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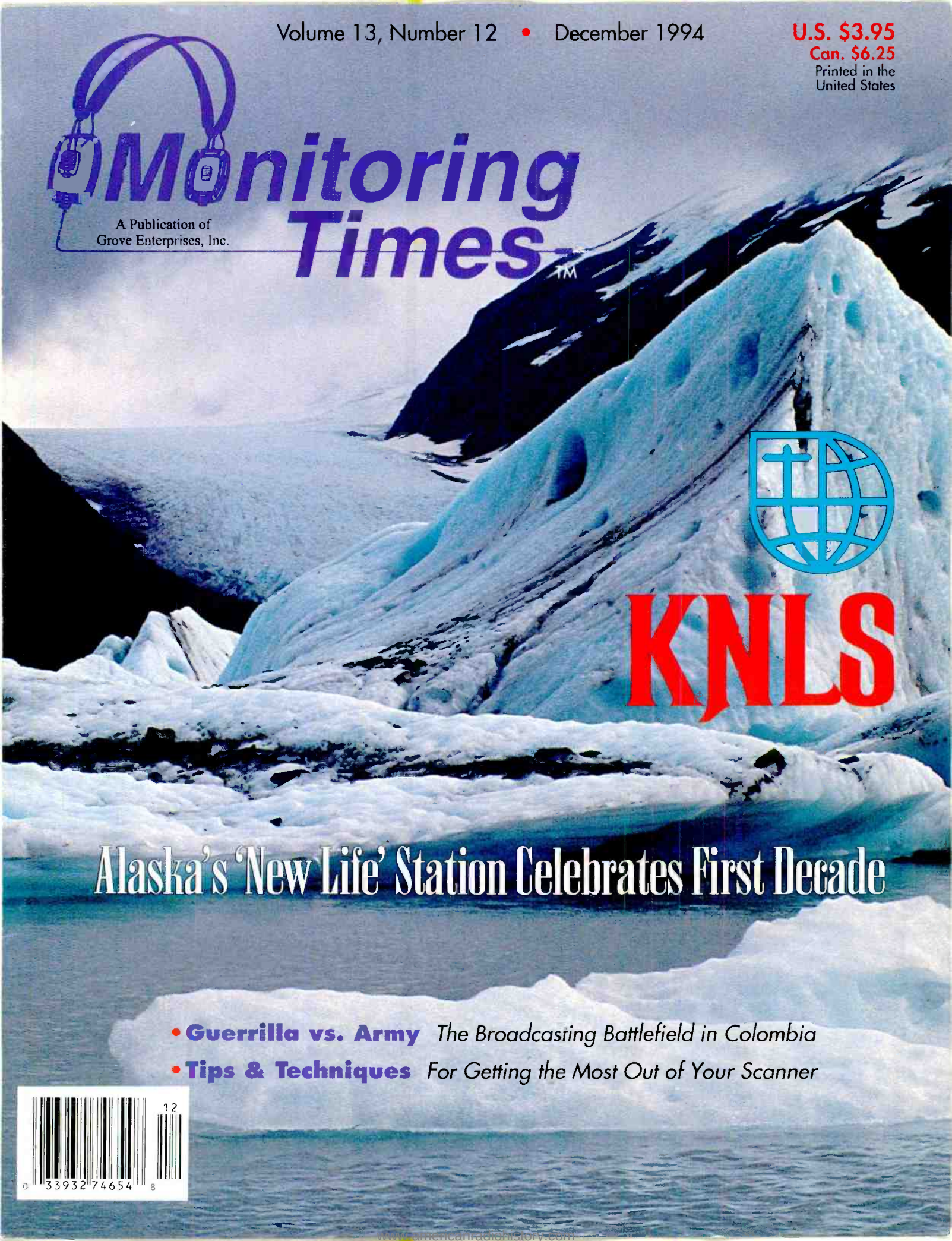

Alaska's 'New Life' Station Celebrates First Decade

- **Guerrilla vs. Army** *The Broadcasting Battlefield in Colombia*
- **Tips & Techniques** *For Getting the Most Out of Your Scanner*

12
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Interceptors®

The Interceptor® series offers quality design in a portable package. The R10 and R20 Interceptors® are near field receivers used for communications monitoring and counter surveillance applications. With use of the signal strength bargraphs they are ideal for locating stuck transmitters. Unlike scanners and receivers that must be tuned to a specific frequency or scanned through a fixed frequency range, The Interceptors® will instantly tune to strong signals.

R10 ..... $359.

- *New* squelch delay feature
- *New* high intensity LEDs & low battery indicator
- Continuous 30MHz - 2GHz coverage in less than 1 second
- Check deviation & signal strength
- Skip button lets R10 scan to next signal
- Completely automatic, no tuning necessary
- Built in speaker or headphones

R20 ..... $119.

- Pager sized, with built in telescoping whip antenna
- 9 volt battery operation
- Monitor Aircraft, CB, AM broadcast transmissions when close
- Check Microwave oven leakage
- Wide .5MHz - 3GHz frequency range

Decoders

To measure Tones and Codes off the air, the TC200 & DC440 Decoders are the units of choice. The Optoelectronics Decoder line can be used with any scanner, service monitor, or communications receiver to monitor PL and DPL tones.

DC440 ..... $259.

- 50 CTCSS tones, 106 DCS codes and 16 DTMF characters
- Convenient front panel controls for Power, Mode and Recall
- New CI-V compatible interface for PC
- Compact Size ideal for mobile or portable operation with optional NiCad battery pack ($39.)
- 2 line by 16 character back-lit display

TC200 ..... $179.

- Measures CTCSS tones only
- Fast - .1Hz resolution with .2 second display update
- Large 4 digit, .5" LCD display
- Low power design, 5+ hours operation

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Opto offers a full line of filters and amplifiers to increase maximum performance.

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Tunable band pass filter system from 10MHz - 1GHz. Maintains a constant 4MHz band width over the entire range. Extends near field detection 10x typical.

N100 ..... $99.
FM broadcast band notch filter. Reduces interference from FM stations.

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Cellular Band Pass Filter and Amplifier. 825 - 845 MHz pass band with 10dB gain amplifier.

BHP800 ..... $40.
High Pass filter for frequencies above 800MHz.

BLP70 ..... $36.
Low pass filter for frequencies below 70MHz.

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OptoScan OS456 ..... $299.

Computer controlled scanning board for the popular Radio Shack Pro 2005/6 scanners. The OS456 takes full computer control of your scanner allowing it to perform simply and effortlessly. You will be amazed at the OS456's 50 channels per second scanning. With its ability to Decode CTCSS Tones, DCS Codes and DTMF Characters, the OS456 becomes a necessary tool for the serious Radio Monitoring Enthusiast.

- High Speed 50 Channels per second scanning!
- CTCSS & DCS Controlled Scanning and Logging
- DTMF Decode & Log with Channel and Time
- RS 232C & CI-V Interface
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Monitoring Times™

Vol. 13, No.12 December 1994

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Cover Story

KNLS Celebrates 10 Years
by John D. Stephens

Religious broadcaster KNLS has overcome ten years of setbacks and harsh weather to broadcast the Gospel to the Asian people. This listener-friendly station with the "soft sell" approach has gotten its message across—with broad coverage and broad appeal.

Author Stephens follows the New Life Station from its inception to its headquarters in Tennessee to the transmitting station in Anchor Point near Homer, Alaska. Our cover photo by John Bailey is also from the Kenai Peninsula, nearby. *See page 10.*

Attendance at the fifth annual* MT *Convention in Atlanta broke all previous records, as twice as many people showed up for the event. Scene at left is from the shortwave broadcasting Q&A forum.

Order Your 1994 Monitoring Times *Index!*

The December issue of *Monitoring Times* traditionally carries the Index for the year just completed. This year, we are offering it by mail instead. Since space will not be limited, it will be a more detailed, and, therefore, more useful Index, arranged by column and by feature topic.

To receive your 1994 Index, please send a self-addressed stamped envelope, *or* $1, *or* two IRC's addressed to: MT 1994 Index, P.O. Box 98, Brasstown, NC 28902.

DEPARTMENTS

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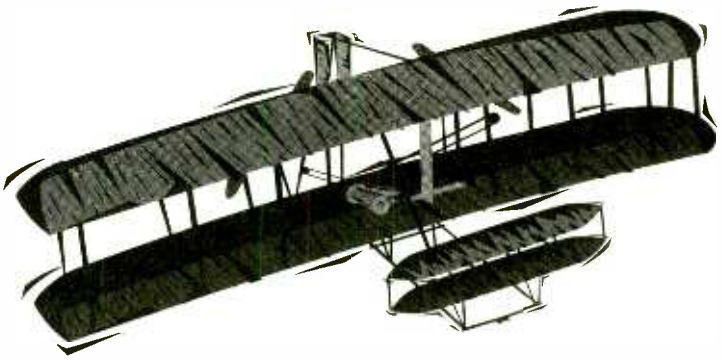
Correspondence to columnists should be mailed c/o Monitoring Times. Any request for a personal reply should be accompanied by an SASE.

"THE WORLD IS FLAT"



"THAT THING WILL NEVER FLY"

"THAT ANTENNA IS TOO SMALL TO WORK"

There's one in every crowd—one that pushes the limits and proves the skeptics wrong. The world sailed into a new era of discovery with Columbus. The Wright brothers propelled us into the age of air travel. AEA advances into the ranks of these distinguished pioneers with the IsoLoop 10-30 HF antenna—a 35" loop antenna with low-angle performance that is better than many full-size HF antennas.

One IsoLoop 10-30 HF pioneer offers this: "Big-gun DXers will tell you nothing *that* small can work. They will continue to tell you this after you work a couple hundred countries with it. Ignore them. In 24 months, I have worked 213 countries and confirmed 198."

The reason you get such a big performance in a small package is the efficiency of the IsoLoop 10-30 HF; it's 72% on 20m, rising to 96% on 10m. The main loop serves as an inductor, tuned with a 10,000 volt variable capacitor. Frequency range is 10 MHz to 30 MHz with continuous coverage. The unique compact design is also ideal if you're facing space limitations—mount it in your attic, on a balcony, or go mobile.

With the optional IT-1 Automatic Antenna Tuner (below), tuning your IsoLoop 10-30 HF becomes an adventure in speed — 2 or 3 seconds is typically all the time it takes before you're tuned and ready to go. (Antenna comes standard with a manual tuner.)

Discover the world of big antenna performance in a small antenna. Call our literature request line at (800) 432-8873 and request the "Inside Story" on the IsoLoop 10-30 HF or call us direct at (206) 774-5554. For best pricing, see your favorite amateur radio equipment dealer.

AEA

Connect with us

LETTERS

Looking Both Ways Now

One more year is nearing completion, and once again, we have seen major changes in both the magazine (our new Art Director), and in the monitoring hobby (April's ban on cellular-capable scanners). The constantly-increasing circulation of *Monitoring Times* testifies that change, which is inevitable, has not dampened the popularity of radio monitoring. If anything, new modes and new obstacles make such publications as *MT* more indispensable than ever.

I am proud to announce another up-coming change in the *Monitoring Times* staff: Bob Parnass is coming on board with the January issue to review scanner equipment as a monthly columnist. Bob is known for straight-shooting and thorough reviews, and his style and excellent qualifications as a technical writer made him Bob Grove's own first choice as his successor for the "Scanning Equipment" column. After writing reviews for *Monitoring Times* for thirteen years, our publisher deserves some time off!

These are a few of the members of the new Viamao DX-Clube in Rio Grande do Sul, Brazil (see Club Circuit for full address). For those in the area, the officers say, "whoever wants to receive more information about our work, talks in the schools, details and location of the next meeting, can contact us by writing in English, Portuguese, Spanish, Italian, French, German, Dutch, Russian, or Esperanto."! They ask Brazilian DXers to write to the international broadcasters, encouraging them in every way possible to continue broadcasting to Brazil.

Monitoring Aids

A couple of resources have come to my attention that are not quite radio-related enough to be covered in "What's New?" and yet have a particular appeal to the interests of radio monitors. Educational Extension Systems (P.O. Box 259, Clarks Summit, PA 18411; 800-447-8561) carries *The Citizen Handbook*, two calendars, and a poster designed to be used in schools or businesses interested in increasing cultural awareness. The *Ethnic Cultures of America* calendar includes holidays and special celebrations of 106 ethnic groups within the U.S., with indexes and introductory material.

The *World Calendar* includes the national, civic, and religious holidays of more than 100 countries; all captions are in six languages. This calendar is also accompanied by photos and indexes to help you understand celebration days throughout the world. Each calendar is $11.75 plus $3 postage. If you simply want the dates of Cultural and Festival Days of the World, the poster by that name will alert you to times when special programming may be aired from broadcast stations of the region; it's available for $9.95 plus $1.45 shipping.

An unusual book read with interest by both Larry Miller and myself is *Starting Over* by Robert L Williams, published by WRS Publishing (P.O. Box 21207, Waco, TX 76702-1207; 800-299-3366). We know that many radio monitors have a keen interest in following or participating in rescue and rebuilding efforts during and after a natural disaster. Many dramatic and heartwarming recovery stories are always told following such a crisis.

However, this book is told from the perspective of a disaster victim—in this case, it was a tornado that struck Robert Williams' Belwood, NC, home. Williams deals openly with the anger and the extreme frustration of dealing with one's loss while wading through reams of red tape to get federal relief. But what makes the book of most value is its common sense and practical advice. It culminates with a series of checklists on what to do *before* a disaster in order to be prepared; and should one occur, what to do and what to realistically expect in the process of putting your life back together. The book is $12.95 from the publisher, and definitely shows the flip side of what you read in the papers about rebuilding.

Radio Books

"Re the article on McMurdo Silver (August), John W. Stokes in his *The Golden Age of Radio in the Home*, Invercargill, NZ, Craigs-Printer and Publishers, 1986, states, *'E.H.Scott himself was born and educated in New Zealand, although he never made radios in this country.'* John Stokes has a further book entitled, *More Golden Age of Radio*, 1990. Both books are in print and available from the publishers (Craig Printing Co. Ltd, P.O. Box 99, Invercargill, New Zealand).

"Your readers may be interested in a history which has recently been published: *The Radio Years: A History of Broadcasting in New Zealand*, Vol One, by Patrick Day. Vol 1 covers the period from the earliest times to 1960, and is a scholarly work which is fully documented. The author is a senior lecturer in sociology. (Auckland University Press, ISBN 1-86940-094-1)."

—Phil Barton, Wellington, New Zealand

Cellular Privacy

Chuck Boehnke of Keaau, HI, wrote to congratulate us on *Satellite Times*, but while writing, couldn't resist adding his comments on cellular monitoring in response to September's "Closing Comments."

"The cellular phone industry, scanner manufacturers, scanner owners, government agencies, and our friends in Congress probably have not realized that the whole business of deleting cellular capability in a scanner is totally redundant now. In the first place, those that really want to listen to cellular phones...will! Secondly—and this is something new—all you have to do to listen to cellular phones is to buy one your-

(Continued on page 114)

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ICOM Simply The Best

IC-R1• Smallest Scanner

150kHz-1300MHz (no gaps); 100 memories; Hold the world in your hands. $479.95

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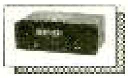
IC-R7100• VHF/UHF Compact
25-2000MHz (no gaps); 900 memories; All mode; 5 scan modes. $1339

LOWE Made in the U.K.

HF-150• HF

30kHz-30MHz; 60 mems; AM, AMN, LSB, USB, CW, Synchro ASU, ASL, ASF, ASD. $599.95

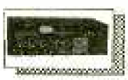
HF-225• HF
30kHz-30MHz; 30 mems; 5 filters; 4-Star rated by IBS! $749.95

KENWOOD R-5000• HF
100kHz-30MHz; 100 mems; All mode; Opt. VHF. $899.95

DRAKE R-8• HF
100kHz-30MHz; 100 memories; All mode; Opt. VHF. $969.95

JRC NRD-535D• HF

Band width control; 100kHz-30MHz; 200 memories; ECCSS $1699
NRD-535
Less BWC, 1kHz filter, ECCSS $1249

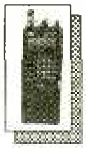
WJ HF-1000• Ultimate HF

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

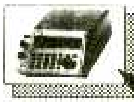
YAESU FRG-100• HF
50kHz-30MHz; 50 mems; All mode; Opt. FM; No keyboard; EEB offers filter upgrades & high performance pkge. $569.95

AOR

AR-3030• *All New HF*

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

AR-1000XLT•
#1 Portable Scanner

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

AR-3000A• Compact Scanner

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

BEARCAT Scanners

BC-200XLT•
29-54,118-174, 406-512, 806-956MHz*; 2... mems; 10 banks; NiCads & adapt. incl. $229...

BC-760XLT• Mobile
Same range* as BC200; 100 mems; 5... 13.8VDC adapt. incl. ...9.95

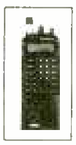
BC-800XLT• Deskt...
S... ran... as BC200; ... m... ...VAC or 13.8VDC. Limited ...

SOLD OUT!!

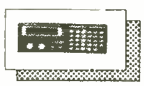
BC-890XLT• *NEW* Base/Mobile

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

BC-8500XLT• *NEW* Base/Mobile
25-1300MHz*; 500 mems; VFO tuning. $379.95

BC-2500XLT•
***NEW* Portable**

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

REALISTIC Scanners

PRO-2006• Base/Mobile

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

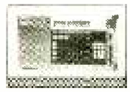
PRO-43• Portable

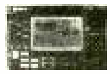
30-54, 118-174, 220-512, 800-1000MHz*; 200 mems; Covers 225-390MHz Gov't. Airband. $299.95

PRO-46• Portable
30-54,108-174,406-512, 806-1126MHz; 100 mems; 10 banks; WX $189.95

PRO-2026 $209.95; PRO-2030 $189.98; PRO-2032 $269.95
*Cellular Blocked But Restorable

SONY The One & Only

ICF-2010• Our Largest Seller!

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

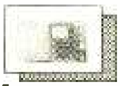
ICF-SW55• Super Performer!

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

ICF-SW77• Top Of The Line!
.15-30MHz; AM, SW, FM; 162 stations; Name memory; AM synchro. $469.95

ICF-SW7600• ...
.15-30MHz; ... SS... compact...

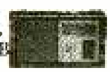
BEST BU...
AM, FM, 10 SW bands. SPECIAL $89.95

PANASONIC

RFB-45•

.14-30MHz; AM, FM, SW; 18 mems; SSB; Scan up/down buttons. $169.95

RFB-65•
.155-30MHz; AM, FM, SW; 36 mems; SSB; 1kHz tuning steps; Keyboard. $219.95

GRUNDIG

Satellite-700• *SPECIAL DEAL*

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

Yacht Boy-400• *NEW*

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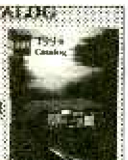

PHILIPS

DC-777• The World Into Yor Car

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ATS-202• *NEW* Mini Digital
520-1710AM; 88-108 FM, 2.3-7.3/15-26.1 SW; ... mems, case, earphng; ...2"W x 5.3"H x 1... $99.95

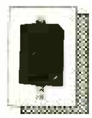
...S-818 $193.95
... cassette. $223.95

ATS-606P•
AM, FM, All SW bands; 45 memories; Auto-tuning; Scan; Keyboard; Picks up 9 most powerful stations (AM,FM) & puts them into memory.
ATS-606 $153.95
ATS-606P with Reel, Antenna & World Power Adapter, 110/220VAC. $173.95

Scanner Accessories

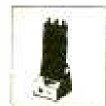
JIM GaAs FET Pre-Amps

M-50•
Gain 20dB; 24-2150MHz; 2 AA power. $74.95

M-75•

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

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

SSE

PSU-101•
Desk Charger/ Power Supply

Use with most Bearcat, Realistic, AOR-1000XLT and other held units. Solid for view, audio and operation $59.95

BHA-3•
Scanner stand like PSU-101 without charger/power supply. $19.95

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Power Grab

Running a radio station means having to satisfy literally dozens of government agencies, from the federal (radio license) to local government (business license). Increasingly, other government entities are trying to put their hands into the pie as well. Now comes the invasion of the county electrical inspectors.

According to recent edition of *Radio World*, Los Angeles station KKLA was recently shocked when the local electrical inspector refused to allow the station to go on the air because their new transmitter did not have an Underwriter Laboratory (UL) sticker. UL stickers are most often associated with consumer items such as toaster ovens and other appliances. According to KKLA Chief Engineer Mark Pollock, radio transmitters are type-accepted by the federal government through the FCC. Pollock sees the failed electrical inspection as a power grab by Los Angeles County.

Radio World perceives a dangerous trend in this direction. KPRZ in San Diego failed an electrical inspection because two of its consoles did not have UL stickers. The situation in San Diego was resolved when the local inspector agreed to pass the station if the offending equipment was not present during reinspection. Station officials apparently then removed the consoles until after the inspector left and then reinstalled them.

Baby Monitor Killing

Victor Parrella killed his wife. Listening in to the argument on a baby monitor was his girlfriend. The girlfriend taped the whole thing.

When Parrella went to trial, the judge ruled that the tape could not be used as evidence—upheld by the Pennsylvania Superior Court—because it violated the law governing the use of wiretaps as evidence. Because of the tape recording, Parrella was able to plea bargain the original charge of first-degree murder to third-degree murder. Now serving 10 to 20 years in a state prison, Parrella admits the gun slaying was a mistake. "I feel sorry for it."

Offshore Broadcasting

Another possible offshore pirate radio station? English-language newspapers in Nairobi, Kenya, says that Kijana Wamalwa, chairman of the opposition Ford-Kenya party, is threatening to broadcast "from a radio station built in a ship in the Indian Ocean." Wamalwa is threatening to take to the high seas because of what he calls bias by the Kenya Broadcasting Corporation in favor of the governing KANU party.

Making It With Frequency

Washington state newspapers are crowing about a 25 year old ex-Boeing employee named Mark Marples. Marples, it seems, is catapulting himself into the world of big money by bidding on alternative television delivery systems.

Marple formed Washington Communications Inc. (WCI) a year and a half ago. His first deal was to buy a wireless cable license to serve Milwaukee, Wisconsin. He paid $1,000 for it. Four months later he sold it for $550,000. The company now holds special wireless radio licenses for 15 major cities. Recently, Marple was informed that his was the winning bid in an FCC auction of four interactive video services licenses. He paid 2.7 million in that deal.

Marple says that he intended to develop interactive TV "to its maximum potential," following in the footsteps of people like Craig McCaw. McCaw, chairman of McCaw Cellular Communications, built his empire by vacuuming up cellular phone licenses issued by the FCC.

Hurricane Light

Radio Sandino suffered a major setback when a "light" hurricane blew through Nicaragua. The station itself suffered only minor damage but the strong winds took down both of the station's two antennas. Radio Sandino Deputy director Orlando Gomez said that the damage amounts to more than $40,000. A sister station on FM was also damaged, but that situation is yet to be assessed.

MARS Tower Falls

Two Seabees were critically injured when the antenna they were working on collapsed. Steelworker Petty Officer 3rd Class Timothy MacTavish and electronic technician Petty Officer 3rd Class Richard Terry plunged 50 feet to the ground when the three-foot-wide triangle-shaped antenna buckled. The two men were taken to a nearby hospital where MacTavish later died of his injuries. The tower was part of the Military Affiliated Radio System (MARS) station at the Naval Construction Battalion Center in Port Hueneme in California.

Antenna Safety

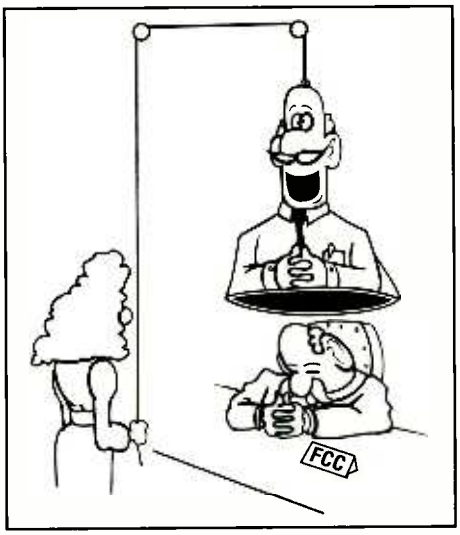
A 22 year old radio announcer was electrocuted and another station employee seriously burned when the mobile antenna they were raising for a remote broadcast came in contact with an overhead power line. Andrew Siehr of WKTT-FM in Cleveland, Wisconsin, was killed as he and a sales representative were setting up at Mel's TV and Appliance, just west of Manitowoc. The saleswoman, Nancy Kortbein, 35, was listed in serious condition at a Milwaukee burn center.

Czech Your Hat at the Door

August 11, 1994: Jindrich Kabat is appointed chairman of the Council for Czech Radio and Television Broadcasting. *September 15, 1994:* Jindrich Kabat hands in his resignation. Kabat, former minister of culture, said the job took too much of his time.

And Thanks for Calling Your FCC

Who says that the federal government is an enormous, bureaucratic monolith that doesn't care about its constituency? The FCC, as part of an overall plan to improve customer service, has installed a toll-free 800 number. The Consumer Assistance Branch may be reached at 1-800-322-1117 during regular business hours. The FCC also said that "within the next 18 months, customer service standards will be developed for other areas of Commission operations to ensure FCC customers receive the highest quality of service possible."



Happy 50th CQ!

Everyone at *Monitoring Times* felt proud—and a little old—when the magazine celebrated its 10th anniversary a couple of years back. Our colleagues at *CQ* magazine make us feel like absolute babes. *CQ* celebrates its 50th anniversary this January! The magazine will have a special anniversary issue, a new group of operating awards and a variety of off-air events and special opportunities.

For more information, contact Richard Moseson at *CQ*, 76 North Broadway, Hicksville, NY 11801.

And congratulations, *CQ*, from everyone at *Monitoring Times*!

Farewell, Old Friend

We close this month with news of the end of a legend—Ft. Wayne, Indiana's clear-channel WOWO Radio. WOWO is well known to even casual AM radio listeners. Its 1190 kHz nighttime signal easily covers 28 states and four Canadian provinces.

In an unusual move, the FCC has approved the sale of the 50 kilowatt clear channel giant from Wayne Broadcasting Company to the Inner City Broadcasting Company (ICBC). But ICBC isn't buying WOWO because they want to provide a service to listeners. Here's what's really happening.

ICBC owns and operates WLIB in New York City. WLIB is a 10 kW news-talk/Caribbean music station that also operates on 1190 kHz. It must go off the air at sunset in order to protect WOWO's signal. So ICBC, which wants to go full time, is buying WOWO. As WOWO's new owners, ICBC will reduce WOWO's nighttime power so that their WLIB can operate at night—the real objective of this move. And since they don't really care about WOWO or its audience, ICBC is discarding the emasculated giant just as soon as the FCC allows, selling it to a third party, Pathfinder Communications Corporation. Pathfinder already owns other stations in Ft. Wayne.

Says Arthur Goodkind, the attorney for ICBC, "We are pleased it happened." And not to worry, says Goodkind. "Everyone who listens to it (WOWO) *during the day* [italics ours] will be unaffected..." The whole sordid ordeal should come to a close before the end of the year.

Hello, New Friend?

The first radio station on the Internet plans to begin 24-hour a day operations next month. Internet Multicasting plans to send out an online equivalent of the C-SPAN cable network. Programming will reportedly include live gavel-to-gavel audio broadcasts from the House and Senate, highlights from performances at the Kennedy Center for the Performing Arts, broadcasts of luncheon speeches from the National Press Club, recordings of famous authors reading their books and poetry, as well as the talk show, "Geek of the Week." "Geek," in this application, is used as a term of admiration.

The station—technically a cyberstation—is called RTFM (Radio Technology for Mankind).

Right now, only a few thousand people have the high speed network data capacity, or bandwidth, necessary to listen to live audio transmissions over their computers. But millions of Internet subscribers with standard personal computers and regular phone lines will be able to retrieve pieces of the audio.,

Goodbye WOWO. Hello, RTFM?

"Communications" is written by Larry Miller from information provided by the following staff or reporters: Anonymous, Albany, NY; Peter Hartman, Dallas, TX; Jacques d'Avignon, Kingston, ON; R. Johnson, White Deer, PA; Fred Kelly, Jr., Houston, TX; Kevin John Klein, Appleton, WI; Alan Messmer, New York, NY; Ronald Pratt, Oak Harbor, WA; Doug Robertson, Oxnard, CA; Paul Roalews, Tulsa, OK; Rich Sklar, Seattle, WA; Robert Thomas II, Bridgeport, CT; Dan Trigilio, Capitola, CA. Other publications consulted include: BBC's World Broadcast Information, National Scanning, Radio World, and the W5YI Report.

You, too, can join the "Communications" team by watching your local newspaper for stories about radio. Send them to Larry Miller, Communications, P.O. Box 98, Brasstown, NC 28902.

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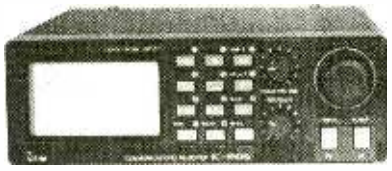

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Although cellular-capable scanners and converters can no longer be imported into or manufactured in the United States, Grove Enterprises offers this exclusive, **full-frequency-coverage** (25-2000 MHz) ICOM R7100/R100/R1 converter package while the limited supplies last.

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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

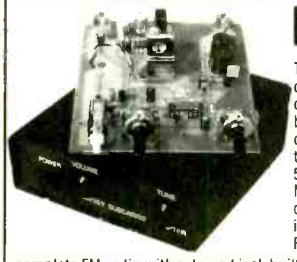
Keep an ear on the local repeater, police, weather or just tune around. These sensitive superhet receivers are fun to build and use. Tunes any 5 MHz portion of the band and have smooth varactor tuning with AFC, dual conversion, ceramic filtering, squelch and plenty of speaker volume. Complete manual 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	$79.95

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.

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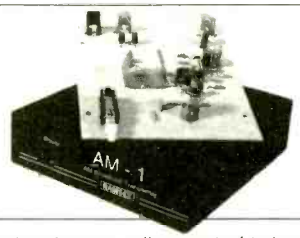
AM BROADCAST TRANSMITTER

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	$29.95
CSR Case and Knob Set	$14.95

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KNLS Celebrates 10 Years Of

By John D. Stephens

In ten years of broadcasting from the top of the World, shortwave broadcast station KNLS has overcome a harsh environment, arson, and even death to broadcast the Gospel to the Asian people. But in spite of these hardships, the "New Life Station" has generated good will and a loyal listenership through its "soft sell" programming.

It all began very simply. In the early 1970's a group of Christian men began to dream of a way to share the peace of God with a troubled world. As their dream began to take shape, it grew into a vision of using shortwave radio to broadcast this message to the people of the People's Republic of China (PRC) and the Soviet Union—people who had long been denied or had severely restricted access to the messages of Christianity. The dream began to become reality in 1976 with the formation of World Christian Broadcasting Corporation (WCBC) during an organizational meeting at the Prestoncrest Church of Christ in Dallas, Texas.

WCBC is a non-profit organization operated and primarily funded by congregations and members of the Church of Christ (not to be confused with the Church of Christ Scientist or Church of Jesus Christ of Latter-Day Saints). Almost immediately, the organization began the search for a location and the necessary financial support for what would eventually become KNLS.

Tragedy Strikes

Only eight months later, in early 1977, the dream briefly turned into a nightmare when two founding members of WCBC's Board of Directors died in a tragic plane crash. Founding president Dr. Lowell Perry and California businessman Ken Ferguson perished while searching for a site upon which to build the KNLS facilities. According to former WCBC President and current Board member Dr. Robert E. Scott, "Since these two men were a driving force behind our efforts, their loss was sorely felt."

Many feared that World Christian Broadcasting would die along with these dedicated men, but ironically the accident seemed to give the project new life. With renewed purpose, the remaining board members continued their search for a broadcast site.

Eventually, 70 acres of land located approximately 110 miles southwest of Anchorage, Alaska, were purchased just outside the small town of Anchor Point—on the Kenai Peninsula near Homer. WCBC petitioned the FCC for a construction permit in October of 1981, and construction began eight months later. A mile of road had to be cut through the rugged Alaskan landscape just to reach the building site. Wells were dug, housing installed, antennas erected, and the transmitter building was constructed. But, just as this building was nearing completion, tragedy struck again.

A Major Disappointment

"A major disappointment was the morning I arrived to see smoke coming out of each end of the newly constructed transmitter building," remembers Station Manager and Chief Engineer Kevin Chambers. "Half of the building was destroyed by arson fire." Despite investigation by local authorities, the arsonist was never captured nor a motive revealed.

Fortunately, the transmitter and other major electronic components had not yet been installed and insurance covered most of the loss. Chambers and his crew went back to work, hoping to complete reconstruction by the following summer.

World Christian Broadcasting Corporation's operations center in Franklin, Tennessee (Photo by J.D. Stephens)

The Work Continues

While the arsonist's damage was repaired, installation of the giant curtain array antenna continued. Manufactured by Technology International, the antenna measures almost 1300 square feet, and actually consists of sixteen separate dipole antennas strung together. A second wire screen, hanging just behind the antenna, pushes the radio frequency (RF) radiation towards the west. Using huge switches at the curtain's base, station operators can aim the antenna at different parts of Asia and the Pacific Basin.

To help the antenna system survive Alaska's bitter winds, ice, and snow, a special counter weight system is employed. "If high wind or heavy icing was to load all of the wires between the towers," says former Chief Engineer Francis Perry, "concrete counter weights would come off the ground allowing the antenna to sag—which is the protective measure which prevents the tower from being loaded too much."

As a testament to the harsh environmental conditions, Perry says he has seen the two giant concrete cylinders (which weigh as much as a small car) pulled almost 6 inches off the ground by wind and ice.

Once the fire damage had been repaired and the antenna array was in place, the New Life Station's 100,000 watt shortwave transmitter was ready for installation. Manufactured by Harris, the SW 100-A unit uses a then-relatively-new modulation technique known as "Pulse Duration Modulation." According to Perry, the transmitter is "about 65% efficient," which means that, out of all the electrical current it uses, about 65% of it is emitted as RF energy into the air. Efficient as it is, the transmitter burns more power in a single month than the average American home would use in six years! When in operation, the unit gives off enough heat to warm the entire transmitter complex—even on the coldest Alaskan winter day.

Opening Day

While construction was going on, WCBC was assigned the call letters KNLS for the station. Specifically requested by WCBC, the call letters were chosen to signify the "New Life Station."

Station KNLS aired its premiere broadcast on July 23, 1983. Obviously, the first broadcast day is a special time in the life of any radio station, but the opening broadcast of the New Life Station was especially memorable, because it represented the sacrifice of so many people. Thousands of individuals had donated funds toward its construction. Dozens of dedicated crewmen battled Alaska's harsh weather and difficult terrain to build it. Board members Perry and Ferguson had made the ultimate sacrifice.

Recalling the opening day ceremonies, Station Manager Chambers says, "We had a very special speaker here and he said things about the need for shortwave broadcasting and religious shortwave broadcasting that will stick with me forever—and made what we were doing seem more than worthwhile."

Standing (L-R) Ed Short, Senior Producer, Chinese Language Department; Mike Osborne, Production Manager; Steve Towell, Senior Language Program Director; Dale Ward, Executive Producer. Seated (L-R) Charles Caudill, President and CEO; Maurice Hall, Communications Consultant. (J.D. Stephens)

The Early Years

During the first months of operation, KNLS broadcast only in Russian and Mandarin Chinese. English language programming for the Pacific Rim was begun in 1984, and Japanese transmissions were added in 1987.

Program coordination posed particular problems during the early phases of operation, as the "on air" personnel were initially quite scattered. "Our early programs were recorded in studios all over North America," says Production Manager Mike Osborne. "We had shows coming from the states of California, Tennessee, Texas, Ohio, Alaska, and even one from Canada. It was a real nightmare trying to coordinate programming with everyone so scattered."

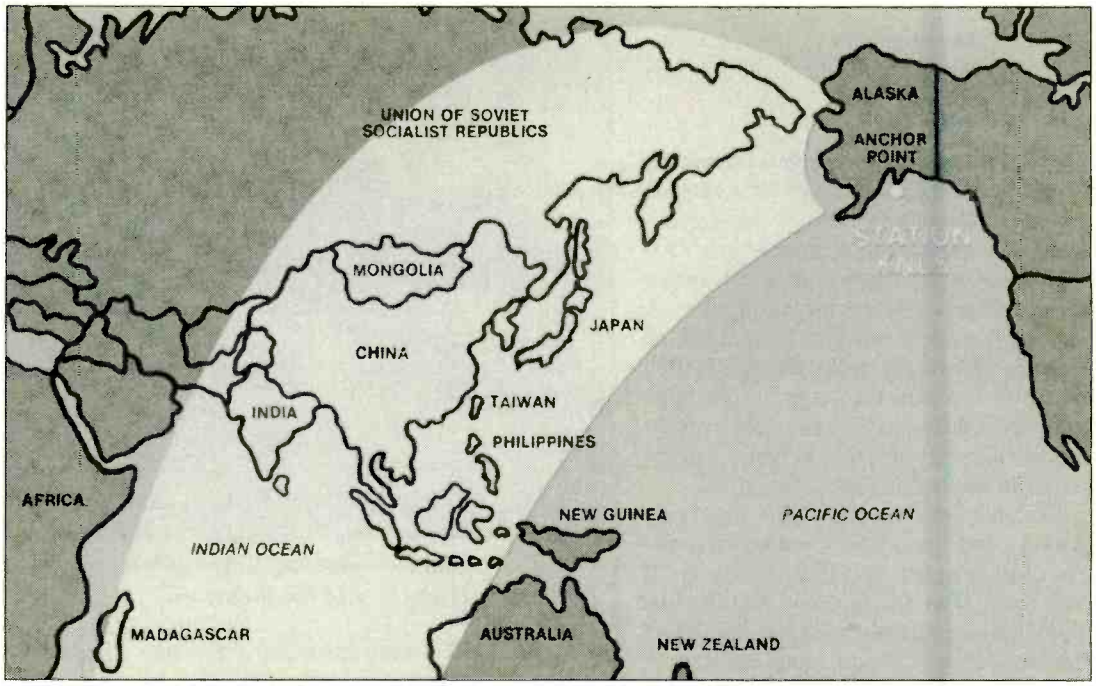
In November of 1989, recognizing the need for a solution, WCBC brought all the production personnel together at a new, state-of-the-art, $750,000 facility in the town of Franklin, Tennessee, just outside of Nashville. In addition to the programming department, these new offices also house WCBC's Director of Engineering, Director of Response, and Director of Operations.

Automating For The Future

In the early 90's, KNLS undertook two technological initiatives that would be part of a program to make every phase of the station's operation as efficient as possible.

The first was the automation of the transmitter. The automatic system was designed, constructed, and installed in 1991. It turns the transmitter on and off, changes frequencies, moves the antenna slew, adjusts the various

power settings, and takes meter readings—all without assistance. This is of particular benefit to the station crew, who previously had to work late night and early morning hours, due to time differentials within the broadcast target areas. Now, programs can be loaded for broadcast, transmitter settings checked, and everything can run unattended while station personnel sleep. Should a problem occur, an alarm will sound, alerting the on-site personnel. According to Production Manager Osborne, implementation of this system allowed more of the salaries and other operational funds to be brought to the operations center in Tennessee.



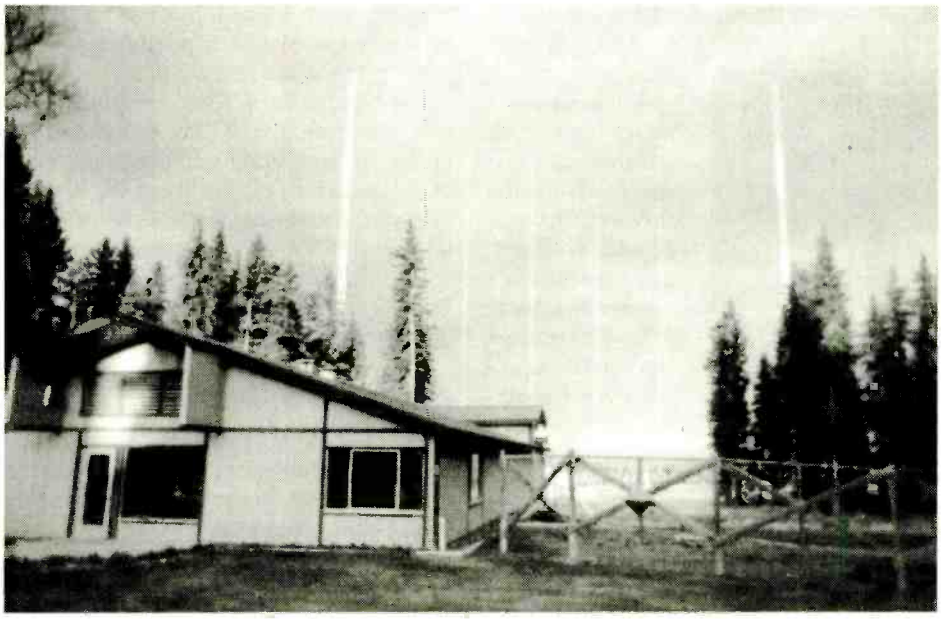
KNLS sends out this attractive QSL card illustrating its transmitter location and expansive Asian coverage zone.

The second initiative was the completion and installation of a programming automation system in the summer of 1992. Unlike most program automation schemes which rely on computers to control analog devices, the KNLS system is totally digital. KNLS announcers record their programs directly into a computer memory. The shows are then edited digitally using a computer monitor and mouse.

These "soundfiles," which are represented graphically on a computer screen, can be edited in a manner similar to word processing on a Macintosh computer. Areas of audio can be selected, cut, and pasted just as if they were text. When the program editor is satisfied with the program, it is then reviewed by the station's language experts. Once the program is deemed ready for broadcast, it is then stored in a digital library until needed on the air.

Additionally, these soundfiles can be transferred between any of the four production studios, which are networked together. To illustrate the huge savings in time, Osborne said that a very complex piece, which would have taken two or three months to produce, took a mere three weeks to complete on this system.

Programs that go to Anchor Point for broadcast are stored on Digital Audio Tapes (DAT), each capable of holding up to 20 hours worth of programming. Before the automated system was in place, bulky reel-to-reel tapes were used for this purpose. Very compact, these DATs—one of which can fit in the palm of your hand—are sent via express mail to Anchor Point for airing, and are a huge savings in postage for the station. Once the tapes are received at Anchor Point, station technicians can simply start the transmitting system each day, load the program tape, and then walk away.



The KNLS building in Anchor Point, Alaska. Their large curtain array is in the background. (Courtesy World Christian Broadcasting)

A Unique Opportunity

On January 1, 1991, World Christian Broadcasting was given the unique opportunity of broadcasting the first ever regularly-scheduled religious radio program on the former Soviet Union's domestic All Union Radio Network. This program, called *The Hour Of Reflection*, is heard each Tuesday evening in virtually every city, town, and village of what is now the Commonwealth of Independent States (CIS).

In its first year alone, *The Hour Of Reflection* received nearly 30,000 listener letters. The majority of those who wrote requested religious materials, usually a Bible or a Bible correspondence course. To handle this overwhelming volume of mail, WCBC opened a response office in the Russian city of St. Petersburg (formerly Leningrad) in the Spring of 1992.

The Remarkable New Frequency SCOUT!

SCOUT IT OUT!

- The Scout automatically finds and records frequencies, will tune a receiver and can differentiate between random noise and coherent RF transmissions!
- Pocket sized—goes anywhere!
- For discreet, in the pocket, walk-by recording, there is a pager style vibrator alert.
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A program producer edits a program on the all-digital production system. Inset: Each of these tiny digital audio tapes contains a whole day of KNLS programming. (Photo by J.D. Stephens)

A Different Sound

From the very beginning, listeners noticed that the *Hour Of Reflection* and other KNLS programs were different. An early letter received from an Italian listener said, "I find the KNLS format particularly enjoyable because your programs seem friendly and varied, with nothing of the slight touch of pressure one sometimes feels from other (religious) broadcasters." From an Australian listener came this note; "May I say that, in my opinion, your approach to religious broadcasting is much more, shall I say... enjoyable than the usual Bible thumping."

WCBC Board member Ed Bailey says that's exactly what he wants to hear. "We hope listeners will observe and see that we are Christians. However, at the same time, we are also interested in sports and music, and have families that are important to us. All of that, we believe, is part of life in Christ. Our desire is to share our faith with friends wherever they may live throughout the world."

The "soft sell" approach in programming includes "programs which deal with social issues, give a Christian perspective about freedom through Christ which is totally outside the political realm, and yet address problems that are political, social, and spiritual," says Senior Chinese Language Department Producer Ed Short. "Interspersed with all that, we play a lot of American music. We begin each hour with a newly released piece of American popular music... whether it's adult contemporary, country, or whatever... and we intersperse some religious segments with American culture and some English language teaching."

For the KNLS message to be as effective as possible, WCBC employs only native speaking announcers. According to Senior English Language Program Director Steve Towell, "One of the things we want to avoid is the sound of someone who has picked up a second language. It would be very easy for me, as an American, to make major blunders—both culturally and linguistically—in speaking in another language."

Executive Producer Dale Ward adds "We think that there are some universals that touch everyone in different cultures—but have to be addressed differently (based on the culture)."

In addition to material produced "in house," Production Manager Osborne points out that KNLS has increased the use of transcription programs it receives from international broadcasters such as the BBC, Radio Australia, Radio Canada International, Kol Israel, and Swiss Radio International. "We screen this material regularly, look for those things we feel would be of interest to our listeners, and use them," says Osborne.

Currently, the New Life Station is concentrating on keeping its programs relevant to an ever-changing world. The world political climate, as well as radio broadcasting, has changed considerably since KNLS began transmitting over 10 years ago. Nowhere is this more evident than in the PRC, to which KNLS directs its programs for eleven hours per week.

Domestic radio in the PRC now has call-in programs, plays more rock-type music, and exhibits a less strident tone than during the Mao era. "They seem to be more conscious of what their listeners want," says Short. Noting that these changes obviously create competition for KNLS, Short adds, "We continue to try and give them things from the United States about the United States that they can't get in China. They do have access to a lot of U.S. news, but it comes through the Communist eyeglasses. We give them U.S. news and culture through Christian eyeglasses—which we feel is information that they couldn't get otherwise."

The station hasn't forgotten the DXer, either. On January 1, 1993, KNLS aired its first DX show called *Radio Today* during its English language programming. Shortly thereafter, the series *DX Tips For Beginners* was added to the station's schedule. Written and recorded by Carl Mann—a long time DXer and news reporter from Omaha, Nebraska—the shows were inserted randomly during the English program segments.

While *Radio Today* is currently on hiatus, a second introductory DX show produced by Mann—*DX Propagation For Beginners*—is now being aired during the KNLS English schedule. There is no set time or day for this program, so check the latest KNLS schedule for times and frequencies of the English broadcasts.

No Appeals Over The Air

The programming style of the New Life Station isn't its only unusual feature. KNLS is also unique among religious broadcasters in that it never airs any paid programming, or asks listeners to donate money—a distinction of which the station is very proud.

Such a practice would be essential in striving to "produce the kind of programming that the people who provide the funding would want to pay for, but at the same time not be controlled by those who are providing the funding," according to WCBC President Charles Caudill. "We feel that it is necessary for us to be totally independent of that and to retain that kind of independence and control."

Maurice Hall—WCBC's Communications Consultant in charge of fundraising duties—says that station funds come from individuals, foundations, churches, and a few businesses. And not all donations come exclusively from those associated with the Church of Christ, as Mr. Hall pointed out. In

fact, one of the largest regular contributions from an individual comes from a gentleman of another faith who said "We... are not doing what you are doing... and I am very anxious to see the Word of God go out."

Ironically, this absence of financial appeals does sometimes make KNLS listeners suspicious. One Communist journalist went so far as to accuse the station of being supported by the CIA!

Any materials offered over the air on KNLS—which includes Bibles, religious publications, audio cassettes, and even a DXing handbook—are sent to listeners free of charge, and with no obligation. All that KNLS wishes for is friendship and trust from its audience.

The Outreach Grows

During the last 18 months, KNLS has increased its area of influence through agreements with two international broadcasters. The first is Radio Sofia in Bulgaria. In early 1993, the station contacted WCBC, noting that they had heard and liked KNLS's Russian programming, and asked for some program material to be sent to them for rebroadcast. Because of this arrangement, listeners in Bulgaria have been enjoying KNLS programs over Radio Sofia's domestic mediumwave and FM radio networks.

Also, in March of the same year, WCBC began leasing former Radio Moscow transmitters in the city of Khabarovsk, near the Pacific Coast of Russia. For six hours per week, KNLS Mandarin programs are directed to the PRC from this site. According to Executive Producer Dale Ward, this arrangement has been less than ideal, due to "the current chaos in the (former) Soviet Union as to who owns what and who knows what's going on. When we say we want a certain frequency at a certain time, they usually give us what is most convenient for them at the time." Ward continues, "For them, that means that they've done their job. For us, that means that's not what we want to pay for." Ward also notes that one of their monitors in Shanghai confirms that the KNLS programs have not always been airing at the time and/or on the frequency that was purchased.

Looking To The Future

In the future, World Christian Broadcasting plans to reach areas of the world in native languages to which KNLS does not currently target its programming. Also, technological advances such as Digital Audio Broadcasting (DAB) are being investigated, according to Station Manager Kevin Chambers.

Whatever the future holds for World Christian Broadcasting and KNLS, one thing will remain constant. It is the station's goal to be, according to Ward, "An excellent representative of the values that established America. We want to very specifically show the spiritual nature of man and be a good guest in people's homes. We want not to turn them off, but rather to turn them on—to spiritual definitions of life."

Ward says that programming will continue to be developed "So that they (the listeners) will listen again, that they'll consider us a friend, and that they'll write to us." Once contact is made by the listener, Ward adds, "Then we will take that friendship as far as they want to go."

Parting Thoughts

The staff members of World Christian Broadcasting are quite friendly toward DXers, and will provide colorful QSL cards in response to correct reception reports. One exception to this is the relay via Khabarovsk. According to President Caudill, "We've had a lot of people write for QSLs on those transmissions. But, because they are so ambiguous, we have not felt that we could issue QSL cards in confirmation of these broadcasts." Pennants, stickers, and copies of the *DX Tips For Beginners* booklet by Carl Mann are free for the asking (though 2 IRCs for postage are appreciated)—as are a wide range of spiritual pamphlets, brochures, and publications.

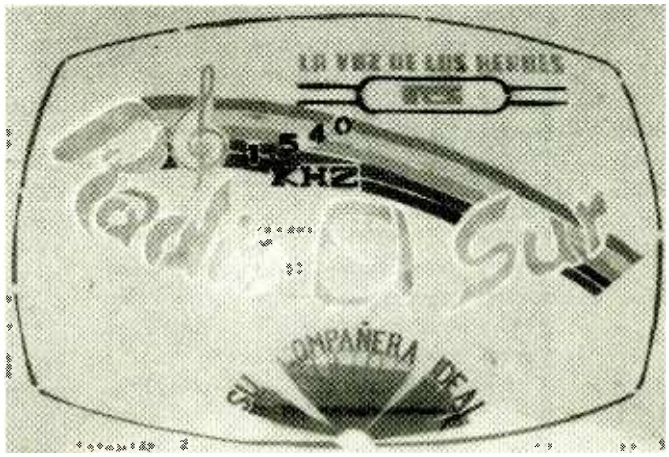
Although an occasional QSL will be sent from the station site in Alaska, most mail is forwarded to the Tennessee office for processing. It is suggested that QSL requests and other listener mail be directed to World Christian Broadcasting, Operations Center, P.O. Box 681706, Franklin, TN 37068-1706, U.S.A. Technical inquiries can be sent to Mr. Kevin Chambers at the station site address of Station KNLS, P.O. Box 473, Anchor Point, AK 99665, U.S.A.

The next time you write KNLS, tell them you read about them in *MT*. They read it, too!

The author would like to thank the friendly and dedicated staff members of World Christian Broadcasting Corporation for their valuable time and gracious assistance in the preparation of this article.

World Christian Broadcasting's central production room and audio library (Photo by J.D. Stephens)

Broadcasting Battlefield



The handpainted logo of Radio El Sur and La Voz de los Heroes

Colombian Guerrillas And Army Compete On The Shortwave Bands

By Henrik Klemetz

In April 1994, the Colombian Army discovered the transmitting site of Radio Patria Libre. During more than five years, and despite operating on a regular schedule, this guerrilla clandestine had successfully thwarted all attempts at tracking them down.

In their announcements, Radio Patria Libre suggested they were broadcasting from "el campamento Nueva Colombia" (the New Colombia Camp) somewhere in the Northeastern part of the country, near the Venezuelan border. However, direction finding indicated northern Colombia as their true location.

Major Paulino Coronado, an Army spokesman, explains what happened: "The Second Mobile Brigade on assignment in Northern Colombia in the Magdalena Medio area, engaged some guerrilla groups in the mountain ridge of San Lucas, in the Southern part of Bolívar. In the course of the attack they discovered a camp belonging to the ELN and FARC guerrillas. The guerrillas fled, leaving behind some equipment, including a 1 kW shortwave transmitter."

After the April raid, Radio Patria Libre was off the air for one month. When they returned on May 15, they were on a reduced schedule. Their nighttime broadcast at 0030, which had been a relatively easy catch as far away as in Europe, has now been suspended.

Radio Patria Libre started broadcasting in October 1988, but no one has ever heard them mention an address for listeners to write to. Consequently, no QSL has ever been issued. Yet the station has always been interested in what foreign news media might have to say about the operation.

A couple of years ago, a news report on the station by Radio Netherlands' Spanish language DX program was promptly referred to and acknowledged on the air by the guerrilla clandestine. And, as recently as December 1992, they would ask their listeners to tell "friends *abroad*"—not just "friends"—to tune in to Radio Patria Libre: a station "fighting lies and disinformation in Colombia," as they put it.

Now that the nighttime transmission has been suspended, reception is precarious even in the nation's capital, Bogotá. This may well indicate a change of the station's objectives. As the transmissions cannot be heard by the

general public, the main task may now be to boost the morale of their own troops, teaching them what's really going on in Colombia and abroad.

This may also explain why the station recently has been devoting so much time to the Cuban situation. According to Radio Patria Libre, Cuba is a country where there is no social injustice. Despite "the US blockade," there is no poverty on the island, the station says.

The addition of a "request show" on Sundays 1600-1700, called *Musicales Patria Libre* seems to confirm the fact that the station is now catering more to their own people than the public at large.

Regular Patria Libre programs include *La revista de la semana* (The review of the week), Saturdays, repeated on Sunday, and daily features such as *Noticiero Patria Libre* (Patria Libre News Roundup). *Microfono abierto* (Open Microphone), and, occasionally, an "educational" feature called *Rompiendo las cadenas* (Breaking the Chains).

Judging from the wow often heard in the audio, the programs may be prerecorded. According to the Army, the programs are produced in mobile studios.

The station signs on with a piece of Colombian popular music which varies from one day to another. They close down with a few bars of a "pirate" version of the Colombian National Anthem. The music is right, but the lyrics are a specially adapted version, saying: "We're fighting for our country. Giving it our lives is not to die, it is to live."

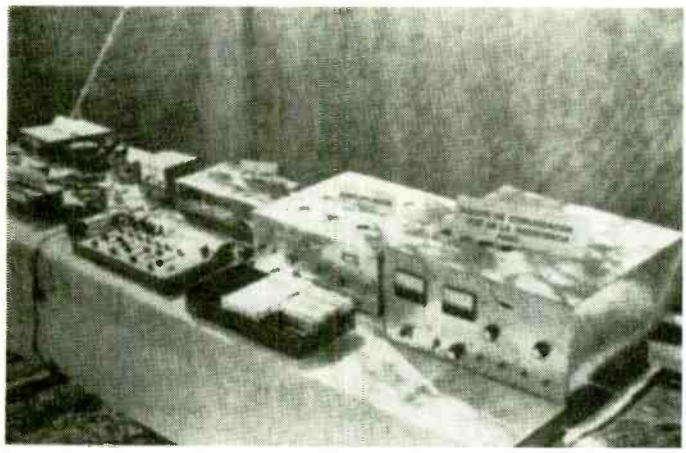
Present schedule

Prior to April 1994, the times and frequencies were announced in the course of most transmissions. This is no longer the case.

- Weekdays 1130-1210 6260 kHz
- Sat. 2130-2210 6260 kHz
- Sun. 1600-1730 6260 kHz

The nighttime transmission, which is now suspended, has been on a number of frequencies during the past year and a half: (kHz) 5850, 5830, 5835, 5840, 5838, 5910, and 6530v. The morning transmission, during the same period, and until April 1994, was on 6270. As from May 1994, the afternoon transmission was initially on 6240, then changed to 6260 where it still remains. 15050 has been announced from time to time, but this frequency has not been heard in Bogotá.

Occasionally, the nighttime broadcasts have been subject to intentional interference from a station identifying itself as "El Pueblo Responde" (The People Answer Back). This station has been playing music and advocating the return of guerrilla soldiers to civilian life. The Colombian Army says it has nothing to do with these broadcasts.



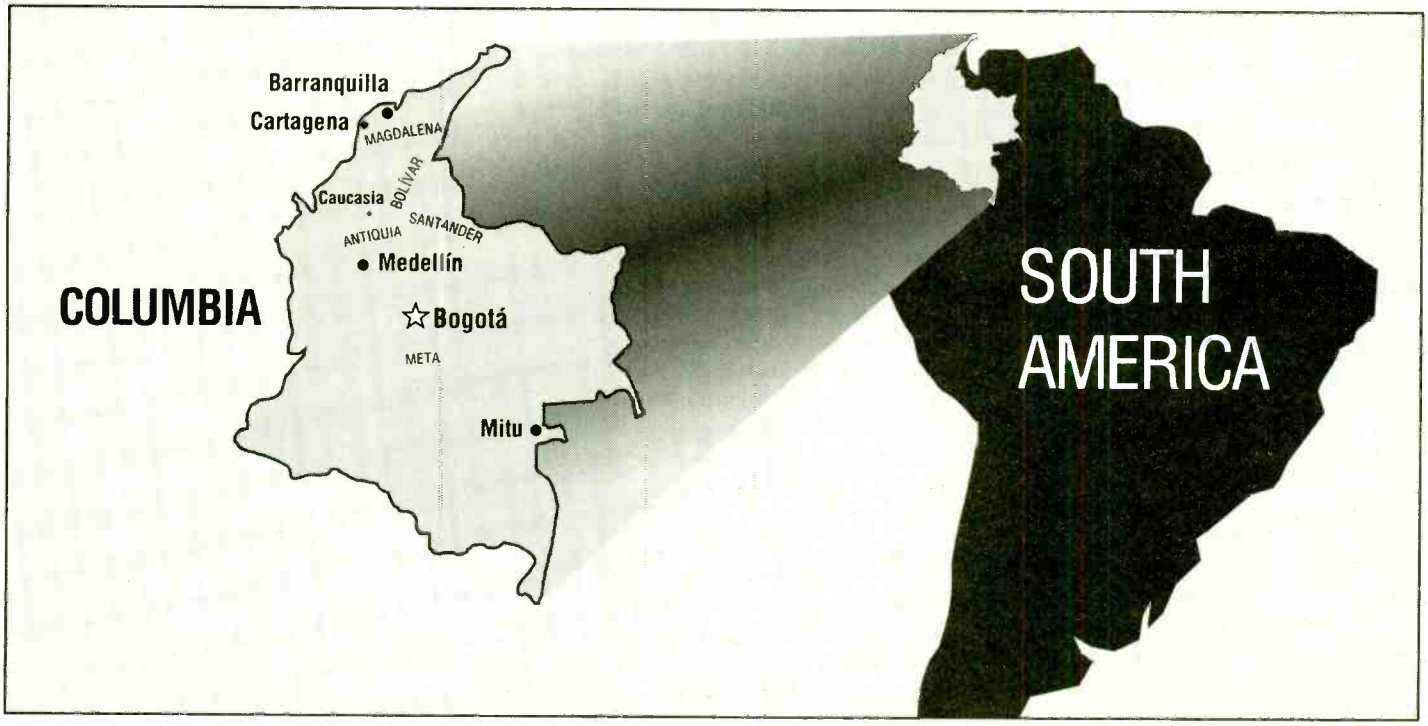
Broadcasting equipment confiscated from La Voz de la Resistencia—clandestine station of Colombia's oldest guerilla group.

Only very recently, there has been some attempts at jamming the signal of Patria Libre. A strong motor-like interference was noted on September 4, during the weekend "request show."

The Voice of the Resistance ...

On September 3, the First Mobile Army Brigade seized the equipment of yet another clandestine shortwave station, La Voz de la Resistencia, which used to hit the air on Saturday or Sunday nights at midnight UTC on 6626 kHz.

According to an Army spokesman, this station may have been active for two or three



The Army's studio at Brisas del Palmar carefully avoids anything political.

years from La Uribe, in the Meta department, which for over 20 years has been a stronghold of the FARC guerrillas.

The station was last noticed on August 28, when they read a letter the guerrilla movement was sending to the newly elected nation's President, Ernesto Samper. In this broadcast they also read a number of "partes de guerra" (war bulletins), each of which ended with the words "Se desconoscan los resultados de la operacion." (The result of the operation is unknown.)

The confiscated material included a Kenwood TS50 transceiver, two linear amplifiers, a microphone, a 15 V battery, a battery charger and a voltage regulator. At the transmitting site there was also an outdoor dipole antenna.

For some reason, this station does not seem to have been heard abroad. When on the air, the signal may have been mistaken for that of the Peruvian La Voz de San Antonio, which, however, has been stable on 6627.2 for more than a year now.

. . . vs. the Voice of the Army

The Colombian guerrilla groups—ELN, EPL, and the oldest one of them all, FARC—are still present in many parts of the country. In some rural areas, they are collaborating with the druglords by keeping their cocaine labs in custody. Some reports indicate that a number of guerrilla fronts have engaged in drug trafficking themselves.

Special Army detachments have been assigned to fighting the guerrillas. Some of these brigades operate radio stations for their own benefit and that of the civilian population.

Most of these stations are on mediumwave, some them on FM, but none as yet have appeared on shortwave. At present there are about a dozen Army stations affiliated with a network called "La Voz de los Heroes" (The Voice of the Heroes).

Their main line of programming is music, although they sometimes feature material produced by the Army HQ in Bogotá. Their main purpose, says an Army spokesman, is to rally support for institutional democracy. "The Army is not just a combat force, it's also actively pursuing the solution to social problems," the Army spokesman says.

The Army has its own network of 11 AM and FM stations, and, in addition, on Sunday mornings, their message is aired through various nationwide networks, such as RCN, Todelar and Colmundo. In some areas, the Army's radio station acts as a tranquilizer, or pacifier, for the civilian population.

In some areas, such as Caucasia, Northern Antioquia, the presence of an Army station is perhaps not as politically important as in other minor cities. Midway on the main road from Medellín to Cartagena, Caucasia boasts several industries and an airport of its own, served twice a day by the ACES airline.

Representative of the local Army stations, Caucasia's Army broadcaster is called "Brisas del Palmar" (Breezes from the Palm Grove). It can be found on the air from 6:30 in the morning to 10 or 11 o'clock at night on a frequency of 1520 kHz. The output is a mere 300 W, and the antenna a half-wave dipole.

The station went on the air in 1988, and the studio is within the premises of the 29th Infantry Regiment "Rifles." The operators are all private soldiers, except for the manager, who is a civilian. They do carry commercials—mostly free for the asking—but not one word that might be labeled as political propaganda.

Even though it's the "official" radio station of the town, "Brisas del Palmar" falls 'way behind Radio El Sol, which is affiliated to the RCN network. This station has first-rate studios and transmitting equipment, and takes the RCN network news via a microwave link at Yarumal, 50 km south of the town.

The guerrilla presence in Caucasia is now negligible. This is also the case of San Vicente del Chucurí, in the Santander department, where the Army, by means of a "development plan," has been successful in clearing the town of guerrilla influence. In this town, the *only* broadcasting station is that of the Army, "Radio El Sur," on 1540 kHz.

Apart from small urban cells, the guerrilla still remain out in the countryside, scaring people from their farms by means of kidnapping and extortion. Whatever their political aims, their message does not easily reach out. A communist newspaper, *Voz Proletarian,* is being published, but its readership is small.

In a country where shortwave is rapidly losing ground, Radio Patria Libre and La Voz de la Resistencia do not reach out, either.

The Army station Radio El Sur has no competition in a region largely cleared of guerrillas.

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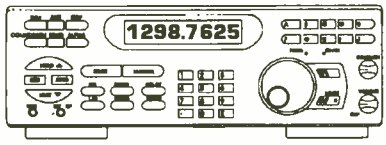

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Weatherlink Software for IBM PC-Version 3.0 7862-K $139.95
Weatherlink Software for Apple-Version 3.0 7866-K $139.95
4-Conductor 40' (12.2 m) extension cable 7876-K $17.95
6-Conductor 40' (12.2 m) extension cable 7878-K $21.95
8-Conductor 25' (7.6 m) junction box cable 7880-K $14.95
8-Conductor 50' (15.2 m) junction box cable 7881-K $24.95
8-Conductor 100' (30.5 m) junction box cable 7882-K $44.95
Modem Adaptor 25-pin for communications port 7870-K $9.95
Car/Boat/RV Lighter Cord 7873-K $9.95
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Talking weather station - Call 313-994-9000 for demo TWS1-K .. $3,999.95
Weatherlink language disks: Française, Deutsche, Italiana, Española 7863-K $24.95
Barometer, Indoor Hygrometer & Thermometer, Clock/Calendar BA888-K . $99.95
Indoor-Outdoor Thermometer/Barometer & Hygrometer by OSI BA213-K .. $79.95
Thermometer with transparent calender & clock display by OSI TC188-K .. $19.95
Thermometer with AM/FM clock radio by Oregon Scientific CR388-K $39.95
Indoor/Outdoor Thermometer with Jumbo Display by OSI JB880EX-K $24.95

Other neat stuff

Grundig Satellit 700-K portable shortwave receiver with 512 memory & AC adapter $389.95
Grundig Yacht Boy 400-K digital portable shortwave receiver - 40 memory presets $199.95
Grundig Yacht Boy 230-K portable shortwave receiver $139.95
Sangean ATS800-K portable 20 memory shortwave receiver $69.95
Sangean ATS803A-K portable shortwave receiver w/AC adapter - 9 memory presets $148.95
Sangean ATS808-K portable 45 memory shortwave receiver $159.95
Sangean ATS818CS-K portable shortwave receiver with cassette recorder $209.95
Uniden EXP9200-K 900 MHz. 2 line cordless phone $289.95
Uniden EXP9100-K 900 MHz. 1 line cordless phone $269.95
Cobra CP912-K 900 MHz. spread spectrum cordless phone $249.95
Bogen PR2000-K Digital two-line advanced voice mail system & answering machine $279.95
Bogen PR0018-K memory expansion module, doubles recording time to 36 minutes . $79.95
FANS P161P-K 60 name/number caller ID, unwanted call blocker, automatic paging $149.95
SNI ID200-K Bouncer name/number caller ID, call reject, forward to machine $89.95
ICOM GP22-K handheld global positioning system (GPS) $599.95
WR200-K weather radio with National Weather Service storm alert $39.95
RELM WHS150-K VHF handheld 5 watt, 16 channel transceiver $339.95
RELM RH256NB-K VHF 25 watt, 16 channel synthesized transceiver $289.95
Ranger RCI2950-K 25 watt 10 meter ham radio transceiver $239.95
Ranger RCI2970-K 100 watt 10 meter ham radio transceiver $369.95
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HCPC-K HamCall CD Rom for IBM PC by Buckmaster Publishing $39.95
ANTK-K VHF scanner/VHF transmitting antenna PL259 connector $29.95
ANTMMBNC-K magnet mount scanner antenna w/ BNC connector $29.95
ANTMMMOT-K magnet mount scan antenna w/Motorola plug $29.95
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Tips & Techniques

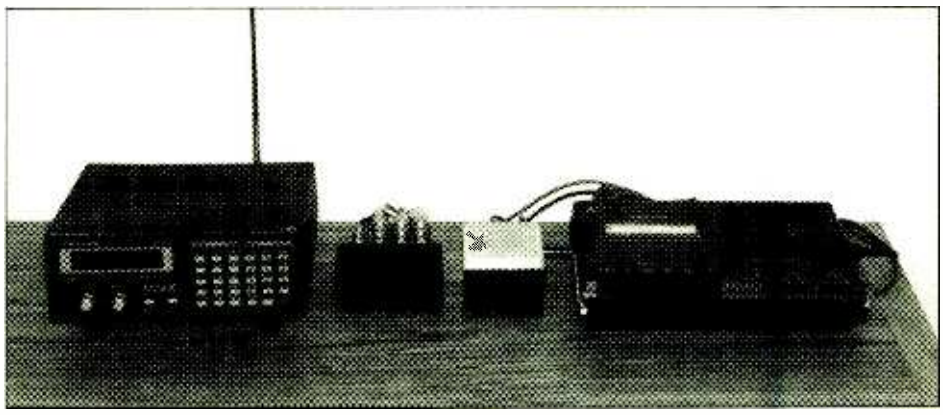
For Getting The Most Out Of Your Scanner

By Haskell Moore

I was bitten by the "scanner bug" in 1978, and started out with a four-channel, crystal-controlled unit from Radio Shack. Since then, I've probably owned a dozen scanners, and currently have a myriad of radios around the house, car and in the "shack."

Through the years, I've picked up a lot of great tips for increasing the functionality of my radios. The purpose of this article is to share some of these pointers and ideas with you. Whether you've just unwrapped your new radio, or are a seasoned enthusiast, hopefully, there'll be something for everyone.

When it comes to antennas, there are as many different designs and variations as there are scanners. And like the correct speakers for your stereo, the right antenna for your scanner can make all the difference in the world.



The author's scanning station includes an antenna switch, talking clock, recorder and scanner. For details, read on!

Antennas For The Handheld Scanner

For handheld applications, your selection is a bit limited. First, there is the standard flexible, rubber coated whip, affectionately referred to as a "rubber duck." Unfortunately, most of these whips are nothing more than an untuned coil of wire, and their performance usually leaves a lot to be desired.

If you plan to monitor only one band (i.e., UHF, VHF, 800 MHz), you may consider an antenna tuned particularly for that band. Optoelectronics offers a full line of antennas tuned for specific parts of the spectrum. Other antennas, such as the Austin Condor, are tuned for several bands, and will allow you to obtain much better general coverage from your hand-held scanner.

Mobile Scanning
(Have scanner, will travel)

When you take to the car with your scanner, there are countless factors that come into play. Since you're in a metal bodied vehicle, the effectiveness of anything except an external antenna will be substantially diminished. Fortunately, there are numerous antennas available for mobile use. Again, a multi-band antenna may be your best all-around choice.

