

Monitoring Times

A Publication of
Grove Enterprises, Inc.

- **Scanning Traffic**
on the New Jersey
Garden State Parkway
- **The Dominican
Scene -- Shortwave
Radio from the Island
Republic**
- **Developing a
Scanner Strategy**

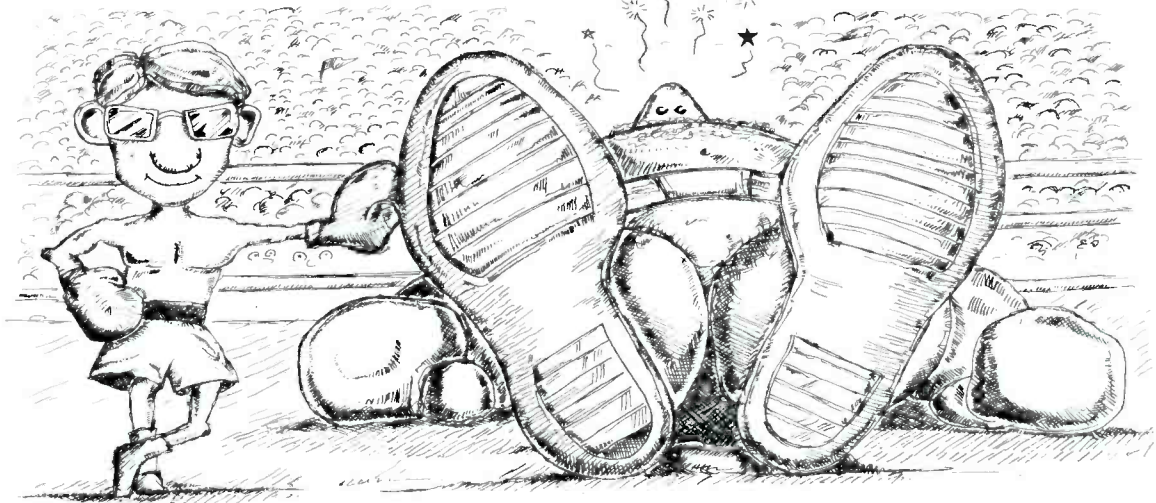
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Monitoring Times



Microwave Monitoring

By John Wilson

8

If your concept of satellite monitoring is a bunch of beeps and weird noises heard on your wide-coverage VHF/UHF receiver, think again. The INMARSAT satellite system is used by ships, news services, relief agencies, armed forces, business personnel — the list goes on and on. Some of these are scrambled communications, but by no means all. Let us introduce you to the fascinating world of satellite communications.

Scanning the Garden State Parkway

By Bob Kozlarek

14

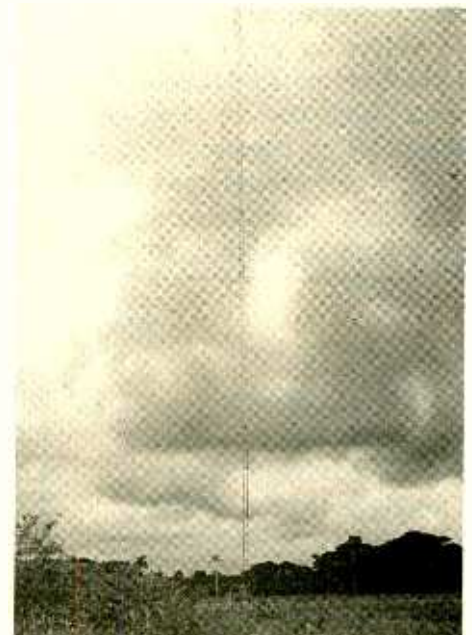
This may seem like a mundane target, but that's what most two-way communications involve — the daily routines that coordinate our modern life. The Garden State Parkway is certainly one of the most heavily-traveled highways in the country, and Bob Kozlarek expected sophisticated radio equipment to be used to keep it running smoothly. Not entirely so, he discovered, on a surprise peek inside.

The Dominican Scene on SW

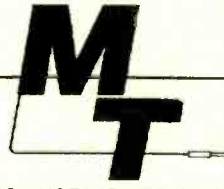
By Adrian Peterson

18

Several shortwave stations have come and gone from this Caribbean island nation, and they are still in a state of flux. One reliable shortwave broadcaster is gone for good, but others are gearing up to take its place. With an average power rating of 1 kW and irregular schedules, catching one like Radio Amanacer — whose antenna is shown in the photo—is a challenge.



ON THE COVER: *This impressive antenna array is only one-third of the spread on Sandia Crest just north of Albuquerque, New Mexico. Photo by Bob Combs.*



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Scanner Strategies

22

By Otto Muller

It is understandable if you miss the action on a crystal-controlled scanner, or even on a scanner with less than a hundred channels. But if you are scanning with your two hundred or even thousand-channel modern marvel and you still miss it, what you need is a scanner strategy!

The Medium IS the Message

24

By Arthur Cushen

The concept of a program *about* radio on the radio was born in Australia in 1946. Since then there have been many noteworthy DX programs from broadcasters all over the world. Arthur Cushen was a contributor to many of them, and it is fitting that he is our guide on this historical tour.

Sometimes It's Better to Stay at Home

27

Paul Blumenstein was thinking about dropping in at a scanner club meeting for the first time, but he decided to catch up on a little sleep instead. A knock at the door quickly ended that thought: "LAPD. We are going to be in your bushes. Don't call the police!"

And Much, Much More . . .

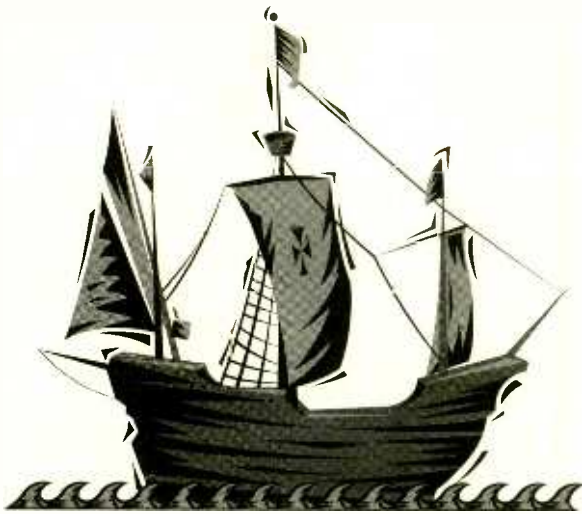
"Magne Tests" an affordable and surprisingly pleasant portable short-wave receiver from Radio Shack — the DX-375, and he also reports on several new developments in the previously-reviewed Yaesu FRG-100. "So you bought a new scanner" ... is the theme of "Scanner Equipment," which will walk you through the first stages of setting up your scanner, programming it, and buying accessories.

Setting up for satellite television has the reputation of being even more expensive than the radio hobby. It doesn't need to be, says Ken Reitz, if you make good use of used equipment. In "Satellite TV" he gives some guidelines for compatible equipment and recommended pricing.

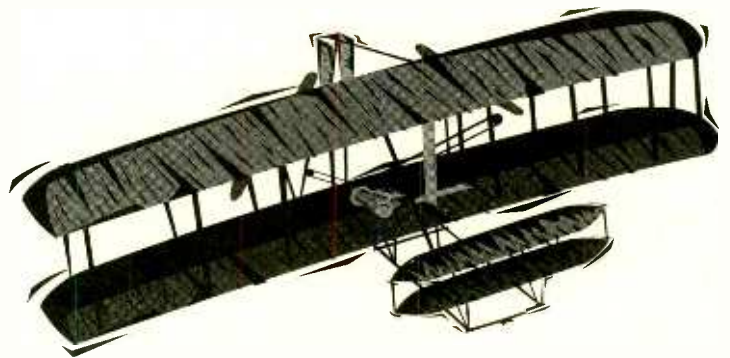
One of the most useful ways a computer can aid in radio monitoring is in database maintenance. "Computers and Radio" compares several commercial database programs specifically geared to the radio hobby.

DEPARTMENTS

Letters	3	On the Ham Bands	84
Communications	6	Outer Limits	86
Utility World	28	What's New	88
The Scanning Report	32	Scanner Equipment	92
The Beginner's Corner	36	Magne Tests	94
Shortwave Broadcasting	38	Computers & Radio	96
QSL Corner	42	Demaw's Workbench	98
Shortwave Guide	43	Experimenter's Workshop	100
Propagation Charts	68	Antenna Topics	102
Radio Reflections	72	Ask Bob	104
American Bandscan	74	Club Circuit	108
Federal File	76	Special Events Calendar	109
Plane Talk	78	DX Radio Tests	109
Satellite TV	80	Stock Exchange	110
Below 500 kHz	82	Closing Comments	112



"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" or the IsoLoop 10-30 HF or call us direct at (206) 774-5554. For best pricing,

see your favorite amateur radio equipment dealer.



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LETTERS



There's More to the Story ...

It is always gratifying when stories in *MT* spark additional information, comments, recollections, or counter opinions. This edition of "Letters" summarizes responses you've sent in to articles and letters appearing over the past few months.

Another Transoceanic Junkie

Bob Moore of Lakewood, Colorado, congratulates the editor "on acquiring a piece of American Radio history. [Nov 'Letters'] It should not take a lot to make it functional—these beauties were built like tanks and all of the ones in my collection still pull in the world with little difficulty.

"One thing I would like to correct; the radio you have was released for sale in April of 1942, not 1938. The first advertisement to appear was in the January 1942 *National Geographic*. Allowing for lead time, the ad was obviously prepared before the attack on Pearl Harbor and our entry into WW II. A sailboat is stitched into the grill cloth and the ad copy says, 'Press a button ... there's Berlin!'

"The next ad appeared in April 1942 and now the bomber design has replaced the sailboat and the ad copy reads, 'Press a button ... there's Europe!'"

Thanks for the interesting bit of history. Bob Moore has written a book, *Zenith Trans-Oceanic - The Radio Powered to Tune the World*, which is out of print, but he may eventually come out with a new edition. If interested, contact Bob at The Mother Road Publishing Company, P.O. Box 27232, Lakewood, CO 80227 (a journal about historic Route 66).

Scanning and the PD

In December, we asked a question regarding the role of scanner listeners in keeping an eye on public service agencies. The lack of response would seem to indicate a certain apathy toward the question, at least on a theoretical basis. Bob Fraser of Cohasset, MA, did speak up, however, to say, "I agree wholeheartedly with the scannist as watchdog. However, I believe such reports [of police wrongdoing, etc.] should go to the media. Let the people decide.

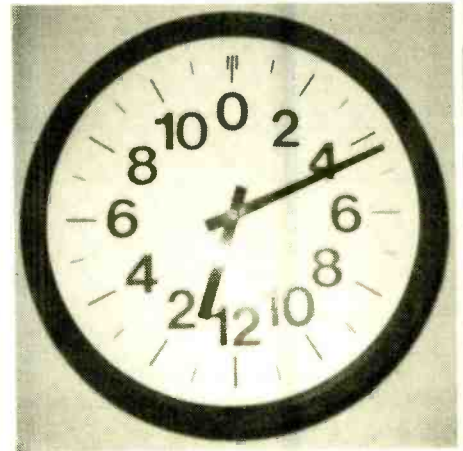
"As to any policeman who would disagree let me say: clean up your act and clean it real fast. We can no longer afford another Miranda decision in these days of pandemic crime. Particularly when it seems that justice bends over backwards not only to protect criminals but to reward them as well."

In January's issue, we also raised the topic of police listening to communications which are banned to the general public. Jim Evans of Tewksbury, MA, found another example in the *Tewksbury Town Crier*, in which, among routine police reports appeared this item: "A state trooper

called to say that he overheard a cellular phone call about a man with a gun and drugs ..." Jim asks, "How can the police get away with it?"

We have an initial report from Florida which suggests they don't always get away with it. One police officer in Miami is apparently in legal difficulties for allegedly helping another officer modify and program a PRO-2006 to receive cellular calls. Since this one hasn't made the news yet, we'll leave the officers anonymous.

This issue is not a simple one. Most of us, like Bob Fraser, end up sympathizing with both law enforcement and the radio hobbyist. Part of our plea to the authorities is to remember who the real "bad guys" are—and it's not us!



It's all a Matter of Time

December's "Letters" carried an idea by Gene Carr for dedicating a wall clock to UTC by using stick-on numbers for the 24-hr format. Dr. Theo Pappan of Owosso, MI, writes, "Come on, Rachel, the big hand still goes around one every hour and the little hand still goes around once every twelve hours no matter how many stickers you put on it! If you put weeks and days on it would that make it a calendar?..."

Perhaps it was too small to show up in the photo, but Gene pasted a second ring of numbers to reflect 1300-2300 UTC; presumably one would know by the time of day which 12-hour period one is in!

Ricardo Molinar of Ft. Lee, NJ, doesn't think small; he submits a picture (above) of his 24-hour customized clock face. Ricardo says "I used the other side of the clock's face and pasted 92-point numbers from LetraSet. Obviously the original design needs some improvements. I could not read the clock across

January 1942

April 1942

Scanners/Shortwave/GMRS/Ham

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Emergency Operations Center

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Signal intelligence experts, public safety agencies and people with inquiring minds that want to know, have asked us for a world class *handheld* scanner that can intercept just about any radio transmission. The new Bearcat 2500XLT has what you want. You can program frequencies such as police, fire, emergency, race cars, marine, military aircraft, weather, and other broadcasts into 20 banks of 20 channels each. The new rotary tuner feature enables rapid and easy selection of channels and frequencies. With the AUTO STORE feature, you can automatically program any channel. You can also scan all 400 channels at 100 channels-per-second speed because the Bearcat 2500XLT has TURBO SCAN built-in. To make this scanner even better, the BC2500XLT has AUTO SORT - an automatic frequency sorting feature for faster scanning within each bank. Order your scanner from CEI.

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

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- Bearcat 700A-H info mobile \$149.95
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- Bearcat 148XLT-H base \$88.95
- Bearcat 100XLT-H handheld \$149.95
- Bearcat BCT2-H info mobile \$139.95

New FCC Rules Mean Last Buying Opportunity for Radio Scanners

On April 19, 1993, the FCC amended Parts 2 and 15 of its rules to prohibit the manufacture and importation of scanning radios capable of intercepting the 800 MHz cellular telephone service. Supplies of full coverage 800 MHz scanners are in *very* short supply. If you need technical assistance or recommendations to locate a special scanner or solve a communications problem, call the Communications Electronics Inc. technical support hotline for \$2.00 per minute at 1-900-555-SCAN.

Bearcat® 8500XLT-H

List price \$689.95/CE price \$369.95/SPECIAL
500 Channels • 20 banks • Alphanumeric display
Turbo Scan • VFO Control • Priority channels
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- 54.000 - 71.995 MHz. (WFM), 72.000 - 75.995 MHz. (NFM),
- 76.000 - 107.995 MHz. (WFM), 108.000 - 136.995 MHz. (AM)
- 137.000 - 173.995 MHz. (NFM), 174.000 - 215.995 MHz. (WFM),
- 216.000 - 224.995 MHz. (NFM), 225.000 - 399.995 MHz. (AM)
- 400.000 - 511.995 MHz. (NFM), 512.000 - 549.995 MHz. (WFM)
- 760.000 - 823.9875 MHz. (NFM), 849.0125 - 868.9875 MHz. (NFM)
- 894.0125 - 1,300.000 MHz. (NFM).

The new Bearcat 8500XLT gives you pure scanning satisfaction with amazing features like Turbo Scan. This lightning-fast technology featuring a triple conversion RF system, enables Uniden's best scanner to scan and search up to 100 channels per second. Because the frequency coverage is so large, a very fast scanning system is essential to keep up with the action. Other features include *VFO Control* - (Variable Frequency Oscillator) which allows you to adjust the large rotary tuner to select the desired frequency or channel. *Counter Display* - Lets you count and record each channel while scanning. *Auto Store* - Automatically stores all active frequencies within the specified bank(s). *Auto Recording* - This feature lets you record channel activity from the scanner onto a tape recorder. You can even get an optional *CTCSS Tone Board* (Continuous Tone Control Squelch System) which allows the squelch to be broken during scanning only when a correct CTCSS tone is received. *20 banks* - Each bank contains 25 channels, useful for storing similar frequencies in order to maintain faster scanning cycles. For maximum scanning enjoyment, order the following optional accessories: PS001 Cigarette lighter power cord for temporary operation from your vehicle's cigarette lighter \$14.95; PS002 DC power cord - enables permanent operation from your vehicle's fuse box \$14.95; MB001 Mobile mounting bracket \$14.95; BC005 CTCSS Tone Board \$54.95; EX711 External speaker with mounting bracket & 10 feet of cable with plug attached \$19.95. The BC8500XLT comes with AC adapter, telescopic antenna, owner's manual and one year limited warranty from Uniden. Order your BC8500XLT from Communications Electronics Inc. today.



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The Uniden GMR100 is a handheld GMRS UHF 2-way radio transceiver that has these eight frequencies installed: 462.550, 462.725, 462.5875, 462.6125, 462.6375, 462.675, 462.6625 and 462.6875 MHz. This one wait radio comes with flexible rubber antenna, rechargeable ni-cad battery, AC adapter/charger, belt clip, F.C.C. license application and more.

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- ICOM R7100-H base with 900 memory (add \$49.00 shipping) \$1,289.95
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- Grundig Satellit 500-H portable with 42 memory & AC adapter \$349.95
- Grundig Cosmopolit-H with integrated mini-cassette recorder ... \$179.95
- Grundig Yacht boy 230-H portable shortwave \$139.95
- Grundig Traveller 7-H portable shortwave \$79.95
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- Sangean ATS606-H ultra compact 45 memory shortwave \$149.95
- Sangean ATS606P-H shortwave with antenna & AC adapter \$169.95
- Sangean ATS800-H portable 20 memory shortwave \$79.95
- Sangean ATS803A-H portable with SSB reception & AC adapter \$159.95
- Sangean ATS808-H portable 45 memory shortwave \$159.95
- Sangean ATS818-H portable without cassette recorder \$189.95
- Sangean ATS818CS-H with cassette recorder \$209.95
- Sangean ANT60-H portable shortwave antenna \$9.95

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Public safety agencies responding to hazardous materials incidents must have accurate, up-to-date weather information. The Davis Weather Monitor II is our top-of-the-line weather station which combines essential weather monitoring functions into one incredible package. Glance at the display, and see wind direction and wind speed on the compass rose. Check the barometric trend arrow to see if the pressure is rising or falling. Our package deal includes the new high resolution 1/100 inch rain collector part #7852-H, and the external temperature/humidity sensor, part #7859-H. The package deal is order #DAVI-H for \$524.95 plus \$15.00 shipping. If you have a personal computer, when you order the optional Weatherlink computer software for \$149.95, you'll have a powerful computerized weather station at an incredible price. For the IBM PC or equivalent order part #7862-H. For Apple Mac Plus or higher including Quadra or PowerBook, order part #7866-H.

Other neat stuff

- Cobra CP910-H 900 MHz. spread spectrum cordless phone ... \$299.95
- ICOM GP22-H handheld global positioning system \$699.95
- WR200-H weather radio with storm alert \$39.95
- RELM WHS150-H VHF handheld 5 watt, 16 ch. transceiver ... \$349.95
- RELM RH256NB-H VHF 25 watt synthesized transceiver \$289.95
- Ranger RC12950-H 25 watt 10 meter ham radio \$244.95
- Ranger RC12970-H 100 watt 10 meter ham radio \$369.95
- Uniden LRD9000W1-H Super wideband laser/radar Detector \$169.95
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Ghost Story

When the license renewal for radio station KARW-AM arrived in Washington, D.C., the FCC knew something was wrong. The owner of the station, Ken Tuck, had been dead three months before the application was filed. To make matters worse, the FCC says that the persons operating KARW have "refused to identify who controls the station and...how such control was obtained."

The FCC, always humorless in such situations, is thinking about getting the station's attention by levying a \$250,000 fine for "willful and repeated violations" of commission rules. That tidbit from *Radio World*.

The Grim Reaper is Reaped



When a radio or TV station goes out to sell advertising, their most effective tool is the ratings book. And since the 1940s, many a radio and TV station employee's job has hinged on how the station did in the "ARBs." Grown men were known to cry at ratings time; many a career was ended (or at least dealt a major setback) when a program director or disc jockey's performance was not reflected positively in "the book."

On January 1, Arbitron suffered its own rating mandate, of sorts. It dropped its TV survey, which it has run in competition with A.C. Nielson since the 1940s. There was no official reason given for the decision; however, it is known that as always, when the book comes out, heads will roll. The bad ratings on Arbitron's TV ratings service cost over 700 people their jobs at the company. Somehow, in a twisted way, there's poetic justice there.

Hoarse but Hamming?

Tuning through the ham bands? You may find yourself chatting to country music star Patty Loveless. So says an announcement in *Country Music City News*, which claims the singer just got her ham license. Fred Maia, W5YI, says that he tried to contact the FCC in Gettysburg, Pennsylvania, to obtain Loveless' callsign but there was none registered at that time. The magazine article said that Loveless communicated with her husband, W4WRO, by Morse Code during recuperation from vocal cord surgery.

Strange Voices

If you always thought that those stories about people "hearing things" were the prod-



uct of sick minds, rethink. It could be because of heated brains. We noticed the following in an article contained in the *W5YI Report*.

"EPA [Environmental Protection Agency] is concerned that the effects of modulated RF should be distinguished from effects of CW (nonmodulated) RF. For example," continues the report, "pulse-modulated RF can produce an effect wherein people hear sounds, probably caused by '...very rapid thermoelastic expansion of the brain, creating a sound wave in the head.'"

Radio to the Rescue

People who rob banks and who get away with any cash usually end up with an explosive dye pack as well. Disguised in a bundle of cash, the pack explodes, covering the robber with a bright, identifying color and filling the air with teargas. According to newspaper reports, though, the system has one drawback. When the explosion occurs, it often burns or shreds the money, covering it with red dye as well. Radio, of course, comes to the rescue.

An electronic tracking system is now being offered to police and banks. Fashioned after the Lo-Jack stolen car tracking system, it allows police to immediately "home in" on the robber. Now, instead of passing along a bundle of dollars with a dye pack, tellers hand the robber a bundle of bills with a transmitter inside.

The system, which is described as "terribly expensive," is already in use in some Western cities, including Los Angeles, Las Vegas, and San Francisco.

Fighting America

The government of France continues its efforts to block out foreign broadcasting, working feverishly to enact various legislation. Right now, the country is focusing on the development of communications groups that are capable of facing up to international competition. "It is necessary," says Minister of Communications Alain Carignon, "to be able to fight against the Americans."

Curiously, France just announced that it has won permission to transmit its programs on local FM frequencies in Berlin and, shortly, in Praia, the capital of the African nation of Cape Verde.

Pulling the Plug?

The Chinese have been waiting nervously to see if the government there is going to enforce a recent ban on satellite dishes. Beijing is talking tough. "The large majority of dish owners will

have to tear their dishes down," says Wei Dangjum, spokesman for the Ministry of Radio, Film and Television. *New York Times* reporter Patrick Tyler cautions that although "So far, no police officers have been sent to start ripping dishes off rooftops...many in Beijing feel the Politburo has invested too much of its prestige to back down."

In the end, it all may be too late. In one Beijing neighborhood, even the apartment buildings that house retired officers of the dreaded public security bureaus are wired up to receive satellite programming from the U.S., Great Britain and Hong Kong. It may, at this time, be too late for Beijing to cut the "heavenly thread"—the literal translation of "satellite antenna" into Mandarin Chinese.



Twisting the Facts (Again)

Scanners are once again the target of legislators in Canada. Using misinformation about U.S. scanner laws, officials of RadioComm Association of Canada, a cellular telephone industry group, is demanding that Canadian officials—quoting Ottawa-based reporter Ian Austen—"follow the U.S. and ban the future sale, manufacturing and importation of scanners." (Such a ban, of course, does not exist in the United States.) As for the expense and difficulty of enforcing such a measure, RadioComm officials say that such matters are "less important than the cellular telephone user's privacy."

The *Canadian Daily Newspaper Association* opposes the ban saying that if the cellular telephoner industry is really concerned about privacy, it should invest money in encryption equipment. Barring that, they say, people should use conventional phones for sensitive calls.

Taking the Long View

The National Radio Astronomy Observatory's Very Large Array/Very Long Baseline Array radio telescopes (based at Socorro, New Mexico) were as far-sighted and flexible as technology knew how to make them in 1980. Recently, however, the spirit of intellectual curiosity and international cooperation have combined again to produce improvements which almost double the system's capacity.

The facility's original receivers had a frequency limit of 23 GHz. When work was begun on the VLBA six years later, 43 GHz receivers were already planned as part of its standard equipment.

COMMUNICATIONS

In the meantime, Luis Rodriguez, a researcher at the University of Mexico, was successful in convincing Mexico's National Science and Technology Foundation to fund ten new receivers for the VLA, to help further his studies into how planetary systems form. The new receivers, which will cover 40 to 50 GHz, are now being installed.

The construction of the VLA's dish antennas, however, didn't match the high standards required for such high-frequency radio waves. Tiny "bumps" in the dish surfaces and misalignments of the reflecting systems cause greater distortions at the higher frequencies. Astronomers wanted to find the "10 best" antennas for the new receivers.

A leading Australian radio astronomer, Michael Kesteven, who happened to be coming to Socorro for a year's sabbatical, provided the solution. He had the necessary experience in a technique called antenna holography. Using sophisticated computer analysis, the antenna surface can be mapped.

"We can then ask the computer," says Kesteven, "How do I distort the dish to produce the difference between the ideal and the actual?" Errors in the surface which measure only a fraction of a millimeter are sufficient to degrade performance when you are capturing radio waves of only about seven millimeters in wavelength.

This technique was used not only to choose the 10 best antennas, but it was also applied to readjust the 172 aluminum panels and reflecting-system alignment on one of the VLA's 82-foot-diameter, 230-ton antennas. The antenna's high-frequency performance was nearly doubled, according to the NRAO.

This spring, Luis Rodriguez will use the new VLA receivers to look at disks of dust around young stars in the constellation Taurus. He hopes to get the first actual image of a planetary system in the process of formation. Astronomers have already asked for 900 hours of observing time at the VLA's newly-available frequency range.

There is a natural thread of interest between radio hobbyists and radio astronomy. No doubt many of our readers are already members of the Society of Amateur Radio Astronomers (SARA). We were sorry to hear that Bob Sickels, editor of its publication *The Radio Observer*, died last year. If you are interested in SARA or its publication, contact Chuck Forster (608) 835-9282 or Robert Brimson (804) 468-6168, and listen in on the planets!

Phones Phreak Out Callers

Two recent telephone glitches gave customers an earful. In the first case, callers



Bob Combs

The parabolic dishes used by the National Radio Astronomy Observatory achieve great flexibility by being movable. Pictured is one dish and the "locomotive" that moves it by rail into the desired position.

attempting to reach ICOM's sales line reached a sex hotline! ICOM is not sure whether it was a mixup in the telephone switching network, or whether it was the result of accidental key presses slightly different from ICOM's phone number.

In the second case, Scanner Master Corporation's answering machine was accessed by a long distance caller who replaced the benign message with a hard-core version. When news of that one hit the computer bulletin boards, the publisher's phone lines lit up like a Christmas tree!

Rich Barnett, president of Scanner Master, says he didn't realize that his AT&T model 1332 answering machine could be re-recorded long distance, so he left the factory access code installed.

Barnett took it in stride, however, and simply replaced the message—and the code.

"Communications" is written by Larry Miller from a variety of sources, including material submitted by the following fine people; Dave "King of Klippings" Alpert, New York, NY; Jacques d'Avignon, Kingston, Ontario; Rachel Baughn and Bob Grove, Brasstown, NC; Lonnie Bunn, Raleigh, NC; Ron Bruckman, Hampstead, MD; Kevin Klein, Appleton, WI; Tom McKeon, Indianapolis, IN; Harry Shute, Edmonton, AB; Richard Sklar, Seattle, WA; and Raymond Schleicher, Woonsocket, RI. Additional information was obtained from BBC *Summary of World Broadcasts*, *National Scanning Report*, *National Radio Astronomy Observatory*, *Radio World*, and *W5YI Report*. Thanks to all for sending in clippings!

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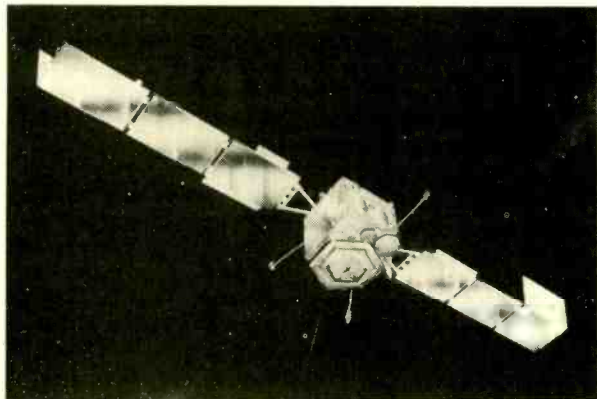
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MICROWAVE MONITORING



Courtesy COMSAT

INMARSAT *Loud and Clear*

By John Wilson, W4UVV

DID it ever occur to you to wonder—after you had purchased that receiver or scanner with frequency coverage above 1000 MHz—why you bought it, since there was nothing in your area to monitor except weird sounds? After all, receiving aircraft transponders was not exactly your “end of your rainbow” in microwave monitoring. With a sigh, you resigned yourself to listening to signals only

in the 25-900 MHz range.

I did; but now I listen as much, if not more, to INMARSAT transmissions than I do to radio signals on the lower frequencies. Only within the past few years have reasonably priced VHF/UHF receivers capable of tuning the low end microwave frequency range, plus relatively low noise microwave RF amplifiers, become available for purchase by the general public.

Monitoring of the Atlantic Ocean East and West INMARSATs over the past year from my central Virginia location has afforded me many hours of interesting and exciting listening, some of which was related to history-making events unfolding in Europe.

The cost of the additional receive system components required is reasonable and you do not have to be a microwave engineer or a tech-

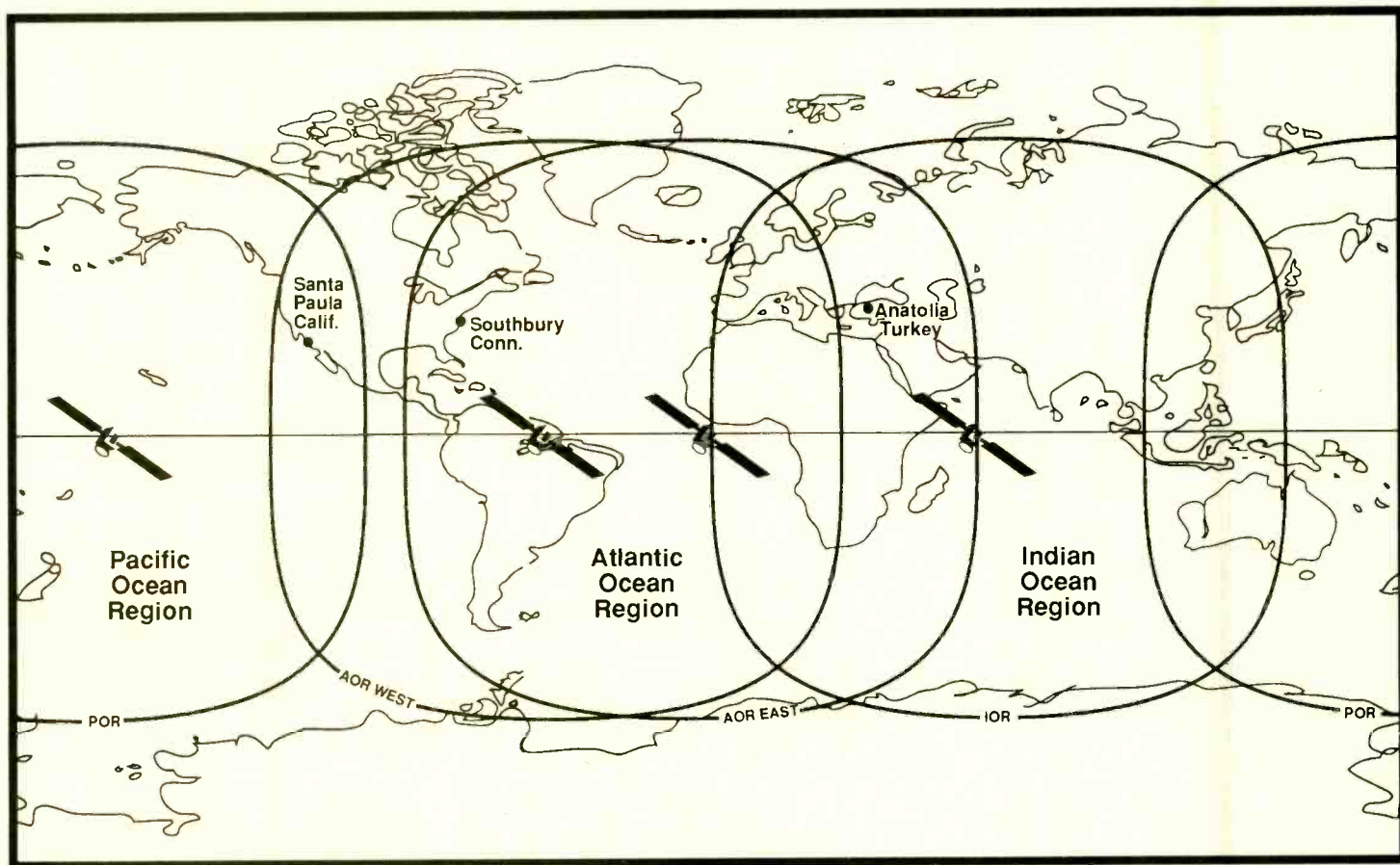


Figure 1

Courtesy COMSAT



Courtesy COMSAT

The INMARSAT system, which started out providing communications to ships, has proved invaluable for "flyaway" uplinks for personnel in remote regions of the world.

nical type to make it work. Assembling a system is relatively simple, and once you receive your first INMARSAT signal, you will agree that the listening rewards are worth the time, effort and expense you went through. Before we address system components, however, let's look in this first installment at what signals are available to the monitor.

INMARSAT History

INMARSAT (International Marine Satellite) is an organization of participating member countries whose primary purpose is to provide ocean going ships and vessels reliable, continuous, worldwide ship-to-shore and shore-to-ship communications. HF and MF frequency marine communications historically had proven to be unreliable, untimely, unpredictable, and noisy.

The first generation of INMARSAT satellites were launched in the late 70s with additional successful launches in the 80s. As communications technology advanced, TV networks began sending portable "flyaway" uplink systems for on scene "live shots" to remote parts of the world. These were often areas where military, medical, rescue and disaster relief personnel were stationed, but in which landline telecommunications systems to the outside world were either very poor, or in some cases nonexistent. These agencies needed a portable telecommunication system which could be deployed easily

and which could offer immediate connection to worldwide telecommunication networks.

The global INTELSAT system did not offer the most practical option mainly due to technical constraints. However, INMARSAT satellites did present a practical alternative and subsequently have been evolving as the satellite of choice for ship, mobile and portable operations worldwide.

As the price of INMARSAT marine and portable equipment has decreased in the past few years, INMARSATs are being increasingly utilized. It is estimated that over 300 land-based terminals currently are in use. A significant percentage of these users are located in Africa, Asia, and Third World countries where no other public telecommunication services are available.

Where Are The Satellites?

Currently, four geostationary satellites serve the Atlantic, Pacific and Indian Oceans providing 24 hour data (telex) and voice communications (Figure 1). Their locations are:

Designator	Location (W. Long)	Area Served
F1	295.5	Indian Ocean (IOR)
F2	15.5	Atlantic Ocean-East (AOR-E)
F3	192.0	Pacific Ocean (POR)
F4	55.0	Atlantic Ocean-West (AOR-W)

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How Does the INMARSAT System Work?

There are approximately 25 Coast Earth Stations (CES) worldwide, through which all communications are routed/processed. Each member country is responsible for construction and operation of its own CES. Within each ocean area (Atlantic, Pacific, Indian), one CES is designated as a Network Control Station (NCS) for each of the four types of INMARSAT users. It is the responsibility of the NCS to assign frequency channels within each appropriate INMARSAT ocean coverage area. COMSAT, the US signatory to the INMARSAT consortium, owns and/or operates several NCSs worldwide.