You should probably consider a magnetic-mount antenna if you plan to move the scanner from vehicle to vehicle. For my mobile, I use a mag-mount MFJ dual-band (UHF/VHF) ham antenna. It's less than eighteen inches high, looks just like a cellular antenna (which won't tip off thieves that there's a scanner in the car), and cost less than fifteen bucks. It doesn't work particularly well on the low band, but does a pretty good job on UHF and VHF.

If you don't want another antenna poking out of your car (my wife drew the limit at three), there's a great way to use your existing car antenna with your scanner. The Para Dynamics PDC 63 Mobile Multicoupler is an antenna splitter which will allow your scanner and car radio to simultaneously share the existing AM/FM auto antenna. And like the mag-mount MFJ, it has the added benefit of not alerting the whole world that you have a scanner in the car.

While we're on the subject of mobile scanners, intermod is an annoying problem that often manifests itself as you drive past powerful transmitters (pagers, cellular phone repeaters, etc.). I have found that the Radio Shack variable inline attenuator (#15-578) is very effective in reducing or eliminating this problem.

Keep in mind that the higher you crank up the attenuator, the less signal will get through. However, by adjusting the level of attenuation, you should be able to find the point where the intermod stops and the desired transmissions can still be heard. I have one of the attenuators hooked to my mobile scanner and use it quite frequently.

It may be also be used on a base station, particularly when near a large urban area where intermod is a constant headache. By the way, don't ever try to transmit through an attenuator unless you want to find out what burning components smell like!

Discone Antennas

For base stations, one of my favorite antennas is the discone. A discone has no gain, but is almost equally effective over a wide range of the spectrum, typically up to 1300 MHz. It is especially suited for air band and satellite monitoring because it works well from the horizon all the way to straight overhead. I've even used my discone to receive packet data from the *SAREX* amateur transmitter aboard the space shuttle.

A major problem with many discones which lack a vertical top element is their ineffectiveness below 50 MHz. However, there is a simple fix for the problem. On the

top of most discones where the horizontal radiators are attached, there is a short section of bolt (which may be covered by a rubber cap) that can be used to attach a vertical whip. I added a six foot whip to mine, which improved reception considerably down into the mid 40 MHz range.

One of the nice features about a discone is that it can also be used for transmitting. My only advice is to check the SWR for your particular radio before extended use.

Yagi Antennas

For those who may be a fairly long distance from a large metro area and want to tap into the scanning action, your best bet may be a Yagi (also know as a "beam") antenna. You can usually obtain good results by simply aiming the antenna in the middle of the area to be monitored. A rotator may not even be necessary, though it may come in handy if you're close enough for the directional characteristics of the antenna to be a problem.

By its very design, a Yagi will be usable for only a relatively limited frequency range. However, a variation of the Yagi, known as a log periodic, will cover a very wide range of frequencies. I have an associate who lives on a hill about eighty miles from San Francisco, and by using a Create brand log periodic. is able to copy most of the action very satisfactorily.

An excellent cross between the omni-directional antenna and the log periodic is the Grove Scanner Beam. It is tuned to cover a wide range of frequencies and provides up to nine dB of gain. However, it isn't so directional as to exclude those signals coming in from the side. And when mounted on a rotator, you can quickly aim the antenna for best reception of weak signals.

One final note about Yagis: since almost everything you will be scanning above 30 MHz will be vertically polarized signals (originating from a vertical antenna), be sure to mount your antenna vertically as well. Otherwise, you will be cross-polarized and will reduce the effectiveness of the antenna significantly.

Ground Plane Antennas

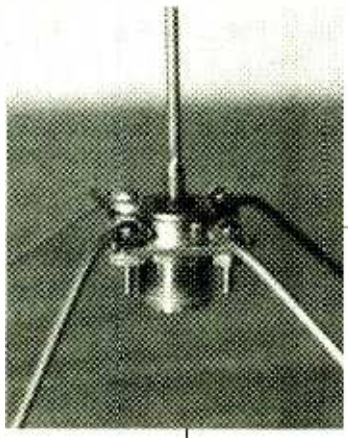
The ground plane is probably the most common type of outdoor scanning antenna in use today. Though it doesn't exhibit much gain, if any, it is quite efficient when used on its resonant band. The Radio Shack ground plane antenna works quite well for UHF/VHF, and sells for under twenty bucks. However, if you want to build your own ground plane, optimized for best performance on a particular band, you can do so for around ten dollars.

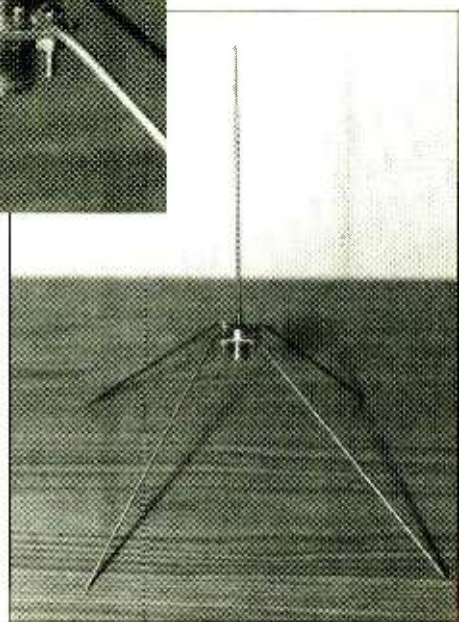
To determine the optimum frequency for the antenna, ascertain the middle frequency of the band you wish to scan. For instance, if you want to scan the domestic aviation band, which covers from 118 MHz to 136 MHz, subtract the lower frequency from the upper. In this case, the result is 18 MHz. Divide this number in half (nine), then add it to the lower frequency, which was 118 MHz. The result is middle of the band: 127 MHz.

The formula for determining the length of the radials is as follows:

2952 /Frequency (in MHz) = Antenna Length (in inches)

Now don't get ahead of me and cut the radials just yet, otherwise the ground radials will be too short when you make the loops for the screws. First, start with a Radio Shack chassis-mount SO-239 (#278-201). For mounting the ground radials, Radio Shack also sells 4-40 screws (#64-3011) and nuts (#64-3018).





Detail at left shows the attachment of the radiator and ground radials to the SO-239. Below is the finished ground plane antenna.

At your local hobby shop, you should be able to obtain the required number of 3/32" brass rods. These rods typically come in 36" lengths. Five would be the most you need, but you may be able to get away with fewer if you are using a frequency high enough to cut some of them in half.

Using the above formula, cut the radiator to the exact length required. It doesn't have to be perfect, but try to get it as close as possible. In the case of the air band example above, that would be 23.24409448819 inches. We can probably safely round up to 23.25 inches!

It may take a bit of force to fit the brass rod into the solder lug on the SO-239. Once firmly in place, carefully solder the rod to the SO-239. I have found that a minimum of a 100 watt soldering iron is usually required to do the job right.

The final step is to attach the ground radials. Using a pair of needle-nose pliers, bend a loop on each of the ground radials just large enough to accommodate the screw. Attach the ground radials to the SO-239 and cut to the same length as the radiator. Finally, for impedance matching, bend the radials down at a forty-five degree angle.

If you would like to purchase a ground plane antenna, customized for a specific frequency, MAX System Antennas provides this service at a reasonable cost. The antennas are constructed of high quality materials in a weather-proof PVC housing that makes mast mounting much easier.

Antenna Related Tips

No discussion of antennas would be complete without a few words about coax. The best antenna in the world will never reach its full potential if the signal doesn't make it to the radio. For example, if you achieve a 3 dB improvement by using RG-8 instead of RG-8/M for a 100 foot run, the perceived difference will be the same as if the transmitting station doubled its power. I strongly suggest you check the coax specifications for the loss characteristics for the frequency range you intend to monitor, then choose the right coax for the job.

For those who find themselves frequently switching between antennas and want to avoid the hassle of having to manually disconnect and reconnect each time, I would recommend an antenna switch. Unlike the expensive type used for switching transmitting antennas, the Radio Shack "high isolation" A/B/C switch (#15-1248) works very well with scanners. There is no apparent loss of signal, and you can choose the right antenna for the job at the touch of a button. However, since the switch

is designed for television use, you will have to pick up a few "BNC to 'F' jack" (278-256) adapters if you plan to use the BNC connectors found on most coax.

RF Amplifiers

If you wish to increase the strength of the signal coming down from the antenna, you may choose to use an RF amplifier. There are a number of good amplifiers on the market, and to get into the attributes of each is beyond the scope of this article. However, as a general observation, I would recommend a GaAs FET model which generates much less internal noise. Also, some amplifiers offer the option of a variable gain control. This is a very helpful option that can be used to optimize the gain for both weak signal reception, and to avoid overloading the scanner when a strong signal is received.

By its design, an RF amplifier will boosts the signal level of everything in its operating frequency range. Unfortunately, that may present more problems than it solves. Not only will the amplifier boost the signal you are trying to monitor, but all the noise and undesired garbage as well.

One way to minimize interference when using RF amplifiers is to use a narrow band pass filter. As its name implies, the band pass filter allows only the frequencies for a specific band to pass through, and rejects all others. To eliminate a specific type of interference, such as a local CB, ham, FM, or TV broadcast station, you can use a filter. The Grove Adjustable Scanner Filter or the Grove Interference Eliminators are both options you may wish to explore to solve your interference problems.

As far as getting the most bang for the buck with the least aggravation, I prefer to invest my money in good antennas with low-loss coax, and mount them as high as possible. However, if you're after weak signals such as satellites, you may wish to explore the RF amplifiers a bit further.

Tape Recorders

One of my favorite scanning techniques is to hook up the scanner to a good tape recorder and compress a whole day's listening onto forty five minutes of tape. This is especially useful for logging seldom used or hard-to-find stations. If your radio doesn't have a tape recorder controller, you will have to rely on a voice activated (VOX) recorder. The following list of features should be considered when purchasing a recorder for use with a scanner:

- tape size (I have had best results with full-size cassettes)
- variable level voice-activation
- rugged enough for daily usage
- AC or DC power
- auto shut off at end of tape
- no annoying chopping or drag when starting up

After evaluating a total of five recorders from various manufacturers, I finally settled on the Radio Shack CTR-69. I've used mine for over a year now and it has served the purpose very well.

As an added feature, you may wish to put a timestamp on your tape to help establish a pattern of activity. This project will take a bit of soldering, and some understanding of basic circuitry.

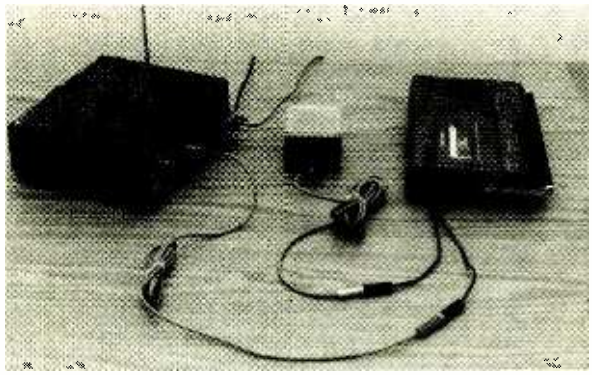
For this project, you will need a Radio Shack "talking" alarm clock with an "hourly announce" feature. I used the VoxClock 2 from Radio Shack, but this unit has been discontinued. However, there are a number of these clocks on the market (including several from Radio Shack) which should be suitable for the purpose.

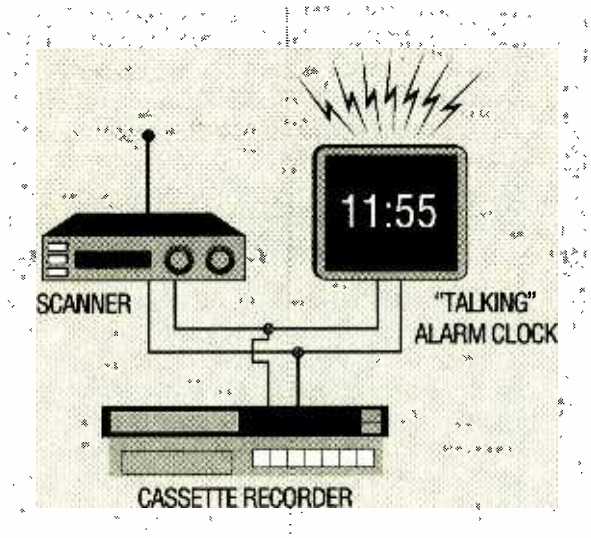
The first step is to open up the clock and remove the two wires from the speaker. Then attach the same two wires to either a speaker jack or to a wiring harness which will be used to connect the clock to the scanner and recorder. I opted to install a 1/8" female jack on my clock which bypasses the clock speaker when it is connected to the recorder.

Next, add the proper speaker (or tape output) jack for your scanner to the harness. And finally, add a jack to interface the output from the clock and scanner to your recorder. Remember, all connections are parallel (see photo).

I must admit that I had reservations when I assembled this contraption. I was concerned about the audio levels and impedance matching. But believe it or not, it works quite well.

These are just a few of the ways you can get the most out of your scanner. Publications like the *The ARRL Antenna Book* and Bill Cheek's *Scanner Modification Handbook* series are excellent sources of additional information. However, making friends with other scanning enthusiasts is probably the best (and most rewarding) way to learn more about this exciting hobby.





Wiring essentials for the author's scanning station.

Footnote:

The following products are available from Grove Enterprises (800-438-8155 or 704-837-9200):

Austin Condor antenna
Para Dynamics PDC 63 Mobile Multicoupler
Grove Scanner Beam
Grove Adjustable Scanner Filter
Grove Interference Eliminators
The ARRL Antenna Book
Bill Cheek's *Scanner Modification Handbook*

Other vendors/manufacturers:

Optoelectronics, 5821 NE 14 Avenue, Fort Lauderdale, FL 33334; 800-327-5912 or 305-771-2050.
MAX System Antennas, 4 Gerring Rd., Suite 30, Gloucester, MA 01930; 800-487-7539.

This past October, Iraqi troops clustered in the vicinity of the Kuwaiti border, reawakening vivid memories of the invasion which began much in the same manner four years before — memories such as this one written by a Norwegian citizen trapped inside Kuwait.

A REAL-LIFE "MISSION IMPOSSIBLE"

By Paul Justnaes LA5PN

"War" is a word that stands for "nightmare" for many people—myself included. Early in the day of August the 2nd, 1990, the war machines started to pass by on Gulf Road just outside our flat. We lived there with our two children, 8-month-old Tobias, and Anne-Katrine who was almost four.

The war had begun. My life is dedicated to radio, and my life in Kuwait was no exception. I worked for Ericsson Radio with mobile telephones. It was a standard system with about 10,000 to 50,000 users.

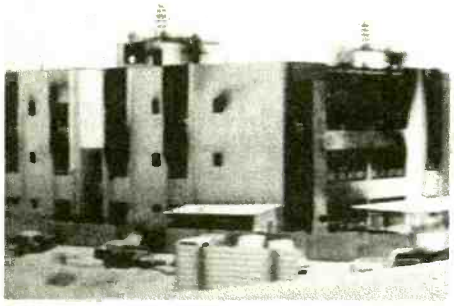
One day after the invasion the Norwegian Ambassador, Hans Willhelm Longwa, called me to ask if I could take a look at their transmitter. Their radio had burned out early in the invasion, and they no longer had any contact with Norway. Since I am married to a Danish girl, they had gotten my name through the Danish embassy.

I traveled through Kuwait City with the Ambassador flying the Norwegian royal flag—not especially fun with all the shooting and military hardware in town. We arrived at the Embassy on back roads, safe but scared. The transmitter was indeed "dead." Spare parts? Not a chance. As I went up on the roof to test the cable and the antenna, I looked across the road. A millitary camp! I came down very quickly. With all those soldiers with guns out there I felt unpleasantly like a "sitting duck."

Hoping to get lucky, I looked inside the transmitter one more time. Still dead. I tried to bypass the P.A. transistors, but in vain. Finally, I took the power connection off the transmitter board, took the coax cable from the synthesizer, and connected it to the antenna relay with a BNC connector.

We tried to contact Baghdad, and surprisingly enough we achieved a link of sorts. There were a lot of errors both ways, but it was enough to prove that something was getting out of the transmitter. This was TOR RTTY ARQ self correcting teletype.

I had my doubts about the antenna tuner. Normally it needs RF power to work. By turning the antenna in the direction of Riyadh, it was posssible to maintain the connection 80% of the day—impressive results for the



At left are the police barracks in Kuwait City. At right, Iraqi armored vehicles patrol the Gulf Road.

frequency generator. The power output must have been only milliwatts. No doubt the log periodic antenna helped as well.

I told the Embassy people they now had the opportunity to try their skills as real Radio Amateurs: using low power and learning how to use the right frequency at the right time.

To make a long story short, my wife and two children got out of Kuwait the 24th of August through enemy country and out via Turkey. I, on the other hand, had to stay another 3-1/2 months as a "guestage" in Baghdad. There I passed the time by listening to the radio, and building antennas camouflaged as "clotheslines" hung with towels. And, the Norwegian embassy got their connection to Norway again.

The Monitoring Times 1994 Fifth Anniversary Convention

By Rachel Baughn

Twenty-Three States and Nine Countries Are Represented As Convention Shatters All Previous Records With 554 Attendees

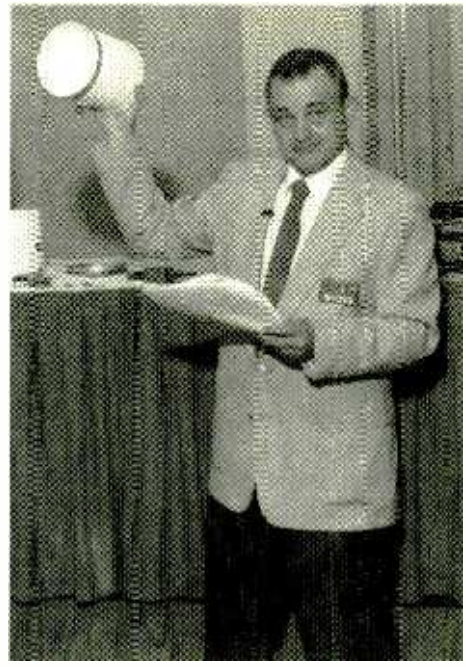
Photos by Harry Baughn

The long anticipated weekend of October 20-23 has come and gone, leaving in its wake warm memories and a brain crammed full of faces, names, facts, and frequencies. Five years ago, Larry Miller, and Bob and Judy Grove conceived of a weekend event in which hobbyists could learn more about the full spectrum of radio, in which an industry that has no outlet outside the amateur radio community could showcase their products, and in which hobbyists and *Monitoring Times* staff writers could get to know each other. It makes for a very intense weekend—but the Fifth Annual *Monitoring Times* Convention has proved the worth of this concept by drawing *double* the number of participants of any prior convention.

At least nine countries and 23 states were represented in the final tally, which—although not as high as an initial estimate announced at the closing session—came to a record-breaking 554 attendees, exhibitors, and walk-ins. Remarkably, the increased number did not interrupt the smooth flow of events in the least, perhaps due to the excellent facilities

Left, banquet guest speaker Ian McFarland, retired from Radio Canada International, speaks about changes in broadcasting.

New faces at this year's convention included John Wilson (right), here demonstrating his homebrew INMARSAT feed horn; and John Catalano (below), "Computers and Radio" columnist.



and superb organization of the convention staff. "It's really no more work to host 500 than 200," decided the Convention coordinators, Beth Leinbach, Terry Kelly, and Debbie Davis.

For the speakers and exhibitors, the increase in participants meant all seminars were well attended, while the nearly 30 exhibit booths continued to experience a steady flow of prospective customers. Exhibitors reported extremely good sales—some said double their sales over last year.

Though many folks obviously came to visit their favorite vendor, "meeting other hobbyists" was the reason most came, according to responses in a written questionnaire. Of course, 40% of those completing the survey were first-time attenders, for whom this was no doubt a rare opportunity. After all, how often does one socialize with people to whom "megahertz" doesn't mean a trip to the emergency room, or to whom UTC isn't some kind of bar code?

Seminars:

The major frustration was the same one heard every year—how to attend more than one seminar at a time! We pared the number of seminars down from 34 last year to 24 in an effort to minimize the problem. This year, however, there is at least a partial solution for those who couldn't attend their favorite seminar—or couldn't attend at all: professionally produced TAPES. See the adjoining ad for details.

We missed Skip Arey and Bob Evans; both were scheduled for forums, but last-minute emergencies prevented their attendance. Larry Van Horn, Bob Grove, and John Catalano generously stepped in to cover their topics.

Fourteen seminar speakers addressed the wide-coverage topics represented in *MT*. But a few unusual, "new acts" were seen this year. John Fulford and Larry Van Horn teamed up to "wow" a spellbound crowd with a definitive presentation, complete with maps of spy number stations—their locations, targets, and purposes.

Jean Baker took "GROVE-1" on an audio-visual flight across the country from New York to Honolulu. "Extremely realistic," was one response. In addition to sector hand-offs and rerouting due to weather, there was even a baby born on board!

John Catalano followed the evolution of the relationship between "Computers & Radio" and software, and predicted the direction it is likely to continue. Each step was illustrated by actual operating computers, radio, and software of the day (on video) from his own collection.

Another new seminar this year was "Rumblings in the Basement," ably presented and illustrated by "Below 500 kHz" columnist Kevin Cary.

Have you ever recorded the live feeds together with the video action from a football game? Joe Eisenberg did, and hearing the "off-air" comments while watching the action to which they refer can be eye-opening and entertaining.

New elements this year were:

— Wireless microphones brought seminar speakers out from behind the podium. It freed many speakers to make more use of audio-visual aids.

— John Wilson's seminar and *real-time* INMARSAT monitoring post was a hit. It was unfortunate he had to leave early on Saturday. Next year he will be only one of many speakers and exhibitors incorporating satellites into the convention's full-spectrum coverage.

— The Listening Post, relocated in the registration area, provided a hands-on opportunity to see what a spectrum display, sound enhancer, and other accessories can do for a monitoring post. An antenna switch provided the opportunity to use three types of antennas for different applications.

The success of the demonstrations this year has encouraged us to offer more vendors the opportunity for scheduled product demonstrations, and to leave the outside antenna connections in place for informal use after exhibit hours.

The relocated Listening Post gave participants a hands-on opportunity to see what a spectrum display, sound enhancer, and other accessories can do for a monitoring post.

The MT Shortwave Broadcast Q&A Forum

Thirteen panelists participated in Friday's lively question and answer forum—attended by an audience of 150—on the future of shortwave broadcasting. They ranged from 6 mo. old station Radio Miami Int'l, to the venerable BBC, and from the financially struggling to relatively well-heeled broadcasters. All, however, are very earnest in their desire to reach the widest possible audience. Here were a few memorable comments:

Kim Elliott, Voice of America: The VOA has been ordered to consolidate—resulting in the relatively low net *increase* (by government standards) of one more agency. Meanwhile, of course, its budget is being cut in half.

Simon Spanswick, BBC: The BBC is not a shortwave broadcaster; it is an international broadcaster. There *is* a difference.

George McClintock, WWCR, on propagation and frequencies: There are already three broadcasters per frequency. As the sunspots go down, it's going to be sheer chaos. Get used to it.

Ian McFarland: Stations have a need for better advice on how to use times and frequencies efficiently, and for more coordination between advisory unions. There is definitely a role here for the listener: your feedback matters, since you are the intended target. One person *can* make a difference, but only if you make the effort to write and tell the station what you really think.

Karl Miosga, World Radio Network: New technology is simply a new vehicle to get the message to a larger audience.

Jeff White, Radio Miami Int'l: Shortwave broadcasting will continue; there will always be a part of the world that needs the message, and where shortwave radio is the only way to get it in.

International broadcasters and panelists: 3rd row, left to right—Jeff White, WRMI; Sandor Laczko, R. Budapest; Larry Magne, Passport to World Band Radio; Karl Miosga, Work Radio Network; George McClintock, WWCR; Stig-Goran Bergholm, YLE R. Finland; Ian McFarland, RCI retired; 2nd row, Thais White, WRMI; Kip Meyers, BBC; Frederica Dochinoiu, R. Romania; Jerome Bellamy, Geraldine Productions; Simon Spanswick, BBC; 1st Row: Juhani Niinisto, YLE R. Finland; Alfonse Montealegre, R. Netherlands; Kim Elliott, VOA; Bob Stessel, WCSN; Tony Kobatake, WSHB.

From the Sublime to the Ridiculous

Ian McFarland, retired Radio Canada International host, recounted the tribulations and triumphs of a life dedicated to international broadcasting to an elegant audience of 250 at Saturday's banquet. Obviously, he's still hard at work as a one-man cheering squad for broadcasting.

Shedding all decorum, a rowdy crowd gathered outside the hall following the feast for the traditional bug hunt. John Fulford, John Jr., and Bill Grove outdid themselves this year with more than one bug on the same frequency, and new and creative hiding places, indoors and out. It took both skill and luck to win, however, since only two of the bugs bore the winning numbers. Thanks again to Optoelectronics for providing frequency counters for the lucky winners.

Ladies and gentlemen, raise your scanners. Let the hunt begin!

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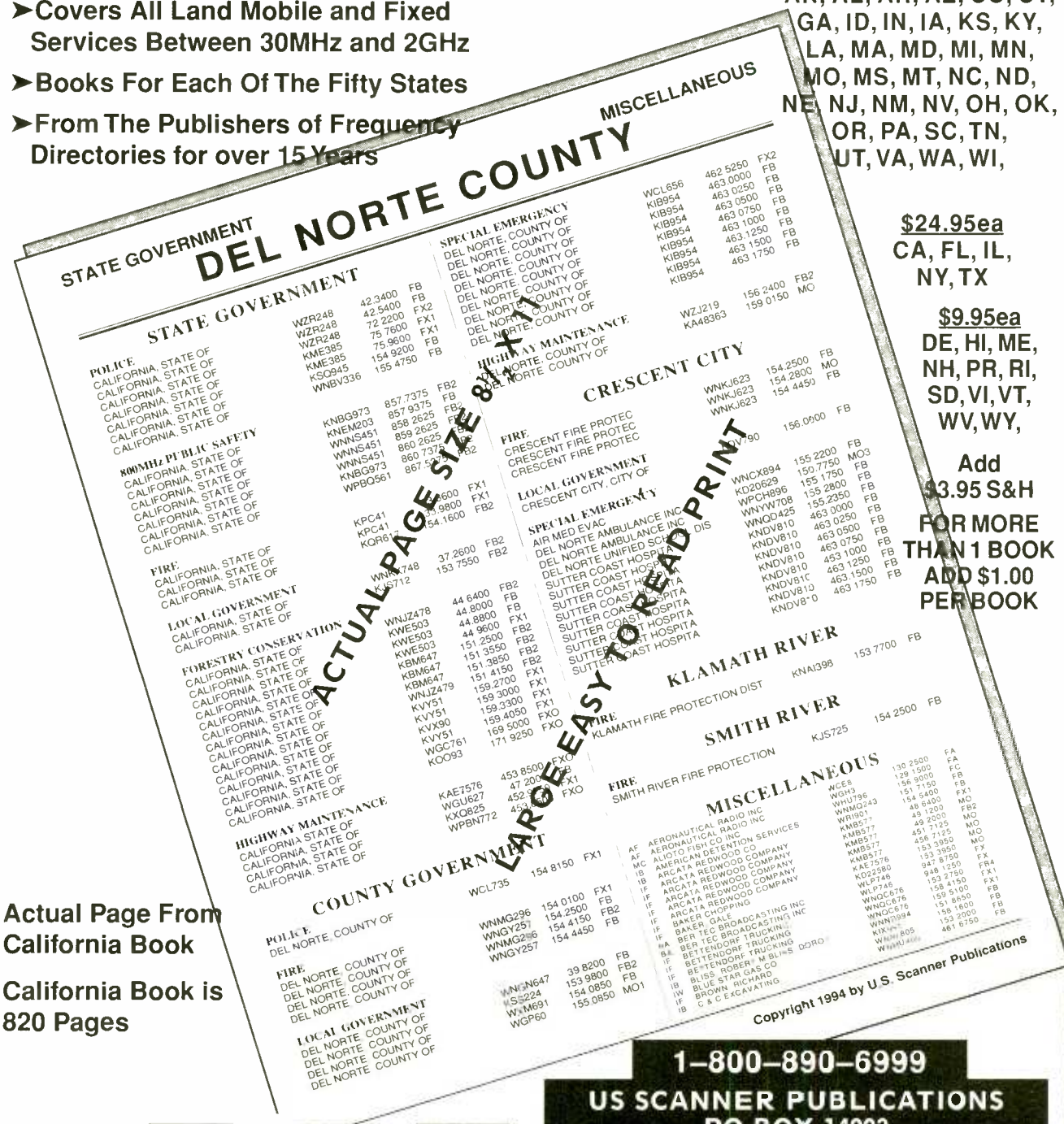

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Prizes!

Though all booth space was filled and all exhibitors warmly received, registrants indicated they would like to see even more exhibitors. With the satellite field entering the program next year, an increase in vendors is assured.

ICOM America generously donated the grand prizes again this year: ICOM R71A's were won by both Jon Kammen and Mike Fisher. Jim Campbell walked away happy from Saturday's banquet with the top prize: the ICOM R7100A VHF/UHF receiver.

Prizes were also awarded from the Christian Science Monitor, Computer Aided Technologies, Jacques d'Avignon, Grove Enterprises, JPS Communications, Lowe Electronics, Optoelectronics, Sangean America, Sony, RCI and Radio Japan. We are very grateful for the support of all the above donors, whose merchandise was valued at more than $12,000.

What About Next Year?

Given the resounding show of support for the current location at the Atlanta Airport Hilton from those in attendance, *Monitoring Times* immediately contracted for the site for the weekend of October 13-15, 1995! All suggestions for tours, topics, etc. that have been submitted in questionnaires or in the closing session will be taken into account in next year's planning, which has already begun.

The exhibits were a great hit, including many first-time vendors along with popular "regulars." Expect even more displays next year!

With a commitment to incorporate satellite monitoring and to continue to involve international broadcasters in a meaningful way, it will be a challenge to compose a slate of forums and seminars that will strike the best balance. Whatever we do, you can rest assured—there won't be anything else like it! We hope to see *you* in Atlanta in '95!

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Larry Van Horn, N5FPW

US Air Force Global High Frequency (HF) System

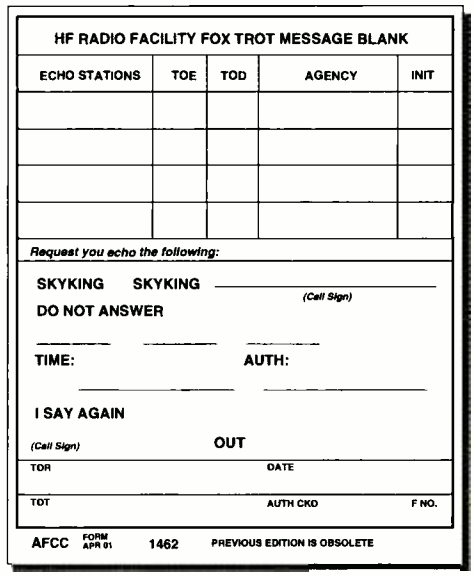
Over the last several months, I have noticed that a lot of hobby publications are still referring to the new USAF Global High Frequency System by its old designation of Global Command and Control System (GCCS). In fact, one book author tried to convince me that he had inside information that indicated this Air Force communications network is still known as "GCCS." Nothing could be further from the truth. In this month's Ute World we will take an in-depth look at the USAF Global HF System or GHFS.

On June 1, 1992, the USAF Global HF system was created by consolidating other USAF HF networks, including the USAF Global Command and Control System (GCCS) and the dedicated Strategic Air Command Giant Talk System. The goal of the merger was to develop a worldwide non-dedicated HF network capable of providing C2 (Command and Control) HF communications support to all authorized Department of Defense (DoD) aircraft and ground stations.

The Global HF System is a worldwide network of 15 high-power HF stations which provide air/ground HF command and control radio communications between ground agencies and US military aircraft and ships. Allied military and other aircraft are also provided support in accordance with agreements and international protocols. The USAF Global HF system is not dedicated to any service or command, but supports all authorized users on a traffic precedence basis. General services provided by the Global HF System are:

— General Phone Patch and Message Relay Services
— HF Radio Teletype (HF RTTY) and Data Support
— Command and Control Mission Following
— Emergency Assistance
— Broadcasts
— HF Direction Finding Assistance
— ATC (Air Traffic Control) Support

Units using the GHFS usually contact and request service from this network using the general air-ground call sign "Mainsail." Any Global station hearing the call "Mainsail" responds and provides the requested service. Depending on the service required, the Global station may request the aircraft to change to a discrete frequency for improved and extended service.



HF RADIO FACILITY FOX TROT MESSAGE BLANK

ECHO STATIONS	TOE	TOD	AGENCY	INIT

Request you echo the following:

SKYKING SKYKING _____ *(Call Sign)*
DO NOT ANSWER

TIME: AUTH:

I SAY AGAIN
(Call Sign) OUT

TOR DATE

TOT AUTH CKD F NO.

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General Phone Patch and Message Relay

The most common traffic monitored on Global is phone patch and message relay. The phone patch service offered by Global permits direct voice communications between ground agencies and aircraft by electronically connecting telephone circuits or other voice channels to radio transmitting and receiving equipment. Aircrew members requesting a phone patch must include all information necessary for the Global operators to complete the call, including the identities and location of the calling and called parties, and telephone numbers, if known.

These phone patches are monitored by the ground operators, and if radio reception isn't of sufficient quality to complete the patch, the Global operator will attempt to copy the traffic and relay it to the caller. All phone patches are supposed to be for official business only, but some comms stretch the definition!

Message relay is a service provided by Global operators of transcribing encoded or plain-text messages for aircraft or ground stations and forwarding them to the addressee by radio or land-line (telephone). The text may be in the the form of alphanumerics, code works, plain text, acronyms and/or numerical sequences. When message data is critical, or when an incomplete transmission is suspected, the receiving station may request a "read-back."

HF Radio Teletype (RTTY) and Autodin

Some Global stations can provide HF Radio Teletype (RTTY) and Autodin relay services. Currently only 8 of the 15 Global stations (Andersen, Croughton, Elmendorf, Hickam, Incirlik, MacDill, McClellan, and Yokota) can provide RTTY/Autodin service. Usually when this service is requested, the Global operators will provide a discrete frequency for RTTY traffic in order to avoid unnecessary interruptions.

An operator will meet the calling party on the discrete frequency and exchange keyboard or test traffic to ensure a satisfactory link before actual transmission begins. RTTY traffic received for Autodin injection will be reformatted by the Global operator. Messages received from Autodin for HF relay to aircraft will be transmitted without reformatting. RTTY service presently provided is Frequency Shift Keying (FSK) mode at 100 words per minute (75 baud), 850 Hz shift with a center frequency of 200 Hz (Mark - 1575 Hz, Space - 2425 Hz).

C2 Mission Tracking and ATC Support

Command and Control (C2) agencies may use the Global system as a means for mission tracking/control. Aircraft using the system for these purposes normally transmit an initial contact/departure report to a Global station as soon as possible after actual time of departure (ATD), as follows:

— Aircraft Call Sign
— Departure Point and Time
— Destination Point and Time
— Relay instructions for C2 agencies
— Remarks: DV codes (VIP codes), special instructions, etc.

The GHFS does not provide direct Air Traffic Control (ATC) flight following support to aircraft that utilize the system. All military aircraft now get ATC support directly from Civil/ICAO ATC facilities. However, the Global system will not refuse to accept ATC traffic, and will provide phone patch traffic or message support as required.

Emergency Assistance and Direction Finding

The Global system is capable of providing emergency assistance to aircraft in distress—identified by the prowords "Mayday" or "Pan." Though all Global stations do not possess HF direction finding capability, once an emergency has been identified Global stations can coordinate direction finding efforts between aircraft and direction finding agencies/stations. This capability may also be used to locate suspected spectrum interference.

Message Broadcasts: EAMs

Two types of broadcasts are heard on Global channels. High priority Emergency Action Message (EAM) broadcasts are made by most Global stations on published frequencies. During scheduled or unscheduled broadcast periods, aircraft transmissions on these frequencies are limited to emergency traffic only.

Tracking and analyzing EAM broadcasts is almost a hobby in itself. One Ute World regular, Jeff Haverlah, has managed to uncover through dedicated monitoring some very interesting trends and information:

"EAM or Emergency Action Messages usually start out with a six character preamble. (*This has been the case since June of 1992-Larry.*) There are some exceptions; for instance, I recently heard two 5 character preamble EAM broadcasts transmitted one weekend. I also caught a USSTRATCOM (US Strategic Command) net a number of months ago—one day only—broadcasting EAMs with a nine character preamble.

"Don't assume that the EAMs and Foxtrot (Skyking) broadcasts are just for USSTRATCOM bombers. Remember that the nuclear deterrent consists of a triad: USAF bombers and land based missiles, and US Navy Ballistic Missile submarines. Just guessing, I believe that some of the USSTRATCOM call signs we hear on GHFS belong to elements of the triad other than just the bomber fleet. Did any of you recently catch the EAM on GHFS broadcast by Offutt to the *USS Ohio* (SSBN-726)?

"If you want to have 'fun with EAMs' try this: Find an active USSTRATCOM net (in the U.S. usually 6730, 9017, 11226, 11229, 13247, 15038 kHz, somedays 11243 or, strangely, 8967 kHz) and park. Eventually you will hear a unit with a USSTRATCOM call sign—same station each day with a different call sign—who will start transmitting the EAM. As soon as he is finished, tune your receiver to 11176 or 11243 (or any other GHFS primary channel). Even better, use a second receiver.

"Usually within a few seconds to a few minutes, a strong carrier will come up on all or most GHFS frequencies (probably a tune-up procedure), then Offutt (or sometimes McClellan or Andrews) will pop up on the GHFS calling Mainsail or specific call signs (e.g., Ohio, Piccolo, etc) and repeat the EAM just heard on the USSTRATCOM channels. It will then be repeated by the rest of the GHFS ground stations. Great fun!!

"Now for the maniacal part. Everyone reading this will eventually curse me for this, just like I have been Larry for getting me started (*We having fun yet, Jeff?-Larry*): Start counting the number of characters in the EAMs!

"You will learn: The most common EAM by far is 26 characters in length, and its preamble's first two characters will generally stay 'static' for a period of time that seems to vary between 9 to 15 days. Currently it is '5E....'.

"Rarely, this type of EAM is *not* 26 characters in length, but is instead 20 characters in length. The 20 character EAM (with exceptions) is common when GHFS stations broadcast the EAMs to a specific call sign or sometimes to more than one call sign at a time. The *USS Ohio* transmission, for example, was 20 characters in length.

"There is also, very rarely, a variable character count EAM that can vary from, let's say, less than 26 characters to huge messages in the hundreds of characters. Recently, this type of EAM had a preamble of 'JU....' Based on past monitoring, these preambles seem to last longer (broadcast over longer periods of time) than the preambles of the 26/20 character types. Late last spring/early summer, there were two classes of large count EAMs: 'KP....' and 'MS....' It was the 'MS....' EAM that I heard one day with a nine character preamble.

"When you get tired of the U.S. EAMs, the Canadians have their own EAMs on their discrete frequencies.

"Finally, I have noticed that the GHFS EAMs have been clustering their broadcasts around 0500 UTC and sometimes 0600 UTC, and, until recently, around 1100-1200 UTC. They just start cranking them out—great fun!"

One more interesting note from Jeff: "On the very day the US and Russia announced the implementation of the retargeting of each country's nuclear weapons, there was a huge EAM transmitted. I could be wrong, but I think I heard one of the operators say that he was sending a 300+ character EAM. I may have misunderstood, but the EAM broadcast was huge."

Thanks, Jeff, for that interesting aspect of GHFS monitoring. I am sure that a few of us will start paying more attention in the future to EAM broadcasts. If you do, report your results to this column or the Utility World message conference on the Grove BBS.

Foxtrot Messages

There is one other type of broadcast that has frequently been monitored on the GHFS frequencies, known as "Foxtrot," which sounds something like this:

"Skyking, Skyking this is Offutt, Offutt, do not answer, time 0601, authentication six whiskey sierra. I say again (message is repeated) Offutt out."

The most interesting aspect of these messages is that they carry a higher priority than the EAMs. Not long ago, one of our reporters indicated that during an EAM broadcast, all stations stopped to broadcast a Foxtrot message and upon completion resumed transmission of the EAM broadcast.

We will probably never know what the content of these messages are, nor what they are used for, but they are still intriguing to monitor and analyze. My best guess is that at least some of the EAM messages are used to authenticate launch orders aboard bombers, missile silos, and subs to initiate an attack, and the Foxtrot messages are used to call off this exercise once it has begun. (Remember the old fail safe points during SAC days?)

Finally, the Global stations operate on mutual frequencies to provide increased "Global" coverage. Table One (see p. 35) is a complete listing of the published GHFS frequencies made available to Ute World from the USAF. This does not represent the complete system; these frequencies are used for initial contact, EAM broadcasts, and short term C2 phone patch and message delivery. Other extended or special services will be moved to each station's available discrete frequencies.

The Global HF System presents the military HF monitor with some of the best concentrated listening available. You don't have to wait long to hear activity on these frequencies and the wait is usually rewarded with some excellent communication intercepts. Give it a try!

It was a real pleasure to meet all the utility band monitors at this year's *MT* convention. If you missed this event, you missed a lot of interesting discussion and information. I hope you are making plans now to attend next year's *MT/ST* convention in Atlanta, October 13, 14, and 15 at the Atlanta Airport Hilton. You won't want to miss this one!

Finally, it is time to see what the Ute World monitoring crew have been hearing this month in the utility world. On behalf of the entire staff of regular contributors, the Van Horn family, and myself, we wish each of you a happy holiday season and best wishes for a prosperous 1995. Happy holidays de N5FPW.

Utility Loggings

Larry Van Horn

UTILITY WORLD

Abbreviations used in this column

AFB	Air Force Base	NWAD	Northwest Air Defense
A/G	Air to Ground	Ops	Operations
AIC	Air Intercept Control	PACS	Post Attack Control System
ANG	Air National Guard	RTTY	Radioteletype
CANFORCE	Canadian Forces	SAM	Special Air Mission
COE	Corps of Engineers	SATCOM	Satellite Communications
COMSTA	Communication Station	SITOR-B	Simplex teleprinting over radio system, mode B
CW	Continuous Wave (Morse Code)	TCF	Tactical Control Flight
DoD	Department of Defense	UHF	Ultra High Frequency
DSN	Defense Switch Network	Unid	Unidentified
FBI	Federal Bureau of Investigation	US	United States
FDM	Frequency Domain Multiplex	USA	US Army, United States of America
FEMA	Federal Emergency Management Agency	USACOE	US Army Corps of Engineers
GHFS	Global HF System	USAF	US Air Force
HF	High Frequency	USAV	US Army Vessel
ID	Identification	USB	Upper Sideband
Metro	Meteorology	USS	United States Ship (US Navy ship)
NCS	Net Control Station	VHF	Very High Frequency
NHC	National Hurricane Center, Miami	WIANG	Wisconsin ANG

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

2366.0 Military tactical call signs: AX, AB, AS, A5W, 2XJ, U2X, 9ED, and many others with track reports and radio checks in USB at 1944. Probably a Dutch Naval exercise. (Ary Boender-Neth)

3122.0 US Navy Link 11 transmission in USB at 0542. (Jeff Haverlah-Houston, TX)

3125.0 Field parties of biologists in Alaska with traffic in USB at 1623. (Gerald Brookman-Kenai, AK)

3187.0 Cape Radio working various units for shuttle launch in USB at 1103. (Bob Lewallyn-Houston, TX)

3230.0 Field parties of biologists giving reports on number of salmon heading upstream in USB at 1626. (Brookman-AK)

4018.0 Russian male number station in AM at 1753. (Boender-Neth)

4144.0 Crossbow 6 working Ironshield in USB at 0432 then moved to frequency 2. Tim Braun also heard Crossbow on 6983/8308. (Haverlah-TX)

4372.0 Net control station M0F in USB working operators with Yankee callsigns. Appears to be Army helicopters. One asked another if he could see him through his window. (Gill Lineberry-Orlando, FL) *Interesting log, Gill, this is a normally a US Navy FACSFAC channel; welcome to the column-Larry.*

4420.0 CANFORCE Vancouver military with routine and priority traffic in USB at 0200. (Allen Renner-Ambler, PA)

4468.0 FTJ-Israeli Mossad female 5-digit number station in AM at 2200. (Boender-Neth)

4487.0 Bulgarian Betty number station in AM at 1355. (Boedner-Neth)

4645.0 Tallinn VOLMET, Estonia, with weather in USB at 0722. (Boender-Neth)

4737.5 US Navy Link 11 transmission in USB at 0548. (Haverlah-TX)

4753.0 Croughton GHFS with coded weather in USB at 1535. Not parallel to 4756, see below. (Boender-Neth)

4756.0 Croughton GHFS with coded weather in USB at 1403. (Boender-Neth)

5180.0 DoD Cape, FL, at 2233 in USB releasing USS Boone, King 1 & King 2 after successful shuttle launch. (Rich Baker-OH)

5260.0 Procedure working Encampment in USB with signal checks at 0218. (Gary Russell-Urbana, IL) *Welcome aboard, Gary, nice to have another mil enthusiast on board-Larry.*

5277.0 Panther (*USS Kitty Hawk*) working 28 Charlie/35 Charlie (US Navy helicopters) during Cuban refugee ops in USB at 0041. (Russell-IL) That's interesting, when did the Kitty come to the east coast-Larry?

5335.0 US Navy FT network in USB at 0256. (Russell-IL)

5343.5 Kilo working BW advising no contact with Red Crown in USB at 0033. BW NCS for Link 11 anti-air ops similiar to anti-ship FT nets. (Russell-IL)

5351.5 US Navy Link 11 transmission in USB at 0424. (Haverlah-TX)

5370.0 Unid station working Lightning and Tropical in USB at 2230. Also sending faxes on VHF to VHFT and V1 and V2. (John Leyden-Long Beach, CA) WKD22-Unid station, sounds like dispatch for an Alaskan Bush flying operation (one side only) in USB at 5370. (Brookman-AK)

5598.0 N1757A working Santa Maria ATC radio, Azores, in USB at 0517. (Gordon Levine-Anaheim, CA)

5696.0 COMSTA Boston working UN Operations in USB at 0553. (Haverlah-TX)

5718.0 Halifax military working Tester 03 in USB at 1634. (Larry Fowler-Falmouth, MA)

6227.0 AAC2-Ft, Eustis, VA, working ADMM (Army vessel) in USB at 1229. (Russell-IL) AAC2 working AADU-USAV *Brandy Station* (LCU-2005); AAEA-*USAV Chickahominy* (LCU-2011); AADZ-*USAV Cedar Run* (LCU-2010); AAEC-*USAV General Frank S. Besson, Jr* (LSV-1). (Baker-OH)

6502.0 VFF-Canadian Coast Guard Iqaluit, NWT Canada, with marine forecast for Arctic waters at 0212 in USB. (Renner-PA)

6683.0 Air Force One working Andrews enroute Detroit in USB at 2030. (Don Watson-Detroit, MI) *Welcome aboard Don; hope to see you here often-Larry.* SAM972 working Andrews with Carter, Powell and Nunn aboard with phone patch traffic in USB (including the now famous 'wake him up' call) at various times. (John Cobb-Roswell, GA) Noted comms from SAM 972 all evening including the 'wake him up' call at 0452 in USB. (Richard L. Kramer-Mt. Penn, PA) *Nice to have you back, Rich; check in often-Larry.* Noted same at various times in USB. (John Cobb-Roswell, GA and Kevin Hecht-Dean, PA) Nightwatch 01 working Andrews in USB at 0541. (Lewallyn-TX)

6715.0 Nancy Adam Susan number station in AM at 1630. (Boender-Neth)

6730.0 Elmendorf GHFS using this frequency as a discrete in USB at 0514. (Haverlah-TX) Nightwatch working MacDill asked MacDill to send data, exchanged quite a few narrowshift RTTY checks in USB at 0132. (Lewallyn-TX)

6735.0 US Navy FT net noted here in USB at 2300. (Dwayne Scurlock-Loganville, GA)

6761.0 Roma 51 (Griffiss KC-135) working Griff 25 (Griffiss B-52H) for a air refueling time check in USB at 2339. (Fowler-MA)

6771.5 US Navy Link 11 transmission in USB at 0146. (Haverlah-TX)

6776.0 Scorpion 3 working Scorpion Base - "go cipher" followed by Parkhill type secure traffic in USB at 1304. At 1310 Scorpion 3 asked Scorpion Base if they had a copy on SAT106? (Russell-IL) *This is part of JTF4 counter narcotics operations-Larry.*

6779.0 DHJ59-German naval radio Wilhelmshaven, Germany, working various German ships and subs in English and German in USB/RTTY. (Baker-OH)

6797.0 Spanish female number station in AM at 0500. (James Laughlan-Youngstown, NY)

6853.0 German female 5-digit number station in AM at 0043. (Fowler-MA)

6959.0 English female 5-digit number station in AM at 2135. (Fowler-MA)

7404.0 German female 5-digit number station in AM at 2142. (Fowler-MA)

7588.6 US Marine Corps tactical ground net, also heard on 4040.0 with callsigns like Gunboat, Gunboat 6, Gunsmoke, etc in USB at 0451. (Haverlah-TX)

7675.0 Major anti-armor USAF net active for two days (or more) in USB at 1400. (Haverlah-TX)

7679.0 Operate working Brochure (128 TCF WIANG) talking about losing track quality with Coffin Corner. Probably ANG mobile radar unit ops. In USB at 2110. (Russell-IL)

7693.0 PACAF 01 working Andrews phone patch to Hickam Command Post in USB at 0216. (Lewallyn-TX)

7903.5 DLA291 calling KII66-FBI Norfolk, VA, in USB at 1943 (J.L. Metcalfe-KY)

8037.0 Antidote 10 working Wolfman with war games not Haiti related in

USB at 1732. (Russell-IL) *I've seen the Wolfman call sign here before, but still not sure if it is Army or USAF-Larry.*

8453.0 YVM-Puerto Ordaz Radio, Venezuela, with DE CW marker at 1116. (Jack Dix-Yonkers, NY) *Nice catch, Jack-Larry.*

8456.0 Unid station HJNF in CW at 1101. (Dix-NY)

8542.0 Spanish female 5-digit number station in AM at 1002. (Dix-NY)

8565.0 Unid station UFZ with CQ CW marker at 0900. (Dix-NY)

8843.0 N1125E working Honolulu ATC radio, HI in USB at 0244.(Levine-CA)

8967.0 Headdancer Metro working Langley Ops via Offutt in USB at 0050, "KC-10 package with chicks in tow complete AR-3. Also worked Langley Metro requesting weather for stations 5-15. Coronet deployment of aircraft to Kuwait. (Russell-IL)
Bandsaw Juliet attempting patch to Deer Hunter (DSN 984-4314) via McClellan with no answer. Then contacted Bigfoot at DSN 984-4340 and asked if Deer Hunter was up on nine zero and to transmit TADIL on Bravo 6. I have no 984 prefix in my DSN lists. Deer Hunter and Bigfoot are apparently at the same location in the NWAD, I assume McChord AFB. I seldom hear Bigfoot on 9023, which may indicate Deer Hunter handles A/G data links in NWAD while Bigfoot handles AIC traffic in NWAD. (Russell-IL)

8972.0 Spangle 713 working Blue Star with NUCO traffic in USB at 0340. (Renner-PA)

8989.0 Barksdale Aircraft 484 calling any station with no reply and gone in USB at 1415. (Haverlah-TX)

8993.0 Robot 41 working MacDill in USB at 2306. (Wendy Quinn-East Windsor, CT)

9007.5 At 0456, unknown station Kingpin calling Mercedes 44 in USB, contact not made. (Baker-OH)

9023.0 Swiftsword (this day's EAM initiator on the SCACS net) calling Sierra Pete and Oakgrove, with no response in USB at 1727. (Haverlah-TX)

9124.7 WUG-USACOE Vicksburg, MS, working WUN-USACOE with SITOR-B messages at 1514. (Metcalfe-KY)

10196.4 WGY901-FEMA Maynard, MA, working WGY908-FEMA Denver, CO, with 75 baud RTTY communications in the clear. USB voice on 10194.0. (Metcalfe-KY)

10493.0 WPEH727-probably Bell Telephone with SHARES exercise message at 1640 using USB. Big Lake-USAF station working WGY912-FEMA, Mt Weather, VA, in USB at 1648. (Metcalfe-KY)

10586.5 WGY911-FEMA Telecommunications Management Washington, D.C., requesting working frequency for WWD58 at 1635. I've seen WWD58 listed somewhere, NOAA maybe? KGD34-NCC Arlington, VA, heard here also in USB at 1640. KGD34 seems to hang out here during SHARES exercises. Must be one of their frequencies. (Metcalfe-KY)

10612.0 'C' Single letter HF channel marker in CW at 1928. (Boender-Neth)

11007.5 CANFORCE-Trenton Military with phone patch for Razor 30 in USB at 1619. Never seen that frequency used before. (Metcalfe-KY) *Neither have I-Larry.* Noted same at 1618. (Baker-OH)

11176.0 Teal 39 working Teal Ops via Croughton. Discussing reoccurring problems with SATCOM, saying "same as in Hawaii." Teal Ops told 39 that N.H.C. Miami's SATCOM is down. (Lewallyn-TX) *Well, that confirms that National Hurricane Center and the USAF is using UHF SATCOM to pass weather reports; probably a data channel-Larry.*
Nightwatch working Ascension asking if they could work data with their station, answer was no in USB at 0145. Taffey Pull with phone patch to Nightwatch then moved to F-295 in USB at 1512. (Duke Rumley-Madison, NC)

11180.0 GHFS Croughton working Reach 20RM in USB at 1456. (Fowler-MA)

11191.0 Unid station noted with the following "Yellow Blood, Yellow Blood. Do not answer. Two Kilo Alpha. Out" in USB at 1927. (Haverlah-TX)

11214.0 Smokey 01 looking for a radio check in USB at 1919. (Quinn-CT)
Bulldog calling Magic 05 in USB at 1454. Smokey 01 with phone patch via Trenton Military, "contact frequency on arrival will be 351.2 Upset Control/ANG unit there" in USB at 1450. (Fowler-MA)

11218.5 Reach 116KW, 114KW, 117KW working on this interplane frequency enroute Kuwait in USB at 0010. (Russell-IL) Heard same at 2000. (Larry Fowler-Falmouth, MA)

11236.0 SAM 681 working Andrews in USB at various times on F-728. (Fowler-MA)

11243.0 Sting 12 working Offutt GHFS asking Offutt to contact Hillsboro (PACS site at Hillsboro, MO) at DSN 449-6047 and have Hillsboro "burn on UHF configuration 3". Offutt was unable to contact Hillsboro. I had FDM on 369.0 and 379.8, which was probably Sting 12. 379.8 dropped off when Offutt was unable to make contact with Hillsboro. (Russell-IL)

12070.0 WUG-USACOE Vicksburg, MS, working WUJ-Portland, OR, with communications checks during regular Friday net using SITOR-B at 1607. (Baker-OH) *Hey, Rich, wonder how the USAF likes the Army using their W-108 frequency?-Larry.*

12695.5 KFS-Palo Alto Radio, CA, with traffic at 1803 in CW. (Bob Kirby-Richardson, TX)

12948.0 Unid station in CW sending, "CP de JJF FB3 FB3 FB3" at 1131. (Dix-NY)

12984.0 VNG-Sydney Time Station with CW ID at 0430. (Renner-PA)

13330.0 UA30 (aircraft) flying north through South America working company ops with low oil pressure on number 2 engine. Wanted to overfly Colombia, but Bogota refused request. Threatened to shut down aircraft if they overflew the country. USB mode. (Tom Hites-Woodland Park, CO) *I didn't know we were at war with Colombia. Very strange events for sure-Larry.*

13375.0 English female 5-digit number station in AM at 1643. (Brookman-AK) Same noted at 1611 in AM. (Fowler-MA)

14493.5 KIG55-FBI, unknown location and LF116 with SHARES traffic at 2026 in USB. (Metcalfe-KY)

15015.0 Symbolic working Lajes GHFS in USB at 1513. (Rumley-NC)

15044.0 Nightwatch working Lajes GHFS in USB at 1555. Also noted Nightwach 02 on 345.5 wideband working Waldorf. (Rumley-NC)

15048.0 Nightwatch calling an unid station on X-212 in USB at 2120. (Metcalfe-KY) *Thanks for the new designator; time to update the list-Larry.* Uniform 3 Kilo requesting health and welfare phone patches to Ft. Bragg area via MacDill. Went to 11217 USB. Conversations indicated U3K was a vessel with Army personnel aboard offshore of Haiti. (Russell-IL)

16982.5 Unid station sending "HKMR HKMR HKMR de KOAT NE C QSX GI IRI K" in CW at 2130. Any new info on these stations? (Jim Ingram-Aromas, CA) *Nothing on this end, Jim; these stations remain a big mystery-Larry.*

25250.0 'R' Single letter HF channel marker in CW at 1346. (Boender-Neth) *Interesting intercept, Ary. This is the highest frequency I have ever seen one of these stations logged on-Larry.*

TABLE ONE: *USAF Global HF Published Frequencies*

Albrook AB, Panama: 6738 (0001-1200), 11176 (24 Hrs), 15015 (1200-2400)
Andersen AB, Guam: 6738 (0900-2000), 8967 and 11176 (Both 24 Hrs), 13201 (2000-0900)
Andrews AFB, MD: 4725 (24 Hrs), 6738 (0001-1000), 8967 11176 and 15015 (All 24 Hrs), 17975 (1000-2400)
Ascension Is Aux AF: 6738 (1800-0600), 8993 and 11176 (Both 24 Hrs), 15015 (0600-1800)
Bayonne, NJ: 8993 11176 and 15015 (All 1300-2100)
Croughton RAF, UK: 4725 (2300-0500), 6750 11176 and 13201 (All 24 Hrs), 15015 (0500-2300), 17975 (24 Hrs)
Elmendorf AFB, AK: 4725 and 6738 (Both 0800-1800), 8967 and 11176 (Both 24 Hrs), 13201 (1800-0800), 15015 (1500-0800), 17975 (24 Hrs)
Hickam AFB, HI: 6738 (0400-1600), 8967 and 11176 (Both 24 Hrs), 13201 (1600-0400)
Incirlik AB, Turkey: 4725 (2000-0500), 6738 8993 and 11176 (All 24 Hrs), 15015 (0500-2000), 17975 (24 Hrs)
Lajes AB, Azores: 6738 8967 15015 (All 24 Hrs)
MacDill AFB, FL: 6738 (0001-0900), 8993 and 11176 (Both 24 Hrs), 15015 (0900-2400)
McClellan AFB, CA: 4725 and 6738 (Both 0400-1600), 8967 and 11176 (Both 24 Hrs), 13201 and 15015 (Both 1600-0400), 17975 (24 Hrs)
Offutt AFB, NE: 6738 (0300-0800), 8967 and 11176 (Both 24 Hrs), 17975 (0800-2300)
Thule AB, Greenland: 4725 6738 8967 13201 and 17975 (All 24 Hrs)
Yokota AB, Japan: 4725 and 6738 (Both 1000-2100), 8967 and 11176 (Both 24 Hrs), 13201 and 15015 (Both 2100-1000), 17975 (24 Hrs)

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

Scanning The Rails

The year was 1935. My wife's great grandfather was an engineer on the Pennsylvania Railroad. His electric locomotive, number 4800, 2-C+C-2, was the original GG-1, passenger service prototype. Affectionately called, "Old Rivets," she pulled twenty passenger cars between New York and Washington, DC, in less than two hours.

Nearly sixty years later, my wife and I discovered that her great grandfather's locomotive had been restored and was on display at the Railroad Museum of Pennsylvania. Located in the town of Strasburg, the museum is approximately 50 miles west of Philadelphia, in Lancaster County. The museum houses one of the world's finest collections of historic railroad engines and rolling stock. The technology and culture of railroading is documented from the 1820's to contemporary times. There are more than 25 locomotives and 40 pieces of rolling stock that are located in both indoor and outdoor exhibits.

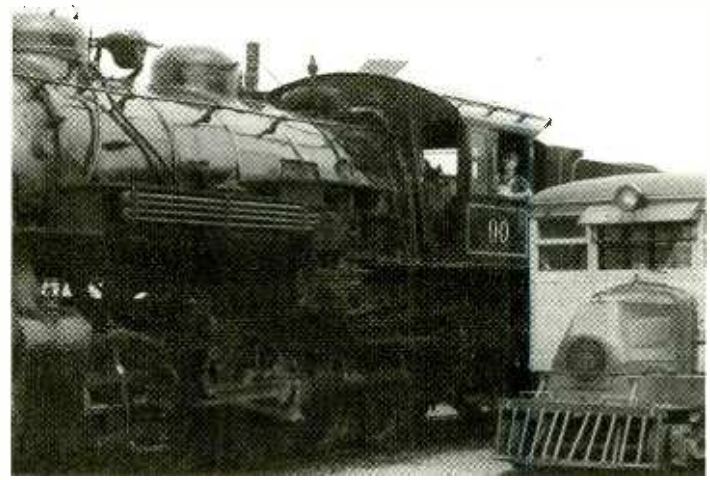
The Railroad Museum also operates a steam locomotive on a nine mile stretch of track that runs through the heart of Amish farmland. For a small fee, visitors can climb aboard a restored passenger car and enjoy a 45 minute ride into the past. For a turn-of-the-century dining experience, there's a 19th century dining car that features a four-course meal served by uniformed attendants.

Near the end of the nine mile track, the Strasburg rails parallel the high speed rails of Amtrack. Ironically, the high speed trains don't slow for the steam locomotive. For a moment, the old and new are side by side, but the meeting is brief. There are no signals, no wave of the hand, no friendly blasts from the air horn. Within the blink of an eye, the high speed line has disappeared into the distance.

Rail buffs will tell you that the unceremonious passing is traditional. To make money, trains must stay on schedule. There simply isn't time to honor the past by slowing down. It has even been suggested that the phrase, "Time is Money," originated with the early railroad.

During the month of December, the museum is decorated for the Christmas holidays. Brightly colored lights enhance the outline of buildings, trees are decorated with ornaments and the entire museum emanates a festive mood that is reminiscent of an old fashioned Christmas. The mood is further enhanced by the large Amish population that resides in Lancaster County. The Amish use horse drawn buggies as their principal means of transportation, and if you're lucky, you may see a horse and buggy waiting for a steam locomotive to pass through a rail crossing.

The scanning action in this part of Pennsylvania is fast paced and red hot. In addition to the thousands of tourists that visit the region on a daily basis, Lancaster County is growing by leaps and bounds. A recent survey listed Lancaster as the fastest growing county in the United States! In addition to the popular train frequencies, (search between 160.215 to 160.995, and 161.010 to 161.565), there is plenty of action on the public service bands. The following frequencies can easily be monitored with a hand held receiver and factory supplied antenna:

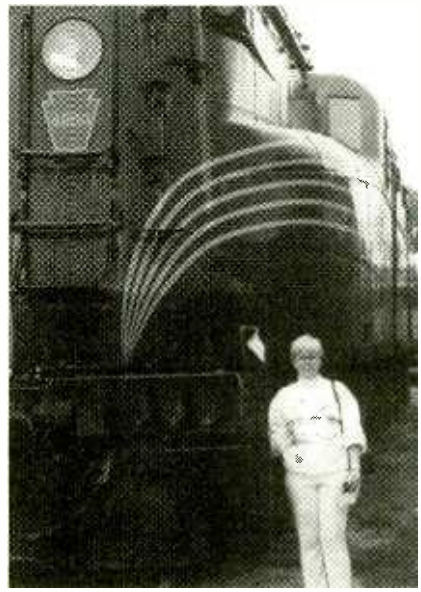


For an old-fashioned Christmas, take your family to see a real steam locomotive.

Strasburg Railroad Operations 161.235 161.430.

Lancaster Area Police

154.875	155.875	155.535	154.740
155.625	155.685	155.535	



Mrs. Kay stands next to her great grandfather's locomotive, "Old Rivets."

As we approached the old locomotive, I saw my wife wipe a tear from her eye. "I wonder if my great grandfather realized that he was making history?" my wife wondered.

Before I could respond, she reached forward and placed her hand on one of the grab irons leading to the cab. At that moment, a strong gust of wind pushed a blast of cold air against the locomotive and we both heard what sounded like a loud popping noise.

"What was that?" My wife asked as she quickly pulled back her hand.

"Don't be alarmed." I said with a smile. "I think the old girl just said 'hello.'"

We stood there in silence for a few minutes, gazing at the old locomotive and realizing that it was no longer just a hunk of cold, lifeless metal. Long before my wife and I were born, "Old Rivets," had become entwined into our lives. She was part of our past and part of our future. More importantly, she was part of our family.

A Glimpse Into the Past

Here's a list of the railroad rules and regulations from the early years of steam powered locomotives:

1. The railroad is not responsible for delays caused by livestock on tracks.
2. Passengers are requested to refrain from spitting tobacco on stoves.
3. All pistols must be checked with the conductor.
4. Positively no shooting of pheasants or cattle from train.
5. Games of chance permitted only in baggage car.
6. All male passengers must assist crew in shoveling snow or pushing if necessary.
7. Be on the alert for card sharks. Do not ride on roofs or platforms. Do not touch steam lines. Keep heads and arms inside windows in case of Indian attacks.

For more information on the Strasburg Railroad Museum, call (717) 687-8628 or Fax (717) 687-0876.

Treasure Hunt

The 800 to 1200 megahertz band is filled with intrigue and excitement. We all know that it's the land of cellular phones, but what about the remaining frequency assignments? What's up there to hear?

For the November/December Treasure Hunt, I'm offering an 8.5 x 11 frequency allocation chart that will take the guess work out of monitoring this popular band. You'll find more than thirty different frequency ranges that belong to specific agencies. To access the information, simply run your finger down the chart, punch in the two frequency ranges and listen in.

Here are the clues:

1) Name the company that is offering a CD-ROM frequency database with mapping.
2) I ordered a CHT-1 from Grove. What did I get?
3) I ordered Cat #22-104 from Radio Shack. What did I get?
4) The Radio Shack Pro-43 has an "instant weather" feature. True or False?
5) The frequency of 156.80 belongs to what agency?

Everyone who enters the November/December Treasure Hunt will receive the frequency allocation chart. However, you must include a #10 SASE. Entries that do not include an SASE will not be honored. Send your entries to the Treasure Hunt, P.O. Box 98, Brasstown, NC 28902.

Frequency Exchange

If you like the hustle and bustle of the big city, we have a special treat for you. John Mercel has provided the frequencies for several large cities in the New England area. Our first stop is **New York City, New York.**

New York Fire

154.19	154.25	154.37	154.40
154.43	460.575 Fire marshals		

John's next group of frequencies will take us to **Boston, Massachusetts.**

Boston Fire

453.65	483.1625	483.1875	483.2125
483.2375			

Metro Fire (Boston area)

483.2625	483.2875	483.3125

John winds up his guided tour with a visit to the neighboring state of **New Hampshire.**

37.94	Turnpike Bureau	44.94	Troop D
45.02	Troop B	45.22	Troop C
45.26	Troop F	45.30	Troop A
45.46	Troop E	155.475	State-wide police
155.655	State Prison	155.91	State Police north
156.90	State Police south	856.2125	Marine Patrol

State Forestry

151.295	Forest service
151.325	Fish & game secondary
151.34	Fish & game primary
151.445	Forest service
154.22	Forest service
154.28	State wide fire ground
159.225	Forest service
159.365	Fish & game mobile

New Hampshire International Speedway

151.625	Parking	154.57	Security
154.60	Tickets		

While we're still in New England, Bryan Lillemore lives in **Milford, Connecticut,** and he has invited us to stop in and listen to his favorite frequencies.

33.86	Fairfield County Fire	125.800	Oxford Airport
154.80	Brookfield Police	154.86	New Milford Police

We're all invited to visit with Larry Kucza in **Idaho Falls, Idaho.** Here are the frequencies that Larry monitors from his listening post.

118.500	Airport tower	155.835	Fire Dispatch
157.68	Life Flight	159.315	Fish & Game
159.33	Fish & Game	411.025	Nat. Engineering Lab
460.20	State Police	460.25	State Police
460.325	State Police	460.45	Local Police
460.525	State Police	460.60	Local Police
465.35	Sheriff		

Our next stop is **Kansas, City, Kansas.** The following frequencies were provided by John Rivera.

154.125	Fire	154.71	Police	154.74	Police
154.755	Sheriff	154.86	Police	154.89	Police
856.437	Police	857.212	Police	857.262	Police
858.262	Police				

Looking for a warmer climate? Mark Rhodes lives in **Phoenix, Arizona**, and he says that the weather is warm and cozy, and the scanner action is hot.

Phoenix Police

154.755	Car to car	154.89	North
155.07	Central	155.37	South
155.43	Maryvale	155.52	Squaw Peak
155.64	Desert Horizon	155.70	Cactus Park
155.76	Car to car	155.79	South
156.06	Tactical	155.61	Information

Phoenix Fire

153.77	South	153.83	Talk	154.025	Investigations
154.19	Dispatch	154.07	West	154.25	East
154.355	North				

Before we return home for the holidays, let's make one more warm weather stop. Dee Bivens lives near **Orlando, Florida,** and she wanted to share the following:

150.905	AAA auto club	150.92	AAA auto club
150.935	AAA auto club	150.95	AAA auto club
150.965	AAA auto club	154.92	Highway Patrol air to car
451.255	Florida Power	453.525	Orlando Airport security
463.275	Cablelvision	464.65	Cablevision

Orlando Police

460.05	460.075	460.10	460.15
460.40	460.42	460.425	460.45

To share your favorite frequencies with other *MT* readers, send your list(s) to the Frequency Exchange, P.O. Box 98, Brasstown, NC 28902.

Computer Corner

This is your last month to receive a frequency "Grab Bag." I'm offering three separate items on one 3.5 disk. Here's the deal: (1) The popular Radiolog shareware program. As most of you know, Radiolog is easy to use, and can store, sort, and print thousands of frequencies; (2) 140 pages of railroad frequencies for cities throughout the nation; (3) An extensive listing of federal frequencies that are used throughout the nation.

The offer is free, but there's a catch. To receive the disk, send a formatted, high density, 3.5 inch disk with return mailer and postage to Bob Kay, P.O. Box 173, Prospect Park, PA 19076. If you don't want to provide the disk, mailer and postage, I'll copy the three items onto a disk, lick the stamps and send it to your doorstep for $5.00 dollars.

And don't forget that "shareware" isn't free. If you like the Radiolog shareware program, please register with the owner.

Capitol Monitoring

Police radio operations in Washington, DC, are reported to be very informal. According to DC area scanner buffs, police dispatchers do not know the identity nor the whereabouts of police officers who are assigned to specific frequencies.

It has also been suggested that civilians with programmable two-way radios are using fictitious radio designators to run NCIC checks through police dispatchers. Part of the problem seems to be the large number of radio designators that are utilized. More than twenty-five separate terms are used to identify law enforcement officers.

If you have additional information concerning the subject, drop us a short note. Write to: The Scanning Report, P.O. Box 98, Brasstown, NC 28902.

Reprogramming Problems

In Tulsa, Oklahoma, members of the media used an outside source to reprogram two-way Motorola radios to monitor local police frequencies.

A Motorola spokesman said that reprogramming the radios without Motorola's permission is illegal. Tulsa Police and the FBI recovered the software that was used to reprogram the radios. The man who actually did the re-programming fled to another state and has not been apprehended. (News clipping from *Tulsa World.*)

Registered to Monitor

There have been a number of inquiries regarding ads that invite scanner buffs to become "registered monitors." One reader wrote, "What are they, and what do they offer?"

There are a number of clubs and organizations that offer to register scanner buffs for a fee. However, the registration provides little more than a sense of community among listeners. There is no increased legitimacy or legal advantages to becoming "registered."

Prior to sending in your money, check to see what the issuing organization is offering—coffee mug, hat, certificate, subscription? If you're not satisfied, don't join.

Scanning SCA

A scanner buff looked at an FM radio playing in a restaurant and noted the frequency: 89.90 MHz. When he tried to tune the frequency on his scanner radio, there was a different station operating on that frequency. The restaurant was probably utilizing subsidiary carrier authorization or SCA. A standard FM receiver is equipped with a narrowband FM detector tuned 67 kHz away from the center carrier.

Most of us have listened to SCA broadcasts in department stores, medical offices and other public places. You can't monitor SCA on a scanner radio. You'll need a standard FM receiver and SCA decoder. Also keep in mind that the Electronic Communications Privacy Act, prohibits the monitoring of SCA broadcasts.

If you want to listen in for "experimental purposes," Ramsey Electronics sells a low cost SCA decoder kit for $24.95. For more information, call (716) 924-4560.

Happy Holidays and best wishes for 1995!

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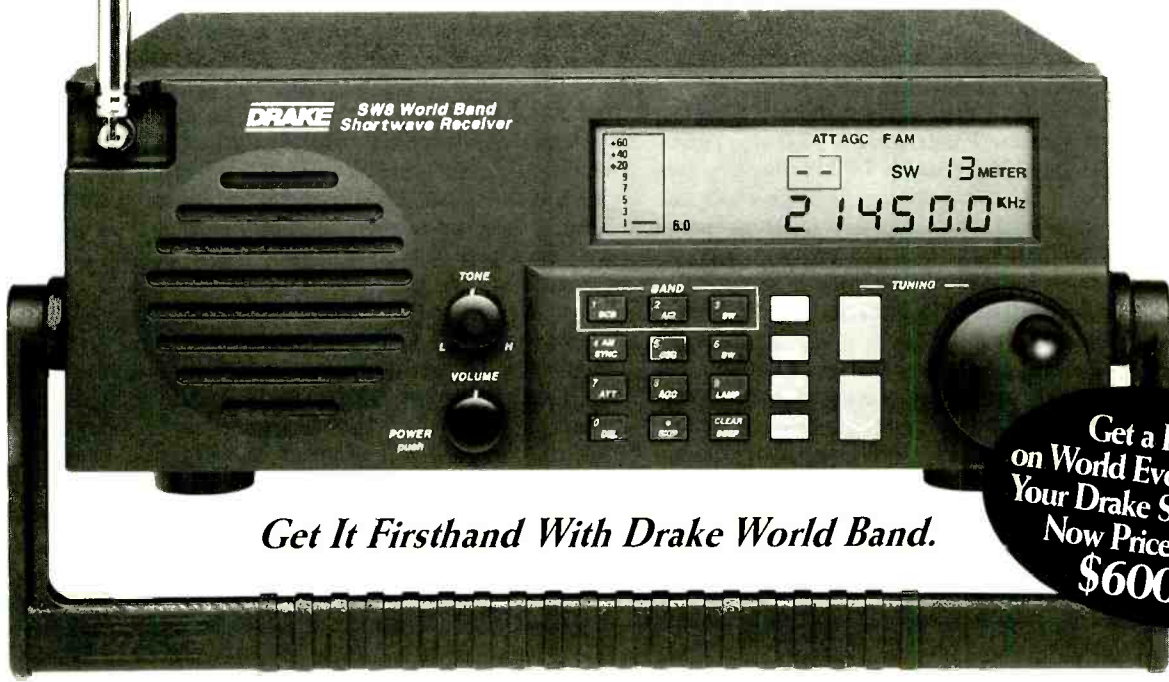

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Watt Did You Say, MHO? Henry's Joule Hertz!

You can't play around in the wacky and wonderful world of electronics for any length of time without coming up against a few terms used for measurement. The confusing thing for most beginners is that, unlike working in the kitchen, you can't use the same measuring cup for everything on the table. Also, each "thing" that you seek to measure goes by a different name.

Well, Bunkey, Uncle Skip is here to help you sort through this melange. Once you get the hang of it, you will even discover that the differences help to keep things from getting confused. In addition, as you progress in your electronic experimentation, you will find that there will be a formula or two that will require knowing your way around these terms. Relax, folks, all will be revealed in a little monograph I choose to call . . .

Uncle Skip's Guide to Measurement

Many years ago, while sitting in Col. Blinky Austel's freshman electronics class, I was exposed to the reality of Ohm's Law. The formulae that support Ohm's Law showed me that whenever I fiddled with the resistance in a circuit I affected the amperage and voltage. As Robert A. Heinlein put it so succinctly, "There ain't no such thing as a free lunch!" Whenever I thought I had Ohm's Law beat, it was either a weakness in my math skills or a misplaced measurement probe. By the time Col. Blinky had passed me on to the sophomore class, I had a healthy respect for Ohm's Law and quite a few others.

OHMS

Ohm is the term applied to the basic unit used to measure resistance, reactance, or impedance in an electronic circuit. The symbol used to indicate ohms in a formula is the Greek capital letter Omega (Ω). Omega—Ohm—get it?

The resistor is probably the most common electronic component. A resistor rated at 1 ohm will conduct 1 ampere of current when a voltage of 1 volt is placed across it, according to Ohm's Law. Don't worry too much about the volts and amps, we'll get to them in a minute. You are likely to encounter resistances from as little as a fraction of an ohm up through thousands and even millions of ohms. For this reason you will often see metric abbreviations for the larger numbers. For example, a 3000 ohm resistor will be abbreviated as 3k ohms. The k stands for kilo meaning (you guessed it) 1000. Likewise, a 1M ohm resistance is much easier than writing out all the zeros in 1,000,000 ohms. M stands for Mega and it's easy to remember that M means million.

MHO Changes His Name

If you want to get a notion of a radio hobbyist's age, just ask them a frequency. If they use the terms kilocycles and megacycles instead of kilohertz and megahertz, you can bet they were playing around with radio long before the Beatles hit the U.S.A. (More on Hertz shortly).

A similar situation is currently occurring with the standard term for the measurement of conductance. In the past, the unit of measurement for conductance was the Mho. Seems to make some sense, since conductance is the opposite of resistance, and "Mho" is the opposite of Ohm, right? Well, folks in France responsible for the *Système International d'Unitès* decided that it must be time for a change. The new, up-to-date, really hip and groovy name for conductance is the Siemens. I haven't figured out yet if the plural of Siemens would be Siemenses.

To further muddy the waters, conductance used to be denoted in formulae by the capital letter G. Henceforth and forever more (or at least until the French decide to change it again) conductance appears as the capital letter S in any "modern" formula. Anyway, using the modern terminology (I'm a New Age kind of guy), a resistance of 1 ohm has a conductance of 1 Siemens. A resistance of 1000 ohms (1k) will have a conductance of 0.001 siemens or 1 millisiemens. A resistance of 1,000,000 ohms (1M) has a conductance of 0.000001 siemens or 1 microsiemens.

Personally, I like the old term Mho. As a matter of fact, when I get to France to ask about the plural of Siemens I may just lobby to have the Mho returned to the fold. I will also put in a bid to have two additional measurements named the Larry and the Curly.

VOLT

We toss the term volt around quite a bit, but how many folks really know what a volt is?

The volt is the unit of measurement for voltage. Voltage is the electromotive force or difference of charge potential between two points in a circuit. A potential difference of 1 volt measured across a 1 ohm resistor will result in a current of 1 ampere. (You can run from Ohm's Law but you can't hide.)

The volt will appear in circuit diagrams and in formulae represented as either a capital letter V or E. You will run across electronic components rated as high as several kilovolts (1 kV = 1000 volts) and the signals your receiver picks out of the air for your listening enjoyment are way down in the microvolt range. A microvolt is 1 millionth of a volt. Just remember what all those old safety lecturers used to say. It's not the volts that can kill you, it's the amps!

COULOMB

But, before we can talk about amps we need to get a handle on the coulomb. The coulomb is a standard unit of electrical charge. One coulomb is equal to 6.24×10^{18} electrons. Coulombs are usually abbreviated in an electronic formula with the capital letter C. I know that modern measuring devices found in any decent physics lab can count electrons. It's neat to know that folks were able to figure these things out strictly with brain power long before the equipment caught up.

AMPERE

The ampere is the unit of measurement we use to discuss the flow of current in an electrical circuit. Start with your basic coulomb of electrons. The movement of 1 coulomb past a given point in a circuit in 1 second

represents a current of 1 ampere. Most folks abbreviate ampere to amp when they are talking. Amps are shown in a formula by the letter I.

Check out the circuit breaker box in your house. You will notice that the circuit breakers are rated in terms of amps. Most commonly you will see 15, 20, or higher rated breakers in your home. So house current is pretty substantial stuff and not to be fooled around with. As you get to know your way around the circuitry inside your average receiver, you will find that you will be dealing with the milliampere (abbreviated as mA) which is one thousandth of an amp, and even microamperes (abbreviated as μA), which would be one millionth of an amp.

WATT Did You Say?

The watt is a unit of power. The output of a radio transmitter is usually expressed in terms of watts. In the world of electronics it ties in like this: 1 watt of power is dissipated by 1 ampere of current flowing through a 1 ohm resistance. (If this sounds suspiciously like it might be somehow tied into Ohm's Law you are right on target, Compadre.)

Since watts represent power, they are commonly listed an electronic formula by the capital letter P. Radio stations usually list their output power in terms of kilowatts (1 kW = 1000 watts), or even megawatts (1 MW= 1,000,000 watts).

FARAD

While we are poking around on circuit boards, we should take a look at capacitors, which provide capacitance to a circuit. Okay, so what is capacitance? Capacitance is the ability of a component to store an electrical charge, and is measured in terms of farads. A capacitor has a capacitance of 1 farad when a charge of 1 volt per second across the capacitor results in a current of 1 ampere through it.

That 1 volt per second sounds a lot like a coulomb, doesn't it? Yep, that's just what it is. Farads are shown in equations by the capital letter C, but sometimes appear as the capital letter F. (Hey, I though those French folks had this all organized?)

You probably will never see a 1 farad capacitor. If you do, keep a safe distance, because that thing is carrying a very big charge. The capacitors you will encounter in most electronic devices are rated in the microfarad (1 millionth of a farad) and picofarad (1 trillionth of a farad) ranges. It's hard to believe that such teeny quantities can affect a circuit, but believe me they do.

HERTZ

Hertz is the unit of measurement applied to frequency. A frequency of 1 cycle per second would be referred to as 1 hertz. Standard United States house current is rated at 60 cycles per second or 60 hertz. Now look at the tuning readout on your receiver. Regardless of whether the tuning control is digital or analog, it is no doubt calibrated in either kilohertz (1 kHz = 1000 cycles per second) or megahertz (1 MHz = 1,000,000 cycles per second).

If you are a lover of older radio equipment designed prior to 1960 or so, you will find the dials calibrated in terms of good old kilocycles and megacycles. On the other hand, if you are keeping up with the latest in electronics, you are aware that folks are now using equipment in the gigahertz (1 GHz = 1,000,000,000 Hz) range. There are even signals up in the terahertz (1 THZ = 1,000,000,000,000 Hz) range. If all those zeros give you a headache, stick with the shortwave bands.

Q

Besides being a character on *Star Trek the Next Generation* who creates all kinds of mischief in the universe, Q refers to the figure of merit of a capacitor, inductor, or tuned circuit. The higher the Q factor, the lower the loss and the more efficient the component or circuit is performing. Q will appear in equations as (big surprise) the capital letter Q.

HENRY

Remember that I said earlier that the ohm is a unit of measurement that can be applied to inductors? (Just checking to see if you're paying attention.) Well, there is another unit of measurement for inductance called the henry. One henry represents the inductance found in a closed circuit in which 1 volt is produced by a current changing uniformly at the rate of 1 amp per second—just like capacitance.

The formula symbol for the henry is the capital letter H. You are unlikely to run across a 1 henry (1H) inductor. Most of the inductors you will see will be rated in the realm of millihenrys (mH) meaning thousandths of henrys, or microhenrys (μH) meaning millionths of henrys.

NEWTON

Of course, good old Sir Isaac should have at least one unit of measurement named after him. The newton is a unit of force. A force of 1 newton produces an acceleration of 1 meter per second per second (yes, twice is right) on a mass of 1 kilogram. Kind of makes you wish you paid attention to the section on the metric system in Mrs. Grundy's math class, doesn't it? I introduce the newton mainly because you need to know about it for the next unit of measurement.

JOULE

If ever there was a unit of measurement that conjured up images of intense folks in lab coats working on something mysterious, it has to be the joule. The joule is the standard unit of energy. When a force of 1 newton is applied over a distance of 1 meter, the amount of energy produced is 1 joule. This becomes important and pops up from time to time in electronics because 1 joule per second is what is necessary to produce 1 watt of power. The joule's abbreviation is the capital letter J.

As you can see, once you start to play with these units and the equations in which they appear, everything is connected to everything. Keep this information in mind as you move through the radio hobby world. You will be surprised when and where you may need it.

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A Precarious Existence

The **CZECH REPUBLIC's** external service, Radio Prague, may cease to exist Dec. 31. At the time they were set to attend the October Monitoring Times Convention, no personnel could be spared, since a final decision regarding the renewal of their contract by the government was to be made October 30 (*MT* staff and *Radiozurnal* via the BBCM). Meanwhile, English to N. America is at 0000 on 5930, 7345; 0100 on 7345; 0300 on 5930, 7345; 0330 on 5930, 7345, 9440 (Wolfgang Büschel, Germany)

GERMANY's DLR, Deutschlandradio's 6005 transmitter at Berlin-Britz will close at end of December. This historic site was formerly the only free voice of RIAS Berlin during Cold War jamming (ORF & Wolfgang Büschel)

AWR, Unión Radio, in **GUATEMALA** is radiating only 3 kW on 5980 and may soon go off as transmitter is quite old. Those wanting a QSL should report quite soon. Also, in **RUSSIA**, it is likely that AWR via Novosibirsk will be phased out soon; request QSLs without delay to Darmstadt, Germany office: 1300-1500 on 6165, 12055, 1500-1700 on 6150 (Adrian Peterson, AWR)

In **SRI LANKA,** some villagers attacked the construction site where three new 500 kW transmitters are being installed by VOA. One villager was killed by local police. The villagers are concerned that the site will be a military target once it's on line (AP, Kansas City *Star* via Rob Keeney, KS, FIDONET *SW Echo* via George Thurman) John Vodenik, VOA engineer at Bethany site, adds that now the contractors cannot enter the work site for a month, and are charging U.S. taxpayers $30,000 a day damages. Also there is a 5 kilogallon hazardous material spill caused by Marconi (Cincinnati) Electronics, contractor for the new transmitters, which, as far as Vodenik knows, is not cleaned up yet.

ABKHAZIA Abkhaz Radio announces adding English, sked Tue and Sat 0430 and 1500 on MW 1368, but heard at 0520 on 9373-LSB, tnx to tip from V. of Russia *DX Klub;* feeder? (Chris Greenway, BBCM via RN*MN*)

*All times UTC; all frequencies kHz. *Asterisk before/after time station sign-on/sign-off; // parallel; + means continuing but not monitored; = 2 x indicates 2nd harmonic of following frequency.*

ANTARCTICA AFAN is active on 6160, power sounded like 3200 W (Dan Fisher, AFAN tech., interviewed by Graham Barclay, Kiwi Radio, via David Martin) Probably 24-hours due to shiftwork as 6012 was, but McMurdo in 24-hour daylight until mid-February, per DXAid program (David Clark, *Fine Tuning*) Likely blocked here by Canadians

ARGENTINA R. Municipal, Buenos Aires, moved from 710 to 1650 kHz, 1 kW (Buenos Aires *Herald* via BBC Monitoring) On 710 was 24 hours, 37/5 kW (*WRTH* 94) Hurry to DX this before U.S. MW stations move onto frequency

ARMENIA Araks Information Service heard with news in English at 2300 on 9480, also announcing but not heard on 11920 (Kevin Hecht, PA, *World of Radio*)

AZERBAIJAN Contrary to item in Oct column, verification letter signed by Mrs. Tamam Bayatli-Öner spells the station Radio Dada Gorgud (via Richard A. D'Angelo, *DX Ontario*) Perhaps conflicting transliteration systems (gh)

BELGIUM RVI doggedly clung to 13675 despite Dubai at 1330-1430, while 13670 was vacant; and made matters worse at 0030 by moving 9930 to 9935 gnashing with Greece (gh) at 0030 to us once tested 6030 instead of 6035 (Joe Hanlon, PA)

CANADA In early October, CFCX, 6005, Montréal, resumed simulcasting CIQC, 600 in English instead of CKOI, 96.9 in French for a month (Don Thornton, NJ, *World of Radio*)

CHINA (non) CRI via Mali including English at 0000 and 0300 found on 9710 ex-9770 //11715 (Bob Thomas, Joe Hanlon, gh, *W.O.R.*) 9710.6v and 11714.9v (Alexander) V. of China, clandestine via CBS Taiwan, new time of 0830-0930 on 11940, initially by mistake on another CBS channel 9690; still at 2100-2200 on 15280 (Nishida, ABI and Yamashita, RJ*MR*)

COLOMBIA R. Tunja new on SW 4584 at 0950-1012 // 1120 (Manuel Rodríguez Lanza, *The Radio News* via *DX Ontario*) La Voz del Río Arauca finally went off 4895, after putting nasty spurs such as on 4950 for six months. Ondas del Meta back on SW 4884.3 after months of silence, Súper net. Ecos del Combeima, 4785.6, renamed R. Súper; manager in Bogotá says MW1110 is now Ecos del Combeima, ex-La Voz del Nevado, ominous volcanic connotation. R. Nacional back on 9655, but no international program, just //570. La Voz de la Resistencia, FARC clandestine in Meta dept., which used 6626.2 Sat at 0000-0100, was confiscated by the Colombian army (Henrik Klemetz, Bogotá, HCJB *The Latest Catch*) Radio Patria Libre, ELN clandestine, now daily 2130-2210 repeated 1130-1210, and Sunday 1600-1700 all on 6260; frequency varies to avoid jamming (BBCM)

COSTA RICA For SSB tests after 0000, RFPI replaced 15050 with 12150, going back to 17905 sometime between 1200 and 1400; then switched same transmitter to AM 6200 weekdays at 1300-1700 for high-angle regional coverage in Spanish. Plans to operate 30 kW with high-gain cubical quad antenna on 15030 in daytime, not only 7385 at night; needs antenna switching network, too, and this will boost electric bill some $300 per month. Electricity outages of two hours daily for rationing expected through Feb at unpredictable times; RFPI urgently needs at least a small generator of about 6 kW to cover such periods. Can anyone help? Contact Oregon office. New on sked is *Refugee Watch*, two editions per week, Mon and Wed 1845, Tue and Thu 0245, 1045 (RFPI *Mailbags*)

Faro del Caribe still putting out spurs, from 9644.69 heard on 9538.04 and 9751.34, strong at times in heavy fading, 1115-1240 (Brian Alexander, PA, *W.O.R.*) Also spurs from 6175 on 6194 and 6156 at 1015 (Johnson/Yamron/Valko, PA, *FT*)

AWR has almost completed installation of five SW transmitters at Cahuita, and renamed AWR-Pan America instead of Latin America (Adrian Peterson, AWR) But will they ever replace that defective cart

machine which puts woozy wows on every taped announcement? (gh)

CROATIA CR, Zagreb, on new 7370 from 2125 tune-in past 0500 including English news 2202-2206, //5894.73, 9830; at 1910 on 7370, 13830, 13640; previously heard 5920 with one minute of English news at 0704; English also at 1302-1306 and 2203-2205 on 9830, 13640 (Brian Alexander, PA, *W.O.R.*) English also at 0904 (Wolfgang Büschel) 1004 (Edwin Southwell)

CUBA For winter, RHC at 2100 replaces 17760 with a channel between 11700 and 11760; SSB moved from 13700 to 9820 and English expanded to 0000-0500, with 30, 20, or 10 kW (Arnie Coro, *DXers Unlimited*)

DNESTRIA R. Dnester International returned to 9620 for W-94, English 2130-2200 (Brian Alexander, PA, *W.O.R.*) See also MOLDOVA

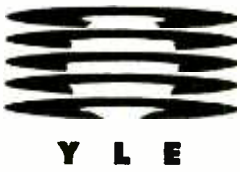
ECUADOR HCJB to Europe at 1700-2000 on 15490 ex-15350, but two days later back on 15350, yet another example of crossed wires in internal communication; at 0700-0830 supposed to be on 9420 and 6205, both new; to Pacific 0700-1130 on 9745 and new 6135; Caribbean 1100-1430 on 12005 ex-17890 (*DXPL*, gh) HCJB SSB on 17490 often not in English, contrary to previous usage of 21455; whatever happened to their "24 hour English service" plans? (gh)

EGYPT unID Arabic on 9126 turned out to be R. Cairo, two different programs, one // 9900, the other possibly MW 774 which is the separation between them, much like the Yemen 9069 / 9780 situation, and here, too, both vary by exactly same amount such as 9125.69 and 9899.69. 9900 also puts out distorted spurs heard on 9800, 9850, 9950, 10000 at 1910 mixing with WWV (Brian Alexander, PA, *W.O.R.*) Also on 10150, 10100, 10050, at times 10000 completely blocking WWV (John Cobb, GA)

EQUATORIAL GUINEA As reported last month, R. Africa heard on 15190 for several weeks, but always very weak and at 2200-2300 covered by France; from early October, English religion back on better 7190.2 as late as 2307* on a Sat (Brian Alexander, PA, *W.O.R.*)

ETHIOPIA VOE renamed R. Ethiopia, and added English to National Service 5990 and 9705 Mon-Fri at 1030-1100 (BBCM)

FINLAND YLE is getting slipshod; not specified on printed schedule or 800 number, but on Sundays, 1230 broadcast on 11735, 15400 is in Finnish, not English; English heard from 1330 ending with Latin News at 1352. Though 9615 previously heard at 2330, sked shows 9680 and 6015 for this. Has Finnish media segment Fri 1245; 1345 and 1445 on 15400, 17740, thanks to BDXC tip (gh)



GREECE VOG shifted 15630 to 15650 at 1300-1450 despite Israel on 15650 Sun-Thu (John Babbis, MD, *W.O.R.*)

GUATEMALA New evangelical protestant station heard 0017-0145+ on 4849.5, Radio Cultural Coatán, but announcing 4760 (or 4770?); sign off at 0200 or 0230, and on at 1100; evening had rustic religious vocal/guitar music, Mayan language except for Spanish ID at hourtop. Is at San Sebastián Coatán, 91-35 W, 15-45 N, or about 20 km ENE of Jacaltenango, not to be confused with San Sebastián Huehuetenango, further south along the PanAm highway (Don Moore, IA, USENET via George Thurman) Sometimes IDs just as R. Coatán or R. Cultural; Tetsuya Hirahara of Radio Nuevo Mundo club heard from Wayne Berger of TGN that this station would be using one of its old transmitters, so assumedly name is in homage to Guat City station (Moore, *Fine Tuning*) Next time heard much closer to nominal, on 4779.8 at 1150-1203 almost fade-free (Moore, HCJB *TLC*)

HONDURAS R. Litoral, 4830 is sked 1100-2400 but one day came on at 1230. La Voz Evangèlica de la Mosquitia, 4910, uses a 1 kW transmitter while waiting on parts for their 10 kW. HRET, 4960, has no station name so as to be ethnically neutral. Sani Radio, 6300, 1kW, is authorized for 4755, but 10 kW transmitter for their frequency is being converted to MW (Tetsuya Hirahara, *Radio Nuevo Mundo*, who visited the stations).

INDIA New 50 kW replaced 10 kW at AIR Hyderabad on 4800, 6120, 7140, followed by 50 ex-10 at Bhopal on 3315, 5990, 7180 (Jose Jacob, India, *Radio News Bulletin*)

INDONESIA RRI Sorong, 4874.6, heard with English program on a Sunday at *1131-1152* (Johnson/Yamron/Valko, PA, *FT*)

IRAN VOIRI, 11790 in English at "2126-2226" but mix China/Mali at 2130. At 0030-0127* on 11790, 7100, 9022, all weak; also on 11790 for English 1150-1227* // 9575, 11930 (Brian Alexander, PA, *W.O.R.*)

IRELAND Reflections Europe, Sun only religion, loop tape on 6205 giving 6295, 3910, 12255 (Edwin Southwell, England) Heard on 6295 ex-6205, 3910 (Mike Barraclough, *ibid*)

ITALY R. Mariquita on 4032 ex-4115, at 2100-2130 (Dario Monferini *et all, Play-DX*) RAI, English to us at 0050-0110 on 11800 and new 9645 (George Poppin via Joe Hanlon)

KURDISTAN V. of Iraqi Kurdistan, in Kurdish and Arabic on 4180v, 0245-0400, 0930-1100, 1445-1645, presumably one hour later in winter (BBCM)

KUWAIT R. Kuwait S-94, English 1800-2100 on 11990 includes: 1830 daily *News*; 2000-2015 *Kuwait — Existence and Boundaries*; 2030-2045 *Psychological Impact of the Iraqi Invasion*, both daily. Mostly music at other times except: Tue 1802-1815 *Science Report* (*W.O.R.*)

NETHERLANDS ANTILLES Though both satellite-fed, at 2330 RN on 6165 and 6020 are out of sync; why? (Will Martin, MO, RN*MN*) One deliberately delayed so that modulation peaks at different times, saving energy. May reactivate third standby transmitter at 2330 for Spanish (Jonathan Marks, RN*MN*) Much needed for S. American prime time, probably 15315, but cannot do until additional feedline equipment installed (Jaime Báguena, RN) May be flexible, but *Radio-Enlace* shifted ahead of *Campo Agrario* to start Fri 2250, Sat 0250 (gh)

NEW ZEALAND Despite bust reported last month, Kiwi Radio plans to continue regular SW broadcasts, such as 7445 USB at 0600 Sunday; P.O. Box 3104, Napier (Graham Barclay, Kiwi R., RN*MN*) RNZI has new mailing address, P.O. Box 123, Wellington (RNZI *Mailbox*)

NORWAY NRK continues the 0500 broadcast in English on UT Sunday, not Monday, and on 5910 ex-5905, still with RTTY QRM. Best

chance here is Sun 1200 on 11850, 15165, intended for Asia, Australia (Joe Hanlon, PA, *W.O.R.*)

PORTUGAL RDP International shifted English to 0230-0300 Tue-Sat, on 9570, 9705 to us, 11840 S. America, also announcing imaginary 9555 (John Norfolk, OK) Weekdays to Africa at 2000 on 21655 despite announced 21515 (Kevin Hecht, PA, *W.O.R.*)

RUSSIA RMWS has been carrying *The Word*, religious program in English, first Sunday of the month at 1500-1600; from Centre of Universal Life, Würzburg, Germany. In August it was heard on 9820 (BBCM) This fall, few good frequencies for RMWS in English found: 1100-1300 on 11980, 12015; 1500-1600 on 12065; 1700?-2300 on 9550 (mix Cuba after 2100); 2200-2300 on 7150, 7300, 7400; 2200-2400 on 9620; 0030-0500? on 7105; 0200?-0500? on 5940; maybe also on 6175 at 0300 - mix BBC (Kevin Hecht, PA, *W.O.R.*)

R. Samaródinka, 3924 low power from southwest quadrant of Moscow, heard almost daily 2000-2030; operator Alex Ulyanov says it is officially registered, a private non-commercial station of the opposition Democratic Party of Russia (Sergei Nikishin, HCJB *DX Partyline*)

SEYCHELLES FEBA D-94 in English: 1458-1600 Mon-Sat on 9810; 1458-1555 Sat 1550, Sun 1558 on 11870; 0457-0553 Fri on 17720 (FEBA)

SWEDEN R. Sweden at 0230 and 0330 sometimes switches to 6195 instead of 6200, and at 0200 mixes Yugoslavia (Joe Hanlon, PA)

SWITZERLAND SRI revived listener-contact show, *Capital Letters*. 2nd and 4th Sat/Sun, no time given (Kevin Hecht, PA) Heard UT Sun 0417 on 9905, so maybe on all SW broadcasts, rather than 0430 feature-block only (gh)

SYRIA Syrian Arab Republic Broadcasting Service (ex-Radio Damascus) English schedule includes *Listeners Overseas*, Tue 2045, Wed 2130; no frequencies, but have been 12085, 15095 (Dave Jeffery, NY)

THAILAND R. Thailand via VOA Udorn in English to Europe at 1900-2000 on 11855 ex-9700; 2000-2115 including English 2030 on 11835 ex-9700; 0030 on 11905 ex-15370 (Brian Alexander, PA, *W.O.R.*) The external service renamed "World Service" (Atsushi Kondo, Japan BCL Federation, R. Japan *Media Roundup* via Diane Mauer) VOA sold the Udorn site to Thailand for 4 cents (John Vodenik, Bethany)

UKOGBANI BBC WS via Ascension finally had to abandon 15260 this season, replaced with 11750 at 2000-0200, for South America, but also good here. At 0730-2030 on new 17830, especially useful in the 1715-2000 gap in North American coverage (gh & Kevin Hecht) *Waveguide* finally makes use of one of BBC's greatest assets: "monitoring." Chris Greenway is to appear once a month with broadcasting news, but first outing Oct. 6 had background on Moscow, RFE/RL, Pakistan, not a single one of those audience-confounding, five-digit—yecch!—*frequencies*! Check Thu 0130, Sat 0715, 1030 (gh)

USA WWCR-3 replaced 5810, 5890 with 5065—the first U.S. SW station, at least in modern times, to be authorized on such a low frequency; it's used between 2300 and 1500. This avoids interference problems and assures better propagation during sunspot trough combined with winter nights of lowest MUFs. This quickly prompted complaints from DXers, who should know better, that WWCR should not be allowed in a tropical band! But 5065 is outside the 60-meter band which ends at 5060, and only two broadcast stations in the world are known within 3 kHz of 5065—one in Perú and one in Zaire. In a live appearance on *Spectrum* George McClintock of WWCR said it was unlikely the FCC would authorize any U.S. broadcasters *within* the 60 meter band, although WWCR transmitters can tune as low as 3.2 MHz. Rhombics for WWCR-1 and 3 are at 40° and 46°; WWCR-2 for Scott, 85°, and each leg of rhombic measures about 37 feet. *World of Radio* was not getting through to Europe, says Büschel, but we hope it can be heard on 5065 Sundays at 0700. *Sound Currents of the Spirit* got a new airing UT Mondays at 0500 on 7435. *Worldwide Country Radio* is now scheduled: Monday-Friday 1700-2100 on 17525, 2100-2200 on 12160; Sunday 1900-2200, and on 5065 at 2300-2400. Adam Lock reports: *Home Schooling* show is on Sat only 1500-1700 on 12160; looking for another 12-MHz frequency and asking listeners to suggest top-5 talk shows they would like to hear weekday mornings and/or afternoons. Neither WWCR nor Saxon can be responsible for what some loony customer in New Zealand did, says Lock, and the fire-bomb item was from a reading of a piece of *fiction*.

WORLD WIDE COUNTRY RADIO

Adam W. Lock, Sr.

WSHB, Monitor Radio International, suddenly switched from 7535 to 6095 at 1000-1400 (Jim Moats, Martin Gallas) Due to a conflict with US Navy on 7535 (C. Ed Evans, WSHB, USENET via Thurman)

New on WEWN is *The Glory of the Papacy*, Sundays at 1700 on 13615, Tuesdays 0930 on 9350, Wednesdays 0230 on 7425 (WEWN via Diane Mauer) One hour later after DST?

WINB on 12160 until 2100 (Tim Hendel, FL) Instead of 13615, which then comes on at 2100; 12160 includes Chuck Harder's *For the People*, weekdays until 2100 // WHRI 9495. WEWN also using 12160, contrary to original plans, for Chinese 1300-1355 (gh)

WYFR's Harold Camping appeared on Mutual's *Jim Bohannon Show* two nights after the world did not end; he still thinks there's a good chance world will end in 1994, but if we make it to January 1, no problem until the next Jubilee Year, 2044 (gh)

"Item in your October column that 'area surrounding KGEI is heavily contaminated with PCBs' *[attributed to R. Fortner of Intersearch]* is totally false. Perhaps the fact it has been twisted from is that we are sending the last of our PCB capacitors for proper disposal by incineration. There has been absolutely no contamination of our site nor anywhere around us that we know of!" (Dean Brubaker, Manager, KGEI)

John Vodenik continues campaigning against the closedown of VOA Bethany, with petitions, letter-writing campaigns, trips to Washington, but VOA still plans to close it, date unknown but could be in late December or early January. It's all part of consolidation of VOA and RFE/RL which he also thinks is a bad idea. As Cuban situation cooled off, Radio Martí via Bethany was reduced to: 1200-1400 on 9600, 1500-1800 on 11740, 11815, 2300-0000 on 11950, 0000-0200 on 11910.

Ross Perot *Listening to America* appeared a few weeks before election, now UT Mons 0106-0200 on several big AM stations—KRLD-1080, KFAB-1110, WJR-760, WOAI-1200, and on WGN-720. Perot told Charlie Ross his show was also "worldwide on shortwave," no details, but we found him on WRNO, 7355 (gh)

World of Radio on WHRI Fri 2300, Sat 0600 on 7315, 9495, Sun 0130 on 7315; on KWHR, Sat 0600 on 9930, Mon 0330 on 17510.

UZBEKISTAN R. Tashkent English at 1200-1230 on new 13785, also announcing 6025, 9715; presumably the same for the different English broadcast at 1330-1400 (Edwin Southwell, England, *W.O.R.*)

VENEZUELA Not everyone at R. Caracas Radio is aware of the SW relay; contrary to the item here in Oct *[from BDXC]* it *is* on 25705 for certain newscasts in daytime; QSL received from Julio Camacho; it's 500 watts USB, probably via a ham transmitter (Manuel Rodríguez Lanza, *The Radio News* via George Thurman)

VIETNAM V. of Vietnam has $150 million expansion project, including relay via Russia to USA; MW to SE Asia and Australia (Chris Greenway, BBCM via RN*MN*)

ZAIRE Bukavu is on 6544 at *0430, 1700* probably with break in between (Ferguson, *FT*)

Until the next, Best of DX and 73 de Glenn!

Broadcast Loggings

Gayle Van Horn

SHORTWAVE BROADCASTING

Log of the Month

December's **LOG OF THE MONTH** was submitted by Mike Hardester of Jacksonville, North Carolina. Thanks, Mike!

ANTIGUA: Deutsche Welle relay site @ 0138-0150*. English program on *Youth Hostels in Germany*. At the end of the sign-off announcement, a male announcer conveniently came on with the following item for my tape collection: "This is the Deutsche Welle Caribbean relay station, Antigua." Only QRM was from a slight heterodyne against 6040.1, and occasional Spanish language station noted under DW. (SIO:4-5 4 4).

A special mention goes to Gerald R. Brookman of Kenai, Alaska, for contributing 243 loggings to this month's column!

0015 UTC on 16190 USB
RUSSIA: Radio Moscow feeder. *Focus on Asia* program. News reports on corruption in the Chinese government, and drug trafficking in Pakistan and India. Super signal. (Jerry Witham, Keaau, HI)

0025 UTC on 9685
UKRAINE: Radio Ukraine Int'l. Mailbag program to 0100. Dedications to listeners. Noted // 9860 (fair) and 12030 (poor). (SIO:454) (Hardester, NC; Witham, HI; Brookman, AK)

0030 UTC on 15370
THAILAND: Radio Thailand. World newscast to weather report. Sports update to features. (Chris Beehner, Oviedo, FL)

0035 UTC on 13750
INDIA: All India Radio. Report on a new drug policy in India, followed by an ID and program review at 0040. Indian music to frequency schedule quote and 0045*. AIR noted at 0212 on 13700 with interval signal, sign-on and Indian music.(Witham, HI)

0144 UTC on 5975
UNITED KINGDOM: BBC. Radio drama program monitored on 6175, 7325, 9590, 15360. Additional monitoring at 0217 on 15070, 12095, 9410, 17880, 15360, 15260, 15070, 12095, 9410, 15400. (Brookman, AK)

0150 UTC on 9630
BRAZIL: Radio Aparecida. Portuguese. Big Band music show hosted by male announcer's European style Portuguese, followed by vocal tune from Astrid Gilberto. (Witham, HI)

0157 UTC on 6160
CANADA: CBC Vancouver. National newscast with SINPO: 35544. Radio Canada Intl's Canadian Forces network monitored on 9755 at 0159, with sports and updates on peacekeeping in Haiti. (Brookman, AK)

0200 UTC on 6726
PERU: Radio Satelite. Spanish. Regional news and station ID to commercials. (Beehner, FL) Tentative ID as Peru's Radio Melodia on 5995 kHz at 0715. (Witham, HI) Logged 0227-0310 with numerous IDs and time checks. Slight fades. (Hardester, NC)

0230 UTC on 6560.2
IRAQ: Radio Iraq Intl. Arabic. Holy Koran recitations to announcers' conversation. (Beehner, FL) Station logged most evenings @ 0243-0301 in Arabic. (Hardester, NC)

0315 UTC on 3270
NAMIBIA: NBC. Country tunes to jazz by Fela Anikulapo Kuti. Interference on // 3290. (William T Hassig, Mt Prospect, IL)

0345 UTC on 3955
SOUTH AFRICA: Channel Africa. Regional African music to station ID at 0349. Mineral price quotes to music tune and time pips at 0353. International newscast at 0400. (Witham, HI)

0358 UTC on 5055
SWAZILAND: Trans World Radio. Music box interval signal to station ID. Time pips to sign-on and German religious programming. (Sam Wright, Biloxi, MS)

0440 UTC on 5033.5
CENTRAL AFRICAN REP: RTV Centraficaine. French. Tentative ID on this station with male/female announcer duo. Vocal pop music and heavy percussion instrumentals. Four short time pips to brief instrumental music. Announcers' possible ID suffering from severe "slop" from unknown station on 5040. Fair to poor with QRM and increasing fading. (SIO:3 3-2) (Hardester, NC)

0440 UTC on 18735 USB
AUSTRALIA: Australian Defense Forces Radio. Requested pop/rock tunes from military personnel. Announcer's chatter of local interest items, ID and news at 0500. (Witham, HI)

0458 UTC on 11620
FRENCH GUINEA: Swiss Radio Int'l. Featured programming to ID and news service. Time pips, ID and Italian news. (Wright. MS)

0511 UTC on 7125
ITALY: IRRS. Station in for a first time log, monitored to 0543 with religious programming. Extended ID, into easy-listening music. Music jingle for "Mr Clean" suffering poor signal quality. Amateur radio QRM on adjacent frequencies. Moderate fading for SIO: 322. (Hardester, NC)

0535 UTC on 4950
ANGOLA: Radio Nacional. Portuguese. Pop tunes and talk to brief news report at 0540. Regional music to commercials and ID at 0601, to updated newscast. (Witham, HI)

0615 UTC on 15240
AUSTRALIA: Radio Australia. Commentary on Papua New Guinea's string of natural disasters. Additional frequency monitoring as; 15415, 15510, 15530, 17715, 17795. (Brookman, AK)

0745 UTC on 9552.3
INDONESIA: (Sulawesi) RRI-Ujang Pandang. Indonesia. Soft spoken lady spinning lush vocal music, with only occasional commercials. Mood-breaking rock music at 0754, wiped out by WYFR sign-on at 0800. (Witham, HI)

0820 UTC on 9930
USA: KWHR Hawaii. *Sounds of Aloha* program in progress, to station ID. Fair signal quality for easy-listening music and announcer chat. (Charlie Patterson, Mobile, AL)

0835 UTC on 9825
KIRIBATI: Radio Kiribati. Vocal selections from announcer duo. Asia/Pacific news headlines at 0902 to "Keer-e-bas" notation. Additional monitoring at 0927 on subsequent days with vocals, and talk to 0943. Fair/poor quality. (Hardester, NC)

1130 UTC on 5965
CANADA: BBC relay. *Composer of the Month* program featuring Chabrier. (Bob Fraser, Cohasset, MA)

1240 UTC on 15210
CHINA: China Radio Intl. *Listeners' Letterbox* program discussing population control and health care. (Fraser, MA)

1310 UTC on 17760
RUSSIA: Radio Moscow. *Science and Engineering* discussing CB radio and Mars exploration. Station audible on 9750 at 2220, with report on the new openness in Russian schools. (Fraser, MA)

1550 UTC on 2310
AUSTRALIA: VL8A Alice Springs. Rock and roll music format with regional interest news and talk. Program noted on // VL8T Tennant Creek on 2485, and VL8K Katherine. (Brookman, AK)

1625 UTC on 3025.4
NORTH KOREA: Voice for Young Infantrymen. Korean. Drama with lots of grief and anguish, with appropriate music for enhancement. Ten minute program pause at 1627 before resuming with music. Companion station on 3000, not heard. Radio Pyongyang heard in Korean on 3320 at 1645. (Witham, HI)

1650 UTC on 15410
MOROCCO: VOA (Briech relay). African sports update to vocal music tune. ID at 1700 into world news, music and *Financial Report*. Fair to poor with QRM on co-channel 15415. (SIO:332) (Hardester, NC) Refer to "QSL Report" for station data.

1920 UTC on 9700
BULGARIA: Radio Bulgaria. Report on Bulgaria's relations with Portugal. (Fraser, MA; Frank Hillton, Charleston, SC)

1935 UTC on 17605
NETHERLANDS ANTILLES: Radio Netherlands Bonaire relay. *Happy Station* show. Station audible on 17655 at 1953, with *Media Network*'s segment, *Where Am I*—a contest with clues from bandscanning local FM stations. (Fraser, MA)

2015 UTC on 9435
ISRAEL: Kol Israel. *Calling All Listeners* program discussing Israel's radio network, and peace processes. (Fraser, MA)

2030 UTC on 11750
MOLDOVA: Radio Dniester Intl. Station sign-on by lady announcer into news report, including mention of this being the "anniversary of the Moldavan Republic." Interview with the Minister of Health, discussing medical practices and shortages in the republic. Fair-poor quality with co-channel interference from the VOA, and fading. (SIO:332) (Hardester, NC)

2030 UTC on 9410
UNITED KINGDOM: BBC. *Brain of Britain* semi-finals quiz show. BBC noted on 9915 at 2215, with *Seeing Stars* show on forecasting weather by the sun's activities. (Fraser, MA)

2133 UTC on 9610
JAPAN: Radio Japan. DX program discussing *MT*'s October convention. Interview with VOFC announcer. (Brookman, AK)

2230 UTC on 9445
TURKEY: Voice of Turkey. *Wonderful World of Proverbs* program on Turkish writings. (Fraser, MA)

2310 UTC on 11401.1
UNID: (Iceland-Rikisutvarpid listed). Noted on USB to 2340*. Two male announcers with continuous talk in unidentified language. Gradually deteriorating signal (fading). Checked 13855, but no carrier or signal noted. (Hardester, NC)

2340 UTC on 9855
USA: World Voice of Historic Adventism (via WCSN). *Voice of Protestantism* program. ID for WCSN with disclaimer for program content. Schedule announced with quite good reception. (SIO: 454) (Hardester, NC)

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

Try Your Luck with AM!

1994 is almost gone and we are half way through the AM (medium-wave) DX season. Before it ends, why not try for some AM QSL cards? DXing the 540-1600 kHz standard AM Broadcast band provides an opportunity for the listener to log a variety of interesting targets. The equipment needed to hear distant reception does not require an expensive model ... your bedside clock-radio will do the trick!

An excellent standard reference for AM station information is the new 15th edition of the *NRC AM Radio Log*. Cross-referenced and 3-hole punched for standard binders, the *NRC AM Radio Log* provides a standard listing of AM radio stations in the U.S. and Canada. It's only $16.95 to U.S. and Canadian members; $19.95 to U.S. non-NRC members; $20.95 Canadian non-NRC members. By airmail: to Latin America, $21.00; Europe, $24.00; rest of the world $28.00. Order from: NRC Publications, Box 164, Mannsville, NY 13661 (NY residents, please add sales tax). Don't miss out on the rest of the AM DX season!

AIRCRAFT TRAFFIC

Air Canada 850, (Boeing 767-233 (ER) Tail # C-GDSY) 8891 kHz USB. Full data prepared QSL card signed by Capt. Cort Benson. Received in 20 days for an English utility report. QSL address: c/o Air Canada. 1 Place Air Canada, Montreal, PQ H2Z 1X5. (Steve McDonald, Port Coquitlam, BC Canada)

Cathay 086, (Boeing 747-267 Freighter) 2932 kHz USB. Full data prepared QSL card verified. Received in 44 days for an English utility report. QSL address: c/o Cathay Pacific Airways, Swire House, 9 Connaught Rd., Central Hong Kong. (McDonald, CAN)

GREECE

Voice of Greece, 9420 kHz. Full data color postcard signed. Program schedule enclosed. Received in 107 days for an English report and one U.S. dollar. Station address: c/o Engineering & Development. P.O. Box 60019, 15310 Aghia Paraskevi, Athens, Greece. (Gerry LeStrange, East Brunswick, NJ; John Babbis, Silver Spring, MD)

KUWAIT

Radio Kuwait, 11990 kHz. Full data station card signed. Color brochure and Radio Kuwait address book enclosed. Received in 128 days for an English report and one U.S. dollar. Station address: P.O. Box 397, 13004 Safat, Kuwait. (Le Strange, NJ)

MEDIUM WAVE

CKCK-620AM. Partial data station letter, signed by Dave Burdeniuk-News Director. Station decals enclosed. Received in 11 days for an English AM report. Station address: 1922 Park St., P.O. Box 6200, Regina, SK, S4P 3H7 Canada. (McDonald, CAN)

KONA-610AM. Full data station QSL card, signed by Art Blum-Chief Engineer. Received in 11 days for an English AM report. Station address: c/o Tri-Cities Communications, Inc., P.O. Box 2623, Tri-Cities, WA 99302. (McDonald, CAN)

WIWO-1580AM. Station form letter signed by Mike Shannon-General Manager. Received for an English AM report. Station address: 1129 North Hickory Rd., South Bend, IN 46615. (Holbrook, MD)

WIVK-990AM. Full data station letter signed by T. Edwards-Asst. Chief Engineer. Bumper sticker enclosed. Received in 23 days for an English AM report and mint stamps (not used). Station address: P.O. Box 11167, Knoxville, TN 37939. (Holbrook, MD)

WWRV-1330AM. Full data station card signed by Bob Janney-Chief Engineer. Received in 24 days for an English AM report and mint stamps (not used). Station address: P.O. Box 2908, Paterson, NJ 07509. (Don Taylor, Green Cove Springs, FL)

Caribbean Christian Radio-1020AM. Full data QSL card signed with illegible signature. Received in 6 months for an English AM report. Station address: c/o West Indies Broadcasting Services, Ltd., P.O. Box 200, Grand Turks & Caicos Islands, British West Indies. (Sam Wright, Biloxi, MS)

WCCO-830AM. Full data station logo/map card signed by Chief Engineer. Received in 26 days for an English AM report, prepared QSL card (not returned) and mint stamps. Station address: 625 Second Ave. South, Minneapolis, MN 55402. (Loyd Van Horn, Brasstown, NC)

WSM-650AM. Full data station logo card signed by Tom Bryant-Production Manager (and *MT* subscriber!). Personal letter, station sticker, brochure, and coverage map enclosed. Received in 39 days for an English AM report, prepared QSL card (not returned) and mint stamps. Station address: 2644 McGavock Pike, Nashville, TN 37214. (Van Horn, NC)

MOROCCO

Voice of America (via Briech), 15410 kHz. Full data Greenville card, unsigned. VOA sticker enclosed. Received in 11 days for no return postage and an address label (used). Station address: c/o VOA, Washington, DC 20547. (Mike Hardester, Jacksonville, NC)

NON-DIRECTIONAL BEACONS

PV, 387 kHz-Providenciales, Turks & Caicos. Full data QSL letter signed by Roy Young-Electronics Engineer (VP5VRY) and amateur-radio card. Received in 63 days for an English utility report and one U.S. dollar. Station address: Civil Aviation Dept., c/o Box 11, Providenciales, Turks & Caicos Islands, British West Indies. (Hank Holbrook, Dunkirk, MD)

DXE, 423 kHz-Dexter, Missouri. Full data QSL letter signed by Cliff Manloce-Chairman. Received in 35 days for an English utility report and mint stamps. Station address: c/o Dexter Airport Board, City of Dexter, 106 W, Stoddard, Dexter, MO 63844. (Tom Banks, Dallas, TX)

W, 296 kHz-Montreal, Quebec, Canada. Prepared QSL verified with illegible initials. Received in 30 days for an English utility report. Station address: c/o Transport Canada (NAE). Air Traffic Services, 700 Leigh Caprelo, Dorval, Quebec H4Y 1G7 Canada. (Larry Van Horn, Brasstown, NC)

OIL PLATFORM

ROWAN HALIFAX-KCZL, 500kHz (Mobile offshore drilling rig). Full data prepared QSL card and rig brochure. Received in 22 days for an English utility report and mint stamps. QSL address: c/o Rowan Co. Inc., 5450 Transco Tower, 2800 Post Oak Blvd., Houston, TX 77056-6111. QSL was a real shocker, oil platform location is in the North Sea, approximately 3,680 miles! (Holbrook, MD)

SHIP TRAFFIC

AMBASSADOR-KRFK, 500 kHz (Roll-On/Roll-Off Cargo). Long QSL letter. Received in 34 days for an English utility report, and mint stamps. Ship QSL address: c/o Crowley American Transport, P.O. Box 359004, Ft. Lauderdale, FL 33335. (Holbrook, MD)

RUSSEL B MURRAY-WE3077 kHz (Tugboat). Prepared QSL card signed with personal note. Received in 81 days for an English utility report and mint stamps. Ship QSL address: c/o Express Marine Inc., P.O. Box 329, Pennsauken, NJ 08110-329. (Holbrook, MD)

NORTHERN SUN-WYR3645, 156.65 MHz (Tanker). Full data prepared QSL card verified, and personal letter. Received in 46 days for an English utility report and mint stamps. Ship QSL address: c/o Sun Transport Inc., Delaware Ave. & Green St., P.O. Box 1078, Marcus Hook, PA 19061-1078. (Frank Hillton, Charleston, SC)

SYRIA

Radio Damascus, 12095 kHz. Full data station map/logo card with illegible signature. Program scheule and Syrian newspaper enclosed. Received in 122 days for an English report, programming cassette, and 1 IRC. Station address: c/o External Service, Syrain Radio & TV, Ommayad Square, Damascus, Syria. (Walter Szczepaniak, Philadelphia, PA)

HAPPY HOLIDAYS FROM QSL REPORT

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 Standard Time) 5, 6, 7 or 8 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 (7:30 pm Eastern, 4:30 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.

Hot News and Hot Spots

RADIO MOSCOW Changes its Name

Fim Frimmel first heard Radio Moscow announcing its name change from Radio Moscow International to the Voice of Russia World Service on Saturday, October 29th. Coincidentally, he is featuring "Radio Moscow" in his selected programs guide in this issue, but there was not enough time to change the references before press time. The Voice of Russia was restored status as a separate broadcasting entity one year ago, and this action appears to be the first major step in its newly found independence.

FINLAND

New in YLE Radio Finland's fall program line-up is a five-minute program called *Media Roundup*, which can be heard at fifteen minutes after the start of transmission on Fridays. The program covers shortwave and satellite news. The unfortunate choice of name conflicts with Radio Japan's *Media Roundup*, another popular program of DX and media news. To differentiate, *Monitoring Times* will identify the program as *YLE Media Roundup* in its quarterly (Feb/May/Aug/Nov) listing of DX/Media programs. (Jim Frimmel)

FRANCE

RFI resumed English programming after 10-day strike (Martin Gallas, IL, *W.O.R.*) but a few days later were on strike again, airing music fill instead except for 1200 newscast produced by scabs while 95% of journalists were on strike (gh) Affected are 17 foreign language services—at issue is a pay dispute on grading of technicians and promotion prospects throughout the external service. All is not well at RFI (Simson Najovits, RFI, via RN*MN*)

Meanwhile, in **DJIBOUTI**, the RFI relay project has been abandoned, but $80 million for five-year development still includes a relay in SE Asia, presumably Thailand. May rent time to cover E. Africa, W. India (Daniel Olivier, RFI, Radio Netherlands *Media Network*)

IRAQ

During border tension with Kuwait in Oct, RII's only English heard at 1030-1055 on 13680; home service in Arabic heard only on 4615, jammed (Chris Greenway, BBCM, RN*MN*)

KENYA (non?)

Opposition Ford-Kenya party threatened to start broadcasting from a ship in the Indian Ocean if the pro-KANU bias on KBC did not stop, per Nairobi newspapers (BBCM)

MOLDOVA (non)

R. Moldova International is finally starting an English service; winter schedule shows 0200-0225 to N. Am on 7190, 1300-1325 on 15390; to Europe 1430-1455 on 11775, 1830-1855 on 7235 (Andy Sennitt, USENET via Thurman) A different version of the schedule is given by Leonid Cultuclu in Chisanau: 0200 same, 1300 not mentioned, 1430 on 5315, 1830 same; transmitters in Galbeni, Romania (Mike Barraclough, England)

PERÚ

Station from Apurímac area on 5325.4 at 1040 with *Alegre Despertar*. This is a new station from guerrilla region, heard only in 1000-1100 period, not at night. Povrzenic, Argentina, says ID is R. Apurímac, so probably same station listed on MW 1420 R. Victoria, Lima, back on 6018.3 to 0500* (Henrik Klemetz, Colombia, *Play-DX*, and HCJB *TLC*)

RWANDA

Deutsche Welle had resumed at least one-high power transmitter here by Sept. 27, *1800 with Kigali ID in French, then German program on 17860 (Kevin Hecht, PA, *W.O.R.*)

SERBIA (non)

R. Yugoslavia broadcasts English programming to North America now at 0000 UT Mon-Sat announced on 11870, heard best on 9580; mailbag resumed bi-weekly UT Mons (Robert E. Thomas II, CT) Also at 0200 on 6195, but Sweden sometimes here instead of 6200 (Joe Hanlon, PA) R.Yugoslavia interval signal is played with several different synthesizer sounds over a simple, arpeggiated background (Dan Brame, IL, SPEEDX *SW Radio Today*)

** (non) means "non-broadcast station"; could be clandestine, unlicensed, or even utility broadcast.*

MT Monitoring Team

Gayle Van Horn, Frequency Manager
North Carolina

Dave Datko
California

B.W. Battin
New Mexico

Next Reporting Deadline
December 20, 1994

Jim Frimmel, Program Manager
Texas

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.

000 UTC
(7:00 PM EST, 4:00 PM PST)
BBC
CBC North - Quebec [S]
China Radio Int'l
Monitor Radio Int'l [T-A]
Radio Australia
Radio Bulgaria
Radio Canada Int'l [S-M]
Radio Havana Cuba [T-S]
Radio Moscow
Radio New Zealand Int'l [M-A]
Radio Norway Int'l [S]
Radio Prague
Radio Thailand
Spanish National Radio
Voice of America (am/as/ca)
0003
Radio Pyongyang
0009
BBC*
China Radio Int'l*
0010
Radio Havana Cuba [T-S]*
Voice of America (ca) [T-A]*
0015
Radio Cairo
0030
Radio Havana Cuba [T-A]
Radio Moscow
Radio Nacional de Venezuela [T-S]
Radio Netherlands Int'l
Radio New Zealand Int'l [M-F]
Radio Sweden [T-A]
Radio Thailand [T-S]
Radio Vlaanderen Int'l
Voice of America (am) [T-S] (Special English)
Voice of America (as) (Special English)
Voice of America (ca) [S] (Special English)
0050
RAI Italy
0055
Vatican Radio [S-W-F]

0100 UTC
(8:00 PM EST, 5:00 PM PST)
All India Radio
BBC
CBC North - Quebec
Deutsche Welle
FEBC (Philippines)
HCJB
Monitor Radio Int'l [T-A]
R Slovakia Int'l [A]*
R Slovakia Int'l [S/T-F]
Radio Australia
Radio Havana Cuba [T-S]
Radio Japan
Radio Korea
Radio Moscow
Radio New Zealand Int'l [M-A]
Radio Prague
Radio Tashkent
Radio Ukraine Int'l
Radio Yugoslavia [M-A]
Spanish National Radio
Swiss Radio Int'l
Voice of America (am/as/ca)
Voice of Indonesia
0110
Radio Australia [M-F]*
Radio Havana Cuba [S/T-F]*
Radio Japan [A]*
0130
BBC (as) [T-A]*
Radio Austria Int'l
Radio Havana Cuba [T-A]
Radio Moscow
Radio Netherlands Int'l
Radio Sweden [T-A]
Radio Tirana
Voice of Greece
0145
BBC (ca) [T-A]*
0155
Voice of Indonesia

0200 UTC
(9:00 PM EST, 6:00 PM PST)
BBC ("Newsdesk")
CBC North - Quebec [S]
Christian Science Sentinel [A]
Deutsche Welle
Monitor Radio Int'l [T-F]
Radio Australia
Radio Budapest
Radio Canada Int'l
Radio Havana Cuba [T-S]
Radio Moscow
Radio New Zealand Int'l [M-A]
Radio Norway Int'l [M]
Radio Romania Int'l
Voice of America (am) [T-A]
Voice of America (as)
Voice of Myanmar (Burma)
WINB [T-A]
0203
Voice of Free China
0210
Radio Havana Cuba [T-S]*
0215
Radio Cairo
Radio Nepal
0230
Radio Havana Cuba [T-A]
Radio Moscow [T-A]
Radio Netherlands Int'l
Radio Pakistan
Radio Portugal Int'l [T-A]
Radio Sweden [T-A]
Radio Tirana

0300 UTC
(10:00 PM EST, 7:00 PM PST)
BBC
CBC North - Quebec
China Radio Int'l
Christian Science Sentinel [A]
Deutsche Welle
KVOH [T-A]
Monitor Radio Int'l [T-F]
Radio Australia
Radio Canada Int'l
Radio Havana Cuba [T-S]
Radio Japan
Radio Moscow
Radio New Zealand Int'l [M-A]
Radio Prague
Radio Thailand
Voice of America (af) [A-S]
WHRI #2 [T-A]
WINB [T-A]
WWCR #3 [T-A]
0301
Voice of America (af) [M-F]*
0303
Voice of Free China
0309
BBC*
China Radio Int'l*
0310
Radio Havana Cuba [S/T-F]*
0315
Radio Cairo
Voice of Greece [S/H]
0320
Radio Philipinas [M-A]
Vatican Radio
0330
BBC (af)*
Radio Austria Int'l
Radio Budapest
Radio Dubai
Radio Havana Cuba [T-A]
Radio Japan [A]*
Radio Moscow
Radio Nacional de Venezuela [T-S]
Radio Netherlands Int'l
Radio Prague
Radio Sweden [T-A]
Voice of America (af) [M-F] (Special English)
0340
Voice of Greece
0355
Radio Japan

0400 UTC
(11:00 PM EST, 8:00 PM PST)
BBC ("Newsdesk")
BBC (af)
CBC North - Quebec
Channel Africa
China Radio Int'l
Deutsche Welle
Monitor Radio Int'l [T-F]
Radio Australia
Radio Canada Int'l
Radio Havana Cuba [T-S]
Radio Moscow
Radio New Zealand Int'l [A]
Radio New Zealand Int'l [M-F]*
Radio Romania Int'l
Radio Tanzania
Radio Ukraine Int'l
Swiss Radio Int'l
Voice of America (af/me)
Voice of Turkey
WHRI #2 [T-H/A]
WINB [M-A]
WWCR #1 [T-S]
WWCR #3 [T-A]
0403
Radio Pyongyang
0409
China Radio Int'l*
0410
Radio Havana Cuba [T-S]*
0411
Channel Africa [T]
0425
RAI Italy
0430
Channel Africa [A]
Radio Havana Cuba [T-A]
Radio Moscow
0431
Channel Africa [T/H/F]
Voice of America (af) [M-F]*
0440
BBC (af) [A-M]*
0445
BBC (af) [T-F]*
Radio Yerevan

0500 UTC
(12:00 AM EST, 9:00 PM PST)
BBC ("Newshour")
CBC North - Quebec
Channel Africa
Deutsche Welle
HCJB
Monitor Radio Int'l [T-F]
Radio Australia
Radio Bulgaria
Radio Cameroon
Radio Havana Cuba [T-S]
Radio Japan
Radio Moscow
Radio New Zealand Int'l [S-F]
Radio Norway Int'l [S]
Spanish National Radio
Vatican Radio [T/F]
Voice of America (af/me)
Voice of Israel
WINB [M-A]
WYFR (Satellite Network) [T-A]
0510
Radio Australia [M-F]*
Radio Havana Cuba [T-S]*
0530
Channel Africa [S-F]
Radio Austria Int'l
Radio Dubai
Radio Finland
Radio Havana Cuba [T-A]
Radio Moscow
Radio Romania Int'l
Radio Yugoslavia
Voice of Nigeria
0555
Radio Japan [A]

0600 UTC
(1:00 AM EST, 10:00 PM PST)
BBC
BBC (af) [A-S]*
BBC (af) [M-F]
CBC North - Quebec
Channel Africa
Deutsche Welle
Monitor Radio Int'l [T-F]
Radio Australia
Radio Canada Int'l [M-F]
Radio Havana Cuba
Radio Japan
Radio Korea
Radio Moscow
Radio New Zealand Int'l
Radio Yemen
Swiss Radio Int'l
Swiss Radio Int'l (eu)
Voice of America (me)
Voice of Kenya
Voice of Malaysia
WINB [T-A]
0601
Voice of America (af) [M-F]*
0603
Radio Pyongyang
0609
BBC*

0610
Radio Havana Cuba [S/T-F]*
0627
BBC (af) [M-F]*
0630
Channel Africa []
Radio Austria Int'l [T-S]
Radio Havana Cuba [T-A]
Radio Japan [A]*
Radio Moscow
Radio Yemen
Vatican Radio [H]
Voice of Nigeria [M-F]
0631
0632
Radio Romania Int'l
0640
Vatican Radio [T]
0645
Radio Romania Int'l
Voice of Nigeria [M-F]*
0655
Voice of Med. (Malta) [M-F]

0700 UTC
(2:00 AM EST, 11:00 PM PST)
BBC
Monitor Radio Int'l [T-F]
Papua New Guinea
Radio Australia
Radio Japan
Radio Moscow
Radio New Zealand Int'l [A]
Radio New Zealand Int'l [M-F]*
Radio Prague
Swiss Radio Int'l (eu)
Vatican Radio [M-A]
Voice of Myanmar (Burma)
WWCR #1 [S-H]
0703
Radio Pyongyang
Voice of Free China
0705
Radio New Zealand Int'l [M-F]*
0710
Radio Australia [M-F]*
0730
BBC (af) [A]*
HCJB
Radio Japan [A]*
Radio Moscow
Radio Netherlands Int'l
Radio Pakistan
Radio Prague
Radio Vlaanderen Int'l
Voice of Greece [S/H]
0731
0750
[A]
Radio New Zealand Int'l [M-F]*
0755
Radio Japan
Voice of Med. (Malta) [M-F]

0800 UTC
(3:00 AM EST, 12:00 AM PST)
BBC
Christian Science Sentinel [T/F]
KNLS
Monitor Radio Int'l [T-F]
Radio Australia
Radio Korea
Radio Moscow
Radio New Zealand Int'l
Radio Pakistan
Voice of Indonesia [A-H]
Voice of Malaysia
0803
Radio Pyongyang
0810
Radio New Zealand Int'l [M-F]*
0830
R Slovakia Int'l
Radio Austria Int'l [T-S]
Radio Moscow [M-A]
Radio Netherlands Int'l
0845
Radio Finland
0855
Voice of Indonesia [A-H]

0900 UTC
(4:00 AM EST, 1:00 AM PST)
BBC
China Radio Int'l
Christian Science Sentinel [T/F]
Deutsche Welle
Monitor Radio Int'l [T-F]
Papua New Guinea [M]*
Radio Australia
Radio Finland
Radio Japan
Radio Moscow
Radio New Zealand Int'l [M-A]
Swiss Radio Int'l
0909
China Radio Int'l*
0920
Voice of Greece [S/H]
0930
FEBC (Philippines)
Radio Japan [A]*
Radio Moscow
Radio Netherlands Int'l
Radio Yerevan [S]
0940
Voice of Greece
0945
Deutsche Welle [M-F]*
0955
Radio Japan

1000 UTC
(5:00 AM EST, 2:00 AM PST)
BBC
China Radio Int'l
Christian Science Sentinel [A-S]
FEBC (Philippines) [M-F]*
HCJB
Monitor Radio Int'l [M-F]
Papua New Guinea
Radio Australia
Radio Bulgaria
Radio Moscow
Radio New Zealand Int'l [S-F]
Radio Tanzania
Radio Vlaanderen Int'l [M-A]
Voice of America (as/ca)
Voice of Kenya
1009
China Radio Int'l*
1010
Radio New Zealand Int'l [M-F]*
1030
Radio Austria Int'l [M-A]
Radio Dubai
Radio Moscow
Radio Netherlands Int'l
Voice of Nigeria
1045
Radio New Zealand Int'l [M-F]*
Voice of Nigeria [A-S]*

1100 UTC
(6:00 AM EST, 3:00 AM PST)
BBC ("Newsdesk")
Channel Africa
Christian Science Sentinel [A]
Deutsche Welle
Monitor Radio Int'l [M-F]
Papua New Guinea
Radio Australia
Radio Ghana [A-S]
Radio Japan
Radio Jordan
Radio Moscow
Radio Mozambique
Radio New Zealand Int'l
Radio Pakistan
Radio Singapore Int'l
Swiss Radio Int'l
Swiss Radio Int'l (eu)
Vatican Radio [M-A]
Voice of America (as/ca)
Voice of Israel
WWCR #1 [M-F]
WYFR (Satellite Network) [M-A]
1103
Radio Pyongyang
1110
Radio Australia*
1130
Radio Japan [A]*
Radio Korea
Radio Moscow
Radio Nacional de Venezuela [M-A]
Radio Netherlands Int'l
Radio Prague
Radio Singapore Int'l
Voice of Asia
WYFR (Satellite Network) [M-F]
1145
Deutsche Welle [M-F]*

1200 UTC
(7:00 AM EST, 4:00 AM PST)
BBC
CBC North - Quebec [A-S]
China Radio Int'l
Christian Science Sentinel [A]
Monitor Radio Int'l [M-F]
Papua New Guinea
Radio Australia
Radio France Int'l
Radio Moscow
Radio New Zealand Int'l [H-T]
Radio Norway Int'l [S]
Radio Singapore Int'l
Radio Tashkent
Swiss Radio Int'l (eu)
Voice of America (as)
WYFR (Satellite Network) [M-A]
1203
Radio Korea
Voice of Free China
1204
HCJB [M-F]
1209
BBC [W]*
China Radio Int'l*
1230
HCJB [M-F]*
Radio Austria Int'l
Radio Bangladesh [S-M]
Radio Bulgaria
Radio Cairo
Radio Canada Int'l
Radio Finland [M-A]
Radio Moscow
Radio Netherlands Int'l
Radio Singapore Int'l
Radio Sweden [M-F]
Voice of Vietnam
WYFR (Satellite Network) [M-F]
1231
Radio France Int'l [T-W]*
1240
Voice of Greece
1258
Africa No. 1 (Gabon)

1300 UTC
(8:00 AM EST, 5:00 AM PST)
BBC ("Newshour")
CBC North - Quebec [A-S]
China Radio Int'l
Christian Science Sentinel [A]
KNLS
Monitor Radio Int'l [M-F]
Papua New Guinea
Polish Radio [A]
Polish Radio [M-F]*
Radio Australia
Radio Canada Int'l [M-F]
Radio Ghana
Radio Korea
Radio Moscow
Radio Norway Int'l [S]
Radio Romania Int'l [M-A]
Radio Singapore Int'l
Radio Tanzania [A-S]
Radio Tashkent [S]
Swiss Radio Int'l
Voice of America (as)
Voice of Kenya
WYFR (Satellite Network) [M-F]
1301
Radio Romania Int'l [S]
1303
Radio Pyongyang
1309
China Radio Int'l*
1310
Radiobrçs [M-F]
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 Moscow [M-A]
Radio Netherlands Int'l
Radio Singapore Int'l [S-F]
Radio Sweden [M-F]
Radio Tashkent [M-A]
Radio Vlaanderen Int'l [S]
Voice of America (as) (Special English)
Voice of Turkey
Voice of Vietnam
WYFR (Satellite Network) [M-F]
1355
Radio Singapore Int'l

1400 UTC
(9:00 AM EST, 6:00 AM PST)
All India Radio [M/W/F]
BBC
BBC (as) [M-F]*
CBC North - Quebec [S]
China Radio Int'l
Christian Science Sentinel [A]
Monitor Radio Int'l [M-F]
Radio Australia
Radio Cameroon
Radio Canada Int'l [S]
Radio France Int'l
Radio Ghana
Radio Japan
Radio Jordan [A]
Radio Korea
Radio Moscow
Radio Vlaanderen Int'l [M-A]
Voice of America (as)
Voice of Israel [S-H]
WWCR #1 [M-F]
WYFR (Satellite Network) [M-F]
1409
China Radio Int'l*
1410
Radio Japan [M-F]*
1415
Radio Nepal
1424
HCJB [M-F]
1430
FEBC (Philippines)
Radio Canada Int'l
Radio Finland
Radio Moscow
Radio Nacional de Venezuela [M-A]
Radio Netherlands Int'l
Radio Romania Int'l [T-S]
Radio Sweden [M-F]
RTM Morocco [S]
Voice of Myanmar (Burma)
1431
Radio France Int'l [T]*
Radio Romania Int'l [M]
1435
Voice of Greece
1440
FEBC (Philippines) [S-F]*
1445
BBC (as) [M-F] (Special English)
Voice of Myanmar (Burma)
1450
All India Radio
1455
All India Radio
Radio Japan [A]
Voice of Med. (Malta) [M-F]