A satellite user must have an INMARSAT type-approved equipment configuration in order to communicate through the INMARSAT satellite system (Figure 2). There are four equipment configurations. The vessel/ship/fixed land based equipment configuration typically consists of an antenna 4-5 feet in diameter (gyrostabilized if shipboard mounted). The related electronics are located in a below deck area on vessels. For portable land configurations, the antenna averages 3 feet in diameter and all necessary electronic modules are manufactured to fit into one self-contained transportable unit.

The shipboard/portable equipment operates in the 1500-1600 MHz range which is known as "L Band." The shore CESs, through the appropriate INMARSAT satellite, receive ship and/or aircraft L Band signals (1626.500-1646.500 MHz) upconverted to C Band signals (3600-3620 MHz), and transmit to ship and/or portable and/or aircraft C Band signals 6425-6440 MHz

Table 1:

<u>USER TYPE</u>	<u>TRANSMIT (MHz)</u>	<u>RECEIVE (MHz)</u>
Ship/Portable	1626.500-1645.500 (Frequency Range upconverted on INMARSAT to 3600.000-3619.000 for shore reception).	1530.000-1544.000 (Frequency range downconverted on INMARSAT from 6425.000-6439.000 for ship/portable reception).
Aircraft	1645.500-1646.500 (Frequency Range upconverted on to INMARSAT from 3619.000-3620.000)	1544.000-1545.000 (Frequency range downconverted on INMARSAT from 6439.000-6440.000 for aircraft reception).
Shore	6425.000-6440.000 (Frequency Range downconverted on INMARSAT to 1530.000-1545.000 for ship/portable/aircraft reception).	3600.000-3620.000 (Frequency range upconverted on INMARSAT from 1626.500-1646.500 for shore reception).

downconverted to L Band signals (1530-1545 MHz).

The audio is voice operated transmit (VOX) FM Single Channel Per Carrier (SCPC) companded for some INMARSAT transmissions. Companding is an audio technical process involving compressing certain audio frequency ranges for efficient transmission. Under worst case conditions, listening to a received companded signal will be a minor annoyance; on most signals the effect is not noticeable.

Data channel signals also are present on INMARSATs and are similar both in sound and purpose to those found on the 800 MHz cellular band.

A signal processing technique known as Time Division Multiple Access (TDMA) at the NCS controls the appropriate INMARSAT frequency channel assignments. Even though the system is capable of 125 voice channel operation under shore-to-ship full loading, monitoring of

the Atlantic Ocean East and Atlantic Ocean West INMARSATs shows an average of 25 kHz spacing with voice and data signals intermixed. Ship-to-shore voice channel capability is twice as much as 250 channels (frequencies).

The latest generation of INMARSATs reserves the upper one MHz of frequency spectrum for aeronautical communications. Most data and/or voice transmissions are reassignable and not dedicated to a particular frequency. On one occasion you may hear a data signal on a frequency which previously carried voice traffic and vice versa.

All INMARSATs transmit and receive on a global beam antenna configuration pattern, which means that approximately one-third of the earth is "illuminated" or seen constantly by the appropriate INMARSAT. There are approximately 10,000 INMARSAT users worldwide and increasing. Specific INMARSAT transponder (satellite repeater) frequency range assignments are listed in Table 1.

Where Do I Listen?

Listen from 1530.000 to 1545.000 MHz, which is the frequency range ships/portables and aircraft receive transmissions from shore stations. If using an ICOM R7000, listen in the Narrow Band FM mode (NBFM); on an ICOM R7100 listen in the FM mode. INMARSAT signals should be receivable using other receivers/scanners capable of FM tuning the downlink frequency range. The listener will have to experiment with the incremental frequency tuning and FM bandwidth settings for the best sounding audio.

What Can I Hear?

The first thing you can hear is the NBFM Armed Forces Radio Television Service (AFRTS) on 1537.000 MHz, which transmits 24 hours a day on all INMARSATs worldwide. You'll be

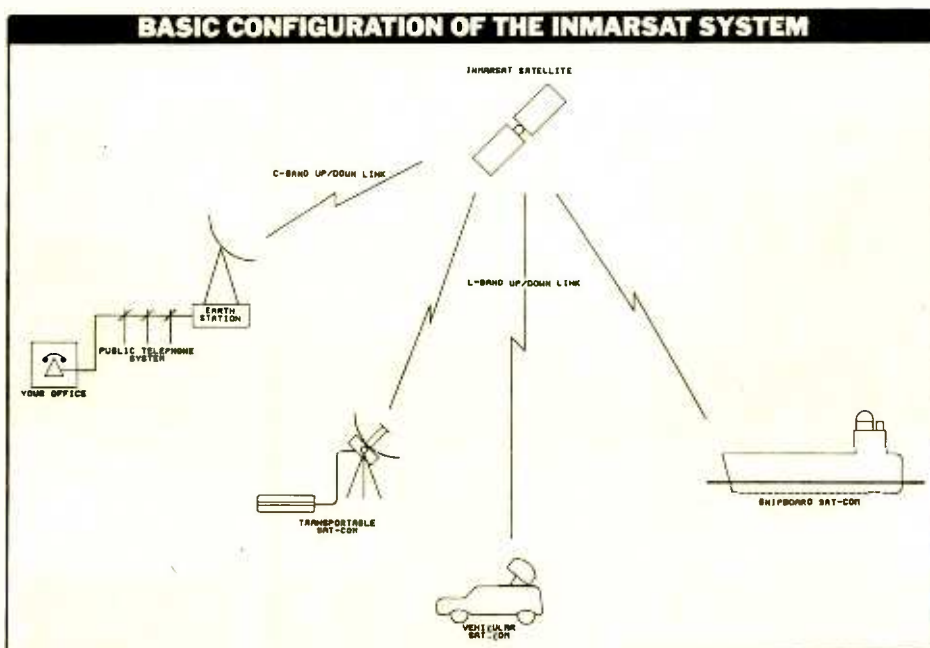


Figure 2

Courtesy COMSAT

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surprised to discover this service rarely IDs. Most programming is broadcast continuously without interruption, advertisement or identification. AFRTS is the "beacon" signal and is a potpourri of selected audio programming services culled from US programmers. These include, but are not limited to, AP News, UPI, NBC, CBS, ABC, USA Radio Network and In-Touch.

INMARSAT's 250 channel capacity for data and/or voice and frequency utilization is impressive. Users include both private and commercial ship/yacht captains and crews, radio and TV news networks/services, law enforcement, disaster relief agencies, remote mining and/or construction sites, oil drilling rigs, land surveying teams, military special operations teams, UN nuclear weapons inspection teams in Iraq, UN forces in Bosnia and Macedonia, and US military special purpose teams.

Recent monitoring of the Atlantic Ocean East INMARSAT, which covers Europe, Africa and the Middle East, included a full duplex transmission of oil company representatives in London talking to a representative on one of their remote oil drilling rigs near Masshad, Iran, involving a worker who had one of his hands caught in a winch and the grisly details of recovering the severed fingers from his glove and subsequent reconstructive surgery; a half-duplex call from a representative from Danish TV calling some official in Bosnia attempting to confirm whether or not a particular road to a city had been mined; a British military officer calling one of their officers attached to UN forces in Bosnia complaining about BBC TV showing too much blood and gore about war victims and threatening to cut access off to the press in

Table 2: English Language Reception (logged by the author)	
Atlantic Ocean Region (AOR) - East (Eastern North America/South America/ Europe/Africa/Middle East)	
1535.275/.525/.725/.775/.825/.925	
1536.025/.125/.775/.875/.975	
1537.000 (AFRTS)/.200/.300/.350/.400/.450/.550/.900	
1538.025/.350/.400/.500/.600/.750/.800/.825//875/.900	1539.150/.200/.400/.550/.600/.650/.900
1540.000/.150/.300/.350/.400/.600/.700/.750	
1541.125/.175/.900/.950	
1542.250/.300/.700/.800/.850/.900 MHz	1543.050/.100/.150/.200/.350
Atlantic Ocean Region (AOR) - West (Western Europe and Africa/North America/South America/Hawaii)	
1535.550	
1537.000 (AFRTS)/.575	
1538.275/.325/.375/.550/.600/.650/.700/.800/.850/.900	
1539.150/.250/.300/.350/.450/.550/.600/.650/.700/.950	
1540.000/.150/.200/.350/.400/.450/.700/.750/.850	
1541.075	
Pacific Ocean Region (POR) (Western North America/Asia/South Pacific)	
1537.000 (AFRTS)	
(Satellite viewable only from western North America)	
Indian Ocean Region (IOR) (Europe/Africa/Asia/Australia)	
1537.000 (AFRTS)	
(Satellite not viewable in the USA)	

certain areas of the country if it continued this approach; a call back home from a US journalist for a major US news network in Somalia expressing concern for his safety from the locals. (He was advised to become "Canadian" instantly if attacked.)

Many different languages have been heard, including French, German, Spanish, Italian, German, Russian and others unknown.... some

very unusual. Even though we supposedly speak the same language, even understanding some English accents can at times be a challenge.

Monitoring the Atlantic Ocean West INMARSAT included a Coast Guard officer advising a ship captain to return to San Diego to obtain medical aid for a crew member who had cut his wrist, since the Coast Guard helicopter only had a 100 mile range. Occasion-

ally, transmissions are heard from US military special mission teams on temporary duty in Central and South American areas as they check in with their CONUS control offices.

On all INMARSATs, telephone facsimile transmissions to ships/vessels/portable stations will be heard. Their polling and transmitting audio are readily identifiable. If you ever wondered what a telephone fax signal sounded like, this is the place to listen. Telephone fax machine transmissions use different technical specifications and cannot be deciphered using fax equipment designed to receive transmissions from orbiting and geostationary weather satellites or press photos. Theoretically, INMARSAT telephone fax transmissions could be understood if the necessary fax machine software protocols, higher baud rates and "handshaking" logic constraints could be overcome.

English language transmissions have been monitored in central Virginia on the INMARSAT satellite frequencies listed in Table 2.

How Do I Receive the INMARSATs?

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MT



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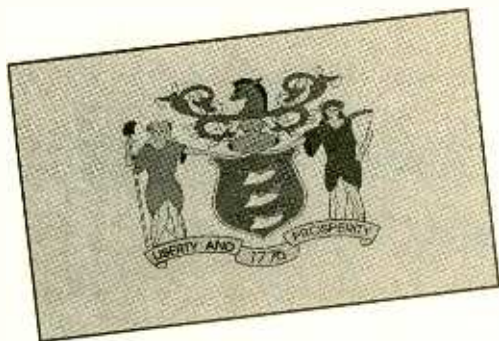
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Scanning New Jersey's Garden State Parkway



By Bob Kozlarek, WA2SQQ

In The Beginning

With the success of the New Jersey Turnpike, state officials decided to create the state's second toll road. On April 14, 1952, the New Jersey Highway Authority was created by an act of the State Legislature and charged with the construction of a self supporting toll road running to, and along the New Jersey shoreline. Three and one half years later, the Garden State Parkway's first toll section was opened on January 15, 1954. Its environmental impact was seen immediately as the population in some areas increased three and fourfold. In 1957, a link was completed to connect the Garden State Parkway to the New York State Thruway.

Owned and operated by NJ Highway Authority, operations are coordinated from a central facility in Woodbridge, NJ. The Garden State Parkway runs North to South, through 50 municipalities in 10 counties. Originating at the

Cape May Ferry in Cape May, it stretches northward 173 miles to Montvale where it connects to the New York State Thruway. Designed to provide motorists with convenient access, 305 entrances and exits are provided. The tolls are collected at "barrier tolls" of which there are 11, and at 19 of the exit and entrance ramps. At only 35 cents per toll, it remains a bargain, averaging about 2.2 cents per mile. In comparison to other New Jersey state highways, the GSP is a carefully landscaped highway offering an almost continuous scenic vista with a wealth of flowering foliage along its route.

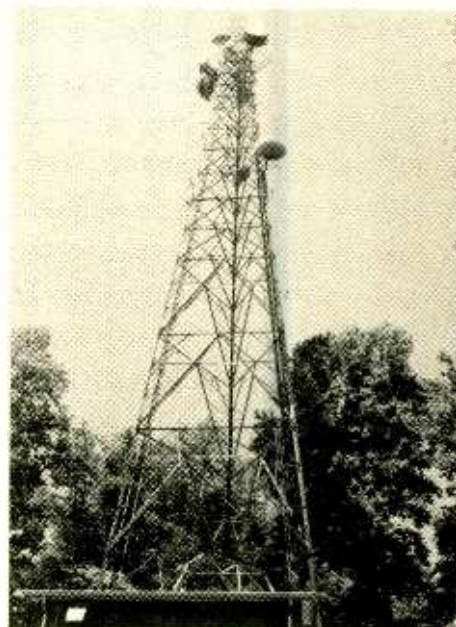
Communications!

The entire roadway is patrolled by "Troop E" of the New Jersey State Police which is headquartered in Woodbridge. Hours of endless scanning action are in store for residents and tourists while traveling along the Garden State

Parkway and its adjacent ocean front tourist attractions. "Hassle free" scanning is again possible since New Jersey amended its scanner law to allow the use of mobile scanners without any type of permit. The amended ruling now makes the use of a mobile scanner a crime, *only* if the radio is used in the commission of a crime.

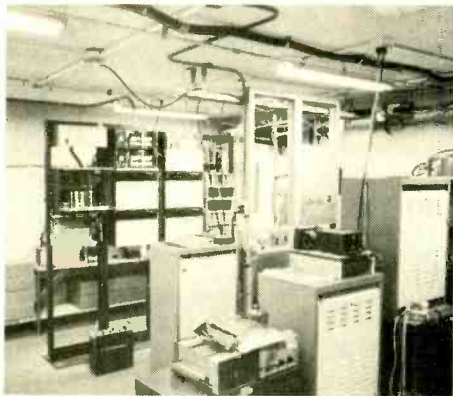
When I decided to write this article I contacted the NJ Highway Authority to see if they would allow me inside their operations facility. Two weeks went by with no reply, not even a letter saying no! I decided to explore the system on my own and set off for one of their primary transmitter sites located just behind the Garden State Art Center in Holmdel, NJ.

A ten minute hike up some rather steep terrain found me face to face with a 185 tower; a proverbial antenna farm! There amongst some



trees I spotted the utility shack which fed the tower. To my surprise the door was open and the radio maintenance people appeared to be home — what timing! After a knock on the door, and a brief introduction, I was invited in for a tour!

I must admit, I wasn't very impressed — my basement had more equipment! Instead of the modern hi-tech equipment I had expected, situated before me were three racks of predominately ten to fifteen year old Motorola repeaters. At least they were solid state!. Much to my surprise GE "DO-36's" were used for paging and maintenance frequencies — quite a shock, since I acquired one 15 years ago as my first repeater on 2 meters. These old tube-type boat anchors never seem to die!



I made it a point to mention the letter I had sent, only to discover that the Highway Authorities telephone operator had given me the name of a dispatcher rather than the communications director as I had requested! For those of you who are thinking about writing an article, tip #1 is, never trust the telephone operator!



Table 1: Garden State Parkway

All freqs MHz

151.100	Paging
154.680	"F4" SPEN 1 NJ Intersys. Channel
154.905	"F1" Dispatch North
154.920	"F5" Station to Station
154.950	"F3" Car to Car
155.460	"F6" Tac-Pac Radar Enforcement
155.475	SPEN 2 Alternate Intersys.
155.505	"F2" Dispatch South
155.755	Road Crews
156.120	Parkway Maintenance
158.910	Input for 154.905
158.970	Input for 155.505
851.3375	Service (Backup) Ch "A" - North (Input 806.3375)
852.1625	Service (Backup) Ch "B" - South (Input 807.1625)
852.7375	POLICE - North "Seldom Used" - Input 807.7375)
852.8125	Toll Plaza's
853.8625	POLICE - South "Seldom Used" (Input 808.8625)



In the early days of the Parkway, leased phone lines linked the highway. Since only one frequency was used, daily maintenance involved lots of line level adjustments and frequency "tweaking." What better place to start our tour than with the one watt (6.6 GHz) microwave links used to connect their system today. In addition to the major transmitter sites, GSP uses several one watt intersystem microwave links, all of which operate in the 6.6 GHz range. All communications as well as the GSP's private telephone network are multiplexed on a single frequency.

Today, virtually all police activity is found on one of two VHF frequencies (154.905 & 155.505 MHz) which service the 173 mile highway (Table 1). Bloomfield (exit 154), near the Parkway's Northern end, provides communications in a southerly direction using 154.905

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Table 2: Adjacent Action

CITY	FREQ (MHz)	EXIT
Cape May	155.210	1
	155.350	
	155.670	
Wildwood	156.210	4
	155.640	
	156.210	
Ocean City	460.350	30
	156.210	
Atlantic City	460.150	36
	460.325	
	460.425	
Seaside Hgts	460.350	80
	460.175	
Pt. Pleasant	156.090	88
	37.180	
Bellmar	155.865	98
	37.10	
Asbury Park	471.2875	100
	39.460	
Ft Monmouth	141.025	105
	304.500	
Earl Naval Station	141.950	114
	304.500	
Coast Guard	157.175	117
Sea Bright	155.565	117
Bergen City P.D.	477.1625	155 -
	477.1875	
SPEN 1		
STATEWIDE	154.680	

MHz. Thirty-four miles south at Holmdel, operations switch to 155.505 MHz which is beamed in a southerly direction to avoid interference with their co-channel neighbor, the New York State Thruway. The coverage overlap is exceptional, considering that each site runs only forty watts. Proceeding south, Bass River (exit 58) provides another strategic link in the GSP system. Since Bass River is licensed for both VHF frequencies, system loading determines which frequency is used.

The remainder of the Garden State Parkway's southern extremity is covered on 154.905 MHz. Listeners should also monitor New Jersey's SPEN 1 & 2 (154.680/155.475 MHz) channels which adjoining towns use to communicate with Parkway police.

Since the GSP is a privately owned toll road, only authorized towing/service vehicles are allowed. Most of these operations are conducted on one of two 800 MHz frequencies as noted in fig 1. Recently I have heard some police activity on the 800 MHz frequencies, so I'd suggest listening here also. Listeners should note that road entrances and exits and mile markers coincide with each other.

Adjacent Action

If you're visiting New Jersey this summer, undoubtedly you'll travel the GSP to access over 100 miles of beaches, amusements, and the world renowned Atlantic City Board Walk. Summer weekends bring hundreds of thousands of young party-goers from the state's Northern

Table 3: Atlantic City Casinos

Bally's Grand Hotel	461.6125	464.125	464.175	464.375	
Bally's Casino	463.600	464.100	464.575	463.4875	463.5875
Caesars Palace	461.8625	461.925	461.950		
Trunked Sys	861-865.3375				
Claridge Hotel & Casino	464.350	465.9375	461.550	461.925	464.575
Harrah's Marino/Casino	462.1625	464.325	464.425	464.825	
Resorts Int'l Casino	461.1125	464.075	463.625	463.650	466.2625
Sands Hotel & Casino	463.500	462.000	461.625	463.5375	
Showboat Hotel/Casino	461.625	461.700	464.325	464.975	
Trop World Casino	464.725	464.825	461.300		
Trump Castle Casino	463.200	463.350			
Trunked Sys	861-865.5875				
Trump Plaza Hotel	461.5125	463.350	461.825		
Trump Taj Mahal Casino	460.800	469.3375	468.6125	854.7875	935.6375
	935.6875	935.700			

communities. To the locals they're known as "bennies." This makes for first rate scanning action in towns such as Belmar (Exit 98), Seaside Heights (Exit 82), and Wildwood (Exit 4).

The U.S. Coast Guard with operations headquartered in Sandy Hook (Exit 117) will provide first rate maritime scanning if this be your forte! (Table 2)

At the Parkway's southern end lies Atlantic City, second only to Las Vegas if you're into gambling. Here, casino voyeurs can keep tuned (Table 3) to the life styles of the rich and famous! You may also want to consider visiting the "Twin Lights" at Highlands, the highest point on the entire Jersey shore line. It is from this point that Guglielmo Marconi and George Kemp conducted their Bristol Channel Tests in 1897. Located off of exit 117, Twin Lights was the first site of Marconi's experiments in the U.S. Hams and scanner listeners often congregate at the look out point and take advantage of the altitude.

Hamming It Up

Let's not forget the amateur community in New Jersey. There is no shortage of repeaters in New Jersey, which offer dozens of repeaters on all bands from 10 meters to 1.2 GHz! From virtually any location along its 173 mile stretch, 2, 220, and 440 MHz repeaters abound (Table 4), most offering open systems with lots of friendly hams waiting for a good "QSO".

With New Jersey's close proximity to New York, scanner listeners have countless hours of quality scanning: certainly much more than could be addressed in this article. I'd enjoy hearing from readers with questions or input on scanning in New Jersey. Hams on "packet" can forward your comments to WA2SQQ@WB2GTX. I'll also answer any questions for those readers who provide an SASE. Mail can be directed to me at my home address; 69 Memorial Place, Elmwood Park, NJ 07407. **MT**

Table 4: Amateur Repeaters

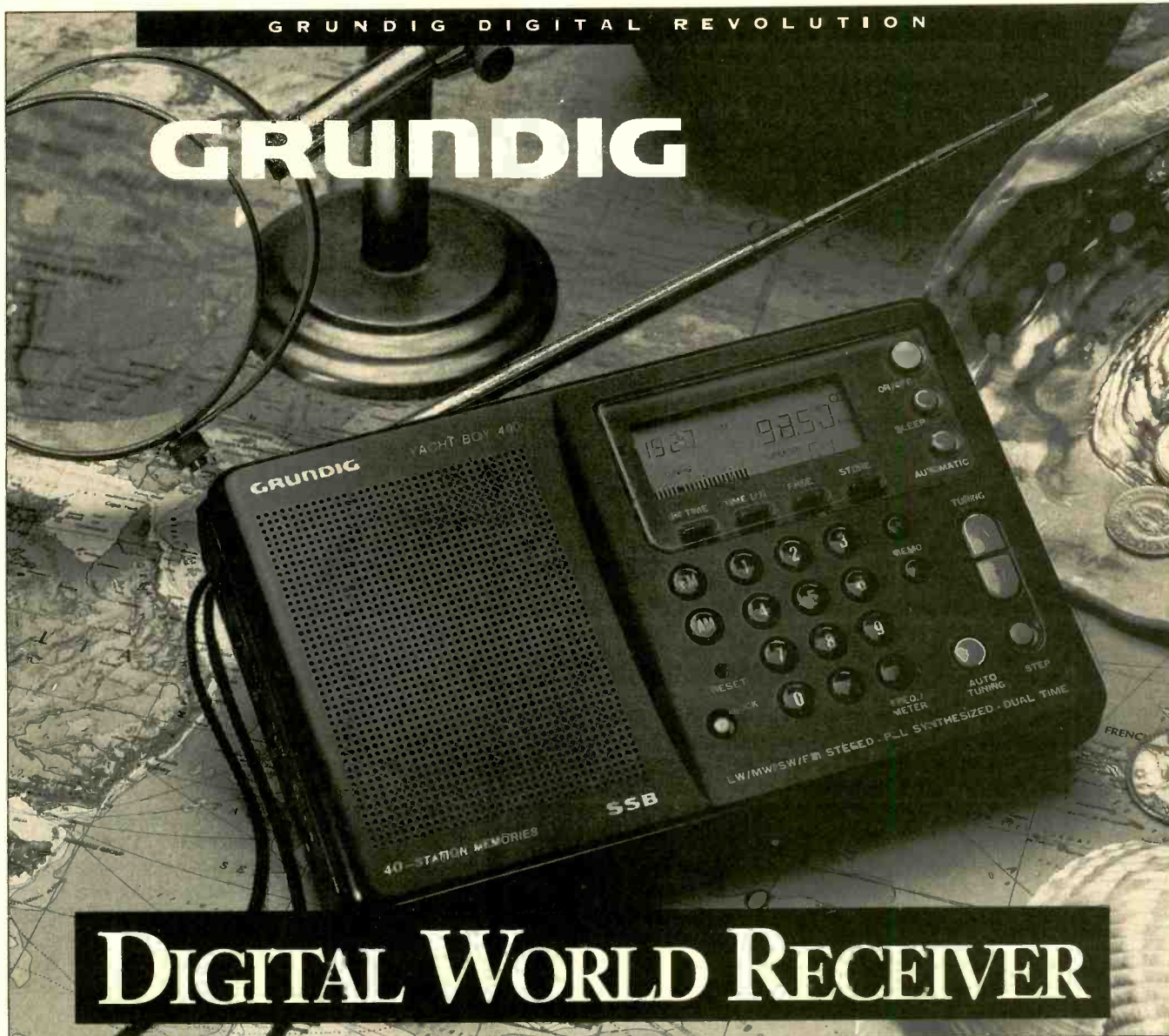
City	Frequency OUT (IN)	GSP Exit
Atlantic City	146.745 (-600)	36
Atlantic City	146.820 (-600)	36
Mays Landing	442.400 (+5 MHz)	36
Pleasantville	443.250 (+5 MHz)	36
Barneгат	443.150 (+5 MHz)	63
Manahawkin	146.835 (-600)	63
Toms River	146.910 (-600)	80
Farmingdale	145.110 (-600)	90
Lakewood	224.720 (-1.6)	90
Asbury Park	147.045 (+600)	100
Neptune	444.350 (5 MHz)	100
Holmdel (PL 5A)	146.475 (+1 MHz)	117
Holmdel	448.125 (+5 MHz)	117
Middletown	145.485 (-600)	117
Keypoint	224.960 (-600)	117
Fords (PL 5Z)	146.820 (-600)	123
Edison (PL 4A)	443.150 (+5 MHz)	123
Sayreville	443.200 (+5 MHz)	123
Linden	146.685 (-600)	127
Springfield	147.505 (-1 MHz)	139
Springfield	446.375 (+5 MHz)	139
Murray Hill	147.255 (+600)	139
Montclair	145.190 (-600)	145
Newark	147.225 (+600)	145
Cedar Grove	223.880 (-1.6)	145
W Orange (PL 4A)	443.250 (+5 MHz)	145
Clifton	224.360 (-1.6)	155
Elmwood Park	442.000 (+5 MHz)	155
Hackensack	145.210 (-600)	158
Saddle Brook	224.520 (-1.6)	158
Paramus	146.790 (-600)	160
Paramus (PL 4A)	444.100 (+5 MHz)	160
Woodcliff Lake	146.835 (-600)	170
Montvale	146.955 (-600)	172

About the Author

Bob Kozlarek is employed by Panasonic as technical support supervisor for industrial audio, video, and satellite products.

He holds Amateur Extra License WA2SQQ. Active on all bands from 160 meters through 450 MHz.

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The Dominican Scene on Shortwave



By Dr. Adrian M. Peterson

Wide sun-swept beaches, cool Caribbean breezes, lazy ocean surf, lush island vegetation, intense blue sky, puffy white clouds, and a happy local people. These are the images we build up in our minds when we think of the exotic Caribbean islands. Despite its proximity to unhappy Haiti, when the touring visitor spends a few days in the Dominican Republic, these concepts are delightfully reinforced and they turn into happy memories.

The Dominican Republic is very proud of its ancient ancestry, looking beyond the exploration days of Christopher Columbus (or Cristobal Colon as they call him) to the days of the original Indian inhabitants. Today's mix of island inhabitants is made up mainly of Spanish people from Europe, Negroes from Africa, and the original Arawak Indians.

The Dominican Republic is an island nation which shares the island of Hispaniola with neighboring French-speaking Haiti. There is surprisingly little spillover across the Haitian border, perhaps due in part to the language difference. It has a population of some seven million people; the capital city is Santo Domingo; and the main religions are Catholicism and Protestantism, with a touch of voodooism near the Haitian border.

Within the city confines of Santo Domingo can be seen several major tourist attractions associated with Christopher Columbus. You can visit his home, and it is claimed that he is buried within the central nave of the huge cross-shaped lighthouse. The Dominicans also claim that

Santo Domingo was the first city in the Americas, and they also claim the first street, and the first church, all of which are pictured on colorful postcards.

Just as colorful, too, has been the radio scene in the Dominican Republic. The entire sweep of radio history in the half-island nation can be researched in the pages of early radio magazines and, since World War II, in the listings in the *World Radio TV Handbook*.

The first AM stations listed for the Dominican Republic were established in Santo Domingo in 1933. These were:

HIX	625 kHz	1 kW
HIJK	1180 kHz	15 kW

Notice the unusual alphabetic progression in the latter call, HIJK! One of the first AM stations also established one of the first shortwave outlets as well. Actually, three shortwave stations were all established in the same inaugural year, 1934. These were:

HIX	Santo Domingo	6065 kHz
HI1A	Santiago	6276
HI1Z	Santo Domingo	6316

Interestingly, the Santiago based station, HI1Z-HIUZ, remained on shortwave until 1967, though the other two stations disappeared many years earlier.

During the succeeding 60 years, a total of almost 100 different shortwave stations have appeared on the Dominican radio dial, and these have been located in 17 different cities. Today,

the *World Radio TV Handbook* lists just five shortwave stations in the Dominican Republic.

However, the radio scene in that island nation is rapidly changing, due in large part to the events which were associated with the 500th anniversary celebrations honoring the arrival of Christopher Columbus to the new world. Many of the radio stations in the Dominican Republic have been modernizing and upgrading their facilities. Several new studio buildings are under construction, and as many as five different stations, one studio each, are located in the one complex. Many of these developments affect the AM-FM stations throughout the country, but there are also several significant developments affecting the shortwave scene.

Let's take a close-up look at the shortwave scene in the Dominican Republic, and we look first at the new and positive developments.

Radio Dominicana, Santo Domingo

The most significant shortwave development in the Dominican Republic at the present time is the construction of a large new shortwave station for the government radio service. The facility is nearing completion and is furnished by a Japanese consortium. When completed within the next few months, a new 20 kW transmitter will begin broadcasting on the traditional frequency of 5980 kHz. They claim this is an historic channel for this organization, but

Table 1:

kHz	kW	Call	Slogan	Location	Today	Tomorrow
4800	1	HIAQ	Norte	Santiago	Spasmodic	New transmitter
4930	5	HI5V	Barahona	Santo Domingo	Not on air	No return
4960	1	HIVR	Cima	Santo Domingo	Spasmodic	Regular sked
5980	20	HISD	Dominicana	Santo Domingo	Construction	On air
6025	1	HI1J	Amanacer	Santo Domingo	Regular sked	Increase 5 kW
6205	1	HIAM	Quisqueya	Santiago	Spasmodic	Regular sked
9878	1	HIAZ	Santiago	Santiago	Not on air	No return
9950	50	HILR	Clarín	Santo Domingo	Sold	No return
		HIVP	Olimpica	La Vega	License only	Test broadcasts

Addresses:

- LA N-103/Radio Norte:** Apartado Postal 320, Santiago, Dominican Republic
- Radio Amanecer Internacional:** Apartado Postal 1500, Santo Domingo, Dominican Republic
- Radio Barahona:** Apartado 201, Barahona, Dominican Republic
- Radio Cima:** Apartado 804, Santo Domingo, Dominican Republic
- Radio Quisqueya:** Apartado Postal 135-2, Santo Domingo, Dominican Republic
- Radio Santiago:** Apartado 282, Santiago, Dominican Republic

earlier editions of the *World Radio TV Handbook* show that the channel for Radio Dominicana, HISD, was actually 5970 kHz. Indications are, though, that the station may later move down to the bottom edge of the 49 meter band.

The construction of this new shortwave facility was part of the 500th anniversary celebrations of Christopher Columbus, which were staged in 1992, but the finalization of the project was delayed.

Radio Norte, Santiago

Currently, Radio Norte is on the air spasmodically from an old 1 kW transmitter located on a mountainside some 39 km north of the city. However, a new 1 kW transmitter has been procured, and this was actually standing at the entry hallway of their current older three-story studio building at the time of my visit. It was due to be installed at their modern new building which was under construction on the eastern edge of the town.

Many of the radio stations in the Dominican Republic have combined facilities, with sometimes as many as five radio stations in the one building, each station being just one studio. The new facilities for Radio Norte are part of a three-station complex at Santiago, and the new shortwave transmitter is intended to be co-sited with the AM transmitter and the new high tower.

Radio Norte was expecting to be on 4800 kHz with their new shortwave unit within three months. If you logged the old transmitter from the old location, you have an excellent catch!

Radio Amanacer, Santo Domingo

Radio Amanacer, HI1J, is on the air daily 1000-0400 UTC with parallel programming on 1570 kHz with 5 kW, and 6025 kHz with 1 kW. The studios are located on the ground floor in a



Radio Amanacer.

building owned by the Seventh-Day Adventist Church and used as their regional headquarters.

The transmitters are located 22 km away, just beyond the edge of the capitol city. The 5 kW AM transmitter is the main on-air unit, but an older standby transmitter of 1 kW is used on occasion. Programming is fed from the studios to the country transmitter base by a 30 watt VHF transmitter.

A new studio complex is on the drawing boards and is scheduled to be located on the third floor of the same building when it is enlarged. The shortwave transmitter is almost ready to take an increase of power, up to 5 kW.

Because of its anticipated wider coverage area, Radio Amanacer is producing a colorful new QSL card for worldwide usage, and it is now announcing on air with an additional new slogan: "Este es Radio Amanacer Internacional, la Voz de la Iglesia Adventista en la Caribe."

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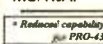
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Currently, Radio Amanacer is the only shortwave radio station located in the Dominican Republic which can be heard in the U.S. on a daily basis.

Radio Quisqueya, Santiago

Another newcomer to the shortwave bands in recent time is Radio Quisqueya, or as it sometimes identifies on air, Radio Quisqueyana. This station has been heard in recent time by listeners in the United States, but identification has posed a problem. The post office address for this three-story building containing three radio stations is Box 26, Santiago. The transmitter is a 1 kW unit, located, again, on the same mountainside 39 km out-of-town.

While in the Dominican Republic, I heard this station on shortwave on just one occasion. However, in view of the fact that it is a new station to the shortwave scene, it is thus likely to become more regular.

Radio Cima, Santo Domingo

Radio Cima is another combination station, with an FM outlet and a shortwave outlet, but none on the MW band. The studios and FM transmitters are located on a main thoroughfare in Santo Domingo, and the shortwave transmitter is located at San Cristobal, some 30 km distant. At the time of my visit, the 10 kW FM unit was off the air, and an emergency generator was driving the 1 kW standby FM transmitter.

At the country transmitter base, a 1 kW shortwave unit is fed into a dipole antenna. This shortwave station is on the air only occasionally, and I heard it only twice during my visit to the island, on 4960 kHz, not 4962 as has been previously listed. This new facility was established as part of the 500th celebrations of Christopher Columbus. It is likely to become a more regular broadcaster on shortwave.

Radio Olimpica, La Vega

Radio Olimpica is another station that has recently taken out a shortwave license. The station is located in the country town of La Vega, on the highway running between Santo Domingo and Santiago. The AM facility emits 1 kW on 970 kHz, and it is likely that the shortwave unit is also rated at 1 kW. Although no date has been announced, I would suggest that this station is likely to begin broadcasting on shortwave sometime soon.

Now that we have looked at the current situation regarding positive developments for six of the shortwave stations located in the Dominican Republic, let's look again at the



Radio Quisqueya, Santiago

Dominican scene, this time at negative developments affecting the remaining three stations.

Radio Clarin, Santo Domingo

Radio Clarin is by far the best known radio station located in the Dominican Republic, at least as far as the shortwave listener and international radio monitor is concerned. This station has been on the shortwave scene for over thirty years, with higher powered transmitters of 20 kW and 50 kW.

DIFUSORA HEMISFERIO, S.A.

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SANTO DOMINGO - D.R.
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25 de febrero de 1975

Señor
Adrian I. Peterson

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Nuevamente agradecemos su carta, y nos halaga que se haya integrado al numeroso grupo de oyentes de RADIO CLARIN "La emisora con Alma Nacional".

Atentamente,
[Signature]
DIFUSORA HEMISFERIO, S.A.

Radio Clarin QSL

Unfortunately though, Radio Clarin has signed off shortwave, and they have sold their old 50 kW Wilkinson transmitter to Jeff White of Radio Miami International. The transmitter has been installed at the site of the new shortwave station in Miami and is undergoing on air testing.