1500 UTC
(10:00 AM EST, 7:00 AM PST)
BBC
BBC (af) [M-F]
CBC North - Quebec [A-S]
Channel Africa
China Radio Int'l
Christian Science Sentinel [A]
Deutsche Welle
Monitor Radio Int'l [M-F]
Radio Australia
Radio Canada Int'l [S]
Radio Japan
Radio Jordan
Radio Moscow
Radio Omdurman
Swiss Radio Int'l
Voice of America (as/me)
WWCR #1 [M-F]
1503
Radio Pyongyang
1509
China Radio Int'l*
1510
Radio Japan [M-F]*
1525
BBC (af) [S]*
Radio Veritas [T-F]
1530

All India Radio
Deutsche Welle [M-F]*
FEBC (Philippines)
Radio Austria Int'l
Radio Japan [A]*
Radio Moscow
Radio Netherlands Int'l
Radio Portugal Int'l [M-F]
Voice of Nigeria [M-H]
WYFR (Satellite Network) [M-F]
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
(11:00 AM EST, 8:00 AM PST)
BBC
CBC North - Quebec [A-S]
Channel Africa
China Radio Int'l
Christian Science Sentinel [A]
Deutsche Welle
Monitor Radio Int'l [M-F]
Polish Radio [A]
Polish Radio [M-F]*
Radio Australia
Radio Canada Int'l [S]
Radio France Int'l
Radio Jordan
Radio Korea
Radio Moscow
Radio Pakistan
Radio Tallinn [M-F]
Radio Tanzania
Voice of America (af) [A-S]
Voice of America (as/me)
Voice of Ethiopia
Voice of Kenya
WRNO [W]
WYFR (Satellite Network) [A]
1604
[M-F]
1609
BBC*
China Radio Int'l*
1611
Radio France Int'l [T]*
1612
Vatican Radio [S-F]
1630
[M-F]*
Radio Canada Int'l
Radio Dubai
Radio Moscow
Voice of America (af) [M-F]*
Voice of America (as/me)
(Special English)
Voice of Ethiopia
1645
BBC (as)*

1700 UTC
(12:00 PM EST, 9:00 AM PST)
BBC
BBC (af)
CBC North - Quebec [A]
Channel Africa
China Radio Int'l
Christian Science Sentinel [A]
HCJB
Monitor Radio Int'l [M-F]
Radio Australia
Radio Japan
Radio Moscow
Radio New Zealand Int'l [M-F]*
Radio Pakistan
Radio Prague
Radio Tirana
Swiss Radio Int'l
Voice of America (af/as/me)
WRNO [M-F]
WWCR #3 [M-F]
WYFR (Satellite Network) [M-A]
1703
Radio Pyongyang
1709
China Radio Int'l*
1710
Radio Australia*
1715
Radio Sweden [M-F]
1725
Radio New Zealand Int'l [F]*
1730
Radio Moscow [S-F]
Radio Netherlands Int'l
Radio Romania Int'l
Vatican Radio [F]
Voice of America (af) [S]
1740
BBC (af)*
1745
All India Radio
Radio Canada Int'l [M-F]
1755
Radio Japan [A]
Radio New Zealand Int'l [M-H]*

1800 UTC
(1:00 PM EST, 10:00 AM PST)
All India Radio
BBC ("Newsdesk")
CBC North - Quebec [A]
Christian Science Sentinel [A]
Monitor Radio Int'l [M-F]
Polish Radio [A]
Polish Radio [M-F]*
Radio Australia
Radio Cameroon
Radio Moscow
Radio Mozambique
Radio New Zealand Int'l [M-F]*
Radio Norway Int'l [S]
Radio Omdurman
Radio Prague
Radio Tanzania
Radio Yemen
Voice of America (af) [A-S]
Voice of America (af) [M-F]*
Voice of America (me)
Voice of Kenya
WHRI #1 [M-F]
WINB [M-F]
WWCR #3 [M-F]
1805
Radio New Zealand Int'l [M-F]*
1815
Radio Bangladesh
1830
Radio Kuwait
Radio Moscow
Radio Nacional de Venezuela
[M-A]
Radio Netherlands Int'l
Radio Sweden [M-F]
Radio Yemen
Voice of America (af) [A-S]
(Special English)
Voice of America (me) (Special
English)
1835
Radio New Zealand Int'l [F]*
1840
Voice of Greece [M-A]
1855
Radio New Zealand Int'l [M-H]*
1857
BBC (af) [M-F]*

1900 UTC
(2:00 PM EST, 11:00 AM PST)
All India Radio [W]
BBC
China Radio Int'l
Christian Science Sentinel [A]
Deutsche Welle
Monitor Radio Int'l [M-F]
Radio Australia
Radio Bulgaria
Radio Japan
Radio Moscow
Radio New Zealand Int'l
Radio Portugal Int'l [M-F]
Radio Romania Int'l [T-S]
Radio Tirana
Radio Vlaanderen Int'l
Spanish National Radio
Voice of America (af/as/me)
Voice of Greece [M-A]
WHRI #1 [M-F]
WINB [M-F]
WWCR #1 [M-F]
WWCR #3 [S-F]
1901
Radio Romania Int'l [M]
1909
China Radio Int'l*
1910
All India Radio [W]
Radio Australia [M-F]*
1930
BBC (af) [S]*
Deutsche Welle [T-F]*
R Slovakia Int'l
Radio Austria Int'l
Radio Japan [A]*
Radio Moscow
Radio Netherlands Int'l
1933
Deutsche Welle [M]*
1935
RAI Italy
1955
Radio Japan [T-W/S]

2000 UTC
(3:00 PM EST, 12:00 PM PST)
BBC
China Radio Int'l
Christian Science Sentinel [A]
Deutsche Welle
KVOH [A-S]
Monitor Radio Int'l [M-F]
Radio Australia
Radio Budapest
Radio Moscow
Radio New Zealand Int'l [S-F]
Radio Norway Int'l [S]
Radio Portugal Int'l [M-F]
Radio Tallinn [M/H]
Radio Yugoslavia
Swiss Radio Int'l
Swiss Radio Int'l (eu)
Vatican Radio [M-T]
Voice of America (af) [A-S]
Voice of America (af) [M-F]*
Voice of America (me)
Voice of Indonesia
Voice of Israel
Voice of Nigeria [M-F]
WHRI #1 [M-F]
WINB [M-F]
WWCR #3
2003
Radio Pyongyang
2007
Radio Damascus [M-F]
2009
China Radio Int'l*
2010
Radio New Zealand Int'l [S-H]*
2025
RAI Italy
2030
Polish Radio [A-S]
Polish Radio [M-F]*
Radio Finland
Radio Korea
Radio Moscow [A-S]
Radio Netherlands Int'l
Radio Sweden [M-F]
Radio Thailand
2045
All India Radio [A]
Radio Yerevan
2055
Voice of Indonesia [M]
2057
Radio Kuwait

2100 UTC
(4:00 PM EST, 1:00 PM PST)
All India Radio
BBC ("Newshour")
China Radio Int'l
Christian Science Sentinel [A]
Deutsche Welle
KVOH [S]
Monitor Radio Int'l [M-F]
Radio Australia
Radio Cameroon
Radio Canada Int'l
Radio Damascus [F]
Radio Havana Cuba [M-A]
Radio Japan
Radio Moscow
Radio New Zealand Int'l [A-H]
Radio Prague
Radio Romania Int'l
Radio Yugoslavia
Spanish National Radio
Voice of America (af/as/me)
Voice of Turkey
WINB [M-F]
WWCR #3 [S-F]
2109
China Radio Int'l*
2110
Radio Damascus [S-M]
Radio New Zealand Int'l [S-H]*
2112
Radio Damascus [F]
2115
BBC (ca) [M-F]*
Radio Damascus [T]
2120
Radio Cairo
Radio Canada Int'l [A]
2130
Radio Austria Int'l
Radio Cairo
Radio Canada Int'l [S]
Radio Havana Cuba [M-F]*
Radio Havana Cuba [W]
Radio Moscow
Radio Nacional de Venezuela
[M-A]
Radio Riga Int'l [M-F]
2145
Radio Damascus [W]
Radio Korea
2155
Radio Canada Int'l [M-F]
Radio Japan [A]

2200 UTC
(5:00 PM EST, 2:00 PM PST)
All India Radio
BBC
CBC North - Quebec [A-S]
China Radio Int'l
Christian Science Sentinel [A]
Monitor Radio Int'l [M-F]
Radio Australia
Radio Budapest
Radio Bulgaria
Radio Canada Int'l
Radio Havana Cuba [M-A]
Radio Korea
Radio Moscow
Radio New Zealand Int'l
Radio Prague
Radio Ukraine Int'l
Radio Vlaanderen Int'l [M-F]
RAI Italy
Voice of America (as)
2203
Voice of Free China
2209
China Radio Int'l*
2215
All India Radio [M/W/F]
Radio Cairo
2230
Radio Havana Cuba [M-F]*
Radio Moscow [M-F]
Radio Sweden [M-F]
Radio Yerevan
Voice of America (as) (Special
English)
Voice of Israel
2240
Radio Cairo
Voice of Greece [S-F]

2300 UTC
(6:00 PM EST, 3:00 PM PST)
BBC ("Newsdesk")
Christian Science Sentinel [A]
Monitor Radio Int'l [M-F]
Radio Australia
Radio Canada Int'l
Radio Japan
Radio Moscow
Radio New Zealand Int'l
Voice of America (as)
Voice of Turkey
WWCR #3 [S]
2303
Radio Pyongyang
2315
Radio Cairo
2330
Radio Canada Int'l [A-S]
Radio Finland
Radio Japan [A]*
Radio Moscow
Radio Netherlands Int'l
Radio Sweden [M-F]
Radio Yerevan
SLBC (Sri Lanka) [M]
2335
Voice of Greece [S-F]
2355
Radio Japan

0000 UTC SHORTWAVE GUIDE 7:00 PM EST 4:00 PM PST

FREQUENCIES

0000-0100	Australia, ADF Radio	13525as	18735as		
0000-0030	Australia, Radio	9610as	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			
0000-0100	Bulgaria, Radio	7205na	9700na		
0000-0015	Cambodia, Natl Voice of	11940as			
0000-0100 vl	Canada, CBC N Quebec Sce	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	5030ca	6150sa	9725na	
0000-0100 vl	Costa Rica, R Peace Intl	7385am	9400am	15030am	17905am
0000-0100	Cuba, Radio Havana Cuba	6010na	13700na		
0000-0027	Czech Rep, Radio Prague	5930na	7345na	9485na	
0000-0030	Egypt, Radio Cairo	9900na			
0000-0100	Ghana, GBC Radio 1	4915do			
0000-0100	Ghana, GBC Radio 2	3366do			
0000-0045	India, All India Radio	9705as	11745as	15110as	15145as
		17800as			
0000-0100 vl	Italy, IRRS Milan	7125eu			
0000-0100	Lebanon, Wings of Hope	9960me			
0000-0100 vl	Malaysia, RTM Kota Kinaba	5980do			
0000-0100 vl	Malaysia, RTM Sarawak	4950do			
0000-0030	Netherlands, Radio	6020na	6165na		
0000-0100	New Zealand, R NZ Intl	15115pa			
0000-0050	North Korea, R Pyongyang	11335na	13760na	15130na	
0000-0030 m	Norway, Radio Norway Intl	6115sa	6120na		
0000-0100 mtwhfa	Palau, KHBN Voice of Hope	11980as			
0000-0100 vl	Papua New Guinea, NBC	9675do			
0000-0100	Philippines, FEBC Manila	15450as			
0000-0100	Russia, Radio Moscow Intl	5940na	9530as	9620as	9750na
		11685na	11750na	11790na	12050na
		15410na	15425na	16190as	17570as
		17890as			
0000-0030 mtwhfa	Serbia, Radio Yugoslavia	9580na	9620eu	11870na	
0000-0100	Spain, R Exterior Espana	9540na			
0000-0030	Thailand, Radio	9690af			
0000-0100	United Kingdom,BBC London	5965as	5975na	6175na	7325na
		9580as	9590na	9915na	11750sa
		15310as	15360as		
0000-0100	USA, KAIJ Dallas TX	13740na			
0000-0100	USA, KTBN Salt Lk City UT	15590na			
0000-0100	USA, KVOH Los Angeles CA	17775am			
0000-0100	USA, KWHR Naalehu HI	17510as			
0000-0100	USA, Monitor Radio Intl	7535na	9430am		
0000-0100	USA, VOA Washington DC	5995sa	6130am	7215as	7405sa
		9455am	9770as	9775sa	11580sa
		11695am	11760as	15120am	15185au
		15205sa	15290as	17735as	17820as
0000-0100	USA, WCSN Scotts Cor ME	7465af			
0000-0100	USA, WEWN Birmingham AL	5825eu	7425na	9985sa	
0000-0100	USA, WHRI Noblesville IN	7315am	9495am	17510am	
0000-0100	USA, WINB Red Lion PA	11950am			
0000-0100	USA, WJCR Upton KY	7490na	13595na		
0000-0100	USA, WRNO New Orleans LA	7355am			
0000-0100	USA, WWCR Nashville TN	5065am	7435am	13845am	
0000-0044	USA, WYFR Okeechobee FL	6085na			
0030-0100	Australia, Radio	13605as	13745as	13755as	15365pa
		15415as	17795pa	17860pa	
0030-0055	Belgium, R Vlaanderen Int	6035na	9930sa		
0030-0100	Ecuador, HCJB Quito	9745am	12005am	17490eu	21455eu
0030-0100	Iran, VOIRI Tehran	7100na	9022na		
0030-0100	Netherlands, Radio	5905as	6020na	6165na	7305as
		9840na	11655na		
0030-0100	Russia, Radio Moscow Intl	7105na	7165na		
0030-0100	Sri Lanka, SLBC Colombo	6005as	9720as	15425as	
0030-0100	Sweden, Radio	6065sa	6200sa		
0030-0100	Thailand, Radio	9655as	11845af	11905as	15370na
0045-0100	USA, WYFR Okeechobee FL	6065na			
0050-0100	Italy, RAI Rome	9645na	11800na		

SELECTED PROGRAMS

Sundays
0011 Radio Moscow: News and Views. Russian views on news developments.
0020 China Radio Int'l: Travel Talk. An armchair guided tour of scenic spots in Chinese provinces.
0028 China Radio Int'l: Cooking Show. Chinese recipes and cooking tips direct from Beijing.
0032 Radio Moscow: Kaleidoscope. A variety of topics ranging from science and ecology to cultural matters.
0035 China Radio Int'l: Music from China. Chinese music from traditional to pop.

Mondays
0011 Radio Moscow: News and Views. See S 0011.
0020 China Radio Int'l: China Scrapbook. See S 1220.
0026 China Radio Int'l: Music Album. See S 1226.
0032 Radio Moscow: Folk Box. One of the top ten entertainment programs (Passport to World Band Radio).
0041 China Radio Int'l: Listeners' Letterbox. See S 1241.

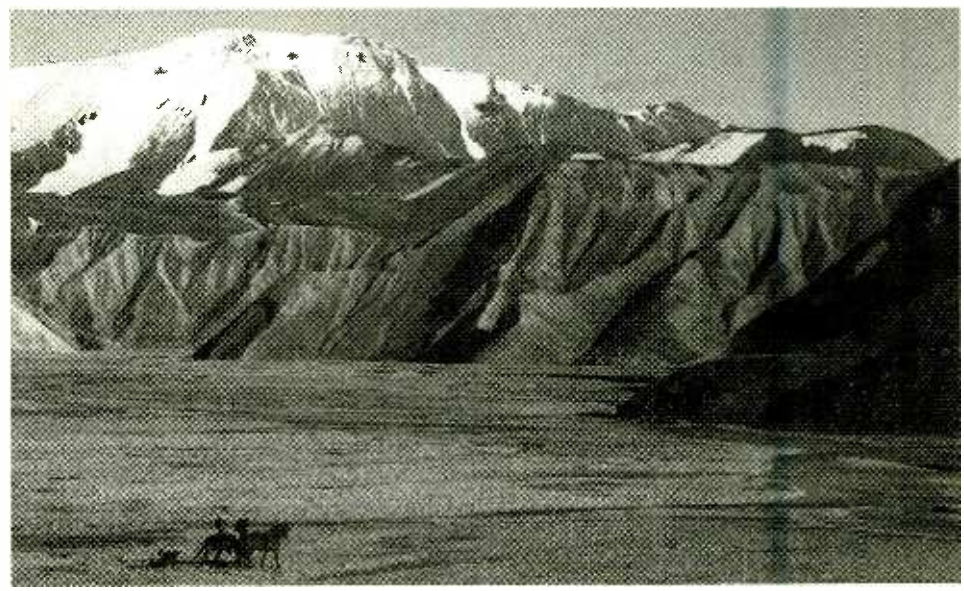
Tuesdays
0000 CBC North - Quebec: As It Happens.
0000 Radio Canada Int'l: As It Happens. See M 2330.
0011 Radio Moscow: News and Views. See S 0011.
0032 Radio Moscow: Folk Box. See M 0032.
0040 China Radio Int'l: Learn to Speak Chinese. See M 1240.

Wednesdays
0000 CBC North - Quebec: As It Happens.
0000 Radio Canada Int'l: As It Happens. See M 2330.
0011 Radio Moscow: News and Views. See S 0011.
0018 China Radio Int'l: Current Affairs. See T 1218.
0032 Radio Moscow: Yours for the Asking. A 30-minute musical request program.
0040 China Radio Int'l: Listeners' Letterbox. See S 1241.

Thursdays
0000 CBC North - Quebec: As It Happens.
0000 Radio Canada Int'l: As It Happens. See M 2330.
0011 Radio Moscow: News and Views. See S 0011.
0018 China Radio Int'l: Current Affairs. See T 1218.
0032 Radio Moscow: Music at Your Request. See M 1232.
0033 China Radio Int'l: Profile. See W 1233.
0040 China Radio Int'l: Learn to Speak Chinese. See M 1240.

Fridays
0000 CBC North - Quebec: As It Happens.
0000 Radio Canada Int'l: As It Happens. See M 2330.
0011 Radio Moscow: News and Views. See S 0011.
0018 China Radio Int'l: Current Affairs. See T 1218.
0032 Radio Moscow: The Jazz Show. See M 0532.
0033 China Radio Int'l: Focus. See H 1232.
0040 China Radio Int'l: Culture in China. See H 1240.

Saturdays
0000 CBC North - Quebec: As It Happens.
0011 Radio Moscow: News and Views. See S 0011.
0020 China Radio Int'l: Current Affairs. See T 1218
0032 Radio Moscow: Folk Box. See M 0032.
0035 China Radio Int'l: Life in China. See F 1235.
0048 China Radio Int'l: In the Third World. See F 1248.



Radio Iceland QSL courtesy of Gerald Brookman of Kenai, Alaska

FREQUENCIES

0100-0200 twhfa	Argentina, RAE	11710na			
0100-0200	Australia, Radio	9580pa	9660pa	11715as	11855as
		13605as	13755as	15240pa	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 vl	Canada, CBC N Quebec Sce	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	9755na			
0100-0130	Canada, RCI Montreal	9535am	11725am	11845am	13720am
0100-0130	Costa Rica, AWR Alajuela	5030ca	6150sa	9725ca	
0100-0200	Costa Rica, R Peace Intl	7385am	9400am	15030am	
0100-0200	Cuba, Radio Havana Cuba	6010na	13700na		
0100-0127	Czech Rep, Radio Prague	7345na			
0100-0200	Ecuador, HCJB Quito	9745am	12005am	17490eu	21455eu
0100-0150	Germany, Deutsche Welle	6040na	6085na	6120na	6145na
		9565na	9670na	9700na	
0100-0200 m	Guatemala, Radio Cultural	3300do			
0100-0200	Indonesia, Voice of	9675as	11752as		
0100-0130	Iran, VOIRI Tehran	7100na	9022na		
0100-0200 vl	Italy, IRRS Milan	7125eu			
0100-0110	Italy, RAI Rome	9645na	11800na		
0100-0200	Japan, NHK/Radio	5960na	9565as	11840as	11860as
		11910as	15195as	17810as	17845as
0100-0130	Laos, National Radio of	7116as			
0100-0200	Netherlands, Radio	5905as	7305as		
0100-0125	Netherlands, Radio	6020na	6165na	9840na	11655na
0100-0200	New Zealand, R NZ Intl	15115pa			
0100-0200 vl	Papua New Guinea, NBC	9675do			
0100-0130	Philippines, FEBC Manila	15450as			
0100-0200	Russia, Radio Moscow Intl	5940na	6005as	6120na	7105na
		7165na	7180na	7205na	7295na
		7315as	9400me	9530na	9930me
		11750na	12050na	15425na	17570as
		17890as			
0100-0200	Slovakia, AWR Europe	7275as			
0100-0130	Slovakia, R Slovakia Intl	5930na	7300na	9440na	
0100-0200	South Korea, R Korea Intl	7550eu	15575am		
0100-0200	Spain, R Exterior Espana	9540na			
0100-0200	Sri Lanka, SLBC Colombo	6005as	9720as	15425as	
0100-0130	Switzerland, Swiss R Intl	5885am	6135am	9885am	9905am
0100-0200	Ukraine, R Ukraine Intl	7180na	9860na	11720na	12030na
		15180na	15580na		
0100-0200	United Kingdom,BBC London	5965as	5975na	6175na	7160as
		7325na	9580as	9590na	9915sa
		11750sa	11955me	15260sa	15310as
		15360as	17790as		
0100-0200	USA, KAIJ Dallas TX	13740na			
0100-0200	USA, KTBN Salt Lk City UT	7510na			
0100-0200	USA, KVOH Los Angeles CA	17775am			
0100-0200	USA, KWHR Naalehu HI	17510as			
0100-0200	USA, Monitor Radio Intl	7535na	9430am		
0100-0130 twhfas	USA, WRMI Radio Miami Intl	9955am			
0100-0200	USA, VOA Washington DC	5995sa	6130sa	7205as	7405sa
		9445sa	9740as	9775sa	11580sa
		11705as	15120sa	15205am	15250as
		15340as	17740as	21550as	
0100-0200	USA, WCSN Scotts Cor ME	7465eu			
0100-0200	USA, WEWN Birmingham AL	5825eu	7425na		
0100-0200	USA, WHRI Noblesville IN	7315am	9495am	17510am	
0100-0200	USA, WINB Red Lion PA	11950am			
0100-0200	USA, WJCR Upton KY	7490na	13595na		
0100-0200	USA, WRNO New Orleans LA	7355am			
0100-0200	USA, WWCR Nashville TN	5065am	7435am	13845am	
0100-0200	USA, WYFR Okeechobee FL	6065na	9505na		
0100-0130	Uzbekistan, R Tashkent	7190eu	7250eu	9715eu	9740eu
0130-0145	Albania, R Tirana Intl	9580na	11840na		
0130-0200	Austria, R Austria Intl	9655na	9870sa	13730sa	
0130-0150	Greece, Voice of	9420na	9935na	15650au	
0130-0200	Netherlands, Radio	9860as	11655as		
0130-0200	Sweden, Radio	9895au	11695as		
0140-0200	Vatican State, Vatican R	5980as	7335as		

SELECTED PROGRAMS

Sundays
0100 WRMI: Viva Miami!. A magazine program hosted by Jeff White from and about Miami and Florida, that includes DX and international travel features and seasonal tropical weather updates.
0105 Swiss Radio Int'l: Newsnet. See S 1105.
0107 CBC North - Quebec: Finkleman's 45's.
0111 Radio Moscow: Moscow Mailbag. Joe Adamov answers listener questions.
0132 Radio Moscow: Audio Book Club. The best of Russian classic and contemporary literature.

Mondays
0105 CBC North - Quebec: Music Alive.
0105 Swiss Radio Int'l: Newsnet. See S 1105.
0111 Radio Moscow: Moscow Mailbag. See S 0111.
0132 Radio Moscow: Russian by Radio. See S 1532.

Tuesdays
0100 WRMI: Viva Miami!. See S 0100.
0105 Swiss Radio Int'l: Newsnet. See S 1105.
0111 Radio Moscow: Focus on Asia and the Pacific. News anc comments on events in the region.
0132 Radio Moscow: Interview. Talks with individuals about various subjects of current interest.
0139 Radio Moscow: Music. See S 0432.

Wednesdays
0100 WRMI: Viva Miami!. See S 0100.
0105 Swiss Radio Int'l: Newsnet. See S 1105.
0111 Radio Moscow: Focus on Asia and the Pacific. See T 0111.
0132 Radio Moscow: Music. See S 0432.

Thursdays
0100 WRMI: Viva Miami!. See S 0100.
0105 Swiss Radio Int'l: Newsnet. See S 1105.
0111 Radio Moscow: Focus on Asia and the Pacific. See T 0111.
0132 Radio Moscow: Interview. See T 0132.
0139 Radio Moscow: Music. See S 0432.

Fridays
0100 WRMI: Viva Miami!. See S 0100.
0105 Swiss Radio Int'l: Newsnet. See S 1105.
0111 Radio Moscow: Focus on Asia and the Pacific. See T 0111.
0132 Radio Moscow: Interview. See T 0132.
0139 Radio Moscow: Music. See S 0432.

Saturdays
0100 WRMI: Viva Miami!. See S 0100.
0105 Swiss Radio Int'l: Newsnet. See S 1105.
0111 Radio Moscow: Focus on Asia and the Pacific. See T 0111.
0132 Radio Moscow: Interview. See T 0132.
0139 Radio Moscow: Music. See S 0432.

KNLS — THE NEW LIFE STATION
Anchor Point, Alaska 99556 USA

English Language

Freq	Time UTC
7365	0600-0900
7365	1300-1400

Russian Language

7365	0900-1000
6150	1100-1200
7365	1200-1300
7355	1700-1800

Mandarin Language

7365	1000-1100
7365	1200-1300
7355	1400-1500
7355	1500-1600
7355	1600-1700

Programming includes variety of music, timely features, listener letters, and inspirational messages.

0200 UTC SHORTWAVE GUIDE 9:00 PM EST 6:00 PM PST

FREQUENCIES

0200-0300	Australia, Radio	9580pa	9660pa	13605as	15240pa
		15365pa	15415as	15510as	17750as
		17795pa	17860pa	17880as	
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 Sce	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			
0200-0230	Canada, RCI Montreal	6120na	9535am	9755na	11845na
		11940am			
0200-0300	Costa Rica, R Peace Intl	7385am	9400am	15030am	
0200-0300	Cuba, Radio Havana Cuba	6010na	9820na		
0200-0300	Ecuador, HCJB Quito	9745am	12005am	17490eu	21455eu
0200-0300	Egypt, Radio Cairo	9475na			
0200-0250	Germany, Deutsche Welle	6035as	6130as	7265as	9515as
		9615as	9690as	9815as	
0200-0230	Hungary, Radio Budapest	6025na	9835na	11910na	
0200-0300 vl	Italy, IRRS Milan	7125eu			
0200-0230 mtwhfa	Kenya, Kenya BC Corp	4935do			
0200-0300 smtwh	Malaysia, RTM Radio 4	7295do			
0200-0225	Moldova, R Moldova Intl	7190na			
0200-0230	Myanmar, Radio	7185do			
0200-0230	Netherlands, Radio	5905as	7305as	9860as	11655as
0200-0300	New Zealand, R NZ Intl	15115pa			
0200-0230 m	Norway, Radio Norway Intl	9560na			
0200-0300 vl	Papua New Guinea, NBC	9675do			
0200-0300	Romania, R Romania Intl	6155na	9510na	9570na	11830na
		11940na			
0200-0300	Russia, Radio Moscow Intl	5915na	5940na	5950na	6120as
		7105na	7165eu	7180eu	7270as
		7315eu	9850as	12050as	15455ca
		17570as	17890as		
0200-0300	Sri Lanka, SLBC Colombo	6005as	9720as	15425as	
0200-0300	Taiwan, VO Free China	5950na	9680na	9765pa	11740ca
		11860as	15345as		
0200-0300	United Kingdom,BBC London	5975na	6175na	6195me	7155me
		7235me	7325na	9410eu	9590na
		9630af	9915am	11750sa	11955me
		15360as	17790as		
0200-0230	USA, KAIJ Dallas TX	9815am	13740am		
0200-0300	USA, KTBN Salt Lk City UT	7510am			
0200-0230	USA, KVOH Los Angeles CA	17775am			
0200-0300	USA, KWHR Naalehu HI	17510as			
0200-0300	USA, Monitor Radio Intl	5850na	9455ca		
0200-0300	USA, VOA Washington DC	5995sa	6130sa	7205as	7405sa
		9455sa	9740as	9775sa	11580sa
		11705as	15120sa	15205sa	15250as
		15340as	17740as	21550as	
0200-0300	USA, WCSN Scotts Cor ME	7465am			
0200-0300	USA, WEWN Birmingham AL	5825eu	7425na		
0200-0300	USA, WHRI Noblesville IN	7315am	9495am	17510am	
0200-0300	USA, WINB Red Lion PA	11950am			
0200-0300	USA, WJCR Upton KY	7490na	13595na		
0200-0300	USA, WRNO New Orleans LA	7355am			
0200-0300	USA, WWCR Nashville TN	5065am	5935am	7435am	
0200-0300	USA, WYFR Okeechobee FL	6065na	9505na		
0215-0255	Nepal, Radio	5005do	7165do		
0230-0257	Albania, R Tirana Intl	9580na	11840na		
0230-0300 s	Kenya, Kenya BC Corp	4935do			
0230-0245	Pakistan, Radio	7290as	15190as	17705as	17725as
		21730as			
0230-0300 twhfa	Portugal, Radio	9570na	9705na	11840sa	
0230-0300	Sweden, Radio	6195na	6200na	9850na	
0250-0300	Vatican State, Vatican R	6095na	7305na		

SELECTED PROGRAMS

Sundays
0205 Radio Budapest: Comment/Gateway to Lifestyles (4th,18th,Jan 1st).
0205 Radio Budapest: Comment/...And the Gatepost (11th,25th).
0207 CBC North - Quebec: Finkleman's 45's.
0211 Radio Moscow: Music and Musicians. World-famous performers and composers play for you.

Mondays
0200 CBC North - Quebec: Music Alive (from 0005).
0205 Radio Budapest: The Weeklies/CSCE Highlights (5th).
0205 Radio Budapest: The Weeklies/Report (12th).
0205 Radio Budapest: The Weeklies/Report (American Studies) (19th).
0205 Radio Budapest: When Help Was Needed/Ecumenical Music (26th).
0207 Radio Canada Int'l: Quirks and Quarks. The latest trends in science and technology.
0211 Radio Moscow: Music and Musicians. See S 0211.

Tuesdays
0205 Radio Budapest: Comment/The CSCE Summit Meeting (6th).
0205 Radio Budapest: Comment/Newsroom Magazine (13th,20th).
0205 Radio Budapest: DX News (27th).
0211 Radio Canada Int'l: Spectrum. See M 1241.
0211 Radio Moscow: Commonwealth Update. See M 2311.
0232 Radio Moscow: Folk Box. See M 0032.

Wednesdays
0205 Radio Budapest: Comment/Travel/CSCE Summit (7th).
0205 Radio Budapest: Travel/DX Tips (14th).
0205 Radio Budapest: Comment/Business Partner (21st).
0205 Radio Budapest: Comment/Balint and Country Blues/DX World (28th).
0211 Radio Canada Int'l: Spectrum. See M 1241.
0211 Radio Moscow: Commonwealth Update. See M 2311.
0232 Radio Moscow: Yours for the Asking. See W 0032.

Thursdays
0205 Radio Budapest: Comment/Newsroom at the Review Conference/DX World (1st).
0205 Radio Budapest: Comment/Newsroom at the Summit/DX World (8th).
0205 Radio Budapest: Comment/DX World (15th,22nd).
0205 Radio Budapest: Comment/Balint and Country Blues (29th).
0211 Radio Canada Int'l: Spectrum. See M 1241.
0211 Radio Moscow: Commonwealth Update. See M 2311.
0232 Radio Moscow: The Jazz Show. See M 0532.

Fridays
0205 Radio Budapest: Comment/Readers' Choice (Book of Books) (2nd,23rd).
0205 Radio Budapest: Comment/Readers' Choice (The Organ) (9th).
0205 Radio Budapest: Comment/Readers' Choice (The Lamb) (16th).
0205 Radio Budapest: Comment/Readers' Choice (Ferencvaros Cocktail) (30th).
0211 Radio Canada Int'l: Spectrum. See M 1241.
0211 Radio Moscow: Commonwealth Update. See M 2311.
0232 Radio Moscow: Music at Your Request. See M 1232.

Saturdays
0205 Radio Budapest: Comment/History in Operetta (3rd).
0205 Radio Budapest: Comment/History in Opera (10th).
0205 Radio Budapest: Comment/History and Folk (17th).
0205 Radio Budapest: Comment/History in Rock (24th).
0205 Radio Budapest: Comment/Charlie and Folk (31st).
0211 Radio Canada Int'l: Spectrum. See M 1241.
0211 Radio Moscow: Commonwealth Update. See M 2311.
0232 Radio Moscow: The Jazz Show. See M 0532.

THANK YOU . . .

ADDITIONAL CONTRIBUTORS TO THIS MONTH'S SHORTWAVE GUIDE:

John Babbis, Silver Springs, MD; Gerald R. Brookman, Kenai, AK; Bob Fraser, Cohasset, MA; John L. Gomer, Sacramento, CA; James A. Gross, Willow Springs, IL: Clyde W. Harmon, Anniston, AL; Kevin Hecht, Devon, PA; C. Clifford Hoffman, Hammond, IN; Jim Moats, Ravenna, OH; George F. Peek, Safford, AZ; Aldon C, Wires Jr., East Point, GA; NASWA *Journal*; BBC *Summary of World Broadcasts*; Grove Enterprises BBS; Internet Shortwave Newsgroup via Larry Van Horn.

FREQUENCIES

0300-0400	Australia, Radio	9580pa	9660pa	13605pa	15240pa
		15365pa	15415as	15510as	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 vl	Canada, CBC N Quebec Sce	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	15030am	
0300-0400 vl	Costa Rica,Faro del Carib	5055do			
0300-0400	Cuba, Radio Havana Cuba	6010na	9820na		
0300-0327	Czech Rep, Radio Prague	5930na	7345na		
0300-0400	Ecuador, HCJB Quito	9745am	12005am	21455eu	
0300-0330	Egypt, Radio Cairo	9475na			
0300-0350	Germany, Deutsche Welle	6045na	6085na	6120na	9535na
		9640na	9650na		
0300-0400	Guatemala, Radio Cultural	3300do			
0300-0400 vl	Italy, IRRS Milan	7125eu			
0300-0400	Japan, NHK/Radio	5960am	9565as	11875am	15210am
		15325am	17810am	17845am	
0300-0330	Japan, NHK/Radio	11885na	11895na	15230na	
0300-0400	Kenya, Kenya BC Corp	4935do			
0300-0400 s	Lebanon, Wings of Hope	9960me			
0300-0400 smtwh	Malaysia, RTM Radio 4	7295do			
0300-0325	Netherlands, Radio	9860as	11655as		
0300-0400	New Zealand, R NZ Intl	15115pa			
0300-0350	North Korea, R Pyongyang	6522eu	9345eu		
0300-0400 vl	Papua New Guinea, NBC	9675do			
0300-0400	Russia, Radio Moscow Intl	4740eu	4940eu	5940na	5950eu
		6035eu	6085eu	6175na	7105na
		7165na	7180na	7205af	7270na
		9620na	9670as	9850as	9880as
		15425na			
0300-0400	S Africa, Channel Africa	5955af	7185af	9585af	11900af
0300-0400	Sri Lanka, SLBC Colombo	9720as	15425as		
0300-0400	Taiwan, VO Free China	5950na	9680na	9765pa	11745as
		15345as			
0300-0400	Thailand, Radio	15370na			
0300-0400 vl	Uganda, Radio	4976do			
0300-0330	United Kingdom,BBC Loncon	6175na	7235me	7325na	9915sa
		15360as			
0300-0400	United Kingdom,BBC Loncon	3255af	5975na	6005af	6175eu
		6180eu	6190af	6195eu	7230eu
		7325eu	9410eu	9600af	11730af
		11760me	11955as	15280as	15310me
		21715as			
0300-0400	USA, KAIJ Dallas TX	9815am			
0300-0400	USA, KTBN Salt Lk City UT	7510am			
0300-0400	USA, KVOH Los Angeles CA	9785am			
0300-0400	USA, KWHR Naalehu HI	17510as			
0300-0400	USA, Monitor Radio Intl	5850na	9455af		
0300-0400	USA, VOA Washington DC	6035af	7105af	7265af	7280af
		7340af	7405af	9575af	9885af
0300-0400	USA, WCSN Scotts Cor ME	7465am			
0300-0400	USA, WEWN Birmingham AL	7425na			
0300-0400	USA, WHRI Noblesville IN	7315am	9495am	17510am	
0300-0400	USA, WINB Red Lion PA	11950eu			
0300-0400	USA, WJCR Upton KY	7490na	13595na		
0300-0400	USA, WRNO New Orleans LA	7355am			
0300-0400	USA, WWCR Nashville TN	5065am	5935am	7435am	
0300-0400	USA, WYFR Okeechobee FL	6065na	9505na		
0315-0330 sh	Greece, Voice of	9420na	9935na	15650au	
0320-0350	Vatican State, Vatican R	5865af	7360af	9725af	
0330-0400	Austria, R Austria Intl	9870sa	13790sa		
0330-0357	Czech Rep, Radio Prague	5930as	7345af	9440me	
0330-0400	Hungary, Radio Budapest	5965na	9835na	11910na	
0330-0400	Netherlands, Radio	6015na	6165na		
0330-0400	Russia, Radio Moscow Intl	5905eu	7345na		
0330-0400	Sweden, Radio	6200na	9850na		
0330-0400	Tanzania, Radio	5050af			
0330-0357	UAE, Radio Dubai	11945na	13675na	15400eu	17890eu
		21485na			
0340-0350	Greece, Voice of	9420na	9935na	15650au	
0345-0400	Tajikistan, Radio	7245as			

SELECTED PROGRAMS

Sundays

0307 CBC North - Quebec: A Propos.
0311 Radio Moscow: Moscow Mailbag. See S 0111.
0320 China Radio Int'l: Travel Talk. See S 0020.
0328 China Radio Int'l: Cooking Show. See S 0028.
0332 Radio Moscow: Your Top Tune. Win a prize by guessing which song of the three is the most popular.
0335 China Radio Int'l: Music from China. See S 0035.
0335 Radio Budapest: Newsroom Magazine/DX Tips.
0335 Radio Budapest: Singing in the New Year/DX Tips (Jan 1st).

Mondays

0308 CBC North - Quebec: Arts Week.
0311 Radio Moscow: Moscow Mailbag. See S 0111.
0320 China Radio Int'l: China Scrapbook. See S 1220.
0326 China Radio Int'l: Music Album. See S 1226.
0332 Radio Moscow: Timelines. A variety program with an upbeat flair and an insight into Moscow life.
0335 Radio Budapest: Press Review/Medical and Science (Abortion and Divorce)/DX World (5th).
0335 Radio Budapest: Pick of the Week/Travel/DX World (12th).
0335 Radio Budapest: Travel/DX World (19th).
0335 Radio Budapest: Churches in Transylvania/Listeners' Choice (Music for the Season) (26th).
0341 China Radio Int'l: Listeners' Letterbox. See S 1241.

Tuesdays

0307 CBC North - Quebec: That Time of Night.
0311 Radio Moscow: Newmarket. This program tells where and how to invest in Russia, how to sell your product, or start a business.
0330 Radio Moscow: Audio Book Club. See S 0132.
0335 Radio Budapest: Press Review/Bookshelf (Steinway Grand).
0340 China Radio Int'l: Learn to Speak Chinese. See M 1240.

Wednesdays

0307 CBC North - Quebec: That Time of Night.
0311 Radio Moscow: Science and Engineering in the CIS. See S 0611.
0318 China Radio Int'l: Current Affairs. See T 1218.
0332 Radio Moscow: Russian by Radio. See S 1532.
0335 Radio Budapest: Press Review/CSCE Summit/Faure Revisited (7th).
0335 Radio Budapest: Press Review/Peter and Pop (14th).
0335 Radio Budapest: Press Review (21st).
0335 Radio Budapest: Press Review/Bookshelf (Steinway Grand) (28th).
0340 China Radio Int'l: Listeners' Letterbox. See S 1241.

Thursdays

0307 CBC North - Quebec: That Time of Night.
0311 Radio Moscow: Moscow Mailbag. See S 0111.
0318 China Radio Int'l: Current Affairs. See T 1218.
0332 Radio Moscow: Audio Book Club. See S 0132.
0333 China Radio Int'l: Profile. See W 1233.
0335 Radio Budapest: Press Review/The Weeklies.
0340 China Radio Int'l: Learn to Speak Chinese. See M 1240.

Fridays

0307 CBC North - Quebec: That Time of Night.
0311 Radio Moscow: Mailbag. See M 0611.
0318 China Radio Int'l: Current Affairs. See T 1218.
0332 China Radio Int'l: Focus. See H 1232.
0332 Radio Moscow: Russian by Radio. See S 1532.
0335 Radio Budapest: Comment/...And the Gatepost (9th).
0335 Radio Budapest: Press Review/Gateway to Lifestyles (2nd,16th,30th).
0335 Radio Budapest: Press Review/...And the Gatepost (23rd).
0340 China Radio Int'l: Culture in China. See H 1240.

Saturdays

0307 CBC North - Quebec: That Time of Night.
0311 Radio Moscow: Moscow Mailbag. See S 0111.
0320 China Radio Int'l: Current Affairs. See T 1218.
0332 Radio Moscow: Audio Book Club. See S 0132.
0335 China Radio Int'l: Life in China. See F 1235.
0335 Radio Budapest: Press Review/...And the Gatepost/DX News (3rd,31st).
0335 Radio Budapest: Press Review/Report/DX News (10th).
0335 Radio Budapest: Press Review/...And the Gatepost (17th).
0335 Radio Budapest: Press Review/Report (Social Partnership)/DX News (24th).
0348 China Radio Int'l: In the Third World. See F 1248.

0400 UTC SHORTWAVE GUIDE 11:00 PM EST 8:00 PM PST

FREQUENCIES

0400-0500	Australia, Radio	9580pa	9660pa	13605as	15240pa
		15365pa	15415pa	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 vl	Canada, CBC N Quebec Sce	9625do			
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	11905me	11925me	15275me
0400-0500	China, China Radio Intl	11680na	11840na		
0400-0500	Costa Rica, R Peace Intl	7385am	9400am	15030am	
0400-0500	Cuba, Radio Havana Cuba	6010na	9550na	9820na	
0400-0430	Ecuador, HCJB Quito	9745am	12005am	21455eu	
0400-0450	Germany, Deutsche Welle	6015af	6045na	6065af	7160af
		7225af	9565af	9765af	
0400-0500 twtfa	Guatemala, Radio Cultural	3300do			
0400-0500 vl	Italy, IRRS Milan	7125eu			
0400-0500	Kenya, Kenya BC Corp	4935do			
0400-0500 s	Lebanon, Wings of Hope	9960me			
0400-0500 smtwh	Malaysia, RTM Radio 4	7295do			
0400-0425	Netherlands, Radio	6015na	6165na		
0400-0500	New Zealand, R NZ Intl	15115pa			
0400-0450	North Korea, R Pyongyang	6130as	15230as	17755as	
0400-0500 vl	Papua New Guinea, NBC	9675do			
0400-0430	Romania, R Romania Intl	6155na	9510na	9570na	11830na
		11940na			
0400-0500	Russia, Radio Moscow Intl	5905eu	5940na	7105na	7165eu
		7180na	7270na	7345na	9620na
		9785na	9850as	9880as	12050af
		15425na	17675as	21790as	

0400-0500	S Africa, Channel Africa	5955af	7185af	9585af	11900af
0400-0500	Slovakia, AWR Europe	6050as	9465as		
0400-0430	Sri Lanka, SLBC Colombo	9720as	15425as.		
0400-0500	Swaziland, Swazi Radio	6155af			
0400-0430	Switzerland, Swiss R Intl	6135na	9860na	9885na	9905na
0400-0430	Tanzania, Radio	5050af			
0400-0500	Turkey, Voice of	9445na			
0400-0500 vl	Uganda, Radio	4976do			
0400-0500	Ukraine, R Ukraine Intl	6055na	7180na	9810na	11790na
0400-0500	United Kingdom,BBC London	3255af	5975na	6005af	6180eu
		6190af	6195eu	7210af	9410af
		9600af	9640af	11760me	12095eu
		15280as	15310as	15575as	21715as
0400-0500	USA, KAIJ Dallas TX	9815am			
0400-0500	USA, KTBN Salt Lk City UT	7510am			
0400-0500	USA, KVOH Los Angeles CA	9785am			
0400-0500	USA, KWHR Naalehu HI	9930as			
0400-0500	USA, Monitor Radio Intl	7535eu	9840af		
0400-0500	USA, VOA Washington DC	5995eu	6040eu	6140af	7170me
		7265af	7280af	7340af	7405af
		9575af	9885af		
0400-0500	USA, WEWN Birmingham AL	7425na			
0400-0500	USA, WHRI Noblesville IN	7315am	9495am	9930am	
0400-0500	USA, WINB Red Lion PA	11950eu			
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	USA, WWCR Nashville TN	5065am	5935am	7435am	
0400-0445	USA, WYFR Okeechobee FL	6065na	9505na		
0400-0459	USA, WYFR Okeechobee FL	9770eu			
0415-0440	Italy, RAI Rome	5990me	7275eu		
0430-0500	Australia, ADF Radio	13525as	18735as		
0430-0500	Ecuador, HCJB Quito	12005am	21455eu		
0430-0500	Nigeria, Radio	3326do	4770do	4990do	
0430-0500	Swaziland, Trans World R	3200af	5055af	7125af	7200af
0430-0500	Switzerland, Swiss R Intl	9905na	11620na		
0445-0500 t	Sri Lanka, SLBC Colombo	9720na	15425na		

SELECTED PROGRAMS

Sundays

0407 Radio Canada Int'l: Innovation Canada. See S 0307.
0408 CBC North - Quebec: Sound of the Blues.
0411 Radio Moscow: News and Views. See S 0011.
0420 China Radio Int'l: Travel Talk. See S 0020.
0428 China Radio Int'l: Cooking Show. See S 0028.
0432 Radio Moscow: Music. Music as selected by Radio Moscow staff.
0435 China Radio Int'l: Music from China. See S 0035.

Mondays

0405 CBC North - Quebec: Jazz Beat.
0407 Radio Canada Int'l: The Mailbag. See S 1237.
0411 Radio Moscow: News and Views. See S 0011.
0420 China Radio Int'l: China Scrapbook. See S 1220.
0426 China Radio Int'l: Music Album. See S 1226.
0432 Radio Moscow: Music. See S 0432.
0441 China Radio Int'l: Listeners' Letterbox. See S 1241.

Tuesdays

0411 Radio Canada Int'l: Spectrum. See M 1241.
0411 Radio Moscow: News and Views. See S 0011.
0432 Radio Moscow: Music. See S 0432.
0440 China Radio Int'l: Learn to Speak Chinese. See M 1240.

Wednesdays

0411 Radio Canada Int'l: Spectrum. See M 1241.
0411 Radio Moscow: News and Views. See S 0011.
0418 China Radio Int'l: Current Affairs. See T 1218.
0432 Radio Moscow: Music. See S 0432.
0440 China Radio Int'l: Listeners' Letterbox. See S 1241.

Thursdays

0411 Radio Canada Int'l: Spectrum. See M 1241.
0418 China Radio Int'l: Current Affairs. See T 1218.
0432 Radio Moscow: Music. See S 0432.
0433 China Radio Int'l: Profile. See W 1233.
0440 China Radio Int'l: Learn to Speak Chinese. See M 1240.

Fridays

0411 Radio Canada Int'l: Spectrum. See M 1241.
0411 Radio Moscow: News and Views. See S 0011.
0418 China Radio Int'l: Current Affairs. See T 1218.
0432 Radio Moscow: Music. See S 0432.
0433 China Radio Int'l: Focus. See H 1232.
0440 China Radio Int'l: Culture in China. See H 1240.

Saturdays

0411 Radio Canada Int'l: Spectrum. See M 1241.
0411 Radio Moscow: News and Views. See S 0011.
0420 China Radio Int'l: Current Affairs. See T 1218.
0432 Radio Moscow: Music. See S 0432.
0435 China Radio Int'l: Life in China. See F 1235.
0448 China Radio Int'l: In the Third World. See F 1248.

QSL from the Voice of Turkey submitted by John Neves of New York City.

FREQUENCIES

0500-0530	Australia, ADF Radio	13525as	18735as		
0500-0600	Australia, Radio	9580pa	9660pa	13605as	15240pa
		15365pa	15415as	17715pa	17750as
		17795as	17860pa	17880as	
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	Bulgaria, Radio	7335na	9700na		
0500-0600	Canada, CBC N. Quebec Sce	9625do			
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	6150eu	7295eu	15430af
		17840af			
0500-0600	Costa Rica, R Peace Intl	7385am	9400am	15030am	
0500-0600	Cuba, Radio Havana Cuba	6010na	9820na		
0500-0600	Ecuador, HCJB Quito	11925am	21455eu		
0500-0600 as	Eqt Guinea, R East Africa	9585af			
0500-0550	Germany, Deutsche Welle	5960na	6045na	6120na	6185na
0500-0515	Israel, Kol Israel	7465na	9435na	17545as	
0500-0600 vl	Italy, IRRS Milan	7125eu			
0500-0600	Japan, NHK/Radio	5975eu	7230eu	9565as	9680pa
		9725am	11740as	11885na	15410as
		17810as			
0500-0600	Kenya, Kenya BC Corp	4935do			
0500-0600 s	Lebanon, Wings of Hope	9960me			
0500-0600	Malaysia, RTM Radio 4	7295do			
0500-0600	New Zealand, R NZ Intl	15115pa			
0500-0600	Nigeria, Radio	3326do	4770do	4990do	
0500-0600	Nigeria, Voice of	7255af			
0500-0550	North Korea, R Pyongyang	9640me	9977af		
0500-0530 m	Norway, Radio Norway Intl	5905na			
0500-0600 vl	Papua New Guinea, NBC	9675do			
0500-0600	Russia, Radio Moscow Intl	5905eu	5930eu	5940eu	7105na
		7165eu	7180eu	7270na	7345na
		9600na	9620na	9705na	9850na
		9865as	11710na	12050na	13370as
		15295na	17570af	17735as	

0500-0553 f	Seychelles, FEBA Radio	17725me			
0500-0600	Spain, R Exterior Espana	9540na			
0500-0515 t	Sri Lanka, SLBC Colombo	9720na	15425na		
0500-0600	Swaziland, Swazi Radio	6155af			
0500-0530	Swaziland, Trans World R	5055af	7125af	7200af	
0500-0600 vl	Uganda, Radio	4976do			
0500-0600	United Kingdom,BBC London	3255af	5975na	6005af	6180eu
		6190af	6195eu	9410eu	9600af
		9640na	11760me	12095eu	15280as
		15310as	15360as	15400af	15420af
		15575as	17830as	17885af	
0500-0600	USA, KAIJ Dallas TX	9815am			
0500-0600	USA, KTBN Salt Lk City UT	7510am			
0500-0600	USA, KVOH Los Angeles CA	9785am			
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	7405af	9530eu
		9665af	9700eu	11825af	12080af
		15205me	15600af		
0500-0600	USA, WHRI Noblesville IN	7315am	9495am	9930am	
0500-0600	USA, WINB Red Lion PA	11950am			
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			
0500-0545	USA, WYFR Okeechobee FL	9850eu			
0500-0530	Vatican State, Vatican R	5865af	7360af	9725af	11625af
0510-0520	Botswana, Radio	3356af	4830af	7255af	
0525-0600	Ghana, GBC Radio 2	3366do			
0530-0600	Australia, Radio	9660do	15510as	15565as	17715as
		17860pa	17880as		
0530-0600	Austria, R Austria Intl	6015na	6155eu	13730eu	15410me
		17870me			
0530-0600	Georgia, Radio	11910as			
0530-0600	Romania, R Romania Intl	11810af	15340af	15380af	17790af
0530-0600	Serbia, Radio Yugoslavia	9580na	11870na		
0530-0545 as	Swaziland, Trans World R	7125af			
0530-0600	Swaziland, Trans World R	9500af	9650af		
0530-0600	UAE, Radio Dubai	15435as	17830as	21700as	
0542-0600 a	New Zealand, R NZ Intl	9700pa			

SELECTED PROGRAMS

Sundays
0500 Voice of Nigeria: Reflections. A thought-provoking talk on the real meaning of man and his existence.
0508 CBC North - Quebec: Sound of the Blues.
0511 Radio Moscow: Top Priority. A weekly panel discussion of key events.
0530 Radio Austria Int'l: Report from Austria. A magazine program covering all aspects of Austrian life and events in the news and opening with the latest news bulletin.

Mondays
0500 Voice of Nigeria: Wave Train. A live music magazine which lightens up and informs listeners.
0505 CBC North - Quebec: Jazz Beat.
0511 Radio Moscow: Top Priority. See S 0511.
0530 Radio Austria Int'l: Report from Austria. See S 0530.
0532 Radio Moscow: The Jazz Show. The world of Russian jazz.

Tuesdays
0500 Voice of Nigeria: Wave Train. See M 0500.
0507 CBC North - Quebec: That Time of Night.
0511 Radio Moscow: Commonwealth Update. See M 2311.
0530 Radio Austria Int'l: Report from Austria. See S 0530.
0532 Radio Moscow: Music. See S 0432.

Wednesdays
0500 Voice of Nigeria: Wave Train. See M 0500.
0507 CBC North - Quebec: That Time of Night.
0511 Radio Moscow: Commonwealth Update. See M 2311.
0530 Radio Austria Int'l: Report from Austria. See S 0530.

Thursdays
0500 Voice of Nigeria: Wave Train. See M 0500.
0507 CBC North - Quebec: That Time of Night.
0511 Radio Moscow: Commonwealth Update. See M 2311.
0530 Radio Austria Int'l: Report from Austria. See S 0530.
0532 Radio Moscow: Folk Box. See M 0032.

Fridays
0500 Voice of Nigeria: Wave Train. See M 0500.
0507 CBC North - Quebec: That Time of Night.
0511 Radio Moscow: Commonwealth Update. See M 2311.
0530 Radio Austria Int'l: Report from Austria. See S 0530.
0532 Radio Moscow: Music. See S 0432.

Saturdays
0500 Voice of Nigeria: African Safari. A musical journey around the countries of Africa with country profiles and current happenings.
0507 CBC North - Quebec: That Time of Night.
0511 Radio Moscow: Commonwealth Update. See M 2311.
0530 Radio Austria Int'l: Report from Austria. See S 0530.
0532 Radio Moscow: Timelines. See M 0332.

HAUSER'S HIGHLIGHTS: GERMANY

Deutsche Welle features after the news in English to N. Am. are now, strictly UT days:

0100, 0300 and 500 broadcasts:

Sun.	*Inside Europe, Religion and Society.*
Mon	*Mailbag, Living in Germany, German by Radio.*
Tue-Sat	*European Journal*
Tue & Thu	*German Tribune*
Wed	*Backdrop*;
Fri	*Come to Germany*;
Sat	*Through German Eyes.*

but a different feature is on the 0300:

Tues	*Economic Notebook*;
Wed	*Insight*;
Thu	*German by Radio*;
Fri	*Science and Technology*

(*tune in* via Diane Mauer)

0600 UTC SHORTWAVE GUIDE 1:00 AM EST 10:00 PM PST

FREQUENCIES

0600-0700	Australia, Radio	9660do	11910pa	13755pa	15510as
		17715as	17880as		
0600-0630	Australia, Radio	13605as	15240pa	15415pa	17795as
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			
0600-0630 mtwtf	Canada, RCI-PK	6050eu	6150eu	9740eu	9760eu
		11905			
0600-0700	Costa Rica, R Peace Intl	7385am	9400am	15030am	
0600-0700	Cuba, Radio Havana Cuba	9820na			
0600-0700	Ecuador, HCJB Quito	11925am	21455eu		
0600-0700 as	Eqt Guinea, R East Africa	9585af			
0600-0650	Germany, Deutsche Welle	6100af	9565af	11765af	13790af
		15185af	17820af	21705af	
0600-0630	Ghana, GBC Radio 1	4915do			
0600-0615	Ghana, GBC Radio 2	3366do			
0600-0700 vl	Italy, IRRS Milan	7125eu			
0600-0700	Japan, NHK/Radio	9680as	11860as	21610as	
0600-0625	Kenya, Kenya BC Corp	4935do			
0600-0700 vl	Kiribati, Radio	9825do			
0600-0630	Laos, National Radio of	7116as			
0600-0700 s	Lebanon, Wings of Hope	9960me			
0600-0700	Liberia, Radio ELWA	4760do			
0600-0700 smtwha	Malaysia, RTM Radio 4	7295do			
0600-0700	Malaysia, Voice of	6175as	9750as	15295as	
0600-0700	Malta, V of Mediterranean	9765me			
0600-0700	New Zealand, R NZ Intl	15115pa			
0600-0700 as	New Zealand, R NZ Intl	9700pa			
0600-0700	Nigeria, Radio	3970do	4770do	4990do	
0600-0700	Nigeria, Voice of	7255af			
0600-0650	North Korea, R Pyongyang	15180as	15230as		
0600-0700 vl	Papua New Guinea, NBC	9675do			
0600-0700	Russia, Radio Moscow Intl	5905eu	5930eu	7175na	7270na
		7345na	9850as	11710na	15230as
		17570na	17840as	17890as	21790as
0600-0700	Slovakia, AWR Europe	13715as			
0600-0630 vl	Solomon Islands, SIBC	5020do	9545do		
0600-0700	South Korea, R Korea Intl	11945na	15155na		
0600-0700	Swaziland, Swazi Radio	6155af			
0600-0700	Swaziland, Trans World R	6070af	9500af	9650af	
0600-0615	Switzerland, Swiss R Intl	3985eu	6165eu		
0600-0630	Switzerland, Swiss R Intl	9885af	13635af	15340af	
0600-0700	United Kingdom,BBC London	6005af	6180eu	6195af	9410eu
		9600af	9640na	11760me	11940af
		11955as	12095eu	15280as	15310as
		15360as	15400af	15575eu	17790as
		17830as	17885af		
0600-0700	USA, KAIJ Dallas TX	9815am			
0600-0700	USA, KTBN Salt Lk City UT	7510na			
0600-0700	USA, KVOH Los Angeles CA	9785am			
0600-0700	USA, KWHR Naalehu HI	17780as			
0600-0700	USA, Monitor Radio Intl	7535eu			
0600-0700	USA, VOA Washington DC	6035af	6040eu	6060eu	6140af
		7170me	7325me	7405af	9530af
		9665af	11805af	11825af	11950af
		12035af	12080af	15205me	15600af
0600-0700	USA, WEWN Birmingham, AL	7425na			
0600-0700	USA, WHRI Noblesville IN	7315am	9495am	9930am	
0600-0700	USA, WINB Red Lion PA	11950na			
0600-0700	USA, WJCR Upton KY	7490na	13595na		
0600-0700 smtwhf	USA, WMLK Bethel PA	9465eu			
0600-0700	USA, WWCR Nashville TN	5065am	5935am	7435am	
0600-0700	USA, WYFR Okeechobee FL	5985na	7355eu	9680eu	9850af
0600-0620	Vatican State, Vatican R	3945eu	6245eu		
0600-0700	Yemen, Yemeni Rep Radio	9780do			
0625-0700	Kenya, Kenya BC Corp	4935do			
0630-0700	Australia, Radio	9580pa	9860pa	11880pa	15415as
		21725as			
0630-0700	Austria, R Austria Intl	6015na			
0630-0700	Vatican State, Vatican R	5865af	7360af	9660af	11625af
0632-0641	Romania, R Romania Intl	7225eu	9550eu	9665eu	11810eu
0645-0700	Romania, R Romania Intl	11775pa	15250pa	15335pa	17720pa
		17805pa			

SELECTED PROGRAMS

Sundays

0600 Voice of Nigeria: This Week on VON. Highlights of programs for the coming week.
0605 Swiss Radio Int'l: Newsnet. See S 1105.
0611 Radio Moscow: Science and Engineering in the CIS. The latest developments in science and technology.
0615 Voice of Nigeria: Listeners' Letters. Typical mailbag program with info for pen pals.
0630 Voice of Nigeria: Weekly Analysis. An examination of three issues of interest each week.
0632 Radio Moscow: Music. See S 0432.

Mondays

0605 Swiss Radio Int'l: Newsnet. See S 1105.
0611 Radio Moscow: Mailbag. Answering listener questions.
0615 Radio Canada Int'l: Report to the Peacekeepers. Information about Canada for Canadian Forces overseas.
0615 Voice of Nigeria: Nigeria and Politics. Happenings on the Nigerian political scene.
0632 Radio Moscow: Contacts and Contracts. See S 1632.
0640 Voice of Nigeria: Commentary. Opinion on events in Nigeria.

Tuesdays

0600 Voice of Nigeria: Southern Connection. Current events in South Africa and Southern Africa are analyzed.
0605 Swiss Radio Int'l: Newsnet. See S 1105.
0611 Radio Moscow: Focus on Asia and the Pacific. See T 0111.
0615 Radio Canada Int'l: Report to the Peacekeepers. See M 0615.
0632 Radio Moscow: Music. See S 0432.
0640 Voice of Nigeria: Commentary. See M 0640.

Wednesdays

0600 Voice of Nigeria: Nigerian Newsletter. A personal review of interesting Nigerian events with opinions on contemporary issues.
0605 Swiss Radio Int'l: Newsnet. See S 1105.
0611 Radio Moscow: Focus on Asia and the Pacific. See T 0111.
0615 Radio Canada Int'l: Report to the Peacekeepers. See M 0615.
0615 Voice of Nigeria: Wheel of Progress. Industrial and agricultural development in Nigeria.
0632 Radio Moscow: Interview. See T 0132.
0639 Radio Moscow: Music. See S 0432.
0640 Voice of Nigeria: Commentary. See M 0640.

Thursdays

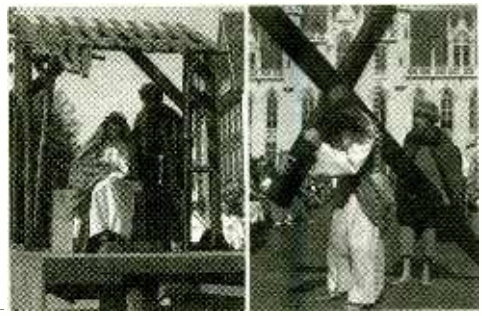
0600 Voice of Nigeria: West African Scene. A news magazine which reflects the events in the sub-region.
0605 Swiss Radio Int'l: Newsnet. See S 1105.
0611 Radio Moscow: Focus on Asia and the Pacific. See T 0111.
0615 Radio Canada Int'l: Report to the Peacekeepers. See M 0615.
0632 Radio Moscow: Interview. See T 0132.
0639 Radio Moscow: Music. See S 0432.
0640 Voice of Nigeria: Commentary. See M 0640.

Fridays

0600 Voice of Nigeria: Listeners' Letters. See S 0615.
0605 Swiss Radio Int'l: Newsnet. See S 1105.
0611 Radio Moscow: Focus on Asia and the Pacific. See T 0111.
0615 Radio Canada Int'l: Report to the Peacekeepers. See M 0615.
0615 Voice of Nigeria: Images of Nigeria. See S 1645.
0632 Radio Moscow: Interview. See T 0132.
0639 Radio Moscow: Music. See S 0432.
0640 Voice of Nigeria: Commentary. See M 0640.

Saturdays

0605 Swiss Radio Int'l: Newsnet. See S 1105.
0611 Radio Moscow: Focus on Asia and the Pacific. See T 0111.
0615 Voice of Nigeria: Issues of the Moment. See F 1645.
0630 Voice of Nigeria: Weekly Analysis. See S 0630.
0632 Radio Moscow: Music. See S 0432.



Another QSL shared by John Nives—this one from Brussels, Belgium

FREQUENCIES

0700-0800	Australia, Radio	6080pa	9580pa	9860pa	11720pa
		11880pa	11910pa	13605pa	15240pa
		15565as	17695as	17750as	21595as
		21715as			
0700-0730	Australia, Radio	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, AWR Alajuela	6150am	9725am		
0700-0800	Costa Rica, R Peace Intl	7385am	9400am	15030am	
0700-0727	Czech Rep, Radio Prague	5930eu	7345eu	9505eu	
0700-0800	Ecuador, HCJB Quito	9600eu	9745pa	11835eu	11925pa
		21455eu			
0700-0800 as	Eqt Guinea, R East Africa	9585af			
0700-0730	Georgia, Radio	11910as			
0700-0715	Ghana, GBC Radio 1	4915do			
0700-0715	Ghana, GBC Radio 2	3366do			
0700-0800 vl	Italy, IRRS Milan	7125eu			
0700-0800	Japan, NHK/Radio	5975eu	7230eu	11740af	15270af
		15335me	15410as	17810me	21610au
0700-0800	Kenya, Kenya BC Corp	4935do			
0700-0800 vl	Kiribati, Radio	9825do			
0700-0800	Liberia, Radio ELWA	4760do			
0700-0800 smtwha	Malaysia, RTM Radio 4	7295do			
0700-0800	Malaysia, Voice of	6175as	9750as	15295as	
0700-0730	Myanmar, Radio	9730do			
0700-0715	New Zealand, R NZ Intl	15115pa			
0700-0800 as	New Zealand, R NZ Intl	9700pa			
0700-0800	Nigeria, Radio	3326do	4770do	4990do	
0700-0800	Nigeria, Voice of	7255af			
0700-0800 vl	Papua New Guinea, NBC	4890do			
0700-0715	Romania, R Romania Intl	11775pa	15250pa	15335pa	17720pa
		17805pa			
0700-0800	Russia, Radio Moscow Intl	5905eu	5930eu	7175na	7270na
		7345na	9480eu	9850as	11675eu
		15230me	15385me	15535na	17795na
		17840af	17890af	21790af	
0700-0715 vl	Sierra Leone, SLBS	3316do			
0700-0800 vl	Solomon Islands, SIBC	5020do	9545do		
0700-0800	Swaziland, Swazi Radio	6155af			
0700-0735	Swaziland, Trans World R	6070af	9500af	9650af	
0700-0730	Switzerland, Swiss R Intl	3985eu	6165eu	9885af	13635af
		15430af			
0700-0800	Taiwan, VO Free China	5950na			
0700-0800	United Kingdom,BBC London	6005eu	6180eu	6190af	6195eu
		7325eu	9410eu	9600af	9640na
		11760me	11940af	11955as	12095eu
		15070eu	15280af	15310as	15360as
		15400eu	15575eu	17790as	17830as
		17885af	21660af		
0700-0800	USA, KAIJ Dallas TX	9815na			
0700-0800	USA, KTBN Salt Lk City UT	7510na			
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	7425am	9350am	13615am	
0700-0800 vl	USA, WHRI Noblesville IN	7315am	9495am	9930am	
0700-0800 vl	USA, WINB Red Lion PA	11950na			
0700-0800	USA, WJCR Upton KY	7490na	13595na		
0700-0800 smtwhf	USA, WMLK Bethel PA	9465eu			
0700-0800	USA, WWCR Nashville TN	5065am	5935am	7435am	
0700-0745	USA, WYFR Okeechobee FL	7355eu	9680eu	9850af	
0717-0800 mtwhf	New Zealand, R NZ Intl	9700pa			
0730-0800	Australia, Radio	9660pa	17880as		
0730-0800	Belgium, R Vlaanderen Int	5985eu	9925au		
0730-0757	Czech Rep, Radio Prague	17485as	21705au		
0730-0745 sh	Greece, Voice of	9425eu	11645eu	15650eu	
0730-0745 mtwhf	Iceland, Natl BC Service	9265am			
0730-0800	Netherlands, Radio	9720pa	11895pa		
0730-0745 mtwhf	Vatican State, Vatican R	3945eu	6245eu	7250eu	9645eu
		11740eu	15210eu	15570eu	
0735-0800 mtwtf	Swaziland, Trans World R	6070af	9500af		
0740-0800 mtwhf	Monaco, Trans World Radio	7120eu			
0745-0800	Guam, KTWR Agana	15200as			

0800 UTC

0800-0900	Australia, Radio	5995pa	6020pa	6080pa	9580pa
		9710pa	9860pa	15565pa	17715as
		17880as			
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, AWR Alajuela	5030am	6150am	9725am	
0800-0900	Costa Rica, R Peace Intl	7385am	9400am	15030am	
0800-0830	Ecuador, HCJB Quito	9600eu	9745pa	11835eu	11925pa
		21455eu			
0800-0900 as	Eqt Guinea, R East Africa	9585af			
0800-0805 s	Ghana, GBC Radio 1	4915do			
0800-0805 s	Ghana, GBC Radio 2	3366do			
0800-0900	Guam, KTWR Agana	15200as			
0800-0900	Indonesia, Voice of	9675as	11752as		
0800-0900 vl	Italy, IRRS Milan	7125eu			
0800-0900	Kenya, Kenya BC Corp	4935do			
0800-0830	Liberia, Radio ELWA	4760do			
0800-0900 smtwha	Malaysia, RTM Radio 4	7295do			
0800-0825	Malaysia, Voice of	6175as	9750as	15295as	
0800-0900 mtwtf	Monaco, Trans World Radio	7120eu			
0800-0825	Netherlands, Radio	9720pa	11895pa		
0800-0900 mtwhf	New Zealand, R NZ Intl	9700pa			
0800-0900	Nigeria, Radio	3326do	4990do		
0800-0850	North Korea, R Pyongyang	11335na	13760na	15180as	15230as
0800-0830 m	Norway, Radio Norway Intl	15175as			
0800-0850	Pakistan, Radio	15625eu	17900eu		
0800-0900 vl	Papua New Guinea, NBC	4890do			
0800-0900	Russia, Radio Moscow Intl	11710as	13370as	15105me	15125me
		15230me	15500na	15535na	15580me
		17620na	17795as	17840as	17860as
		17890as			
0800-0815 vl	Sierra Leone, SLBS	3316do			
0800-0900 vl	Solomon Islands, SIBC	5020do	9545do		
0800-0900	South Korea, R Korea Intl	7550eu	13670eu		
0800-0830	South Korea, R Korea Intl	7550eu	13670eu	15575af	
0800-0900	United Kingdom,BBC London	7325eu	9410eu	9640na	11760as
		11955as	12095eu	15070eu	15280as
		15360as	17640eu	17790af	17830as
		17885af	21660af		
0800-0900	USA, KAIJ Dallas TX	9815am			
0800-0900	USA, KNLS Anchor Point AK	7365as			
0800-0900	USA, KTBN Salt Lk City UT	7510am			
0800-0900	USA, KWHR Naalehu HI	9930as			
0800-0900	USA, Monitor Radio Intl	7535eu	13615au	15665eu	
0800-0900	USA, WEWN Birmingham AL	7425sa	9350na		
0800-0900 vl	USA, WHRI Noblesville IN	7315am	9495am	9930am	
0800-0900 vl	USA, WINB Red Lion PA	11950na			
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	
0830-0845 s	Armenia, Radio Yerevan	15170eu	17770eu		
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	Austria, R Austria Intl	6155eu	13730eu	15450as	17870au
0830-0900	Netherlands, Radio	9720pa	9895pa	13700pa	
0830-0900	Slovakia, R Slovakia Intl	11990au	17485au	21705au	
0845-0900	Guam, KTWR Agana	11840as			

HAUSER'S HIGHLIGHTS: UKRAINE

R.Ukraine International's best frequency is 7180:
Used for all three English hours at 2200, 0100, 0400
(Kevin Hecht, PA, *W.O.R.*)

At 0400 also on: 6055, 9810, 11790, 11870, maybe in November also 4780
(Wolfgang Büschel, Germany)

At 2200 on 4820, 5940, 6020, 7180, 7240, 9640, 9810, 11870, 13720
(AMID via Büschel)

FREQUENCIES

0900-1000	Australia, ADF Radio	13525af			
0900-1000	Australia, Radio	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			
0900-1000	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	17710pa	
0900-1000	Costa Rica, AWR Alajuela	5030am	6150am	9725am	
0900-1000	Costa Rica, R Peace Intl	7385am	9400am	15030am	
0900-1000	Ecuador, HCJB Quito	9745pa	11925pa	21455pa	
0900-1000 as	Eqt Guinea, R East Africa	9585af			
0900-0950	Germany, Deutsche Welle	6160as	9565af	11715as	12055as
		15410af	17780as	17800af	21600af
		21650as	21680as		
0900-0915 mtwtf	Ghana, GBC Radio 1	4915do			
0900-0915	Ghana, GBC Radio 2	3366do			
0900-1000	Guam, KTWR Agana	11840as			
0900-0915	Guam, KTWR Agana	15200as			
0900-1000 vl	Italy, IRRS Milan	7125eu			
0900-1000	Japan, NHK/Radio	9680as	9750as	11815as	15195as
		15270au			
0900-1000	Malaysia, RTM Radio 4	7295do			
0900-0920 mtwtf	Monaco, Trans World Radio	7120eu			
0900-0930	Netherlands, Radio	9720pa	13700pa		
0900-1000 mtwhf	New Zealand, R NZ Intl	9700pa			
0900-1000	Nigeria, Radio	3326do	4990do		
0900-1000 mtwtfa	Palau, KHBN Voice of Hope	9830as			
0900-1000 vl	Papua New Guinea, NBC	4890do			
0900-1000	Russia, Radio Moscow Intl	9480eu	11710me	11800eu	11900af
		12015as	12020eu	13370as	15355na
		15385eu	15455na	15580as	17640as
		17765eu	17795eu		
0900-0930	Slovakia, AWR Europe	9450as	17630as		
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	9410eu	9740as
		11750as	11760me	11940af	12095eu
		15070eu	15190sa	15310as	15575me
		17640eu	17705eu	17790af	17830as
		17885af	21660af	21715as	
0900-1000	USA, KAIJ Dallas TX	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	9430eu	13615au
0900-1000	USA, WEWN Birmingham AL	9350na	12160eu		
0900-1000 vl	USA, WHRI Noblesville IN	7315am	9495am	9930am	
0900-1000 vl	USA, WINB Red Lion PA	11950na			
0900-1000	USA, WJCR Upton KY	7490na	13595na		
0900-1000 smtwhf	USA, WMLK Bethel PA	9465eu			
0900-1000	USA, WWCR Nashville TN	5065am			
0910-0940	Mongolia, R Ulaanbaatar	11850au	12050au		
0920-0935 sh	Greece, Voice of	15650au	17525au		
0920-0935 a	Monaco, Trans World Radio	7120eu			
0920-0945 s	Monaco, Trans World Radio	7120eu			
0930-1000	Canada, CKZN St John's	6160do			
0930-1000	Netherlands, Radio	7260pa	9720pa	9810pa	21505pa
0930-1000	Philippines, FEBC Manila	11690as			
0930-1000	South Korea, R Korea Intl	13670eu			
0940-0950	Greece, Voice of	15650au	17525au		

1000-1100	Australia, Radio	9580pa	9860pa	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			
1000-1030 mtwhfa	Belgium, R Vlaanderen Int	6035eu	15510af	17595af	
1000-1100	Bulgaria, Radio	12040au			
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	17710pa	
1000-1100	Costa Rica, AWR Alajuela	5030am	5970am	9725am	
1000-1100	Costa Rica, R Peace Intl	7385am	9400am	15030am	
1000-1100	Ecuador, HCJB Quito	9745pa	11925pa	21455pa	
1000-1100 as	Eqt Guinea, R East Africa	9585af			
1000-1100	India, All India Radio	15050as	15180as	17387au	17895as
		21460as			
1000-1100 vl	Italy, IRRS Milan	7125eu			
1000-1100 vl	Malaysia, RTM Kota Kinaba	5980do			
1000-1100 mtwh	Malaysia, RTM Radio 4	7295do			
1000-1030	Netherlands, Radio	7260pa	9720pa	9810pa	21505pa
1000-1100	New Zealand, R NZ Intl	9700pa			
1000-1050	North Korea, R Pyongyang	15340as	17765as		
1000-1100 mtwhfa	Palau, KHBN Voice of Hope	9830as			
1000-1100 vl	Papua New Guinea, NBC	4890do	9675do		
1000-1100	Philippines, FEBC Manila	11690as			
1000-1100	Russia, Radio Moscow Intl	9480eu	9550eu	9800eu	11675na
		11705na	11710as	11800eu	11900af
		12010eu	12020eu	12055me	15385na
		17710af			
1000-1100	S Africa, Channel Africa	17810af			
1000-1100	United Kingdom,BBC London	6190af	6195as	7160as	9410eu
		9740as	11750as	11760me	11940af
		12095eu	15070eu	15190sa	15310as
		15400eu	15575me	17640eu	17705eu
		17790me	17830af	17885af	21470af
		21660af			
1000-1100	USA, KAIJ Dallas TX	9815am			
1000-1100	USA, KTBN Salt Lk City UT	7510am			
1000-1100	USA, KWHR Naalehu HI	9930as			
1000-1100	USA, Monitor Radio Intl	6095sa	7395sa	9430as	13625pa
1000-1100	USA, VOA Washington DC	5985pa	7405am	9590am	11720pa
		11915am	15120am	15425pa	
1000-1100	USA, WEWN Birmingham AL	7465eu			
1000-1100 vl	USA, WHRI Noblesville IN	6040am	9850am		
1000-1100 vl	USA, WINB Red Lion PA	11950na			
1000-1100	USA, WJCR Upton KY	7490na	13595na		
1000-1100	USA, WWCR Nashville TN	5065am	15685am		
1000-1100	USA, WYFR Okeechobee FL	5950na			
1000-1030	Vietnam, Voice of	10059as	12025as	15010as	
1030-1100 mtwhfa	Austria, R Austria Intl	6155eu	13730eu	15450as	17870au
1030-1100 mtwhf	Ethiopia, Radio	5990af	9705af		
1030-1055	Iraq, Radio Iraq Intl	13680as			
1030-1100 vl	Malaysia, RTM Sarawak	4950do	7160do		
1030-1100	Netherlands, Radio	7260pa	9810pa		
1030-1100	South Korea, R Korea Intl	11715sa			
1030-1100	Sri Lanka, SLBC Colombo	11835au	15120as	17850as	
1030-1100	UAE, Radio Dubai	13675eu	15320eu	15395eu	21605eu

HAUSER'S HIGHLIGHTS: HUNGARY

R. Budapest changed English schedule to:

Target	Time	Freq
Europe	2000	3975, 6110, 7220
	2200	3955, 6110, 7220
N. Am.	0200	6025, 7220, 9835
	0330	5965, 7220, 9835

(via John Carson, *DX Listening Digest*)

FREQUENCIES

1100-1200	Australia, Radio	9510pa	9580pa	9710pa	9860pa
		13605as	15170as	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	5970am		
1100-1200	Costa Rica, R Peace Intl	7385am	9400am	15030am	
1100-1130	Ecuador, HCJB Quito	9745pa	11925pa	21455pa	
1100-1200	Ecuador, HCJB Quito	15115am	17890am	21455pa	
1100-1150	Germany, Deutsche Welle	15370af	15410af	17765af	17800af
		21600af			
1100-1115	Ghana, GBC Radio 1	4915do			
1100-1130	Israel, Kol Israel	15640na	15650eu	17575eu	
1100-1200 vl	Italy, IRRS Milan	7125eu			
1100-1200	Japan, NHK/Radio	6120na	9680as	15295as	
1100-1200 vl	Malaysia, RTM Kota Kinaba	5980do			
1100-1200	Malaysia, RTM Radio 4	7295do			
1100-1200 vl	Malaysia, RTM Sarawak	4950do	7160do		
1100-1200 mtwhf	New Zealand, R NZ Intl	9700pa			
1100-1150	North Korea, R Pyongyang	6576na	9977na	11335na	
1100-1120	Pakistan, Radio	15625as	17900as		
1100-1200 mtwhf	Palau, KHBN Voice of Hope	9830as			
1100-1200 vl	Papua New Guinea, NBC	4890do	9675do		
1100-1200	Russia, Radio Moscow Intl	7205eu	9470eu	9680eu	9800eu
		11675eu	11710as	11835as	11980as
		12015eu	13370as	13615na	15190as
		15265as	15495as	17755me	17765na
		17860me	21600af		
1100-1115	Rwanda, Radio	6055do			
1100-1200	S Africa, Channel Africa	9730af			
1100-1200	Singapore, SBC Radio One	6155do			
1100-1200	Singapore,R Singapore Int	9530as			
1100-1130	Sri Lanka, SLBC Colombo	11835au	15120as	17850as	
1100-1130	Switzerland, Swiss R Intl	6165eu	9535eu	9885as	11640as
		13635as			
1100-1200	United Kingdom,BBC London	5965na	5975na	6190af	6195na
		7160as	9410eu	9515na	9660eu
		9740as	11750as	11760me	11940af
		12095af	15070eu	15310as	15575as
		17640eu	17885af	21660af	
1100-1130	United Kingdom,BBC London	5965na	6110as	15400eu	17790sa
1100-1200	USA, KAIJ Dallas TX	9815am			
1100-1200	USA, KTBN Salt Lk City UT	7510na			
1100-1200	USA, KWHR Naalehu HI	9930as			
1100-1200	USA, Monitor Radio Intl	6095na	7395ca	9355as	9425pa
1100-1200	USA, VOA Washington DC	5985as	6110as	7405am	9590am
		9615as	9760as	11720as	11915am
		15120am	15160as	15425as	
1100-1200	USA, WEWN Birmingham AL	9350na	9370as		
1100-1200 vl	USA, WHRI Noblesville IN	6040am	9850am		
1100-1200	USA, WJCR Upton KY	7490na	13595na		
1100-1200	USA, WWCR Nashville TN	5065am	5935am	15685am	
1100-1200	USA, WYFR Okeechobee FL	5950na	7355na		
1120-1130 mtwtfa	Vatican State, Vatican R	6245eu	11740af	15210af	17585me
1130-1157	Czech Rep, Radio Prague	7345eu	9505eu	11990eu	
1130-1200	Iran, VOIRI Tehran	9525me	11715me	11790as	11910as
		11930as			
1130-1200	Netherlands, Radio	6045eu	7130eu		
1130-1200	Vietnam, Voice of	10059as	12025as	15010as	
1145-1200	Rwanda, Radio	6055do			

SELECTED PROGRAMS

Sundays

1100 Taiwan (Voice of Asia): Pop Songs.
1105 Swiss Radio Int'l: Newsnet. An in-depth look at issues, events and people.
1111 Radio Moscow: Culture and the Arts. An overview of a Russian cultural activity.
1130 Radio New Zealand Int'l: Good Night from Wellington.
1132 Radio Moscow: Audio Book Club. See S 0132.

Mondays

1100 Taiwan (Voice of Asia): Asian Culture.
1105 Swiss Radio Int'l: Newsnet. See S 1105.
1111 Radio Moscow: Science and Engineering in the CIS. See S 0611.
1130 Radio New Zealand Int'l: Good Night from Wellington.
1132 Radio Moscow: Music. See S 0432.

Tuesdays

1100 Taiwan (Voice of Asia): Touring Asia.
1105 Swiss Radio Int'l: Newsnet. See S 1105.
1111 Radio Moscow: Commonwealth Update. See M 2311.
1130 Radio New Zealand Int'l: Good Night from Wellington.
1132 Radio Moscow: Russian by Radio. See S 1532.

Wednesdays

1100 Taiwan (Voice of Asia): World of Science.
1105 Swiss Radio Int'l: Newsnet. See S 1105.
1111 Radio Moscow: Commonwealth Update. See M 2311.
1130 Radio New Zealand Int'l: Good Night from Wellington.
1132 Radio Moscow: Audio Book Club. See S 0132.

Thursdays

1100 Taiwan (Voice of Asia): Variety.
1105 Swiss Radio Int'l: Newsnet. See S 1105.
1111 Radio Moscow: Commonwealth Update. See M 2311.
1130 Radio New Zealand Int'l: Good Night from Wellington.
1132 Radio Moscow: Russian by Radio. See S 1532.

Fridays

1100 Taiwan (Voice of Asia): Music Gallery.
1105 Swiss Radio Int'l: Newsnet. See S 1105.
1111 Radio Moscow: Commonwealth Update. See M 2311.
1130 Radio New Zealand Int'l: Good Night from Wellington.
1132 Radio Moscow: Audio Book Club. See S 0132.

Saturdays

1100 Taiwan (Voice of Asia): Letterbox/Songs by Request.
1105 Swiss Radio Int'l: Newsnet. See S 1105.
1111 Radio Moscow: Commonwealth Update. See M 2311.
1130 Radio New Zealand Int'l: Good Night from Wellington.
1132 Radio Moscow: Music. See S 0432.

Paul Gager of Austria sends this QSL from Blue Danube Radio in Vienna.

1200 UTC SHORTWAVE GUIDE 7:00 AM EST 4:00 AM PST

FREQUENCIES

1200-1230	Australia, Radio	5995pa	6060pa	6080pa	9580pa
		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			
1200-1215	Cambodia, Natl Voice of	11940as			
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	9635na	11855na	17820na	
1200-1300	China, China Radio Intl	9655na	9715as	11660as	11795pa
		15440pa			
1200-1300	Costa Rica, R Peace Intl	7385am	9400am	15030am	
1200-1300	Ecuador, HCJB Quito	15115am	17890am	21455pa	
1200-1256	France, Radio France Intl	9805eu	13625af	13640af	15155eu
		15195eu	15325af	15530ca	17575na
1200-1230	Iran, VOIRI Tehran	9525me	11715me	11790as	11910as
		11930as			
1200-1300 vl	Italy, IRRS Milan	7125eu			
1200-1300	Jordan, Radio	9560eu			
1200-1300 vl	Malaysia, RTM Kota Kinaba	5980do			
1200-1300	Malaysia, RTM Radio 4	7295do			
1200-1230	Mongolia, R Ulaanbaatar	11850as	12050as		
1200-1300	Netherlands, Radio	6045eu	7130eu		
1200-1206 mtwhf	New Zealand, R NZ Intl	9700pa			
1200-1230 s	Norway, Radio Norway Intl	11850as	15165au		
1200-1300 mtwhf	Palau, KHBN Voice of Hope	9830as			
1200-1230 a	Palau, KHBN Voice of Hope	9830as			
1200-1300 vl	Papua New Guinea, NBC	4890do	9675do		
1200-1300	Russia, Radio Moscow Intl	5960eu	7160na	7205na	9470eu
		9540eu	9550eu	9680eu	9800eu
		11675af	11710as	11760eu	11800eu
		11985eu	12015af	13370eu	15190af
1200-1300	Singapore, SBC Radio One	6155do			
1200-1300	Singapore,R Singapore Int	9530as			
1200-1300	South Korea, R Korea Intl	7180as			
1200-1230	Switzerland, Swiss R Intl	6165eu	9535eu		
1200-1300	Taiwan, VO Free China	7130au	9610as		
1200-1300	United Kingdom,BBC London	6190af	6195na	7160as	9410eu
		9515na	9740as	9760eu	11750as
		11760me	11940af	12095af	15070eu
		15220na	15310as	15575as	17640eu
		17790af	17885af	21660na	
1200-1300	USA, KAIJ Dallas TX	9815am			
1200-1300	USA, KTBN Salt Lk City UT	7510am			
1200-1300 vl	USA, KWHR Naalehu HI	9930as			
1200-1300	USA, Monitor Radio Intl	6095am	9425pa	9455am	13625as
1200-1300 s	USA, WRMI Radio Miami Intl	9955am			
1200-1300	USA, VOA Washington DC	6110as	9645as	9760as	11715as
		15160as	15425as		
1200-1300	USA, WEWN Birmingham AL	9350na	9985ca	15695na	
1200-1300 vl	USA, WHRI Noblesville IN	6040am	9850am		
1200-1300	USA, WJCR Upton KY	7490na	13595na		
1200-1300	USA, WWCR Nashville TN	5065am	13845am	15685am	
1200-1300	USA, WYFR Okeechobee FL	5950na	7355na	11790na	11830na
1200-1230	Uzbekistan, R Tashkent	6025eu	9715eu	13785eu	
1207-1300 occsnal	New Zealand, R NZ Intl	9700pa			
1215-1300	Egypt, Radio Cairo	17595as			
1220-1230 vl	Ghana, GBC Radio 1	4915do			
1230-1300	Australia, Radio	5995pa	6060pa	7260as	11800pa
		15565as			
1230-1300	Austria, R Austria Intl	6155eu	13730na	15450as	
1230-1300	Bangladesh, Radio	9548as	13615as		
1230-1300	Bulgaria, Radio	9770as	11740as		
1230-1300	Canada, RCI Montreal	9660as	15195as		
1230-1300 mtwhfa	Finland, YLE/Radio	11735na	15400na		
1230-1300	Russia, Radio Moscow Intl	6000eu	6060eu		
1230-1300	Sri Lanka, SLBC Colombo	6075as	9720as	15425as	
1230-1300	Sweden, Radio	13775au	15120as	15240as	
1230-1300	Vietnam, Voice of	10059as	12025as	15010as	
1240-1250	Greece, Voice of	11645af	15630af	15650af	

SELECTED PROGRAMS

Sundays
1211 Radio Moscow: News and Views. See S 0011.
1220 China Radio Int'l: China Scrapbook. Snippets of facts about China's past and present.
1226 China Radio Int'l: Music Album. A combination of traditional and Western musical selections.
1232 Radio Moscow: Kaleidoscope. See S 0032.
1237 Radio Canada Int'l (As): The Mailbag. Listener letters, musical selections, and happenings in Canada.
1241 China Radio Int'l: Listeners' Letterbox. Listener letters and information about China.
1245 WRMI: Music. Musical selections for both English and Spanish listeners.

Mondays
1211 Radio Moscow: News and Views. See S 0011.
1232 Radio Moscow: Music at Your Request. Music as requested by listeners.
1240 China Radio Int'l: Learn to Speak Chinese. Chinese language lessons for English speakers.
1241 Radio Canada Int'l (As): Spectrum. A weekday magazine program of current affairs, features, and a business report.

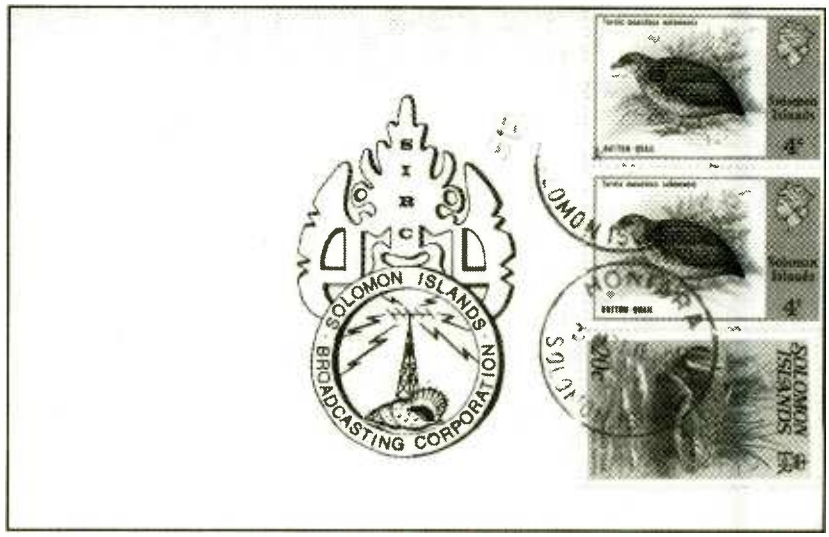
Tuesdays
1211 Radio Moscow: News and Views. See S 0011.
1218 China Radio Int'l: Current Affairs. An in-depth look at events and happenings in China.
1232 Radio Moscow: Folk Box. See M 0032.
1240 China Radio Int'l: Listeners' Letterbox. See S 1241.
1241 Radio Canada Int'l (As): Spectrum. See M 1241.

Wednesdays
1211 Radio Moscow: News and Views. See S 0011.
1218 China Radio Int'l: Current Affairs. See T 1218.
1232 Radio Moscow: Music. See S 0432.
1233 China Radio Int'l: Profile. The activities of an interesting individual are examined.
1240 China Radio Int'l: Learn to Speak Chinese. See M 1240.
1241 Radio Canada Int'l (As): Spectrum. See M 1241.

Thursdays
1211 Radio Moscow: News and Views. See S 0011.
1218 China Radio Int'l: Current Affairs. See T 1218.
1232 Radio Moscow: The Jazz Show. See M 0532.
1233 China Radio Int'l: Focus. Looking at an issue of significance to China's development.
1240 China Radio Int'l: Culture in China. The rich cultural heritage of China as manifested in literature and art.
1241 Radio Canada Int'l (As): Spectrum. See M 1241.

Fridays
1211 Radio Moscow: News and Views. See S 0011.
1220 China Radio Int'l: Current Affairs. See T 1218.
1232 Radio Moscow: Yours for the Asking. See W 0032.
1235 China Radio Int'l: Life in China. Focus on an aspect of everyday living.
1241 Radio Canada Int'l (As): Spectrum. See M 1241.
1248 China Radio Int'l: In the Third World. News about developing nations.

Saturdays
1200 CBC North - Quebec: World Report/Sports.
1211 Radio Moscow: News and Views. See S 0011.
1220 China Radio Int'l: Travel Talk. See S 0020.
1228 China Radio Int'l: Cooking Show. See S 0028.
1232 Radio Moscow: Music at Your Request. See M 1232.
1235 China Radio Int'l: Music from China. See S 0035.
1237 Radio Canada Int'l (As): Innovation Canada. See S 0307.



Thanks to Martin Gallas of Princeton, Indiana, for this Solomon Islands QSL.

FREQUENCIES

1300-1400	Australia, Radio	5995pa	7240as	9610as	11800pa
1300-1330	Australia, Radio	6060pa	6080as		
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			
1300-1320	Brazil, Radiobras	15445na			
1300-1330	Bulgaria, Radio	9770as	11740as		
1300-1400 vl	Canada, CBC N Quebec Sce	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	9715as	11660as	15440pa	
1300-1400 vl	Costa Rica, R Peace Intl	7385am	9400am	15030am	
1300-1400	Ecuador, HCJB Quito	15115am	17890am	21455eu	
1300-1330	Egypt, Radio Cairo	17595as			
1300-1330	Ghana, GBC Radio 1	4915do			
1300-1400 vl	Italy, IRRS Milan	7125eu			
1300-1400 mtwhfa	Lebanon, Wings of Hope	9960me			
1300-1400 vl	Malaysia, RTM Kota Kinaba	5980do			
1300-1400	Malaysia, RTM Radio 4	7295do			
1300-1325	Moldova, R Moldova Intl	15390na			
1300-1325	Netherlands, Radio	6045eu	7130eu		
1300-1306 occsnal	New Zealand, R NZ Intl	9700pa			
1300-1350	North Korea, R Pyongyang	13760na	15230na		
1300-1330 s	Norway, Radio Norway Intl	9590eu			
1300-1400 mtwhf	Palau, KHBN Voice of Hope	9830as			
1300-1400	Papua New Guinea, NBC	4890do	9675do		
1300-1400	Philippines, FEBC Manila	11995as			
1300-1355	Poland, Polish R Warsaw	6135eu	7145eu	7270eu	9525eu
		11815eu			
1300-1400	Romania, R Romania Intl	11940eu	15365eu	17720eu	
1300-1400	Russia, Radio Moscow Intl	9550eu	9635eu	9830eu	9895eu
		11765eu	11865as	11960as	11985me
		15265eu	15320eu	15460eu	15470me
		17720eu	17775eu		
1300-1400	Singapore, SBC Radio One	6155do			
1300-1400	Singapore,R Singapore Int	9530as			
1300-1330	South Korea, R Korea Intl	9570as	13670as		
1300-1400	Sri Lanka, SLBC Colombo	6075as	9720as	15425as	
1300-1330	Switzerland, Swiss R Intl	7250as	7480as	11640as	13635as
1300-1400	United Kingdom,BBC London	6190af	6195na	7160as	7180as
		9410eu	9515na	9580as	9740as
		11750as	11760me	11765as	11820na
		11940af	12095eu	15070eu	15220na
		15310as	15420af	15575me	17640eu
		17705eu	17790af	17840na	17880af
		17885af	21470af	21660af	
1300-1400	USA, KAIJ Dallas TX	9815am			
1300-1400 vl	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 s	USA, WRMI Radio Miami Intl	9955am			
1300-1400	USA, VOA Washington DC	6110as	9645as	9760as	11805as
		15160as	15425as		
1300-1400	USA, WEWN Birmingham AL	9350na	15695na		
1300-1400	USA, WHRI Noblesville IN	6040am	9930am	15105am	
1300-1400	USA, WJCR Upton KY	7490na	13595na		
1300-1400	USA, WWCR Nashville TN	5065am	9475am	13845am	15685am
1300-1400	USA, WYFR Okeechobee FL	5950na	9705na	11830na	11970na
		13695af			
1307-1400 occsnal	New Zealand, R NZ Intl	9655pa			
1330-1400	Austria, R Austria Intl	15450as			
1330-1400 s	Belgium, R Vlaanderen Int	13675na			
1330-1400	Canada, RCI Montreal	9535as	11795as	11935eu	15315eu
		15325eu	17820eu	17895af	21455eu
1330-1400 mtwhfa	Finland, YLE/Radio	15400na	17740na		
1330-1400 tw	Ghana, GBC Radio 1	4915do			
1330-1400	India, All India Radio	13750as	15120as		
1330-1400	Laos, National Radio of	7116as			
1330-1400	Netherlands, Radio	9895as	13700as	15150as	
1330-1400	Sweden, Radio	11650na	15240na		
1330-1400	Switzerland, Swiss R Intl	6165eu	9535eu		
1330-1400	Turkey, Voice of	9675as			
1330-1355	UAE, Radio Dubai	13675eu	15320eu	15395as	21605as
1330-1400	Uzbekistan, R Tashkent	6025eu	9715eu	13785eu	
1330-1400	Vietnam, Voice of	10059as	12025as	15010as	
1345-1400 vl	Myanmar, Radio	7185do			
1345-1400	Vatican State, Vatican R	11625as	12050as	15585pa	

SELECTED PROGRAMS

Sundays

1300 CBC North - Quebec: World Report/Sports.
1300 Polish Radio: Weekend Commentary. Interviews and discussion.
1310 Polish Radio: Panorama. Examining day-to-day life in Poland.
1311 CBC North - Quebec: Fresh Air.
1311 Radio Moscow: Music and Musicians. See S 0211.
1315 WRMI: Music. See S 1245.
1320 China Radio Int'l: China Scrapbook. See S 1220.
1326 China Radio Int'l: Music Album. See S 1226.
1330 Polish Radio: Postbag. Your letters answered and more.
1336 Radio Canada Int'l (As): The Arts in Canada. A look at the Canadian arts scene.
1341 China Radio Int'l: Listeners' Letterbox. See S 1241.

Mondays

1310 Radio Canada Int'l: The Mailbag. See S 1237.
1311 Radio Moscow: Top Priority. See S 0511.
1320 Polish Radio: Jazz/Folk/Rock/Pop from Poland. A musical kaleidoscope.
1332 Radio Moscow: Russian by Radio. See S 1532.
1337 Radio Canada Int'l: Innovation Canada. See S 0307.
1340 China Radio Int'l: Learn to Speak Chinese. See M 1240.
1341 Radio Canada Int'l (As): Spectrum. See M 1241.

Tuesdays

1310 Radio Canada Int'l: As It Happens. See M 2330.
1311 Radio Moscow: Focus on Asia and the Pacific. See T 0111.
1318 China Radio Int'l: Current Affairs. See T 1218.
1320 Polish Radio: Request Concert. Variable music program.
1332 Radio Moscow: Interview. See T 0132.
1339 Radio Moscow: Music. See S 0432.
1340 China Radio Int'l: Listeners' Letterbox. See S 1241.
1340 Polish Radio: A Day in the Life Of. Anyone from government minister to pop star to bag lady.
1341 Radio Canada Int'l (As): Spectrum. See M 1241.

Wednesdays

1310 Radio Canada Int'l: As It Happens. See M 2330.
1311 Radio Moscow: Focus on Asia and the Pacific. See T 0111.
1318 China Radio Int'l: Current Affairs. See T 1218.
1320 Polish Radio: The Classics. Polish Classical Music beyond Chopin.
1332 Radio Moscow: Interview. See T 0132.
1333 China Radio Int'l: Profile. See W 1233.
1339 Radio Moscow: Music. See S 0432.
1340 China Radio Int'l: Learn to Speak Chinese. See M 1240.
1340 Polish Radio: Flashback. Polish history remembered.
1341 Radio Canada Int'l (As): Spectrum. See M 1241.

Thursdays

1310 Radio Canada Int'l: As It Happens. See M 2330.
1311 Radio Moscow: Focus on Asia and the Pacific. See T 0111.
1318 China Radio Int'l: Current Affairs. See T 1218.
1320 Polish Radio: DX Club. News, chat and interviews for shortwave and satellite enthusiasts.
1332 China Radio Int'l: Focus. See H 1232.
1332 Radio Moscow: Interview. See T 0132.
1339 Radio Moscow: Music. See S 0432.
1340 China Radio Int'l: Culture in China. See H 1240.
1340 Polish Radio: Letter from Poland. A personal look at Poland today.
1341 Radio Canada Int'l (As): Spectrum. See M 1241.

Fridays

1310 Radio Canada Int'l: As It Happens. See M 2330.
1311 Radio Moscow: Focus on Asia and the Pacific. See T 0111.
1320 China Radio Int'l: Current Affairs. See T 1218.
1320 Polish Radio: Landscape/Literary Series/Feature/The Best of Polish Radio Warsaw. A travel magazine and other programs in rotation.
1332 Radio Moscow: Interview. See T 0132.
1335 China Radio Int'l: Life in China. See F 1235.
1339 Radio Moscow: Music. See S 0432.
1340 Polish Radio: Business Week. What's happening in Europe's newest capitalist economy.
1341 Radio Canada Int'l (As): Spectrum. See M 1241.
1348 China Radio Int'l: In tne Third World. See F 1248.

Saturdays

1300 CBC North - Quebec: World Report/Sports.
1310 Polish Radio: What We Said. A digest of events, views and opinion on Polish Radio Warsaw in the past seven days.
1311 CBC North - Quebec: Good Morning Quebec.
1311 Radio Moscow: Focus on Asia and the Pacific. See T 0111.
1320 China Radio Int'l: Travel Talk. See S 0020.
1328 China Radio Int'l: Cooking Show. See S 0028.
1330 Polish Radio: Focus. The arts in Poland.
1332 Radio Moscow: Your Top Tune. See S 0332.
1335 China Radio Int'l: Music from China. See S 0035.
1337 Radio Canada Int'l (As): Innovation Canada. See S 0307.
1350 Radio Moscow: Interview. See T 0132.

1400 UTC SHORTWAVE GUIDE 9:00 AM EST 6:00 AM PST

FREQUENCIES

1400-1430	Australia, Radio	5995pa	7240pa	9610pa	9710pa
		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			
1400-1430 mtwhfa	Belgium, R Vlaanderen Int	13675na			
1400-1500 vl	Canada, CBC N Quebec Sce	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	9785as	11815as	15165as
1400-1500 vl	Costa Rica, R Peace Intl	7385am	9400am	15030am	
1400-1430	Ecuador, HCJB Quito	15115am	17890am	21455eu	
1400-1500	France, Radio France Intl	11910as	17560me	17695eu	
1400-1420	Ghana, GBC Radio 1	4915do			
1400-1500	India, All India Radio	13750as	15120as		
1400-1425 smtwh	Israel, Kol Israel	15640na	15650au		
1400-1500 vl	Italy, IRRS Milan	7125eu			
1400-1500	Japan, NHK/Radio	9535na	9750as	11705na	11840as
		11915as	11955na		
1400-1500 mtwhfa	Lebanon, Wings of Hope	9960me			
1400-1500 vl	Malaysia, RTM Kota Kinaba	5980do			
1400-1500	Malaysia, RTM Radio 4	7295do			
1400-1500 vl	Malaysia, RTM Sarawak	4950do	7160do		
1400-1500	Malta, V of Mediterranean	11925eu			
1400-1500 vl	Myanmar, Radio	7185do			
1400-1500	Netherlands, Radio	9895as	13700as	15150as	
1400-1500 occsnal	New Zealand, R NZ Intl	9655pa			
1400-1430 mtwhf	Palau, KHBN Voice of Hope	9830as			
1400-1500	Philippines, FEBC Manila	11995as			
1400-1500	Russia, Radio Moscow Intl	5960as	6060eu	7205as	7275eu
		9550na	9635as	9820eu	9895na
		11765na	11960na	12065as	15125eu
		15140as	15205na	15450na	15455eu
		15485eu	15560af	17760na	17780af
1400-1500	Singapore, SBC Radio One	6155do			
1400-1500	Slovakia, AWR Europe	9455as			
1400-1500	South Korea, R Korea Intl	5975as	7275as		
1400-1500	Sri Lanka, SLBC Colombo	6075as	9720as	15425as	
1400-1500	United Kingdom,BBC London	5990as	6195as	7180as	9410eu
		9515na	9660eu	9740as	9750eu
		11750as	11820as	11940af	12095eu
		15070eu	15260af	15310me	15400af
		15575me	17640af	17705eu	17790af
		17840af	17880af	21660af	
1400-1500	USA, KAIJ Dallas TX	15725am			
1400-1500 vl	USA, KJES Mesquite NM	11715na			
1400-1500	USA, KTBN Salt Lk City UT	7510na			
1400-1500	USA, Monitor Radio Intl	9355as			
1400-1500	USA, VOA Washington DC	6110as	7215as	9645as	9760as
		15160as	15205as	15395as	15425as
1400-1500	USA, WEWN Birmingham AL	7425na			
1400-1500 vl	USA, WHRI Noblesville IN	6040am	9930am	15105am	
1400-1500	USA, WJCR Upton KY	7490na	13595na		
1400-1500	USA, WWCR Nashville TN	5065am	13845am	15685am	
1400-1500	USA, WYFR Okeechobee FL	9705na	11830na	17760na	
1404-1500 s	Morocco, RTV Marocaine	17595af			
1415-1500	Bhutan, Bhutan BS	5025as			
1415-1425	Nepal, Radio	5005do	7165do		
1430-1500	Australia, Radio	5995pa	6060pa	6080pa	7260as
		9710pa	9770as	11660as	11695pa
		11800pa			
1430-1500	Canada, RCI Montreal	9555eu	11915eu	11935eu	15325eu
		17820eu			
1430-1500	Ecuador, HCJB Quito	6080do	17890am	21455eu	
1430-1500 mtwhfa	Finland, YLE/Radio	15400na	17740na		
1430-1455	Moldova, R Moldova Intl	11775eu			
1430-1500	Myanmar, Radio	5990do			
1430-1500	Romania, R Romania Intl	11775as	15335as	17720as	
1430-1500	Sweden, Radio	11650na	15240na		
1435-1445	Greece, Voice of	15650na	17520na		
1445-1500	Guam, KTWR Agana	11580as			
1445-1500	Mongolia, R Ulaanbaatar	7260as	13780as		

SELECTED PROGRAMS

Sundays
1411 CBC North - Quebec: Sunday Morning.
1411 Radio Canada Int'l: Sunday Morning. A magazine program covering virtually everything under the sun.
1411 Radio Moscow: Science and Engineering in the CIS. See S 0611.
1420 China Radio Int'l: China Scrapbook. See S 1220.
1426 China Radio Int'l: Music Album. See S 1226.
1432 Radio Moscow: Your Top Tune. See S 0332.
1437 Radio Canada Int'l: The Mailbag. See S 1237.
1441 China Radio Int'l: Listeners' Letterbox. See S 1241.

Mondays
1411 Radio Moscow: Science and Engineering in the CIS. See S 0611.
1432 Radio Moscow: Audio Book Club. See S 0132.
1439 Radio Canada Int'l: Spectrum. See M 1241.
1440 China Radio Int'l: Learn to Speak Chinese. See M 1240.

Tuesdays
1411 Radio Moscow: Newmarket. See T 0311.
1418 China Radio Int'l: Current Affairs. See T 1218.
1432 Radio Moscow: Music. See S 0432.
1439 Radio Canada Int'l: Spectrum. See M 1241.
1440 China Radio Int'l: Listeners' Letterbox. See S 1241.

Wednesdays
1411 Radio Moscow: Moscow Mailbag. See S 0111.
1418 China Radio Int'l: Current Affairs. See T 1218.
1432 Radio Moscow: Russian by Radio. See S 1532.
1433 China Radio Int'l: Profile. See W 1233.
1439 Radio Canada Int'l: Spectrum. See M 1241.
1439 Radio Canada Int'l: The Business Report. Financial news, stock exchange reports, and business trends.
1440 China Radio Int'l: Learn to Speak Chinese. See M 1240.

Thursdays
1411 Radio Moscow: Culture and the Arts. See S 1111.
1418 China Radio Int'l: Current Affairs. See T 1218.
1432 Radio Moscow: Audio Book Club. See S 0132.
1433 China Radio Int'l: Focus. See H 1232.
1439 Radio Canada Int'l: Spectrum. See M 1241.
1440 China Radio Int'l: Culture in China. See H 1240.

Fridays
1411 Radio Moscow: Moscow Mailbag. See S 0111.
1420 China Radio Int'l: Current Affairs. See T 1218.
1432 Radio Moscow: Russian by Radio. See S 1532.
1435 China Radio Int'l: Life in China. See F 1235.
1439 Radio Canada Int'l: Spectrum. See M 1241.
1448 China Radio Int'l: In the Third World. See F 1248.

Saturdays
1400 CBC North - Quebec: The House.
1411 Radio Moscow: Newmarket. See T 0311.
1420 China Radio Int'l: Travel Talk. See S 0020.
1428 China Radio Int'l: Cooking Show. See S 0028.
1432 Radio Moscow: Audio Book Club. See S 0132.
1435 China Radio Int'l: Music from China. See S 0035.
1437 Radio Canada Int'l: Innovation Canada. See S 0307.

HAUSER'S HIGHLIGHTS: BULGARIA

R. Bulgaria's one-hour broadcasts in English:

Time UTC	Frequencies
1000	12040
1230	9770, 11740
1900	7305, 9700
2200	7105, 9700

To North America:

0000	7205, 9700
0500	7335, 9700

Site-chasers note Varna is sked for W-94 until March:

0300-0400	7230
0500-0600	7115
0600-0700	7115 (except Sun)
1530-1930	7310

(via Bob Thomas, *DX Listening Digest*)

FREQUENCIES

1500-1600	Australia, Radio	5995pa	6060pa	6080pa	7260as
		9710pa	9770as	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 Sce	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	7405na	11815as	15165as	
1500-1600 vl	Costa Rica, R Peace Intl	7385am	9400am	15030am	17905am
1500-1600	Ecuador, HCJB Quito	6080do	17890am	21455eu	
1500-1550	Germany, Deutsche Welle	7195af	9735af	11965af	15145af
		17800af			
1500-1600	Guam, KSDA/AWR Asia	9370as			
1500-1600	Guam, KTWR Agana	11580as			
1500-1600	Iraq, Radio Iraq Intl	15250as			
1500-1600	Italy, AWR Europe	7230eu			
1500-1600 vl	Italy, IRRS Milan	7125eu			
1500-1600	Japan, NHK/Radio	9535na	9750as	11915as	11955na
		15355af			
1500-1600	Jordan, Radio	9560eu			
1500-1600 mtwhfa	Lebanon, Wings of Hope	9960me			
1500-1600 vl	Malaysia, RTM Kota Kinaba	5980do			
1500-1600	Malaysia, RTM Radio 4	7295do			
1500-1600 vl	Malaysia, RTM Sarawak	4950do			
1500-1600	Malta, V of Mediterranean	11925eu			
1500-1515	Mongolia, R Ulaanbaatar	7260as	13780as		
1500-1525	Netherlands, Radio	9895as	13700as	15150as	
1500-1600 occsnal	New Zealand, R NZ Intl	9655pa			
1500-1600	Nigeria, Voice of	7255af			
1500-1600	North Korea, R Pyongyang	9325eu	9640af	9977af	13185eu
1500-1600	Philippines, FEBC Manila	11995as			
1500-1530	Romania, R Romania Intl	11775as	15335as	17720as	

1500-1600	Russia, Radio Moscow Intl	7295eu	7330eu	7345na	7360eu
		9575eu	9820na	9830na	9885na
		11765as	11825af	11875eu	11940as
		12065me	15180eu	15205na	15265ns
		15320as	15465eu	15470as	15480as
		17760na			
1500-1600	S Africa, Channel Africa	7225af			
1500-1550	Seychelles, FEBA Radio	9810as	11870as		
1500-1600	Seychelles, FEBA Radio	11870as			
1500-1600	Singapore, SBC Radio One	6155do			
1500-1600	Sri Lanka, SLBC Colombo	6075as	9720as	15425as	
1500-1530	Switzerland, Swiss R Intl				
		9885as			
			13635as		
1500-1600	United Kingdom,BBC London	6190af	6195as	7180as	9410eu
		9515na	9740as	11750as	11940af
		12095eu	15070af	15260na	15310as
		15400af	15420af	17705eu	17840na
		17880af	21470af	21490af	21660af
1500-1600	USA, KAIJ Dallas TX	15725am			
1500-1600	USA, KTBN Salt Lk City UT	15590na			
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, WCSN Scotts Cor ME	15665eu			
1500-1600	USA, WEWN Birmingham AL	7425na			
1500-1600	USA, WHRI Noblesville IN	9930am	13760am	15105am	
1500-1600	USA, WJCR Upton KY	7490na	13595na		
1500-1600	USA, WWCR Nashville TN	13845am	15685am		
1500-1600	USA, WYFR Okeechobee FL	11830na	15215na	17760ca	
1525-1530 twhf	Philippines, Veritas Asia	15140as			
1530-1600	Austria, R Austria Intl	6155eu	9880me	11780as	13730eu
1530-1600	Netherlands, Radio	9895as	15150as		
1530-1600 mtwhf	Portugal, Radio	21515me			
1530-1600	Russia, Radio Moscow Intl	6005af	6110af	7150af	7205eu
		9800eu			
1540-1555 asm	Philippines, Veritas Asia	15140as			
1545-1600	Vatican State, Vatican R	9500as	11640as		

SELECTED PROGRAMS

Sundays

1500 Voice of Nigeria: Perspectives (biweekly). Global issues from the Nigerian and African point of view.
1500 Voice of Nigeria: Reaching Out (biweekly). A review of both government and private projects of a humanitarian nature.
1505 CBC North - Quebec: Sunday Morning (Centerpoint).
1505 Radio Canada Int'l: Sunday Morning (Centerpoint). A feature program segment of the CBC Sunday Morning program.
1511 Radio Moscow: News and Views. See S 0011.
1520 China Radio Int'l: China Scrapbook. See S 1220.
1526 China Radio Int'l: Music Album. See S 1226.
1530 Voice of Nigeria: In the News. Fifteen minutes of the news behind the news.
1532 Radio Moscow: Russian by Radio. A course in the Russian language.
1541 China Radio Int'l: Listeners' Letterbox. See S 1241.

Mondays

1500 Voice of Nigeria: Health Corner (biweekly). Health-related problems and medical research and innovations.
1500 Voice of Nigeria: Towards a Common Destiny (biweekly). Analyses of the economic and political issues which link African countries in their development.
1511 Radio Moscow: News and Views. See S 0011.
1532 Radio Moscow: Folk Box. See M 0032.
1540 China Radio Int'l: Learn to Speak Chinese. See M 1240.

Tuesdays

1500 Voice of Nigeria: Bridge Across Time (biweekly). Focus on the struggle for reparations for harm done to Africans through slave trade and colonialism.
1500 Voice of Nigeria: Striding Ahead (biweekly). The contributions of Nigerian women in particular and African women in general to national development.
1511 Radio Moscow: News and Views. See S 0011.
1518 China Radio Int'l: Current Affairs. See T 1218.
1532 Radio Moscow: Music. See S 0432.
1540 China Radio Int'l: Listeners' Letterbox. See S 1241.

Wednesdays

1500 Voice of Nigeria: Nigeria and Politics. See M 0615.
1511 Radio Moscow: News and Views. See S 0011.
1518 China Radio Int'l: Current Affairs. See T 1218.
1532 Radio Moscow: Music. See S 0432.
1533 China Radio Int'l: Profile. See W 1233.
1540 China Radio Int'l: Learn to Speak Chinese. See M 1240.

Thursdays

1500 Voice of Nigeria: Theatre on the Air (biweekly). A radio drama which reflects the rich social and cultural value of the society.
1511 Radio Moscow: News and Views. See S 0011.
1518 China Radio Int'l: Current Affairs. See T 1218.
1532 Radio Moscow: Yours for the Asking. See W 0032.
1533 China Radio Int'l: Focus. See H 1232.
1540 China Radio Int'l: Culture in China. See H 1240.

Fridays

1500 Voice of Nigeria: The Developing World. Global developments from the perspective of the developing countries of the world.
1511 Radio Moscow: News and Views. See S 0011.
1520 China Radio Int'l: Current Affairs. See T 1218.
1532 Radio Moscow: Music at Your Request. See M 1232.
1535 China Radio Int'l: Life in China. See F 1235.
1548 China Radio Int'l: In the Third World. See F 1248.

Saturdays

1500 Voice of Nigeria: The Young World (biweekly). The activities, experiences, hopes, and aspirations of Nigerian youth are highlighted.
1500 Voice of Nigeria: Who are the Nigerians (biweekly). A program that seeks to trace ethnic diversity of Nigeria.
1511 CBC North - Quebec: Basic Black.
1511 Radio Moscow: News and Views. See S 0011.
1520 China Radio Int'l: Travel Talk. See S 0020.
1528 China Radio Int'l: Cooking Show. See S 0028.
1530 Voice of Nigeria: Africa Hour. A news magazine devoted exclusively to African issues.
1532 Radio Moscow: Timelines. See M 0332.
1535 China Radio Int'l: Music from China. See S 0035.

1600 UTC SHORTWAVE GUIDE 11:00 AM EST 8:00 AM PST

FREQUENCIES

1600-1700	Bahrain, Radio	6010do			
1600-1700 vl	Canada, CBC N Quebec Sce	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	11575af	15110af	15130af	
1600-1700 vl	Costa Rica, R Peace Intl	7385am	9400am	15030am	17905am
1600-1700	Ecuador, HCJB Quito	6080do	15350eu	21455eu	
1600-1700	Ethiopia, Radio	7165af	9560af		
1600-1700	France, Radio France Intl	6175eu	11700af	12015af	15530me
		17650me	17795af	17850af	
1600-1630	Georgia, Radio	11910eu			
1600-1650	Germany, Deutsche Welle	6170as	7225as	7305as	9525as
		9585as	11795as		
1600-1700	Guam, KSDA/AWR Asia	9370af			
1600-1700	Guam, KTWR Agana	11580af			
1600-1627	Iran, VOIRI Tehran	11790eu			
1600-1700 vl	Italy, IRRS Milan	7125eu			
1600-1630	Jordan, Radio	9560eu			
1600-1630 mtwhfa	Lebanon, Wings of Hope	9960me			
1600-1625	Netherlands, Radio	9895as	15150as		
1600-1649 occsnal	New Zealand, R NZ Intl	9655pa			
1600-1700	Nigeria, Voice of	7255af			
1600-1630	Pakistan, Radio	9470me	11570af	13590af	15555as
		15675af	17660as		
1500-1555	Poland, Polish R Warsaw	7285eu	9525eu		
1600-1700	Russia, Radio Moscow Intl	7210na	7345as	7355eu	9550na
		9600na	9880eu	11875af	11960af
		12015eu	12055me	12065eu	15180na
		15265af	15385as	15500af	17760eu
		17780eu			
1600-1700	S Africa, Channel Africa	7225af			
1600-1700	South Korea, R Korea Intl	5975as			
1600-1700	Sri Lanka, SLBC Colombo	6075as	9720as	15425as	
1600-1700	Swaziland, Trans World R	9500af			
1600-1645	UAE, Radio Dubai	11795af	13675eu	15435eu	21605eu
1600-1700	United Kingdom,BBC London	3915as	5990as	6190af	6195eu
		7160as	9410eu	9515na	9580as
		9740as	11750as	11940af	12095eu
		15070af	15260na	15310as	15400af
		17640af	17840af	17880af	21470af
		21660af			
1600-1700	USA, KAIJ Dallas TX	15725am			
1600-1700	USA, KTBN Salt Lk City UT	15590am			
1600-1700	USA, KWHR Naalehu HI	6120as			
1600-1700	USA, Monitor Radio Intl	9355af	21640af		
1600-1700	USA, VOA Washington DC	3970af	6110as	7125as	9645as
		9700as	9760as	11920af	12040af
		13710af	15205as	15225af	15320af
		15395as	15410af	15445af	17785af
		17895af			
1600-1700	USA, WCSN Scotts Cor ME	15665eu			
1600-1700	USA, WEWN Birmingham AL	13615na	15695eu		
1600-1700 vl	USA, WHRI Noblesville IN	6120am	13760am	15105am	
1600-1700	USA, WINB Red Lion PA	15715eu			
1600-1700	USA, WJCR Upton KY	7490na	13595na		
1600-1700	USA, WRNO New Orleans LA	15420na			
1600-1700	USA, WWCR Nashville TN	13845am	15685eu		
1600-1700	USA, WYFR Okeechobee FL	11830na	15215na	15566eu	17760na
		21525af	21745eu		
1630-1700	Australia, Radio	6060pa	6080pa	7260as	9710pa
		9860pa	11660pa	11695pa	11800pa
1630-1700	Austria, R Austria Intl	11780as			
1630-1700	Canada, RCI Montreal	7150as	9550as		
1630-1700	Egypt, Radio Cairo	15255af			
1630-1700	Liberia, Radio ELWA	4760do			
1630-1700	Russia, Radio Moscow Intl	9575af	9775eu	9860eu	
1630-1700	United Kingdom,BBC London	3255af	5965as	5975as	7180as
		9630af	15420af		
1640-1650 s	Rwanda, Radio	6055do			
1645-1700	Afghanistan, Radio	9635as			
1645-1700	Tajikistan, Radio	7245as			
1650-1700 mtwhf	New Zealand, R NZ Intl	9655pa			

SELECTED PROGRAMS

Sundays

1600 Polish Radio: Weekend Commentary. See S 1300.
1605 CBC North - Quebec: Sunday Morning.
1610 Polish Radio: Panorama. See S 1310.
1611 Radio Moscow: Science and Engineering in the CIS. See S 0611.
1620 China Radio Int'l: China Scrapbook. See S 1220.
1626 China Radio Int'l: Music Album. See S 1226.
1630 Polish Radio: Postbag. See S 1330.
1630 Voice of Nigeria: VON Economic Report. Domestic financial news updates and international economic issues.
1632 Radio Moscow: Contacts and Contracts. Commercial and business activities and developments.
1637 Radio Canada Int'l (As): The Mailbag. See S 1237.
1641 China Radio Int'l: Listeners' Letterbox. See S 1241.
1645 Voice of Nigeria: Images of Nigeria. Tourist attractions in Nigeria such as the country's natural beauty, the wildlife parks, and cultural festivals.

Mondays

1611 Radio Moscow: Culture and the Arts. See S 1111.
1620 Polish Radio: Jazz/Folk/Rock/Pop from Poland. See M 1320.
1630 Radio Canada Int'l (As): The World at Six. Half hour news magazine from the CBC domestic radio network.
1630 Voice of Nigeria: African Writers. The coming of age of African writers and their works is the focus of this program.
1632 Radio Moscow: Music. See S 0432.
1641 Radio Canada Int'l (As): Spectrum. See M 1241.
1645 Voice of Nigeria: Nigerian Scene. A lively fifteen minute news program about Nigeria.

Tuesdays

1611 Radio Moscow: Focus on Asia and the Pacific. See T 0111.
1618 China Radio Int'l: Current Affairs. See T 1218.
1620 Polish Radio: Request Concert. See T 1320.
1630 Radio Canada Int'l (As): The World at Six. See M 1630.
1630 Voice of Nigeria: Roundtable. Discussion of the economic, social, and political changes in different parts of the continent.
1632 Radio Moscow: Music. See S 0432.
1640 China Radio Int'l: Listeners' Letterbox. See S 1241.
1641 Radio Canada Int'l (As): Spectrum. See M 1241.

Wednesdays

1611 Radio Moscow: Focus on Asia and the Pacific. See T 0111.
1618 China Radio Int'l: Current Affairs. See T 1218.
1620 Polish Radio: The Classics. See W 1320.
1630 Radio Canada Int'l (As): The World at Six. See M 1630.
1630 Voice of Nigeria: Musical Heritage. The pure music of Africa (devoid of foreign influences) is featured.
1632 Radio Moscow: Interview. See T 0132.
1633 China Radio Int'l: Profile. See W 1233.
1639 Radio Moscow: Music. See S 0432.
1640 Polish Radio: Flashback. See W 1340.
1641 Radio Canada Int'l (As): Spectrum. See M 1241.
1645 Voice of Nigeria: African Writers. See M 1630.

Thursdays

1611 Radio Moscow: Focus on Asia and the Pacific. See T 0111.
1618 China Radio Int'l: Current Affairs. See T 1218.
1620 Polish Radio: DX Club. See H 1320.
1630 Radio Canada Int'l (As): The World at Six. See M 1630.
1630 Voice of Nigeria: VON Link-Up. Call-in request and dedication music program.
1632 Radio Moscow: Interview. See T 0132.
1633 China Radio Int'l: Focus. See H 1232.
1639 Radio Moscow: Music. See S 0432.
1640 China Radio Int'l: Culture in China. See H 1240.
1640 Polish Radio: Letter from Poland. See H 1340.
1641 Radio Canada Int'l (As): Spectrum. See M 1241.

Fridays

1611 Radio Moscow: Focus on Asia and the Pacific. See T 0111.
1620 China Radio Int'l: Current Affairs. See T 1218.
1620 Polish Radio: Landscape/Literary Series/Feature/The Best of Polish Radio Warsaw. See F 1320.
1630 Radio Canada Int'l (As): The World at Six. See M 1630.
1630 Voice of Nigeria: Top Stars. The Nigerian pop music scene, it's hit tunes and top music stars.
1632 Radio Moscow: The Jazz Show. See M 0532.
1635 China Radio Int'l: Life in China. See F 1235.
1640 Polish Radio: Business Week. See F 1340.
1641 Radio Canada Int'l (As): Spectrum. See M 1241.
1645 Voice of Nigeria: Issues of the Moment. A documentary of evolving political events in Nigeria.
1648 China Radio Int'l: In the Third World. See F 1248.

Saturdays

1610 Polish Radio: What We Said. See A 1310.
1611 CBC North - Quebec: Double Exposure.
1611 Radio Moscow: Focus on Asia and the Pacific. See T 0111.
1620 China Radio Int'l: Travel Talk. See S 0020.
1628 China Radio Int'l: Cooking Show. See S 0028.
1630 Polish Radio: Focus. See A 1330.
1630 Voice of Nigeria: Nigerian Mosaic. A light magazine program with potpouri of interviews, music, and gossip.
1632 Radio Moscow: Music. See S 0432.
1635 China Radio Int'l: Music from China. See S 0035.
1636 Radio Canada Int'l (As): Innovation Canada. See S 0307.

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*. Enclose SASE and your QSLs will be returned.

FREQUENCIES

1700-1800	Australia, ADF Radio	8743af	10375af	10621af	
1700-1800	Australia, Radio	6060pa	6080pa	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 vl	Canada, CBC N Quebec Sce	9625do			
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	9570af	11575af	
1700-1800	Costa Rica, R Peace Intl	7385am	9400am	15030am	17905am
1700-1727	Czech Rep, Radio Prague	5930as	7345eu	9420me	
1700-1800	Ecuador, HCJB Quito	6080do	15350eu	21455eu	
1700-1800	Egypt, Radio Cairo	15255af			
1700-1800 vl	Eqt Guinea, Radio Africa	7200af			
1700-1800	Iraq, Radio Iraq Intl	15250as			
1700-1800 vl	Italy, IRRS Milan	7125eu			
1700-1800	Japan, NHK/Radio	6150na	9535na	9580as	11930as
1700-1713 mtwhfa	Lebanon, Voice of	6550eu			
1700-1800	Liberia, Radio ELWA	4760do			
1700-1800 mtwhf	New Zealand, R NZ Intl	9655pa			
1700-1750	North Korea, R Pyongyang	9640af	9977af	13785af	
1700-1750	Pakistan, Radio	7485eu	11570eu		
1700-1755	Poland, Polish R Warsaw	5995eu	7270eu	7285eu	
1700-1800	Russia, Radio Moscow Intl	7115eu	7180eu	7345as	9505eu
		9530na	9540na	9575eu	9880na
		9890eu	11715af	11825na	11960af
		12055af	15385as	15500na	17760eu
1700-1800	S Africa, Channel Africa	7225af	15240af		
1700-1800	Slovakia, AWR Europe	7270as	9450as		
1700-1730	Sri Lanka, SLBC Colombo	6075as	9720as	15425as	
1700-1715	Swaziland, Trans World R	7120af			
1700-1730	Switzerland, Swiss R Intl	6205af	9885af	13635me	
1700-1800	United Kingdom,BBC London	3255af	3915as	5975as	6180eu
		6190af	6195eu	7160me	9410eu
		9515na	9630af	9740as	11750as
		11940af	12095af	15070af	15260af
		15400af	15420af	17880af	
1700-1800	USA, KAIJ Dallas TX	15725am			
1700-1800	USA, KTBN Salt Lk City UT	15590am			
1700-1800	USA, KWHR Naalehu HI	7425as			
1700-1800	USA, Monitor Radio Intl	9355af	21640af		
1700-1800	USA, VOA Washington DC	6040eu	6110as	7125as	7215as
		9645as	9700eu	9760af	11920af
		12040af	13710af	15205as	15395as
		15410af	15445af	17895af	
1700-1800	USA, WEWN Birmingham AL	13615na	15695eu		
1700-1800	USA, WHRI Noblesville IN	6120am	13760am	15105am	
1700-1800	USA, WINB Red Lion PA	15715eu			
1700-1800	USA, WJCR Upton KY	7490na	13595na		
1700-1800 smtwhf	USA, WMLK Bethel PA	9465eu			
1700-1800	USA, WRNO New Orleans LA	15420am			
1700-1800	USA, WWCR Nashville TN	13845am	15685eu	17525am	
1700-1800	USA, WYFR Okeechobee FL	15566eu	17760na		
1715-1730 mtwhf	Swaziland, Trans World R	7120af			
1715-1745	Sweden, Radio	6065eu			
1715-1730	Vatican State, Vatican R	6245eu	7250eu	9645eu	
1720-1730 mtwtf	Estonia, Estonian Radio	5925eu			
1730-1800	Netherlands, Radio	6020af	9605af	11655af	
1730-1800	Romania, R Romania Intl	11830af	15340af	15365af	17805af
1730-1800	Russia, Radio Moscow Intl	7105eu	7340eu	9520na	13670af
1730-1800	Vatican State, Vatican R	7305af	9695af	9725af	11625af
1745-1800	Armenia, Radio Yerevan	4810eu	4990eu	5930eu	6065eu
1745-1800	Bangladesh, Radio	7190eu	9647eu		
1745-1800	India, All India Radio	7412eu	9650me	9950me	11620eu
		11935af	15075af		

1800 UTC

1800-1827	Albania, R Tirana Intl	7260eu	9730eu		
1800-1900	Australia, ADF Radio	8743af	10375af	10621af	
1800-1900	Australia, Radio	6060pa	6080pa	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	Brazil, Radiobras	15268eu			
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	7385am	9400am	15030am	17905am
1800-1827	Czech Rep, Radio Prague	5930eu	7345eu	9430eu	
1800-1900	Ecuador, HCJB Quito	6080do	15350eu	21455eu	
1800-1830	Egypt, Radio Cairo	15255af			
1800-1900 vl	Eqt Guinea, Radio Africa	7200af			
1800-1815	Ghana, GBC Radio 1	4915do			
1800-1815	Ghana, GBC Radio 2	3316do			
1800-1900	India, All India Radio	7412eu	9650me	9950me	11620eu
		11935af	15075af		
1800-1900 vl	Italy, IRRS Milan	7125eu			
1800-1900	Kuwait, Radio	11990na			
1800-1900	Liberia, Radio ELWA	4760do			
1800-1830	Netherlands, Radio	6020af	9605af	11655af	
1800-1849 mtwhf	New Zealand, R NZ Intl	9655pa			
1800-1850	North Korea, R Pyongyang	9640as	13750as	15435as	
1800-1830 s	Norway, Radio Norway Intl	7120eu	11930af		
1800-1900	Russia, Radio Moscow Intl	4940eu	5995eu	7170na	7205eu
		9505as	9550eu	9575eu	9880eu
		11715me	11825as	11945as	12055af
		13670af	15180na	15500af	17760na
1800-1900 irreg	Sudan, Radio Omdurman	9200af			
1800-1900	Swaziland, Trans World R	3200af			
1800-1845	Swaziland, Trans World R	9500af			
1800-1900	United Kingdom,BBC London	3255af	5975as	6005af	6180eu
		6190af	6195eu	7110as	9410eu
		9630af	9740me	11940af	12095af
		15070af	15400af	15420af	17880af
1800-1900	USA, KAIJ Dallas TX	15725am			
1800-1900	USA, KJES Mesquite NM	15385na			
1800-1900	USA, KTBN Salt Lk City UT	15590am			
1800-1900	USA, KWHR Naalehu HI	13625as			
1800-1900	USA, Monitor Radio Intl	9355me	9370eu	21640af	
1800-1900	USA, VOA Washington DC	4985af	6040eu	9700eu	9760eu
		11920af	12040af	13680af	13710af
		15580af	17800af	17895af	
1800-1900	USA, WEWN Birmingham AL	13615na	15695eu	18930sa	
1800-1900	USA, WHRI Noblesville IN	9495am	13625am		
1800-1900	USA, WINB Red Lion PA	15715eu			
1800-1900	USA, WJCR Upton KY	7490na	13595na		
1800-1900	USA, WMLK Bethel PA	9465eu			
1800-1900	USA, WRNO New Orleans LA	15420am			
1800-1900	USA, WWCR Nashville TN	13845am	15685am	17525am	
1800-1845	USA, WYFR Okeechobee FL	15566eu			
1800-1900	USA, WYFR Okeechobee FL	17760na			
1800-1900	Yemen, Yemeni Rep Radio	9780do			
1815-1845	Bangladesh, Radio	7190eu	9688eu		
1830-1855	Moldova, R Moldova Intl	7235eu			
1830-1900	Netherlands, Radio	6015af	6020af	9605af	9860af
		9895af	15315af	17605af	
1830-1845	Rwanda, Radio	6055do			
1830-1900	Sweden, Radio	6065eu	9655af	13690me	
1840-1850 mtwhfa	Greece, Voice of	15650af	17525af		
1845-1900 irreg s	Mali, RDTV Malienne	4783do	4835do	5995do	
1850-1900	New Zealand, R NZ Intl	11735pa			

Thanks to Donald Choleva of Euclid, Ohio, for sharing this QSL from Radio Netherlands.