At the present time, there is no indication that Radio Clarin will ever return to the air on the shortwave bands. This, the best known shortwave station in the Dominican Republic, was licensed as HILR on 9950 kHz.

Radio Santiago, Santiago

The rather well-known Radio Santiago first began shortwave broadcasting back in 1946. It has used at least a dozen different frequencies in the tropical and international shortwave bands, and it is currently listed with 1 kW on 9877 kHz. The engineer at Radio Amanacer states that Radio Santiago has been heard in times past in their afternoons, but no sign of this station has been evident recently.

The studios of Radio Santiago, HIAZ, are located in an older building in a crowded downtown area, and the transmitter is some miles out in the country. A small historic transmitter is on display in the hallway entrance to the studios. I guess that their shortwave transmitter is so old that it can no longer be maintained for air-worthiness.

Radio Barahona, Santo Domingo

And finally, we come to Radio Barahona, another historic station that traces its shortwave origins back about 30 years. Currently, this station is listed for 5 kW on 4930 kHz. However, it has not been heard on shortwave for a considerable period of time, and the indications are that there are no plans for it to return to the air.

In summary, there is only one shortwave station on the air in the Dominican Republic which is heard reliably on a daily basis throughout the island nation, and that is Radio Amanacer International, broadcasting from the capital city, Santo Domingo. Although three other stations have unfortunately closed down their shortwave facilities, the good news is that a total of six shortwave stations are showing various forms of growth and development. These developments, for ease of reference, are listed in frequency order in Table 1.

I hope you have enjoyed this panorama of the shortwave radio scene in the Dominican Republic. We leave you with the prospect of additional radio signals and more exotic QSLs for your collection. Your program loggings from this delightful Caribbean country will **MT** long be etched in your memory.

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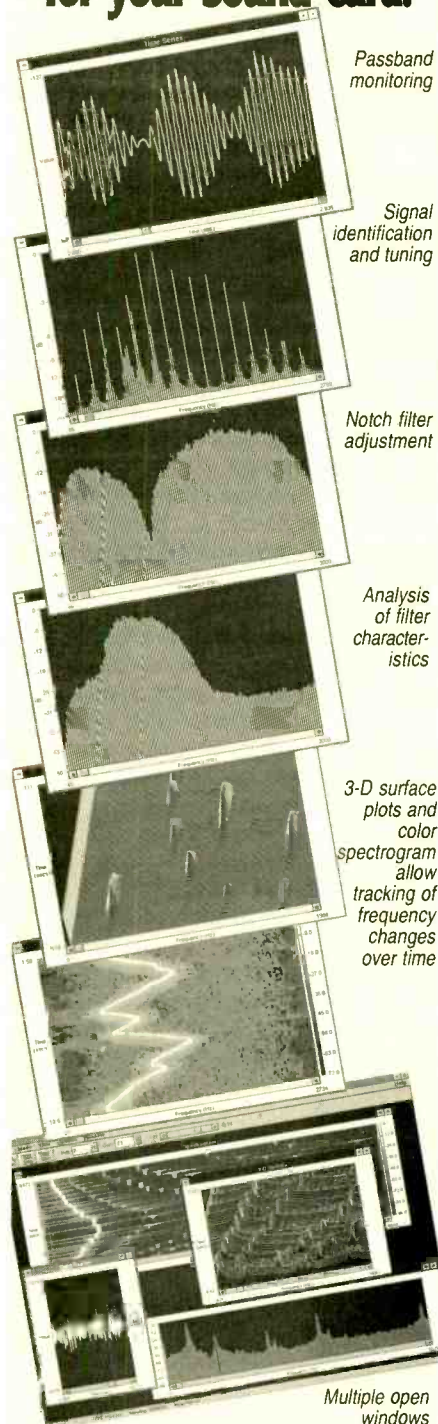
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Scanner Strategies

By Otto Muller

Life was a lot simpler back when scanners had crystals, each one was purchased individually, and you could only install ten in the very best radios available. Most scannists would select their crystals, and hence the frequencies they scanned, by asking a friend or the salesperson selling the radio to suggest what crystals to buy. Once bought, you would install them, and that was that. You'd just scan those ten frequencies and be happy with what you heard. But technology marches on.

Soon scanners became programmable. Now you weren't locked into just those frequencies for which you had the foresight to buy crystals. Now you could change your mind. But this meant that you'd have to make decisions. Before, if you missed a block fire in an adjacent county, it was because you didn't own that crystal, so you couldn't hear it, period. Now if you missed it, it was because you had not programmed your scanner to hear it, and maybe that meant that you had made a mistake. Still, with only ten channels, perhaps twenty in a top-of-the-line model, you could forgive yourself if you hadn't programmed that county on that particular night. What are you supposed to do—listen? Or punch in frequencies all night? But technology marches on.

Scanners developed memory. Not just for a dozen frequencies, but for hundreds, or even a thousand frequencies! Suddenly, your options became immense, intimidating, maybe even overwhelming. How can you cope? You need a strategy.

To help you develop this strategy most of today's scanners have their memories divided up into banks of twenty channels each. A 200 channel scanner, such as the Pro-2006 or Pro-34, will have ten banks, each of which can be turned on or off independently. In addition to this ability to select the banks you wish to monitor, you can usually turn off ("lockout") any specific channel independently. So, all that you need to do is decide which frequencies to put in which banks, and then which banks to turn on under which conditions, and you can be confident that you have optimized your listening pleasure...

Goals

To help you in this process, let me suggest that we consider several different goals which it seems many scannists have in common:

1. Keep track of the important stuff.

A volunteer firefighter might want to keep tabs on the activities of neighboring depart-

ments, in case they need some help and call for Mutual Aid. A municipal employee might want to listen to the road crews clearing snow, to have an idea of what to expect later at work.

Most folks want to keep track of their local police, fire and ambulance services. So setting up one bank of memories to scan in the background is probably a good idea. Those of us who have been scanning for a while may still have that ten channel antique sitting around, and if so it may serve this purpose well. Chances are that the crystals still tune the relevant frequencies, too!

2. Catch moderately interesting stuff on moderately busy frequencies.

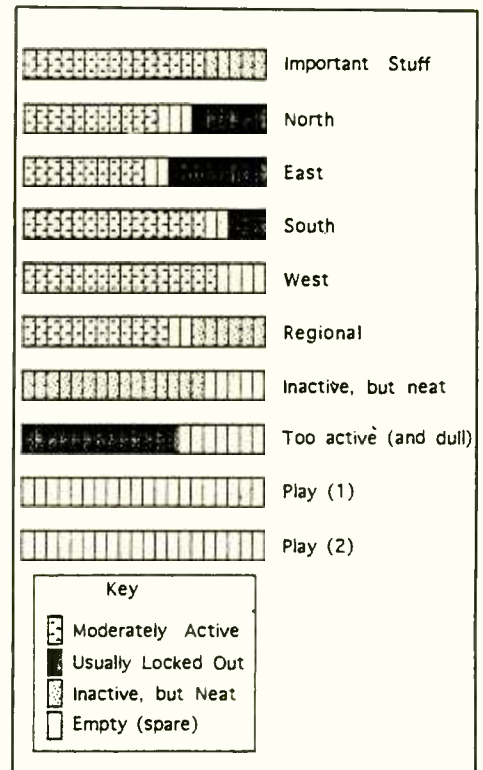
Police in pursuit, fire engines responding to a structure fire, an ambulance crew performing CPR on the way to a hospital... these are the transmissions which are the goal of scanning for most of us. Chances are that we'll hear them on busy service channels. It's all in a day's work for the people involved, and we're really just listening in as they go about their jobs. Like any job, much of it is routine. Scannists have to listen to a lot of drivel, even with very fast, very fancy radios, and sort out the uncommon exciting events to pay attention to.

This skill develops over time. It comes with practice, from recognizing a certain tone in the voices on the radio, or the tempo and frequency of the transmissions, or other cues and clues of which we aren't even consciously aware. But it is an important part of what makes scanning fun. It doesn't require rapt attention. Let your subconscious do it in the background. After a while, you'll find you miss very little that is exciting, and are able to largely ignore—maybe even mentally tune out—the boring, mundane activities.

3. Catch very interesting transmissions on frequencies with little traffic.

There are many frequencies which are used under only unusual circumstances, but when they are, the transmissions tend to be of great interest. An example would be a frequency used by a helicopter medical evacuation unit. Today's scanners are so fast that dozens of channels can be checked in less time than it used to take to scan ten. As long as there is no traffic, you might as well be listening in.

What? Isn't that the opposite of what scannists want? Well, sometimes — see goal #2 above. The point here is that your radio isn't going to stop on these channels very often, so it will spend very little time on them. Those times



when it does stop, you will probably be glad that you were scanning them.

4. Avoid dull transmissions on very active frequencies.

An extreme example of a very active frequency is the NOAA weather frequency! You may wish to keep this programmed in your radio (I keep two of them, because I live in a fringe area), but you don't want to scan a bank containing them unless you have locked them out. Similarly, there are services which may not hold much interest for you (county snowplows, local college security, the drive-through in the fast food restaurant down the street, etc.) so usually you don't want to scan them. If you did, your radio would be forever stopping on them when they're saying things you couldn't care less about.

Sometimes, though, you might want to listen specifically to one of these. If you have enough memory, you can store these frequencies in your scanner, and then intentionally avoid scanning them by locking them out. When you want to listen to one of them, you manually go to that memory. It is usually easier for most of us to remember, and punch in, a three digit memory address than a five or six digit frequency. Still, that little difference in effort is all you are saving yourself, so this should have a low priority in your strategy.

5. Explore, investigate, experiment - i.e. Play!

Remember why you bought your scanner in the first place — for most of us it was to have fun. Save a bank or two for things you are just

When scanners were limited to ten crystals, you could forgive yourself if you missed the action. But are you still missing it with your hundreds of channels?

trying out. Most of my interest is in the emergency services, but there are times when I find it fascinating to listen to air traffic—not enough to consider letting those frequencies permanently reside in my scanner, but enough to leave them in there for a week or two until my interest wanes.

Frequencies which you know are active, because you found them with a search, but which you may not have identified yet, also fit in this category. So do frequencies whose activity is unknown in your area. Lists of frequencies from *MT* (for the FBI, stealth fighters or whatever) stay in the “Play” banks until you determine that they are active in your area and that the traffic they carry is of sufficient interest to include them in your general strategy.

Memory Allocation

Okay, given this set of goals, how do we program our scanner to try to accomplish them? First, let’s think about what we probably should avoid doing. Some people think that a strategy means being organized, and that being organized means having similar things in proximity to each other. This leads to putting all the fire frequencies from the five surrounding counties in one bank, police in another, ambulances in a third, etc.

This is not likely to achieve the goals listed above. If there is a fire or a motor vehicle accident, all three services will probably be involved at once. To hear the action you would have to scan sixty frequencies, many of which are likely to have traffic unrelated to this incident! This would mean you’d be busy either locking them out, or manually moving past them all the time.

Consider, instead, setting up banks geographically. One for your home county (probably your Important Stuff bank), one for the counties to the East, another for the counties to the North, etc. When little is happening, you can scan them all. But when something is going on you can easily zero in on the action by scanning only the bank of interest. By keeping those frequencies needed to monitor important stuff in one bank, and continuing to monitor that bank regardless of what else is occurring, you accomplish goals #1 and #2. This is a little like a priority frequency, except that it is a priority bank, and it is only accessed during breaks in whatever other traffic is being monitored.

If done strictly, this geographic strategy can waste a lot of memory: Many agencies have statewide, or even country wide, frequencies. Instead of putting these in every geographic bank, you can put them in their own bank and continue to monitor it, too, most of the time. A lot of these frequencies will satisfy goal #3: Some cover inter-agency and inter-county trans-

missions which are relatively rare, while others are reserved for low power tactical use and generally don’t travel very far. But some are more in line with goal #2: Ambulance - Hospital transmissions on 155.340 MHz, for example, or state police frequencies.

Additional frequencies to accomplish Goal #3 can go into your Important Stuff bank if there is room, or may need an additional bank. The point is that these should be in banks you will normally be scanning. Those to accomplish Goal #4 can go anywhere there is room, as these will usually be locked out.

Try to leave a channel or two empty in most of your banks at first. A successful strategy doesn’t mean we have to fill everything up right away. As you come across frequencies of interest you can stick them in where they belong.

Operation

The strategy outlined here is suitable for several kinds of listening:

- 1. Background scanning.** Monitor the Important Stuff bank even when you don’t have the time to listen to every transmission carefully. Leave all the other banks off. And then pay attention when your subconscious tells you something funny is going on!
- 2. Generalscanning.** Scan all your geographic area banks and your regional bank as you wait for the action to start anywhere. Once it begins, you can narrow your scan to one geographic area bank and the regional bank. If your scanner keeps stopping on an unrelated service, lock it out.
- 3. Directed monitoring.** Sometimes you may want to listen to the security service in your local college as they check out parking lots and buildings all night long. Just manually go to their frequency and enjoy. This is about the only time I use the “Priority Channel” feature, because, since I am not scanning, I never hit my Important Stuff bank. I can only get one frequency this way, though.
- 4. Exploring.** Don’t fall into the trap of feeling that you are locked into any strategy, or that listening has to be “efficient” or “effective.” Those Play banks can fill up quickly—remember they are supposed to be temporary storage, so be brave and clean them out after a bit. You probably forgot what those frequencies were for, anyway!

This strategy is the one I use at the moment. I have tried other strategies, but prefer this one for the reasons stated. Still, part of the fun of scanning is to see if we can improve our listening. And I was wondering if it might not be better to put in my frequencies in ascending order . . .

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The Medium IS the Message

An Historical Look at DX Programs

By Arthur Cushen

The first DX Session in the world was broadcast by Radio Australia and took place on 28 July 1946 at 0110 GMT beamed to the United States and Canada over VLC-9 on 17840 kHz.

Take a look at this issue at the *Monitoring Times*' "Shortwave Guide" and you'll see the substantial, quarterly listing of DX Programs on the air today. The original concept of special programming to provide listening tips, schedule information, and other news of interest to the radio hobbyist can be credited to an Australian radio club.



Rex Gillett of Adelaide, South Australia, a pioneer in DX programmes.

They had attempted to interest local commercial stations to carry the broadcast on AM but were not successful. Bill proposed the idea of a regular international DX Session and Radio Australia expressed their interest in the proposal.

The first forty-four broadcasts were prepared in Adelaide and broadcast from Radio Australia, after which they were taken over by the late Graham Hutchins who continued with

the session, named *Australian DXers Calling*. Over the years the session had several hosts, or comperes.

By 1971 the program was known as *Radio Australia Listeners Club* and in that year, the International Shortwave Club of London placed the station first in its popularity poll. It continued to evolve: By 1981, the name was changed to *Spectrum*, with Dick Speekman as host, and today, the current *Communicator* program is more or less devoted to electronics. Keith Glover was also popular in the late 1970s with his *Club Forum* program which included answering listeners letters and providing some DX tips.

Sweden Calling DXers is the session with the longest continuous broadcasting history, commencing in 1948. Arne Skoog was the founder of the program and broadcast the session weekly until his retirement in 1981. The present host is George Wood. Actually, the program under the long-running title of *Sweden Calling DXers* was cancelled in 1990, despite the appeals and protests from listeners all around the world. The program was reinstated under the title *Media Scan* in which George Wood presents news for the shortwave listener.

In the days of Arne Skoog (who remains an active radio listener), *Sweden Calling DXers* was not only broadcast in several transmissions, but the script was released to radio clubs and broadcasters each week.

Radio Nederland

Today, the most popular program for shortwave listeners is *Media Network* hosted by Jonathan Marks on Radio Nederland each Thursday. This station has a long history of involvement in shortwave listener programs. In the late 1950's Harry van Gelder devised a program called *DX Jukebox* in which he played the hit tunes of the



Arne Skoog of Sweden Calling DXers.

day, interspersed with station information from contributors.

By 1966, when Arthur Cushen joined the program, there were four contributors, and his report from the Pacific on the first Thursday of the month continues to be broadcast today. He and Victor Goonetilleke are the last remaining correspondents. Victor joined the session in 1976, the same year Harry van Gelder retired. Fritz Greveling and Dick Speekman were other hosts of *DX Jukebox*. In August 1980, Jonathan Marks became the new comperer of *DX Jukebox* and on May 7th, 1981, he renamed the program *Media Network*.

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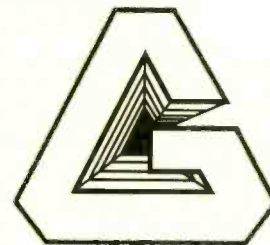
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DX Jukebox on Radio Nederland was hosted by Harry van Gelder and Jim Vastenhoud.

Today, the program has moved into, as the title indicates, media news covering shortwave broadcasting, electronics, satellite news and receiver reviews; it is a "must" for listening each week. The use by Radio Nederland of its relay bases in Bonaire, Madagascar, and now in the CIS, has made it the dominant program as far as the shortwave listener is concerned. One of the regular features is Mike Bird's "Propagation Report" which is unique in shortwave broadcasting.

Radio Canada

The *Radio Canada Shortwave Club* was originally the brain child of the German Language Section and the Engineering Group of the CBC International Service of Radio Canada. The first club broadcast was on 1 December 1962 and at first was broadcast every second Saturday. It was a ten-minute program conducted as a club meeting complete with Secretary,

Agenda and Gavel to bring the meeting to order. The Club program was beamed to Europe, Africa, the Caribbean, North, South and Central America, Australia, New Zealand and the Islands of the Pacific.

In 1968, the Radio Canada Shortwave Club had 6532 members located in 84 different countries, including over 1000 members in Eastern Europe. Basil Duke was Club President and aired the program weekly in English together with Elaine McMaster, Club Secretary, and Duncan Nicholson, Club Vice President.

In the late 1970's, Ian McFarland commenced *DX Digest*, later to become *Shortwave Listeners Club*, which commanded a worldwide audience and was broadcast until he retired from Radio Canada in 1990 to spend two years with Radio Japan. Ian McFarland is an energetic promoter of shortwave listening and continued his involvement through Radio Japan's *Media Roundup* program.

United Kingdom

The BBC World Service in the 1950's had a program for shortwave listeners, but when Henry Hatch came on the scene with *World*



BBC World Radio Club from left: Henry Hatch, Producer, Joy Boatman and host Colin Marchant.



Clayton and Helen Howard of DX Partyline, HCJB.

Radio Club this became the flagship of all shortwave sessions. Certificates and other mementos were available and the Club rapidly won the interest of listeners each week. With the huge facilities of the BBC available, Henry Hatch and his colleagues were able to call upon engineers, producers, presenters and a wide range of BBC activities for the program's focus.

Since the demise of *World Radio Club*, the BBC has had several programs for shortwave listeners. Today *Waveguide* is heard each week in which Simon Spanswick looks at a wide field of electronics.

New Zealand

Radio New Zealand, the shortwave service of the NZBC in 1960, entered the field of programming for the shortwave listener when Cleve Costello, who had an electronics magazine called *This Radio Age*, asked Arthur Cushen to become a contributor. Later, it became Arthur Cushen's *Radio World on Shortwave*, which in the 1970's was also carried on National Radio mediumwave.

Radio Canada Shortwave Club was hosted by Pip Duke, Duncan Nicholson and Elaine McMaster.



In the early 1980's Tony King started *Mailbox* to which Arthur Cushen contributed. Since January 1990, with the new 100 kW transmitter and the name of RNZI, he broadcasts *DX News* every two weeks in the *Mailbox* program. Since 1984, he has been broadcasting a weekly program on 4XD, New Zealand's oldest radio station established in 1922, and since 1989 has contributed a weekly radio magazine program on ZLXA 3935 kHz, Print Disabled Radio.

Ecuador

Ecuador, South America, is the home of HCJB and *DX Partyline*, started by Harvey Hayes. The program was soon taken up by Clayton Howard who hosted the show for 18 years. Today, John Beck, Ken MacHarg and Rich McVicar present the program.

There are many other stations carrying DX programs: Spain, Belgium, Turkey, Austria, Germany, Finland, Norway and most countries in Europe. There are also shortwave information programs from Korea, Japan and other Asian

stations. In the United States Glenn Hauser presents *World of Radio* on several stations and for a short period, had a *DX Daily* broadcast Monday to Friday. In the South Pacific, KTWR Guam had a DX program for many years while KSDA, Adventist World Radio, has had a regular session called *DX Asiawaves*.

It has been proven over the years that shortwave programs which feature DX information are the quickest way to communicate changes to the listener. Their popularity continues today — a positive reflection on the spirit of the Australian pioneers who felt that it made good sense to spread news *about* shortwave radio by broadcasting to listeners *on* shortwave radio.

MT

Footnote:

DX programs in English are listed quarterly (February, May, August and November) in the front of the *MT* "Shortwave Guide" section. *Monitoring Times* would appreciate your additions and corrections to this list.



Sometimes It is Better To Stay Home

By Paul D. Blumstein

I almost went to my first scanner club meeting last night. I have always been a lone-wolf scanner buff and get the information I need from periodicals and computer nets. I have never considered scanning to be a group activity, but I was tempted to go to the meeting for the same reason I like to listen to my scanner: curiosity. This time, however, I had just finished two 12 hour days at work and was in desperate need of sleep, so I decided to stay home and let my curiosity wait until next month.

Boy, was I wrong about getting sleep! My doorbell started ringing wildly at nine in the evening. My wife and I looked at each other and at the same time we both asked: "Were you expecting anyone?" We both answered: "No."

I opened up my door to find a dark blue figure. "LAPD. We are going to be in your bushes, so don't call the police or turn on your outside lights." I said: "You must be lost, this isn't Los Angeles." His answer was brief: "We know that. We aren't lost." I asked him to tell me what was happening. He just replied that he would let me know later as he turned away and headed back towards the bushes.

I thought it was odd that a cop would tell me not to call the police. It was also odd finding the LAPD here in the suburbs. The only way for me to find out what was going on was to turn to my trusty scanner. I heard them talking on TAC-8, LAPD's Emergency Frequency. It was clear from their conversation that they were casing the house across the street. "I can see him in the window...he has a rifle or shotgun...he is pacing as if he is very agitated." I peeked through my curtains and saw the person that they were talking about.

The cops kept coming in to use my phone. They told me that their phones were not working. I served them coffee and pastries. Finally, they asked to borrow my cordless so that they didn't have to keep coming inside.

It turned out that the guy barricaded across the street had just robbed a convenience store with a shotgun. As time went on, the residents of the house returned. The police discovered the suspect's name, his record and they learned he was high on cocaine and alone in the house. They tried to call him but the phone was constantly busy. I checked the cordless frequencies for the cops and told them that if he is using a phone, it wasn't a cordless. They thanked me and seemed amused that I was following their operation with a scanner.

They kept using a PA system to ask him to come out of the house, but without result. The owner of the house that was involved and her children (the suspect was the boyfriend of her daughter) were shepherded over to our house, which was rapidly turning into the police command post. My new house guests were glad that the scanner let them follow the proceedings rather than having to sit and wonder what drama was unfolding outside. After several hours, the cops decided to call in the SWAT team.

Unfortunately, that meant that they had to evacuate all the neighbors, including us. We were all moved one house over to allow the SWAT team use of our house as their command post. We listened in as the SWAT snipers positioned themselves around the house.

The SWAT team tried using a bull horn to ask him to come out. When that didn't work, they tried asking him to hang up the phone so that they could talk to him. They tried calling again and again and got nothing but a busy signal. Then the suspect's mother got on the bullhorn and asked him to come out and told him that he wouldn't be hurt. He still didn't respond.

The SWAT team decided to use tear gas. They positioned six men around various windows and told the LAPD regulars to notify the homeowner of their plans. Thanks to our scanner, she heard this conversation and was prepared for their arrival. We even opened the door just before they knocked!

It turned out that the regular cops couldn't get the SWAT frequencies on their handhelds, so my scanner was of benefit to them. They stayed with us so that they could listen in to

the SWAT operation!

SWAT orders went out over the air: fire two rounds from every position making a total of 12 rounds. The SWAT commander then said: "Let him cook in there." They tried using the bull horn again and still didn't get a response. Then they fired another round from each position. Finally, he came out and he was taken into custody.

It was after three in the morning when we finally went back home as the police called in the fire department to ventilate the tear-gassed house with their fans. Two and a half hours later my alarm woke me up to start another day.

Next month, I will be faced with a dilemma. Should I go to the scanner club meeting and possibly learn more things about scanners or should I stay home and not risk **M_T** missing any action?



Motorola

Utility World

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QSLing MARS

NNNONGW this is NNN0ANI, go ahead and initiate your phone patch, your party is on the line.

To Navy MARS (Military Affiliate Radio System) aficionados, a transmission like the above is music to the ears. Hearing Navy MARS transmissions can become a hobby within itself. Besides the actual communications, what really makes listening interesting is the side benefit of collecting QSLs (verification cards or letters) from the different Navy ships.

If you aren't participating in this aspect of the hobby, maybe you ought to take a second look. The US Navy afloat is disappearing fast. Current plans call for a 12 aircraft carrier fleet with one of the carriers assigned as a full-time training and reserve duty. More than likely this assignment will go to the USS John F. Kennedy (CVA-67).

Pentagon planners will also trim the number of ballistic missile submarines from 22 to 18. The first four Ohio class SSBN's would be retired before 2000 instead of refueling. The number of nuclear attack subs will drop from 85 today to between 45 and 50. A third Seawolf submarine will be ordered to maintain construction capability until the next generation of attack subs, the Centurion, is designed.

The Navy is in the process of decommissioning ships at a much greater rate than announced several months back. At this point, it appears that 57 ships, not the 32 previously announced, will be stricken from the books in fiscal year 1994. The apparent goal is a 346 ship Navy by the turn of the century. As the U.S. military downsizes, so does our Navy fleet. Each month, more and more Navy ships will hit the scrap heap. By QSLing these ships now, via Navy MARS nets, you can preserve your own piece of naval history.

From time to time, I get mail queries regarding the art of QSLing Navy MARS traffic, especially the ships. This month's Ute World column will discuss some of the aspects on how to QSL Navy MARS ships.

The first thing you must remember about Navy MARS and utility traffic in general is that it is not intended for the general public. There are laws out there governing what you can and cannot say about the transmissions you monitor. Your report to the station should therefore, reflect that reality.

MARS QSL Rule No 1:

DO NOT disclose actual transcripts of "off the air" transmissions in any utility reception reports you write.

You should be more concerned with reporting the act of the communications you hear, not the content. It is perfectly acceptable to say that at 2045 UTC you heard NNNONGW working NNN0ANI with phone patch traffic. You should not be reporting that Petty Officer Smith was talking to his wife via phone patch about their new baby. That is a no-no and your report will probably end up in file 13 ("trash can" to you landlubbers).

MARS QSL Rule No 2:

DO report the Date, Time and Frequency on which the transmission was heard. Now this is where it gets sticky. Be sure your report uses



UTC (Universal Time Coordinated) for both date and time. Remember, these ships could be anywhere in the world, but most MARS operators know about UTC. As a MARS operator in years past, I even maintained my logs in UTC. Make it easy on them by reporting in this time zone.

You should also remember that when you go past 0000 UTC, you should change your date to the next day. Many hobbyists forget that one point and it usually costs them a QSL in the collection.

MARS QSL Rule No 3:

DO include a cover letter describing what you are after. Always write a polite letter; do not demand a QSL. This is being done as a courtesy to you. There are no written regulations saying a MARS station must QSL your report. Remember the old saying: it's easier to draw a fly to sugar than vinegar.

You can address your QSL one of two ways. Either send the QSL to the Navy MARS station manager or, preferably, try addressing the report to the operator you heard during the communications you are reporting. I have had very good luck using the latter in my reception report request. I also try to send along some personal details as well as a souvenir (i.e.-local post card, etc). Sailors love to get mail; it's what really makes long periods at sea bearable. The friendlier the letter, the better chance for a QSL response.

You can try addressing your request as follows:

Navy MARS Operator Larry
C/O Navy MARS Radio Station
USS Neversail (FF-1100)
FPO AE 99999-9999

Old-timers and newbies alike please notice the new way to address your letters to FPO/APO addresses. Gone are the days of FPO San Francisco and FPO New York. You must now use this new addressing system in order for your correspondence to make it to a ship. If you are still using the old system, your list is no longer valid. I recommend a copy of the Grove *Shortwave Directory*, as it now has an updated list of Navy and Coast Guard ships, their new addresses, and their International/MARS call signs.

MARS QSL Rule No 4:

DO include return postage and an envelope with your request for a QSL. Don't always assume that the Navy will pay the freight on your QSL. Sailors don't make a lot of money so give them a break and include a stamp and envelope with your request. It will probably help speed things up a bit as well.

There is another side benefit that can be achieved by sending your own envelope and stamp. Most stamp collectors are probably familiar with the term "First Day Covers" or "Cover Collecting." One whole facet of cover (i.e., envelope) collecting involves Naval Ship covers. In fact, there is a whole society devoted to collecting Navy ship covers for various events (i.e.- Ship anniversaries, Holidays, Launchings, Commissioning, Decommissioning, First and Last Days of Postal Service, etc.).

A polite request with your QSL to have the ship's post office return your envelope with their cachet and cancel can turn your transport medium (the return envelope) into a collectable item. I usually stick a couple of extra envelopes with peelable address labels (my return address) plus a nice flag postage stamp on each envelope with my QSL request. This usually results in some nice naval covers, like the three samples provided, in addition to the QSL.

MARS QSL Rule 5:

DO enclose your own prepared QSL letter or card for the MARS operator to sign and return. It really makes the job easier for them and has dramatically increased my QSL return rate. Those of you with computers (you do have a computer, don't you?) can use your favorite word processor to do some fancy prepared cards or letters for the shipboard operators to sign.

Now that you have mastered some of the basics of QSLing, you need some frequencies to start with. The *Shortwave Directory* has a comprehensive list, but if you want to get a flavor of what is going on, just listen on 14441.5 kHz (afloat calling channel). Within a short period of time you should hear those NNN0--- call signs. As a rule, most NNN0C-- calls are ships. Some of the NNN0N-- calls are ships, but the majority are shore stations. NNN0M-- calls are Marine Corps, and the rest are shore based stations.

Finally, I mentioned a naval cover society earlier in the column. If you would like more information on membership you can contact them at the following:

USCS (Universal Ship Cancellation Society)
Secretary/Treasurer - Lorraine Kozicki
35 Montague Circle
East Hartford, CT 06118

The USCS is a non-profit, tax exempt corporation founded in 1932, that promotes the study of the United States Navy, its ships, and postal markings of the U.S. Navy and maritime organizations of the world. The *USCS Log* is the official monthly publication of the USCS and a sample is available for \$2.00 postpaid from the address above. Be sure to tell Lorraine you heard about the USCS via the Utility World column in *MT* and USCS member #10438.

Gee, I just noticed in the *USCS Log* that a few more ships are being decommissioned. Looks like it is time to jump on 14441.5 kHz and log them before they disappear into Naval history.

RTTY — Those "Black Holes"

Ute World regular, Robert Hall, in Capetown, South Africa, reports that a search through his current database of over 1,400 active RTTY frequencies produced only 14 stations which use standard 75/850 baud/

shift common to almost all decoders and software. So why is this significant?

Robert points out that a search through the HF spectrum with his R71E and Universal M-7000 decoder will turn up a host of frequencies transmitting at the 75/850 baud setting, particularly in and around the maritime bands, but except for the 14 positively identified, these are "mystery" stations! They are not listed in *Klingenfuss* or the *Confidential Frequency List* and the M7000 will not tune or decode them other than indicating the 75/850 baud/shift. Another line of mystery stations occur between 16900.0 and 17200.0 kHz where one can often find up to a dozen strong signals beeping away at the 96/830 speed/shift.

Robert says, "These unid transmissions are sometimes called 'black holes'; there are many of them and I find it a waste of time and temper to decode them! It has been suggested that they might emanate from NATO in some unspecified mode. Has anyone out there got a clue?"

Thanks, Robert, for the report. I think the majority of the activity you are trying to decode emanates from the U.S. Navy. They use a lot of encrypted RTTY circuits in the HF spectrum. In the *Shortwave Directory*, I have included a comprehensive list of frequencies and some background on the encrypted modes used by the Navy. The U.S. military over the years has used 850 shift/75 baud speed as a defacto mode for most of the RTTY work in the HF spectrum. While some NATO countries use the standard as well, the bulk of the activity will be from U.S. military forces.

Ute World Pot Luck Frequencies and News



- Norman Briggs forwarded an article to *MT* headquarters in regard to the demise of the Coast Guard guarding 500 kHz reported in this column last year. This article pointed out one of the major reasons the Coast Guard gave up their watch on 500 kHz: lack of activity. In the last year of 500 kHz operation, there were fewer than two dozen alerts reported to the Coast Guard using the 500 kHz capability.

- If you hear the USAF Air Mobility Command call sign 'Reach' and it has only two numbers following it, then you are hearing a tanker aircraft. Transport aircraft have three or more numbers and letters following the call sign.

- Maiquettia Air Traffic Control Radio in Venezuela has been reported in USB on the following frequencies: 8924.0, 11435.0, 17937.0, and 21976.0 kHz.

- The following airline company frequencies have been reported recently, all communications are in USB and frequencies in kHz:

Fast Air (Ottawa, Canada)	13285.0		
Nationair (Montreal, Canada)	13339.0		
Tarom (Bucharest, Hungary)	10021.0		
Gulf Air (Falcon - Bahrain)	5538.0	11354.0	13339.0
	17931.0	21943.0	
Middle East Airlines (Cedar Base - Beirut)	10093.0	13330.0	17931.0
	21943.0		
Air India (Bombay)	6637.0	8930.0	10072.0
	13333.0	17916.0	21943.0

And now it's time to close this month's Utility World column. But before you go, be sure to flip the page and check out what our 18 contributors this month were hearing around the world on the utility bands.