FREQUENCIES

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			
1900-1930	Belgium, R Vlaanderen Int	5910eu	9925af		
1900-1918	Brazil, Radiobras	15268eu			
1900-2000	Bulgaria, Radio	7305eu	9700eu		
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	China, China Radio Intl	9440af	11515af		
1900-2000	Costa Rica, R Peace Intl	7385am	9400am	15030am	17905am
1900-2000	Ecuador, HCJB Quito	6080do	15350eu	21455eu	
1900-2000 vl	Eqt Guinea, Radio Africa	7200af			
1900-1950	Germany, Deutsche Welle	7110af	9665af	9765af	11785af
		11810af	11865af	13790af	15145af
		15425af			
1900-1910 mtwhfa	Greece, Voice of	7450eu	9380eu		
1900-1945	India, All India Radio	7412eu	9650me	9950me	11620eu
		11935af	15075af		
1900-2000 vl	Italy, IRRS Milan	7125eu			
1900-2000	Japan, NHK/Radio	6150as	7140au	9535as	9580au
		9680as			
1900-2000	Kuwait, Radio	11990eu			
1900-2000	Liberia, Radio ELWA	4760do			
1900-1925	Netherlands, Radio	6015af	6020af	9605af	9860af
		9895af	15315af	17605af	
1900-2000	New Zealand, R NZ Intl	11735pa			
1900-2000	Nigeria, Radio	3326do	4770do	4990do	
1900-2000	Nigeria, Voice of	7255af			
1900-1930 s	Norway, Radio Norway Intl	5960eu	7215pa	9590af	
1900-2000 vl	Papua New Guinea, NBC	4890do			
1900-2000	Romania, R Romania Intl	9690eu	9750eu	11810eu	11940eu
1900-2000	Russia, Radio Moscow Intl	6110eu	7170na	7205eu	7275eu
		9505eu	9550eu	9640eu	9880na
		9895as	11715me	11825as	11945eu
		12055af	13670eu	15205af	15480as
		15500af	17570af	17760na	
1900-1915	Rwanda, Radio	6055af			
1900-2000	Slovakia, AWR Europe	9455as			
1900-2000	Spain, R Exterior Espana	11775af			
1900-2000	Swaziland, Trans World R	3200af	3240af		
1900-2000	Thailand, Radio	4830do	9655eu	9700eu	11905eu
1900-2000 vl	Uganda, Radio	4976do			
1900-2000	United Kingdom,BBC London	3255af	6180eu	6195eu	7110as
		7160me	9410eu	9630af	9740me
		11955as	12095af	15070af	15400af
		17830af	17880af		
1900-2000	USA, KAIJ Dallas TX	15725am			
1900-2000	USA, KTBN Salt Lk City UT	15590am			
1900-2000 as	USA, KVOH Los Angeles CA	17775am			
1900-2000	USA, KWHR Naalehu HI	13625as			
1900-2000	USA, Monitor Radio Intl	9355me	9370eu	17510af	
1900-1930 a	USA, WRMI Radio Miami Intl	9955am			
1900-2000	USA, VOA Washington DC	3980eu	6040eu	7415af	9525pa
		9700af	9760af	11870as	11920af
		12040af	13710af	15180pa	15410af
		15445af	15580af	17800af	
1900-2000	USA, WCSN Scotts Cor ME	17612af			
1900-2000	USA, WEWN Birmingham AL	13615na	15695eu	18930sa	
1900-2000 vl	USA, WHRI Noblesville IN	9495am	13625am		
1900-2000	USA, WINB Red Lion PA	15715eu			
1900-2000	USA, WJCR Upton KY	7490na	13595na		
1900-2000	USA, WMLK Bethel PA	9465eu			
1900-2000	USA, WRNO New Orleans LA	15420am			
1900-2000	USA, WWCR Nashville TN	12160eu	13845am	15685am	17525am
1900-2000	USA, WYFR Okeechobee FL	17760af			
1910-1920	Botswana, Radio	3356af	4830af	7255af	
1930-2000	Austria, R Austria Intl	5945eu	6155eu	9880me	13730af
1930-2000	Iran, VOIRI Tehran	9022me	9745me		
1930-2000	Netherlands, Radio	6020af	9605af	9860af	9895af
		11655af	15315af	17605af	
1930-2000	Poland, Polish R Warsaw	5955eu	6135eu	7285eu	
1930-2000	Serbia, Radio Yugoslavia	6100eu	9720af		
1930-2000	Slovakia, R Slovakia Intl	5915eu	7345eu		
1930-2000 s	USA, Radio Miami Intl	9955am			
1935-1955	Italy, RAI Rome	7275eu	9575eu	11905eu	
1940-2000	Mongolia, R Ulaanbaatar	11790as	11850eu		

2000-2100 mtwhf	Argentina, RAE	15345eu			
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			
2000-2100	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	China, China Radio Intl	9440af	9920eu	11500eu	11715af
		15110af			
2000-2100	Costa Rica, R Peace Intl	7385am	9400am	15030am	17905am
2000-2100	Ecuador, HCJB Quito	6080do	21455eu		
2000-2100 vl	Eqt Guinea, Radio Africa	7200af			
2000-2050	Germany, Deutsche Welle	5960eu	7285eu		
2000-2030	Ghana, GBC Radio 1	4915do			
2000-2030	Ghana, GBC Radio 2	3366do			
2000-2030	Hungary, Radio Budapest	3975eu	6110eu	7220eu	
2000-2100	India, All India Radio	7412eu	9910au	9950eu	11620eu
		11715pa	15225pa		
2000-2100	Indonesia, Voice of	9675as	11752as		
2000-2030	Israel, Kol Israel	7405na	7465na	9435eu	11603na
		17575af			
2000-2100 vl	Italy, IRRS Milan	7125eu			
2000-2010 mtwhf	Kenya, Kenya BC Corp	4935do			
2000-2100	Kuwait, Radio	11990eu			
2000-2100	Liberia, Radio ELWA	4760do			
2000-2010	Mongolia, R Ulaanbaatar	11790eu	11850eu		
2000-2025	Netherlands, Radio	6020af	9605af	9860af	9895af
		11655af	15315af	17605af	
2000-2050	New Zealand, R NZ Intl	11735pa			
2000-2100	Nigeria, Radio	3326do	4770do	4990do	
2000-2100	Nigeria, Voice of	7255af			
2000-2100	North Korea, R Pyongyang	6576eu	9345eu	9977eu	
2000-2100 vl	Papua New Guinea, NBC	4890do			
2000-2030 mtwhf	Portugal, Radio	21515af	21655af		
2000-2100	Russia, Radio Moscow Intl	5995eu	6085eu	6110eu	7115eu
		7205eu	7330af	9490na	9640eu	9665af	9800na
		9890na	11750na	12015na	13670as	15205eu	15385na
2000-2100	Slovakia, AWR Europe	6055as			
2000-2100 vl	Solomon Islands, SIBC	5020do	9545do		
2000-2100	Sri Lanka, SLBC Colombo	9720eu	15120eu		
2000-2045 s	Swaziland, Trans World R	3240af			
2000-2015	Swaziland, Trans World R	3200af			
2000-2030	Switzerland, Swiss R Intl	3985eu	6135af	6165eu	9770af
		9885af	11640af	13635af	
2000-2100 vl	Uganda, Radio	4976do			
2000-2030	United Kingdom,BBC London	7160me	9630af	9740me	17830af
2000-2100	United Kingdom,BBC London	3255af	6180eu	6195eu	7110as
		7325eu	9410eu	12095af	15070af
		15260sa	15400af	17880af	
2000-2100	USA, KAIJ Dallas TX	15725am			
2000-2100 vl	USA, KJES Mesquite NM	15385na			
2000-2100	USA, KTBN Salt Lk City UT	15590am			
2000-2100 as	USA, KVOH Los Angeles CA	17775am			
2000-2100	USA, KWHR Naalehu HI	11980as			
2000-2100	USA, Monitor Radio Intl	7510eu	7535eu		
2000-2100	USA, VOA Washington DC	3980eu	6040eu	7415af	9700eu
		9760af	13710af	15160af	15205me	15410af	15445af
		15580af	17800af	21485af			
2000-2100	USA, WEWN Birmingham AL	13615na			
2000-2100	USA, WHRI Noblesville IN	9495am	11980am		
2000-2100	USA, WINB Red Lion PA	15715eu			
2000-2100	USA, WJCR Upton KY	7490na	13595na		
2000-2100	USA, WMLK Bethel PA	9465eu			
2000-2100	USA, WRNO New Orleans LA	15420am			
2000-2100	USA, WWCR Nashville TN	12160eu	13845am	15685am	17525eu
2000-2045	USA, WYFR Okeechobee FL	21525af			
2000-2030	Vatican State, Vatican R	7355af	9645af	11625af	
2005-2100	Syria, Radio Damascus	12085eu	15095na		
2010-2100 sa	Kenya, Kenya BC Corp	4935do			
2015-2045 s	Swaziland, Trans World R	3200af			
2025-2045	Italy, RAI Rome	7235me	9710me	11800me	
2030-2100	Egypt, Radio Cairo	15375af			
2030-2100	Netherlands, Radio	9860af	9895af		
2030-2100 mtwhfa	Palau, KHBN Voice of Hope	11980as			
2030-2100	Russia, Radio Moscow Intl	6185as	7180eu	7260eu	9550eu
2030-2100	Serbia, Radio Yugoslavia	9580eu	9620eu	11870eu	
2030-2100	South Korea, R Korea Intl	5965af	5975as	9640eu	9870eu
2030-2045	Thailand, Radio	4830do	9655eu	9700eu	11905eu
2030-2100	Vietnam, Voice of	10059as	12025as	15010as	
2050-2100	Vatican State, Vatican R	3945eu	5882eu		
2051-2100	New Zealand, R NZ Intl	15115pa			

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FREQUENCIES

2100-2200	Australia, Radio	6060pa	6080pa	7240pa	7260as
		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			
2100-2106	Bahrain, Radio	6010do			
2100-2200 vl	Canada, CBC N Quebec Sce	9625do			
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			
2100-2159	Canada, RCI Montreal	5995eu	7260eu	11945eu	13690af
		15140af	15325af	17820af	
2100-2200	China, China Radio Intl	9920eu	11500eu		
2100-2130	China, China Radio Intl	11715af	15110af		
2100-2200	Costa Rica, R Peace Intl	7385am	9400am	15030am	17905am
2100-2200	Cuba, Radio Havana Cuba	17760eu			
2100-2127	Czech Rep, Radio Prague	5930eu	7345eu	9420eu	
2100-2200	Egypt, Radio Cairo	15375af			
2100-2130 mt	Estonia, Estonian Radio	5925eu			
2100-2150	Germany, Deutsche Welle	6185as	9615af	9670as	9690af
		9765as	11785as	13690as	15425af
2100-2200	India, All India Radio	7412eu	9910au	9950eu	11620eu
		11715eu	15225pa		
2100-2200 vl	Italy, IRRS Milan	7125eu			
2100-2200	Japan, NHK/Radio	6035as	6185as	9625af	9680af
		9750me	11925eu		
2100-2115	Japan, NHK/Radio	9660as	11915as		
2100-2200	Lebanon, Wings of Hope	9960me			
2100-2200	Liberia, Radio ELWA	4760do			
2100-2125	Netherlands, Radio	9860af	9895af		
2100-2200	New Zealand, R NZ Intl	15115pa			
2100-2200	Nigeria, Radio	3326do	4770do	4990do	
2100-2200	Nigeria, Voice of	7255af			
2100-2200 mtwhfa	Palau, KHBN Voice of Hope	11980as			
2100-2200 vl	Papua New Guinea, NBC	4890do	9675do		
2100-2125	Poland, Polish R Warsaw	5995eu	6135eu	7285eu	
2100-2200	Romania, R Romania Intl	7225eu	9690eu	9750eu	11940eu
2100-2200	Russia, Radio Moscow Intl	7115eu	7300eu	9470eu	9530af
		9550eu	9750eu	9795na	9820eu
		9880eu	9890eu	11730na	11920na
		12065eu	13670na		
2100-2150	S Africa, Channel Africa	5960eu	7285eu		
2100-2130	Serbia, Radio Yugoslavia	7265eu	9595eu		
2100-2115 vl	Sierra Leone, SLBS	3316do			
2100-2200	Slovakia, AWR Europe	6055as	7270as		
2100-2200 vl	Solomon Islands, SIBC	5020do	9545do		
2100-2200	South Korea, R Korea Intl	6480eu	15575eu		
2100-2200	Spain, R Exterior Espana	6125eu			
2100-2130	Sri Lanka, SLBC Colombo	9720eu	15120eu		
2100-2105	Syria, Radio Damascus	12085eu	15095na		
2100-2200	Turkey, Voice of	9400eu			
2100-2200	United Kingdom,BBC London	3255af	3915as	5975na	6005af
		6180eu	6195eu	7110as	7325eu
		9410eu	11750sa	11955as	12095af
		15070eu	15260as	15360as	15400na
		15575eu			
2100-2200	USA, KAIJ Dallas TX	15725am			
2100-2200	USA, KTBN Salt Lk City UT	15590na			
2100-2200 s	USA, KVOH Los Angeles CA	17775am			
2100-2200	USA, KWHR Naalehu HI	13720as			
2100-2200	USA, Monitor Radio Intl	7510eu	7535na	13840au	
2100-2200	USA, VOA Washington DC	6040eu	6125eu	7415af	9760eu
		11870pa	13710af	15185pa	15205me
		15410af	15445af	15580af	17735pa
		17800af	21485af		
2100-2200	USA, WEWN Birmingham AL	13615na	18930sa		
2100-2200	USA, WHRI Noblesville IN	9495am	11980am	13760am	
2100-2200	USA, WINB Red Lion PA	11915eu			
2100-2200	USA, WJCR Upton KY	7490na	13595na		
2100-2200	USA, WMLK Bethel PA	9465na			
2100-2200	USA, WRNO New Orleans LA	15420am			
2100-2200	USA, WWCR Nashville TN	12160eu	13845am	15685am	
2100-2200	USA, WYFR Okeechobee FL	7355eu	11580af	13695af	
2110-2200	Syria, Radio Damascus	12085na	15095na		
2115-2200	Egypt, Radio Cairo	9900eu			
2115-2130 mtwhf	United Kingdom,BBC Carib	6110am	15390am	17715am	
2130-2200	Australia, Radio	9580pa	9645as	9660pa	11695pa
		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 as	Latvia, Radio	5935eu			
2130-2200	Sweden, Radio	6065eu	9655eu		
2200-2300	Australia, Radio	9580pa	9645as	9660pa	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			
2200-2230	Belgium, R Vlaanderen Int	5910eu	6035eu		
2200-2300	Bulgaria, Radio	7105eu	9700eu		
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	11705as	11945na	13690na	15325na
		17820na			
2200-2300	Canada, RCI Montreal	9755na			
2200-2230	China, China Radio Intl	3985eu			
2200-2300	China, China Radio Intl	7170eu			
2200-2300	Costa Rica, R Peace Intl	7385am	9400am	15030am	
2200-2300	Cuba, Radio Havana Cuba	9550na			
2200-2227	Czech Rep, Radio Prague	5930eu	7345af	9420eu	
2200-2245	Egypt, Radio Cairo	9900eu			
2200-2300 vl	Eqt Guinea, Radio Africa	15190af			
2200-2230	Hungary, Radio Budapest	3955eu	6110eu	7220eu	
2200-2230	India, All India Radio	7412eu	9910au	9950eu	11620eu
		11715pa	15225eu		
2200-2300 vl	Italy, IRRS Milan	7125eu			
2200-2225	Italy, RAI Rome	9710as	11800as	15330as	
2200-2300	Lebanon, Wings of Hope	9960me			
2200-2300 vl	Malaysia, RTM Kota Kinaba	5980do			
2200-2300 smtwha	Malaysia, RTM Radio 4	7295do			
2200-2300	New Zealand, R NZ Intl	15115pa			
2200-2300	Nigeria, Radio	3326do	4770do	4990do	
2200-2300	Nigeria, Voice of	7255af			
2200-2250	North Korea, R Pyongyang	9325eu	13185eu		
2200-2300 mtwhfa	Palau, KHBN Voice of Hope	11980as			
2200-2300 vl	Papua New Guinea, NBC	9675do			
2200-2300	Russia, Radio Moscow Intl	5965eu	7150na	7300eu	7400na
		9550eu	9620na	9750na	9890as
		11750af	11920ca	12065af	15290as
		17570as			
2200-2215 vl	Sierra Leone, SLBS	3316do			
2200-2235 vl	Solomon Islands, SIBC	5020do	9545do		
2200-2210	Syria, Radio Damascus	12085na	15095na		
2200-2300	Taiwan, VO Free China	5810eu	9850eu		
2200-2300	UAE, Radio Abu Dhabi	9605na	9770na	11885na	
2200-2300	Ukraine, R Ukraine Intl	4820eu	5940eu	6020eu	7180eu
		7240eu	9640eu	9810eu	11870eu
		13720eu			
2200-2300	United Kingdom,BBC London	3915as	3955eu	5975na	6195eu
		7180as	7325eu	9410eu	9570as
		9590na	9915am	11695as	11750sa
		11955as	12095af	15070eu	15260sa
		15400af	15575eu		
2200-2300	USA, KAIJ Dallas TX	15725am			
2200-2300	USA, KTBN Salt Lk City UT	15590am			
2200-2300	USA, KWHR Naalehu HI	17510as			
2200-2300	USA, Monitor Radio Intl	7510eu	9430as	13625as	13770am
2200-2300	USA, VOA Washington DC	6035as	7215as	9705as	9770as
		9890as	11760as	15185au	15290as
		15305as	17735as	17820as	
2200-2300	USA, WEWN Birmingham AL	7425na			
2200-2300	USA, WHRI Noblesville IN	9495am	17510am		
2200-2300	USA, WINB Red Lion PA	11915eu			
2200-2300	USA, WJCR Upton KY	7490na	13595na		
2200-2300	USA, WRNO New Orleans LA	15420am			
2200-2300 vl	USA, WWCR Nashville TN	12160am	13845am		
2200-2245	USA, WYFR Okeechobee FL	11580af	13695af		
2230-2245	Armenia, Radio Yerevan	11790am	11920am		
2230-2300	Israel, Kol Israel	7405na	7465eu	9435sa	11603na
		15640sa	15650sa		
2230-2300	Sweden, Radio	6065eu			
2230-2300 a	USA, WRMI Radio Miami Intl	9955am			
2240-2250 smtwhf	Greece, Voice of	9375au	9425au		
2245-2300	Ghana, GBC Radio 1	4915do			
2245-2300	Ghana, GBC Radio 2	3366do			
2245-2300	India, All India Radio	9705as	9950as	11745as	15110as
		15145as	17800as		
2245-2300 mtwhf	USA, Voice of the OAS	9670na	11835na	15155na	
2245-2300	Vatican State, Vatican R	6150as	7305as	9600au	11830pa

FREQUENCIES

2300-0000	Australia, Radio	9580pa	9610as	9645as	9660pa
		9850as	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 vl	Canada, CBC N Quebec Sce	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			
2300-2330	Canada, RCI Montreal	5960na	9755na	11845ca	11940sa
2300-0000 as	Canada, RCI Montreal	11940am	15235am		
2300-0000	Costa Rica, R Peace Intl	7385am	9400am	15030am	17905am
2300-0000	Ecuador, HCJB Quito	6080do			
2300-0000	Egypt, Radio Cairo	9900na			
2300-0000	Guam, KSDA/AWR Asia	11980as			
2300-0000	India, All India Radio	9705as	9950as	11745as	15145as
		17800as			
2300-0000 vl	Italy, IRRS Milan	7125eu			
2300-0000	Japan, NHK/Radio	5965eu	6155eu	6185as	9625as
		9680as			
2300-0000	Lebanon, Wings of Hope	9960me			
2300-0000 vl	Malaysia, RTM Kota Kinaba	5980do			
2300-0000 smtwha	Malaysia, RTM Radio 4	7295do			
2300-0000	New Zealand, R NZ Intl	15115pa			
2300-2350	North Korea, R Pyongyang	11700na	13650na		

2300-0000 mtwhfa	Palau, KHBN Voice of Hope	11980as			
2300-0000 vl	Papua New Guinea, NBC	9675do			
2300-0000	Russia, Radio Moscow Intl	9620na	9685na	9750na	12065na
		15425na	17570as	17890as	
2300-0000	Turkey, Voice of	7185me	9445na	11710eu	
2300-0000	UAE, Radio Abu Dhabi	9605na	9770na	13605na	
2300-0000	United Kingdom,BBC London	5975na	6175na	6195eu	9570as
		9590na	9915am	11750sa	11945as
		11955as	15260sa	15370as	
2300-0000	USA, KAIJ Dallas TX	13740am			
2300-0000	USA, KTBN Salt Lk City UT	15590na			
2300-0000	USA, KWHR Naalehu HI	17645as			
2300-0000	USA, Monitor Radio Intl	7510eu	9430as	13625as	13770sa
2300-0000	USA, VOA Washington DC	6035as	7215as	9705as	9770as
		9890as	11760as	15185au	15290as
		15305as	17735as	17820as	
2300-0000	USA, WEWN Birmingham AL	7425na	9985eu	11820sa	
2300-0000	USA, WHRI Noblesville IN	7315am	17510am		
2300-0000	USA, WINB Red Lion PA	11915eu			
2300-0000	USA, WJCR Upton KY	7490na	13595na		
2300-2400	USA, WRNO New Orleans LA	15420am			
2300-0000 vl	USA, WWCR Nashville TN	5065am	13845am	15685am	
2330-0000	Austria, R Austria Intl	9870sa	13730sa		
2330-0000	Netherlands, Radio	6020na	6165na		
2330-0000 m	Sri Lanka, SLBC Colombo	15425na			
2330-0000	Sweden, Radio	11910as			
2330-0000	Vietnam, Voice of	10059as	12025as	15010as	
2335-2345 smtwhf	Greece, Voice of	9425sa	11595sa	11645sa	

SELECTED PROGRAMS

Sundays
2300 CBC North - Quebec: Cross Country Checkup.
2311 Radio Moscow: Science and Engineering in the CIS. See S 0611.
2332 Radio Moscow: Audio Book Club. See S 0132.
2335 Radio Canada Int'l: The Mailbag. See S 1237.

Mondays
2300 CBC North - Quebec: The World at Six.
2300 Radio Canada Int'l: The World at Six. See M 1630.
2311 Radio Moscow: Commonwealth Update. Commonwealth of Independent States (CIS) developments.
2330 CBC North - Quebec: As It Happens.
2330 Radio Canada Int'l: As It Happens. Live telephone interviews with newsmakers around the world.
2332 Radio Moscow: Russian by Radio. See S 1532.

Tuesdays
2300 CBC North - Quebec: The World at Six.
2300 Radio Canada Int'l: The World at Six. See M 1630.
2311 Radio Moscow: Commonwealth Update. See M 2311.
2330 CBC North - Quebec: As It Happens.
2330 Radio Canada Int'l: As It Happens. See M 2330.
2332 Radio Moscow: Audio Book Club. See S 0132.

Wednesdays
2300 CBC North - Quebec: The World at Six.
2300 Radio Canada Int'l: The World at Six. See M 1630.
2311 Radio Moscow: Commonwealth Update. See M 2311.
2330 CBC North - Quebec: As It Happens.
2330 Radio Canada Int'l: As It Happens. See M 2330.
2332 Radio Moscow: Russian by Radio. See S 1532.

Thursdays
2300 CBC North - Quebec: The World at Six.
2300 Radio Canada Int'l: The World at Six. See M 1630.
2311 Radio Moscow: Commonwealth Update. See M 2311.
2330 CBC North - Quebec: As It Happens.
2330 Radio Canada Int'l: As It Happens. See M 2330.
2332 Radio Moscow: Audio Book Club. See S 0132.

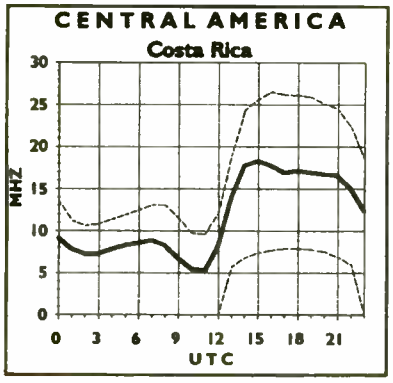
Fridays
2300 CBC North - Quebec: The World at Six.
2300 Radio Canada Int'l: The World at Six. See M 1630.
2311 Radio Moscow: Commonwealth Update. See M 2311.
2330 CBC North - Quebec: As It Happens.
2330 Radio Canada Int'l: As It Happens. See M 2330.
2332 Radio Moscow: Music. See S 0432.

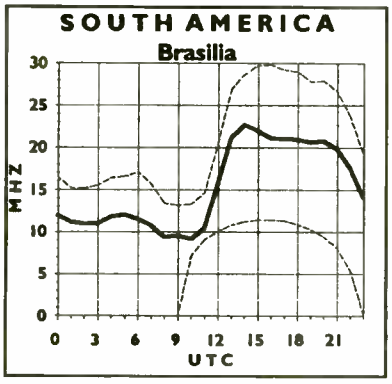
Saturdays
2307 Radio Canada Int'l: Innovation Canada. See S 0307.
2311 Radio Moscow: Top Priority. See S 0511.
2332 Radio Moscow: Timelines. See M 0332.

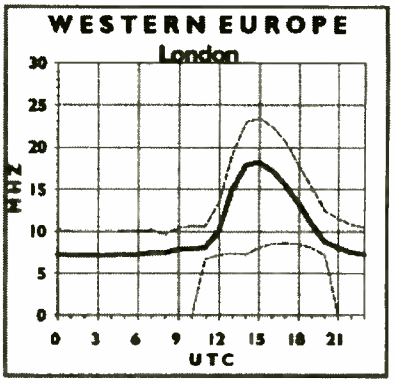
Our thanks to Anthony Santora for sharing this Radio Vietnam QSL with us.

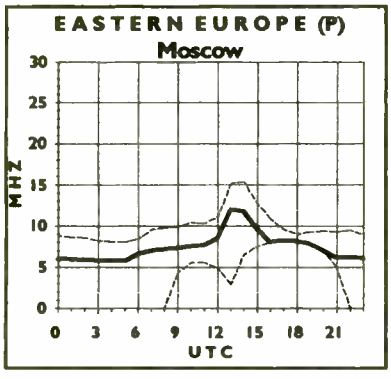
Propagation conditions: Eastern United States

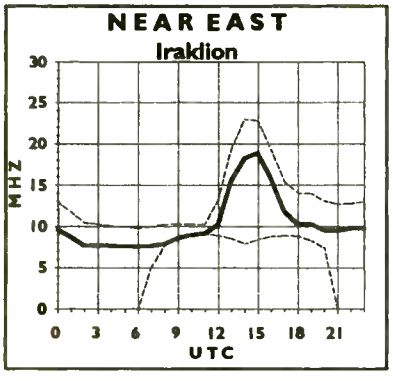
How to use the propagation charts: Propagation charts can be an invaluable aid to the DXer in determining which frequencies are likely to be open at a given time. To use the propagation charts, choose those for your location. Then look for the one most closely describing the geographic location of the station you want to hear.

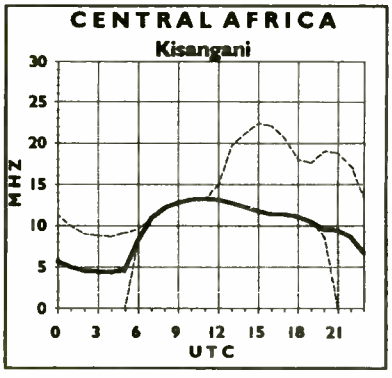


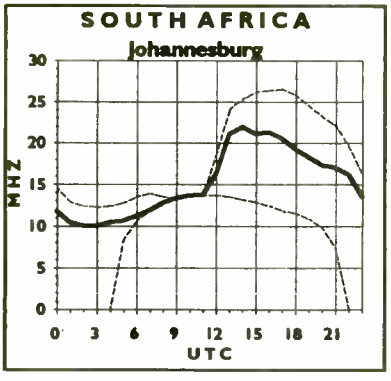


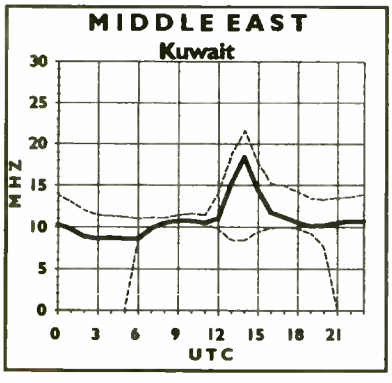


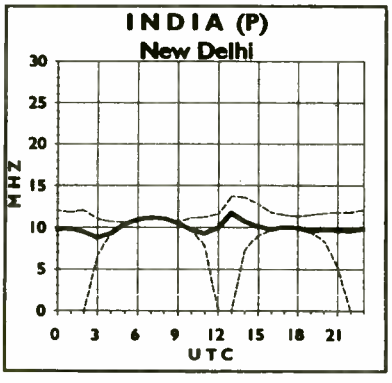


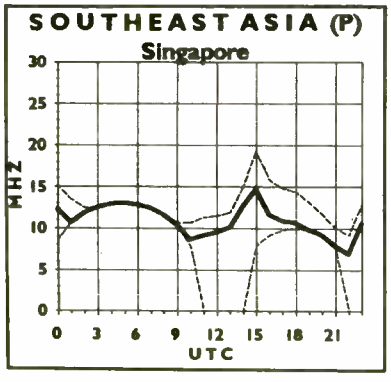


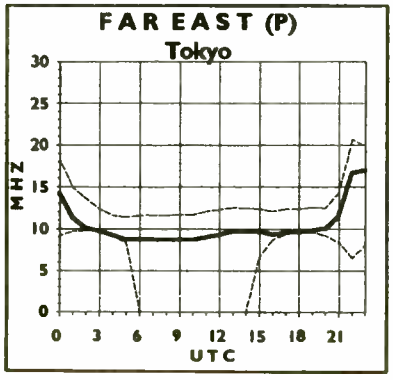


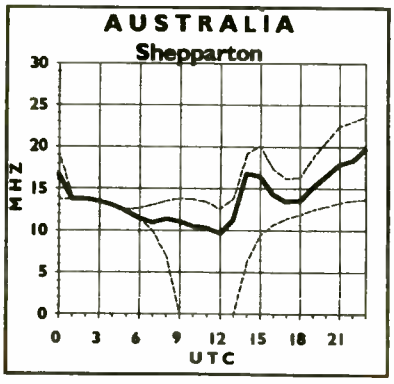






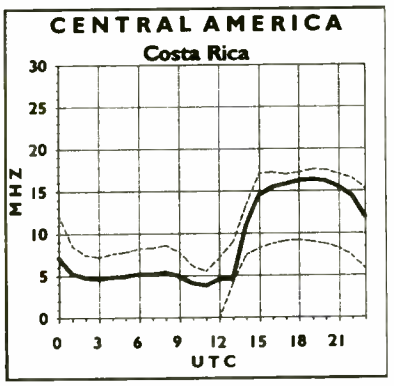


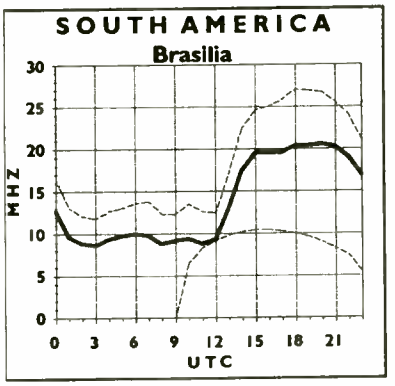


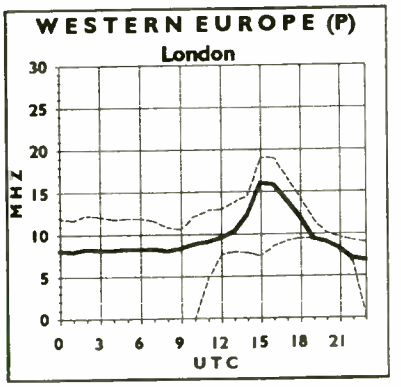


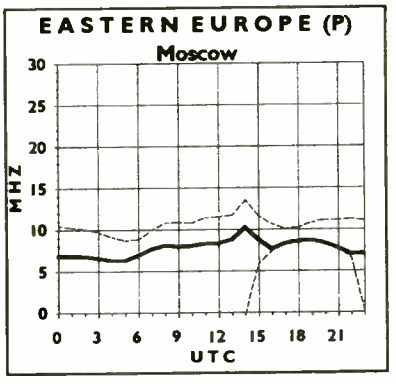
Propagation Conditions: Western United States

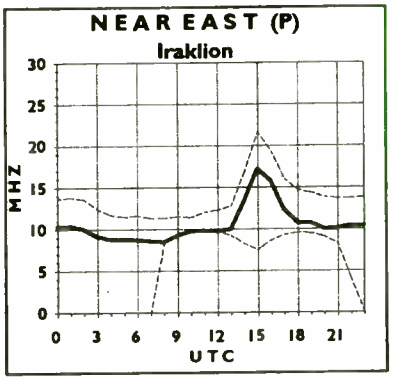
Once you've located the correct charts, look along the horizontal axis of the graph for the time you are listening. The top line of the graph shows the maximum usable frequency (MUF), the heavy middle line is the frequency for best reception, or optimum working frequency (OWF), and finally, the bottom 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.

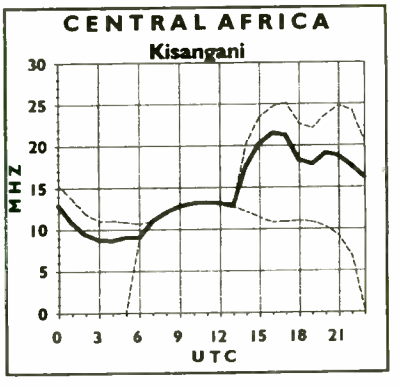


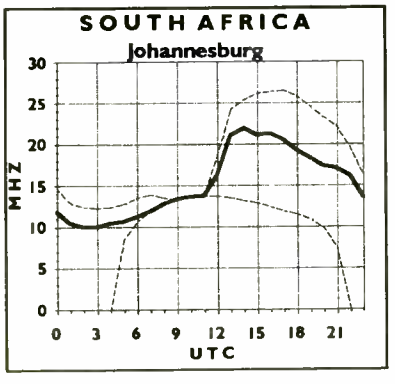


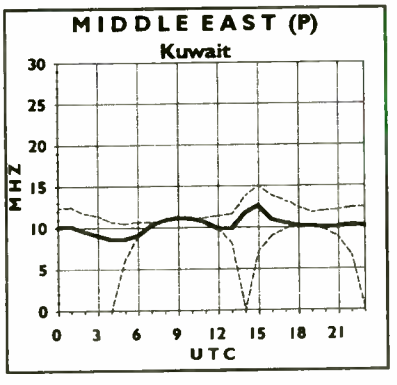


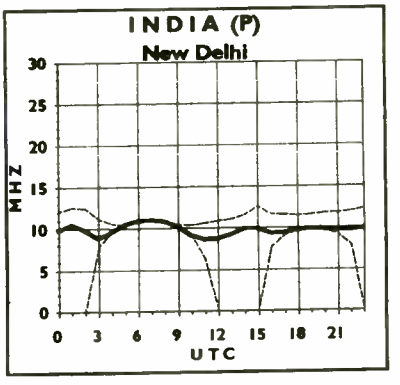


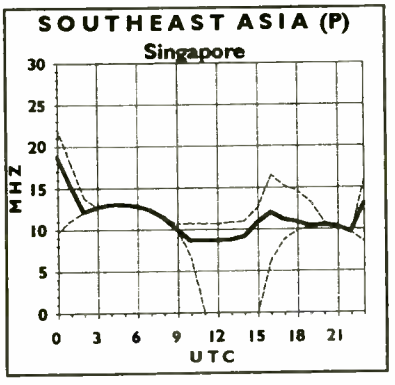


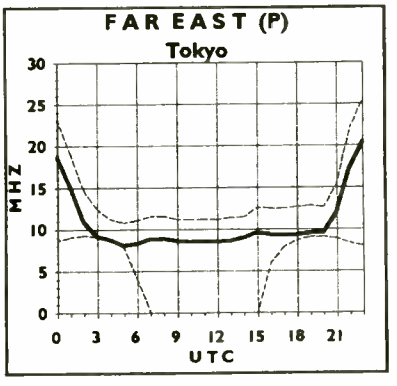


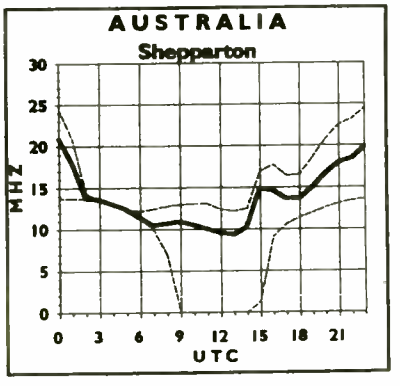




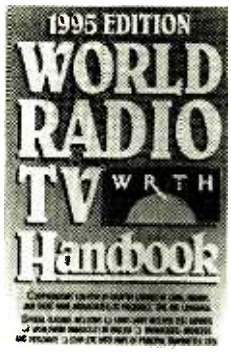






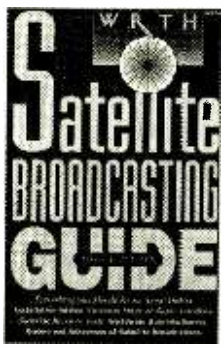


For nearly half a century...



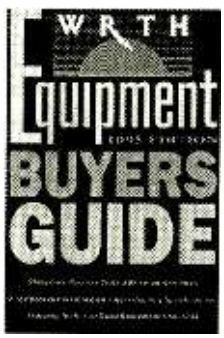
A "must-have" resource for radio buffs and broadcasting professionals, this annual shows how to find out--quickly--what's on the airwaves anywhere in the world at any time. It features country-by-country listings of long-, medium-, and shortwave stations by frequency, time and language; an address book of worldwide TV stations; maps of principal transmitter sites; an hour-by-hour guide to broadcasts in English; a survey of high-frequency broadcasting reception conditions for the year; an annual review of shortwave receivers; and the names and addresses of international radio listener clubs, broadcasters, and personnel. With its comprehensive, up-to-date listings, the World Radio TV Handbook is endorsed by the world's leading broadcast organizations.

Pre-publication offer: $23.95 (includes shipping!)



As more and more people become fed up with cable TV services, they are turning to the option of satellite dishes. This burgeoning group of consumers has generated a real need for a guide to the equipment. Here it is, written by the experts who publish the respected World Radio TV Handbook. Much more than a buyer's manual, this book also reveals how dishes work and provides a guide to satellite broadcasters. Readers are shown how to set up their own home satellite system and learn how to receive hundreds of TV and radio stations that they probably didn't know existed. The book also includes directories of stations, maps locating the major satellites, and a directory of reputable dealers.

Pre-publication offer: $23.95 (includes shipping!)



From the publishers of the World Radio TV Handbook comes the only complete and objective buyer's guide to shortwave receivers, antennas, and accessories. Each year the WRTH staff reviews new receivers and equipment launched in the preceding 12 months and publishes their findings in this volume, along with updated reviews of earlier models. The book also contains a section in which the significance of the technical specifications is explained, so that readers can choose the equipment that fits their needs. Other sections offer advice on improving reception and give descriptions of software for Macintosh and other computers.

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The books of choice.

"And Now, the News"

By John Figliozzi

The most cited reason listeners give for turning to shortwave radio is the opportunity to hear a diversity of views about current events and trends throughout the world. Shortwave listeners have a unique opportunity virtually unavailable to users of other media to become truly intelligent about the world around them.

At the outset let it be said that all stations offer perspectives and in this they are all valuable sources of information. The primary purpose of this article, however, is to offer the listener alternative sources to "check" the information received from stations that may be too close to a given situation to be objective.

This article has been prepared with the North American listener in mind. Programming times primarily reflect station transmissions to North America and times of day likely to be more convenient for the North American listener. Days and times are referenced in GMT/UTC. Frequencies for those transmissions can be obtained by referring to the "Shortwave Guide" section of this magazine.

For around-the-clock general worldwide coverage, there are two standout choices—the BBC World Service (BBCWS) and Monitor Radio International (MRI).

The **BBC** offers news updates every hour of every day—ranging from one to sixty minutes, depending on the day and time. The sixty minute version is called *Newshour*. Heard every day at 0500, 1300, and 2100, *Newshour* is the BBC's flagship current events program offering perhaps the most comprehensive report to be found on shortwave radio.

News features also abound on the BBC World Service. Two of the best are *The World Today* (Mon-Fri 1645/2015, Tues-Sat 0615), which provides in-depth analysis of one current events topic daily; and, in two editions per week, *From Our Own Correspondent* (Sat 1830, Sun 0330/0730, and Wed 1515, Thur 0445/0915) in which BBC correspondents worldwide provide news background stories about nations, cultures, and individuals.

Monitor Radio International transmits twenty-four hours a day, Monday through Friday, from transmitters in South Carolina and Saipan. Programming consists of one hour blocks of news features that are changed at 1000 daily and repeated with rolling updates as dictated by breaking events. Fresh news reports are presented on the hour and half-hour. Concern has been expressed about financial pressures that have forced several cutbacks in news gathering resources and transmitting facilities, but the reporting remains excellent overall, nonetheless. MRI's strengths still lie in its general objectivity and its efforts to highlight events and issues in developing nations.

Two somewhat smaller broadcasters—the Canadian Broadcasting Corporation (CBC) and Radio Netherlands (RN)—also provide excellent worldwide coverage.

On shortwave through **Radio Canada International** (RCI) and its Northern Quebec Service (CBCNQS), the CBC's strength and value to the discriminating listener is in its longer form news programming and analyses. The CBC especially excels in dispassionate analysis of the United States and its activities throughout the world and gives the listener a view of the world uncolored by American ethnocentrism.

An excellent daily source for background to the news that emphasizes personal experience and reaction is the ninety minute *As It Happens*, broadcast in its entirety over RCI and CBCNQS (Mon-Fri 2330). A shortened version of the previous evening's program is broadcast Tuesday through Friday on RCI (1312). *As It Happens* features interviews with newsmakers as well as ordinary individuals caught up in world events. With its many unique, on-the-spot perspectives on the news, it is a valuable, one-of-a-kind program.

The weekly *Sunday Morning* (RCI/CBCNQS Sun 1400)—a three-hour long Sunday newspaper of the air—provides well-written and well-presented documentary reports on worldwide (and Canadian and American) political, cultural, and social events and issues. It, arguably, is the most literate news and arts program on shortwave radio. As of this past September, the program has undergone something of a renaissance with the arrival of Canadian author and broadcaster Ian Brown as host. Brown brings a wry sense of humor and an eclectic curiosity to his presentation of the program.

Radio Netherlands (RN), through its daily program *Newsline* (Mon-Fri 2336; Tues-Sat 0036/0336), provides excellent perspective on areas, events, and trends not usually covered by the larger shortwave services and North American domestic media. *Newsline* correspondents often provide a unique, and balanced, perspective on major breaking events as well. This 18 minute program offers an opportunity to truly learn something new and significant.

The Local Point of View

Many smaller stations with correspondingly smaller budgets eschew global coverage for what they are better able to do by virtue of their geographic location—that is, provide comprehensive regional coverage. Some comments on these follow:

Europe

There are many good choices for news stressing European events and issues. In general, for objective all-Europe coverage, the best are Swiss Radio International (SRI) and Belgische Radio-Televisione's Radio Vlaanderen Internationaal (BRT). Deutsche Welle (DW) and Radio France Internationale (RFI) also are quite reliable, but their reporting on events and issues in which their sponsoring countries have important interests sometimes appear biased. Radio Austria International (ORF) provides a generally good perspective on eastern and central Europe, but also sometimes appears to emphasize Austrian views on events and issues in the region.

For coverage of Europe's regions or regional perspectives on Europe-wide issues, nearly every European shortwave station—from Radio Moscow to Radio Bulgaria to Radio Portugal—can provide the listener with something of value. Eavesdropping on Europe can be a full time job and a news junkie's delight.

Africa

Obtaining reliable information on African events and issues is a research project

for the listener, especially if he or she is confined to English language services. The continent lacks a truly intercontinental radio voice and most of its media is strongly state-controlled. Several large broadcasters, notably former colonial powers and the VOA, attempt to fill this void by ostensibly reflecting Africa back to Africans.

It is true, therefore, that much of Africa's news comes to it from outside Africa. Some of these broadcasts are audible in North America, where domestic media provide minimal coverage of African issues and events. The VOA, the BBC, RFI, DW, and a few others have special services and programs targeted at Africa, which transmit during the continent's mornings and evenings. Whether these programs better serve Africa's needs or those of their sponsors is a question which needs to be asked, but is exceedingly difficult to evaluate.

Asia and the Pacific

The clear winner in this increasingly powerful and important region is Radio Australia (RA). Some years ago, the Australian Broadcasting Corporation (ABC) decided to focus RA's attention on south, southeast, and east Asia and the Pacific island nations, much to the chagrin of listeners in North America. However, as a result, RA provides far and away the most comprehensive and balanced reporting and analysis of Asian and Pacific events and issues from the Indian subcontinent to Micronesia. World and Australian news reports, with clear emphasis on the Asian and Pacific regions, are broadcast around the clock at the top of the hour. More in-depth reports are featured on *International Report*, broadcast on even numbered half-hours.

In addition to Radio Australia, Radio New Zealand International (RNZI) provides good coverage of events in New Zealand and the various small, but diverse, Pacific island nations and the issues of importance to them. An added perspective is provided to shortwave listeners by virtue of the fact that a significant portion of RNZI's broadcast day includes rebroadcasts of domestic network newscasts and programs. These can provide North American listeners with a more unguarded view of what New Zealanders think, since the programs heard are not prepared with an international audience in mind. *Checkpoint*, the flagship evening news program of the domestic network, provides an excellent daily review of New Zealand and Pacific regional events and issues (Mon-Fri 0500).

Both RA and RNZI are heard regularly in North America. RA broadcasts around the clock, RNZI up to eighteen hours a day.

A third source of regional information is Radio Japan (NHK). Radio Japan's reporting is a little more difficult to assess since a large proportion of it focuses on Japan itself and its relationship to the Asian and Pacific region and the world in general. Though the presentation is sometimes dry, a wealth of information and perspective is provided to the attentive listener. Given the importance of Japan to the global body politic and economy, the informed listener cannot afford to ignore Radio Japan and consider him or herself truly informed.

All the same, although it appears that Radio Japan is fundamentally reliable, it is probably best to hear Radio Japan with some reserve. For the most complete daily report, try *Newsround* (Mon-Fri 1100).

Latin America

As with Africa, the North American listener who speaks only English is left with limited sources of information about regional events and issues. HCJB, a religious broadcaster in Quito, Ecuador, which also produces some fine secular programming, gives primary consideration in its newscasts to current events in Central and South America (0000 and 0500). Immediately following these newscasts, on Tuesday through Saturday, HCJB features twenty minutes of topical in-depth reporting on the region in *Studio 9*. Radio Exterior de España (REE), Spanish National Radio, also gives some attention to events in Latin America in its daily newscasts (0000/0100/0500).

The Caribbean

Remember the Windward Islands Broadcasting Service? Over twenty years ago, this was the authoritative voice (for those able to receive it from its 5 kW transmitters) about events in this region. Today, the most comprehensive and reliable sources of information about current events and issues in the Caribbean are outsiders. The BBC broadcasts *Caribbean Report* (Mon-Fri 2115; Tues-Sat 0145) which provides daily political and economic reports on the region. The Voice of America (VOA) has an identically named program (Tues-Sat 0010) with a slightly wider focus. Again as with Africa, whether these broadcasts better serve the people of the region or the sponsoring nations' is an open question.

North America

This, in some ways, is a euphemism for the United States. Canadian events and issues are covered only by Canadian stations, with only rare exceptions. Apart from RCI and the CBCNQS, a few Canadian commercial stations simulcast on shortwave at very low power (1 kW or lower). Depending on conditions at various times of the day and your location, for a non-CBC perspective, try a newscast or talk show from CHNS (6130 kHz) in Halifax, CIBQ (6005 kHz) in Montreal, CFRB (6070 kHz) in Toronto, CFCN (6030 kHz) in Calgary, and CKWX (6080 kHz) in Vancouver, which has been off the air but is expected back during 1995.

American media is so pervasive and American events and culture so widely reported that alternative sources of information and views about American current events and government policies can be found on almost any station anywhere. However, balanced and critical analyses of American issues can be had by tuning to Monitor Radio International and Radio Canada International *As It Happens* (see references at the beginning of this article), along with the many BBC World Service news related programs. A personal perspective from a long-time observer of the States can be heard weekly in Alistair Cooke's *Letter from America*. (BBC - Sat 1015; Sun 0615/1645/2230).

You may have noticed that the Voice of America was largely omitted from these recommendations. This was done for a number of reasons: First, most North Americans use shortwave radio to gain perspectives *other* than those readily available to them within the American media. An American perspective—which the VOA is charged with providing—doesn't satisfy that goal.

Secondly, it is not clear that the VOA's news and analysis is entirely independent of US government influence. Editorial and operational independence of the VOA, or any post-Cold War successor, would guarantee the integrity of the service and better represent the most cherished American constitutional principle—the First Amendment.

That is not to say that the VOA is of no use to anyone in the effort to gain an informed perspective on the world around us. Worldwide, many look to the VOA for more reliable information about their circumstances than they can get from their domestic sources. The VOA is much respected by many international listeners—and justifiably so. Let us not, however, mistake VOA coverage for anything other than what it is—an American perspective—and, all too often, a narrow, mainstream one at that. For North Americans seeking a more global perspective, the VOA is not a primary source.

Do not, however, discount the VOA and the many other stations not specifically cited in this article. As stated at the outset, all perspectives are valuable. A listener interested in increasing his or her depth of perspective of, for example, issues and events in eastern Germany, should obviously seek out Deutsche Welle. But that listener would be ill advised to rely solely on that reporting without checking other available—and more detached—sources. Hopefully, this analysis has assisted the reader in identifying some of those sources.

This article was previously published in The Journal, *the publication of the North American Short Wave Association. Reprinted by permission of the author.*

Joe Eisenberg, WA0WRI

'Tis the Season for DXers

Most retailers will tell you that December is their biggest single month. With the holidays coming up fast, now is a good time to look at how to pick out a receiver that not only is a good stereo system (a popular gift item), but a great DX tuner, too! Many factors come to mind, such as knobs versus up/down buttons, tuning steps, signal strength meters, as well as such features as Dolby Pro-Logic for enjoying TV shows in Surround Sound.

For DXers, the most important factors are sensitivity and selectivity. Image rejection and capture ratio are important, too. But all of those numbers really don't really tell the whole story. It is the real world, with its noises, computer hash, automobile static, and powerful stations with their potential for overloading that is the true test of receiver performance.

Worst of all, the only place you have to look at all of them together is in a store, with all of its noises from computers, cash registers, price scanners, and maybe even nearby strong broadcast signals. A metal building only adds to the problem. But, all of those factors can really be used to your advantage. After all, if a radio can pull in signals well in *that* environment, your home will be a breeze!

By using a portable receiver, such as a Walkman-type radio, and seeing what it can receive at home, you can take that same radio into a store and see what difference the environment is really making. Then, by tuning each receiver up and down the band, looking for specific stations and how well they come in, you can quickly pick out the best receiver. Many times, it is not the most expensive, either!

With large electronics superstores, such as Silo or Best Buy or Circuit City, becoming more and more popular, shopping can be a bit bewildering with all of the choices at hand. Using a little common sense will find you an exceptional radio that might be very affordable. Remember that AM reception can be next to impossible in these circumstances. But, if most of the radios hear very little on AM and one seems to be catching all of the locals and maybe some fringe area stations, that is the mark of a good receiver!

The same is true for FM. I look for tuning steps finer than the standard 200 kHz—most commonly either 100 kHz or better still, 50 kHz. This feature lets you use the selectivity of the receiver to pull out weaker stations that may be too close to stronger signals.

In a store, they either have a short wire on the antenna terminals or maybe nothing at all. Always check if possible. It is a better comparison if all have the same amount of antenna, even if it is very short. Look for features such as signal strength meters and wide/narrow bandwidth switches. These are invaluable DX aids. Since practically all tuners are digital, there is no longer a need to compare the accuracy of the tuning dial, or guessing what frequency you are DXing.

Picking a Television

What about TV sets? Unfortunately, most stores have them all hooked to some sort of cable or master antenna system. This makes it a lot harder to evaluate TV sets for DX capabilities. But, a check of recent issues of *Consumer Reports* magazine or their annual *Buyer's Guide* in your local library gives detailed information as to how they tested in their lab, including such things as sensitivity and selectivity in comparison to other models. If it has good fringe area reception, then you can be assured of good DXing when the band is open.

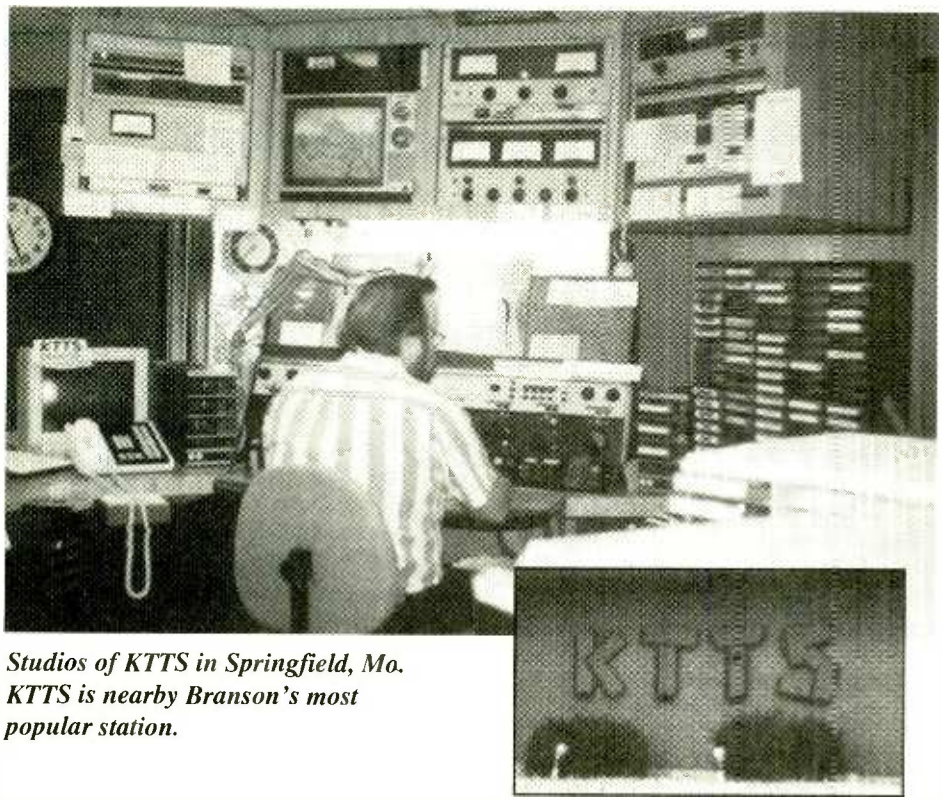
What does the tiny town of Branson, Mo., have to offer? Besides radio station KOMC/KRZK of 76 Country Music Blvd., Branson is the second most popular destination reached by car in the U.S., according to AAA. See "Bits and and Pieces" for details.

Look for such things as multiple antenna connections, so you can switch from antenna to cable, and audio/video output/input jacks. These features make DXing a lot more enjoyable. For the more adventurous, "picture in picture" lets you DX more than one channel at a time. Some TV sets even "scan" the channels, putting a small image of each channel in little boxes on the screen. What a neat way to get a look at the band all at once!

Balancing features and performance with price is not as hard as it seems. The main thing is to find the best DX receiver and then watch for it to be on sale. Big sales are the worst time to be testing several radios or TVs with all of the other shoppers crowding the aisles. But, they are the best time to pick up your favorite receiver at a bargain price. Do your testing when the store is quieter and less crowded and you will be able to try every radio you want. Then, when the sale flyer hits, get there fast, to assure getting what you came for. It helps to cultivate a friendship with someone at the store; he or she can be a valuable source of information about newer models, features, problems, and future sales.

Are you just shopping for a simple clock radio for your bedside? The same methods work well in finding the one that is right for you. There are some excellent DX performers out there in the guise of a simple clock radio. Use a few selected stations to look for that are difficult to get in the store, and the best one will stand out in a hurry! On your way into the store, don't forget to look around for such things as high voltage power lines or radio towers close by that might affect the radios' performance.

Car stereos can be looked at in the same way. But, those may be more difficult to judge when thinking about automotive noises. Most all store displays are on a big 12 volt DC power supply, which does not produce such



Studios of KTTS in Springfield, Mo. KTTS is nearby Branson's most popular station.

things as ignition noise or computer noise. Make sure the store has a good return policy in case of such problems arising in your vehicle.

Follow-up

Have you found an outstanding DX receiver? Let us know! Send your AM/FM/TV DX receiver discoveries to this column by e-mail or to the Brasstown address, so we can share your good fortune! I am available on e-mail at JPGC40A on Prodigy, Internet at jpgc40a@prodigy.com, and AOL at JoeE262156.

Bits and Pieces

• It is time for the short winter sporadic-E season, so watch for openings on TV and FM, especially in the period from Christmas to New Year's! This season also provides some of the best AM DX as well, so let us hear about your long winter nights of DXing.

• According to the AAA motor club, Orlando ranks the highest as a vacation destination reached by car. Next on that list is the tiny town of Branson, Missouri. Home to a myriad of live country music shows, Branson radio is also dominated by country music. The top station in the Branson market hails from the nearby larger city of Springfield. KTTS AM and FM enjoy the status of being the most popular stations in Branson. A close second is a local AM/FM pair that had actually gone off the air a few years ago, before the tourist boom. KOMC 1220 AM and KRZK 106.3 FM operate from studios located at the far eastern end of the "Strip," 76 Country Music Blvd.

Skipping In

This month's DX comes from the logs of Mark Conelly in Massachusetts—incredible DX for early fall!

567 kHz Ireland—news and talk in English
639 kHz Spain—talk in Spanish and classical guitar
666 kHz Portugal—Portuguese music and woman in Portuguese
756 kHz Germany—news with male announcer in German
774 kHz Egypt—Arabic music
927 kHz Belgium—Male vocals in French
1053 kHz Morocco—Arabic talk and music
1251 kHz Libya—Arabic female chanting and drums
1287 kHz Slovak Republic—Male speaking Slavic
1296 kHz Sudan—Interval signal and anthem
1512 kHz Saudi Arabia—Arabic vocals and talk

John Fulford, WA4VPY

Federal Trunking Systems -Chapter Two

As we reported in the last issue, the federal agencies are moving more and more into the new age of technology by the utilization of trunking technology. The first exposure I had to this was the discovery of the 406-420 MHz trunking channels in the Miami, Fla., area several months ago.

The trunked frequencies are set up in the bandplan (frequencies MHz) in the box below.

The GROUP 1 frequencies have been monitored in the South Florida area—with the control channel first noticed on 407.9500 MHz. It has been reported that the Miami FBI Field Office has been experimenting with this system. The Secret Service is said to be next.

Incompatible Systems

To understand the latest trunking technology, it is important to realize there are three systems in use for trunking systems. The first, and probably most prominent, is the Motorola system. The other two are the General Electric/Ericsson system and the E.F. Johnson (Standard) system. It is beyond the scope of this column to go into the differences between the three systems. One of the best descriptions of the differences is described in the *Police Call* series by Hollins Radio Data (available through Grove Enterprises or at 'most any Radio Shack). What matters to us is that the systems are not interchangable.

The system in use in the Miami area is the Motorola system. To follow this system, you must enter all of the channels labeled in the frequency list in order to follow the mobile users of that system. In the Motorola system, the control channel will be a loud jet pitched sound called a TURBO STREAM. If you listen closely to this sound, you will notice a change in pitch as users interrogate the sytem for voice channel access.

In a twenty channel trunked system, there will be one or more control channels. There will be fifteen or more voice channels to be used by the individual users. This means fifteen individual users can share the system at once. One user could be the FBI organized crime section, the next could be the FBI counterterrorist unit, the next could be the Secret Service counterfeiting division, and so on. The trick is to follow the individual divisions among the channels in use.

This is interesting, you may be saying, but how do we get fifteen voice channels out of the above four groups of five federal channels?

The answer is that not all of the federal agencies are using the federal trunked channels. This has been alluded to in the past, and several unnamed readers have sent in reports from all across the country of federal agencies using *commercial* trunked radio systems.

For example, the Miami Coast Guard district is reported on the following trunked channels:

861.0625
862.0625
863.0625
864.0625
865.0625 MHz.

This is a commercial trunked system in use in the Miami, Fla., area. Remember, not all of the traffic heard on these channels will be Coast Guard units. There may be a dozen or more individual users each with a half dozen or more units on this system. Homestead Air Force Base, which is undergoing a complete rebuilding, is using as Motorola trunked system located in the south end of Dade County, Florida.

FEDERAL GOVERNMENT TRUNKING SYSTEMS

	BASE	MOBILE
Group 1	406.3500	415.1500
	407.1500	415.9500
	407.9500	416.7500
	408.7500	417.5500
	409.5500	418.3500
Group 2	406.7500	414.7500
	407.5500	415.5500
	408.3500	416.3500
	409.1500	417.1500
	409.9500	417.9500
Group 3	406.5500	415.3500
	407.3500	416.1500
	408.1500	416.9500
	408.9500	417.7500
	409.7500	418.5500
Group 4	406.9500	414.9500
	407.7500	415.7500
	408.5500	416.5500
	409.3500	417.3500
	410.1500	418.1500

A Different Approach to Trunking

Another system in use in the federal sector is the General Electric/Ericsson system. This system does not use an individual control channel, but passes the trunking data along on one of the voice frequencies underneath the voice. This system is being accepted in the military branches.

In 1993, the United States Navy Personal Communications Services examined the aircraft carrier communications system at Lynchburg, Virginia. A trunked system was designed to be configured and operated on an aircraft carrier or amphibious command ship. This system was finally accepted and given the name of HYDRA (Heirarchical Yet Dynamically Reprogrammable Architecture) System. The first unit was installed on the *USS Dwight D. Eisenhower* (CVN-69). The next system was installed on the *USS Ponce* (LPD-15).

This system, officially known as the HYDRA/EDACS AEGIS SYSTEM, consists of fourteen (14) channels for increased reliability in case of ship-wide damage. The trunked system repeaters and antennas were installed in two physically separate compartments, six channels above and eight channels below. The primary and backup antennas were installed on the upper yard arm and below deck in the forward aircraft hanger. The channels are those mentioned above in the 406-420 MHz band.

Other users of the General Electric/Ericsson system include the U.S. Department of Energy, U.S. Army Joint Readiness Center at Fort Polk, U.S.Army National Training Center at Fort Irwin, U.S. Navy Boca Chica Naval Air Station at Key West, Guantanamo Bay Naval Base, and the Department of

Justice's FBI/Metropolitan Dade Correction Center in Southwest Dade County, Fla.

Recruiting all Fed File reporters ...

Look for trunked activity around military installations and in any city with federal offices; and let me know what you find—or hear.

How do you know if there is trunked activity in your area and if so, what format is it? This I will leave up to you. You will have to be an investigator. Watch the news. Observe video tape footage of federal operations—better yet, video tape the news. Then you can go back and examine the radios frame by frame. Learn the differences between a General Electric and a Motorola trunked radio.

Visit the federal building. Hang out in the coffee shop or go visit a federal courtroom to see a trial. Eventually you will see federal agents carrying their radios. Learn the difference in 406 and 860 MHz antennas. With a little experience, you will be able to tell the difference between a Motorola SABRE and a STX821 at ten paces. That's all you need to know to discover the type of radio system in use and the frequencies used.

Thanks to Jay Harris and the *Frequency and Intelligence Directory*—a publication of the Frequency Intelligence Administration—for the background on the federal trunking systems.

Salt Lake City Frequencies

The column received a nice package from David Howden listing frequencies in the Salt Lake City, Utah, area.

Drug Enforcement Administration

F-1	418.625	Salt Lake City/ Denver dispatch
F-2	416.325	Car-to-car (see note below)
F-3	418.725	Car-to-car
F-4	418.675	Car-to-car
F-5	418.975	Car-to-car

Note: F-2 frequency (416.325 MHz) is a repeater input frequency. This neat trick is accomplished by turning off the sub-audiable tone (the private line) and talking on the input frequency, without bringing up the repeater. Moral: ALWAYS put the repeater input frequencies in your scanner bank—you can tell if the units are close—maybe too close.

Misc. unconfirmed frequencies:
417.025 417.200 415.700 418.875 418.250
418.900 418.800 418.775 418.175 418.075

Federal Bureau of Investigation

F-1	162.6375	Repeater output
	167.7375	Repeater input
F-2	163.9875	Simplex

Several simplex channels also reside in the 167-168 MHz band

U.S. Marshall

F-1	163.200	Control/Base
F-2	163.8125	Car-to-car (see note)
F-3	164.600	Federal Court transport

Note: F-2 is another input frequency used in the simplex mode with the private line turned off. This is normally the frequency for the 163.200 MHz repeater nationwide.

Hill Air Force Base

148.450	Range
126.200	Tower
163.5875	Disaster Prep.
149.165	Security
149.265	Security
163.650	Security
163.4625	Security
139.510	FF (Identification, friend or foe)
118.450	Range control
413.450	Air alert frequency
34.150	F-16 close in air support
40.150	Same

Misc. Frequencies used on base:
164.1625 164.1675 164.050 163.225
149.350 163.5125 141.125 162.825

Salt Flat Area:

375.200	Weather
381.300	Command
335.800	Clearance
124.100	Clearance
275.800	Ground
121.600	Ground
289.600	Tower
236.600	Tower
396.000	Clearance

Electronic Surveillance Revisited

Several columns ago we did a section on electronic surveillance and the radio frequencies used by different federal agencies. The majority of the frequencies are in the 162-174 MHz range using equipment provided by Audio Intelligence Devices (AID) of Ft. Lauderdale, Fla. Here is a compilation of frequencies used by the FBI, Customs, Alcohol Tobacco and Firearms, and DEA. This list is by no means complete—it is just a guide to some of the more frequently reported frequencies.

Federal Bureau of Investigation

Wireless Microphones (Body Bugs)

F-1	169.445	F-5	171.045
F-2	169.505	F-6	171.105
F-3	170.245	F-7	171.845
F-4	170.305	F-8	171.905

Special Operations Group

F-1	171.450
F-2	171.600
F-3	171.750
F-4	171.850
F-5	172.000

Microphone Surveillance Bugs

F-1	172.2125	F-5	172.3125
F-2	172.2375	F-6	172.3375
F-3	172.2625	F-7	172.3625
F-4	172.2875	F-8	172.3875

U.S. Customs Service

F-1	166.6625
F-2	166.8625
F-3	164.4625
F-4	164.8625

Alcohol, Tobacco and Firearms

F-1	165.2875(main channel for voice operations also)
F-2	166.2875
F-3	170.4125
F-4	165.5125

Drug Enforcement Administration

F-1	171.450
F-2	171.650
F-3	172.000
F-4	172.100
F-5	172.200
F-6	172.300

This is the layout of the frequencies in the DEA Audio Intelligence Devices intelligence kits (receivers and recorders).

Uncoordinated Agencies

The Broward County Sheriff's Office just received a federal grant to purchase electronic surveillance equipment for their federally funded street crime/prostitution task force. The transmitters of the body bugs are on 167.500 MHz (an FBI repeater input channel in South Florida)—another fine example of non-cooperation between federal and state and federal/federal agencies.

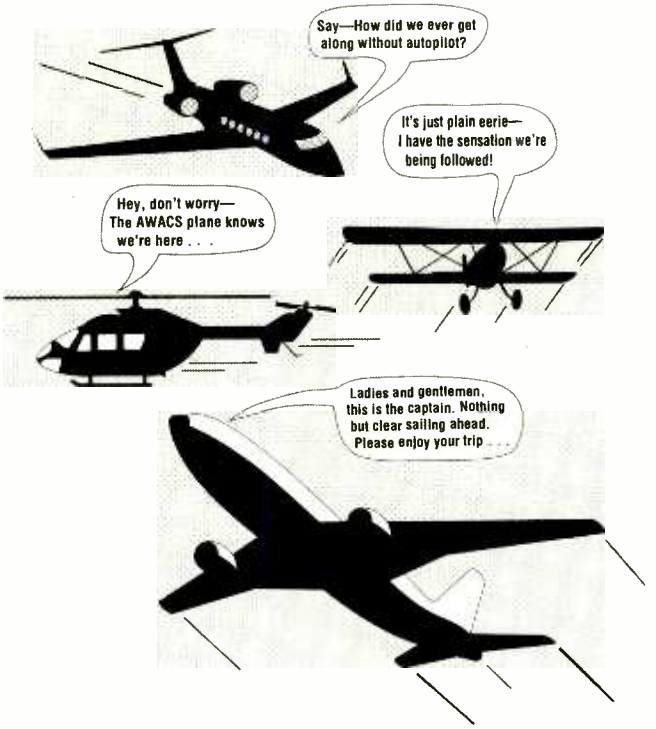
The 167.500 MHz is the input to the 163.9625 MHz repeater used in South Florida. This 167.500 MHz frequency is also used as a car-to-car frequency with the private line turned off.

That's it for this month. 73's

Jean Baker, KIN9DD

"Lofty" Lingo

Welcome aboard! We are going to review some terminology that has confused beginners to our hobby and experienced listeners alike. For example, as monitors of airband communications we often hear controllers talking to pilots using the terms VFR or IFR.



VFR

First of all, remember that airspace below 18,000 feet above mean sea level (msl) is referred to as "altitude"; above 18,000 feet the term "flight level" (FL) is applied.

Those of us who monitor the aero bands on a regular basis have learned that VFR stands for "Visual Flight Rules." Visual Flight Rules can be used (weather permitting) when the pilot flies on a "see and be seen" basis, although he more than likely still talks to an air traffic controller for flight following and advisories. Under these circumstances, the individual pilot is responsible for avoiding collisions ("see and avoid").

An aircraft flying VFR without a transponder will appear on a radar screen as a"target," although it will not show any of the identifying numbers, codes, or altitude readout that a flight with a full transponder would. An aircraft with even a basic transponder would show up with a little more detail, however.

Certain rules define the conditions under which this type of flight must be conducted. Some restrictions in terms of equipment may also be applicable when a VHF flight operates in high-density traffic environments. This would especially be the case in or around an airport control area with the quantity of approaches and departures of O'Hare, Atlanta, Kennedy, or Los Angeles, for example.

Some conditions under which an aircraft may **not** be flown under VFR include:

- Within certain prescribed proximities of a cloud formation vertically (above and below) and horizontally.
- Unless flight and ground visibilities are equal to or better than defined distances.
- Unless a "special" VFR authorization is given by ATC of weather that is below prescribed VFR minimums.

In all cases, it is wise for VFR pilots to file a flight plan with a Flight Service station before takeoff. And it's equally wise for them to remember to cancel it with an FSS station or ATC. Otherwise, if the plan isn't closed out shortly after they were to arrive at their destination, the Search and Rescue people are called out!

To sum it up, the pilot when flying in accordance with the visual flight rules has the direct responsibility for providing separation from other aircraft by means of "see and avoid" and "see and be seen" in regard to cruising altitudes, climbing, and descending.

IFR

Instrument Flight Rules are another story altogether. IFR is designed to provide separation between aircraft operating in accordance with the instrument flight rules, primarily when weather conditions are such that pilots cannot "see and be seen." Aircraft must be fitted with specified flight instruments, communication, and navigation equipment, as well as having an airborne radar transponder to tie into the ground radar surveillance system. The ATC gives instructions to pilots via this system as to altitudes and flight paths to be followed. Pilots must meet certain proficiency standards for instrument flying. An aircraft being flown under these rules is called an "IFR flight."

For a flight conducted under IFR in controlled airspace, the pilot must do the following.

- Submit a flight plan and thereafter comply with ATC "clearances" or traffic control instructions.
- Unless a pilot is under active radar surveillance, he is required to make periodic position reports as to time and altitude of passing specified "reporting points" (such as in oceanic crossings).
- Obtain prior approval from ATC for any desired change in flight plan or in current air traffic control instructions.

Radar Separation

Since radar surveillance provides the basis for the control of air traffic in areas of the world having medium-to-high density air traffic volume, it is obvious that "radar separation standards" play a key role in determining the capacity and efficiency of the ATC system. In general, radar separation may be applied between the following:

- Radar-identified aircraft.
- An aircraft taking off and another radar-identified IFR aircraft. The aircraft taking off will be radar identified within one mile of the runway end.
- A radar-identified aircraft and an IFR aircraft not radar- identified, when the former is climbing or descending through the altitude of the latter and the following conditions exist:

- The performance of the primary target is being displayed on the PPI (Plan Position Indicator) radarscope being used.
- The airspace in which separation is applied is not less than 6 miles (10 miles, if 40 miles or more from the radar antenna) from the edge of the radar PPI display.
- Flight data on the IFR aircraft not radar-identified indicates it is a type which can be expected to give adequate primary return on the radarscope in the area where separation is applied.
- The radar-identified aircraft is vectored on a flight path different from the route of the IFR aircraft not radar identified before descent or climb.
- Radar separation is maintained from all observed primary and beacon targets on a controller's radarscope until non-radar separation is established from IFR aircraft not radar-identified.

The above is a only a **synopsis** of some of the principals of radar separation. If anyone would like to have additional information on the subject, please drop me a business-size SASE in care of *Monitoring Times* and I'll be glad to send you a more detailed description.

Uncontrolled Airspace

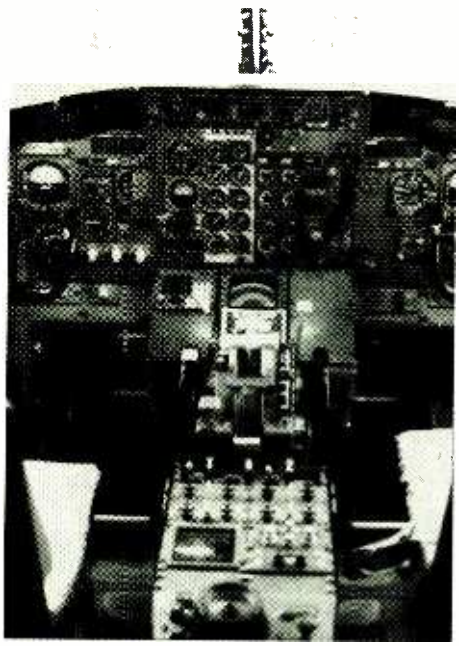
This term describes that portion of the airspace that has not been designated as continental control area, control area, control zone, terminal control area, or transition area, and within which ATC has neither the authority nor the responsibility for exercising control over air traffic.

Readers' Corner

We have a lot of frequencies to share with you that were contributed by several of our readers.

Scott Miller provides us with company frequencies for the Minneapolis\St. Paul International Airport:

128.825 Northwest Airlink (Mesaba) Operations
128.900 Signature Flight Support
129.025 Northwest Airlink (Twin Cities) Operations
129.050 Northwest South Ramp Ops.
129.150 Northwest Airlink Freight Ops.
129.200 American Airlines Operations
129.300 Northwest Inbound Flight Reports
129.375 Northwest
129.425 UPS Service Operations
129.500 United Airlines Flight Ops.
129.550 Northwest Load Planning
129.900 TWA Flight Operations
129.925 Northwest Maintenance Operations



130.000 Continental Operations
130.100 Delta Operations
130.900 PJ (Private Jet) Ops possibly using NW for ramp service.
131.625 DHL Airfreight Operations
131.825 FedEx
131.925 FedEx

From Bob V. in Texas:

133.800 Houston ARTCC
132.950 Houston ARTCC
134.800 Houston ARTCC
118.100 Houston Intercontinental (IAH) Tower
121.700 IAH Ground Control
120.5\050 IAH Approaches (North and East)
124.350 IAH Approach (West)
119.700 IAH Departure (North)
123,800 IAH Departure (West)
133.600 IAH Departure (East)
134.450 IAH Departure (South)
128.100 IAH Clearance

Evan Singer, who is attending Vanderbilt University in Nashville, TN, contributed the following company freqs from airports around the country:

129.000 USAir-Laguardia (LGA) New York;
129.050 British Airways (Speedbird)-O'Hare (ORD) Chicago.
129.075 United Airlines-O'Hare (ORD) Chicago
129.100 TWA-JFK & DEN (New York and Denver)
129.150 British Airways-JFK, & Miami (MIA)
129.200 American-Ft.Myers, FL (RSW); Nashville, TN (BNA)
New York (JFK); Salt Lake City (SLC), Tampa, FL (TPA).
129.325 American-Hartford/Springfield, CT (BDL); Miami-Maintenance
129.450 United Chicago Dispatch (ORD)
129.500 Delta-Boston (BOS); Miami (MIA); Tampa (TPA)
Delta-Atlanta Radio; United-Salt Lake City
129.600 Delta-Atlanta Radio; Chicago (ORD);
129.625 TWA-St. Louis (STL)
129.925 Continental-Atlanta (ATL); Denver (DEN);
130.125 Air France-New York (JFK); Finnair-JFK; United-O'Hare;
Sabena-(JFK)
130.400 Continental-Boston; Tampa, FL
130.525 Valujet (Critter)-Dispatch, Atlanta (ATL)
130.625 TWA-Boston; TWA Express Ramp-St. Louis
130.925 USAir-Pittsburgh (PIT)
131.050 TWA-JFK; Pittsburgh
131.250 Virgin Atlantic-Boston
131.500 Air Ontario-Hartford/Springfield; American Eagle-Hartford/Springfield; Continental, Newark (EWR)
131.750 American-Boston; El Al-JFK; Northwest-Nashville; TWE Express Manchester, NH (MHT)
131.850 Delta-Atlanta; Boston; Hartford-Springfield; Ft. Lauderdale (FLL); Ft. Myers; Pittsburgh; American Trans Air-Boston
132.000 Virgin Atlantic-JFK

All of the above contributors sent more frequencies than we can print in one month, so we'll run the rest of them in a future issue. In the meantime, anyone who has VHF or HF frequencies from his/her area to share, please feel free to send 'em in to me.