Utility World

Utility Loggings

Abbreviations used in this column

AB	Air Base	m/v	Motor Vessel
AFB	Air Force Base	MWARA	Major World Area Route Area
AF1	Air Force One		
AF2	Air Force Two	NASA	National Aeronautics and Space Administration
AM	Amplitude Modulation	Net	Network
ATC	Air Traffic Control	PACKTOR	New digital mode—Teletypewriter system combining certain characteristics of Packet Radio and SITOR.
BBS	Bulletin Board System		
CAMPAC	Communication Area Master Station, Pacific	PSAs	Public Service Announcements
CAP	Civil Air Patrol	QRM	Interference
CIS	Commonwealth of Independent States	SAM	Special Air Mission
Comms	Communications	SAR	Search and Rescue
COMSTA	Communication Station	SITOR-A	Simplex teleprinting over radio system, Mode A
CW	Continuous Wave (Morse Code)	SITOR-B	Simplex teleprinting over radio system, Mode B
EAM	Emergency Action Message	SWBC	Shortwave Broadcast
FAF	French Air Force	TIS	Travel Information Service
Fax	Facsimile	UHF	Ultra High Frequency
FEMA	Federal Emergency Management Agency	Unid	Unidentified
GHFS	Global HF System	US	United States
HF	High Frequency	USACOE	US Army Corps of Engineers
ID	Identification	USAF	US Air Force
ISB	Independent Side Band	USB	Upper Side Band
kHz	Kilohertz	USCG	US Coast Guard
LSB	Lower Side Band	USCGC	US Coast Guard Cutter
MARS	Military Affiliate Radio System	USMAG	US Military Assistance Group
MCW	Modulated CW	VIPs	Very Important Persons
MEDFER	Medium Frequency Experimental Radio		
Meteo	Meteorological		

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

- 415.0 OGY-Non Directional Beacon in Rockaway, NY, with MCW ID at 2227. (Jack Dix-Yonkers, NY)
- 1620.0 Radio Free Ybor, a new TIS station from Tampa, FL, kicking into regular service after testing with music loops for several days. Various PSAs concerning area, phone number for reports using AM at 0215. (D.Gasque-SC) *You sure this isn't a pirate broadcast? Very unusual ID for a TIS station-Larry.*
- 1638.2 SEA-Possible experimental ham beacon at 0200 in CW. (Gasque-SC) *Yep, Dave, this is a MEDFER out of Warm Springs, GA, operated 24 hours per day-Larry.*
- 1667.0 5572 Driftnet beacons in CW at 0215. (Gasque-SC)
- 1670.0 9W530 Driftnet beacon in CW at 0219. (Gasque-SC)
- 2598.0 St. Lawrence Coast Guard Radio, PQ Canada, on with a weather broadcast for southeast Canadian waters in USB at 0050. (Bill Fernandez-MA)
- 2749.0 Yarmouth Coast Guard Radio, NS, ending a weather broadcast in both English and French for the northwest Atlantic waters in USB at 0442. (Fernandez-MA) *Bill, is it Yarmouth, NS or NF?-Larry*
- 2799.0 SVH-Iraklion Radio, Crete, with navigation warnings in English using USB at 2349. (Robin Hood-UK)
- 3190.0 USU-Maripol Radio with traffic list in CW at 2001. (Robin Hood-UK)
- 3491.0 Saudia 864 working Calcutta ATC in USB at 2143. (Robin Hood-UK) *What MWARA is this, Robin? I only show Calcutta in SEA-1 on 3470-Larry.*
- 4215.0 HEC24-Berne Radio, Switzerland, with traffic list in SITOR-B at 2031. (Robin Hood-UK)
- 4248.0 ARQ4/6-Simonstown Naval Radio, South Africa, with V CW marker at 2139. (Dix-NY)
- 4360.0 SYN2-Israeli Mossad number station in AM at 2130. (Dix-NY)
- 4463.0 FTJ-Israeli Mossad number station in AM at 2200. (Dix-NY)
- 4735.0 FT network operation noted here from 0548-0600 in USB. (Jeff Haverlah-Humble, TX)
- 4845.0 US military station Billboard calling Mellow in LSB at 1444. (J. Metcalfe-KY)
- 4930.5 United Nations monitoring vessels in Adriatic 4YR and K8S in USB at 2210. (Robin Hood-UK)
- 5091.0 Female with call Sierra Romeo Juliet to 0425, silent carrier to 0430 and then into 5 figure groups using USB. (Gasque-SC)
- 5329.6 WUG-USACOE Vicksburg, MS, with message using SITOR-A for AEEK at 1544. Some callsigns passed include AAEB-m/v *Benyaurd*, AEOC-m/v *Lipscomb*, 3602-m/v *Dick Harbinson*, 3570-m/v *Ms Helen* and AEDL-Dredge *Jadwin*. (Metcalfe-KY)
- 5342.0 FDY-FAF Orleans, France, with V CW marker at 2322. (Dix-NY)
- 5400.0 JQN working VSJ in USB at 1120. (Harry Riddell-Rochester, NY)
- 5437.0 ART-Israeli Mossad number station in AM at 2133. (Dix-NY)
- 5629.0 CIO2-Israeli Mossad number station in AM at 2246. (Dix-NY) *At least one of the CIO2 stations has been DF'ed to Cyprus-Larry.*
- 5696.0 COMSTA Portsmouth, VA, working SAR on sailing vessel *Duchess* in USB at 2000. (James Ashe-Weymouth, MA) CAMPAC San Francisco calling Tac Zero Xray in USB at 0429. (Gordon Levine-Anaheim, CA)
- 5700.0 Blue Star working Michael Field "Request you go Parkhill," reply "Roger sir, going my town 3,2,1 go" then into encrypted transmission. In USB at 0401. (Neal Perdue-Madison, AL)
- 5752.5 United Nations messages to Sarajevo (in English) using SITOR-A at 1637. (Robin Hood-UK)
- 5992.0 Pretoria calling *Paradise Down* without luck in USB at 1030. (Gasque-SC) *Now there is an unusual frequency-Larry.*
- 6227.0 Alpha Alpha Charlie 2-US Army working Alpha Alpha Delta Victor with a position report that placed the ship off the Georgia coast. In USB at 2213. (Perdue-AL)
- 6267.0 UUBC-*Janis Sudrabkalis* working Lyngby Radio in SITOR-A at 0823. (Robin Hood-UK)
- 6376.0 WCC-Chatham Radic, MA, with V CW marker at 1540. (Mike Hardester-Jacksonville, NC)
- 6383.0 NOR-USCG San Diego, CA, with CQ CW marker at 1145. (Dix-NY)
- 6389.5 WSC-Tuckerton Radio, NJ, with CQ CW marker at 1525. (Hardester-NC)
- 6390.0 R-Single letter HF beacon in CW at 2158. (Dix-NY)
- 6415.6 WLO-Mobile Radio, AL, using SITOR-B with "ARA Free Press news for shipmates" at 0242. (Bill McClintock-Minneapolis, MN, via Grove BBS) *I show them on 6416.0-Larry.*
- 6485.0 English female 3/2-digit number station in AM at 2116. (Dix-NY)
- 6493.5 LYL-Klapeida Radio, Lithuania, DE CW marker at 2156. (Dix-NY)
- 6516.0 Two females talking simplex in the Bahamas area apparently on sailing boats in USB at 0120. (Bob Pettengill-Blanchard, OK)
- 6624.0 Scrambled voice tones-Data then voice in USB at 2207. (Roger Cape Cod, MA) *No idea who this is, Roger. Welcome to the column-Larry.*
- 6683.0 An unid aircraft an hour from Madrid, Spain, doing patches through a GHFS station in Europe about press conferences, TV interview in-flight with *Good Morning America* program (taped for next morning), morale calls to family back in US, etc. Aircraft was to land in Madrid, refuel and return to US in morning. All stations very weak here. Assuming this was AF2 flight, due to mention of Vice President in patches at 0200 in USB. (Fernandez-MA)
- 6705.0 Thule AB GHFS station working unid station on a discrete channel. I thought they were Canadian until I caught a couple of good Thule IDs. (Haverlah-TX)
- 6735.0 Edmonton military, AB, Canada, working Sentry 32 enroute to Goose Bay at 0516 in USB. Bluecrab working *Huntress* in the clear and in the green, working around the FT net in USB at 0351. (Haverlah-TX)
- 6745.0 VLB22-Israeli Mossad number station in AM at 2147. (Dix-NY)
- 6750.0 FT Net active during mid day and just perceptible here until late afternoon in USB from 1902-2300. (Haverlah-TX)
- 6757.0 Pot Roast working Head Rest with EAM traffic in USB at 0535. Then they moved to W-100. Since the receipt of the updated *Grove Shortwave Directory*, I now know where to look, thanks,

6809.0	Larry. (Haverlah-TX) <i>Glad it is of use, Jeff-Larry.</i> WGY948-FEMA working WGY908 with phone test both duplex (6809/7248) and simplex on the same two frequencies. When they were simplex, WGY948 was very weak here on both frequencies (but very strong when rebroadcast by WGY908 during duplex operation. (Haverlah-TX)	10202.0	SAM 26000 working Andrews AFB with phone patch in USB at 0025. (Jones-CA) <i>Andy, believe probably using their own site on this Mystic Star frequency-Larry.</i>
6912.0	Oscar Echo Mike 5 loop tape by female at 0325 using USB. (Hardester-NC)	10802.0	MIW2-Israeli Mossad number station in AM at 1818. (Dix-NY)
6988.0	AAR4YG-US Army MARS with messages in PACTOR at 1459. (Metcalfe-KY)	10880.0	SAM 29000 on F-277 working Andrews AFB with phone patch traffic in USB at 0257. Followed them here 7693.0. (Jones-CA) <i>Jeff, you were probably hearing the McClellan remote site so that would correlate with F-277-Larry.</i>
6993.0	SAM 27000 working Andrews AFB with phone patch in USB at 0340. (Jeffery Jones-Tracy, CA)	11204.0	Ascot 5326 calling Belize Flight Watch in USB at 1704. (Pettengill-OK)
7330.4	USAF MARS Region 2 packet radio net at 2052. (Dix-NY)	11217.5	Toto calling Buckeye in USB. Changed antenna direction for better reception and signed off around 1700 until next month. (Metcalfe-KY)
7342.7	USAF CAP stations SC0040 and SC0043 in packet BBS operation at 1430. (Metcalfe-KY) <i>These were South Carolina CAP stations-Larry.</i>	11226.0	Andrews periodically working Navy 676 with 676 enroute to Pensacola using USB at 2020. Lajes also testing on frequency. (Haverlah-TX)
7693.0	Andrews AFB, MD, testing voice communications with SAM 403, SAM 28000 and SAM 29000. AF1 then broke in to advise that SAM 29000 and SAM 403 were released in USB at 0100. (Jones-CA) <i>New Mystic Star freq for me, Jeff, thanks-Larry.</i>	11233.0	Chalice Alpha calling Okie Sam "on 9023." Strong, brief and no repeat. The Canadians did not respond. Probably punched the wrong preset, in USB at 1958. (Haverlah-TX) <i>I would say so; no wonder he didn't get a reply-Larry.</i>
7595.0	Asmara, Ethiopia, working various aircraft on this unpublished frequency changed from 11300. (Riddell-NY) <i>Harry, I only show 5526.5, 5658, 6574, 8927, 11256.5 and 11300 for Asmara. Nice catch, I've added it to the Shortwave Directory-Larry.</i>	11249.0	Halifax military with North Atlantic weather broadcast in USB at 1523. (Haverlah-TX)
7741.0	Airlift 15 working USCGC Thetis (WMEC-910) with position report in USB at 2115. NYWL-USCGC Thetis (WMEC-910) working Foxtrot Whiskey in USB at 2130. (Perdue-AL)	11407.0	SAM 200 and 202 working each other and Andrews in USB at 1534. (Haverlah-TX)
7776.5	OST-Oostende Radio, Belgium, with traffic list in SITOR-B at 1810. (Robin Hood-UK)	12068.5	Yankee 61, 68 and 77 in USB voice net at 2020. Data transmissions from these stations on 12070.7 kHz, but mode unknown. (Metcalfe-KY)
8037.0	29 calling Wolfman in USB at 1740. Possible US Army stations also using 8056.0 kHz. (Metcalfe-KY)	12107.0	Two unid stations talking about a recovery and launch team. One then ended comms by relaying message, "Andrews wants you back on primary and the ISB system is working pretty well." in USB at 2355. I heard mention a couple of times this month that Andrews was starting to use ISB. (Jones-CA) <i>Jeff, I show Ascension as a possible remote site here for Andy-Larry.</i>
8117.0	BMB-Taipei Meteo, Taiwan, with gale warnings (in English) in CW at 1600. (Robin Hood-UK)	12283.0	DEA47-Unid station with V CW marker at 1450. (Dix-NY)
8153.0	O2S and a few other stations heard here and on 8153.3 kHz around 2200. (Metcalfe-KY)	13057.5	LSA-Boca Radio, Argentina, on this frequency instead of 13055.0 with V CW marker at 2257. (Hardester-NC)
8436.5	UKK3-Nakhodka Radio with SITOR/CW marker at 1542. (Robin Hood-UK)	13204.0	Bangor Net Control working Mayhem, F8G91, Deadeye, Biscayne and Deflect with radio checks in USB at 1620. (Jones-CA)
8445.0	STQ-Victoria Radio, Mahe, with CW DE marker at 1211. (Dix-NY) <i>Nice catch, Jack-Larry.</i>	13205.0	Andrews periodically working SAM 29000 and Palm Date. Palm Date seemed to be shadowing/monitoring Air Force One (not heard) along with Andrews in USB at 2039. (Haverlah-TX)
8448.0	A9M-Bahrain Radio with DE CW marker at 1217. (Dix-NY)	13207.0	Zulu 92 working Lima 16 in the red and green using USB at 1456. Various Closeout call signs (zero zero through four), Night Rider and one or two single letter calls working Foxtrot Tango in a very active Playground control net, tracking many aircraft up through DC-3's generally headed for Jamaica and the Dominican Republic (both mentioned by name). Using USB at 2036. (Haverlah-TX)
8455.0	UVA-Batumi Radio, Russia CIS, with DE CW marker at 2103. (Dix-NY)	14931.0	8BY-Unid station sending V CW marker at 1459. (Dix-NY)
8522.0	CBV-Playa Ancha Radio, Valparaiso, Chile, with CW marker at 0253. (Pettengill-OK) <i>Klingenfuss says Valparaiso Radio but I will go with what the station calls itself-Larry.</i>	14945.0	German female 3/2-digit number station in AM at 1415. (Gasque-SC)
8549.0	PWZ33-Rio Naval Radio, Brazil, with navigation warnings in CW at 0715. (Robin Hood-UK)	14961.0	Hotel Six working Romeo Romeo Tango and Echo Echo Tango in USB at 1600. (Gasque-SC)
8690.0	XFS2-C.Madero Radio, Mexico, with V CW marker at 2206. (Dix-NY)	15018.0	Probable Andrews phone patch with VIPs in USB at 1541. (Haverlah-TX)
8764.0	8PO-Barbados Radio working J?ML in USB at 2115. (Perdue-AL)	15055.0	Navy Link 11 frequency (Alligator Playground) heard in afternoon period. (Haverlah-TX)
8861.0	Campo Grande, Brazil, and Dakar, Senegal, ATCs in USB on with several aircraft with flight data/position reports in English at 0230. (Fernandez-MA)	15821.0	Air Force 2 working Andrews at 0100 in USB. (Doug Kramer-Orbn, MI)
8972.0	Hotel calling Foxtrot Tango (FT) at the request of India, with no luck, so back to 6735 in USB at 0525. (Haverlah-TX)	16246.0	Active phone patch traffic with unid stations (too much QRM to dig out IDs) in USB at 2119. Listed as a common NASA frequency. (Haverlah-TX)
9014.0	Gemini 77 working Raymond 7 with phone patch request in USB at 1933. Raymond 7 could not complete request because of equipment failure (common). (Haverlah-TX) <i>Seems Raymond 7 has been having a lot of phone patch equipment problems lately-Larry.</i>	18019.0	Harpy 93 (self ID'ed as a C-130) working Ascension with a phone patch to Dover Command Post. Enroute to Dover from St. Croix and 30 minutes from Dover UHF range. Using USB at 1544. (Haverlah-TX)
9023.0	Foxtrot Tango, single letter calls. Closeout 01/03, Nightrider, Hersey, Alpha Whiskey in a very active playground net. Using USB at 1230. (Haverlah-TX)	16921.0	CLS-Havana Fishery Radio, Cuba, with V CW marker at 1524. (Dix-NY)
9043.5	Gray Team working a barely perceptible Gold Team in voice (USB) Some kind of data transmission at 2146. (Haverlah-TX)	20885.0	ZPM261-USMAG Asuncion, Paraguay, working Fox 4 in USB at 2320. (Riddell-NY) <i>Thanks, Harry, I thought these guys had disappeared as I have had no reports nor heard anything on their frequencies in quite some time-Larry.</i>
9124.7	USACOE station sending net operation procedures in SITOR-B at 1532. Voice comm on 9122.5 kHz in USB. (Metcalfe-KY)	26725.0	NMN-USCG Portsmouth, VA, with CW marker and no text following at 2125. (Fernandez-MA) <i>Very interesting frequency, Bill, I don't think I have seen that one listed before-Larry.</i>
9338.5	Tashkent, Uzbekistan, Meteo with weather Fax charts at 2215. (McClintock-MN) <i>Listed on 9340 with the call RCH72-Larry.</i>		
9809.0	Sycamore working Night Wear (or Night Ware), Backbench, Rockbell and other USSTRATCOM call signs on W-106 (positively ID'ed on this frequency), S-211 (15038) primary and X-905 (11226) as a secondary frequency. All frequencies very active with W-106 used as a data frequency also. They wanted to use W-108 for data secondary, but SWBC station already on this		

The Scanning Report

Bob Kay

c/o MT, P.O. Box 98
Brasstown, NC 28902

Turning the Tables

As scanner buffs, we usually think of ourselves as third party listeners. The first and second party are the sender and intended recipient of the radio transmission that we intercept. We rarely see ourselves as monitoring targets. But the technology of the nineties has made it very easy for anyone to turn the tables on the most experienced scanner buff.

Did you know, for example, that a wire connected telephone cannot guarantee your privacy? If you're using a wire line phone, and the person you call answers on a cordless phone, your entire conversation is being indiscriminately flung across the air. The only solution is to request that the second party use a wire connected phone. The situation becomes more serious when hotels, travel agencies and other service companies answer your call on a cordless phone.

If you went on vacation last summer and temporarily cancelled the morning newspaper, your departure and arrival dates were probably broadcast across the entire neighborhood. Newspapers that guarantee

home delivery utilize radio dispatched managers to deliver papers that are damaged, soiled or lost. In many areas, your request to stop the newspaper will be sent to the circulation manager via two-way radio.

Another way to have your vacation plans broadcast on the airways is to call your local police department. If the patrol vehicles are informed of your vacation plans via police radio, anyone with a scanner radio will know that you're scheduled to be out of town.

Using your credit card can also generate a radio transmission. Contractors will often utilize two-way radio equipment to relay your credit card information to the main office. After the transaction is approved, the main office provides the contractor with the approval code. In the process, your name, address, phone number and credit card number were transmitted across the air!

Home care and other out-patient services will often utilize medical taxis that are radio dispatched. In most instances, the driver is informed via two-way radio of your name, address, pickup and return time. As well, anyone listening in will also know when your home is unoccupied.

Are you expecting a package? If you're like most of us, you'll be at work when the delivery arrives. So you call the company and tell them that there's a check in the mailbox or under the doormat. If cash is required, you may tell them that the money is in an envelope and pinned to the inside front door. The delivery driver is informed where to find the payment via two-way radio—and so is the listening public.

With today's technology and a home computer, it's possible to pay bills, apply for a loan and balance your checkbook from the privacy of your home. The obvious threat is an unauthorized user gaining access to your bank account. But there is another concern that cannot be ignored. Though it requires more sophisticated equipment, computers without proper shielding can be monitored on television screens at considerable distances. It's also interesting to note that the new 66 megahertz computers operate near television channel #6.



If you think that a wire connected phone will protect your privacy—think again!

As we all know, users of the radio spectrum have nothing to fear from the radio hobbyist. Scanner buffs listen because it's fun, exciting and full of intrigue. But as we also know, there are a small percentage of individuals who monitor the airways for personal gain. Protecting yourself from high tech sting operations won't be easy, but you can stack the odds in your favor. Here are a few suggestions:

(1) When you place or receive a phone call, ask the other party if they are using a cordless or cellular phone. Follow the same procedure when you call or are contacted by a hotel or travel agency.

(2) Ask the local police to refrain from broadcasting your vacation plans via police radio.

(3) If you temporarily cancel the morning paper, don't be afraid to ask if the newspaper utilizes two-way radio to convey customer information.

(4) Don't use a computer without shielded cables and don't operate the unit with the case removed.

As you have seen, protecting your privacy in our high tech world doesn't require a technical background. If you can exercise a little common sense and use your knowledge of two-way radio communications, you can prevent someone from turning the tables on you!

Treasure Hunt

This is the last month that you can win a brand new antenna from Electron Processing, Inc. The "Antenna Stick" provides complete coverage between 25 and 1000 megahertz, and it is enclosed in PVC pipe. Since the antenna is virtually indestructible, you can store it in the closet and stack a few boxes on it as well. Here are the clues:

1. Mobile signals will be heard 5 MHz below the repeater frequencies in the 450-470 MHz range. True or False?
2. A half-wave dipole antenna for the cordless phone band would be approximately _____ feet long. (Fill in the blank)
3. In residential house wiring, what color is the load wire?
4. Name the three leads on a transistor.
5. Name two of the elements that are found in vacuum tubes.

The "Antenna Stick" is a unique and rugged scanning antenna that can be mounted permanently or used as a portable antenna. If you combine scanning with the great outdoors, the Antenna Stick can withstand the rigors of nearly any environment. For more information contact Electron Processing, P.O. Box 68, Cedar, Michigan 49621, (616) 228-7020.

Frequency Exchange

If you live in the snow belt, don't miss our first stop. Ron Brown lives in the warm city of *Bakersfield, California*. Here are Ron's favorite frequencies:

153.875	Dept of License & Inspection	154.415	Fire
153.95	Fire	154.74	Police
153.995	Court house	154.80	Police
154.05	Fire	155.025	Emergency rescue
154.25	Fire	155.19	Police
154.265	Fire	155.265	School Buses
154.35	Fire	155.55	Police

Our next California invitation is from an anonymous contributor who lives near *Los Angeles*.

33.45	Fire	154.725	City College Police
33.50	Fire	154.965	LA Juvenile Police
33.60	Fire	453.05	Trash Trucks
37.20	Life Guards	453.375	Airport Police
45.62	San Pedro Harbor Police	460.525	Airport Police
45.74	San Pedro Harbor Police	460.55	Convention Center Police
153.80	LA Parks	506.6375	Fire
153.90	Park Rangers	854.9625	Harbor Police
154.25	Fire	856.2375	Rescue

Harry Danson lives near *Clackamas County, Oregon*. His invitation included the following frequencies.

153.90	Oregon City Fire	166.00	Forest Fire
154.20	Oregon City Fire	166.20	Forest Fire
155.055	Oregon City Fire	166.30	Forest Fire
155.10	Astoria City Police	166.325	Forest Fire
155.75	SheriffNet, Oregon City	166.35	Forest Fire
158.85	Oregon City Police	166.375	Forest Fire
158.95	Oregon City Police	168.15	Forest Fire
163.15	Forest Fire	453.70	Dog Catcher, Oregon City
164.425	Oregon Cave National Monument	460.50	Oregon City Police
		460.575	Boring City Fire

Brad Newbury is a railroad fan who routinely monitors the Burlington Northern Railroad. His invitation was sent from *Seattle, Washington*.

160.25	160.60	160.955	161.20
160.30	160.620	PBX	160.98
160.38	160.65	Yard	161.10
160.45	160.665	PBX	161.15
160.50	160.85		161.55

Ready for a cross-country trip? Welcome to the home of Rocko Tucci. Rocko lives in *New York City, New York*, and here are his favorite monitoring targets.

47.65	Bronx Hospital	460.575	Fire investigations
151.175	Parks	460.625	High rise fire
151.205	Parks	470.3875	Transit
154.10	Court Security	470.4125	Transit
154.40	High rise fire	470.4875	Transit
154.755	Dist. Attorney	471.4125	Schools
155.50	Arson task force		

Since we're already in New York, let's check out the Fire Department Codes and frequencies that are used by several *New York Cities*. The following list was submitted anonymously.

Bronx		Brooklyn	
154.19	Base	154.37	Base
154.07	Mobile	153.95	Mobile
Manhattan		Richmond	
154.25	Base	154.40	Base
154.010	Mobile	154.07	Mobile
Queens			
154.40	Base		
153.77	Mobile		

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Further publications available are *Guide to Facsimile Stations, Air and Meteor Code Manual* (13th editions) and *Radioteletype Code Manual* (12th edition). We have published our international radio books for 24 years. They are in daily use with equipment manufacturers, monitoring services, radio amateurs, shortwave listeners and telecommunication administrations worldwide. Please ask for our free catalogue, including recommendations from all over the world. For recent book reviews see Larry Miller in *MT 9/93* pages 90/92 and Bob Evans in *MT 10/93* page 57. All manuals are published in the handy 17 x 24 cm format, and of course in English.

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Fire Codes

10-1	Call your quarters
10-2	Return to your quarters
10-3	Call dispatcher by phone
10-4	Okay
10-5	Repeat message
10-6	Stand-by
10-7	Verify address
10-8	In service by radio
10-9	Off the air
10-10	What is your location
10-11	Request Radio Test Count
10-12	First Arriving unit report
10-14	Breakdown of apparatus
10-18	Return all units except...
10-19	Return all units except units required at scene
10-21	Brush fire
10-22	Outside rubbish fire
10-23	Abandoned derelict vehicle fire
10-25	Manhole fire
10-26	Food on stove
10-30	Request for 2 engines, 2 ladders and ABC response
10-31	Clogged incinerator
10-32	Defective oil burner
10-33	Odor of smoke
10-35	Defective alarm system
10-36	Auto accident
10-37	Assisting civilian
10-38	Steam leak
10-39	Broken water main
10-41	Suspicious Fire

- 10-44 Request for ambulance
- 10-45 Possible DOA (Dead on arrival)
- 10-47 Request for police assistance
- 10-48 Request for police assistance (Harassment)
- 10-59 Water pressure alert
- 10-60 Water pressure emergency
- 10-68 Restrict use of vehicle alarms to minimum
- 10-75 Request for 3 engines, 2 ladders and ABC response
- 10-92 Malicious false alarm

Our final stop takes us to the home of George Philips. George also lives in *New York City*, and his invitation included the following:

- 156.85 Harbor Police
- 470.6375 Narcotics
- 470.6625 Detectives
- 470.7375 Intelligence Division
- 470.7875 Manhattan Narcotics
- 470.8375 Highway Police
- 470.8625 Highway Police
- 470.8875 Detectives
- 470.9125 Staten Island Narcotics
- 470.9375 Detectives
- 470.9625 Brooklyn Narcotics Portable
- 471.0125 Narcotics
- 471.0375 Bronx Narcotics
- 471.0875 Detectives
- 471.1375 Detectives
- 476.5125 Staten Island Police Portable
- 480.7625 Detectives

George's complete list contains more than 100 frequencies for New York City. The list is free, but you must send a #10 SASE to the Frequency Exchange, P.O. Box 98, Brasstown, NC 28902.

To invite the Frequency Exchange to your home town, send an invitation with your favorite frequencies to the Frequency Exchange, P.O. Box 98, Brasstown, NC 28902. Anonymous invitations are welcomed, but please tell us where to find the refreshments.

Computer Corner



This is your last chance to receive a free copy of my favorite frequency management program. "Radiolog" is an easy program to master (you'll be up and running in less than 15 minutes), and it's offered as shareware. As you know, shareware isn't free. However, the author allows you to try the program

before you buy it. If you decide to use the program, a registration fee is sent to the author.

To receive Radiolog, send a blank, formatted disk with a return mailer and return postage to: Bob Kay, P.O. Box 173, Prospect Park, PA 19076. If that's too much of a hassle, here's the flip side of the offer. Send \$5.00 dollars to Bob Kay, P.O. Box 173, Prospect Park, PA 19076, and I'll provide the disk (specify size and format) copy the program, purchase the mailer and lick the stamps.

Your requests will be mailed on a first come, first served basis. Don't forget to include your proper mailing address and please allow a few weeks for delivery.

Scanning for Jewelry

When the Scranton, Pennsylvania, police apprehended two burglary suspects, the stolen jewelry was not in the vehicle that was used in the robbery. Two scanner buffs, who had been monitoring the high speed, vehicular chase, found the jewelry in a bag on the road.

Inside the bag were 252 pieces of jewelry—with price tags still attached, totaling more than \$40,000.00 dollars. The two scanner buffs were listening on a mobile scanner and found the jewelry by retracing the route taken by the bandits. (News clipping from *Scranton Times*.)

Canadian Caller ID

Caller ID is available in Canada. It is marketed under the name, "Call Display" and costs approximately \$4.75 per month. According to Rory McEvoy, the calling number appears on the display after the first ring. A free, automated "Call Block," is also available. To prevent your name and phone number from being transmitted, the caller would press "*67" and then dial the number. If the second party has call display, the message, "Private Number," appears on the display.

Rory was not certain if Call Block would also prevent the emergency 911 service from automatically displaying the caller's name and address.



Ellis Island Monitoring

Scanning in a federal park is not illegal, but the park guards may frown upon your ability to hear radio communications. When Bob Ferguson took his scanner radio to Ellis Island, a belligerent park guard asked if he was monitoring the park service. When Bob replied that he wasn't, the guard replied, "Keep it that way!"

The Ellis Island/Statue of Liberty frequencies that Bob monitored are as follows: 166.325; 414.825; 417.850 and 417.925.

Have you been hassled because you were carrying or listening to a scanner radio? If so, send your scanning adventures to the Scanning Report, P.O. Box 98, Brasstown, NC 28902.

Harry Baughn took this picture of a friendlier federal park guard.

Drug Free Scanning

In Providence, Rhode Island, it's illegal for a person convicted of drug possession to have a scanner radio. When police stopped a known drug dealer for questioning, he was charged with possessing a scanner radio—a felony—and sent to jail.

Similar laws are in effect in other states as well. In the state of South Dakota, for example, a person convicted of a felony within the past ten years cannot possess a scanner radio.

The moral of the story? If you want to enjoy the hobby of scanning, don't get convicted of a crime.



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Band Pass Filters

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LP-60	DC-60 MHz Usage	\$69.
HP-400	400-1500 MHz Usage	69.
HP-800	800-2000 MHz Usage	69.
BP-3	Above 3 filters (SAVE \$30)	\$177. 207.

Accessories

A	CC-90	Case for all models	12.
B	TA-90	Telescope BNC antenna	12.
C	TA-90-L	Telescope elbow antenna	16.
D	RD-150	150 MHz rubber duck	16.
E	RD-2750	27-50 MHz rubber duck	28.
F	RD-800	800 MHz rubber duck	29.
G	M-207-IC	Interface cable for MFJ-207	10.
H	P-110	200 MHz, 1x, 10x probe	39.
J	LP-22	Lo-Pass, audio usage probe	25.
K	DC-10	Direct, 50 OHM probe	20.



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The Beginner's Corner

"Uncle Skip" Arey, WB2GHA
Genie T.AREY1

Reading RTTY

February is notorious for cabin fever, and the same restless desire for change can also strike the hobbyist who longs for something new and different to listen to. Well, if you have been listening to shortwave for a bit, it's right under your nose. All those chirps, cheeps, and assorted electronic birdcalls between the broadcast stations carry information that can be fun to monitor. A quick glance at Larry Van Horn's "Utility World" on page 28 will give you an idea of the sort of things you might run across. News services, weather, ships, aircraft, and government agencies all make wide use of Radioteletype (RTTY) as a means of point to point communication. Getting a handle on translating RTTY can be exasperating, but it is by no means out of your reach.

RTTY Roots

CW transmission was the very first "digital" mode. The letters of the alphabet were sent as a series of dots and dashes by simply turning the transmitter on and off. CW had its obvious limitations. Not everybody is a whiz at Morse Code (I am a prime example). There was an obvious need to develop a method of sending text that was less dependent on operator skill and speed.

The first commonly used alternative to CW became the **Baudot Encoded Teletypewriter**. This allows the operator to sit at what is essentially a typewriter keyboard and type away without any direct knowledge of the coding system going out over the airwaves. The information is sent to the transmitter in the form of a five level coding sequence. Instead of keying the transmitter by turning it on and off as with CW, the signal's information is passed by shifting the frequency slightly. The **frequency shift** and the **baud rate** (from the name Baudot) are the key features in trying to translate any RTTY coding system.

The Baudot system greatly improved text communication. Even though Baudot has some serious limitations, it remains in use, even in our modern electronic world, by over half the stations transmitting in the digital modes. Over the years, more efficient teletypewriter coding systems using more complex coding, various frequency shifts and different baud rates have been developed. But basically, RTTY is just another coded signal that can be copied if you have the right equipment.

Code Busting

You have to admit, one of the advantages of CW communications is that the only additional piece of equipment you need to copy the code is a pencil and paper. If you want to copy RTTY, you will need to add another piece of equipment or two to your shack. That's the bad news. The good news is that there are many different ways to go. RTTY translation can be achieved by almost any pocketbook or interest level from cheap and casual to intense and expensive.

The first tool you will need to assure success, regardless of which decoding method you choose, is a stable receiver. Stability is important because of the need to sense the frequency shift that makes RTTY transmission possible. Most modern transistor receivers should not have any problem with this. If you are a fan of older tube type equipment, you must make sure that your receiver is "warmed up" to minimize any signal drift. If your receiver has extra filter options, check your owner's manual concerning filters designed specifically for RTTY. These would be helpful in copying RTTY in a crowded band.

If you are already a personal computer user, you are well on the way to an inexpensive RTTY station. All you need is some decoding software and a way to get the signals from your receiver to your computer.



Decoders like this Universal M-8000 can open up another facet of the radio monitoring hobby.

Several companies sell computer interface boards that make this possible. AEA, MFJ, Kantronics and Universal Radio are the current major manufacturers of receiver/computer interfaces. Many of these devices have the added ability to allow amateur radio operators to use them with their transceivers to send RTTY as well as receive it. Most of these interface units sell for about \$300. That can be a bit steep for many of us, so shop around for the best price and features. Most of the major shortwave suppliers listed in *MT* carry a few of these interfaces, or see Table 1 to contact the company directly.

Since there are about a dozen common digital modes that fall in the RTTY realm, you will probably do well to seek out an interface that gives you as many modes as your wallet can handle. When shopping around, don't forget to check out what software support your interface requires and if this comes with the interface at additional costs. Also find out if cables are included or extra. As with many electronics purchases, it's those "extras" that determine a project's true expense.

Folks who do not want or need a personal computer should consider a dedicated RTTY reader. These are self contained units designed to decode RTTY signals and send the output directly to a video monitor or printer. The major manufacturers of dedicated units are Info-Tech (which does not market retail), HAL Communications, and Universal Radio. Dedicated readers are clearly designed for the "dedicated" RTTY monitor. The more sophisticated devices often have special features not provided by computer interfaces that are important to serious utility monitors. They market for between \$400 and \$1400. To this you must add the cost of a video monitor and/or printer. If you are only dabbling in the RTTY realm, you may want to seek out a "used" unit if you want to go the dedicated RTTY route. Although Table 1 gives you a starting list, there are many more recent entries into the game, some found in the pages of *MT*.

When RTTY reading equipment first started appearing on the hobby radio market, RTTY terminal units often had a simple two or three line LED screen that would display the incoming decoded text. These units began to disappear as full screen video became readily available. However, such units did represent a low cost alternative and have once again caught the eye of hobbyists.

Universal Radio has recently released an LED screened decoder called the M-400. It markets for \$400 and has the advantage of being applicable to VHF/UHF digital modes as well. You might want to compare the advantages and disadvantages of this simple unit to either of the above systems, especially if you are a scanner monitor as well as an SWL.

Other units in this class you may want to examine include the ERA Morse Master distributed by Action Communications, the Code Scanner and Code Star sold by Microcraft Corporation and Somerset Electronics' Microdec unit.

Where to Listen

Readable RTTY signals can be found in any portion of the radio spectrum used by utility stations. RTTY signals are intended for point to point communications. Three books that are popular with RTTY

monitors are *Ferrel's Confidential Frequency List* compiled by Geoff Halligey, published by Gilfer Associates, *The Guide to Utility Stations* by J. Klingenfuss, published by Klingenfuss Publications and *The Grove Shortwave Directory* edited by Larry Van Horn, published by Grove Enterprises.

What makes books like these useful is that they don't simply give you the frequency to listen to, they also list information that you will need to get your RTTY station decoding properly. RTTY frequency listings will usually include information about the signal's baud rate, frequency shift and transmission mode. What we commonly refer to as RTTY is actually many types of frequency shifted signals. Let's take a look at the modes you are likely to run across.

To decode a signal you will need to set your system's baud rate (speed) and frequency shift (the amount the signal shifts in frequency measured in Hertz). This is easier than it sounds, and higher priced decoding units do it for you. But, isn't half the fun of monitoring twisting the dials? Just read the manual that comes with your interface or decoder and you'll soon get the hang of it.

RTTY

Traditional five level Baudot code has ruled the roost for a long time. Only now are more modern signal systems overtaking its use. Most common baud rates are 45, 50, 57, 75 or 100, although some stations transmit at nonstandard speeds ranging from 20 through 250 baud. Common frequency shifts for Baudot are 300, 425 and 850 Hz.

What if your system starts decoding a signal successfully, but your screen shows gibberish? Remember that there are a lot of RTTY stations using languages with alphabets that don't translate into English. Cyrillic, Arabic and Chinese come immediately to mind. When in doubt, check your frequency lists for more information before you assume your system has failed you. Additionally, if you think about the types of services that use RTTY, most of them have good reason to send encrypted copy.

ASCII

The American Standard Code for Information Interchange is the language that computers use to talk to each other. It is a seven level code that resolves many of the text transmission problems of Baudot. Right now it is mostly used experimentally by Amateur Radio operators in the portions of the ham bands set aside for RTTY. Any ASCII you are likely to run across will be sent at 110 Baud with 170 Hz Shift.

SITOR

Simplex Telex Over Radio is an improved coding system in common use today. It is a system that allows for correction of errors in its transmissions by intercommunication between the sending and receiving station. SITOR is usually sent at 100 baud with a 170 Hz shift. You will discover two forms of SITOR communication.

SITOR "A" works by sending its signal three characters at a time and then waiting for an acknowledgment signal sent back by the receiving station on a different frequency. Once the sending station is sure that "the mail got through" it proceeds to send its next three character group.

SITOR "B" performs its error correction "on the fly." This is known as forward error correction (FEC) The data is sent in a continuous stream. However, each character is sent twice along with a series of control

Table 1: RTTY Equipment Suppliers

Action Communications, 1705 Westminter Dr., Greensboro, NC 27410; 910-299-1298
AEA 800-432-8873 for literature
HAL Communications, P.O. Box 365, Urbana, IL 61801; 217-367-7373; 1701 FAX
Kantronics, 1202 E. 23rd St., Lawrence, KS 66046 913-842-7745; 2021 FAX
MFJ, Box 494, Mississippi State, MS 39762 601-323-6859; 6551 FAX
Microcraft Corporation, Box 513-MT, Thiensville, WI 53092; 414-241-8144
Software Systems Consulting, 615 S. El Camino Real, San Clemente, CA 92672; 714-498-5784; 0568 FAX
Somerset Electronics, Inc., 1290 Hwy A1A, Satellite Beach, FL 32937; 407-773-8097
Universal Radio, 6830 Americana Pkwy, Reynoldsburg, OH 43068; 614-866-4267

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characters. The receiving station's system performs a series of error tests to assure that the data is accurate. SITOR "B" lends itself best to transmitting news and weather broadcasts.

Amateur radio operators also use their own variations of the SITOR systems of transmission called AMTOR.

ARQs and FECs

There are quite a few more exotic RTTY signals out there worth giving a listen to if your equipment is up to it. ARQ stands for AUTOMATIC REQUEST. This is a form of message error correction that involves the receiving station sending signals back to the transmitting station to assure the message was properly received. (SITOR-A would be considered an ARQ mode.)

ARQ-M is a system that allows either two or four different data signals to travel along a single carrier. ARQ-E is a single channel system used by the French Military as is ARQ-E3. Other ARQ systems you will encounter include SWED-ARQ, used by the Swedish Embassies and DUP-ARQ, used by the Hungarian Embassies. Many other diplomatic services make use of systems known as FEC-A and FEC-3.

Baud rates and frequency shifts are all over the map in these modes. You will need to keep an eye on RTTY loggings in *MT* to get a real handle on the latest trends. Also watch for *MT's* quarterly "Digital Digest" column for digital news.

Accepting the Challenge

RTTY monitoring will expose you to yet another facet of the radio monitoring hobby. You will need to make an additional investment in equipment and reading material and set aside the time to climb the learning curve. But I can assure you that the signals out there are worth grabbing if you have an interest in utility monitoring. Looking for something new? Give RTTY a try!

Shortwave Broadcasting

Glenn Hauser

P.O. Box 1684-MT

Enid, OK 73702

ALGERIA R. Algiers carries V. of Palestine, in Arabic at 1702-1800 on 15215, 15205, 11715, 9685-a, 7245-a, 6160, 6145-a, and at 1800-1900 on 17745, 15205, 11715, 9685, 9510, 7245, 7145, 6145, all -a (which means announced but unconfirmed)—but during Ramadan at 1902-2100 instead; V. of Free Sahara, Arabic at 2200-2300, and its own Spanish 2300-2400 both on 15215, 9640 (*BBC Monitoring*)

ANGOLA VORGAN heard on 7290 from 2015 French, 2033 Portuguese to closing varying 2039 to 2047*, much earlier than previous 7100 (Ernie Behr, Ont.) Sometimes English around 2015-2040 (Brian Alexander, PA)

AUSTRALIA ABC Perth at least got a one-month reprieve from Dec. 17 to evaluate response finally coming in from within WA (RNMN) Yes, 6140 and 9610 still heard (Mickey Delmage and Larry Shewchuk, Man.) R. Australia, Shepparton will resume good reception to C. Pacific and hence U.S. with new antennas; had been using temporary less than optimum ones (Arie Schellaars, RA, via Brian Johnson, *SW Echo* via Thurman)

AAFR to Malaysia at 0930 on 13525, 18735 both USB (Ralph Famularo, Japan, *SPEEDX*)

AZERBAIJAN R. Azerbaijan, 6109.1v, from 1300 Azeri talk, music 1430+, strong, probably Gyandzha with 200 kW (Ernie Behr, Ont.)

BELGIUM RVI changed frequencies to us: 17590 at 1400 weekdays, 1330 Sundays; 5900 at 0030 daily (Bob Thomas, Steven Cline, Diane Mauer, Joe Hanlon, George Thurman)

BELIZE (non?) Voyager shipboard project got callsign from here, V30U3, applying to all transmitters; R. New York International programs on tape to start and invites one-hour shows from pirates to 507 Violet Ave., Hyde Park, NY 12538 (Steve Coletti, *Spectrum*) Can run SSB, DSB, DSB suppressed carrier, AM, range up to 2000 miles, omnidirectional (Al Weiner, RNMN) Scott Becker, chief of operations contacts on PACTOR ham radio 14075 using Nevis call V47DH; said three of four transmitters commissioned before Xmas (Lee Reynolds, NH, *W.O.R.*)

BRAZIL R. Itatiaia, Belo Horizonte, 5970, from 0830 Port. news, ID, weak but clear on LSB; last heard in 1985; Russian on USB was stronger (Ernie Behr, Ont.) 4865, R. Alvorada, and 4885, R. Carajá, reactivated; 6020 sold by R. Educadora Bahia to R. Gáucha; 6065 is new for CBN São Paulo; 11805 has R. Globo active daytime; 15325 is planned for 10 kW foreign service by R. Record (Dario Monferini, visiting Brazil, *DSWI SW News*) R. Bras Amazon service has been running World Wildlife Fund show since May, Sats. 1430-1600, with UN environmental messages, taking faxes from the jungle (R. Netherlands *Media Network*) 11780?

BURUNDI 6140 resumed with 100 kW the week before Xmas (BBC via RNMN)

CANADA In late Oct., CKFX-6080 C.E. Jack Wiebe wrote that revival on SW had been put off until Feb. or March (David Shearman, *Ecunet* via Harold Sellers, *DX Ontario*) CFCX, 6005, Montreal, from 2200 news and sports talk very strong until RAI came on at 2230; "CFCX Shortwave" ID at 2213 (Ernie Behr, Ont.)

CANARY ISLANDS RNE Padio Uno back on 11430 USB from 14880, as early as 0405, as late as 2250 (Brian Alexander, PA, *World of Radio*) On 14880 USB at 1300 time check for 1:00 in Canarias, local news (Hans Johnson, MD, HCJB *DX Partyline*)

CHINA CPBS a.k.a. CNR, First Program, has English Suns. 0000-0030 on 17605, 15550, 15390, 12120, 11330, 9290, 7504, 6840, 6750, 6125, 5955, 5915, 5880 (BBCM) Language lessons? (gh) Hunan PBS,

All times UTC; all frequencies kHz.

*asterisk before/after time signifies station sign-on/sign-off;

// means parallel; + means continuing but not monitored;

= 2 x indicates 2nd harmonic of following frequency.

News Station, Changsha, on 4990 at 2125-0600, 0855-1605; includes foreign language lessons daily at 0900-0930, 1330-1400 (BBCM) CPBS-2, Kunming, on 7770 and 5163 at 2237 with English lessons (Sheldon Harvey, PQ, *CIDX Messenger*)

COLOMBIA Rdif. Nacional on 9685 ex-9655 at 0130, strong sig but weak audio; 11785 closed at 2221* (Ernie Behr, Ont., *W.O.R.*) CARACOL Villavicencio on 23820 = 4 x 5955 at 1320 with municipal news (Alan Roberts, PQ, *CIDX Messenger*) Ecos del Palmar on 3040 = 2 x 1520; Emisora Claridad, Medellín, tropical dance music on 3060 = 3 x 1020 at 0903 (Fernando Viloría, Venezuela, HCJB *DXPL*) R. Monumental, Cúcuta, on 2920 = 2 x 1460 at 1002-1058 (Viloría via San Gil)

COSTA RICA With log-periodic finally mounted on tower, RFPI began testing new 9375 USB, 24 hours, but best in the 2200-1300 period, reports wanted. 5 kW with ERP 25 kW due north but may start rotating toward other targets. May add more 30 kW transmitters, possibly one dedicated to UN Radio programming; voltage choke should allow full 30 kW on 7375 or 7385. New automation system for repeats 8 and 16 hours later is longplaying hi-fi VHS video tape. (James Latham, RFPI and *Mailbags*) See also USA for *W.O.R.* Other recommendations/programs: *Counterspin*—media analysis, Thu. 2300, Sat. 1900; *Second Opinion*, Tue. 1800, Fri. 2230; *Food Not Bombs Radio Network*, alt. Mon. 2130, Sat. 2300—all 8 and some also 16 hours later (RFPI)

DNESTROVIA (non) Secessionist republic from Moldova started service to us in English, 0330-0400 on 7105 exc. UT Fris. in Ukrainian, R. Dnestr International, Tiraspol (RVI *Radio World* via Steve Cline) Strong but co-channel VOA (Brian Alexander, PA) VOA-Ascension, and what became of Armenia's service to us at that time? All via Russian transmitter (gh)

DOMINICAN REPUBLIC R. Barahona, 4930, 1106-1200 with news, time checks every minute (Fernando Viloría, Venezuela) Weak, as early as 1020, as late as 1200, mentions 1240 kHz only (Santiago San Gil, Venezuela)

ECUADOR Astonished to hear HCJB 11925 transmitter only S4-5 but overmodulated and splash over 220 kHz wide, including 11805-11825, around 1200 (Brian Carling, MD, *SW Echo* via Thurman) After trying 5 to 50% carrier insertion, decided 30% is best for SSB on 21455, 17490 (John Beck, HCJB via Bob Fraser, *SPEEDX SW Radio Today*) R. Nacional Espejo, 4879.6 at 0230 (Jim Clar, NY, *DXPL*) known for its novela format; named for a general, not a newspaper. R. Interocéánica, 4840, off for several months since filter choke blew in main power supply, serious problem, says our engineer Jim Heck. La Voz del Upano, 4870, is in Macas, not Macuma; it got the frequency but not the site of former R. Rio Amazonas; new 3360 is also in Macas, former Sucúa, Shuar frequency. Official list shows two new stations on 3370, not yet heard—one for the 910 MW outlet in Lago Agrio; and one for R. Limón in Morona Santiago (Rich McVicar, HCJB *DXPL*)

ETHIOPIA V. of Ethiopia at *1059 with ID in English as V. of Peace broadcasting to Somalia, into Somali, on 11800.2 (Mikhail P. Timofeyev, Russia, *DSWI SWN*)

[non] Free Radio Voice of Ethiopian Unity, heard 1600-1700 on 11695, announced as Sunday and Wednesday, in Amharic, P.O. Box 91701, Washington, DC 20090; follows R. Moscow's Amharic at 1500-1600 on same, and same M.O. as former V. of Ethiopian Patriotism, in 1992y (BBCM)

FRANCE RFI announced that its first rotatable antenna was inaugurated Nov. 23; fourteen more to be activated by 1997, one of them in Guiana in 1994, total cost around 800 megafrancs. It's the first

rotatable antenna in the world, they say (AFP via BBCM) Curtain, that is; but already some in Vatican, Quito (gh)

GERMANY DW's European service in English, succeeding DLF on MW, went to SW in Jan. at 2000-2050 on 5960, 7285 (BBCM) Save postage with new DW address: Box 50641, Washington, DC 20091.



GREECE VOG's 11645 at 0000-0350 is not toward N. America any more but 95° toward Australia, and western N. Am. by longpath (Demetri H. Vafeas, ERT, via John Babbis, MD, W.O.R.)

HAWAII See KWHR schedule in our Dec. column; controlled from WHRI South Bend with newly installed computerized studios, but not planned to simulcast any. Feed to KWHR is on Galaxy 4, ch. 15, 7.64 MHz subcarrier. Will use the slewable TCI-611 curtain more than the fixed TCI log-periodic at 225°. KWHR is at 19-01-43 north, 155-10-14 west (WHRI *DX Radio Show*) Started as scheduled Xmas; includes W.O.R., times TBA; best here in mornings on 9930 (gh) Site has constant winds of at least 30 mph, terribly corrosive (Doug Garlinger, WHR, RNMN)

HONDURAS R. Paz, 4323, announcing in Spanish SW tests on 4325 (or nominal 4825?), and Indian language, at 1130 (Manuel Rodríguez Lanza, Venezuela, *The Radic News Electronic*, via Don Moore, *SWL-List* via Will Martin) La Voz Evangélica de la Mosquitia, 4910.6, 2358-0231* in Spanish only, rarely active (Hans Johnson, MD, FT)

IRAN Another new English broadcast from IRIB is at 2130-2227 for Australia/New Zealand on 11790 (AMID & RVI via Southwell and Büschel, DSWCI *SW News*)

[non] V. of Strouz(?), clandestine for Iran, had ID in English at 0340 on 4300, Persian past 0400 (Manuel Rodríguez L., Venezuela, *The Radio News Electronic* via Will Martin)

IRAQ RII from 1000 on 17740 and 15180 in Arabic, occasional English IDs, and news at 1035, 1100, 1225; irregular (Eugene, RVI *Radio World*)

JAPAN Due to different practices at relay stations, R. Japan listeners are confused by eight frequency schedule changes per year (Dave Kenny, BDXC *Communication*)

NHK's low-power backup mostly SSB relays of regional domestic stations have closed down some sites permanently, changed frequency for others; powers range from 300 to 900 watts. Latest info (USB except when AM specified, parenthetical cities are control/originating station): 3259 JKP-20 Kasuga (Fukuoka 1) 0800-1300. 3373.5 JKM-20 Mihara (Osaka 2) 0800-1300 ex-3377.5. 3607.5 JKI-20 Shobu (Tokyo 1) 0800-1300. 3970 JKD-20 Nabeta (Nagoya 1) 2000-0030 and 0400-1300. Also 3970 but AM is JKU-20 Ebetsu (Sapporo 1) 1300-1500. 5428 JKM-21 Mihara (Osaka 2) 2000-0300 and 0500-0730. 6005 AM JKU-21 Ebetsu (Sapporo 1) 2030-0030 and 0400-1230. 6005 JKD-21 Nabeta (Nagoya 1) 0100-0330. 6130 JKP-21 Kasuga (Fukuoka 1) 2000-0400 ex-6133.75. 6175 JKI-21 Shobu (Tokyo 1) 2030-0030. 9181 JKM-22 Mihara (Osaka 2) 0330-0430 ex-9538.75. 9535 JKU-22 Ebetsu (Sapporo 1) 0100-0330. 9535 JKP-22 Kasuga (Fukuoka 1) 0430-0730. 9550 JKI-22 Shobu (Tokyo 1) 0100-0730 (Takayuki Inoue N., DSWCI *SW News*) On 3259 a local ID mentioning JOLK is heard only at 1159; 3607.5 has JOAK ID only at 1158 (Inoue, *DX Ontario*)

KOREA SOUTH R. Korea at 1200-1300 on 7180 ex-9640 (gh)

KUWAIT R. Kuwait still in English at 1800-2100 on 13620 now includes: Daily 1830 *News*, 2000 *The Liberation of Kuwait*, 2030 *The Friendly Role of the GCC in the Gulf War*; Sat. 1802 *Argus Eye*, 1845 *A Moment of Faith*. Mon. 1900 *Signs of Progress*, 1930 *Arabic Variety*. Tue. 1802 *Science Report*, 1845 *A Moment of Faith*. Thu. 1845 *A Moment of Faith* (via Steve Hunter, PA, W.O.R.)



LEBANON Wings of Hope on new 9960 at 0410 with Gene Scott, also at 1425 (Brian Alexander, PA) On 9960 but announcing 11530 from 1500 Farsi(?), 1530 Russian, 1600 English, 1630 Central Asian langs,

1800 Azeri; also Scott from 2200 to 2300 fadeout (Ernie Behr, Ont.) University Network via WOH from 2000 past 2100 (Padula, Victoria)

LIBYA Libyan Jamahiriya Broadcasting sent this unique schedule for 15415 at 1555 (presumably UT) depending on day of month: Russian 1, 2, 3, 16, 17, 18, 29. German 4, 5, 19, 20. Hungarian 6, 7, 21, 22. Polish 8, 9, 23, 24. Bulgarian 10, 11, 25, 26. Czech/Slovak 12, 13, 27, 28. Romanian 14. Serb/Croat 15, 30, 31 (Hans-Peter Tillmm, BDXC *Communication*)

LITHUANIA R. Vilnius N. Am. service was to cease at end of 1993 due to increasing cost of renting Russian transmitter, \$50K per year; was 0000 on 7150 (Bill Bergadano, MVDXC, and Daryl Rocker, NY) Sad

NETHERLANDS Reorganization of RN expected in Feb. or March. Programs previewed last summer: *Mirror Images*, Tues. in Feb. from 44th Berlin International Film Fest; March, visiting EuroDisney on birthday-2. *Sounds Interesting*, Sat., Feb. 5, food inspection and restaurant ratings. *East of Edam*, Suns. in Feb. visits India in South Asia season; Wed. documentaries in Feb. also focus on S. Asia (RN) 0730 via Bonaire on 9720 ex-9630 // 11895 (RNMN)

NEWFOUNDLAND CKZN, 6160 clear after DW closes 0950, past 1100, programs from CFGB 89.5 Goose Bay, Labrador (Harold Box, TN, W.O.R.) Fewer and fewer exotic domestic services in English available on SW (gh)

NEW ZEALAND From Feb., RNZI's *Trading Post* reports on NZ overseas trade, alternating weekly with trade from the Pacific to NZ, Tues. 2035 on 11735, Thurs. 1040 on 9700 (RNZI)

PAKISTAN R. Pakistan changes in English: 1600-1630 on 9470 ex-15555 // 11570, 13590, 15675; 1700-1800 on 9855 and 7355 ex-15550 and 11570 (Eugene, RVI *Radio World*) 1700 on new 7485; 1600 also on 4895 (Edwin Southwell, UK, W.O.R.)

PAPUA NEW GUINEA New NBC 100 kW on 9565 had English news at 0800, later in Pidgin (Arthur Cushen, NZ, RNMN) It's a Continental, target PNG, N. Australia, C. Pacific, moved to 9675 at 2100-1400 (Adrian Sainsbury, RNZI Wellington, *SWL List* via Martin) Asked for reports by phone to Port Moresby 252096 or 255026 (John Kecskes, Australia, *USENET* via Thurman) A second 100 kW is expected for Pidgin net, and first one will take English; possibly reactivating 3925, 4890, or testing on 11980 (Steve Lowe, PNG, via Andy Sennitt, RNMN) 9675 heard 1200-1315+ (Ed Rausch, NJ) R. Enga, 2410, reactivated by late Nov., 1200-1315* (David M. Clark, Ont., *Fine Tuning*)

PERÚ Despite previous report that reactivated R. Nacional on 6095 is from Tacna, letter from R. Televisión Peruana's chief radio administrator Rafael Mego says it is in the historic Chorrillos district 19 km from the studios in Lima, same site as MW 850; SW call is OAX4H, had been inactive for 20 years, new Philips 10 kW (via Santiago San Gil, Venezuela, W.O.R.) Then why does 6095 ID as R. Nacional Tacna? (M. Molano, Spain, and Dario Monferini, *Play-DX*) R. Nuevo Mundo, 4881.61, has ID at 1037, then regular religious program with



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echo effect (Chuck Bolland, FL)

RUSSIA Mayak SSB frequencies monitored in UK at various long hours are 10855-USB, 13820-LSB, 13365-LSB. R. Rossii uses 8040-USB, 8005-USB, 7970-USB, 18870-USB, 15660-USB, 16300-USB, 12175-USB, 11575-USB; includes BBC and AWR relays, various religious programs. R. Lena, Yakutsk, Mon.-Fri. 1500-2200 on 6125, 5920; phone 248 62, per VOR *DX Club*. Radio Al-Risalah—the Message, Islamic station from Moscow in Russian, at 0800-0900 on 17635, 15550, also heard on 17710 but not daily; phone 233-6016, fax 233-1342, postal to Pyatnitskaya 25, Moscow; name in Russian is *Poslaniye* (BBCM) Also reported on *RJMR* but Japanized name to “Arisariya” (gh) What’s the Chinese religious program until 1500* on 6145? (Ernie Behr, Ont.) FEBC Russia uses 6145 in Chinese at 1200-1300 (Yoshinori Kato, *RJMR*)

State Broadcast Radio Communication Company 2 (SBC-2) in St. Petersburg is creating its own radio relay service for taped programs from international radio stations, public and religious organizations, private persons, using 200 kW SW covering most of Europe, elsewhere;— success depends on interest from potential customers; for further info fax (812) 2342971 or write SBC-2, Akadmika Pavlova St. 13-a, St. Petersburg, Russia 197376 (M.V. Sergeyev, SBC-2 Chief Engineer via gh)

V. of Hope, Novosibirsk until March 6: 1200-1600 on 9835 111°, 1600-2000 on 6150 178°, all in Mandarin on Sat. & Sun.; other days includes English at 1700 (via Adrian Peterson, IN)

SLOVAKIA Adventist World Radio using two 250 kW at Rimavska Sobota, considered tests until March 27; preliminary schedule on No. 1: 0100-0300 7270 English & Hindi, 0300-0500 9465 English and W. Asian languages. 0500-0600 9465 French to W. Africa. 0600-0700 13715 English to W-Af. 0700-0800 7180 English to UK. 1300-1400 5940 Czech. 1400-1500 13790 English to India. 1500-1800 9455 English and Indian languages. 1800-2000 9455 French & English to W.Af. No. 2: 0300-0400 7115 French to E.Af. 0400-0500 9455 English to E.Af. 0500-0700 11610 Arabic to ME. 0700-0900 5940 German & Czech. 1500-1600 5945 German to Czechia. 1600-1800 11610 French & English to E.Af. 1800-2000 7315 Arabic to ME (Adrian M. Peterson, AWR, *Review of International Broadcasting*)

SUDAN SNBC, 9165 in English at 1800-1900 with news, commentary, local music, 1840 radiodrama, 1855 news; weak but better after 1830, heard for three days in a row (Brian Alexander, PA) Later checked 9165 for National Unity Radio in English at 1500 but it was in Arabic (gh) New 5000 ex-4994 at 2120 in Arabic // 9165, 7200 (Hans Johnson, PA, HCJB *DXPL*)

SWAZILAND R. Cidade (Swazi Commercial Radio), 6155 QSLed V. of Renamo relay 0356-0428+ Nov. 29, but it was only a test and politics may prevent it; via fax +2711-434-3682 (Ron Howard, CA)

SWEDEN R. Sweden on new 6000 at *0200-0400* including English 0230, 0330, covered by RCI after 0300; announced 11650, 9695 not heard (Brian Alexander, PA) Temporary test?

TURKEY VOT hostess announced she was leaving, some programs from Jan. are: Sat., *Culture Continent*, *Blue Voyage*; Sun., *Magnificent Ensemble*; Mon., *Suburbs*; Tue., *A Turcologist and His Work*; Thu., *Turkish Classical Music*, *International Institutions and Churches* (Diane Mauer, WI)

UAE Abu Dhabi, English at 2200-2400 on 9605, 9770, 11885 (Arthur Cushen, NZ, *RNMN* and Eugene, *RVI Radio World*)

USA Keep up with news between *MTs* by monitoring gh’s weekly *WORLD OF RADIO*—on *WWCR*, Fri. 2215, Tue. 1330 on 15685; Sat. 0730, Sun. 0415, Mon. 0000 on 7435; Sat. 2130 on 15610; Sun. 0700 on 5810. On *WHRI*, Sat. and Sun. 0130 on 7315; Sat. 0600 on 7315 & 9495; Mon. 0100 on 9495, 2230 on 13760; and a week or more later on *RFPI*, Costa Rica, 7385, 9375, 15030, 21465—Fri. 2000, Sat. 0400, 1200, 1800, Sun. 0200, 1000, 2300, Mon. 0700, Tue. 1900, Wed. 0300, 1100.

Australia complained to FCC about U.S. out-of-band SWBC stations on 5, 7 MHz interfering with domestic communications such as radio-schools—*WEWN*, *MRI*, *WHRI*, *WYFR*, *WJCR*, *WWCR*. Some of us may have to move, and we may carry through a previous plan to replace 5810 with 5890 closer to band (George McClintock, *WWCR*)

WHRI, Indiana, experimented with additional times for Croatian Radio, Zagreb on 7315 when reception might be better—1200 and 2300; considering moving to 6 MHz band but probably will stick out winter on 7. Turkish show expanded to Mon.-Fri. 1900-1930 on 13760. Steven Michael’s *Daily Devotional* hour, weekdays 1800-1900 on 9485, 2100-2200 on 17830, 13760, includes news of station developments, *KWHR*. Plans to set up monitoring club, with certificates, T-shirts. Reports by fax welcome at 219-291-9043 (*DX Radio Show*; Joe Hill, *WHRI*) See also HAWAII (gh) *WHRI* will give tech info in new “sign-on” at 0000 (Joe Hill)

WWCR, Tennessee, experimenting with 6-hour weekday C&W format, *Worldwide Country*, designed for SW audience with live DJs, 1800 on 15610, 2200 on 12160; this may appeal to ad agencies. From Israel Radio, *In the Holy Land* runs Sat. 1945 on 15685; *Israel Magazine*, Tue. 2145-2215 on 15685 (via Adam Lock, *WWCR*)

Nashville has another SW station, *WLAC*, heard on 4530 = 3 x 1510, gospel music at 0710-0730 (Brian Alexander, PA, *W.O.R.*)

WEWN, Alabama, actual schedule bears little resemblance to publicized W-93 lineup; checking Dec. 14 at 1800-2400, feeds were reversed so that European languages were on S. American frequencies and vice versa, and nobody noticed at the station! That made frequency change announcements wrong, hour after hour (gh) *Holy Rosary* at 1400-1428 on 9350 is joyful Mon. & Thu., sorrowful Tue. & Fri., glorious Wed. & Sat.; same at 2100-2118 on 13740 (*WEWN* via Bill Westenhaver)

Pastor Pete Peters, who bought into *WINB*, planned to start using that outlet Jan. 3 (Diane Mauer, WI) For *Scriptures for America*, already on other SW stations (gh) Peters also has a gay-bashing, load-your-gun TV show; is a leader in Christian Identity movement, which claims that whites are descendants of the biblical people of Israel; Jews are behind Satanic conspiracy, integration a sin (Leonard Zeskind, *NY Times* Op-Ed, via Don Thornton) *WHRI* sometimes prefaces 0200 UT Sat. airing with disclaimer (gh) That program is pure blasphemy, absolutely antibiblical and fascist (German Albornoz Pellecer, Guatemala)

Prophecy Countdown planned to start programming on *WCSN*, Maine, Jan. 17, up to 30 hours (Steve Coletti, *Spectrum*, via Jim Moats) Per week? (gh) *MRI* at 2210 on 18930, first Harmonic of 9465 (Edgar Cronin, UK, *BDXC*) That would be *second* harmonic, but far more likely *WEWN* on fundamental, first and only occupant so far of 18-MHz band (gh)

KJES, New Mexico, at 1800-1900 on 9510 nominally in Spanish, but some days in English (gh)

WBLC, Lenoir City, TN, on 2720 = 2 x 1360 at 1219 with local ads; *WAGC*, Centre, AL, on 3160, another harmonic at 1209, good signal with clear IDs (Don Moore, IA, *SWL List* via Martin) Listed on 1560, so harmonic would be on 3120; typo? (gh)

VATICAN Vatican R. on new 3950.12 at 0600 in English, 0620 Italian, // 6245, 7250 (Brian Alexander, PA, *W.O.R.*) Testing 3945 at 0300-0745, 1730-2110 (*RNMN*) First quarter schedule shows 3950 (gh) On 0250 program to us, UT Fri. 2nd feature is *Faith by Numbers*; Sat., *Orders of the Day*, *By The Way*. Sun., *With Heart and Mind*, and at 0256 *On the Air*—behind the scenes at VR and program previews (John Norfolk, OK, *R.I.B.*)

VIETNAM Cao Bang varies 6500 to 6600, lately on 6585 ex-6552 at *1200-1400* (Isao Ugusa, *RJMR*)

ZANZIBAR RTZ on 6014.6 at 1903 Swahili news (Hans Johnson, PA, HCJB *DXPL*)

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

Broadcast Loggings

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

0030 UTC on 7150

BELARUS: Radiostansiya. Russian. Organ melody interval signal to station ID. Frequency quote to national newscast. Music bridge to interview feature. Closing ID and station promotional to haunting Russian instrumental folk song. Station sign-off 0059. (John Sedlacek, Omaha, NE)

0030 UTC on 9540

SPAIN: Spanish National Radio, Commentary on Spain and its economy in the European community. (Bob Fraser, Cohasset, MA)

0130 UTC on 4990.65

PERU: Radio Ancash. Spanish. Station ID, "Ancash en el corazón de Peru en el capital de la Republica Radio Ancash." Slogans over regional music. (Ed Rausch, Cedar Grove, NJ) Peru's Radio San Martin audible on 4810.2 at 1048-1056 with IDs and campo/huayno music past 0200. Fair signal. (David Gasque, Orangeburg, SC)

0130 UTC on 4990.9

SURINAME: Radio Apintie. Spanish. English ID to Top 40 pop music format. Brief announcer chat to infrequent IDs. (Rausch, NJ)

0200 UTC on 2390

MEXICO: Radio Huayacocotla. Spanish. Tune-in to male's ID at 0200. Pop and folk music program with fair to poor copy. (Gasque, SC)

0202 UTC on 5050

TANZANIA: Radio Tanzania. Tentative logging for Arabic programming. Call to prayers 0202-0210, followed by talk from male announcer. Latin station on 5049.8 made for extremely difficult copy. Poor signal. (Gasque, SC)

0210 UTC on 6281.6

PERU: Radio Huancabamba. Spanish. Campos music by vocal group to 0240. Music played in three-song blocks with ID breaks. This station is on rarely, usually with a good signal due to the frequency. (Gasque, SC)

0232 UTC on 4895

COLOMBIA: La Voz del Rio Arauca. Spanish. Lady announcer with news and IDs battling with Brazilian on frequency. Additional Colombian's heard; Armonias del Caqueta tentively ID'd at 0235 on 4915. Radio Caracol on 5075 at 0310 with "Caracol" promos. (Sam Wright, Biloxi, MS) Ecos del Combeima heard on 4785 at 1054-1100. Caracol network news to IDs. (Gasque, SC)

0245 UTC on 7455

BULGARIA: Radio Bulgaria. Western style pop music to station ID. Presumed news in Bulgarian at 0300. Editorial to musical selection, monitored beyond 0315. (Jerry Witham, Keauu, HI)

0250 UTC on 7305

VATICAN STATE: Vatican Radio. Interval signal to English service ID. Vatican events calendar to prayers for peace in the Balkans. Religious news and excerpts from the Pope's weekly general audience. *Postcards from Rome* featuring recent artwork found in Rome. (Steve Hunter, Drexel Hill, PA)

0323 UTC on 9610

RWANDA: Radio Rwanda. French. Musical vocals to DJ duo chat about Kigali. Fair signal to 0359 when BBC signed-on. (Mike Hardester, Jacksonville, NC) Station monitored in French at 1800 on 9780. (Rausch, NJ) French service audible on 15340 at 1942. (Serra, Italy)

0554 UTC on 21595

AUSTRALIA: Radio Australia. Australia vs New Zealand cricket commentary on parallel 21740, 17715. *One World* program heard at 0738 on 21525, 21595, 17750, 17695. Broadcast 0900 on 13605, 15170. (Serra, Italy)

0720 UTC on 9565

PAPUA NEW GUINEA: (Papua) NBC. Pidgin/English. March music by the Australian Navy. ID and time check at 0730 to pop music. Station promotional and a warning about trespassing on transmitter sites! News at 0800. Nice signal for new 100 kw transmitter. (Witham, HI)

0835 UTC on 21705

SLOVAKIA: Radio Slovakia International. National news to travelogue describing architecture of Bratislava. Report on Slovakian children and interview with precocious kindergartner. (Witham, HI) Talk on Slovakian politics 0846 on 11990, 15605, 21705, 17535. (Serra, Italy)

1004 UTC on 5025

PERU: Radio Quillabamba. Spanish. Station sign-on at 1004, immediately into huayno music, with brief ID break at 1009. Cuba's Radio Rebelde over the top at 1100. Fair signal. Peru's Radio Atlantida noted on 4789.9 at 1035-1040. Tentative ID on Peru's Radio Villa Rica at 1046 on 4804.5. (Gasque, SC)

1010 UTC on 9525

INDONESIA: (Java) RRI-Jakarta. Indonesian. Very soothing instrumental music to commercials. Low modulation. (Witham, HI)

1020 UTC on 9700

NEW ZEALAND: Radio New Zealand International. *Music From the Islands* program to station frequency quote. Pop music, ID, and QSL address. *Trading Post* to music by artist Mariah Carey and Hugh Masekela. (Hunter, PA)

1025 UTC on 6175

MALAYSIA: (Peninsular) Voice of Malaysia. Malaysian talk to regional music. RTV Malaysia (Sabah) in Tamil on 4845 at 1225. RTV Malaysia (Sarawak) in Iban on 4895 at 1230 with music and male/female host. (Witham, HI)

1130 UTC on 4119

NORTH KOREA: Voice of National Salvation. Korean. Talk and Asian music audible through jamming. (Rausch, NJ) Radio Pyongyang on 9345 at 1309. (Serra, Italy) Pyongyang's sign-on in Korean at 1200 on 4780. (Witham, HI)

1150 UTC on 7230

ITALY: AWR-Europe. Italian. Program *La Vita Del Cuore* narrated by Ruggero Ferretta. Music and multilingual IDs (English, French, German, Italian) by Stefano and interval signal. (Serra, Italy)

1135 UTC on 3324.8

GUATEMALA: Radio Maya de Barillas. Spanish. Marimba music to ID at 1159. Terrific signal! Additional Guatemalan's: Radio Buenas Nuevas on 4799.8 at 0007; Radio Tezulutlan on 4835.18 at 0010; La Voz de Atitlan on 2390 at 0016. Despite weak signal, Atitlan's marimbas heard to ID format. Station mixing with Mexico's Radio Huayacocotla (another great catch!) (GVH/NC)

1235 UTC on 4910

CAMBODIA: Radio Phnom Penh. Cambodian. Tentative logging for male and female dialogue to 1255. No recognizable ID at 1300, followed by regional music. (Witham, HI)

1640 UTC on 6176.4

CHINA: Shaanxi Peoples BS. Chinese. Female chatter to classical music bridge at 1645. Program feature to 1647. (Witham, HI)

1658 UTC on 7180

IRAN: Radio Tehran. Arabic. Interval signal to sign-on. Anthem and prayers to music at 1707. Religious readings buried by Radio Japan's sign-on at 1715. Interesting this station broadcasting on an Iraqi frequency. (Witham, HI) VOIRI heard on 9022.02 at 0039 English service. (Serra, Italy)

1806 UTC on 9165

SUDAN: Radio Omdurman. News, music and national commentary. Station ID and DX program with reports from listeners. (Serra, Italy)

1915 UTC on 4957.5

AZERBAIJAN: Voice of Azerbaijan. Newscast to station ID. Mozart music "Alla Turca" to Azeri program at 1922. (Serra, Italy)

1935 UTC on 17605

NETHERLANDS ANTILLES: Radio Netherlands relay. *Happy Station* with John Gruber's visit to Israel. (Fraser, MA)

1957 UTC on 7465

ISRAEL: Kol Israel. Interval signal to "This is Israel." *Israel News Magazine* with good signal. (Gasque, SC) Heard on 15640, 17575, 15650. (Serra, Italy) Israel's Reshet Bet in Hebrew on 9388 at 0232-0300. (Hardester, NC)

2015 UTC on 6110

SWITZERLAND: Swiss Radio International. Report on Swiss aid to Armenia in the past five years. (Fraser, MA)

2020 UTC on 13949

SPAIN: Radio Pirania International. English/Spanish. Good signal for this pirate station. Spanish and pop vocals to chat about European pirates, this one is beamed to North America. Station off by 2045. (Wright, MS)

2025 UTC on 5003.7

EQUATORIAL GUINEA: Radio Nacional Bata. Spanish. ID to African highlife music. Latin tunes to station ID and anthem at 2157. (Rausch, NJ) Station heard on 6270 at 2130-2135 with IDs, Afro pops and possible weather forecast. Station Africa 2000 heard on 6910.2 from 2140-2200+. (Gasque, SC)

2025 UTC on 11715

MAL: China Radio International relay. Economic news with musical bridges. (Fraser, MA) *Listeners Letterbox* on 9780 at 0040 and 9655 at 1200. (Bill Newberry, Bakersfield, CA)

2105 UTC on 9780

YEMEN: Radio Yemen. English "Sana" ID to international news. Cultural programs to regional music. Arabic service at 2135. (Rausch, NJ; Fraser, MA; Charlie Patterson, Mobile, AL)

2113 UTC on 15165

CUBA: Radio Havana. *Spotlight on the Americas*, a *NY Times* article says the U.S. government knew of El Salvador death squads. (Fraser, MA)

2125 UTC on 9955

USA: Radio Miami International. Test transmission with music and English/Spanish IDs. Station noted 1740-1744* with IDs. Great signal! (Hardester, NC) Test transmission IDs on 9925 at 2230-2235. (Patterson, AL)

2239 UTC on 3970

CAMEROON: CRTV Buea. French. Male announcer with music vocals and station ID to 2255 sign-off. (Hardester, NC)

2300 UTC on 4780

DOMINICAN REP: Onda Musical. Spanish. Reactivated on shortwave, with test transmissions. Onda Musical callsign *HIAS* transmits from Santo Domingo the capital of Dominican Republic. Now irregular with variable close heard at 0345. Station signs-off with ID and national anthem. (Rausch, NJ)

2320 UTC on 5960

CANADA: Radio Canada International. Excellent prog *As It Happens* and *Spectrum* with man-on-the-street interviews // 9755 Hunter, PA)

Have you ever noticed that most major broadcasters reply for free? Look closer, however, and you will notice that many small organizations hope for, or perhaps expect reimbursement for their postage cost. By far the most effective method, especially for Indonesian or Latin American stations, is to enclose return postage of unused (mint) stamps from the station's country.