Although we were going to have some airline addresses in this issue, I thought that it would be a good idea to devote more space to frequencies this time. We *will* have the addresses in the February issue, along with a visit to Oakland Oceanic Control. 'Til then, 73 & out.

Ken Reitz, KC4GQA

The Changing Face of Satellite Audio

The ever changing technology of satellite broadcasting has brought about significant changes for listeners. With today's spectacular "CD quality" audio sound we've never heard it so good. Let's take a quick look at the history of audio delivery technology for the past ten years or so to see just how far we've come.

In 1982 there was no such thing as a Compact Disc. Cassette tape players were King of Audio and the best sound you could get from broadcasting was over-the-air FM stereo which played mostly vinyl records. Listeners didn't expect much. Cable TV systems rarely carried anything more interesting than the local FM stations on their audio services. Sound quality was not a consideration.

DMX for Business' 120 channel DBS receiver by ComStream (with built-in Dolby AC-3 digital audio decoder), a compact 29" antenna dish and the DMX-DJ. The DJ allows the listener to view the song title, artist, album title, record label and, where applicable, the chart position of the song currently playing.

Up From Telco

Prior to the advent of satellite delivery, radio networks relied on old Ma Bell. Tinny audio over expensive phone lines was the state of the art. But with satellites, radio networks suddenly had a choice. Using Single Sideband/Single Channel Per Carrier (SSB/SCPC) networks were able to duplicate that same tinny signal for much less. By installing receive-only systems at the affiliate radio stations, networks could increase flexibility and decrease expenses at the same time.

Other programmers realized that there was extra room on each satellite video transponder. After the video and its corresponding audio was transmitted, there was still room for several other signals. What's more, these signals could be FM! Why, the same quality sound that listeners were used to could be sent directly to affiliates in glorious Hi-Fi! It's amazing to note that many subcarrier services were monaural. Only a few opted for two subcarriers to accommodate the left and right channels.

A Higher Standard

By the end of the 1980's broadcast audio had made dramatic turns. Compact Disc players got cheaper every year; networks abandoned SSB/SCPC in favor of FM/SCPC; subcarrier services started transmitting in stereo; and encrypted premium services provided for digitally transmitted stereo.

The dawn of digital audio is, by far, the most dramatic event in satellite audio's short history. Now it's technically possible to achieve a higher standard of audio fidelity with less satellite bandwidth.

The first services to take advantage of this new technology were the old radio networks ABC, CBS, and NBC—not that most listeners ever appreciated the difference. After all, transmission is hardly relevant if the receiver is not up the task.

Broadcast Digital Audio

International Cablecasting Technologies had a great idea back in 1990. Securing channel 19 on Satcom F4, it began what it called CD/18. "...Imagine the equivalent of 18 CD players in your home — each programmed in a different music format by one of the world's leading experts in that format. No commercials, no disc jockeys, no interruptions of any kind — just pure music, 24 hours a day." So read the promotional material for ICT.

It was a fabulous idea. Now known as DMX (Digital Music Express) the service offers 30 channels of CD-quality music formats to consumers through 800 cable systems. At present DMX is not on any of the DBS services, though Chris Oake, VP Corporate Communications, says they're looking at all options.

"We've had talks with DBS providers," Oake noted, but it's too early to make any announcements. Their latest venture is DMX For Business—a stand alone 61 channel (expandable to 120 channel) satellite system set up directly at subscribing businesses. Elevator music will never be the same!

DMX For Business is on the Ku band side of Telstar 401 (97 degrees West) whose powerful signal allows the use of their 29 inch dish in the receiving system.

DMX Not Alone

The competition was not far behind. Just months after CD/18 launched, Digital Cable Radio began to offer its 19 channel CD-quality service to the nation's cable TV systems. Now known as Music Choice, the service is poised for its greatest expansion yet. Riding the DirecTV DBS skyrocket, Music Choice brings its 30 music channels to American ears via DirecTV's 18 inch dish.

Lost in the pre-launch hype, Music Choice could be the main reason for consumers to give the nod to DirecTV over the traditional C band dish. If entertainment is the main reason you're considering any type of dish, Music Choice is the icing on DirecTV's cake.

Lost In Space

Somehow, between CD/18's original launch and Music Choice's debut on DBS, direct broadcast to C band dish owners lost out. One suspects that such services were waiting all along for the DBS market to arrive. It's clear that DBS will achieve in its first few years what it has taken the C band market 15 years to do: add up to significant numbers.

This whole industry is about market share. Music service providers know that they will always serve a proportionally small market,

but 5 per cent of 10 million is always better than 5 per cent of 3 million. Still, Music Choice's Karen Muldoon says, "We're looking at a number of distribution channels." She says they won't rule out eventually having a digital package for C band, or wireless cable, for that matter.

Primestar Weighs In

Early entrant into the DBS field, Primestar is just now converting from analog delivery to digital and now has the opportunity to offer digital audio services. So far, the fare is disappointing, especially compared to DMX or Music Choice. Offering its Superaudio series of seven formats currently available to C band dish owners and countless Jones Intercable customers, Primestar's audio star is less sparkling. Aside from the limited choice of formats, these services are commercially supported and feature disk jockeys.

USSB Looks To The Future

USSB, the third DBS entrant, currently does not offer digital audio services. USSB spokesman Steve Blum, KA6GZW, told me "We're looking at innovative things we can do." Not content to offer the same services, USSB plans to offer a choice in audio and data services. Blum indicated that customers could look for such new services in mid 1995. The important thing to keep in mind here is that we are literally on the ground floor with these new technologies and those involved are highly competitive. There will be big changes in all of these services in the years to come.

C Band Status

The current status of audio services on C band is fairly stable. There are still basically two types of audio. Neither will compare in audio fidelity with digital. First is the analog FM subcarrier mentioned earlier. With this method, quantity will have to substitute for quality. There are a little over 100 such subcarriers on C band ranging from Business Radio Network to the Voice of America. No special equipment is required to receive these services and there are no subscription fees.

The other type of audio service receivable on C band systems is Single Channel Per Carrier (SCPC) FM. This is the system used by America's vast array of radio networks. This inexpensive, flexible way to get the signal to affiliates accounts for the burgeoning number of sports, news, and regional radio networks in this country.

Still, big changes are happening here as well. National Public Radio (NPR) is one of the big users of SCPC technology. Industry sources say that beginning next year NPR will begin using digital equipment on some of its SCPC channels. This is a common trend which will likely increase as time goes on. The only drawback to digital is the initial increase in expense as new uplink and downlink hardware is installed.

Don't expect analog SCPC to disappear entirely any time soon. Digital transmissions aren't fail-safe and most networks still maintain some analog duplication. Reception of these signals requires the purchase of an SCPC receiver such as the SCPC-100 sold by Universal Radio. For details on services and frequencies for all satellite subcarrier and SCPC signals see the latest issue of *Satellite Times*.

TRANSPONDER NOTES

Another grim reminder of the fallibility of human system designs was revealed September 8 as AT&T's Telstar 402 (sister bird to T401) was lost shortly after separation from its final stage booster. It is apparently in a highly elliptical orbit which has it coming as close to Earth as 120 miles and as far away as 23,000 miles. As this is written, it is too early to say what caused the problem. Sources say that AT&T is calling the satellite a total loss. Telstar 403, if successfully launched either late this year or early next year, will take its place and be named T402R. T402 was to replace T303, which is very near the end of its predicted life span.

CNN International returns to American C band viewers January 1, 1995. When the service was initially launched several years ago it was transmitted on Galaxy 2 channel 1 in the clear. Shortly afterward it was encrypted using a Leitch system. Now the folks at Turner Broadcasting have seen fit to allow Americans to subscribe via its new home on Galaxy 1 channel 15.

MAILBAG

• Joseph Martin, of Beach Park, IL, wrote to tell us that the station one of our readers was seeing on channel 58 in Wisconsin was not WDJT, Milwaukee, as I had suggested in this column in September. He suggests, instead, that a low power station near the Wisconsin location was where the signal was originating. The station was retransmitting the satellite signal from Trinity Broadcasting Network (G5,3) and not identifying.

Writes Martin, "...He many never be able to identify the Trinity station since, although required by law to use a Morse Code aural identification at least once an hour, Trinity has a very spotty record in complying with the law — its W22AJ in nearby Waukegan went over a year with zero identifications, until I notified the FCC of its non-compliance with the regulations."

• Karl Keller, of Rocky Point, NY, enjoyed the column from this past July in which I talked about "bottom dollar" satellite receiving systems. "...So far, I've picked up my receiver, a Radio Shack SR-2012...for $125...a Hytek RD1 Feedhorn...for $25..." and a 4' 10" black perf spun aluminum dish for $35 plus shipping. With a brand new 25 degree LNB for $90, Karl is going to come in at about $325 for his system.

He's planning a homebrew mount made with off the shelf plumbing parts and sent in a well drawn plan of the project. Karl also took the time to set out what he'd like to see in future columns.

• How about you? Why not take a few minutes and drop me a line care of this magazine. Let me know what you'd like to see more of and what your plans are for your own "Adventures in the Clarke Belt." For a personal reply please send an SASE. Your photos, as always, are welcome, too.

Kevin Carey, WB2QMY

The Extra Edge

December is a month which, according to many listeners, provides some of their best longwave DX. The noise levels are down, and with the arrival of winter, most of us have a little more time to spend at the dials. With the season switching into high gear, it seems like a good opportunity to review some basics for getting the most out of the time you have available.

Tuning Tricks

There's no doubt that successful DXing requires a good measure of patience, but tuning technique can also play a major role. Here's a tuning method that should work well for any tabletop receiver that has an IF Shift control and a narrow filter (500 Hz bandwidth or less):

1) Set your receiver to the USB mode and tune for the zero beat of a beacon's carrier.
2) With the narrow filter selected, carefully adjust the IF Shift control for a peak response to the keyed ID (typically 400 Hz for Canadian beacons, 1020 Hz for U.S.).

This method is far more responsive than straight AM reception. It also makes it possible to separate "dueling" U.S. and Canadian beacons since you can focus on one ID pitch at a time. This means that you could end up with two loggings on one frequency.

Here are some additional tips for improving your DX reception:

- Use a low-noise antenna such as a loop or active antenna. An untuned long wire antenna can act as a "noise collector" in urban or residential settings.
- If possible, shut off all static-producing appliances. (Devices to check include: fluorescent lights, dimmer switches, electric motors, TV sets, computers, etc.)
  Use a good set of headphones to help you concentrate on the signals at hand.
- Tune slowly to avoid missing weak signals!—Beacons are assigned to 1 kHz channel spacings.

Logging On

When your DX list starts growing, you'll want to have some way of recording your achievements. Unfortunately, the typical SWL log lacks some categories that are important for the serious beacon hunter. You can, however, make up your own custom log sheet that will serve quite well for LF purposes.

The log could be on paper, or for those wishing to go first class, a log could be kept "online" using one of the popular spreadsheet or word processor programs. One advantage to the computer method is that you can arrange the listings by frequency, location, power level or whatever criteria you like.

What, exactly, should the log contain? As with a shortwave log, you'll want it to show the date, time, frequency, ID, signal strength and location of the station heard. Here are some additional categories geared specifically toward beacon hunters:

Serial Number—Many beacon chasers like to assign a sequential number to each log entry. This makes it easy to determine your total number of loggings at a glance and provides a convenient reference point when searching for a particular entry later on.

ID Pitch—The two tones you'll hear from navigation beacons are 1020 Hz and 400 Hz. (You can quickly tell one from the other by ear.) Traditionally, U.S. beacons use the 1020 Hz high tone and Canadian beacons use the 400 Hz low tone. There are some exceptions to the rule however, where the reverse is true, and these are considered "rare catches"—even more reason to include them in your log!

Distance—The direct distance in miles (or kilometers) from your station to the beacon site is very useful information for DXing. To determine distance, many DXers have a map posted in their shack with their own location marked by a thumbtack. The thumbtack holds a movable strip that has been marked off in miles (or kilometers) for quick measurement of distances.

Beacon Power—To put a logging into proper perspective, it's helpful to know the transmitting power of the beacon. For instance, hearing the 4000 watt New England powerhouse "TUK" (194 kHz) at 500 miles away may be fairly routine, but pulling in a 25-watt beacon at that distance would be a good catch by *any* standards.

Comments—Finally, a space should be left to note special information about a logging such as whether or not the transmission included a voice weather message, local weather conditions at the time of reception, pertinent QSL data and so on.

TABLE 1

Selected Longwave Broadcasters

Freq	Station	Country
153	Bechar	Algeria
153	Donebach	Germany
153	Brasov	Romania
162	Allouis	France
171	Kaliningrad	Russia
171	Medi 1-Nador	Morocco
177	Oranienburg	Germany
183	Saarlouis	Germany
198	BBC	England
207	Munich	Germany
207	Azilal	Morocco
216	Roumoules	France
234	Beidweiller	Luxembourg
252	Tipaza	Algeria
252	Atlantic 252	Ireland
261	Moscow	Russia

My primary source for determining the output power, location, and other details about a beacon is *The AerolMarine Beacon Guide*. It lists complete data for hundreds of beacons and contains a handy cross reference section that allows you to find an entry as long as you know either the ID or frequency. Copies of the guide are available for $15.00 ($20.00 Foreign) postpaid from Ken Stryker, 2856-G West Touhy Avenue, Dept. MT, Chicago, IL 60645.

Across the Pond

This is an excellent time of year to hunt for European broadcasters on the longwaves. Reception of these high power stations is quite possible anytime there is a path of darkness between you and the transmitting site. Your chances are even better if you live on the East Coast of the U.S.

Table 1 lists several broadcasters you may want to try for. In the eastern U.S., the best time to listen is between dusk until about six hours before local sunrise.

Mailbag

If you've ever tracked down an FAA beacon site you may have noticed that the station

included a small V-shaped antenna in addition to the traditional longwave antenna.

Mr. A.W. Edwards of Corpus Christi, TX, saw one of these sites pictured in the August column ("AS"-359 kHz) and has supplied some interesting facts about the purpose of the additional array, which serves as a marker beacon antenna.

He explains, *"Marker beacons operate on 75 MHz (VHF). Many of these are located at some specified distance from the end of a runway. Others are colocated with other radionavigation aids."* He adds that these VHF marker beacons are an important complement to the LF beacon by giving a precise indication of when the aircraft passes over the station.

Figure 1 shows another combined site photographed by *MT* reader Jim McGloin of Orland Park, IL. The VHF marker antenna is clearly visible on the right side of the picture. The longwave antenna is of the newer "tophat" style being used by the FAA for new and refurbished beacons.

That wraps it up for another month. I'd like to extend the very best holiday wishes from my family to yours. Join me again in January for more longwave monitoring times!

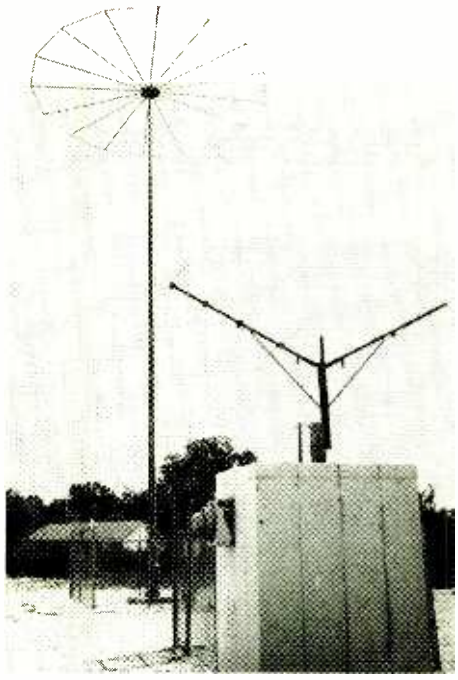
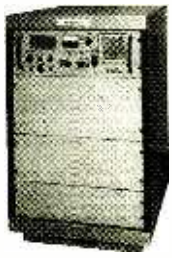


Figure 1. Longwave Beacon "HK" (332 kHz) near Chicago, IL, also includes a V-shaped 75 MHz marker beacon antenna.

BEYOND THE BASICS



Ever wonder what a beacon transmitter looks like? Photo at right shows a typical rackmount unit manufactured by Scientific Radio Systems, Inc. It is a fully solid state unit that can send modulated CW, keyed carrier CW, or Voice. Many installations incorporate two such units in a main/standby arrangement. The beacon can be powered by the AC mains, or by DC backup power and includes a battery charger for keeping the backup batteries at peak performance.

Table 3 shows a few of the key specifications for a more advanced beacon, the FA-9589, which is a new generation unit currently being used by the FAA for new and refurbished sites:

TABLE 3: ***FAA Beacon Specifications***

CHARACTERISTIC	SPECIFICATION
RF Output Power:	10-50 Watts (adjustable)
Frequency Range:	190-535 kHz (synthesized, 1 kHz steps)
Distortion:	5% Maximum
Temperature:	-40 to +70C
Humidity:	Up to 95% Non-Condensing
ID Pitch:	Selectable 400 Hz or 1020 Hz
Dimensions:	30 x 21.5 x 9.25 inches
Weight:	80 lbs.
Remote Control:	All basic parameters are remotely Configurable via modem including Frequency, ID, RF Output and Modulation Level.
Operating Modes:	Carrier only, Normal keyed modulation, Continuous modulated tone.

Ike Kerschner, N31K

Here Comes Santa Claus ...

Do you have all your gift shopping done? If you are like me, the answer is a definite NO! So here are a few ideas that might please the new or prospective ham.

A nice item from the ARRL is the *Repeater Directory*. This handy little book is a constant companion for most of us who like to work FM and repeaters. Its 630 pages list more than 20,000 repeaters in every state of the union, and many outside of the U.S.A. You will find repeaters from 29 MHz all the way to 1240 and above listed here. In addition, packet BBS's, ATV repeaters and beacons are included in this shirt pocket sized volume. You'll even find information on VHF/UHF band plans, and—of great interest to our new Novice and Technician friends—a chapter on using repeaters for the newcomer including a glossary of terms (repeater lingo).

As mentioned earlier, the book fits handily into your shirt pocket or hand bag, which makes it easy to carry along on trips. Mine stays in the glove box of the car and goes everywhere with me. A few years ago, while on a trip to Prince Edward Island, I used the directory to locate the local repeater, and spent several pleasant evenings with the local hams, thanks to the info in this little reference. *Don't leave home without it.*

The price of the *Repeater Directory* is six dollars. It is available from most ham radio suppliers and the ARRL (225 Main St, Newington, CT 06111). There is a shipping and handling charge from the ARRL, so it is best to find it locally if you can.

CQ Magazine produces a wide variety of books and videos for the new ham. One video I recently had a chance to review would be ideal for the person who thinks ham radio might be fun, but is not sure. "Ham Radio Horizons," is an excellent introduction to our hobby.

The video shows the prospective ham just who hams are, how they use their stations and what they do and talk about. One segment on women in ham radio should help introduce the YF or YL to the hobby and hopefully encourage her to go on to get a license.

Segments on DXing, space communication, and how ham radio can help your career all serve to whet the interest of the wannabe ham.

Of special interest to some is a portion of the video dealing with ham radio and disabled persons. This part of the tape discusses how hamming can free the disabled and allow them to learn new skills and develop new friendships.

Other segments deal with equipment costs and myths. And how to go about getting a license of your own. The video is available from *CQ Magazine* at 76 N. Broadway, Hicksville, NY 11801-9962 or phone toll free at 1-800-853-9797. Price is $19.95 plus $4.00 s&h.

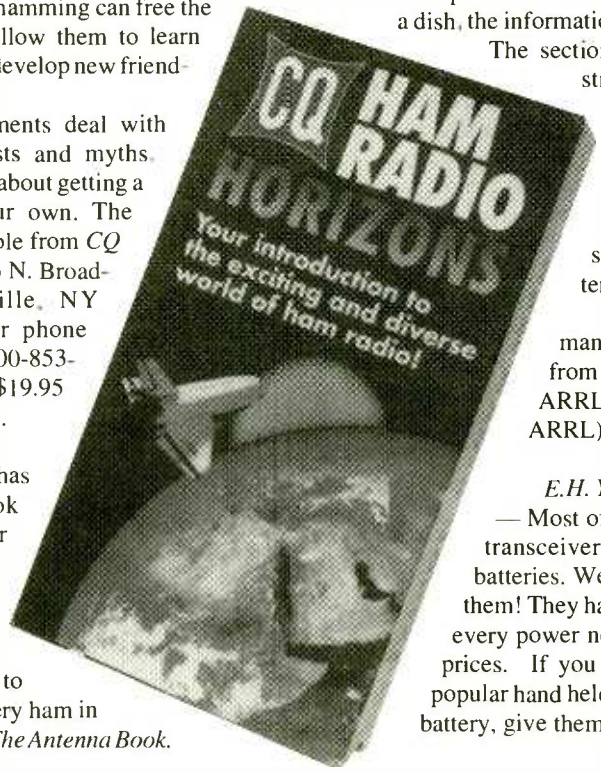
The ARRL has a second book that is a super gift (buy one for yourself). It deals with a subject near and dear to the heart of every ham in the world: It is *The Antenna Book*.

Without doubt this is THE definitive book on antennas for the amateur. Every possible question about antennas is answered in this manual. In addition, discussions of propagation at all frequencies is included to provide the amateur with a good understanding of how radio waves travel. The many antenna projects included are worth the price of the book alone.

This edition of *The ARRL Antenna Book* includes software you can run on your IBM or compatible computer. The software includes programs to help design a Yagi antenna, determine when a path will be open to a particular part of the world, a transmission line subdirectory analyses the impedance, SWR peak voltage, and loss in typical transmission lines of the HF through VHF range, and draws an L-Network on screen to match the impedance at the input of the line to 50 ohms. Other directories compute element lengths for a given taper and help design gamma matches for the beams you build. NEAT!

If you want to build an antenna for 160 meters or explore the microwave region with a dish, the information is in this book. The section on tower construction and putting up your antenna is "MUST" reading for anyone thinking about installing a new antenna.

This 732 page manual is is $30.00 from your dealer or the ARRL (plus s&h from ARRL).



E.H. Yost & Ccompany — Most of us use handheld transceivers which require batteries. Well, E.H. Yost has them! They handle batteries for every power need at reasonable prices. If you have one of the popular hand helds and need a new battery, give them a try. They have

packs already made up at prices far better (usually about one third) than the cost of an OEM pack.

I have purchased many batteries over the years from this company and find them to have an excellent selection. Write them for your needs. 7344 Tetiva Road, Sauk City, WI, 53583, or phone at (608)-643-3194.

One more item that will make a nice gift for the new VHF ham is one that I have recently introduced through my company THE ANT FARM. It is the TALKING STICK—a two meter base antenna that can be mounted in two different ways: conventional U-bolt mounting, or hung in a tree, under the eaves or in the attic, using the built-in hook (ideal for portable operation). The TALKING STICK provides 3 dB of gain over a ground plane antenna and price is $18.00 completely assembled and postpaid in the 48 states. Order from THE ANT FARM, POB 3196, Wescosville, Pa. 18106.

See ya all next month; Happy holidays to one and all! 73 es DX de Ike, N3IK

Bob Grove's

Ham DX Tips

Ho, ho, ho, and a Merry Christmas to everyone! I hope that Santa brought you all the new radios and accessories that you wanted. Now, let's get into this month's tips so you can *use* that new equipment, or dream of using it while you wait for Santa to arrive!

AZORES CU2BJ has been on 7005 to 7100 kHz CW daily starting at 2330 UTC. QSL to Messias Nascimento R Moniz, Rua Nova Misericordia, P-9500 Ponta Delgada, Sao Miguel, Azores, Portugal... **BRUNEI** V85AA (William Maddox, Box 1711, Bandar Seri Begawan, Brunei) is another target for CW DXers as he frequents 14025 kHz CW weekends at 1330 UTC... **CAMBODIA** Check 3505 kHz at 1230 to 1330 UTC for XU7VK. QSL requests should be sent to his manager: HA0HW, Lazzlo Szabo, Jakobinyi 25, H-4220 Hajduboszormeny, Hungary... **JAPAN** JE10M0 (Mitty Yokota, 3-11-16 Ninamiogkubo, Suginami, Tokyo 167, Japan) can be found on 3795 kHz SSB at 1040 UTC most days... **MAURITIUS** 3B8CF (Seewoosankar Mandary, Shastri Rd, Candos, Quatre Bornes, Mauritius) operates on the WARC band 30 meters between 10103 kHz and 10108 kHz CW every Monday starting at 0230 UTC... **PAKISTAN** Jahanzeb Arbab (address: House 13, Street 15, Khayaban Touheed Phase V, Defense Housing Authority, Karachi, Pakistan) is a member of the military here who operates on the ham bands as AP2JZB. You can log him by checking 18125 to 18130 kHz SSB at 1300 UTC daily... **SVALBARD** If you think it is cold outside, then you might want to catch JW0I and compare notes. He operates from this frozen island near the Arctic Circle North of Norway daily at 0200 UTC on 7003 kHz CW. His QSL manager is: SP3ASN, Henryk Jozefiak, ul Feliksa Dziezynskiego 16, 68-320 Jasien, Poland... **SWITZERLAND** RTTY DXers should check 14085 to 14090 kHz HB9CAL (Peter Seeholzer, Hummelakerstr 29, CH-8106 Adlikon bei Regensdorf, Switzerland) at 2000 UTC daily... **SYRIA** VE3UWC/4U is a member of the Canadian contingent of the UN peace keeping forces stationed here. He will be active till the end of 1994. He frequents 14220 kHz SSB at 2145 UTC daily, when schedule permits. His QSL route will be announced on the air or you may send cards via the VE3 Bureau... **TURKEY** TA7I has been operating on 1843 kHz SSB daily at 0001 UTC. His address: Ozkan Ozal, P.O. Box 164, TR-610000 Trabzon, Turkey... **USA** K3SIW/9 has several CW UHF beacons up and running from Schaumburg, IL (42 03' 54"N by 88 02' 54"W) They are on the following frequencies: 903.090 MHz, 1296.070 MHz, 2304.070 MHz, 3456.020 MHz, 5759.950 MHz. They have been heard many hundreds of miles away, depending upon conditions. The West Coast VHF/UHF Society has several nets that meet during the week. The nets meet year around at 8 PM Pacific "local" Time on the following frequencies and days: Sundays—144.200 MHz SSB—a general Discussion net, Tuesdays—432.100 MHz SSB—"Activity night," Wednesdays—144.200 MHz SSB—a Swap Net. Net Control is KI6FF and stations check in from the Southern California, Nevada, and Arizona areas with occasional check-ins from hams in Northern and Central California.

Pirate Frequencies Scatter

This month's lead story was stimulated by a letter to *MT* from Normal Driskell of Providence, RI. Norman wrote in with a tale of frustration:

"Friday I was looking at the September 'Outer Limits' in *Monitoring Times,* and it seems that there is lots of pirate activity on the air. So I gave it a try. From 0000 UTC till 0300 UTC I tuned 7300 kHz to 7500 kHz back and forth until I was beat. All I got was **WEWN, VOA, WJCR, WRNO,** etc. It must have been my unlucky night."

Norman blamed an indoor antenna that feeds his Kenwood R-5000 receiver, but plenty of pirate DXers have had to scramble lately. The interference situation in the traditional 41 meter North American pirate band has been tough during the fall. As we see in our logging section this month, pirates have been moving to a variety of frequencies to avoid a growing number of powerful international broadcasters who operate above the internationally allocated 41 meter broadcasting band edge.

Winter 1994 station schedules created new interference from several European broadcasters. They joined the QRM roster mentioned by Norman, adding to the confusion caused by a late summer move to 7385 kHz by **Radio for Peace International** in Costa Rica.

Some stations have been resurrecting the old traditional 7415 kHz pirate frequency, often using lower sideband mode in an attempt to avoid splatter interference from the WEWN powerhouse in Alabama. This strategy meets with mixed success. On multiple occasions in mid-October, I observed WEWN's signal on an ICOM R-9000 spectrum display. Their extremely wide bandwidth generates noticeable splatter interference in a 60 kHz range between 7395 and 7455 kHz. Weak pirates have trouble in a fight with hundreds of kilowatts from a station like this.

Other pirates have been moving to spots that are clear at particular times of day, which can change suddenly. 7370, 7445, and 7470 kHz have been increasingly used by pirates. It pays to tune around carefully. But, patience is also a virtue, as Norman found. Most weekend evenings still support pirate broadcasting, but there are unpredictable dry spots on some days.

Three upcoming major holidays have traditionally been hotbeds of pirate activity: Thanksgiving, Christmas, and New Years. Your odds of DXing a pirate should increase very substantially during these periods. Good luck!

Finland Busts

MT reader Dick Pearce of Brattleboro, VT, sends in an interesting tape of a **Radio Finland** broadcast that discussed coordinated busts earlier this year of several Finnish pirate stations. Telecommunications authorities closed down several stations after discovering a central correspondence coordination office in central Finland. Station names included **Mayday, Free Radio,** and **Rebellion.**

Pigpen Marley's station promotes Jamaican barbeque.

Although some of the busted pirates used medium wave, most activity was on 49 meters shortwave. Radio Finland announcer Eddie Hawkins editorialized that since Finnish media have been removed from the control of central elites, there was no longer any need for pirate radio in the country. Hawkins did not compare Finland to North America, where hundreds of pirates remain active despite the many thousands of licensed broadcasters on our side of the Atlantic.

Radio Democracy

Although the situation is subject to change without notice, many dozens of North American DXers have been logging the airborne clandestine broadcasts of **Radio Democracy** in Haiti. The September issue of *MT* contained Jim Pogue's fascinating profile of this USA-sponsored station on 1035 kHz.

Two items of news have surfaced. The station has continued operations even after the US military intervention in Haiti. It signed off around 0100 UTC before the military arrived, but it has often been observed past 0200 since then. A Harrisburg, PA, *Evening Sun* article, forwarded to *Fine Tuning* by Brian Alexander of Mechanicsburg, PA, reported that the station transmitter is operated by troops of the 193rd Special Operations Group of the Pennsylvania Air National Guard, normally based at Harrisburg International Airport.

Nick Grace of Washington, DC, reports what probably is the first known QSL from Radio Democracy. By accident he met the spouse of a station announcer, who works in a Haitian arts and crafts store in Washington. She took Nick's prepared card to her husband, who had it signed by station authorities.

Congratulations, Nick, on yet another novel but successful QSL method!

Miscellaneous Items

- Robert Gash of Walnut Creek, CA, joins the long list of readers who sent in press accounts of the struggle between Taiwanese pirate broadcasters supported by local taxi drivers and the government of the Republic of China. At last report, many of the stations have returned to the air, despite a massive bust crackdown by the government.
- Gigi Lytle of Lubbock, TX, sends in a very interesting unidentified logging of a subcontinental clandestine station on 5865 kHz at 0400 UTC. She noted rousing political talks and songs. As *MT's* Larry Magne points out in the new 1995 edition of *Passport to World Band Radio,* Gigi probably heard **Kashmir Freedom,** an anti-Indian government clandestine. Gigi notes that she could hear a microphone pedestal scraping on a table as it was passed from person to person.
- Although Haiti and Kuwait have pushed USA-Cuba relations off the front page, we still hear a nightly jamming war between

QSLs are now arriving from the clever K-2000.

Cuban heterodyne jammers and anti-Castro clandestines like **Radio Caiman** on 9965 kHz and **La Voz del CID** on 9941.7 kHz.

Some have speculated that Castro might crank up his 100+ kilowatt medium wave transmitters in retaliation. *MT* reader Maryanne Kehoe of Atlanta, GA, notes strong daytime Cuban signals on 710 and 1180 kHz, but they aren't creating mayhem on medium wave in the northern USA. Nevertheless, it would be a good idea to keep your eye on these frequencies and others such as 600 kHz that Castro has blasted away on in the past.

This new pirate recreates the late 1960's.]

- A reader who wishes to remain anonymous sent in a September 7 logging of WEWN on 5812 kHz, causing interference to the nearby regular 5810 kHz channel used in the evening by **WWCR.** I have checked unsuccessfully for this scenario, so it must have been a temporary and inadvertent move. Has anybody else noticed this?
- The **Voice of Scotland** was very widely heard in North America during an October DX test that they conducted on 6273 kHz at 2300 UTC. Now that winter propagation has arrived, you might check this 49 meter region for Europirates, particularly much later at night.
- Richard Sklar of Seattle, WA, forwards an interesting profile of pirate broadcasters that ran in a recent issue of *Mondo 2000,* a California magazine targeted to high tech issues. In addition to coverage of local California pirates such as **Radio Free Berkeley,** the article contained plans for the construction of a 30 watt FM transmitter. Of course, this power capability is well in excess of FCC approved microcasting standards. By the way, the *W5YI Report* notes that Stephen Dunifer of the Berkeley pirate is still fighting an FCC Notice of Apparent Liability through legal channels.

What We Are Hearing

All of the following stations were reported by our readers this month. You can send **your** loggings to us c/o PO Box 98, Brasstown, NC 28902. Correspondence maildrop addresses used by North American pirate stations reported by our readers this month include PO Box 452, Wellsville, NY 14895; PO Box 109, Blue Ridge Summit, PA 17214; PO Box 2024, Faribault, MN 55021; and PO Box 605, Huntsville, AL 35804.

6YVOS- 7385 at 0330. Pigpen Marley's reggae music and Jamaican call sign define the main focus of programming here. But, Pigpen points out that an earlier reference to marijuana advocacy in *MT* was inaccurate. Actually, the station advocates barbecue, believe it or not. Addr: Wellsville. (Scott Krauss, Cleveland, OH, and direct from the station.)

Bob Dylan Radio- 7466 at 0200. You don't have to be a rocket scientist to figure out what famous folk music artist is the focus of programming on this station. Parodies and phony ads are spliced in. Addr: None, but verifies logs in *The ACE* bulletin. (Randy Ruger, Brandon, FL)

Bob Yonus Radio- 7408 at 2230. This unusual new station announces that they operate on 600 kHz MW from Tumwater, WA. It mixes rock music with strange coverage of recent news events. Little is known about them; even the spelling of Bob's name is a phonetic guess. Addr: Unknown. (Paul Roales, Tulsa, OK)

CSIC- 7413 at 2330. Pirate Rambo's veteran pirate operation still puts out one of the better AM pirate signals in North America. His Canadian focus, rock music, comedy, and famous "Psycho Chicken" interval signal usually make the station easy to ID. Addr: Blue Ridge Summit. (William Hassig, Mt. Prospect, IL)

He Man Radio- 7465 at 0100. He Man, sometimes joined in the studio by his son He Man Jr., maintains a very consistent format of sexist male advocacy. In recent months he often has produced lengthy mailbag segments on the shows. Addr: Blue Ridge Summit. (Pearce)

Hip Hop Radio- 7415 at 0045. Although it has broadcast on several different occasions, not much is known about this new station yet. Since its format emphasizes rap and soul music, Dick speculates that it may be a black pirate. Addr: None yet. (Pearce)

K-2000- 7472 at 0045. Some pirate DXers think that the elabarate DX parody comedy on this station qualifies it as the most entertaining pirate in North America. Their slogan, revealed in recent QSL's that finally have been arriving, is "Maximum Power." Addr: Stoneham. (Pearce, Hassig)

KTVI- 7412 at 2345. Emanuel Goldstein is the host on this one, where a mix of rock oldies and world events commentary usually dominates the shows. He has announced that some recent shows have been beamed to Haiti. Addr: Faribault. (Roales)

North American Pirate Relay Service- 7415 at 2245. Richard T. Pistek of NAPRS transmitted a widely heard program in honor of the station's second anniversary. He featured short segments of every North American and European pirate that he has officially relayed. Addr: Wellsville. (Barry Williams, Enterprise, AL; Max Syko, Gaylord, MI)

Primitive Radio- 7470 at 0100. So far this new station has programmed modern alternative rock music poetry readings, and sound effects. The announcer's name sounds like "Hosen," but this awaits confirmation. Addr: Wellsville. (George Zeller, Cleveland, OH)

Radio Azteca- 7413 at 2330. Bram Stoker has produced a dozen different hilarious parodies of the DX scene, and they are always extremely entertaining. William submitted this one as unidentified, but Azteca was certainly what he heard. Addr: Wellsville. (Hassig)

Radio Doomsday- 7470 at 0200. Since a show in early September where he committed suicide on the air, Nemesis has not been spotted on the shortwave pirate bands. But, Dick heard his last two programs, including the end. Addr: Wellsville. (Pearce)

Radio X- 7407 at 2300. Although this new station has been broadcasting during the fall, there haven't been too many loggings of its rock music fare. Addr: Unknown. (Zeller)

RKNA- 7375 at 0030. Harry I. Ball has broadcast only occasionally for the last three years, but he resurfaces occasionally with a program of rock music. Addr: Wellsville. (Hassig)

Solid Rock Radio- 7385 at 2030. Dr. Love programs a mix of rock, soul, rap, and pop music, depending upon his mood. Coverage of pirate radio news is sometimes mixed in. Addr: Wellsville. (James Laughlan, Youngstown, NY)

Up Against the Wall Radio- 7470 at 0115. The station creates an atmosphere of the late 1960's and early 1970's with protest rock music and leftist rhetoric. Addr: Wellsville. (Pearce)

WISL- 7415 at 2330. A. J. Michaels of **Action Radio** seems to be associated with this new operation that promotes railroads with a "Whistle Stop Radio" slogan. Railroad music and commentary are the main fare. Multiple sources say that the Boys Town maildrop has closed, but has been replaced. Addr: Huntsville. (Pearce)

WKND- 7465 at 0130. Radio Animal has received some criticism in pirate DX circles for slow response to reception reports. But, Scott reports that he bagged QSL #121 and a station history in only 77 days. Addr: Blue Ridge Summit. (Krauss)

WREC- 7385 at 0000. P. J. Sparx obviously won't be using this frequency any more, since **Radio for Peace International** in Costa Rica now occupies the channel. But, Scott found that he's still verifying reception reports. Addr: Wellsville. (Krauss)

WRFW- 7376 at 2200. Dick Bender's programming uses a slogan of "Radio Free Wisconsin" between rock music selections and comedy bits. Addr: Blue Ridge Summit and Faribault. (Pearce)

WHAT'S NEW?

BOOK REVIEWS AND NEW PRODUCTS

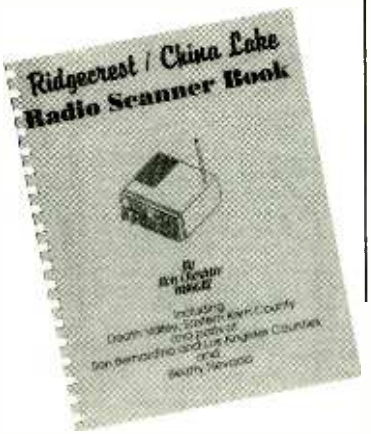
by Larry Miller

This Valley Is Rich in VHF

"This valley is extremely rich in VHF radio frequencies," intones Ron Cheshire in the beginning of his 46 page frequency directory. The valley he's speaking about is the Indian Wells Valley. Although Indian Wells and environs include Death Valley, Eastern Kern County, and parts of San Bernadino, Los Angeles County, and Beatty, Nevada, its main claim to fame is Ridgecrest and China Lake—the latter being the home of the Naval Air Warfare Station.

Cheshire has put together a nice list of local frequencies and short articles which compliment the frequencies very nicely. It's first person stuff, too, meaning that you can tell that Ron knows what he's talking about from actual experience. He's obviously no armchair expert. The piece "Charlie Range is HOT!" is enough to interest even the most jaded listener in tuning in the military jet jockeys streaking over the desert.

Normally, we'd tuck a little minor complaint into this review—there's a little too much "fill" artwork. But we thought better of it after reading the author's preface: "...I do this as a hobby, at my own pace, so please cut me some slack."



Nonetheless, for its quality and creativity, *The Ridgecrest/China Lake Radio Scanner Book* gets the coveted *MT* "nod of approval." It's $13.95 plus $3.00 shipping from Ron Cheshire, 1539 N. China Lake Blvd., Suite 595, Ridgecrest, CA 93555. You can also use your credit card and call 619-375-3379. When you contact Ron, tell him Larry Miller at *MT* sent you.

RTTY and even Wefax

If receiving and decoding RTTY and Wefax (like satellite weather charts) has sounded interesting, but you've been put off by the price of the hardware, Jerry Normandin wants to talk to you. Jerry runs a company called Innovative Technology and he has developed a low cost Wefax/RTTY Demodulator package.

Called *MapZation!*, it sounds pretty incredible. For just $69.95, you get a hardware/software bundle that demodulates Wefax satellite images (up to 64 shades of gray), Slow Scan TV (in full color), RTTY, Baudot and CW (Morse code). What you'll need to pull this off once your MapZation! arrives in the mail is a shortwave receiver capable of SSB reception or a scanner such as the AOR AR1500, says Jerry. You'll also need a personal computer. Jerry supplies everything else, even a list of frequencies.

That's about all we know right now—a pretty attractive tease. We're hoping to be able to provide you with a hands-on review in the near future. Until then, if you'd like to pick up a copy of MapZation! for your own evaluation, contact Jerry Normandin at Innovative Technology, 479 N. Underwood St., Fall River, MA 02720. The phone number is 508-677-1921. Mention that you heard about it in "What's New."

Radio Stuyvesant

"Is it a CD about shortwave?" I asked editor Rachel Baughn when she told me what was coming in the mail. "No," she said, "not really. It's kind of like a CD that's set up like a shortwave station."

Yep, even if I had not read the letter that accompanied the CD, I would have guessed that a shortwave listener was involved somewhere. The title itself is a dead giveaway: *Radio Stuyvesant.*

Alec Cumming, a self-described shortwave nut and *Monitoring Times* subscriber, together with his wife, Cynthia Harden, are the band behind the CD. The band is called, "Bite the Wax Godhead."

BTWG's music is wide ranging. It's described by *Town & Village* reporter Todd Maisel as a "sort of mix of jazz inspired rock and roll." Cumming himself describes the group as "a diverse-sounding pop band, with songs leaping from genre to genre."

Indeed, it's all there, from folk-pop to ballads, rockers and even rap. "That's why I called it *Radio Stuyvesant.* So our CD is not just a collection of tracks... it's an hour of shortwave programming!"

Indeed, *Radio Stuyvesant* reeks SW. The cover of the CD features an old Heathkit shortwave receiver and, in between tracks, a radio announcer intersects, "This is Radio Stuyvesant, transmitting to the world from Stuyvesant Town, USA." True hard core, down-and-dirty radio freaks may even recognize the voices of the announcers, like Bill St. James.

Want to know more? You can get a taste of Bite the Wax Godhead by dialing 212-598-0627, extension 0517. Or you can get a copy of the CD for yourself by sending $12.00 to Alec Cumming, at P.O. Box 198, Stuyvesant Station, New York, NY 10009. Tell him that Larry Miller from *MT* sent you.

Cellular Coverage R7100

The ICOM R7100 is a legendary receiver with a legion of admirers. It boasts all kinds of bells and whistles, plus 25 to 2000 MHz coverage—at least it did. Now this grand receiver has been emasculated, stripped of its cellular frequencies.

We were saddened, and even a little angered, by the note that must now accompany the ad for

the radio in the latest Grove catalog: "cellular capable, full-frequency-coverage model R7100-1 available only to federal, state, county, city and local government agencies and cellular service providers who submit an official order." It's like those old World War II films where the German officer demands, "I vant to zee your papers!"

But wait! What's this? The Grove catalog also says "Now get continuous cellular coverage with the R7100-2—legally." So what's the story?

According to Sue from Grove's technical support, the company bought out GRE's entire remaining supply of 800 MHz converters. Since the law apparently allows the sale of remaining stock manufactured before April 26, 1994, Grove is selling the R7100 packaged with the converter. The radio itself is $1,349.95. The $84.95 converter is free of charge! (Incidentally, the converters are also available separately, but order soon. Supplies are limited and when they're gone, that's it.)

If you don't already have a copy of the Grove catalog, be sure to get one. Their number is 1-800-438-8155.

Grove Preamp Power

While speaking of Grove, we've received word that the PRE-4 Signal Booster has been replaced by an updated version—the PRE-5. Designed primarily for VHF/UHF reception, the PRE-5 offers what Grove chief engineer Chuck Morrison calls "a dramatically improved preamplifier." According to Morrison, the noise figures are lower, there's less intermod, and there's better high frequency gain.

This is a tool that every serious scanner and communications monitor should have. Gain is continuous from a negative 10 dB (technically, attenuation, not gain—very helpful in certain situations) all the way up to +18 dB gain. The frequency range is from 30 to over 1000 MHz.

There are two other features of interest. First is that the PRE-5 has a built-in splitter so you can operate up to two scanners. The second is that the unit is automatically bypassed when it is switched off—a small but thoughtful idea, since preamplifiers are not beneficial in every application.

The PRE-5 comes in a handy 4"W x 2"H x 3"D enclosure, weighs in at 10 ounces, and costs $89.95 plus $5.50 UPS. For more information or to order, call Grove at 1-800-438-8155.

New Electronics

If you sometimes feel as if you don't have a really firm grip on electronics, but the idea of reading out of a dry, dusty textbook leaves you cold, the U-CAN-DO Video series is the answer for you.

Each U-CAN-DO tape covers, in depth, a particular aspect of electronics. They're quick, easy-to-follow, and very informative. In fact, these very same tapes are being used all across the country in technical schools, CET's, and industry—and now they're being sold privately to individuals. Eight tapes are available.

The first, *The AM Radio*, is the most complete video ever produced on AM theory. It starts with the basics of AM radio transmission then proceeds into the five stages used in every AM mono receiver. The second and third, *FM Radio 1* and *FM Radio 2*, cover the basics of FM radio technology. There are also tapes on DC, AC (coils, capacitors, transformers, and sine waves; average, peak, effective, and peak-to-peak readings). Semiconductors, Power Supplies, Amplifiers, and Oscillators.

Each tape is $44.95 plus $4.00 UPS from DX Radio Supply, Box 360, Wagontown, PA 19376. (PA residents add 6% sales tax.) You can also order by phone by credit card. The number is 610-273-7823. Tapes are not returnable.

CB on TV

Here's the history of CB in a nutshell: Obscure. Fad. Crash. The Dark Ages (barbarians take over the airwaves.) Coming next: Renaissance?!

No kidding. Everytime I turn around, I see signs of the return of CB. This time, however, CB is coming back with some civil-

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 289202.

ity. One example is Michael Lee's new video, *C.B. 101*.

C.B. 101 is an instructional video. Says Lee, "I want to show CB as a valuable tool while traveling. No cellular phone is going to tell you that there's a wreck up ahead in the left hand lane. No cellular phone is going to warn you of a speed trap two exits up."

Not surprisingly, *C.B. 101* focuses on mobile CB, especially the correct installation of the radio and antenna. You'll learn everything from selecting a radio to antenna tuning and purchasing accessories. It is, as Mr. Lee says, "the info you need on the superhighway."

To get your copy of the video, send $14.95 plus $3.00 shipping and handling from TMI, P.O. Box 3426, Marietta, GA 30061.

Power Play

If you operate on 1.5 to 22 MHz and need more power, Ameritron wants to talk to you. Their newest solid state amplifier has 500 watts of output, not to mention instant bandswitching, no tuning, no warm-up, and SWR-protection.

The model number for this new unit is ALS500M and it is primarily designed for mobile operation. Power requirements are 13.8 VDC and the size is a compact, 3-1/2 x 9x15 inches.

The ALS500M gives you load fault protection which bypasses the amplifier if the antenna has excessively high reflected power or if the bandswitch is set lower than the exciter frequency. There's also thermal overload protection.

You can pick up an Ameritron amplifier at your favorite ham dealer or direct from the manufacturer at 921 Willow Road, Starkville, MS 39759 or call 601-323-8211. Tell 'em *MT* sent you

Sports/Recreation Directory

The handiest pocket guide for scannists on the move that we've seen in quite some time is the *National Sports and Recreation Frequency Directory* from Scanner Master. Following on the footsteps of the popular Grove *Sports and Entertainment Frequency Guide* (now out of print), Richard Barnett's new edition covers even more topics.

Racing and sports events of every description, parks and recreational areas nationwide, game and wildlife management listings, TV networks, government listings, security forces, theme parks, colleges and museums, GMRS and itinerant assignments are included.

Individual licensees are arranged by state or by nationwide agency. Generic frequency lists like GMRS, itinerant, common public safety and federal frequencies, cordless telephones and wireless mikes, railroad and marine are simply presented as a block of frequencies to try.

A scant 3-1/2" x 6-1/2", this little pocket frequency directory would be a nice companion on that next trip. You can pick it up for $13.95 from Grove Enterprises.

—B.G.

Scanner Radio Listings: Ohio

If you live in or near the state of Ohio, you'll want to pick up a copy of the new *Scanner Radio Listings Ohio*. This 220-page book is jam-packed with frequencies for the Buckeye State. There are police (including new and even yet-to-be-implemented 800 MHz licenses), fire and emergency, medical, government, transportation—even business frequencies. Ten-codes are also included. It's up-to-date, too; the last entries were added in November of 1994.

The price is $15.95 plus $4.50 UPS shipping. You can get your copy of *Scanner Radio Lstings: Ohio* using your credit card by calling DX Radio Supply, 610-273-7823, or by mail: P.O. Box 360, Wagontown, PA 19376. Tell 'em you read about it in *MT*.

SW Trivia

Ludo Maes is a Belgian gentleman with an obsession. Apparently, Mr. Maes has spent the last 10 years of his life documenting the transmitters of international shortwave stations around the world. Compiled into a 52 page booklet, the *Transmitter Documentation Project* (Mr. Maes calls it *TDP SW-94*) is primarily an alphabetical listing of countries.

Under each country is the name of a station, the transmitter site, its formal geographic coordinates (02.57E 36.43N), the power of the transmitter, the manufacturer, type number and year of installation.

MT REVIEW

Black Magic for Shortwave

A couple of months ago we told you about the Black Box Antenna for broadcast band listeners and DXers. It's a tunable loop antenna that improves reception—despite the fact that it uses no power. The unit increases both gain and selectivity.

Now comes the Black Box Antenna, Model S. Model S is for shortwave (3.4 to 17.4 MHz), and like its broadcast band cousin, it works equally well.

Model S requires no outside antenna, but is instead placed next to the radio (there are terminals for direct connection, but we found that noise increases when the unit is hardwired into place. You place the antenna perpendicular to the receiver, tune in the radio to a particular station, and then tune the antenna until you find a sharp increase in volume. Rotating the antenna allows you to null out competing stations.

The Black Box Antenna, Model S, works well and is just the ticket for people hoping to eke out just a little more from their receiver but who do not want to (or cannot) put up an outside antenna.

To get yours, send $49.95 plus $6.00 shipping and handling to Black Box Antenna, 14624 Deon Dr., Sonora, CA 95370. Please mention the "What's New" column when you call. Antenna is warranted for one year and comes with a 30-day money-back guarantee.

— L.M.

All of this is very, uh, very... interesting. Did you know, for instance, that the oldest transmitter currently in use is a 1933 Nippon Electric Company (NEC) unit at Nazaki, Japan? Or that the VOA's Bethany site uses a 1944 by Crosley—the famous old-time receiver manufacturer?

OK, how about this one?: According to Mr. Maes, religious broadcaster Adventist World Radio uses a *Sin*tronics transmitter at their Guatemala City site. No kidding.

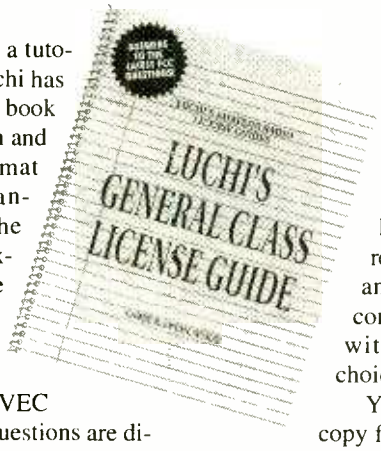
All right: So you won't be the life of the party with this one, but there is a lot of data packed in here that hard-core SWLs or DXers are guaranteed to find interesting.

The price is six US dollars: send to Ludo Maes, P.O. Box 1, 2310 Rijevorsel, Belgium.

General Class License Book

If you're one of thousands of hams struggling to climb the license ladder, you may want to consider Larry Luchi's *General Class License Guide*. Published by Tiare, it's a 116 page, comb-bound, compilation of information.

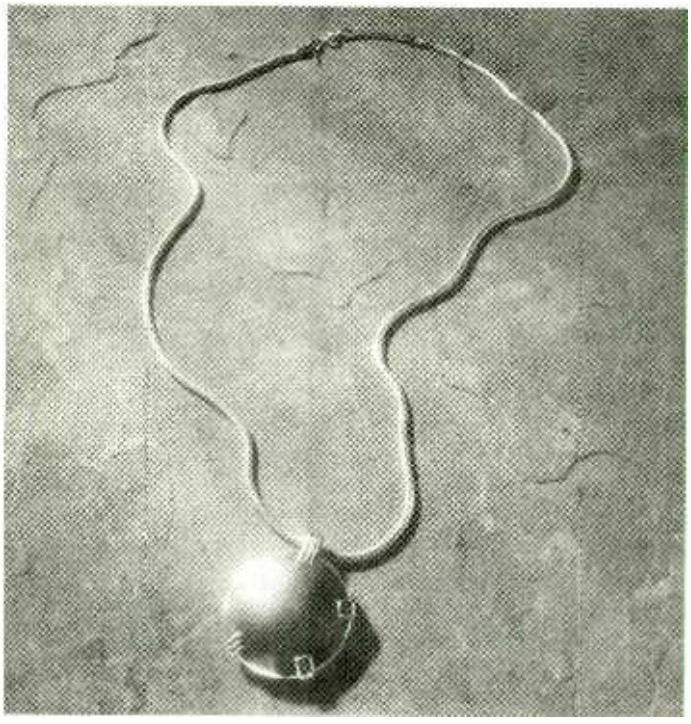
Luchi's *General Class License Guide* is not a tutorial text. Luchi has arranged the book in a question and answer format with the answers to the questions exactly as one would find them on an A R R L, VEC, W5YI VEC exam. The questions are divided into subjects like FCC rules and regulations, operating procedures, radio propagation, and so forth.



MT photographer, Harry Baughn, KE4OPK, says that as a study guide, he finds the method of presentation very helpful. "It helps to reinforce the correct answers, before it confuses your brain with multiple choices."

You can get your copy from your favorite radio bookseller or direct from the publisher. The price is $19.95 plus $2.00 shipping. Tiare's address is P.O. Box 493, Lake Geneva, WI 53147.

Here's ELF Protection (and Possible Side Benefits . . .)



If you're one of the millions of people who have been concerned about the effects of ELF radiation—and how many of us can honestly say that we haven't spent at least one teeth-chattering night worrying if we should turn on the electric blanket—relax. Someone has it all figured out.

The problem—the folks at Zygon International have determined—is that these ELF waves disrupt your personal energy field. They have a device that they claim will "counteract" these negative waves and "literally transform [them] into 'healthy' positive energy." Those among us possessing a healthy amount of skepticism might well inquire as to how this is accomplished.

C'mon. And you call yourself a radio hobbyist! It's a Scalar Wave Generator.

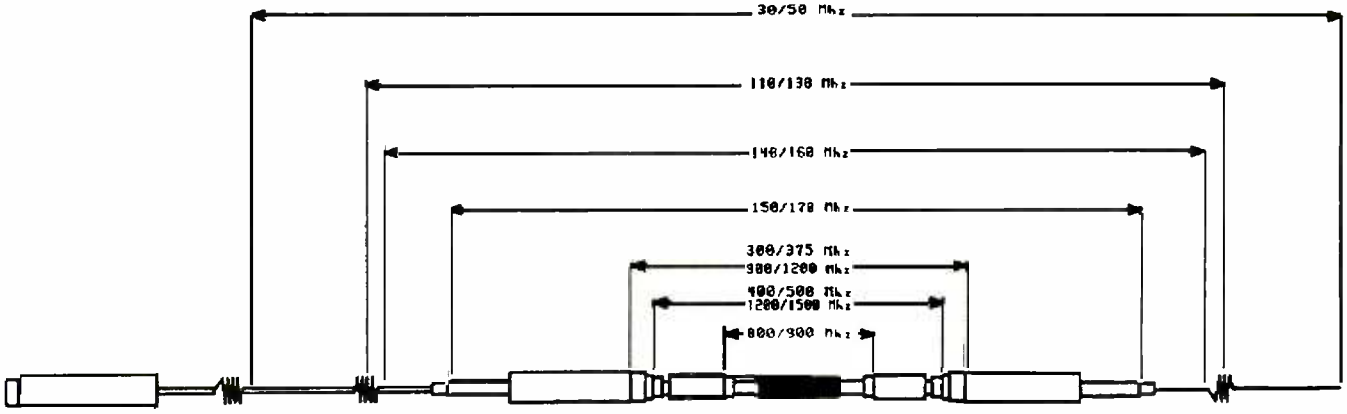
A Scalar Wave Generator, we are told, is a collection of "quartz and other minerals cut and arranged in a specific pattern." Lest wearing such a powerful piece of equipment around your neck frighten little children and emotionally unstable adolescents, your Scalar Wave Generator is disguised as a sterling silver pendant with gold accents.

The copywriter for Zygon says that he/she uses one and "...besides looking and feeling pretty cool, I can honestly say my energy level has increased.... I have no idea how it will work for you." (We do.)

The Zygon International BioElectric Shield can be yours for only $139.95 plus $6.50 shipping and handling (the chain is $25.95 plus $4.00 shipping extra). The address is 18368 Redmond Way, Redmond, WA 98052. Tell them *MT* sent you when you order. No, on second thought, don't.

Bob Grove, WA4YQ

Austin Ferret VHF/UHF Antenna



While scanner antennas for mobile, base and portable applications abound, the Austin Ferret stands out in a class by itself. Its unique construction is housed in a sturdy, eight-foot-long, fiberglass radome. An N connector is provided to mate with a low-loss, coax transmission line of 50 ohms characteristic impedance.

Most non-directional scanner antennas are designed around tried and true principles: ground planes, trapped verticals, helically-wound elements and discones. The Ferret is different.

Austin uses an array of elements isolated by dielectrically-tuned chokes and multi-tuned parallel resonant circuits to provide excellent impedance matches at common band centers: 40, 100, 122, 146, 310, 465, 865 and 1280 MHz. Other center frequencies are available on special order.

For our application, we ordered center frequencies of 39 MHz for low-band highway patrol, 106 MHz for FM broadcast, 121.5 MHz for civilian aircraft, 146.5 MHz for two-meter amateur, 157 MHz for high-band land mobile, 316 MHz for UHF military aero, 464 MHz for UHF land mobile, and 870 MHz for UHF-high land mobile services.

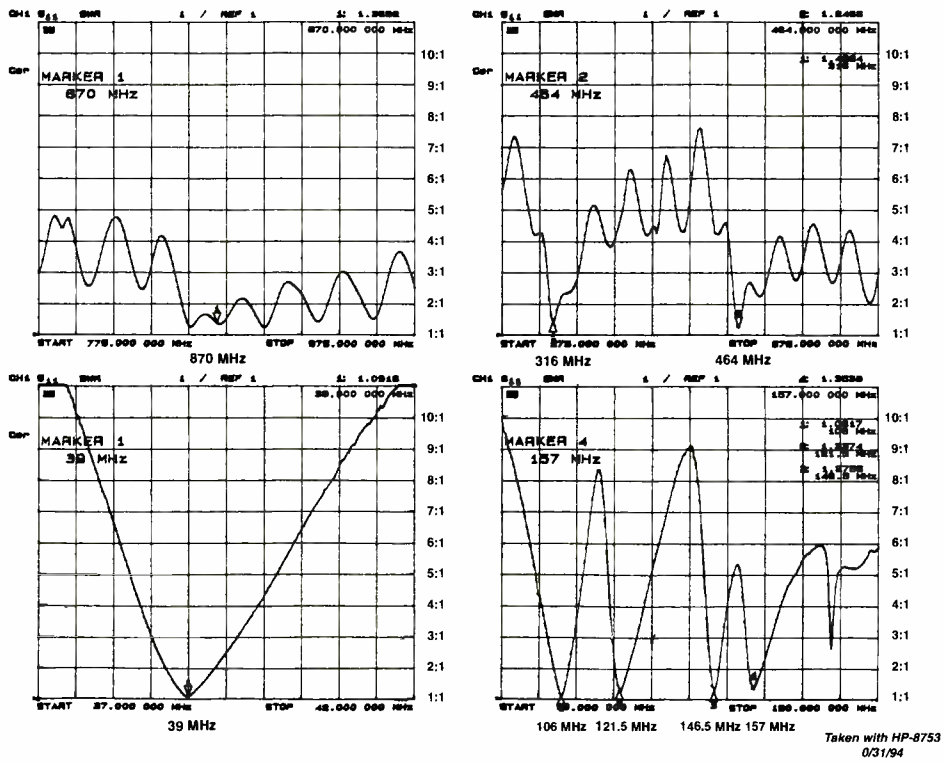
Since the antenna array is essentially a combination of half-wave dipoles, gain is equivalent to a conventional half-wave dipole on any design frequency (0 dBd or 2.1 dBi).

SWR curves, as plotted by a Hewlett-Packard 8753 impedance analyzer, are shown in the accompanying graphs. SWR is in the vertical, beginning at 1:1 on the baseline and rising 1 dB per division to a maximum of 11:1 at the top of the graphs.

Due to the multiple resonances of the antenna, reception is quite good on many frequencies throughout the 30-1300 MHz range, making it ideally suited for wide-coverage, VHF/UHF reception and amateur, commercial or government two-way communications as well.

Austin includes a small length of aluminum pipe which provides weather protection

SWR for FERRET
(MT Sample)



Taken with HP-8753
0/31/94
Thomas W. Howey

for the connector as well as a mounting fixture for the antenna; the user must supply his own mounting hardware, however.

So, does it work?

Hoisting the lightweight antenna to our all-metal roof was easy—one hand. Fortunately, we had a metal mastpipe and a coax line with an N connector already in place, so a minute or two later the antenna was ready for an on-the-air test.

Since the vast majority of our readers will be considering the Ferret for receiving, we devised an A/B test between it and our present—and effective—master antenna system consisting of a popular, all-band, VHF/UHF scanner antenna and a distribution amplifier.

Several test frequencies were selected between 40 and 900 MHz, chosen from those most active in our area, and including some weak stations for signal-to-noise comparisons.

In the majority of cases, those signals located near the design frequencies stated at the onset of the article and shown in the accompanying graphs were 6 to 12 dB stronger on the Austin Ferret. We were surprised, however—until we consulted the VSWR graphs—that signals outside the centers were dramatically weaker. The reason became obvious.

Note that the antenna exhibits high Q (sharp selectivity); as the operating frequency becomes further removed from the design frequencies, the VSWR (standing wave ratio as measured in volts; impedance mismatch) becomes progressively worse.

While VSWR itself isn't bad, transmission-line losses become considerable with long lengths and at higher frequencies.

Not only that, but one of our listening quarries was the 240-270 MHz FLEETSATCOM satellites; with the Ferret's low angle of radiation (and reception) for terrestrial applications, it was less responsive to elevated radio sources.

So, will you like it?

If you are looking for high-quality construction, multiband transmitting capability, and high-performance reception on the standard mobile radio bands, you won't be disappointed in this antenna.

The Ferret costs $249.95 plus shipping from Austin Antenna, Ltd., 10 Main Street, Gonic, NH 03839; phone 603-335-6339.

Lawrence Magne
Editor-in-Chief
Passport to World Band Radio

• JPS Digital Signal Processors
• SoftWave Firm Gone?
• Radio Shack DX-380 on Sale

DXers and shortwave listeners often have different needs, which is one reason there is such a variety of HF receivers from which to choose. Yet, they also have much in common, including a need to keep unwanted interference and noise to a minimum. After all, these gremlins not only can make listening unnecessarily trying, they can also blot out faint signals.

JPS Communication's NTR-1 and NIR-10

DSP Modifies Audio

Various manufacturers have looked to the emerging high-tech field of digital signal processing (DSP) for a solution. For example, the Watkins-Johnson HF-1000 receiver incorporates DSP, as does the SoftWave computer-receiver system we reported on recently. (For more on this, look farther on in this article.) Trouble is, these built-in solutions are pricey, and your range of available choices is greatly limited.

Someday, if DSP works out, this solution may be incorporated within nearly all better shortwave receivers, much as synchronous selectable sideband has been. But for now, there is an intriguing "have-your-cake-and-eat-it" solution: add-on DSP.

Add-On DSP Devices Available

Among the most interesting add-on DSP boxes being offered are from the JPS Communications, P.O. Box 97757, Raleigh NC 27624; 800/533-3819. They offer two models: the $169.95 NTR-1 and the $349.95 NIR-10. In a nutshell, what we found is that you get what you pay for.

NTR-1 Relatively Affordable...

Their ads for the more-affordable NTR-1 state, "The spectral notch removes *all* tones or whistles in 3 to 5 milliseconds. The noise remover reduces or removes most noise types instantly." That's a lot of improvement to claim for a reasonable sum, so we put it through the hoops at *Passport to World Band Radio*.

The NTR-1, which comes with a tank-tough metal case, is reasonably small. It has controls for power, notch filter, noise reduction and bandwidth, as well as a socket for headphones. Its operating manual is excellent from its "Quick Operation" guide at the beginning to the "Troubleshooting" section at the back. You won't waste valuable hours trying to figure out how to use this device, even if you're not technically inclined.

...but Performance a Mixed Bag

In some respects, the NTR-1 works very well, indeed. For example, when RTTY is bothering a world band station, the NTR-1 makes the offending signal drop out almost completely. This is especially relevant within those portions of the shortwave spectrum where RTTY and broadcasting stations share the same airspace: the tropical bands, as well as the "out-of-band" segments just outside the official international broadcasting bands.

That's the good news. Less encouraging is that the NTR-1's performance is mixed. Yes, it can reduce "Rice Krispies" atmospheric sounds and other background noises, but it usually doesn't eliminate them completely. Traces of residual noise often remain.

There's another shortcoming. You may get some noise reduction, but you may also find a noticeable drop in audio quality. The audio can sound attenuated or have pumping, or even sound hollow.

Many good tabletop receivers come with a notch filter to knock out at least one offending heterodyne. This, like RTTY reduction, is handy within the tropical bands and out-of-band segments. Additionally, it can be useful within the 40/41 and 75/80 meter bands effectively "shared" in the Western Hemisphere by hams and broadcasters.

The NTR-1 has notching facilities to reduce heterodyne interference, and they are both good and useful. However, if, say, a CW signal is too strong, you'll still hear some traces of offending heterodyne interference.

It's easy enough to check out whether the result is better with or without the NTR-1 simply by turning it on and off. Unprocessed signals often sound better, even if they have more unwanted noise and/or interference, than they do when the NTR-1 is switched on.

The bottom line is that the NTR-1 works well some of the time, and if you're watching your kopeks it may be worth purchasing.

However, there is a better, if costlier, solution: its NIR-10 sibling.

NIR-10 Pricier, but Works Better

The NIR-10 is only slightly larger than the NTR-10, but you hook it up in the same way, once it has been equipped with a special $25 SWL PROM chip. By the way, its ads say it is for single-sideband signals, but we found it worked just fine with AM-mode shortwave stations. The NIR-10 has an adjustable noise-reduction processor, a tunable three-width passband filter and an automatic notch filter, as well as a peaking processor that boosts voices and suppresses surrounding noise.

With that passband filter, you can select nearly any segment of the station's audio that you wish to hear, thus rejecting unwanted segments. This is like the passband or IF-shift tuning that's found on most top-end tabletop receivers. It helps a lot in making a signal more intelligible or pleasant.

The NIR-10's automatic notch filter is very effective at knocking out heterodynes. Even if your receiver already comes with a notch filter, you'll probably find yourself using the NIR-10's, instead. For some, this alone may make the NIR-10 worthwhile.

But these sorts of features center around doing things that outstanding tabletop receivers often already do. What really makes the NIR-10 interesting is the effectiveness of its noise reduction.

Here's how it works. First, you tune into a strong voice signal. Next, adjust your radio's volume until the PEAK LED blinks occasionally on strong voice peaks. Turn on the NIR noise-reduction processor, then adjust the knob to increase the level of processing—and smile as you hear the noise drop down.

Well, then, why not just leave the processing setting at the maximum position?

Alas, it's not that simple. The greater the noise reduction, the greater the distortion. For listening to news and the like, this tradeoff tends to be favorable, even dramatic—especially if you switch on the peak mode at the same time. However, for DXing there are limits to the results. After all, if a signal is simply too weak compared to the noise, even the NIR-10 can't do much good.

Most of us listen to shortwave broadcasts mainly for information, whether it be news, opinion or simply to catch a station ID. But if you're into listening to shortwave for music, forget the NIR-10. Unless you have a sturdy ear that can filter out distortion, you'll want to skip voice processing when listening to your favorite concert.

The bottom line is that the NIR-10 sometimes can make the difference between a signal that is barely audible and one that is readable—or between a signal that is readable in the noise and one that is clean enough to be listened to over long stretches. Its extra controls complicate operation somewhat, but for some serious DXers and shortwave news hounds, the tradeoff in additional adjustments will be well worth the cost.

SoftWave Firm Gone?

According to various unconfirmed reports, the firm, ComFocus, that produces the SoftWave computer-controlled receiver reported on in the October issue of *MT*, no longer appears to be in normal operation. Its "800" number doesn't answer when we call, and its regular telephone number is answered only by a recording machine that makes no reference either to SoftWave or ComFocus. There are also reports that the firm is not responding to customers' phone messages.

Radio Shack DX-380 Bargain!

There is another "disappearing product" this month, but this time it is generally good news. Radio Shack's DX-380 world band portable, which is virtually identical to the compact $259 Sangean ATS-808 that gets a full three stars in the 1995 *Passport to World Band Radio*, is being discontinued. So long as supplies last, it is being sold for $109.97—a real holiday-season bargain, if you can find one!

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.

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John Catalano, PhD

Rare, Reported Sightings of CBGs*

*(Cheap But Good)

I'm sure we have all experienced the unwanted-gift/appreciated-thought syndrome. "Oh, Aunt Carol, just what I wanted: another Hawaiian shirt and flower tie."

Now, it's not that we don't enjoy being thought of by our friends and relatives at birthdays and holidays. It's just that our closets can't take another flowered shirt/tie combo we'll never wear. But what are the alternatives?

It truly is the thought that counts. And you cannot exactly expect people to shell out a Grand for that super receiver. But how about some useful radio accessories which would benefit both the giver and the receiver? (Sorry for the pun.) The benefit to you (and your closet) is obvious. And suppose what you hinted at for a radio related gift, was actually LESS money than the shirt and tie would cost? It's a win-win situation for you *and* the giver. Let's check out some software possibilities this month.