One source for mint worldwide stamps is *Bill Plum's Airmail & DX Supplies*. For a current price list, send one dollar or a self-addressed-stamped envelope to: 12 Glenn Rd., Flemington, NJ 08822-3322. Bill also supplies DXers with prepared QSL cards in English, Spanish, Portuguese, French and Indonesian. Airmail return envelopes are also available. In fact says Bill, "users of our envelopes constantly tell us that their overseas contacts truly appreciate a return envelope and return postage. It does make the courtesy QSL arrive faster." Isn't that what it's all about? Tell Bill *MT* sent ya!

AUSTRALIA

Australian Armed Forces Radio, 9193.5 kHz. Full data letter signed by Deb Elsworth. Received in 19 days for an English report. QSL address: Electronic Media Unit, Anzac Paek West 1-b-07, REID ACT 2601, Australia. (Michael T. Prindle, New Suffolk, Long Island, NY)

BULGARIA

Radio Bulgaria, 15310 kHz. Full data QSL card and letter signed by Iva Delcheva. Program schedule and info on QSL "Diplomas" enclosed. Received in 166

days for an English report. Station address: 4 Dragan Tsankov Blvd., 1040 Sofia, Bulgaria. (Charles Montgomery, Cheyenne, WY; Tom Banks, Dallas, TX)

EGYPT

Radio Cairo, 9475 kHz. Full data scenery card signed by Mrs. Sahar Khalil-Director of English Service to North America. Program schedule and souvenir postcards enclosed. Received in 120 days for an English report and 2 IRCs. Station address: P.O. Box 566, Cairo, Egypt. (John R. Castillo, San Antonio, TX)

FRENCH GUIANA

China Radio International relay station, 11680 kHz. Full data scenery card unsigned. Station stickers and pamphlet enclosed. Received in 28 days for an English report. Station address: Beijing 100866 China. (Rich T. McClouskey, Chicago, IL)

RFO Guyane, 5055 kHz. Full data card unsigned. Received in 62 days after a second French follow-up report and mint stamps. Station address: Cayenne, French Guiana. (McClouskey, IL)

KIRIBATI

Radio Kiribati, 9825 kHz. Full data beach card unsigned. Received in 22 days for an English report and one U.S. dollar. Station address: P.O. Box 78, Bairiki, Tarawa Atoll, Republic of Kiribati. (Harold Frodge, Midland, MI) "Fishing" card received in 40 days for one U.S. dollar. (Banks, TX)

NORWAY

Radio Norway, 9740 kHz. Full data QSL signed by Kirsten Rund Salomonsen. Program schedule and sticker enclosed. Received in 40 days for an English report. Station address: NRK, N-0340 Oslo 3, Norway. (Montgomery, WY; James C. Hirschak, Washington, DC)

PERU

Radio Oriente, 6190 kHz. Full data letter signed by Pedro Capo Moraes-Gerente. Received in 72 days for a Spanish report and mint stamps. Station address: Av. Progreso 112, Yurimaguas, Loreto, Peru. (Frank Hillton, Charleston, SC)

SHIP TRAFFIC

PANTANASSA-C6J14, 500 kHz (Cargo Ship). Full data prepared QSL card verified. Received in 189 days for an English utility report and one U.S. dollar. Ship address: c/o Bahamas Telecommunications Corporation, P.O. Box N3048, Nassau, Bahamas. (Hank Holbrook, Dunkirk, MD)

M/V GEORGIA-H9RP, 500 kHz (Bulk Carrier). Full data QSL letter verified. Received in 35 days for an English utility report and U.S. mint stamps. Ship address: Facit, Inc., 66 Field Point Rd., Greenwich, CT 06836-3100. (Holbrook, MD)

MARIT MAERSK-OZFC2, 156.65 MHz (Container Vessel). Full data prepared QSL card verified by Mantin H. Birk-Master. Received in 35 days for an English utility report and one U.S. dollar. Ship address: A.P. Moller, Esplanaden 50, DK-1098 Copenhagen K, Denmark. (Holbrook, MD)

SUN SUMA-C6JD6, 156.65 MHz (General Cargo). Full data prepared QSL card verified and photo of ship. Received in 137 days for an English utility report and one U.S. dollar (returned by Radio Officer). Ship address: c/o E.B. Communications (Great Britain) Ltd., 20 Imperial Way, Croydon CRO 4RR England; Holbrook, MD)

SLOVAKIA

Radio Slovakia International, 9810/5930 kHz. Full data color photo card of Radio Bratislava building, unsigned. Received in 20 days for an English report and one U.S. dollar. Station address: External Services, Mytna 1, 812-90, Bratislava, Slovakia. (Brian Bagwell, St. Louis, MO)

UNITED STATES

KCBI, 15725 kHz. Full data "Spreading Its Light To The World" card, with illegible veri signature. Received in 307 days for an English report. Original report and follow-up to two different addresses on card, but postmark indicates Texas. Reported to: P.O. Box 1809, Dallas, TX 75221. Follow-up to: 22720 SE 410th St., Enamclaw, WA 98002. (Mike Hardester, Jacksonville, NC)

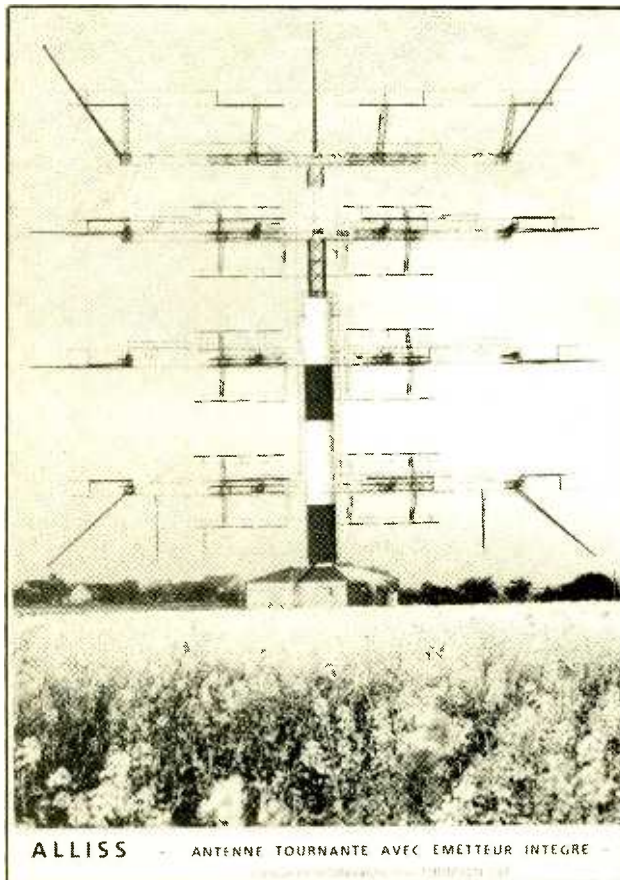
WNOE, 1060 AM. Full data prepared QSL sheet verified and signed by Doug Booth. Station bumper sticker and key chain enclosed. Received in 14 days for an English AM report and 1 U.S. mint stamp. Station address: 529 Rue Bienville, New Orleans, LA 70130. PH: 504-529-1212. (Lloyd Van Horn, Brasstown, NC)

WMT, 600 AM. Partial data station logo card, info letter and personal note signed by Rick Sellers. Received in eight days for an English AM report and an SASE. Station address: P.O. Box 2147, 600 Old Marion Rd., NE, Cedar Rapids, IA 52406. PH: 319-395-0530/FAX: 319-393-0918. (Frodge, MI)

WMAL, 1090 AM. Full data coverage map card signed by Don Culp. Received in 19 months for an English AM report and return postage. Station address: 4400 Jenifer St. NW, Washington, DC 20015. (Prindle, NY)

WELC, 1150 AM. Full data letter for special *DX Test* signed by John Sidote-Chief Operator. Received in 7 days for an English AM report, 1 U.S. mint stamp and address label (used). Station address: P.O. Box 949, Welch, WV 24801. PH: 304-436-2131. (Hardester, NC)

Radio France's
new QSL
showing new
transmitter
facility was sent
to *MT* by
Antonio Garcia
of RFI.



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	as: Asia
na: North America	au: Australia
ca: Central America	pa: Pacific
sa: South America	va: various
eu: Europe	do: domestic broadcast
af: Africa	om: omnidirectional
me: Middle East	

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.

Programs for Shortwave Listeners: This section, published quarterly, lists programs with news and information about shortwave radio for listeners. For brevity, only programs at certain peak listening times are included. Corrections and additions are appreciated.

Sundays	2145 Radio Bulgaria: "Radio Bulgaria Calling"	1100 Radio For Peace Int'l: "World of Radio"	2018 Radio Portugal Int'l: "DX Program" (Monthly)
0015 Spanish National Radio: "DX Spot"	2235 Radio Korea: "Shortwave Feedback"	1315 FEBC (Philippines): "DX Report"	2210 Radio Australia: "Feedback"
0038 Radio Vlaanderen Int'l: "Radio World"	2300 Radio For Peace Int'l: "World of Radio"	1335 Polish Radio: "DX Program"	2215 WWCR # [15685]: "World of Radio"
0039 HCJB: "DX Partyline"		1605 Polish Radio: "DX Program"	
0110 Czech Republic: "Calling All Listeners"	Mondays	1610 Czech Republic: "Calling All Listeners"	Saturdays
0110 Voice of America (am,ca): "Communications World"	0000 WWCR [7435]: "World of Radio"	1730 HCJB: "Ham Radio Today"	0010 Radio Australia: "Feedback"
0115 Spanish National Radio: "DX Spot"	0100 WHRI [9495]: "World of Radio"	1810 Czech Republic: "Calling All Listeners"	0039 Radio Vlaanderen Int'l: "Radio World"
0123 Deutsche Welle: "DX Club"	0130 Radio Japan: "Media Roundup"	1920 RAE Argentina: "DX'ers Special"	0119 Radio Yugoslavia: "RadioHams' Corner"
0130 WHRI [7315]: "World of Radio"	0145 Radio Bulgaria: "Radio Bulgaria Calling"	1900 WHRI [13760]: "World of Radio"	0130 WHRI #2: "World of Radio"
0200 Radio For Peace Int'l: "World of Radio"	0430 Radio New Zealand Int'l: "Mailbox" (biweekly)	1930 HCJB: "Ham Radio Today"	0235 RAE Argentina: "DX'ers Special"
0238 Deutsche Welle: "DX Club"	0640 Radio Korea: "Shortwave Feedback"	2110 Czech Republic: "Calling All Listeners"	0210 Radio Australia: "Feedback"
0245 Radio Romania Int'l: "DX Mailbag"	0700 Radio For Peace Int'l: "World of Radio"	2115 Polish Radio: "DX Program"	0248 Radio Portugal Int'l: "DX Program" (Monthly)
0300 WWCR [5810]: "Spectrum"	0730 Radio Australia: "Communicator"	2230 Radio Budapest Int'l: "DX World"	0400 Radio For Peace Int'l: "World of Radio"
0309 HCJB: "DX Partyline"	0739 Radio Vlaanderen Int'l: "Radio World"	Thursdays	0600 WHRI: "World of Radio"
0317 Radio Budapest Int'l: "DX World"	1000 Radio Vlaanderen Int'l: "Radio World"	0011 Czech Republic: "Calling All Listeners"	0730 WWCR [7435]: "World of Radio"
0323 Deutsche Welle: "DX Club"	1409 Radio Vlaanderen Int'l: "Radio World"	0130 BBC: "Waveguide"	0739 HCJB: "DX Partyline"
0330 Radio Havana Cuba: "DXers Unlimited"	1500 Radio For Peace Int'l: "World of Radio"	0152 Radio Netherlands Int'l: "Media Network"	0739 Radio Vlaanderen Int'l: "Radio World"
0410 Radio Australia: "Feedback"	2145 Radio Bulgaria: "Radio Bulgaria Calling"	0330 HCJB: "Ham Radio Today"	0940 FEBC (Philippines): "DX Dial"
0410 Czech Republic: "Calling All Listeners"	2230 WHRI [13760]: "World of Radio"	0330 Radio Budapest Int'l: "DX World"	1009 HCJB: "DX Partyline"
0413 Voice of Turkey: "DX Corner"	2240 Voice of Israel: "DX Corner"	0530 HCJB: "Ham Radio Today"	1010 Voice of America (as): "Communications World"
0415 WWCR [7435]: "World of Radio"	Tuesdays	0752 Radio Netherlands Int'l: "Media Network"	1030 BBC: "Waveguide"
0509 HCJB: "DX Partyline"	0145 Radio Bulgaria: "Radio Bulgaria Calling"	0830 Radio New Zealand Int'l: "Mailbox" (biweekly)	1200 Radio For Peace Int'l: "World of Radio"
0515 Spanish National Radio: "DX Spot"	1130 Radio Australia: "Communicator"	0952 Radio Netherlands Int'l: "Media Network"	1210 Voice of America (as): "Communications World"
0523 Deutsche Welle: "DX Club"	1330 WWCR [15685]: "World of Radio"	1152 Radio Netherlands Int'l: "Media Network"	1345 Voice of Turkey: "DX Corner"
0530 Radio Japan: "Media Roundup"	1530 Radio Australia: "Communicator"	1352 Radio Netherlands Int'l: "Media Network"	1350 Radio Romania Int'l: "DX Mailbag"
0610 Radio Australia: "Feedback"	1605 Polish Radio: "DX Program"	1552 Radio Netherlands Int'l: "Media Network"	1410 Radio Vlaanderen Int'l: "Radio World"
0631 Radio Havana Cuba: "DXers Unlimited"	1730 Radio Australia: "Communicator"	1752 Radio Netherlands Int'l: "Media Network"	1440 FEBC (Philippines): "DX Dial"
0700 WWCR [5810]: "World of Radio"	1900 Radio For Peace Int'l: "World of Radio"	1952 Radio Netherlands Int'l: "Media Network"	1610 Voice of America (as,eu): "Communications World"
0810 Radio Australia: "Feedback"	1930 Radio Australia: "Communicator"	2210 Czech Republic: "Calling All Listeners"	1800 Radio For Peace Int'l: "World of Radio"
0835 Radio Korea: "Shortwave Feedback"	1940 Radio Bulgaria: "Radio Bulgaria Calling"	Fridays	1909 HCJB: "DX Partyline"
0940 FEBC (Philippines): "DX Report"	2138 Radio Havana Cuba: "DXers Unlimited"	0052 Radio Netherlands Int'l: "Media Network"	1909 Radio Vlaanderen Int'l: "Radio World"
1000 Radio For Peace Int'l: "World of Radio"	2235 Radio Havana Cuba: "DXers Unlimited"	0252 Radio Netherlands Int'l: "Media Network"	1945 Radio Romania Int'l: "DX Mailbag"
1040 Radio Korea: "Shortwave Feedback"	Wednesdays	0352 Radio Netherlands Int'l: "Media Network"	2039 HCJB: "DX Partyline"
1236 Radio Korea: "Shortwave Feedback"	0000 Radio Bulgaria: "Radio Bulgaria Calling"	1548 Radio Portugal Int'l: "DX Program" (Monthly)	2110 Voice of America (af,eu): "Communications World"
1307 Radio Korea: "Shortwave Feedback"	0039 Radio Havana Cuba: "DXers Unlimited"	1918 Radio Portugal Int'l: "DX Program" (Monthly)	2130 Voice of Turkey: "DX Corner"
1419 Voice of Israel: "DX Corner"	0220 RAE Argentina: "DX'ers Special"	1930 Radio New Zealand Int'l: "Mailbox" (biweekly)	2130 WWCR [15610]: "World of Radio"
1430 Radio Japan: "Media Roundup"	0239 Radio Havana Cuba: "DXers Unlimited"	1945 Radio Bulgaria: "Radio Bulgaria Calling"	2133 Radio Havana Cuba: "DXers Unlimited"
1436 Radio Korea: "Shortwave Feedback"	0300 Radio For Peace Int'l: "World of Radio"	2000 Radio For Peace Int'l: "World of Radio"	2205 Radio Vlaanderen Int'l: "Radio World"
1635 Radio Korea: "Shortwave Feedback"	0415 BBC: "Waveguide"		2230 Radio Budapest Int'l: "DX World"
1730 Radio Japan: "Media Roundup"	0439 Radio Havana Cuba: "DXers Unlimited"		2235 Radio Havana Cuba: "DXers Unlimited"
2011 Voice of Israel: "Calling All Listeners"	0539 Radio Havana Cuba: "DXers Unlimited"		2313 Voice of Turkey: "DX Corner"
2024 Voice of Israel: "DX Corner"	0800 HCJB: "Ham Radio Today"		
2040 Radio Korea: "Shortwave Feedback"	0800 HCJB: "Ham Radio Today"		
2130 Radio Japan: "Media Roundup"	1030 HCJB: "Ham Radio Today"		

MT Monitoring Team

Gayle Van Horn, Frequency Manager
North Carolina

Next Reporting Deadline
February 21, 1994

Jim Frimmel, Program Manager
Texas

Dave Datko B.W. Battin
California New Mexico

Jacques d'Avignon
Propagation Forecasts
Ontario, Canada

newsline

"Newsline" is your guide to news broadcasts on the air. • All broadcasts are world news reports unless followed by an asterisk, which means the broadcast is primarily national news. • All broadcasts are daily unless otherwise noted by the day codes.

0000 UTC

(7:00 PM EST, 4:00 PM PST)

BBC ("Newsdesk")
China Radio Int'l
Czech Republic
FEBC (Philippines)
Monitor Radio Int'l [T-F]
Radio Australia
Radio Canada Int'l [S-M]
Radio Havana Cuba
Radio Moscow
Radio New Zealand Int'l [M-A]
Radio Norway Int'l [M]
Radio Thailand
Radio Vilnius [A]*
Radio Vilnius [T-F]
Radio Vlaanderen Int'l
Spanish National Radio
Voice of America (am,as,ca)
WWCR (5810)

0003

Radio Pyongyang

0005

Radio Vilnius [A/F]*

0008

China Radio Int'l*

0010

Voice of America (ca) [T-A]*

0012

Radio Havana Cuba*

0030

HCJB

Radio Havana Cuba

Radio Moscow

Radio Nacional de Venezuela

[T-S]

Radio Netherlands Int'l

Radio Sweden [T-A]

Voice of America (am,as)

(Special English)

Voice of America (ca) [S-M]

(Special English)

0045

Korean World News Service

0057

Spanish National Radio [F]

0100 UTC

(8:00 PM EST, 5:00 PM PST)

All India Radio

BBC

Czech Republic

Deutsche Welle

Monitor Radio Int'l [T-F]

R Slovakia Int'l

Radio Australia

Radio Havana Cuba

Radio Japan

Radio Korea

Radio Moscow

Radio New Zealand Int'l [M-A]

Radio Thailand

Radio Ukraine Int'l

Radio Yugoslavia

RAI Italy

Spanish National Radio

Swiss Radio Int'l

Voice of America (am,as,ca)

WWCR (5810) [S]

0103

Radio Bulgaria

0110

Radio Australia [M-F]*

0112

Radio Havana Cuba*

0119

Radio Ukraine Int'l [W-H]*

01230

Radio Sweden [T]

0130

Radio Austria Int'l

Radio Havana Cuba

Radio Moscow

Radio Netherlands Int'l

Radio Sweden [T-A]

Radio Tirana

Voice of Greece [M-A]

0145

BBC (ca) [T-A]*

0155

Voice of Indonesia

0157

Spanish National Radio [F]

0200 UTC

(9:00 PM EST, 6:00 PM PST)

BBC ("Newsdesk")

Christian Science Sentinel [A]

Deutsche Welle

KVOH [T-A]

Monitor Radio Int'l [T-F]

Radio Australia

Radio Canada Int'l

Radio Havana Cuba

Radio Moscow

Radio New Zealand Int'l [M-A]

Radio Norway Int'l [M]

Radio Romania Int'l [T-S]

Radio Thailand

Radio Yugoslavia

Voice of America (am) [T-A]

Voice of America (as)

Voice of Myanmar (Burma)

WHRI (7315) [M]

WWCR (5810) [T-S]

0201

Radio Romania Int'l [M]

0203

Voice of Free China

0212

Radio Havana Cuba*

0215

Radio Cairo *

Radio Nepal

0230

HCJB [M]

Radio Havana Cuba

Radio Moscow [T-A]

Radio Netherlands Int'l

Radio Pakistan

Radio Portugal Int'l [T-A]

Radio Sweden [T-A]

Radio Tirana

0245

Korean World News Service

0300 UTC

(10:00 PM EST, 7:00 PM PST)

BBC

China Radio Int'l

Christian Science Sentinel [A]

Czech Republic

Deutsche Welle

HCJB [T-S]

KVOH [T-A]

Monitor Radio Int'l [T-F]

Radio Australia

Radio Budapest Int'l

Radio Canada Int'l

Radio Havana Cuba

Radio Japan

Radio Moscow

Radio New Zealand Int'l [M-A]

Radio Norway Int'l [M]

Radio Thailand

Vatican Radio [F]

Voice of America (af)

WHRI (7315) [T-A]

WWCR (7435) [T-S]

WWCR (5810) [T-A]

0303

Voice of Free China

0308

China Radio Int'l*

0309

BBC*

0312

Radio Havana Cuba*

0315

Radio Cairo

0320

Radio Philipinas [M-A]

0330

BBC (af)*

Radio Austria Int'l

Radio Dubai

Radio Havana Cuba

Radio Moscow

Radio Nacional de Venezuela

[T-S]

Radio Netherlands Int'l

Radio Sweden [T-A]

0340

Voice of Greece [M-A]

0345

Radio Yerevan

0355

Radio Japan [M-W]

0400 UTC

(11:00 PM EST, 8:00 PM PST)

BBC

BBC (af)

Channel Africa

China Radio Int'l

Christian Science Sentinel [A]

Czech Republic

Deutsche Welle

Monitor Radio Int'l [T-F]

Radio Australia

Radio Canada Int'l

Radio Havana Cuba

Radio Moscow

Radio New Zealand Int'l [M-F]

Radio Romania Int'l

Radio Thailand

Swiss Radio Int'l

Voice of America (af,eu)

Voice of Turkey

WHRI (7315) [T-A]

WWCR (7435) [T-A]

WWCR (5810) [T-A]

0403

Radio Pyongyang

0408

China Radio Int'l*

0411

Channel Africa [T]

0412

Radio Havana Cuba*

0415

RAI Italy

0430

Channel Africa

Radio Havana Cuba

Radio Moscow (na)

0445

BBC (af) [T-F]*

0500 UTC

(12:00 AM EST, 9:00 PM PST)

BBC ("Newshour")

Channel Africa

China Radio Int'l

Christian Science Sentinel [A]

Deutsche Welle

HCJB

Israel Radio Int'l

Monitor Radio Int'l [T-F]

Radio Australia

Radio Havana Cuba

Radio Japan

Radio Moscow

Radio New Zealand Int'l [A-S]

Radio New Zealand Int'l [M-F]*

Radio Thailand

Spanish National Radio

Swiss Radio Int'l (eu)

Vatican Radio [A]

Voice of America (af,eu)

0501

Channel Africa [A-S]

0503

Radio Bulgaria

0508

China Radio Int'l*

0510

Radio Australia [M-F]*

0512

Radio Havana Cuba*

0530

Channel Africa [F-M/W]

Radio Austria Int'l

Radio Finland [M-A]

Radio Moscow

Radio Romania Int'l

Radio Thailand

Voice of Nigeria

0550

Radio Finland [S]

0600 UTC

(1:00 AM EST, 10:00 PM PST)

BBC

BBC (af) [A-S]*

BBC (af) [M-F]

Channel Africa

Deutsche Welle

Monitor Radio Int'l [T-F]

Radio Australia

Radio Canada Int'l [M-F]

Radio Havana Cuba

Radio Korea

Radio Moscow

Radio New Zealand Int'l [M-F]*

Swiss Radio Int'l

Swiss Radio Int'l (eu)

Voice of America (af,eu)

Voice of Kenya

Voice of Malaysia

WWCR (7435) [F]

0603

Radio Pyongyang

0609
BBC*
0612
Radio Havana Cuba*
0627
BBC (af) [M-F]*
0630
Channel Africa [W]
Radio Austria Int'l [T-S]
Radio Havana Cuba
Radio Moscow
Vatican Radio [H]
Voice of Nigeria [M-F]
0632
Radio Romania Int'l
0640
Vatican Radio [T]
0645
Radio Romania Int'l
Voice of Nigeria [M-F]*
0650
Radio New Zealand Int'l [M-F]*
Voice of Med. (Malta)
0653
Channel Africa [S]

0700 UTC
(2:00 AM EST, 11:00 PM PST)
BBC ("Newsdesk")
Monitor Radio Int'l [T-F]
Radio Australia
Radio Ghana
Radio Japan
Radio Moscow
Radio New Zealand Int'l [M-F]*
Radio New Zealand Int'l [S]
Swiss Radio Int'l (eu)
Voice of Myanmar (Burma)
WWCR (7435) [S]
0703
Radio Pyongyang
Voice of Free China
0710
Radio Australia [W]*
0730
BBC (af) [A]*
HCJB
Radio Moscow
Radio Netherlands Int'l
Radio Vlaanderen Int'l
Vatican Radio [M-A]
0745
Radio Finland [M-A]
0755
Radio Japan [M-F]

0800 UTC
(3:00 AM EST, 12:00 AM PST)
BBC
Christian Science Sentinel [M/A]
KNLS
Monitor Radio Int'l [T-F]
Radio Australia
Radio Korea
Radio Moscow
Radio New Zealand Int'l [M-F]*
Radio New Zealand Int'l [S]
Radio Norway Int'l [S]
Voice of Indonesia [A-H]
Voice of Malaysia
WWCR (7435) [A]
0803
Radio Pyongyang
0830
R Slovakia Int'l

Radio Austria Int'l
Radio Moscow [M-A]
Radio Netherlands Int'l
0855
Voice of Indonesia [A-H]

0900 UTC
(4:00 AM EST, 1:00 AM PST)
BBC
China Radio Int'l
Christian Science Sentinel [M/A]
Deutsche Welle
Monitor Radio Int'l [M-F]
Radio Australia
Radio Finland [M-A]
Radio Japan
Radio Moscow
Radio New Zealand Int'l [S-M/H]
Swiss Radio Int'l
0908
China Radio Int'l*
0915
Korean World News Service
0930
FEBC (Philippines)
Radio Moscow
Radio Netherlands Int'l
Radio New Zealand Int'l [M-T]
0940
Voice of Greece
0945
Deutsche Welle [M-F]*
Radio Yerevan [S]
0955
Radio Japan [M-W]

1000 UTC
(5:00 AM EST, 2:00 AM PST)
BBC
China Radio Int'l
Christian Science Sentinel [M/A]
FEBC (Philippines) [M-F]*
HCJB
Monitor Radio Int'l [M-F]
Radio Australia
Radio Moscow
Radio New Zealand Int'l [M-F]*
Radio New Zealand Int'l [S]
Radio Norway Int'l [S]
Radio Vlaanderen Int'l [T-A]
Voice of America (as,ca)
Voice of Kenya
1005
Radio New Zealand Int'l [M-F]*
1008
China Radio Int'l*
1030
Radio Austria Int'l [M-A]
Radio Dubai
Radio Korea
Radio Moscow
Radio Netherlands Int'l
Radio New Zealand Int'l [M-F]*
Voice of Nigeria
1040
Voice of Greece
1045
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
Israel Radio Int'l
Monitor Radio Int'l [M-F]
Radio Australia
Radio Ghana [A-S]
Radio Japan
Radio Moscow
Radio New Zealand Int'l ("BBC Newsdesk")
Radio Pakistan
Swiss Radio Int'l
Vatican Radio [M-A]
Voice of America (as,ca)
WYFR (Satellite Network) [M-A]
1103
Radio Pyongyang
1110
Radio Australia*
1115
Korean World News Service
1130
Czech Republic
Radio Moscow
Radio Nacional de Venezuela [M-A]
Radio Netherlands Int'l
Voice of Asia
1133
Radio Bulgaria
1135
Radio Thailand
1145
Deutsche Welle [S-F]*

1200 UTC
(7:00 AM EST, 4:00 AM PST)
BBC
China Radio Int'l
Christian Science Sentinel [A]
Monitor Radio Int'l [M-F]
Radio Australia
Radio France Int'l
Radio Jordan
Radio Moscow
Radio New Zealand Int'l
Radio Norway Int'l [S]
Radio Tashkent
Radio Tashkent
Voice of America (as)
WWCR (15685) [M-F]
1203
HCJB [M-F]
Radio Korea
1208
China Radio Int'l*
1209
BBC [W]*
1224
HCJB [M-F]
1225
WYFR (Satellite Network) [M-A]
1230
Radio Austria Int'l
Radio Bangladesh [S-M]
Radio Cairo
Radio Canada Int'l
Radio Finland [M-A]
Radio Moscow
Radio Netherlands Int'l
Radio Sweden [W-F/T]
Voice of Vietnam [T/F]
1238
Radio France Int'l [T]*

1253
Radio France Int'l

1300 UTC
(8:00 AM EST, 5:00 AM PST)
BBC ("Newshour")
China Radio Int'l
Christian Science Sentinel [A]
KNLS
Monitor Radio Int'l [M-F]
Radio Australia
Radio Canada Int'l [M-F]
Radio Ghana
Radio Moscow
Radio Romania Int'l [M-A]
Swiss Radio Int'l
Voice of America (as)
Voice of Kenya
WYFR (Satellite Network) [M-A]
1301
Radio Romania Int'l [S]
1302
Radio Korea
1303
Radio Pyongyang
1308
China Radio Int'l*
1310
Radiobrçs [M]
1315
Radio Nepal
1324
HCJB [M-F]
1328
Radio Cairo
1330
All India Radio
FEBC (Philippines)
Korean World News Service
Radio Austria Int'l
Radio Canada Int'l [A-S]
Radio Dubai
Radio Finland [M-A]
Radio Moscow [M-A]
Radio Netherlands Int'l
Radio Sweden [M-F]
Radio Tashkent
Radio Vlaanderen Int'l [S]
Radio Yugoslavia
Voice of America (as) (Special English)
Voice of Turkey
Voice of Vietnam
WYFR (Satellite Network) [M-A]
1333
Radio Bulgaria

1400 UTC
(9:00 AM EST, 6:00 AM PST)
All India Radio [M/W/F]
BBC
China Radio Int'l
Christian Science Sentinel [A]
Israel Radio Int'l [S-H]
Monitor Radio Int'l [M-F]
Radio Australia
Radio Canada Int'l [S-F]
Radio Finland [S]
Radio France Int'l
Radio Ghana
Radio Japan
Radio Moscow
Radio Vlaanderen Int'l [M-A]
Voice of America (as)

WWCR (15685) [M-F]
WYFR (Satellite Network) [M-A]
1403
Radio Korea
1408
China Radio Int'l*
1411
Radio France Int'l [T]*
1420
Israel Radio Int'l [H]*
1422
Israel Radio Int'l [S]
1424
HCJB [M-F]
Israel Radio Int'l [T/W/H]
1430
FEBC (Philippines)
Radio Canada Int'l [S]
Radio Finland [M-A]
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 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
Voice of Med. (Malta)
1453
Radio France Int'l
1455
All India Radio

1500 UTC
(10:00 AM EST, 7:00 AM PST)
BBC
BBC (af) [M-F]
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 Moscow
Radio Omdurman
Swiss Radio Int'l
Voice of America (as,eu)
WHRI [A]
WWCR (15685) [M-F]
1503
Radio Pyongyang
1508
China Radio Int'l*
1525
BBC (af) [S]*
Radio Veritas [T-F]
1529
Deutsche Welle [F]*
1530
Deutsche Welle [M-H]*
FEBC (Philippines)

Radio Austria Int'l
 Radio Moscow
 Radio Netherlands Int'l
 Radio Portugal Int'l [M-F]
 Radio Tirana
 Voice of Greece [M-A]
 Voice of Nigeria [M-H]
 WYFR (Satellite Network) [M-A]
1540
 Radio Veritas [A-M]
1545
 Korean World News Service
1555
 Radio Japan [M-W]
 Radio Veritas [A-M]
 Vatican Radio

1600 UTC
(11:00 AM EST, 8:00 AM PST)

BBC
 Channel Africa
 China Radio Int'l
 Christian Science Sentinel [A]
 Czech Republic
 Deutsche Welle
 Monitor Radio Int'l [M-F]
 Radio Australia
 Radio Canada Int'l [S]
 Radio France Int'l
 Radio Korea
 Radio Moscow
 Radio Pakistan
 Radio Tanzania
 Voice of America (af,as,eu)
 Voice of Kenya
 Voice of Nigeria [M-F]
 WHRI (9465) [A]
 WWCR (15610) [A]
1605
 Radio Yemen [F-W]
1608
 China Radio Int'l*
1609
 BBC*
1611
 Radio France Int'l [T]*
1630
 HCJB [S-F]
 Radio Austria Int'l
 Radio Canada Int'l
 Radio Dubai
 Radio Finland [M-F]
 Radio Moscow
 Voice of America (as,eu)
 (Special English)
1653
 Radio France Int'l

1700 UTC
(12:00 PM EST, 9:00 AM PST)

BBC
 BBC (af)
 Channel Africa
 China Radio Int'l
 HCJB [F]
 Monitor Radio Int'l [M-F]
 Radio Australia
 Radio Japan
 Radio Moscow
 Radio New Zealand Int'l [M-F]*
 Radio Pakistan
 RTM Morocco [A]
 Swiss Radio Int'l
 Voice of America (af,as,eu)

WRNO [M-F]
1703
 Radio Pyongyang
1708
 China Radio Int'l*
1710
 Radio Australia*
1715
 Korean World News Service
 Radio Sweden [M-F]
1725
 Radio New Zealand Int'l [M-F]*
1730
 Radio Moscow [S-F]
 Radio Netherlands Int'l
 Vatican Radio [F]
 Voice of America (af) [A-S]
1740
 BBC (af)*
1745
 All India Radio

1800 UTC
(1:00 PM EST, 10:00 AM PST)

All India Radio
 BBC ("Newsdesk")
 Christian Science Sentinel [A]
 Israel Radio Int'l
 Monitor Radio Int'l [M-F]
 Polish Radio
 Radio Australia
 Radio Moscow
 Radio New Zealand Int'l [M-F]*
 Radio Norway Int'l [S]
 Radio Tanzania
 Voice of America (af,eu)
 Voice of Kenya
 WWCR (15685) [M-F]
 WWCR (15610) [M-F]
1805
 Radio New Zealand Int'l [M-F]*
1830
 Radio Kuwait [M/H/A]
 Radio Moscow
 Radio Nacional de Venezuela [M-A]
 Radio Netherlands Int'l
 Radio Sweden [M-F]
 Voice of America (af) [A-S]
 (Special English)
 Voice of America (eu)
 (Special English)
1833
 Radio Bulgaria
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
 HCJB
 Monitor Radio Int'l [M-F]
 Radio Australia
 Radio Japan

Radio Moscow
 Radio New Zealand Int'l [S-F]
 Radio Portugal Int'l [M-F]
 Radio Romania Int'l [T-S]
 Radio Vlaanderen Int'l
 Spanish National Radio
 Voice of America (af) [S-F]
 Voice of America (as,eu)
 WHRI (9485) [M-F]
 WWCR (15685) [M-F]
 WWCR (15610) [M-F]
1901
 Radio Romania Int'l [M]
1908
 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 Finland [S-F]
 Radio Moscow
 Radio Netherlands Int'l
 Radio Romania Int'l
 Radio Yugoslavia
 Voice of America (af) [S]
1933
 Deutsche Welle [M]*
1935
 RAI Italy
1945
 Radio Yerevan
1955
 Radio Japan [M-W]

2000 UTC
(3:00 PM EST, 12:00 PM PST)

BBC
 China Radio Int'l
 Deutsche Welle
 Israel Radio Int'l
 KVOH [A-S]
 Monitor Radio Int'l [M-F]
 Radio Australia
 Radio For Peace Int'l [A]
 Radio Moscow
 Radio New Zealand Int'l [S-F]
 Radio Norway Int'l [S]
 Radio Portugal Int'l [M-F]
 Radio Riga Int'l [A-S]
 Swiss Radio Int'l
 Voice of America (af,eu)
 Voice of Greece [M-A]
 Voice of Indonesia
 Voice of Nigeria [M-F]
 WHRI (9485) [M-F]
 WWCR (15610) [M-A]
2003
 Radio Pyongyang
2008
 China Radio Int'l*
2010
 Radio New Zealand Int'l [S-H]*
2011
 Israel Radio Int'l [W]*
2024
 Israel Radio Int'l [T]
2025
 RAI Italy
2028
 Israel Radio Int'l [M]

2030
 HCJB [M-A]
 Polish Radio
 Radio Korea
 Radio Moscow [A-S]
2031
 HCJB [S]
2045
 All India Radio [A]
 Korean World News Service
2055
 Voice of Indonesia [M]

2100 UTC
(4:00 PM EST, 1:00 PM PST)

All India Radio
 BBC ("Newshour")
 China Radio Int'l
 Deutsche Welle
 KVOH [S]
 Monitor Radio Int'l [M-F]
 Radio Australia
 Radio Damascus [F]
 Radio Havana Cuba
 Radio Japan
 Radio Moscow
 Radio New Zealand Int'l [S-H]
 Radio Romania Int'l
 Spanish National Radio
 Voice of America (af) [A]
 Voice of America (as,eu)
 Voice of Turkey
 WWCR (15610) [M-A]
2103
 Radio Bulgaria
2105
 Radio Yemen
2108
 China Radio Int'l*
2110
 Radio Damascus [S-M]
 Radio New Zealand Int'l [S-W]*
2112
 Radio Damascus [F]
2115
 BBC (ca) [M-F]*
2120
 Radio Cairo
2130
 Radio Cairo [M]
 Radio Canada Int'l
 Radio Moscow
 Radio Nacional de Venezuela [M-A]
 Radio Riga Int'l [M-F]
 Radio Sweden [M-F]
 WWCR (15610) [M-F]
 Radio Havana Cuba
2145
 Radio Damascus [W]
 Radio Korea

2300 UTC
(6:00 PM EST, 3:00 PM PST)

BBC
 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
 Radio Norway Int'l [S]
 Radio Tirana
 Voice of America (as)
 Voice of Turkey
 WWCR (12160) [M-A]
2303
 Radio Pyongyang
2330
 Radio Austria Int'l
 Radio Moscow
 Radio Netherlands Int'l
 Radio New Zealand Int'l [S-H]
 Radio Sweden [M-F]
 SLBC (Sri Lanka) [M]
2335
 Voice of Greece [S-F]
2340
 Radio Yerevan
2355
 Radio Japan [M-W]

Radio Havana Cuba
 Radio Korea
 Radio Moscow
 Radio New Zealand Int'l
 Radio Ukraine Int'l
 Radio Vlaanderen Int'l [M-F]
 Radio Yugoslavia
 RAI Italy
 Voice of America (as)
 WWCR (12160) [M-F]
2203
 Voice of Free China
2208
 China Radio Int'l*
2209
 BBC*
2215
 All India Radio [M/F]
 Radio Cairo
2230
 Israel Radio Int'l
 Radio Finland [S-F]
 Radio Havana Cuba
 Radio Moscow [S-F]
 Radio Sweden [M-F]
 Voice of America (as) (Special English)
 WWCR (12160) [M-F]
2240
 Radio Cairo
 Voice of Greece [S-F]
2242
 Israel Radio Int'l [H]*
2245
 Radio Yerevan
2248
 Radio Bulgaria
2253
 Israel Radio Int'l [T]
2257
 Israel Radio Int'l [M]

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0.5 microvolt sensitivity

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2.3 kHz selectivity on SSB**

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FREQUENCIES

Table with columns for call letters, country/station, and frequencies. Includes entries for Australia, Canada, China, India, Lebanon, Lithuania, Malaysia, Netherlands, Norway, Philippines, Russia, Singapore, Spain, Thailand, Ukraine, United Kingdom, USA, and Sweden.

SELECTED PROGRAMS

Sundays

- 0000 Spanish National Radio: News.
0015 Spanish National Radio: Spanish Radio DX Spot.
0027 Spanish National Radio: Spain Speaking.
0040 Spanish National Radio: Grass Roots.
0053 Spanish National Radio: Program Announcements.

Mondays

- 0000 Spanish National Radio: News.
0011 Spanish National Radio: Grass Roots.

- 0034 Spanish National Radio: Visitors Book.
0044 Spanish National Radio: Radio Club.
0055 Spanish National Radio: Program Announcements.

Tuesdays

- 0000 Spanish National Radio: News.
0015 Spanish National Radio: Panorama.
0020 Spanish National Radio: Review of the Spanish Press.
0030 Spanish National Radio: Sports Spotlight.
0049 Spanish National Radio: Spanish Course by Radio.
0057 Spanish National Radio: Program Announcements.

Wednesdays

- 0000 Spanish National Radio: News.
0015 Spanish National Radio: Panorama.
0020 Spanish National Radio: Review of the Spanish Press.
0026 Spanish National Radio: Review of the Spanish Economy.
0034 Spanish National Radio: Stage and Screen.
0047 Spanish National Radio: Spanish Course by Radio.
0056 Spanish National Radio: Program Announcements.

Thursdays

- 0000 Spanish National Radio: News.
0015 Spanish National Radio: Panorama.
0025 Spanish National Radio: Review of the Spanish Press.
0032 Spanish National Radio: As Others See Us.
0038 Spanish National Radio: The Natural World (biweekly).
0040 Spanish National Radio: Science Desk (biweekly).
0048 Spanish National Radio: Spanish Course by Radio.
0056 Spanish National Radio: Program Announcements.

Fridays

- 0000 Spanish National Radio: News.
0015 Spanish National Radio: Panorama.
0025 Spanish National Radio: Review of the Spanish Press.
0029 Spanish National Radio: People of Today.
0036 Spanish National Radio: Social Clippings.
0047 Spanish National Radio: Spanish Course by Radio.
0057 Spanish National Radio: News Summary.

Saturdays

- 0000 Spanish National Radio: News.
0015 Spanish National Radio: Panorama.
0022 Spanish National Radio: Review of the Spanish Press.
0029 Spanish National Radio: Window on Spain.
0036 Spanish National Radio: Arts and Music.
0048 Spanish National Radio: Spanish Course by Radio.
0056 Spanish National Radio: Program Announcements.

Thank You...

Additional contributors to this month's Shortwave Guide:

Todd Dokey, Lodi, CA; Leslie Edwards, Doylestown, PA; Bob Fraser, Cohasset, MA; Semon Hachikian, Upper Darby, PA; Mike Hardester, Jacksonville, NC; Clyde Harmon, Anniston, AL; Frank Hillton, Charleston, SC; Donald Kidder, Ashland, ME; Rev. Michael G. Mayer, Dover, DE; Ed Rausch, Cedar Grove, NJ; Alden C. Wires Jr., East Point, GA; Fine Tuning, NASWA Journal, OXDA, BBC Summary of World Broadcasts, Grove BBS, Internet via Larry Van Horn.

FREQUENCIES

0100-0200	Australia, AAF Radio	13525af			
0100-0200	Australia, ABC Brisbane	4920do	9660do		
0100-0200	Australia, ABC Perth	9610do			
0100-0200	Australia, Radio	11720pa	11800pa	15240pa	15320pa
		15365pa	15510as	17715pa	17750as
		17795pa	17880as	21595pa	21740pa
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	Bulgaria, Radio	7455na	9700na		
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, CKZU Vancouver	6160do			
0100-0200	Costa Rica, R Peace Intl	7375am	7385am	15030am	21465am
0100-0200	Cuba, Radio Havana Cuba	6010na	9815na		
0100-0130	Czech Republic, R Prague	5915na	7345na	9405na	9485na
		11990na			
0100-0200	Ecuador, HCJB Quito	9745am	15155am	17490am	21455am
0100-0150	Germany, Deutsche Welle	6040na	6085na	6120na	6145na
		9565na	9670na	9700na	
0100-0200 mwf	Guam, KSDA AWR Agat	15610as			
0100-0200	Indonesia, Voice of	9675na	11752na		
0100-0130	Iran, VOIRI Tehran	9022am	11790am	15260am	
0100-0120	Italy, RAI Rome	6005na	9725na	11800na	
0100-0200	Japan, NHK/Radio	11860as	15195as	17775as	17810as
		17845as			
0100-0130	Laos, National Radio of	7116as			
0100-0200	Lebanon, King of Hope	6280me			
0100-0200	Namibia, Namibia BC Corp	3290af			
0100-0200	Netherlands, Radio	7305as	9860as		
0100-0125	Netherlands, Radio	6020na	6165na	9840na	11655na
0100-0200	New Zealand, R NZ Intl	15115pa			
0100-0200	Philippines, FEBC Manila	15450as			
0100-0200 vl	PNG, Nati BC	4890do			
0100-0200	Russia, Radio Moscow Intl	5915na	7165na	7180na	7340me
		9620na	9675me	9685au	9725me
		9755me	9775me	9885me	11675am
		11875as	12050na	15425na	15475am

0100-0130	Serbia, Radio Yugoslavia	6190na			
0100-0200	Singapore, SBC Radio One	5010do	5052do	11940do	
0100-0200	Slovakia, R Slovakia Intl	5930am	7310am	9810am	
0100-0200	South Korea, Radio Korea	7550eu	15575eu		
0100-0200	Spain, Spanish Natl Radio	9540na			
0100-0200	Sri Lanka, SLBC Colombo	6005as	9720as	15425as	
0100-0130	Switzerland, Swiss R Intl	6135am	9885am	17740am	
0100-0200	Thailand, Radio	4830as	9655as	11905as	
0100-0200	United Kingdom, BBC London	5975na	6175na	6180na	7325na
		9590na	9915sa	11750sa	11955sa
		15260sa	15280as	15310as	15360as
		17790as	21715na		
0100-0200	USA, KCBI Dallas TX	13740na			
0100-0200	USA, KTVN Salt Lk City UT	7510na			
0100-0200	USA, KVOH Los Angeles CA	17775am			
0100-0200	USA, Monitor Radio Intl	5850na	9430ca		
0100-0200	USA, VOA Washington DC	5995am	6130am	7115as	7205as
		7405am	9455am	9740as	9775am
		11580am	11705as	15120am	15205as
		17740as	21550as		
0100-0200	USA, WEWN Birmingham AL	7425na	9825as		
0100-0200	USA, WINB Red Lion PA	15145na			
0100-0200	USA, WJCR Upton KY	7490na	13595na		
0100-0200	USA, WRNO New Orleans LA	7355am			
0100-0200	USA, WWCR Nashville TN	5810am	5935am	7435am	
0100-0200	USA, WYFR Okeechobee FL	6065na	9505na	15440na	
0100-0130	Uzbekistan, R Tashkent	9540as	9715	15295as	17745as
		17815as			
0130-0200	Albania, R Tirana Intl	9580na	11840na		
0130-0200	Austria, R Austria Intl	9655na	9870sa	13730sa	
0130-0150	Greece, Voice of	9380na	9420na	11645au	
0130-0200	Netherlands, Radio	9845as	9860as	11655as	
0130-0200	Sweden, Radio	9695au	11695as		
0130-0200	USA, WHRI Noblesville IN	7315am			
0145-0200	Vatican State, Vatican R	5975as	9650as		

SELECTED PROGRAMS

Sundays

- 0100 Radio for Peace Int'l: FIRE (Feminist Int'l Radio Endeavour). Featuring women's voices on every imaginable topic.
- 0100 Radio Japan: NHK News.
- 0100 Radio Korea: News.
- 0115 Radio Japan: This Week.
- 0115 Radio Korea: Commentary.
- 0120 Radio Korea: Sites and Sounds.
- 0130 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.
- 0135 Radio Korea: From Us to You.

Mondays

- 0100 Radio for Peace Int'l: FIRE (Feminist Int'l Radio Endeavour). See S 0100.
- 0100 Radio Japan: NHK News.
- 0100 Radio Korea: News.
- 0115 Radio Japan: Let's Learn Japanese.
- 0115 Radio Korea: Echoes of Korean Music.
- 0130 Radio Austria Int'l: Report from Austria. See S 0130
- 0130 Radio Japan: Media Roundup.
- 0154 Radio Japan: Viewpoint.

Tuesdays

- 0100 Radio for Peace Int'l: FIRE (Feminist Int'l Radio Endeavour). See S 0100.
- 0100 Radio Japan: NHK News.
- 0100 Radio Korea: News.
- 0115 Radio Japan: Spectrum.
- 0115 Radio Korea: Commentary.
- 0120 Radio Korea: Seoul Calling.
- 0130 Radio Austria Int'l: Report from Austria. See S 0130.
- 0150 Radio Japan: Commentary.
- 0155 Radio Japan: Tokyo Pop-In.

Wednesdays

- 0100 Radio for Peace Int'l: FIRE (Feminist Int'l Radio Endeavour). See S 0100.
- 0100 Radio Japan: NHK News.
- 0100 Radio Korea: News.

- 0112 Radio Korea: Commentary.
- 0115 Radio Japan: Enjoy Japanese.
- 0117 Radio Korea: Seoul Calling.
- 0130 Radio Austria Int'l: Report from Austria. See S 0130.
- 0150 Radio Japan: Commentary.
- 0155 Radio Japan: Tokyo Pop-In.

Thursdays

- 0100 Radio for Peace Int'l: FIRE (Feminist Int'l Radio Endeavour). See S 0100.
- 0100 Radio Japan: NHK News.
- 0100 Radio Korea: News.
- 0115 Radio Japan: Spectrum.
- 0115 Radio Korea: Commentary.
- 0120 Radio Korea: Seoul Calling.
- 0130 Radio Austria Int'l: Report from Austria. See S 0130.
- 0150 Radio Japan: Commentary.
- 0155 Radio Japan: Tokyo Pop-In.

Fridays

- 0100 Radio for Peace Int'l: FIRE (Feminist Int'l Radio Endeavour). See S 0100.
- 0100 Radio Japan: NHK News.

- 0100 Radio Korea: News.
- 0115 Radio Japan: Japan Travelogue.
- 0115 Radio Japan: The Travel and Book Beat.
- 0115 Radio Korea: Commentary.
- 0120 Radio Korea: Seoul Calling.
- 0130 Radio Austria Int'l: Report from Austria. See S 0130.
- 0130 Radio Japan: Short Story.
- 0150 Radio Japan: Commentary.
- 0155 Radio Japan: Tokyo Pop-In.

Saturdays

- 0100 Radio for Peace Int'l: FIRE (Feminist Int'l Radio Endeavour). See S 0100.
- 0100 Radio Japan: NHK News.
- 0100 Radio Korea: News.
- 0115 Radio Japan: Musix Mix.
- 0115 Radio Korea: Commentary.
- 0117 Radio Korea: Let's Sing Together.
- 0130 Radio Austria Int'l: Report from Austria. See S 0130.
- 0140 Radio Korea: Listeners' Forum.
- 0150 Radio Japan: Commentary.
- 0155 Radio Japan: Tokyo Pop-In.

*Igor Sannikov
in the studio of
Radio Echo of
Moscow.*



FREQUENCIES

0200-0300 twhfa	Argentina, RAE	11710am			
0200-0300	Australia, ABC Brisbane	4920do	9660do		
0200-0300	Australia, ABC Perth	4910do	9610do	15425do	
0200-0300	Australia, Radio	11880pa	15320pa	15365pa	15510as
		17715pa	17750as	17795pa	17880as
		21525as	21595as	21740pa	
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	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, CKZU Vancouver	6160do			
0200-0300	Canada, RCI Montreal	6120na	9535am	9755na	11725na
		11845na	11940na		
0200-0300	Costa Rica, R Peace Intl	7375am	7385am	15030am	21465am
0200-0300	Cuba, Radio Havana Cuba	6010na	9510na		
0200-0300	Ecuador, HCJB Quito	9745am	15155am	17490am	21455am
0200-0300	Egypt, Radio Cairo	9475na	11600na		
0200-0250	Germany, Deutsche Welle	6035as	6130as	7265as	7285as
		7355as	9615as	9690as	9815as
		11865as	11945as		
0200-0300	Guam, AWR Asia	9835as			
0200-0300 as	Guam, KSDA AWR Agat	13720as			
0200-0300	Hungary, Radio Budapest	5970na	9835na	11910na	15220na
0200-0300 vl	Italy, IRRS Milano	7125na			
0200-0230 mtwhfa	Kenya, Kenya BC Corp	4935do			
0200-0300 smtwh	Malaysia, RTM Radio 4	7295do			
0200-0300 vl	Mexico, Radio Educacion	6185am			
0200-0230	Myanmar, Radio	7185do			
0200-0300	Namibia, Namibia BC Corp	3290af			
0200-0300	Netherlands, Radio	9845as	9860as	11655as	
0200-0300	New Zealand, R NZ Intl	15115pa			
0200-0230 m	Norway, Radio Norway Intl	6120na	7165as		
0200-0230	Philippines, FEBC Manila	15450as			
0200-0300 vl	PNG, Natl BC	4980do			
0200-0300	Romania, R Romania Intl	6155na	9510na	9570na	11830na
		11940na			
0200-0300	Russia, Radio Moscow Intl	5915na	5940am	7130af	7165na
		7180na	7335am	9620na	9755me

					9775af	9885me	11875as	12050na
					15425na	17570as	17610as	17655au
					17780af	17860am	17870am	17890as
					21480na	21585as	21690as	21770au
0200-0230	Serbia, Radio Yugoslavia	6190na						
0200-0300	Singapore, SBC Radio One	5010do	5052do	11940do				
0200-0300	Sri Lanka, SLBC Colombo	6005as	9720as	15425as				
0200-0300	Taiwan, VO Free China	5950na	9680na	9765au	11740ca			
		11860as	15345na					
0200-0300	Thailand, Radio	4830as	9655as	11905as				
0200-0300	United Kingdom, BBC London	5975na	6175na	6195me	7135me			
		7155me	7325me	9410eu	9590na			
		9630af	9915am	11705sa	11730af			
		11750sa	11955me	15260sa	17790as			
0200-0230	USA, KCBI Dallas TX	13740am						
0200-0300	USA, KTBN Salt Lk City UT	7510am						
0200-0230	USA, KVOH Los Angeles CA	17775am						
0200-0300	USA, Monitor Radio Intl	5850na	9430ca					
0200-0230 twhfa	USA, VOA Washington DC	5995sa	7115as	7405sa	9775ca			
		11580sa	15120sa	15205sa				
0200-0300	USA, VOA Washington DC	7205as	11705as	15160sa	15250as			
		17740as	21550sa					
			9825me					
0200-0300	USA, WEWN Birmingham AL	7425na						
0200-0300	USA, WHRI Noblesville IN	7315na						
0200-0300	USA, WINB Red Lion PA	15145eu						
0200-0300	USA, WJCR Upton KY	7490na	13595na					
0200-0300	USA, WRNO New Orleans LA	7355am						
0200-0300	USA, WWCR Nashville TN	5810am	5935am	7435am				
0200-0300	USA, WYFR Okeechobee FL	6065na	9505na	15440na				
0215-0255	Nepal, Radio	3230do	5005do	7165do				
0230-0245	Albania, R Tirana Intl	9580na	11840na					
0230-0300 s	Kenya, Kenya BC Corp	4935do						
0230-0245	Pakistan, Radio	17705as	17725as					
0230-0300	Philippines, R Pilipinas	17760as	17840as	21580as				
0230-0300 mtwhf	Portugal, Radio	9555na	9570na	9600na	9705na			
0230-0300	Sweden, Radio	9695am	11705am					
0245-0300	United Kingdom, BBC London	6110sa	9515sa	9895sa	11965sa			
		15390sa						
0250-0300	Vatican State, Vatican R	6095na	7305na	9620na				

SELECTED PROGRAMS

Sundays

- 0200 Radio for Peace Int'l: World of Radio. Glenn Hauser's essential program for the shortwave listener.
- 0209 Deutsche Welle: Commentary. Guest commentary about a current event.
- 0212 Deutsche Welle: Sports Report. The latest news from the world of sports.
- 0216 Deutsche Welle: Asia-Pacific Mailbag. Listener mail from Asia-Pacific region is answered.
- 0230 Radio for Peace Int'l: RFPI Reports. Daily news program of Latin American and Caribbean topics not generally heard in the mainstream media.
- 0238 Deutsche Welle: Technical Tips for DXers. Last Sat/Sun of the month.

Mondays

- 0200 Radio for Peace Int'l: Food for the Thoughtful. The earth's fragile balance is explored.
- 0208 Deutsche Welle: Asia-Pacific Report. Correspondent reports, interviews and background news from the Asia-Pacific region.
- 0224 Deutsche Welle: European Journal. A review of major events in Europe and Germany through interviews, analyses and background reports.
- 0230 Radio for Peace Int'l: RFPI Reports. See S 0230.

Tuesdays

- 0200 Radio for Peace Int'l: Unconventional Wisdom. Analyzing key issues of US foreign policy.
- 0208 Deutsche Welle: Asia-Pacific Report. See M 0208.
- 0224 Deutsche Welle: European Journal. See M 0224.
- 0230 Radio for Peace Int'l: RFPI Reports. See S 0230.

Wednesdays

- 0200 Radio for Peace Int'l: Second Opinion. Erwin Knoll, editor of "the Progressive", talks to a wide variety of guests.
- 0208 Deutsche Welle: Asia-Pacific Report. See M 0208.
- 0224 Deutsche Welle: European Journal. See M 0224.
- 0230 Radio for Peace Int'l: RFPI Reports. See S 0230.

Thursdays

- 0200 Radio for Peace Int'l: Amnesty International Reports (monthly). Human rights records of culpable countries are examined.
- 0200 Radio for Peace Int'l: The CFRU Series—Cassette Culture. Reports and interviews produced by the student radio station at the University of Guelph, Canada.
- 0208 Deutsche Welle: Asia-Pacific Report. See M 0208.
- 0224 Deutsche Welle: European Journal. See M 0224.
- 0230 Radio for Peace Int'l: RFPI Reports. See S 0230.
- 0240 Radio for Peace Int'l: UNESCO Program. See M 2330.

Fridays

- 0200 Radio for Peace Int'l: Living Enrichment Center. See M 0400.
- 0208 Deutsche Welle: Asia-Pacific Report. See M 0208.
- 0224 Deutsche Welle: European Journal. See M 0224.
- 0230 Radio for Peace Int'l: RFPI Reports. See S 0230.

Saturdays

- 0200 Radio for Peace Int'l: Common Ground. See W 2300.
- 0209 Deutsche Welle: Commentary. See S 0209.
- 0230 Radio for Peace Int'l: Focus on Haiti. See S 0500.
- 0233 Deutsche Welle: Economic Notebook. The economic scene in Germany and around the world.

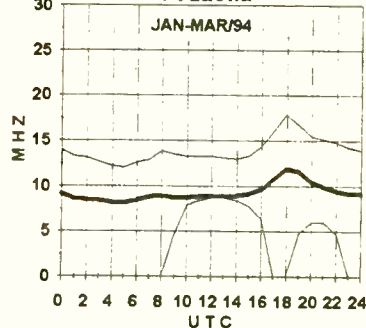
Special Insert

Propagation Conditions: Alaska

In response to reader requests, the charts shown here and on following pages were produced on a space available basis. These forecasts cover a longer time period than normal, thus the accuracy is not comparable to the regular monthly forecasts.

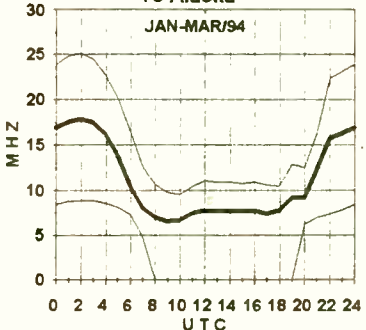
WESTERN EUROPE (P)

To Alaska



JAPAN

To Alaska



FREQUENCIES

0300-0400	Australia, ABC Brisbane	4920do	9660do					7270na	9750na	9755me	9760me		
0300-0400	Australia, ABC Perth	9610do						9775af	9860am	11765me	12050na		
0300-0400	Australia, Radio	11720pa	11880pa	15240pa	15320pa			15280me	15320me	15425na	17655as		
		15365pa	15510pa	17715pa	17750as			17780af	17860as	21690as			
		17795pa	17880as	21525as	21595as			5960af	9730af				
		21740pa						5010do	5052do	11940do			
0300-0400 vl	Australia, VL8A Alice Spg	4835do						9720as	15425as				
0300-0400 vl	Australia, VL8K Katherine	5025do						5950na	9680na	9765au	11740as		
0300-0400 vl	Australia, VL8T Tent Crk	4910do						15345na					
0300-0400	Bahrain, Radio	6010do						5985af	9685af	11765af			
0300-0330	Canada, CanForce Network	6000eu						9655as	11905as				
0300-0400	Canada, CBC Toronto	6010am	9725am	9755am				4976do					
0300-0400	Canada, CFCX Montreal	6005do						United Kingdom, BBC London	7155me	11750sa	15260sa	15310as	
0300-0400	Canada, CFRX Toronto	6070do						15380as					
0300-0400	Canada, CFVP Calgary	6030do						United Kingdom, BBC London	3255af	5975na	6005af	6175na	
0300-0400	Canada, CHNX Halifax	6130do						6180eu	6195eu	7230eu	7325na		
0300-0400	Canada, CKZU Vancouver	6160do						9410eu	9600af	9630af	9915am		
0300-0400	China, China Radio Intl	9690na	9780na	11715na				11730af	11760me	11955me	12095ca		
0300-0400	Costa Rica, R Peace Intl	7375am	7385am	15030am	21465am			15310me	15420af	21715as			
0300-0400	Costa Rica, Faro del Carib	5055do						9815am					
0300-0400	Cuba, Radio Havana Cuba	6010na	9510na					0300-0400	USA, KCBi Dallas TX				
0300-0330	Czech Republic, R Prague	5915na	5930na	7345na	9405na			0300-0400	USA, KTVN Salt Lk City UT				
		9810na						0300-0400	USA, KVOH Los Angeles CA				
		9745am	15155am	17490am	21455am			0300-0330 mtwtf	USA, KVOH Los Angeles CA				
0300-0330	Egypt, Radio Cairo	9475na	11600na					0300-0400	USA, Monitor Radio Intl				
0300-0350	Germany, Deutsche Welle	6045na	6085na	6120na	9535na			0300-0400	USA, VOA Washington DC	7105af	7265af	7280af	7405af
		9545na	9640na						9575af	9885af	11965af		
		3300do						0300-0400	USA, WEWN Birmingham AL	7425am			
0300-0400	Guatemala, Radio Cultural	3250ca						0300-0400	USA, WHRI Noblesville IN	7315na			
0300-0400 sm	Honduras, R Luz y Vida	7125na						0300-0400	USA, WJCR Upton KY	7490na	13595na		
0300-0315 vl	Italy, IRRS Milano	5960am	11875na	11885am	15210am			0300-0400	USA, WRNO New Orleans LA	7355am			
0300-0400	Japan, NHK/Radio	15230am	15325am	17810am	21610am			0300-0400	USA, WWCR Nashville TN	5810am	5935am	7435am	
		4935do						0300-0400	USA, WYFR Okeechobee FL	6065na	9505na		
0300-0400	Kenya, Kenya BC Corp	11530me						0300-0315	Vatican State, Vatican R	6095na	7305na	9605na	
0300-0400 mtwhf	Lebanon, Wings of Hope	7295do						0315-0345	Vatican State, Vatican R	9695af	11625af		
0300-0400 smtwh	Malaysia, RTM Radio 4	6185am						0330-0400	Austria, R Austria Intl	9870sa	13730sa		
0300-0400 vl	Mexico, Radio Educacion	9860na	11655na					0330-0400 smtwf s	Moldova, R Dnestr Intl	7105am			
0300-0325	Netherlands, Radio	15115pa						0330-0400	Netherlands, Radio	6165na	9590na		
0300-0400	New Zealand, R NZ Intl	6115na						0330-0400	Sweden, Radio	9695am	11650am		
0300-0330 m	Norway, Radio Norway Intl	17760as	17840as	21580as				0330-0400	UAE, Radio Dubai	11945na	13675na	15400eu	17890eu
0300-0330	Philippines, R Pilipinas	4890do							21485na				
0300-0400 vl	PNG, Natl BC	4940me	4975me	5915na	5940am			0340-0350	Greece, Voice of	9380na	9420na	11645au	
0300-0400	Russia, Radio Moscow Intl	7130af	7155me	7165na	7180na			0345-0400	Armenia, Radio Yerevan	7105na	10344na	17605na	17690na
								0345-0400	Tajikistan, Radio	7245eu			

SELECTED PROGRAMS

Sundays

- 0300 Radio for Peace Int'l: CounterSpin. Fairness and Accuracy in Media (FAIR) examines how the media reports key stories.
- 0300 Radio Japan: NHK News.
- 0315 Radio Japan: Let's Learn Japanese.
- 0330 Radio Austria Int'l: Report from Austria. See S 0130.
- 0330 Radio for Peace Int'l: RFPI's Mailbag. The latest news and happenings at RFPI and responses to listener letters.
- 0355 Radio Japan: Viewpoint.

Mondays

- 0300 Radio for Peace Int'l: New Dimensions Radio. Conversations with innovative thinkers whose ideas are on the leading edge of change.
- 0300 Radio Japan: NHK News.
- 0315 Radio Japan: Radio Japan Magazine Hour.
- 0330 Radio Austria Int'l: Report from Austria. See S 0130.
- 0350 Radio Japan: Commentary.
- 0355 Radio Japan: News Summary.

Tuesdays

- 0300 Radio for Peace Int'l: Steppin' Out of Babylon. Sue Supriano interviews people who speak out against injustice and stand up for freedom and liberty.
- 0300 Radio Japan: NHK News.
- 0315 Radio Japan: Radio Japan Magazine Hour.
- 0330 Radio Austria Int'l: Report from Austria. See S 0130.
- 0330 Radio for Peace Int'l: Voices of Our World. A social justice magazine program.
- 0350 Radio Japan: Commentary.
- 0355 Radio Japan: News Summary.

Wednesdays

- 0300 Radio for Peace Int'l: World of Radio. See S 0200.
- 0300 Radio Japan: NHK News.

- 0315 Radio Japan: Radio Japan Magazine Hour.
- 0316 Radio Japan: Japan Diary.
- 0330 Radio Austria Int'l: Report from Austria. See S 0130.
- 0330 Radio for Peace Int'l: RFPI's Mailbag. See S 0330.
- 0330 Radio Japan: Asia Hotline.
- 0350 Radio Japan: Commentary.
- 0355 Radio Japan: News Summary.

Thursdays

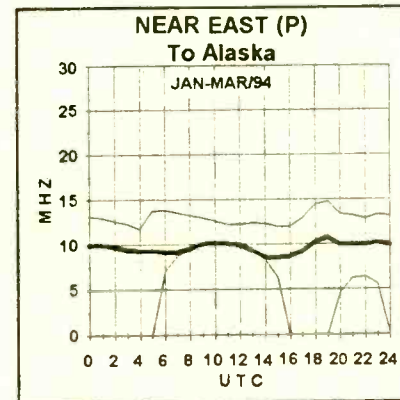
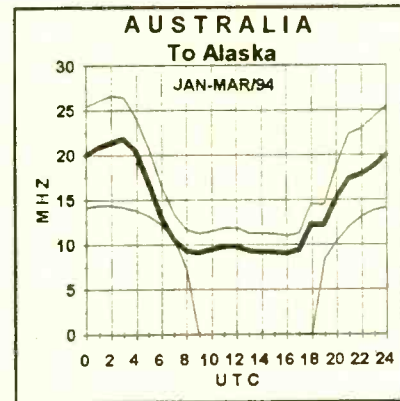
- 0300 Radio for Peace Int'l: Changemakers. See M 0630.
- 0300 Radio Japan: NHK News.
- 0315 Radio Japan: Radio Japan Magazine Hour.
- 0316 Radio Japan: Japan Diary.
- 0321 Radio Japan: Crosscurrents.
- 0330 Radio Austria Int'l: Report from Austria. See S 0130.
- 0330 Radio for Peace Int'l: New Dimensions Radio. See M 0300.
- 0350 Radio Japan: Commentary.
- 0355 Radio Japan: Tokyo Pop-In.

Fridays

- 0300 Radio for Peace Int'l: Alternative Radio. See T 0400.
- 0300 Radio Japan: NHK News.
- 0315 Radio Japan: Radio Japan Magazine Hour.
- 0330 Radio Austria Int'l: Report from Austria. See S 0130.
- 0350 Radio Japan: Commentary.
- 0355 Radio Japan: Tokyo Pop-In.

Saturdays

- 0300 Radio for Peace Int'l: New Dimensions Radio. See M 0300.
- 0300 Radio Japan: NHK News.
- 0315 Radio Japan: This Week.
- 0330 Radio Austria Int'l: Report from Austria. See S 0130.