A Database, Logging and Radio Control Program for under $20?!

I see your raised eyebrows. I was just as skeptical when I received the $19.95 program called SWL Manager version 1.0 for IBM ATs capable of running Microsoft's Windows 3.1! I see a lot of "nice try, but nothing new, and poorly presented" programs. But as soon as I loaded SWL Manager from Windows, I could immediately feel that this one was different. It consists of only one screen (see figure 1), but everything you need to operate your receiver, log catches, search the database, and more is easily controlled from this single screen.

It appeared so simple to me when I first looked at it I wasn't sure that SWL Manager could do all that it promised: I was mistaken. The screen is actually in five pieces. The top tool bar contains a pulldown menu named Configuration. From this menu the radio whose frequency you want to control is chosen. The possibilities include all ICOM radios/transceivers which use the ICOM I/O address convention, Kenwood HF radios, and Yaesu radios. For this review we only tested the ICOM interface using an IC-R71A.

The serial port that your receiver is connected to is set with this menu, as well as your local time and the scan delay time when allowing SWL Manager to tune your receiver to database frequencies (more on this later). The Database pulldown menu controls all database functions such as add/edit/delete records. Using the database is really just that simple.

The next section of the screen, labeled SWL Database, displays station information contained in the database. The flag of the selected country is displayed at the left. Below the flag is the country's (or station's) name. The location of the station is indicated by a bull's eye on the World Map on the lower right of the screen.

Great! But how do we control the thing? Good question, and easily answered. Check out the section of the screen labeled Search Parameters. This simple and unassuming three button area is the control center of SWL Manager. Let's say we want the program to scan all stations that are in the database and broadcasting at this time of day. Clicking with your mouse on the "On-Air Hour" button will bring up the following choices: NOW, ANY and 00:00 to 23:00. In our case we said we wanted to hear what was on right now! (Very demanding, aren't we) So we click on the word Now. By clicking on the button labeled "Broadcast Station" the names of all the countries and any custom categories we may have stored in the database are displayed. For our example, we choose the option: "All Countries." Clicking on the large Search button starts the process.

SWL Manager looks through its database for stations which are scheduled to be transmitting at the current time. By looking back at the SWL Database Screen section, you will now find the top of a list of stations on at this time, displaying country, time period, and frequencies.

Two ways of tuning your receiver are possible. By clicking on the Tune buttons next to one of the displayed frequencies the receiver is tuned to that one frequency. The second method is quite slick. By selecting the Start button in the Scan Control section of the screen, SWL Manager will scan through all the selected countries, show their location on its map, show its active frequencies, and tune your receiver to the frequencies. It will linger on each frequency for the number of seconds you set up in the Delay at the lower left of the screen. If you like what you hear, clicking on the Stop button in the Scan Control section will do just that!

So, How Does It Rate?

Very high, in my opinion. SWL Manager performed flawlessly, was up and running in five minutes, and was very easy to use. I also discovered that the database could contain user-programmed categories for utility stations instead of sorting by country. For example, by using the Database menu I programmed a "country" name of Aviation Weather. In this "country" I stored the frequencies and times of aviation weather broadcasts, such as Shannon or New York Radio. In this way SWL Manager is not limited only to SWL broadcast stations.

In talking with Tony at HAM Software, the makers of SWL Manager, I found that after the initial boot-up of the program it does not monitor or control the mode of the receiver. This enables the use of the program in any mode, as long as all the stations within a scanned category have the same mode, and it is set manually on the receiver.

One omission in version 1.0 is the lack of a serial port terminal screen for displaying decoder output. According to Tony this is already in the works for a future version. Another "wish list" item is a squelch sensing scan stop. This would be nice for HF radios, but a

necessity for VHF/UHF radio, such as Yaesu's FRG-9600.

But for now, SWL Manager is the best program around under $45, and is better than many currently selling around the $100 mark. At twenty dollars it makes a great "don't break the bank" way of getting into computers and radio, while possessing some really new and innovative features. SWL Manager V1.0, with its simple, but comprehensive help files, is available from KC4ZGL HAM Software, 1548 Cedar Bluff Trail, Marietta, GA 30062 for $19.95 + $3 S/H US ($5 S/H elsewhere). They also offer another program, Rig Manager 2.0 which works in conjunction with SWL Manager for Kenwood ham transceivers.

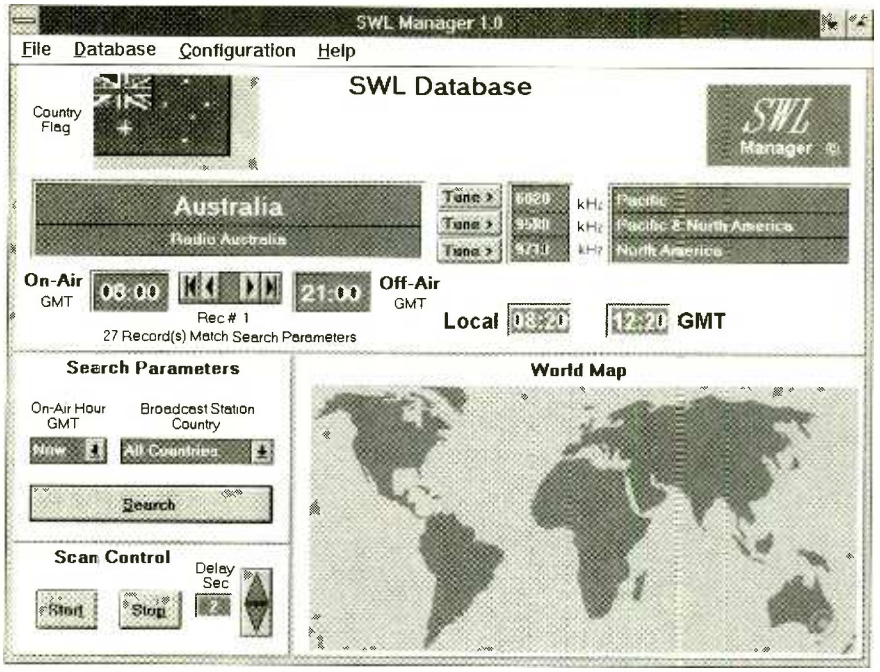

Figure 1: *SWL Manager V1.0's one and only screen*

CD ROMs Cheaper Than Disk Programs? No Way!

Well, since my prediction about a year ago that 1994 would be the year of the CD ROM, a lot has happened. The best way I know of bringing you up to date on this topic is to tell you about a new company, CD-ROMS PLUS, devoted totally to CD ROM software (not a disk in sight). This company specializes in CD-ROM software, multimedia products and computer hardware.

Would you believe that I found four different CD ROMS especially made for our radio hobby here on the shelf? Even more amazing, not one was priced over $19, with the cheapest coming in at $9! These included titles such as QRZ! Ham Radio CD ROM Volume 3, and The Ham Radio & Scanner Companion. We'll review these CD ROMs in a coming month.

I spoke with the president and manager, Larry Iannuzzi, who assured me that mentioning that you saw this in *MT*'s "Computers & Radio" column would get "at least as good, if not better prices and free postage on all software." Be aware that Larry's stock changes rapidly.

CD-ROMS PLUS, a walk-in store and mail order company, discounts all their products. But, when a new version of a program comes out, CD-ROMS PLUS further reduces the price of their remaining stock of the older version, with prices on CD ROMs which once sold for over $50 starting at $5. For example, I saw prices on current CD ROM flight combat simulation programs that were under the $20 mark!

Don't confuse these with public domain programs. These are commercially produced by the leading software manufacturers. Some of these I have purchased on disk at close to three times that price just a few months ago. Somebody, hold me back—or at least hold my wallet!

As for hardware, the new double spin CD ROM drives have almost twice the information transfer rate of the original CD ROM drives. The price of these double speeds at Larry's were around $125. The price of the older/slower single spins are now under $80, and falling fast. I can remember when single head, 5.25 Apple disk drives were twice that price (no, not when the dinosaurs ruled the earth). Not only did the CD ROM revolution occur as predicted, but it is on its second or third generation of products already. A look through CD-ROM PLUS products will attest to this.

CD-ROM PLUS can be contacted by phone at (603) 898-5047, FAX (603) 898-3607, or by mail at 254 N. Broadway - Unit 107, Salem, NH 03079.

No More Shirts and Ties

Well, there you have the first two. No, they are not the dream-able ICOM 9000 (the receiver that does it all), nor the superb HOKA Code 3 decoder (which has become the standard against which all future decoders will be compared in this column). But then, the price of the gifts we have looked at this month should make the giver as happy as the receiver.

(Heck, at these prices you could treat yourself to one and explain the loss of cash with, "Oh that. Just the cost of checking the fluid levels in the car, Honey." Nah: bad advice. You'd still have to find a place in the closet for the next ugly shirt and tie.)

Next month we'll shift to the hardware side and bring you two more CBG (cheap but good) products. How about a computer controlled, FM broadcast band radio, with DOS and Windows software, for under $55—for those of you who can get two shirt and tie givers to go in together on one gift?

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Low Cost Power Supplies

One of the most overlooked electronics bargains is the inexpensive wall transformer that is available from numerous surplus dealers. I have bought good ones at ham radio flea markets for as little as 50 cents each. The unused surplus units found in electronics catalogs generally cost from $1.50 to $5, depending upon the output-current rating.[1] Some provide an ac output voltage, while others deliver unregulated dc voltage. These transformers are designed to plug directly into 120-V ac wall outlets, and hence the name "wall transformer."

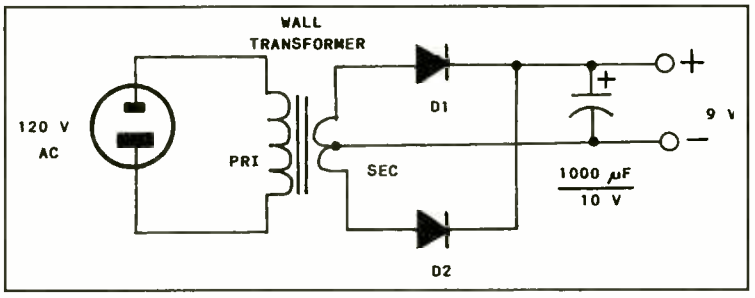

FIGURE 1: Representative circuit for a typical dc-output plug-in wall transformer. The dc is poorly filtered and lacks regulation.

Applications

You may be wondering if you can create a low-cost power supply that is built around a wall transformer. The answer is definitely "yes." If you are an electronics tinkerer it is likely that your workshop could use a 5-, 9- or 12-volt dc power supply. Most of the solid state equipment you build can be powered by a small dc supply that contains a wall transformer. These inexpensive power sources are available with various output-current ratings from 100 mA to 2 amperes. Most home-made gear requires less than 200 or 300 mA to function properly. The supplier listed in note 1 sells a 12 V dc, 200-mA wall transformer for only $1.75 (part no. E-1758). This illustrates clearly the money-saving benefits associated with these simple units.

DC Wall Transformers

All is not milk and honey when we buy a dc type of wall transformer. Indeed, the output voltage is dc, but it is seldom pure dc energy, and it is not regulated—a characteristic that is sometimes essential.

Figure 1 shows the circuit for a typical dc style of wall transformer. It can be seen that marginal filtering results from using only a 1000µF capacitor at the rectifier output. This is fine for powering calculators and other devices that can tolerate ripple (hum) on the dc line, but some home-made receivers would have hum in the speaker or phones without better 120-Hz filtering.

You will note also that the Figure 1 basic circuit lacks a regulator for keeping the output voltage constant. The shortcoming of this omission is that the output voltage may be as great as, say, 12 volts with no load when using a 9-volt dc wall transformer. As the load (current drawn) increases, the output voltage decreases. Under a heavy load the output may fall below the rated 9 volts. Sensitive circuits, such as VFOs, are prone to frequency shifting if the operating voltage is not regulated.

Furthermore, a solid-state regulator provides excellent filtering of the dc voltage along with establishing a fixed output-voltage level. Solid-state, three-terminal regulators are inexpensive and can often be bought for under $1. Figure 2 shows how to add a voltage regulator outboard from a 12-volt dc wall transformer. D1 and D2 are used to elevate the output voltage to +9.4, since 8-volt regulators are the nearest standard-voltage types. Each diode raises the U1 output by 0.7 volt. The two 0.01-µF disc capacitors prevent U1 from self-oscillating.

It should be noted that wall transformers, even though UL approved for indoor use, are not fused. I strongly recommend that all hobby equipment be protected (along with the user) by installing a fuse in the 120-volt ac primary line. This is somewhat impractical when using wall transformers. Rather we must install a fuse somewhere after the transformer output circuit. I have adopted the practice of placing a fuse at the output of the wall transformer (F1 in Figure 2) to protect the transformer from shorts or severe overloads that may occur in the regulator circuit or beyond.

A good rule of thumb when selecting the correct dc wall transformer for use with a regulator is to make certain it delivers 1.3 to 1.5 times the rated dc output voltage of the regulator. Otherwise, regulation will be poor or nonexistent. For example, 14 to 18 volts dc would be suitable for use with a 12-volt regulator. Regulators are available in standard voltages of 5, 8, 12, 15 and 24. Positive or negative regulators are available for the voltages listed above. Be sure to order the correct one for your project.

Using AC Wall Transformers

You can utilize ac-output wall transformers by simply considering them to be the power transformer for your dc supply. These units are generally available with output voltages of 6, 9, 12, 13 or 24. Some have current ratings as great as 2 A.

Figure 3 shows a practical outboard recti-

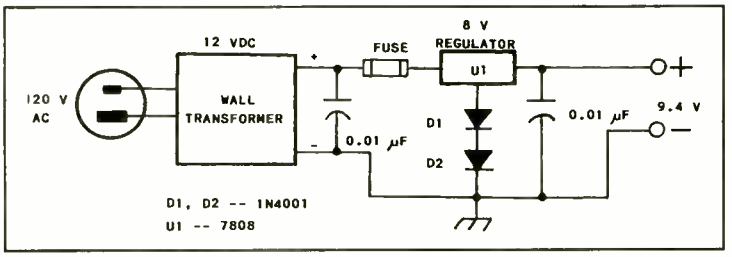

FIGURE 2: Method for adding an outboard regulator to a dc-output plug-in wall transformer. F1 is added to fuse everything after the transformer (see text). U1 regulates the dc and removes unwanted ripple.

[1] *Hosfelt Electronics, Inc., 2700 Sunset Blvd., Steubenville, OH 43592. Phone 1-800-524-6464 when ordering or requesting a catalog.*

fier and regulator that may be used with an ac wall transformer. The rectified dc voltage will be 1.41 times the ac voltage at the transformer output. Thus, if the transformer delivers 16.5 volts ac to the rectifiers, the resultant dc voltage at the rectifier output will be 22.5 volts. Therefore, ample dc voltage is available for allowing the regulator to do its job.

Current Rating

It is wise to order an ac or dc wall transformer that has a somewhat greater current rating than the dc current taken by the equipment. This will help to ensure ripple-free, constant dc output voltage from the regulator. When a transformer is overloaded the hum (dc ripple) increases and the output voltage sags. For example, I would use a 1-A transformer to power a circuit that draws 500-800 mA. The fuse used at the transformer output would be rated at 1 or 1.5 A to provide a reasonable safety factor.

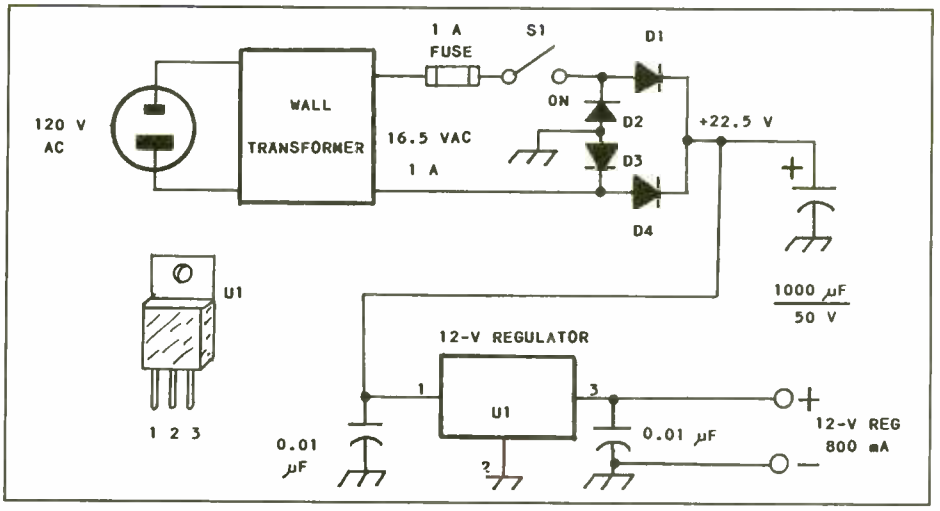

FIGURE 3: Method for using an ac type of plug-in wall transformer to obtain well filtered and regulated dc output voltage. D1-D4 are 1-A, 50- or 100-PRV silicon rectifier diodes (1N4001 or 1N4002). U1 is a 12-volt, 1-A, 3-terminal regulator, type 7812. See note 1 for a supplier of all of the parts. An extruded aluminum heat sink at least 1.5 inches square should be used at U1 to prevent overheating of the IC. The heat sink is not required for load currents less than 200 mA.

Some Final Thoughts

There is no reason why you could not put a wall transformer in the cabinet that houses the rest of the power-supply components. This would provide power supply self-containment with only the line cord being outside of the main assembly. I have attached wall transformers to the power supply chassis by means of Velcro strips. Alternatively, the transformer can be affixed to the chassis or cabinet wall by holding it in place with a U-shaped metal bracket. A third option is to install a female ac-outlet socket on the chassis to permit plugging the transformer into the rest of the circuit.

Wall transformers should be for you if you're a tight-fisted, penny-wise parts scrounger. Several of them could be combined in one cabinet to provide a bench supply that would yield +5, +9 and +12 volts for all manner of workshop experiments.

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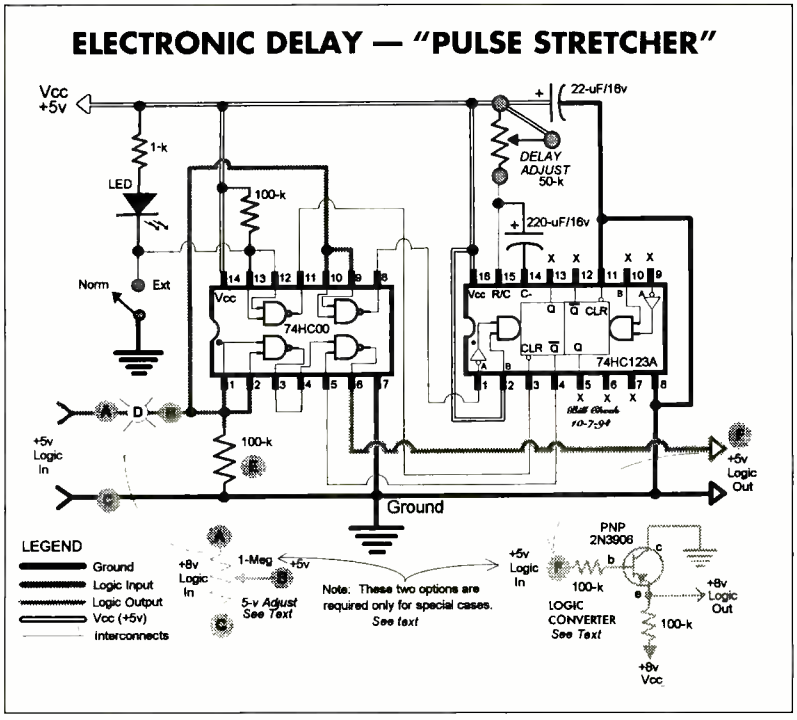
Pulse Stretcher

This month's project can go as deep or as superficial as you like. At its most elementary level, it provides a very nice, adjustable, Extended Delay Function for most VHF-UHF scanners. Due to space constraints, this is the only application we'll address from the many possible uses of this simple circuit that can "stretch" electronic gates and pulses.

Loosely called a "Pulse Stretcher," one imaginative application is given in Vol-2 of my ***Scanner Modification Handbook***, as "*MOD-29, Extended Delay*". That circuit, expressly for the PRO-2004/5/6 (*and the new PRO-2035*) scanners, offers a 0-15 second ***adjustable*** Scan/Search Delay function. The factory 0 or 2-sec delay isn't adequate for critical needs. The PRO-2004/5/6/2035 use an inverse +5v Squelch Logic that's derived from a +8v source, which differs from all other scanners of which I am aware. So the MOD-29 circuit is designed to accommodate that oddity. The book includes a version of MOD-29 for other scanners, too, but it's needlessly complicated.

This month's project, designed by Mark Persson of New York, and refined by Yours Truly, serves as an ideal Extended Delay for most scanners ***excluding*** *the PRO-2004/5/6/2035*. It is so practical that even the greenest neophyte might discover other applications for it.

For example, it's difficult to "see" short duration logic pulses without expensive test equipment. Our Electronic Delay is a cheap, but effective means to "stretch" or delay the end (trailing edge) of many logic signals. It can serve as a detector on data lines where pulses are too short to be noticed. Just connect a voltmeter to the Output and you'll know when a pulse or logic gate passes. An adjustable scanner delay function is the application on which we'll focus, but open your mind; let your fantasies unwind relative to the other possibilities of a *pulse stretcher*.



You'll need two CMOS IC chips (74HC00 and 74HC123A) and a few other parts. Less common 8-volt logic might require several more parts. The schematic shows how to connect the extras for combinations of +8v IN/+5v OUT and +8v IN/+8v OUT. There won't be many cases which call for +8v, but the options are shown for those who want them.

Construction is not important; a piece of perfboard with point-to-point wiring will do. Consider putting the circuit board in one area with the controls and indicator LED in another. The switch selects ***normal*** and ***extended*** Delay. The trimmer potentiometer adjusts the extended delay, from 0 to about 15-seconds. Install these controls and indicator somewhere handy, then run wires from them to the appropriate places on the board.

Initial Tests

Before installing or using your Extended Delay, test it! Connect a regulated +5v to the Vcc point. The (-) lead of the power supply should go to circuit ground. Attach a volt meter to the Logic Output at Point "F". Set the switch to the Normal position. With no signal applied to Point "A", the output at Point "F" should be 0-volts.

Now connect a jumper wire from the +5v Vcc point to Point "A". Instantly, the output at "F" should go to +5v. Remove the jumper and "F" should instantly drop back to 0-v. Now flip the switch to the EXT position. The LED should light.

Set the ***DELAY ADJUST*** trimmer to a midway position. The output at "F" should remain at 0-v. Now reconnect the jumper from Vcc to Point "A". The output at "F" should instantly rise to +5v as before. Now disconnect the jumper from "A" and lo! The output stays high at +5v! After a few seconds, it should drop back to 0-v.

Experiment with different settings of the ***DELAY ADJUST*** to get a feel for how it "stretches" the duration of the output. When you're satisfied with performance, install the board where convenient and out of the way. If the board is to go inside a handheld scanner where "real estate" is at a premium, special consideration will have to be given to size and shape of the board. For instance, the BC-200XLT has a bit of narrow but elongated space, so the Extended Delay board might best be made narrow with the two chips positioned end to end. If space is sparse in your application, design the board accordingly. The following diagram shows the concept of installation:

CAVEAT: this circuit works ONLY with 5-volt, positive, non-inverse logic where low is zero volts and high is 5 volts, and where 0-v is the baseline and the "pulse" or "gate" is a rise to and fall from +5v.

The power feed (Vcc) must be +5v and circuit ground must be connected to scanner or other application ground. If you need +5v inverse logic where +5v is the baseline and the pulse or gate drops to and rises from 0-v, then use the variation of this circuit in Vol-2 of the *Scanner Modification Handbook*. The active part of the Electronic Delay is "*trailing*

edge triggered."This says a lot if you're technically savvy. If not, you don't care anyway; just build it and good things will happen.

Using Extended Delay in a Scanner

Find the SQUELCH line that goes to the CPU (usually from the scanner's NFM Discriminator chip); cut that line and connect the Extended Delay between the cuts. Connect a regulated +5v to the board's +5v Vcc point. Connect the board's ground to the scanner ground and you're all set.

The Extended Delay board must be powered continuously. The switch does not control power; rather, it controls *DELAY*, normal or extended. When the switch is in the Normal position, there is no difference between Input and Output. When the switch is in the EXT position, the leading (starting) edge of an ***input*** pulse or logic gate triggers a leading edge of an identical ***output*** pulse or gate, just like the Normal position.

Similarity ends when the Input pulse or gate goes low.....the Output **stays high** for the period of time determined by the ***DELAY ADJUST*** setting—anywhere between 0 and 15-sec or so. Do you see what I mean by "pulse stretcher"? A 1-millisecond pulse can be stretched into 15-sec, if desired!

When used in a scanner, the receiver operates normally in the sense that the Squelch opens and closes with the coming and passing of signals. But the CPU will not resume the SCAN or SEARCH function until what it "thinks" is the Squelch Gate goes low. The Extended Delay holds the Squelch gate at the CPU artificially high for the adjusted time. It works fine with or without the resident 2-sec factory delay function; i.e., add 2 seconds to the Extended Delay when factory DELAY is set.

The most difficult part of connecting the Extended Delay to your scanner is determining WHERE to do it. Find the NFM Discriminator chip and the CPU; the rest is almost a piece of cake. One pin of most NFM chips is dedicated to outputting a Squelch Gate to the CPU. Find that pin from Table 1 and then follow the trace to a convenient place to cut it. A service manual (advised) will help immeasurably: Tandy/Radio Shack (800) 442-2425 and Uniden (317) 842-1036.

As you study the Squelch trace, you will probably run into a couple of resistors and capacitors along the way and maybe a branch (Y) or two, but stay on the main trace to the CPU and identify that pin of the CPU as the SQUELCH or SCAN CONTROL input. When you're familiar with the circuit, go to the CPU's Squelch Sense Pin and work backward to a convenient place where you can intercept the SQ-Logic path. Such a spot might be a resistor, or perhaps an exposed circuit trace or, if you're lucky, a handy wire. This spot may be cut later and the Extended Delay Board connected between the cuts.

First, (before any cutting), measure the voltage at the SQ intercept point to be sure it really is the Squelch line. Connect a voltmeter between ground and the point that you think is the SQUELCH line to the CPU. Rotate the squelch control back and forth to open and close the Squelch Gate. When Squelch is closed, the line should measure 0v and when SQ is open, it should be +5v. Tolerances here are 0.5-volt or so and if your measurement is outside the spec, either something is wrong or you're not on the right point. Now here's another caveat for you:

The NFM/SQ chip in some scanners operates from the +8v supply and therefore outputs a +8v Squelch Gate. The PRO-2004/5/6 and the new PRO-2035 are examples, but there may be more. Caution is advised because our Extended Delay circuit cannot handle more than +5.5v input! Relax, now that I've said that: all scanner CPU's of which I am aware operate on +5v and therefore have to have +5v logic. This means that in those cases where the NFM/SQ chip outputs a +8v gate, there will be a level converter down the line a ways to reduce or convert that +8v to +5v. This will ordinarily be a resistor voltage divider.

Be sure to take the INPUT signal for your Extended Delay off the +5v side of the divider or whatever it happens to be. This will not be a concern in most scanners, but you'll do well to check it out first. The above measurement will disclose what you need to know.

+8v Applications

If your logic signal happens to be +8v, don't use the 100-k resistor at Pins 1 & 2 (Point "E") of the 74HC00 chip. Instead, **cut** the input trace at Point "D" on the schematic; and install the 1-megΩ trimmer at Points "A" and "C" (*not "B" yet*) as shown in the diagram. Attach a voltmeter to Point "B" on the trim pot and adjust the trimmer for +5v. (This protects your Delay circuit from the Input +8v logic.) Then connect Point "B" on the trim pot to Point "B" in the circuit. If you need +8v Output Logic, then add the PNP transistor circuit as shown to Point "F". These +8v add-ons are not going to be needed in most cases, but are shown just in case.

Let me know the uses you find for this circuit.

TABLE 1: *NFM/Squelch Chips*
SQUELCH GATE OUTPUT PINS—VARIOUS SCANNERS

SCANNER	CHIP Ckt SYM	NFM/SQ CHIP TYPE	CHIP Pin #
PRO-2035	IC-2	TK-10420	13 *
PRO-2006	IC-2	TK-10420	13 *
PRO-2005	IC-2	TK-10420	13 *
PRO-2004	IC-2	TK-10420	13 *
PRO-2003	IC-104	MC-3357P	13
PRO-2002	IC-101	MC-3357P	13
PRO-2027	IC-2	MC-3361	13
PRO-2026	IC-7	NJM-3359D-A	15
PRO-2024	IC-2	MC-3361N	13
PRO-2022	IC-1	MC-3361N	13
PRO-2021	IC-2	TK-10420	13
PRO-2020	IC-101	MC-3357P	13
PRO-2011	IC-1	TK-10420	13
PRO-46	IC-401	TK-10421M-3	16
PRO-44	IC-201	MC-3361	13
PRO-43	IC-301	TK-10427	13
PRO-42	IC-2	MC-3361N	13
PRO-41	IC-1	MC-3359P	15
PRO-42	IC-2	MC-3361N	13
PRO-39	IC-201	MC-3361	13
PRO-36	IC-101	TK-10420	13
PRO-35	IC-401	TK-10421M-2	16
PRO-34	IC-101	TK-10420	13
PRO-32	IC-101	TK-10420	13
PRO-31	IC-1	TK-10420	13
AR-800	IC-200	MC-3361N	13
AR-900	IC-201	MC-3361N	13
AR-950	IC-201	MC-3361N	13
AR-1000	IC-4	TA-7787AF	7 ??
AR-2002	IC-4	MC-3357P	14
BC-100XL	IC-1	MC-3359P	15
BC-100XLT	IC-401	TK-10421M-2	16
BC-200/205	IC-401	TK-10421M-2	16
BC-250	IC-3	??	13 ??
BC-400/560	IC-1	NJM-3359D-A	15
BC-760/950	IC-2	NJM-3359D-A	15
BC-800XLT	IC-1	MC-3359P	15
BC-855XLT	IC-401	TK-10421M-2	16
TurboScan 2	U-201	??	14 ??
HX-1000	U-201	TK-10420	13
MX-7000	IC-4	MC-3357P	13
MX-5000	IC-4	MC-3357P	13
SR-15	IC-1	TK-10421D-2	13
R-1600	IC-2	NJM-3359D-A	15
R-4030	IC-401	TK-10421M-2	16

?? Unknown or not sure
* Use MOD-29 in Scanner Mod Handbook, V-2

W. Clem Small, KR6A, CET

Systems for Antenna Receiver Switching

HF Antenna Switching Systems

Antenna switching for receive-only antennas used at HF or lower frequencies can be achieved relatively simply and with readily available components. For instance, losses from switches not designed for RF work are usually relatively low at HF or lower frequencies and it is not uncommon to find ordinary toggle switches, wafer switches or even AC power switches used as antenna switches at these frequencies. On the other hand, at VHF and higher frequencies, such practices may introduce unacceptably high levels of loss into your antenna system.

Many radio operators prefer antenna switches designed specifically for RF work; coaxial switches used with coaxial cable being the most popular. Coaxial switches introduce very little loss into your antenna system and can be used for both transmitting and receiving applications.

In vacuum tube days the electronic transmit-receive (T-R) switch was popular. Despite its name this device really switched nothing; it actually avoided the need for any antenna switching by making it possible to connect both the transmitter and receiver permanently to the antenna. The transmitter was connected directly to the antenna but the receiver's antenna connection was through the T-R switch. This switch was in fact an isolation amplifier that prevented significant transmitter power from reaching the receiver's input during transmitting, yet fed received signals from the antenna to the receiver when the transmitter was not operating.

A Receiver-Only Antenna Routing System

This month's project is an antenna routing system (ARS) to allow you to utilize any of up to four antennas with any of up to four receivers. The system allows connecting any combination of the four receivers to any combination of the four antennas. This particular ARS is designed for use in receive-only installations for the HF band or lower frequencies and is not appropriate for VHF or higher frequencies or for transmitting applications.

You can make a simplified ARS (see fig. 1) for fewer than four antennas or fewer than four receivers by leaving out unwanted sections. For instance, an ARS for use with four antennas and less than four receivers would simply omit the SO-239 to each undesired receiver position, the resistor and capacitor connected to that socket, and also omit the four switches attached to each resistor-capacitor combination so removed. For use with fewer than four antennas simply omit any undesired antenna input, its grounding switch, and all receiver switches connected to its line.

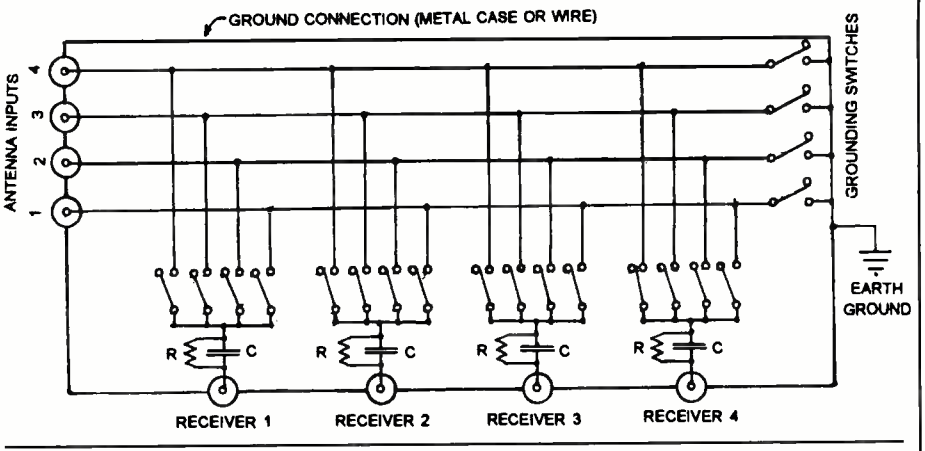


FIGURE 1: Wiring diagram for an antenna routing system for switching any of four antennas to any combination of four receivers.

Let's Build One:

1. Decide how many antennas and receivers you will be using as described above.
2. Obtain the required components and lay them out on a tabletop temporarily so that you can determine how to arrange the connectors and switches for convenience of operation from your operating position. Decide how you want to mount the finished unit: on the wall, on your operating table, or elsewhere. Then select an appropriate case or panel for the ARS, transfer your trial parts layout to the case or panel and mark the location for all holes that must be made to mount the components.
3. Make the necessary holes for mounting all components and mount the components in place on the panel or case.
4. Wire the circuit as shown in fig. 1 keeping the wiring short and neat. Keep the wires from the different antennas separated as much as reasonably possible to avoid unnecessary coupling between antennas. Solder all connections.
5. Install lightning-induced damage protection as desired. I have lived in several areas which had frequent lightning and have never had a problem with lightning induced damage; I typically use only the precautions of disconnecting and grounding my antennas when not operating and of never operating during bad weather or when such weather is approaching.

Using the Antenna Routing System

A good earth ground, such as a 6 to 8 ft. long rod in the ground, is recommended for use with this system (see this month's Radio Riddle). You will also need a connecting cable between the ARS and each receiver. To operate the unit simply select the bank of switches associated with the receiver you are using and set the switch for the antenna you want to use to its "on" position. Occasionally, when more than one receiver is connected to an antenna simultaneously, the signal level from that antenna may drop slightly.

Turn all antenna switches to "off" and all grounding switches to "on" any time the unit is not in service.

A Very Useful Antenna Testing Instrument

Modern solid-state technology has spawned a number of instruments which greatly facilitate and simplify antenna design. One of these is the MFJ-259 SWR Analyzer, a device which is very useful for determining an antenna's SWR, resonant frequency, and feedpoint resistance at the antenna's resonant frequency. The 259 is also useful for testing baluns, adjusting antenna tuners and matching networks, testing transmission lines, adjusting tuning stubs, and even indirectly measuring inductance and capacitance.

I also find it useful as a signal generator. With the MFJ dip meter attachment (MFJ-66) you can use the 259 to determine the resonant frequency of tuned circuits. Frequency for all measurements is accurately indicated on the 259's 10-digit LCD frequency counter. This counter can also be used independently of the 259 to measure frequencies from a few Hz to above 170 MHz (typically 200 MHz).

In using the MFJ-259 to test an antenna, I was impressed with the ease with which it is possible to tune the unit across its frequency range. I cannot overstate the convenience this provides: the time savings over older methods of making SWR and antenna-resistance measurements is so significant, that I find I have time to make many more measurements and try more variations in my designs than would otherwise be the case. And its small size makes it possible to take the 259 right to the antenna. This is a "must have" instrument for anyone doing significant work with antennas.

The MFJ-259 is priced at $219.95 and the MFJ-66 at $19.95. Both are available from MFJ Enterprises, Inc., Box 494, Mississippi State, MS, 39762. Order/nearest dealer line is 800-647-1800.

RADIO RIDDLES

Last Month:

We discussed the fact that it is hard to RDF (radio direction find) skywaves (skip signals) accurately, but that we can often get a decent idea of the general direction from which they come. Then I asked: "If you were located in the exact center of the United States and were RDFing an HF skip signal which originated on the other side of the world, exactly opposite to your location on the globe, from what compass direction would that signal appear to come? "

Well, the straightest (straight in terms of compass direction, yet curved to follow the earth's contour) and shortest path between any two locations on earth is the compass direction which radio waves take between those two points. Waves pointed in other compass directions go elsewhere. Now think about it: the point on the globe which is exactly opposite your location is equidistant from you in every direction - and radio waves can travel in any compass direction from that opposite point and come straight to your location.

RDFing the opposite side of the world (the "antipodes") is therefore an exercise in futility because signals from there can arrive from any compass direction!

This Month:

The ground rod suggested for this month's ARS is routinely considered acceptable for safety functions, such as grounding a lightning arrestor, electromagnetic-pulse protective device, or AC power system. However, why is it not adequate as an RF ground for antennas? We'll have the answer to this month's riddle and much more in next month's issue of *Monitoring Times*. 'Til then, Péace, DX, and 73.

ASK BOB

ANSWERS TO YOUR RADIO QUESTIONS

Bob Grove, WA4PYQ

Q. *Many vehicles embed their AM/FM antennas in the windshield. If glass is an insulator, how do radio signals get through the insulator? (Roger West, Amery, WI)*

A. Glass is an insulator (as opposed to a conductor like copper) for electrical current, but radio waves are electromagnetic fields (zones) of energy like light and do not require a conductor.

Insulators like glass are transparent to radio waves (and light) which go right through them. When they strike a conductor (like the antenna wire) they induce an electrical current which is then delivered to the radio as a signal.

Q. *For stereo speaker leads, is there any real advantage to using heavy-duty, flexible "mag" wire rather than much-less-expensive, although stiffer, household electrical wire like Romex? (Kenneth Slusher, Woodbourne, NY)*

A. Absolutely not. This is a classic case of merchandising hype. At frequencies below 20 kHz, the upper end of listenable sound, such cables offer no measurable improvement in inductance or capacitance which would affect high or low frequency performance.

Ohmic resistance, the only other electrical characteristic, would be undetectable in lengths found in typical home environments. It would require many hundreds of feet of 14-gauge house wire to cause a barely-detectable (1 dB) reduction in sound level. Even then, the sound would be indistinguishable from

Bob's Tip of the Month

Cellular Restoration On The New PRO-51

When the first Realistic PRO-51 handheld scanners were announced, they were allegedly non-cellular-restorable; it didn't take long for our intrepid *MT* "Mod Squad" (a.k.a. Larry Wiland) to discover a simple keyboard routine that allowed full coverage of the forbidden 824-849 MHz (mobile) and 869-894 MHz (base) cellular telephone frequencies. The PRO-51 was subjected to the indignities of a Radio Shack recall after *MT* published the procedure in our July issue.

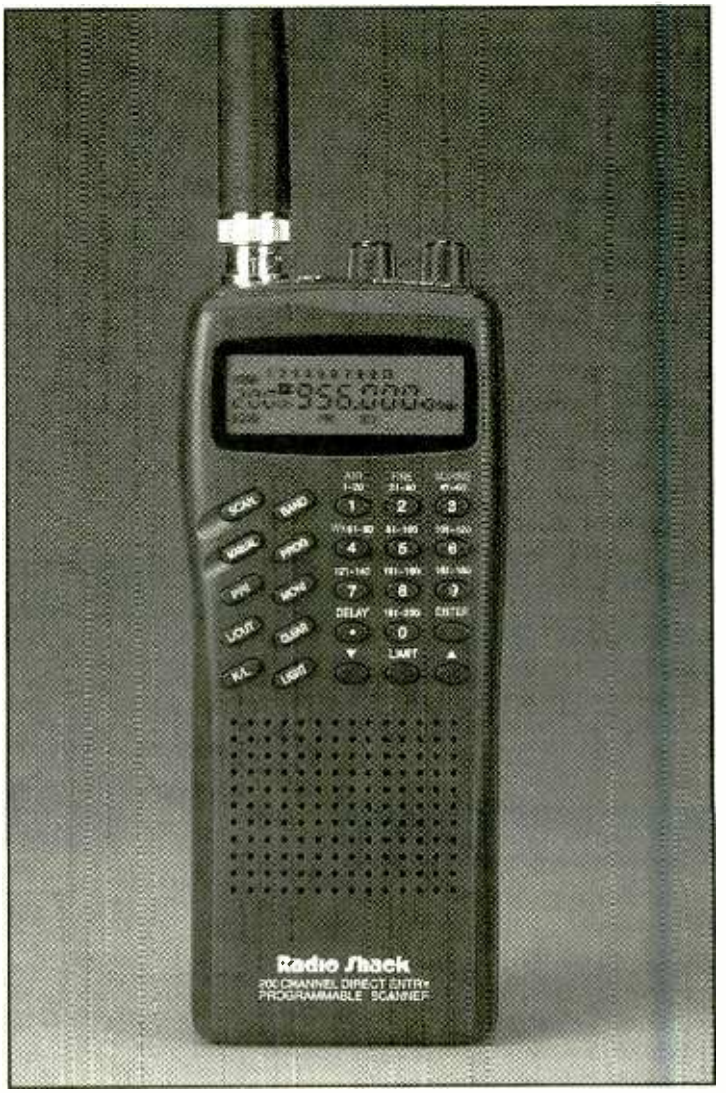
Now the "new" PRO-51 has been distributed and—guess what? That's right; the cellular frequencies can *still* be accessed with a simple keypad routine:

(1) With the scanner switched off, hold down the BAND, 2 and 9 keys, and turn the scanner on. Now in the digit test mode, all digits of the LCD will move slowly from the left to the right of the display.

(2) When the movement advances nearly to the right end of the display, press and hold the LOCKOUT, 2 and 9 keys until the digit test mode stops. The display will blink, then the radio will begin scanning the factory-preset test frequencies.

Manually step to channel 23 which will display 888.960 MHz, roughly the middle of the cellular telephone band. Start a normal, direct-search routine from this frequency to cover the cellular frequencies.

(NOTE: While it is lawful to own a cellular-capable scanner, it is not lawful to monitor cellular conversations.)



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.

that produced by the high-priced wire.

Q. *I notice that electric sparks jump from my antenna wire to a nearby ground when a storm passes over; is this likely to cause damage to my radio? (Howard Graham, Glenwood City, WI)*

A. You betcha! Older tube-type radios were far more tolerant to high-voltage transient than modern solid-state receivers, but even vacuum tubes were protected by lightning arrestors.

There are several ways to discharge static-electric buildup on an antenna: Connect a 1000-ohm resistor from the antenna lead-in to ground as a "bleeder," install a commercial gas-discharge lightning arrestor like the Alpha-Delta or Grove units, or even connect two silicon rectifier diodes in cross-polarized parallel between the antenna and ground leads.

Finally, modern receivers are so sensitive that large antennas are unnecessary for adequate shortwave or even broadcast-band reception. Keep wires under 75 feet in length, and often 25-30 feet is plenty.

Q. *My Sony Walkman stereo has no external power jack and uses the earphone wires as an antenna. How can I get better reception and attach an AC adaptor? (Martin Wishnewitz, Jackson Heights, NY)*

A. Professional and amateur operators have used "docking boosters" for years, a whimsical reference to mobile or desktop contrivances which provide physical stability to hand-held radios while allowing them to be affixed to external antennas and attached to AC power supplies.

Fortunately for them, their radios already have jacks to allow such interconnection; yours doesn't. You could purchase an appropriate stereo mini-plug and mini-jack from an electronics retailer, and devise an adaptor for the earphones, allowing for connection to an outside antenna as well.

Simply described, the earphone wires attached to the tip and ring of the plug are now each isolated by a small RF choke of 1 microhenry or so inductance to prevent them from being used as antennas.

An FM dipole antenna can now be attached to the two leads between the radio and the RF chokes. It would be a good idea to insert a DC blocking capacitor of 0.001 microfarad (1000 picofarads) or so in series with one of the antenna leads to prevent a short circuit in the audio line in case the antenna is a folded dipole or uses a balun transformer.

After looking at this "fix," you may agree that it would be almost as economical—and certainly easier—to buy an inexpensive FM portable that has appropriate jacks.

Q. *I live in a high-intermod area, besieged by digital pager signals. Does anyone make filters for these frequencies in the VHF/UHF spectrum? (Burt Rich, Conejo Valley, CA)*

A. In a word, no. We have done exhaustive listening tests to see where these pagers group; they are typically in the 152, 158, 462 and 930 MHz ranges.

Simple traps work fine up through VHF, but at 450 and 800 MHz, such simple coil/capacitor (L/C) filters are very broad, attenuating desirable signals on nearby frequencies as well as the unwanted targets.

High-performance, adjustable helical filters may cost $1000 or more. Simple crystal filters require impedance transformation and are too narrow to be of use for reducing these bands of interference. Surface acoustic wave (SAW) filters do a good job, but custom units are expensive as well.

Any suggestions from readers as to how we can approach this growing problem is welcome.

Q. *Does anyone make a multiband shortwave converter to be used with car radios? (Neil Iverson, Seattle, WA)*

A. At one time, such converters abounded. Gradually, with the emergence of low-cost car radios, and portable radios that would work in cars, such devices could not profitably compete.

A brand new mobile converter which covers the 19, 25, 31 and 49 meter bands has just been released for $79.95 from MFJ Enterprises, Box 494, Mississippi State, MS 39762 (ph. 800-647-1800).

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.

LETTERS

(Continued from page 4)

self. Then, you take it to one of the persons who have developed a way of converting a standard phone into a scanner which scans the bands and can even be stepped through each channel. So why bother with messing up your scanner?"

"I feel it is our right to be able to listen to all frequencies, no matter who uses them, or for what purpose. If users need or want privacy then it is up to the manufacturer to scramble the transmissions from their products. At least we can still listen even though we may not be able to decipher what we hear. I feel it is a manufacturing problem, [and they should] make their products relatively secure and leave us scanner owners out of their paranoid scenarios. There is an ever increasing trend to brand scanner owners as 'criminals' just because we have a hobby which is not understood by many.

"It isn't just scanners, either. The constant erosion of our rights as American Citizens should be everyone's concern. The day could come when we would be told that it would be illegal to listen to foreign radio broadcasts or even to certain of our own frequencies which may be politically incorrect. By then it may be too late for Americans to wake up!"

UNIDs

From Harold Bower, a young 79er from Sunbury, PA: "As an SWL from early 1930's I have often wondered why no one ever had a 'Who Was It?' corner. The handbooks cannot possibly be up-to-date; even a magazine like *MT* cannot be on the mark with every change. It takes an army of listeners to report newcomers on a frequency. Some might be able to get a positive ID. For example:

"Who was it? - At 1450 - Sun 9-18-94. 15500 kHz. Religious prgm in English at about 1458 ID in Spanish, with PO Box Etc. USA. Assigned to China and Russia, it is not likely they would be carrying religious pgrm."

Maybe there is not a column by that name, Harold, but I see this kind of information-sharing all the time—in club bulletins, on computer bulletin boards, and in *MT*. Glenn Hauser's column is devoted to this approach, being a clearing house for reports from all over the world of changes overheard in the shortwave spectrum, identified and otherwise. Larry Van Horn does the same on the Utility side of the house in his "pot pourri" department. Likewise, Bob Kay's "Scanning Report" is the logical place for questions of scanner mysteries. Send your unID's to those departments, and I can guarantee someone has an answer, if it's a worthy stumper. Be sure to enclose an SASE if you wish a personal reply.

Selected Shorts

"Your article about Haiti (July 94) caused me to dig down through my stack of QSLs and pull out my one true DX catch.

"At the time (1976) I was living in a second floor apartment in Washington, D.C. with a Hallicrafters S-120 and 20' of random wire antenna. This early morning (1140 UTC) catch was considered a rarity for me under those conditions ... But nonetheless I was very happy to receive this QSL, which was xerox copy of a photograph! *[Not reproducible...ed]*

Glenn Bowman, Saline, MI

"The August *MT* lists brown dot channels at 464.50 and yellow dot channels as 464.55. My Massachusetts scanner guide lists them as 454.5 and 454.55. I haven't heard any traffic on any of these frequencies. Which frequencies are correct?"

—Jason Thurston, via Grove BBS

Fellow BBS participant *Roger Cravens of Atlanta* replied, "The 464 MHz ones are correct." *[Thanks, Roger—rb]*

"The letter by Stan Lopes of Concord, CA (Sep 94) in response to an article on Morocco by Colin Miller (May 94) caught my eye. The whole subject of military communications in foreign countries might make for some pretty interesting reading." *[Any takers?—rb]*

"I was stationed at Sidi Yahia in 1957 and can confirm what he says. In case anyone wonders why there were 75 transmitters at Bouknadel, there were a lot more communications going on than just submarine communications. Many of those were very high power HF transmitters intended to reach very long distances reliably. Remember that there were no satellites in those days.

"I do not have specific information on Bouknadel, but Sidi Yahia is now a Moroccan only base (communications?) and a recent article in the Spring Extra 1993 *Cryptolog* tells what has become of it. The *Cryptolog* is the official publication of former and some current Communications Technicians and related personnel, about 3000 strong, associated with the Naval Security Group (4809 Listra Road, Rockville, MD 20853). Many of these people are radio amateurs and readers of *MT*.

—Neil Berg W0MXX, Alexandria, MN

"One very real First Amendment dilemma is that posed by people whose ideological passions obscure their understanding of what the First Amendment is there for, who fail to realize that any encroachment on Ernst Zündel's right to speak is an encroachment on Glenn Hauser's right to speak."

—Zack Replica, Sheridan, Wyoming

"Any chance on expanding digital coverage? 'Digital Digest' is not frequent enough. There is not much in the way of mainstream coverage. Something with some technical teeth would be appreciated."

—Stan Scalsky via Grove BBS

If you've been following the "Computers and Radios" column the last couple of months, there appears to be some question about how much decodable information is out there any longer to warrant increased coverage. However, an occasional feature article to provide more depth of coverage would be welcome from a writer who can bring the subject alive to other readers.— rb

From the Editor

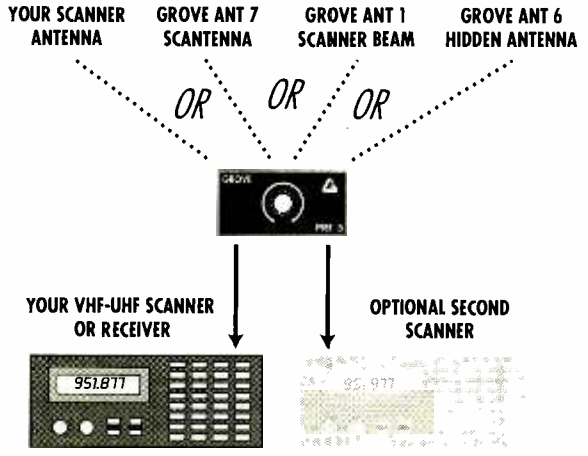
As 1994 draws to a close and a new year is about to dawn, it is my fervent hope that *Monitoring Times* and the community of radio hobbyists will be a force for increased tolerance and understanding in the world. May we make good use of what we learn as we sit down to the radio for another new year of mind-expanding monitoring times.

Rachel Baughn, *Editor*

Introducing, from Grove ...

The PRE-5
SIGNAL BOOSTER FOR SCANNERS!

NEW!



For years the popular Grove PRE-4 signal-boosting scanner preamplifier has provided thousands of scanners, TVs and FM stereo systems improved VHF and UHF reception.

Now Grove offers a dramatically-improved preamplifier with lower noise figure, lower intermod, and better high frequency gain! Mount the weatherproof remote module at the antenna to overcome coax line loss, or right at the control box for convenience.

Use your new PRE-5 Power Ant with an indoor or outdoor antenna, and operate up to two scanners with its built-in splitter. Continuous gain control from -10 dB attenuation to +18 dB amplification, and the unit is automatically bypassed when power is switched off!

Order PRE 5
Only **$89.95**

$5.50 UPS
$9.50 UPS 2nd Day Air
$8.00 US Priority Mail
$11.50 Canadian APP
$10.50 Canadian UPS

GROVE ENTERPRISES, INC.
(704) 837-9200
300 South Highway 64 West
Brasstown, NC 28902

PRE-5 SPECIFICATIONS

GAIN: Continuously adjustable —10 dB to +18 dB

FREQUENCY RANGE: 30-1000+ MHz

NOISE FIGURE: 3.5 dB

3RD ORDER INTERCEPT POINT: +27 dBm

DIMENSIONS: 4"W x 2"H x 3"D

WEIGHT: 10 oz.

CONNECTORS: Low-loss type F

POWER REQUIRED: 12 VDC (nom.); AC adaptor included

Combine Your PRE-5 with the Best Scanner Antenna Money Can Buy!

Order ANT 1
Only **$59.95**

$10 UPS
$16 UPS 2nd Day Air
$11.50 US Priority Mail
$13.50 Canadian APP
$18 Canadian UPS

Shipped only in U.S. and Canada

The Grove SCANNER BEAM

Our world-renowned Scanner Beam has been improved to provide unexcelled 30-50 MHz low band reception, 108-136 MHz aircraft, 136-174 MHz high band, 225-400 MHz military aircraft and satellites, 406-512 MHz UHF, and 806-960 MHz microwave mobile.

HAMS NOTE—can be used for transmitting up to 25 watts on 144, 220, and 420 MHz bands. 50/75 ohms nominal impedance.

May be used with inexpensive TV antenna rotator (such as Grove's ROT-1) for boresight accuracy, or fixed in one direction as required for those elusive, distant stations. Local signals still come in loud and clear from all directions.

Balun transformer, offset pipe and all mounting hardware included (requires TV type F connector on your coax). Approximate size 8'H x 5'L.

New Club Start-Up

Join the new Tampa Bay Area Scanner Enthusiasts Club. For a printout of local frequencies, club meeting dates and times, and a list of other upcoming events, please send $2 and an SASE to: Phil Clark, P.O. Box 1004, Oldsmar, FL 34677.

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 at VOA Bethany station. Net Thurs 9:30 146.835/6.235. 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. Meet 3rd Tuesdays.

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. *RCMA 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.

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)

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.

SPEEDX (Society to Preserve the Engrossing Enjoyment of DXing): Bob Thunberg, Business Mgr., P.O. Box 196, DuBois, PA 15801-0196. Worldwide; SWBC, utilities. *Shortwave Radio Today.* $23 annual in US. Sample $2 or 6 IRCs. $2 for award program info open to non-members.

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.

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. $20 annual in U.S. $2 for sample.

Monitoring Clubs Outside North America

Associazione Italiana Radioascioto (AIR): C.P. 873, 34100 Trieste, Italy. Broadcasting all bands, utilities, pirates. *Radiorama* (Italian) 70,000 lira. April 25 annual mtg.

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 Listeners Organization: Mohsin Abbas, St. Nisar Ali Shah Ahamed Pura, Sheikhupura, Pakistan, 1-(50359) 2-(50561). South Asia. Broadcasting. *Listener Times.*

International Radio Youth Club: G.M. Mostafa Kamal, Amla Wapda Colony-1, Kushtia-7032, Bangladesh

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.

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.

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.

Umbrella Organizations

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.

SPECIAL EVENT CALENDAR

Date	Location	Club/Contact Person
Dec 2-3	Dothan, AL	Wiregrass ARC / Walter Haymon WA6MWS, 266 Ashley Circle, Dothan, AL 36301 (205) 793-3978
Dec 3	Mesa, AZ	Superstition ARC / Joe Bonfante WA6MVW, 1432 N. 67th St, Mesa AZ 85205 (602) 832-6594
Dec 3	Minden, LA	Minden ARA / Geo Winford AA5OL, 111 Fuller St, Minden, LA 71055-3420 (318) 377-5019
Dec 3	N. Olmsted, OH	Fall Hamfest / North Coast ARC, P.O. Box 30529, Cleveland, OH 44130, Dan Sarama KB8A (216) 267-5083. Location: St. Clarence Church, 301016 Lorain Rd (between Stearns and Barton). $4 general admission. Talk-in 145.29, 224.76 rptrs.
Dec 3	Norwich, NY	Chenango Valley ARA / Robt Levin N2KYZ, 25 Hillview Dr, Norwich, NY 13815 (607) 334-9503
Jan 14	Lancaster, PA	Columbia Area ARC / Dutch Country Comp & Comm Show, P.O. Box 682, E. Petersburg, PA 17520-0682, (717) 560-2072. Location: Lancaster Host Resort and Conference Center, Rte 30, E. Lancaster. $5 general admission. Talk-in 146.715
Jan 14-15	Sarasota, FL	Sarasota Hamfest & Computer Show / Ed Neely, KC4RYC, 2632 Sunnyside St, Sarasota, FL 34239; (813) 366-5564. Location: Robarts Sports Arena, Sarasota Fairgrounds. 9-5 Sat, 9-3 Sun, $7 general admission. Talk-in 146.31/91, 444.925, 146.13/73
Jan 15	Yonkers, NY	Metro 70cm Network / Otto Supliski WB2SLQ, 53 Hayward St., Yonkers, NY 10704 (914) 969-1053
Jan 21	Loveland, CO	Northern CO ARC Winter Superfest / Randy Long WB6AVV (303) 226-1529. Location: Larimer Co. Fairgrounds, 9-3. $3 general admission. Talk-in 144.515/ 145.115
Jan 21	St. Joseph, MO	Missouri Valley ARC, Green Hills ARC, Ray Clay ARC / Gaylen Pearson WB0W, 1210 Midyett Rd., St. Joseph. MO 64506 (816) 232-8786
Jan 21	Hammond, LA	SE Louisiana ARC / Ernest Bush N5NIB, 12447 General Ott Rd., Hammond, IN 70403 (504) 542-0034
Jan 22	Buena Pk, CA	Ray Briem Appreciation Day / So. Cal. Area DXers, 16182 Ballad Lane, Huntington Beach, CA 92649-2272 (717) 846-1685. Location: Knott's Berry Farm 12-4pm, $21.95, includes complete meal, parking, gifts.
Jan 28	San Diego, CA	Challenger Jr High School ARC, KI5YG / Special event station to commemorate 9th anniversary of Space Shutte Challenger tragedy. Operation on or near 14.250, 21.350, and 28.350. For QSL, card send QSL and SASE to Challenger JHS ARC, 10810 Parkdale Ave, San Diego, CA 92126. SWL reports welcomed.
Jan 29	Odenton, MD	Maryland Mobileers ARC / Jim Botluk KD3SI, 10 Tiburon Ct., Annapolis, MO 21403 (410) 280-9815
Jan 29	Dover, OH	Tusco ARC / Charles McEaneney KC8QK, 428 Seneca Driver, Dover, OH 44622 (216) 343-5160
Jan 29	Villa Park, IL	Wheaton Community RA / Mike Blackwell N9TSI, 1 South, 165 Winthrop Ln, Villa Park, IL 60181 (708) 627-9166

Monitoring Times is happy to run brief announcements of radio events open to our readers.Send yourannouncementsat least 60 days beforethe event to:

Monitoring Times Special Events Calendar
P.O. Box 98, Brasstown, NC 28902-0098

DX Radio Tests

These special test broadcasts provide a unique opportunity to hear and identify the following stations. If you hear their broadcasts, please let the engineer know at the address provided. More information on DXing the broadcast band can be found in *DX Monitor*, the publication of the International Radio Club of America (IRCA, P.O. Box 1831, Perris, CA 92572-1831, USA) and *DX News*, the publication of the National Radio Club (NRC, P.O. Box 5711, Topeka, KS 66605-0711). Both clubs are devoted to the hobby of hearing distant stations on the standard AM and FM broadcast bands.For a sample of either publication, send one 29 cent stamp ($1 US or 1 IRC overseas) to the addresses above. The following tests were arranged by J.D. Stephens for IRCA unless otherwise noted.

Dec 1-15- CJSB-540, 1504 Merivale Road, Ottawa, ON, K2E 6Z5 Canada, will conduct a DX test day and night starting on Dec 1, until they are scheduled to leave the AM band and move to FM. CJSB will insert Morse code IDs during their regular rock format programming and this will run 24 hours per day. This will run until CJSB leaves the air, which, according to CJSB'S engineer, will be mid-Dec. Reception reports may be sent to: Mr. Jeff Ruck - Chief Engineer.

Saturday Dec 3 - KGTL-620, P.O. Box 103, Homer, AK 99603, will conduct a DX test 5:30-6:30 am EST. The test will include "Patriotic" music, test tones and Morse code ID's. Reception reports may be sent to: Mr. David F. Becker (KL7HSB) President & General Manager.

Monday Dec 3 - WHBY-1150, P.O. Box 1519, Appleton, WI 54913, will conduct a DX test 1:00-2:00 am EST. WHBY will stick to its regular format of "Middle of the Road" music, and will air many extra voice IDs during the test period. Additionally, WHBY will operate outside their normal nighttime parameters as follows: from 1:00-1:20 am WHBY will utilize their 5,000 watt day pattern; from 1:20-1:40 am, they will use their 5,000 watt night pattern; and from 1:40-2:00 am WHBY will be using their 1,250 watt non-directional emergency antenna. Reception reports may be sent to : Mr. Steve Brown - Chief Engineer.

Tuesday Dec 6 - KLTC-1460, P.O. Box 1478, Dickinson, ND 58602-1478, will conduct a DX test 2:30-3:30 am EST. The test will include polkas, march music, and Morse code IDs. Reception reports may be sent to : Senator Ray David - Owner & General Manager.

Sunday Dec 11 - CKQR-760, 525 11th Avenue, Castlegar, B.C. V1N 1J6 Canada, will conduct a special DX test 3:00-6:00 am EST. The test will include oldies music and Morse Code IDs. Power will be 20 kW using a non-directional antenna pattern. The test will also be broadcast over station CKGF-1340, Grand Forks, BC, and the following 100 watt FM repeaters: CKGF-FM1 93.3, CKGF-FM2 96.7, CKGF-FM3 103.7, and CKGF-FM1 103.5. Reports for all stations may be sent to Mr. Kevin McKinnon (VE7KEV), Chief Engineer at the Castlegar address shown above.

Sunday Dec 11 - CKGF-1340, Grand Forks, BC, Canada. See CKQR-760 item above for test details and reporting information.

Monday Dec 12 - WEAQ-790, P.O. Box 1, Eau Claire, WI 54702, will conduct a DX test 2:30- 3:00 am EST. The test will include instrumental music, voice IDs, test tones and Morse code IDs. Power will be 5kW and the last 15 minutes of the test will be run using a non-directional antenna pattern. Reception reports may be sent to: Mr. Jim Casey - Chief Engineer.

Monday Dec 19 - WIBW-580, 5600 SW 6th Street, Topeka, KS 66606, will conduct a DX test 2:00-2:30 am EST. The test will include Morse code IDs. Reception reports may be sent to: Mr. Ed O'Donnell - Operations Manager.

Saturday Dec 24 - HCJB-690, Casilla 17-17-691, Quito, Pichincha, Ecuador, will conduct a DX test 12:15-13:45 am EST. The test will include Morse Code IDS, Spanish and English announcements and talk, and "various types of distinct music." Power will be 50 kW. A special QSL card will be issued for correct reception reports sent to: Mr. Rich McVicar attn: 690 DX Test, c/o DX Partyline Program. NOTE: Return postage in the form of 2 or 3 mint Canadian, US or Ecuadorian stamps, or two IRCs are required for an airmail reply. According to Mr. McVicar "We will be real fussy about the details we receive in the reception reports for this test. If you hear Morse Code, we want to know exactly what the code words were. If you don't know Morse Code, tape it, and send us a tape." Mr. McVicar points out that cassette tapes, regretfully, cannot be returned. (Arranged by Mr. Rich McVicar for the benefit of all DXers.)

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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.

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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. Send camera-ready copy or copy to be typeset. Photo-reduction $5 additional charge. For more information on commercial ads, contact Beth Leinbach, 704-389-4007.

FINALLY! Monitoring awards you can be proud of! Details—SASE. ISWAC, Box 87-MT, Hanover, MI 49241.

SHORTWAVE AND SCANNER Computer Service. Shortwave Paradise—1019 Cambridge Drive #2, Kalamazoo, MI 49001. 6 mos. $15, 1 yr $25. Call our Computer System today! (616) 383-4979.

R-390-A SALES — SERVICE — PARTS. Information SASE Miltronix, P.O. Box 3541, Toledo, OH 43608.

For Sale: Scanner Antenna-super high gain. Base Antenna, outperforms all others-25 MHz coverage. $39.95 + $5.00 shipping. Check or money order to Radio World, 1014 1/2 North Combee Road, Lakeland, FL 33801. (800) 639-4707

GE SUPERADIO III, custom designed with up to four noise-free SCA channels. Performance guaranteed. Credit Card orders accepted. (800) 944-0630.

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DON'T JUST LISTEN, TALK! Personal Radio Communications Systems Available New & Used. Talk to family or friends. No cellular bills, not CB radio. GMRS & business systems, repeaters, mobiles, handhelds available. Radio World 1-800-639-4707.

WANTED: MOTOROLA Flip phones and EXPO walkie talkies (UHF/DPL preferred). Also looking for Yupiteru handheld receiver. Mark. (301) 428-9076 phone/fax.(12-94)

Highest price paid for used scanners! (614)544-5842 (03-95)

Mint AR-3000 receiver. $500. Call W8ISG, (616)731-5600 days or leave message.(1-95)

Take heed SHORTWAVE LISTENERS. Are you planning to deal with Mike Papagorgio's coin show "Money Makes Money"? Please contact me before you buy from him. George DiPrinzio 837 E 232 St., Bronx, NY 10466 or call collect (718)231-5638. (01-95)

SELL: Kenwood R-5000 new in box, warr. card, manual. $700. Yaesu FRG-8800, manual, like new. $350. Uniden 800XLT, full 800 MHz, new in box. $200. Motorola MT-1000, portable, 136-176 MHz, 99ch, 1-hr charger, extra batt, speaker/mic., like new, $400. John, (907) 337-9157 Alaska time.

Scanner SCANTENNA, full coverage. 25-1300 MHz, mint. First. $20. (407) 651-5410.

FOR SALE: ICOM Receivers-R1 with BP84, $250; R100 $400; R7000 with TV, SP3 and Discone $700; R71A with CR-64, FL-32 and SP-3 $600/ All Mint. Call Ron (602) 742-5703.

Hammarlund SP600 JX Receiver. Covers .54 KC to 54 MHz. Excellent Condition $225 you ship. Phone before 6 P.M. central or write: John Belille. 302 Herndon St., Park Forest, IL 60466, (708) 747-1850.

AOR 1000XLT handheld scanner. 500 KHz-1300 MHz. No gaps. 1000 channels. $300 (701) 746-8792..

BEARCAT BC800XLT $150. PRO-46 Restorable $165. Mint Condition, in boxes. Plus S & H, will swap both for a restorable BC2500XLT. Robert Berg. 3539 Warringham Avenue. Waterford, MI 48329, (810) 623-6636.

For Sale: Military R109/GRC, 27-39 MHz FM Receiver with manual $50. TS 497C Signal Generator. with manual. $75. (716) 671-0776.

WANTED: ICOM R7000 or R7100 Full Coverage Scanner. Write: 881 Lafayette Boulevard, Suite 302, Bridgeport, CT 06604.

Radio Shack PRO-2026 WITH CELLULAR. New. Mint. Guaranteed. $295 delivered. (304) 727-9267.

LOWE HF-150 w/keypad, perfect condition $499. LOWE PR-150 Pre-Selector, perfect condition $175. JRC NVA Speaker, perfect condition $125. Stoner-Dymek DA100E Active Antenna $99. Sony ICF-SW77, perfect condition $350. Palomar Loop Antenna with HF1 and BCB Elements, perfect condition $150. (508) 792-9000.

2 Max 800 MHz Antennas, handheld & base $30. AOR Interference Filter $15. GRE 800 MHz Converter $15. Austin Condor 3 Band Antenna $15. Connie (813) 577-9493.

Kenwood R-2000, VHF converter, DC kit, paperwork, exc. cond., $375/offer. Randy Grahek, 4616 Studebaker Rd., Placerville, CA 95667. (916) 676-4259.

Collins 390A with manuals. Restored to mint condition and aligned. One of the best U.S. made tube radios. $450. Drake 2B with crystals and manual. Excellent condition. $120. Yaesu 7700 with VHF converter, 7700 antenna tuner, and manual. Excellent condition. $300. Tom Kulis, (303) 226-6313 after 1:00 UTC.

McIntosh MR-78, considered "Simply the Best" FM tuner ever made (MT, July 93, p. 48). Walnut case, $995, Matching McIntosh MC-2205 Amp. $1; Onkyo T-9090 (see same article) $260, Onkyo T-9060 $190, Magnum-Dynalab FT101 with full "Etude" upgrade $750, Magnum- Dynalab "Signal Sleuth": F-205 $175. Bill Fusfield, 335 S Lang Ave., Pittsburgh, PA 15208, (412) 243-1569.

Drake R8 with Speaker. Excellent condition. $700 or best offer. Call (214)680-9126 evenings.

Icom R-7100 with speech option installed. Mint Condition. $1,250. Call (615) 791-5763.

Open 800 MHz scanners, Bearcat 800 XLT $145. Radio Shack PRO-43 $195. PRO-2006 $295, all mint. (407) 651-5410.

INFOTECH M-6000 V.8 Multimode Code Receiver (decoder). Like new with manual. $415 shipped. Uniden President HR 2600 10 meter SSB transceiver (capable of 24-30 mc. with small mod.), like new with manual. $165 shipped. Chuck N8GMB (216) 729-2273.

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The All-American Pro Receiver Goes Amateur!

HF-1000

Since 1957, Watkins-Johnson Company has been the leading supplier of high quality, high performance receivers for governments and military worldwide. Now, through the magic of digital signal processing and state-of-the-art manufacturing technology, W-J offers the HF-1000 Digital Receiver to short-wave listeners and HAM stations.

Trade publications worldwide have given the HF-1000 high rankings. To give the HF-1000 a tryout, contact your area distributor or dealer today.

Features:

- Frequency Range of 5 to 30,000 kHz in 1-Hz Steps
- High Dynamic Range (+30 dBm IP3)
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