FREQUENCIES

0400-0500	Australia, ABC Brisbane	4920do	9660do		
0400-0500	Australia, ABC Perth	9610do			
0400-0500	Australia, Radio	11720pa	11800pa	15240pa	15320pa
		15365pa	17715pa	17750as	17795pa
		21525as	21595as	21740pa	
0400-0500 vl	Australia, VLBA Alice Spg	4835do			
0400-0500 vl	Australia, VL8K Katherine	5025do			
0400-0500 vl	Australia, VL8T Tent Crk	4910do			
0400-0500	Bahrain, Radio	6010do			
0400-0404	Botswana, Radio	3356do	4830af	7255af	
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, CKZU Vancouver	6160do			
0400-0430	Canada, RCI Montreal	6105me	9505me	9670me	
0400-0500	China, China Radio Intl	11680na	11840na		
0400-0500 vl	Congo, R Natl Congolaise	4765do	5985do		
0400-0500	Costa Rica, R Peace Intl	7375am	7385am	15030am	21465am
0400-0430	Croatian Radio via WHR1	7315na			
0400-0500	Cuba, Radio Havana Cuba	6010na	6180na	9510na	
0400-0430	Czech Republic, R Prague	5915na	5930na	7345na	9405na
		9810na	13715af		
0400-0430	Ecuador, HCJB Quito	9745am	15155am	17490am	21455am
0400-0450	Germany, Deutsche Welle	6015af	6065af	7150af	7225af
		7275af	9565af	9765af	
0400-0430	Guatemala, Radio Cultural	3300do			
0400-0500	Kenya, Kenya BC Corp	4935do			
0400-0500 mtwhf	Lebanon, Wings of Hope	11530me			
0400-0500 smtwh	Malaysia, RTM Radio 4	7295do			
0400-0500 vl	Mexico, Radio Educacion	6185am			
0400-0425	Netherlands, Radio	6165na	9590na		
0400-0500 vl	New Zealand, R NZ Intl	15115pa			
0400-0450	North Korea, R Pyongyang	15180as	15230as	17765as	
0400-0500 vl	PNG, Natl BC	4890do			
0400-0430	Romania, R Romania Intl	6155na	9510na	9570na	11830na
		11940na			
0400-0500	Russia, Radio Moscow Intl	5915af	5940am	5950af	6165na
		7105na	7165na	7180na	7270na
		7295af	7330af	9580na	9665na
		9760af	9865na	11765me	12055af

0400-0455	S Africa, Channe Africa	5955af			
0400-0500	Singapore, SBC Radio One	5010do	5052do	11940do	
0400-0430	Sri Lanka, SLBC Colombo	9720as	15425as		
0400-0500	Swaziland, Swazi Radio	6155af			
0400-0430	Switzerland, Swiss R Intl	6135na	9860na	9885na	12035na
0400-0430	Tanzania, Radio	5985af	9685af	11765af	
0400-0430	Thailand, Radio	4830as	9655as	11905as	
0400-0500	Turkey, Voice of	9445na			
0400-0500 vl	Uganda, Radio	4976do			
0400-0430	United Kingdom, BBC London	6175na	6180eu	7325na	9630af
		9915am	11760me	11955me	12095eu
		15310as	15575me	21725as	
0400-0500	United Kingdom, BBC London	3255af	3955eu	5975na	6005af
		6190af	6195eu	7325af	9410af
		9600af	11730af	11820af	21470af
		21715as			
0400-0500	USA, KCBI Dallas TX	9815am			
0400-0500	USA, KTBN Salt Lk City UT	7510am			
0400-0500	USA, KVOH Los Angeles CA	9785am			
0400-0500	USA, Monitor Radio Intl	7465na	9840af		
0400-0500	USA, VOA Washington DC	5995me	6040me	6140me	6873me
		7170eu	7265af	7280af	7405af
		9575af			
0400-0500	USA, WEWN Birmingham AL	7425am			
0400-0500	USA, WHRI Noblesville IN	7315na			
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	5810am	5935am	7435am	
0400-0500	USA, WYFR Okeechobee FL	6065na	9505na	11825eu	
0415-0444	Italy, RAI Rome	7275eu			
0430-0500	Australia, AAF Radio	13525as			
0430-0500	Nigeria, Radio	3326do			
0430-0500	Swaziland, Trans World R	3200af	7200af	7215af	
0435-0500 mtwhf	Namibia, Namibia BC Corp	4965af			
0445-0500 t	Sri Lanka, SLBC Colombo	9720na	15425na		
0455-0500	Nigeria, Voice of	7255af			

SELECTED PROGRAMS

Sundays

- 0409 Deutsche Welle: Sports Report. See S 0212.
- 0416 Deutsche Welle: International Talking Point. Journalists discuss major trends and events.
- 0420 China: Travel Talk. An armchair guided tour of scenic spots in Chinese provinces.
- 0428 China: Cooking Show. Chinese recipes and cooking tips direct from Beijing.
- 0435 China: Music from China. Chinese music from traditional to pop.
- 0436 Deutsche Welle: People and Places. Interviews, stories and music for Africa listeners.

Mondays

- 0400 Radio for Peace Int'l: Living Enrichment Center. Mary Boggs lectures on practical suggestions for everyday living.
- 0409 Deutsche Welle: European Journal. See M 0224.
- 0420 China: China Anthology. See S 1620.
- 0425 China: Music Album. See S 1625.
- 0430 Radio for Peace Int'l: Sound Currents of the Spirit. Music mixed with spiritual readings.
- 0433 Deutsche Welle: Africa in the German Press. What the German newspapers and weeklies have to say about Africa.
- 0440 China: Listeners' Letterbox. See S 1640.

Tuesdays

- 0400 Radio for Peace Int'l: Alternative Radio. Featured speakers critique on multiculturalism, environment, racism, US foreign policy, media, and indigenous rights.
- 0408 Deutsche Welle: Africa Report. Reports and background to the news from Africa by Deutsche Welle correspondents.
- 0420 China: The Business Show. See M 1620.
- 0423 Deutsche Welle: European Journal. See M 0224.
- 0440 China: Learn to Speak Chinese. See M 1640.

Wednesdays

- 0400 Radio for Peace Int'l: Peace Forum. A grab bag of individual programs and special short series received by RFPI.
- 0408 Deutsche Welle: Africa Report. See T 0408.
- 0420 China: Current Affairs. See T 1620.
- 0423 Deutsche Welle: European Journal. See M 0224.
- 0440 China: Listeners' Letterbox. See S 1640.

Thursdays

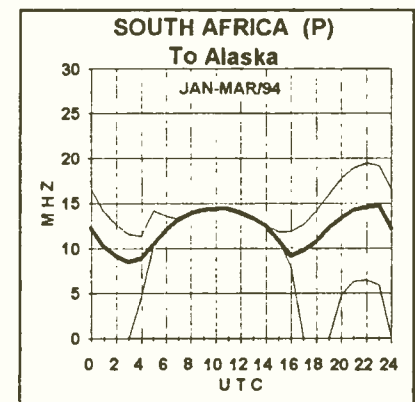
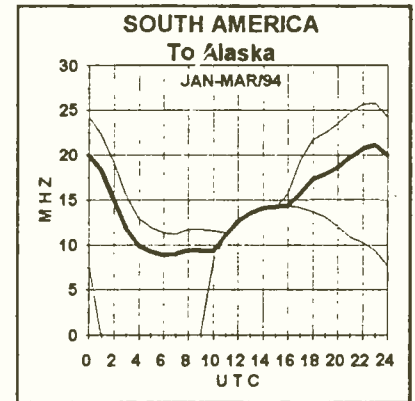
- 0400 Radio for Peace Int'l: New Dimensions Radio. See M 0300.
- 0408 Deutsche Welle: Africa Report. See T 0408.
- 0420 China: Current Affairs. See T 1620.
- 0423 Deutsche Welle: European Journal. See M 0224.
- 0430 Radio for Peace Int'l: Voices of Our World. See T 0330.
- 0440 China: Learn to Speak Chinese. See M 1640.

Fridays

- 0400 Radio for Peace Int'l: UNESCO Program. See M 2330.
- 0408 Deutsche Welle: Africa Report. See T 0408.
- 0420 China: Current Affairs. See T 1620.
- 0423 Deutsche Welle: European Journal. See M 0224.
- 0430 Radio for Peace Int'l: WINGS. See W 0530.
- 0440 China: Culture in China. See H 1640.

Saturdays

- 0400 Radio for Peace Int'l: World of Radio. See S 0200.
- 0409 Deutsche Welle: Commentary. See S 0209.
- 0420 China: Current Affairs. See T 1620.
- 0420 China: The Business Show. See M 1620.
- 0430 Radio for Peace Int'l: RFPI's Mailbag. See S 0330.
- 0433 Deutsche Welle: Man and Environment. Various topics relating to the environment in industrial and developing countries.
- 0440 China: In the Third World. See F 1640.



FREQUENCIES

0500-0600	Australia, ABC Brisbane	4920do	9660do	0500-0600	S Africa, Channe Africa	7275af	11745af	
0500-0600	Australia, ABC Perth	9610do		0500-0600 vl	S Africa, Radio Oranje	7270do		
0500-0530	Australia, Radio	17750as		0500-0553 f	Seychelles, FEBA Radio	17750me		
0500-0600	Australia, Radio	11720pa	11800pa 15240pa 15320pa	0500-0600	Singapore, SBC Radio One	5052do	11940do	
		15365pa	17715pa 17795pa 21525as	0500-0515 vl	Somalia, R Free Somalia	7460do		
		21595as	21740pa	0500-0556	Spain, Spanish Natl Radio	9540na		
0500-0600 vl	Australia, VL8A Alice Spg	4835do		0500-0515 t	Sri Lanka, SLBC Colombo	9720na	15425na	
0500-0600 vl	Australia, VL8K Katherine	5025do		0500-0600	Swaziland, Swazi Radio	6155af		
0500-0600 vl	Australia, VL8T Tent Crk	4910do		0500-0530	Swaziland, Trans World R	3200af	7200af 7215af	
0500-0600	Bahrain, Radio	6010do		0500-0530 mtwhf	Switzerland, Swiss R Intl	3985eu	6165eu	
0500-0600	Bulgaria, Radio	9700na	11720eu	0500-0600	Thailand, Radio	4830as	9655as	11905as
0500-0600	Canada, CFCX Montreal	6005do		0500-0600 vl	Uganda, Radio	4976do		
0500-0600	Canada, CFRX Toronto	6070do		0500-0600	United Kingdom, BBC London	3955eu	5975na	6005af 6180eu
0500-0600	Canada, CFVP Calgary	6030do				6195eu	9410af	9600af 9640ca
0500-0600	Canada, CHNX Halifax	6130do		0500-0600	USA, KCBI Dallas TX	9815am		
0500-0600	Canada, CKZU Vancouver	6160do		0500-0600	USA, KTBN Salt Lk City UT	7510am		
0500-0600	Costa Rica, R Peace Intl	7375am	7385am 15030am 21465am	0500-0600	USA, KVOH Los Angeles CA	9785am		
0500-0515	Croatian Radio via WHRI	7315na	9495na	0500-0600	USA, Monitor Radio Intl	7465eu	9840af	
0500-0600	Cuba, Radio Havana Cuba	9510na		0500-0600	USA, VOA Washington DC	3980eu	5995me	6035af 6040me
0500-0600	Ecuador, HCJB Quitto	11925am	21455am			6140eu	6873eu	7170me 7405af
0500-0600 as	Eq Guinea, R East Africa	7190af	7203af			9530me	9665af	9700me 11825af
0500-0550	Germany, Deutsche Welle	5960na	6045na 6120na 6185na			12080af	15205af	15600af
		9670na						
0500-0515	Israel, Kol Israel	7465eu	9435na 11605na 17545na	0500-0600	USA, WEWN Birmingham AL	7425am		
0500-0600	Japan, NHK/Radio	6025na	6085me 7230eu 11740as	0500-0530	USA, WHRI Noblesville IN	7315na		
		15410as	17810as	0500-0600	USA, WINB Red Lion PA	15145eu		
0500-0600	Kenya, Kenya BC Corp	4935do		0500-0600	USA, WJCR Upton KY	7490na	13595na	
0500-0600 mtwhf	Lebanon, Wings of Hope	11530me		0500-0600 mtwhfa	USA, WMLK Bethel PA	9465eu		
0500-0505	Lesotho, Radio	4800do		0500-0600	USA, WRNO New Orleans LA	7395am		
0500-0600	Malaysia, RTM Radio 4	7295do		0500-0600	USA, WWCR Nashville TN	5810am	5935am	7435am
0500-0600 vl	Mexico, Radio Educacion	6185am		0500-0600	USA, WYFR Okeechobee FL	5985na	9850eu	11580af
0500-0600 mtwhf	Namibia, Namibia BC Corp	3270af	3290af	0500-0530	Vatican State, Vatican R	9695af	11625af	15090af
0500-0600	New Zealand, R NZ Intl	15115pa		0510-0520 mtwhfa	Botswana, Radio	3356af	4830af	7255af
0500-0600	Nigeria, Radio	3326do	4770do 4990do	0525-0600	Ghana, GBC Radio 2	3366do		
0500-0600	Nigeria, Voice of	7255af		0530-0600	Austria, R Austria Intl	6015na	6155eu	13730eu 15410me
0500-0600 vl	PNG, Natl BC	4890do				17870me		
0500-0600	Russia, Radio Moscow Intl	5905eu	5930eu 5950eu 6165eu	0530-0540	Finland, YLE/Radio	9635me	11755af	
		7105na	7130af 7165na 7180eu	0530-0600	Romania, R Romania Intl	15340af	15380af	17720af 17745af
		7270na	7295af 7330af 7335eu			17790af		
		9665eu	9705me 9830af 11765me	0530-0600 vl	Russia, Radio Centre	12010eu		
		12030na	12055af 15280me 15320me	0530-0600	Swaziland, Trans World R	3200af	7200af	11740af
		15425na	15465af 17655af 17725af	0530-0600	UAE, Radio Dubai	15435as	17830as	21700as
		17835af	21655me 21690af					

SELECTED PROGRAMS

Sundays

- 0500 Radio for Peace Int'l: Focus on Haiti. Interviews with leaders in the struggle for a return to democracy in Haiti.
- 0500 Radio Japan: NHK News.
- 0515 Radio Japan: Let's Learn Japanese.
- 0530 Radio Austria Int'l: Report from Austria. See S 0130.
- 0530 Radio for Peace Int'l: Science and Spirit (biweekly). The findings of science and ancient wisdom teachings.
- 0530 Radio for Peace Int'l: Wisdom School of the Air (biweekly). Lectures of the late Manly P. Hall, founder of the Philosophical Research Society.
- 0530 Radio Japan: Media Roundup.
- 0554 Radio Japan: Viewpoint.

Mondays

- 0500 Radio for Peace Int'l: Sound Currents of the Spirit. See M 0430.
- 0500 Radio Japan: NHK News.
- 0515 Radio Japan: Spectrum.
- 0530 Radio Austria Int'l: Report from Austria. See S 0130.
- 0530 Radio for Peace Int'l: World Goodwill Forum. Lectures on the needs of humanity.
- 0550 Radio Japan: Commentary.
- 0555 Radio Japan: Tokyo Pop-In.

Tuesdays

- 0500 Radio for Peace Int'l: United Nations. See S 1530.
- 0500 Radio Japan: NHK News.
- 0515 Radio for Peace Int'l: RFPi Reports. See S 0230.
- 0515 Radio Japan: Enjoy Japanese.
- 0530 Radio Austria Int'l: Report from Austria. See S 0130.
- 0530 Radio for Peace Int'l: Focus on the Americas (biweekly). See S 1500.
- 0530 Radio for Peace Int'l: Food Not Bombs Radio Network (monthly). See S 1500.
- 0550 Radio Japan: Commentary.
- 0555 Radio Japan: Tokyo Pop-In.

Wednesdays

- 0500 Radio for Peace Int'l: UNESCO Program. See M 2330.
- 0500 Radio Japan: NHK News.
- 0515 Radio for Peace Int'l: RFPi Reports. See S 0230.
- 0515 Radio Japan: Spectrum.
- 0530 Radio Austria Int'l: Report from Austria. See S 0130.

**BBC World Service Previews
for late January and February**

Advance programming did not arrive for this month from the BBC. However, following are programs for late January, early February, which were culled from the BBC January schedules by Glenn Hauser:

Way Out West—in Ireland, music and touring, 3 weeks from Jan. 23, Suns. 0230, 1615, Mons. 0730. **Maestro**—anarchic music quiz, 8 weeks from Jan. 17, Mons. 1715, Tues. 0030, Weds. 0830. **World Ranking** most popular black music tracks, dedications, 9 weeks from Jan. 31, Mons. 2215, Tues. 0630, Weds 1615, Fris. 1030. **This Is Your Sport**—history of horse racing, cycling, boxing, cue games, motor sport, track & field, 6 weeks from Jan. 30, Suns. 1401, Mons. 0630, 1001. **Alexis Korner's Rhythm 'n' Blues**, 10 weeks from Jan. 23, Suns. 0415, Mons. 1930, Tues. 0915. **Meridian**—Martin Scorsese on *The Age Of Innocence*, Tue. Jan. 25 at 2030, Wed. 0630, 1130. **On African Alternative, The World of Mestere Tamoda** by leading Angolan writer Agostinho Mendes Carvalho, serialised for radio in 8 parts from Jan. 22, Sats. 0630 on 9600, 11820, 1830 and/or 1930 on 15400, 1500 on 21490, 17790, 15420, 11860; Suns. 0630, 1830.

- 0530 Radio for Peace Int'l: WINGS. Women's news and current affairs by the Women's International News Gathering Service.
- 0550 Radio Japan: Commentary.
- 0555 Radio Japan: Tokyo Pop-In.

Thursdays

- 0500 Radio for Peace Int'l: United Nations. See S 1530.
- 0500 Radio Japan: NHK News.
- 0515 Radio for Peace Int'l: RFPi Reports. See S 0230.
- 0515 Radio Japan: Japan Travelogue.
- 0515 Radio Japan: The Travel & Book Beat.
- 0530 Radio Austria Int'l: Report from Austria. See S 0130.
- 0530 Radio for Peace Int'l: Vietnam Veterans Radio Network. See S 0630.
- 0530 Radio Japan: Short Story.
- 0550 Radio Japan: Commentary.
- 0555 Radio Japan: Tokyo Pop-In.

Fridays

- 0500 Radio Japan: NHK News.
- 0515 Radio Japan: Music Mix.
- 0530 Radio Austria Int'l: Report from Austria. See S 0130.
- 0550 Radio Japan: Commentary.
- 0555 Radio Japan: Tokyo Pop-In.

Saturdays

- 0500 Radio for Peace Int'l: United Nations. See S 1530.
- 0500 Radio Japan: NHK News.
- 0515 Radio for Peace Int'l: RFPi Reports. See S 0230.
- 0515 Radio Japan: This Week.
- 0530 Radio Austria Int'l: Report from Austria. See S 0130.
- 0530 Radio for Peace Int'l: Red Cross Roads (biweekly). The activities of the Red Cross, the League of Red Cross and Red Crescent Societies.
- 0530 Radio for Peace Int'l: Working Together (biweekly). See T 2300.

FREQUENCIES

0600-0700	Australia, ABC Brisbane	9660do			
0600-0700	Australia, ABC Perth	15425do			
0600-0700	Australia, Radio	6020pa	11720pa	11800pa	15240pa
		15320pa	15365pa	17630pa	17670as
		17715pa	17880as	21525as	21595as
		21740pa			
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			
0600-0630	Bulgaria, Radio	9700na	11720eu		
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 Montreal	6050eu	6150eu	7155af	9740af
		9760af			
		7375am			
0600-0700	Costa Rica, R Peace Intl	7375am	7385am	15030am	21465am
0600-0700	Cuba, Radio Havana Cuba	9510na			
0600-0700	Ecuador, HCJB Quito	11925am	15155am	21455am	
0600-0700 as	Eqt Guinea, R East Africa	7190af	7203af		
0600-0650	Germany, Deutsche Welle	5960af	9565af	11765af	11780af
		13790af	15185af	15205af	17820af
		17875af	21705af		
0600-0615	Ghana, GBC Radio 1	4915do			
0600-0615	Ghana, GBC Radio 2	3366do			
0600-0700 vl	Italy, IRRS Milano	7125eu			
0600-0700	Japan, NHK/Radio	11860as	21610as		
0600-0625	Kenya, Kenya BC Corp	4935do			
0600-0700 vl	Kiribati, Radio	9825do			
0600-0630	Laos, National Radio of	7116as			
0600-0700	Lebanon, Wings of Hope	11530me			
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	Mexico, Radio Educacion	6185am			
0600-0700	Namibia, Namibia BC Corp	6175af			
0600-0630	New Zealand, R NZ Intl	15115pa			
0600-0700 s	New Zealand, ZLXA	3935do			
0600-0700	Nigeria, Radio	3970do	4770do		
0600-0700	Nigeria, Voice of	7255af			
0600-0650	North Korea, R Pyongyang	15180as	15230as		
0600-0700 vl	PNG, Natl BC	4890do			
0600-0630	Romania, R Romania Intl	7225eu	9510eu	9665eu	11810eu

0600-0700	Russia, Radio Moscow Intl	4940me	4975me	5905eu	5915eu
		7130af	7165na	7175na	7180eu
		7270na	7330eu	9830af	9890eu
		12055af	13650eu	15190eu	15280me
		15320me	15465af	15480me	15550me
		17655af	17725af	17765af	17805me
		17835af	21550me	21610af	21655me
0600-0700	S Africa, Channel Africa	7230af	17710af		
0600-0700 vl	S Africa, Radio Oranje	7270do			
0600-0700 vl	Sierra Leone, SLBS	3316do			
0600-0700	Singapore, SBC Radio One	5010do	5052do	11940do	
0600-0630 vl	Solomon Islands, SIBC	5020do	9545do		
0600-0700	South Korea, Radio Korea	7275na	11945na	15155na	
0600-0700	Swaziland, Swazi Radio	6155af			
0600-0700	Swaziland, Trans World R	3200af	7200af	11740af	
0600-0630	Switzerland, Swiss R Intl	9885af	13635af	15430af	
0600-0615 mtwtf	Switzerland, Swiss R Intl	3985eu	6165eu		
0600-0700 as	Thailand, Radio	4830as	9655as	11905as	
0600-0700	United Kingdom, BBC London	3955eu	5975ca	6190af	6195af
		7150pa	9410eu	9600af	9640na
		11780eu	11820af	11940af	12095eu
		15360as	15420af	15575eu	17790as
		17830as	17885af	21470me	
0600-0700	USA, KCBI Dallas TX	9815am			
0600-0700	USA, KTNB Salt Lk City UT	7510na			
0600-0700	USA, KVOH Los Angeles CA	9785am			
0600-0700	USA, Monitor Radio Intl	5850eu	7465eu	7535eu	
0600-0700	USA, VOA Washington DC	3980af	5995af	6035af	6040af
		6060af	6140af	6873eu	7170af
		7325eu	7405af	9530af	9665af
		11805af	11925af	12080af	15205eu
0600-0700	USA, WHRI Noblesville IN	7315eu	9495am		
0600-0700	USA, WJCR Upton KY	7490na	13595na		
0600-0700 smtwhf	USA, WMLK Bethel PA	9465eu			
0600-0700	USA, WWCR Nashville TN	5810am	5935am	7435am	
0600-0700	USA, WYFR Okeechobee FL	5985na	7355eu	9680am	11580af
0600-0620	Vatican State, Vatican R	6245eu	7250eu		
0603-0610	Croatia, Croatian Radio	6145eu	9830eu	13830eu	
0625-0700	Kenya, Kenya BC Corp	4935do			
0630-0700	Austria, R Austria Intl	6015na			
0630-0700	New Zealand, R NZ Intl	9700pa			
0630-0700 smtwhf	New Zealand, ZLXA	3935do			
0630-0700	Vatican State, Vatican R	9625af	11625af	15090af	
0632-0641	Romania, R Romania Intl	7225eu	9510eu	9665eu	11810eu
0645-0700	Romania, R Romania Intl	11775pa	15250pa	15335pa	17720pa
		17805pa			

SELECTED PROGRAMS

Sundays

- 0600 Radio for Peace Int'l: Science and Spirit (biweekly). See S 0530.
- 0600 Radio for Peace Int'l: Wisdom School of the Air (biweekly). See S 0530.
- 0600 Radio Korea: News.
- 0615 Radio Korea: Commentary.
- 0620 Radio Korea: Sites and Sounds.
- 0630 Radio Austria Int'l: Report from Austria. See S 0130.
- 0630 Radio for Peace Int'l: Vietnam Veterans Radio Network. Bringing to light the real stories behind the Vietnam War.
- 0635 Radio Korea: From Us to You.

Mondays

- 0600 Radio for Peace Int'l: World Goodwill Forum. See M 0530.
- 0600 Radio Korea: News.
- 0615 Radio Korea: Echoes of Korean Music.
- 0630 Radio Austria Int'l: Report from Austria. See S 0130.
- 0630 Radio for Peace Int'l: Changemakers. Interviews on timely themes, with an alternating focus.
- 0640 Radio Korea: Shortwave Feedback.

Tuesdays

- 0600 Radio for Peace Int'l: Peace Talks. Focus on topics such as peace education, development and peace, and women and peace.
- 0600 Radio Korea: News.
- 0615 Radio Korea: Commentary.
- 0620 Radio Korea: Seoul Calling.
- 0630 Radio Austria Int'l: Report from Austria. See S 0130.
- 0630 Radio for Peace Int'l: New Dimensions Radio. See M 0300.
- 0640 Radio Korea: Let's Learn Korean!.



This humorous QSL is from BRT International in Belgium.

Wednesdays

- 0600 Radio for Peace Int'l: Peace Forum. See W 0400.
- 0600 Radio Korea: News.
- 0615 Radio Korea: Commentary.
- 0620 Radio Korea: Seoul Calling.
- 0630 Radio Austria Int'l: Report from Austria. See S 0130.
- 0640 Radio Korea: Let's Learn Korean!.

Thursdays

- 0600 Radio for Peace Int'l: Peace Forum. See W 0400.
- 0600 Radio Korea: News.
- 0615 Radio Korea: Commentary.
- 0620 Radio Korea: Seoul Calling.
- 0630 Radio Austria Int'l: Report from Austria. See S 0130.
- 0640 Radio Korea: Let's Learn Korean!.

Fridays

- 0600 Radio for Peace Int'l: Dialogue. See T 2330.
- 0600 Radio Korea: News.
- 0615 Radio for Peace Int'l: RFP Reports. See S 0230.
- 0615 Radio Korea: Commentary.
- 0620 Radio Korea: Seoul Calling.
- 0630 Radio Austria Int'l: Report from Austria. See S 0130.
- 0630 Radio for Peace Int'l: Steppin' Out of Babylon. See T 0300.
- 0633 Radio Korea: Let's Learn Korean!.

Saturdays

- 0600 Radio for Peace Int'l: Unconventional Wisdom. See T 0200.
- 0600 Radio Korea: News.
- 0615 Radio Korea: Commentary.
- 0620 Radio Korea: Let's Sing Together.
- 0630 Radio Austria Int'l: Report from Austria. See S 0130.
- 0630 Radio for Peace Int'l: Second Opinion. See W 0200.
- 0640 Radio Korea: Listeners' Forum.

Table listing radio stations and their frequencies. Columns include call signs (e.g., Australia, ABC Brisbane), frequencies in kHz (e.g., 4920do), and time zones (e.g., 9660do).

Table listing radio stations and their frequencies. Columns include call signs (e.g., Australia, ABC Brisbane), frequencies in kHz (e.g., 9660do), and time zones (e.g., 9660do).

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BBC WORLD SERVICE

FREQUENCIES

1200-1300	Australia, ABC Brisbane	4920do			
1200-1300	Australia, ABC Perth	6140do	9610do		
1200-1230	Australia, Radio	6080as	9710as		
1200-1300	Australia, Radio	6020pa	6080pa	7240pa	9580pa
		17910as			
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			
1200-1300	Bulgaria, Radio	11645na	13645me		
1200-1215	Cambodia, Natl Voice of	11938as			
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, CKZU Vancouver	6160do			
1200-1300	China, China Radio Intl	9655as	9715as	11660as	11795as
		15210na	15440na		
1200-1300	Costa Rica, AWR Alajuela	9725ca	11870ca		
1200-1300	Costa Rica, R Peace Intl	7375am	7385am	15030am	21465am
1200-1300	Ecuador, HCJB Quito	11925am	15115am	17490am	17890am
		21455om			
1200-1300	France, Radio France Intl	9805eu	13640na	15155eu	15195eu
		15365na	21645na		
1200-1230	Iran, VOIRI Tehran	9525me	11715me	11790me	11910as
		11930as			
1200-1300 vl	Italy, IRRS Milano	7125eu			
1200-1300	Jordan, Radio	9560eu			
1200-1300	Kenya, Kenya BC Corp	4935do			
1200-1300 vl	Malaysia, RTM Kota Kinaba	5980do			
1200-1300	Malaysia, RTM Radio 4	7295do			
1200-1230 smwha	Mongolia, R Ulaanbaatar	11850as	12015as		
1200-1206	New Zealand, R NZ Intl	9700pa			
1200-1300	Nigeria, Radio	4990do	7285do		
1200-1300 mtwhf	Palau, KHBN Voice of Hope	9830as			
1200-1230 a	Palau, KHBN Voice of Hope	9830as			
1200-1300 vl	PNG, Natl BC	4890do			
1200-1300 vl	PNG, Radio Central	3290do			
1200-1300 vl	PNG, Radio Enga	2410do			
1200-1300 vl	PNG, Radio Milne Bay	3365do			
1200-1300 vl	PNG, Radio Western	3305do			

1200-1300	Russia, Radio Moscow Intl	7130af	7160am	7295me	9635af
		9830af	11675me	11980eu	12065na
		12070eu	13650eu	15190eu	15210na
		15345eu	15380na	15440eu	15465af
		15480me	15495eu	15525af	15540eu
		15585eu	17605eu	17760na	17780af
		17880eu	21515eu	21540eu	21825af
1200-1300 vl	S Africa, Radio Oranje	9630do			
1200-1300	Singapore, SBC Radio One	5010do	5052do	11940do	
1200-1245	South Korea, Radio Korea	9640na			
1200-1230	Thailand, Radio	4830as	9655as	11905as	
1200-1300	United Kingdom, BBC London	6190af	6195am	9410eu	9515na
		9660eu	9740na	9750eu	9760eu
		11760me	11940af	12095eu	15070eu
		15220na	15310as	15400af	15575me
		17640eu	17705eu	17790af	17885af
		21470af	21660af		
1200-1300	USA, KCBI Dallas TX	9815am			
1200-1300	USA, KTBN Salt Lk City UT	7510am			
1200-1300	USA, Monitor Radio Intl	7465am	9425pa	9455na	13625as
1200-1300	USA, VOA Washington DC	6110as	9590as	9760as	11715as
		15160as	15425as		
1200-1300	USA, WEWN Birmingham AL	9350am	15695am		
1200-1300	USA, WHRI Noblesville IN	7315na	9850sa	11790sa	
1200-1300	USA, WJCR Upton KY	7490na	13595na		
1200-1300	USA, WWCR Nashville TN	5935am	15685am		
1200-1300	USA, WYFR Okeechobee FL	5950na	7355na	11830na	11970na
1200-1230	Uzbekistan, R Tashkent	7285as	9540as	9715as	15420as
		17745as			
1200-1300	Vietnam, Voice of	6115as	10059as	12025as	15010as
1207-1300 ocasnl	New Zealand, R NZ Intl	9655pa			
1215-1300	Egypt, Radio Cairo	17595as			
1220-1230 vl	Ghana, GBC Radio 1	4915do			
1230-1300	Austria, R Austria Intl	6155eu	13730na	15450as	
1230-1300	Bangladesh, Radio	13615eu	15220eu		
1230-1300	Canada, RCI Montreal	6150as	11730as		
1230-1255 mtwhfa	Finland, YLE/Radio	11735na	15400na		
1230-1300	Ghana, GBC Radio 2	6130do	7295do		
1230-1300	Netherlands, Radio	5955eu	9650eu		
1230-1300	Sri Lanka, SLBC Colombo	6075as	9720as		
1230-1300	Sweden, Radio	15240au	17740au	17865as	

SELECTED PROGRAMS

Sundays
 1200 Radio Korea: Frequency Announcements.
 1203 Radio Korea: News.
 1213 Radio Korea: Echoes of Korean Music.
 1230 Radio Austria Int'l: Report from Austria. See S 0130.
 1236 Radio Korea: Shortwave Feedback.

Mondays

1200 Radio for Peace Int'l: Living Enrichment Center. See M 0400.
 1200 Radio Korea: Frequency Announcements.
 1203 Radio Korea: News.
 1213 Radio Korea: Commentary.
 1217 Radio Korea: Seoul Calling.
 1230 Radio Austria Int'l: Report from Austria. See S 0130.
 1230 Radio for Peace Int'l: Sound Currents of the Spirit. See M 0430.

Tuesdays

1200 Radio for Peace Int'l: Alternative Radio. See T 0400.
 1200 Radio Korea: Frequency Announcements.
 1203 Radio Korea: News.
 1215 Radio Korea: Commentary.
 1220 Radio Korea: Seoul Calling.
 1230 Radio Austria Int'l: Report from Austria. See S 0130.
 1240 Radio Korea: Korean Cultural Variety.

Wednesdays

1200 Radio for Peace Int'l: Peace Forum. See W 0400.
 1200 Radio Korea: Frequency Announcements.
 1203 Radio Korea: News.
 1215 Radio Korea: Commentary.
 1220 Radio Korea: Seoul Calling.
 1230 Radio Austria Int'l: Report from Austria. See S 0130.
 1241 Radio Korea: Pulse of Korea/Koreans Today.

Thursdays

1200 Radio for Peace Int'l: New Dimensions Radio. See M 0300.
 1200 Radio Korea: Frequency Announcements.
 1203 Radio Korea: News.
 1215 Radio Korea: Commentary.
 1220 Radio Korea: Seoul Calling.
 1230 Radio Austria Int'l: Report from Austria. See S 0130.
 1230 Radio for Peace Int'l: Voices of Our World. See T 0330.
 1240 Radio Korea: Forward to Reunification.

Fridays

1200 Radio for Peace Int'l: UNESCO Program. See M 2330.
 1200 Radio Korea: Frequency Announcements.
 1203 Radio Korea: News.
 1215 Radio Korea: Commentary.
 1220 Radio Korea: Let's Sing Together.
 1230 Radio Austria Int'l: Report from Austria. See S 0130.
 1230 Radio for Peace Int'l: WINGS. See W 0530.
 1240 Radio Korea: Let's Learn Korean.

Saturdays

1200 Radio for Peace Int'l: World of Radio. See S 0200.
 1200 Radio Korea: Frequency Announcements.
 1203 Radio Korea: News.
 1213 Radio Korea: Commentary.
 1217 Radio Korea: Sites and Sounds.
 1230 Radio Austria Int'l: Report from Austria. See S 0130.
 1230 Radio for Peace Int'l: RFP's Mailbag. See S 0330.
 1235 Radio Korea: From Us to You.



Nigel Rees chairs the quotation quiz on the BBC's "Quote, Unquote."

FREQUENCIES

1300-1400	Australia, ABC Brisbane	4920do			
1300-1400	Australia, ABC Perth	9610do			
1300-1400	Australia, Radio	7240pa	9580pa	11800pa	
1300-1400 vl	Australia, VLBA 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			
1300-1400 mtwtf	Canada, CBC Toronto	11855am	17820am		
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, CKZU Vancouver	6160do			
1300-1400	China, China Radio Intl	7405na	8425as	9715as	11660as
		15440pa			
1300-1400 vl	Costa Rica, R Peace Intl	7375am	7385am	15030am	21465am
1300-1400	Ecuador, HCJB Quito	11925am	15115am	17490am	17890am
		21455am			
1300-1330	Egypt, Radio Cairo	17595as			
1300-1330	Ghana, GBC Radio 1	4915do			
1300-1400	Greece, Voice of	17535na			
1300-1400 vl	Italy, IRRS Milano	7125as			
1300-1325	Kenya, Kenya BC Corp	4935do			
1300-1400 vl	Malaysia, RTM Kota Kinaba	5980do			
1300-1400	Malaysia, RTM Radio 4	7295do			
1300-1400 ocasnal	New Zealand, R NZ Intl	9655pa			
1300-1400	Nigeria, Radio	4990do	7285do		
1300-1350	North Korea, R Pyongyang	13760as	15230as		
1300-1400 mtwhf	Palau, KHBN Voice of Hope	9830as			
1300-1400	Philippines, FEBC Manila	11995as			
1300-1400	PNG, Natl BC	4890do			
1300-1355	Poland, Polish R Warsaw	6135eu	7145eu	7270eu	9525eu
		11815eu			
1300-1400	Romania, R Romania Intl	11940eu	15365eu	17720eu	17850eu
1300-1400	Russia, Radio Moscow Intl	7195af	7295as	9635af	9715me
		9830af	9890eu	11715af	11765me
		11980eu	12030eu	15205af	15210na
		15345eu	15380eu	15440eu	15480me
		15495eu	15540eu	17610me	17725me
		17760na	17775as	17780as	17790as
		17880eu	21540eu	21610af	21785af
1300-1400 vl	S Africa, Radio Oranje	9630do			
1300-1400	Singapore, SBC Radio One	5010do	5052do	11940do	
1300-1330	South Korea, Radio Korea	9750as	13670as		
1300-1400	Sri Lanka, SLBC Colombo	6075as	9720as		
1300-1330	Switzerland, Swiss R Intl	7480as	11690as	13635as	15505as
1300-1400	United Kingdom, BBC London	6190af	6195am	7180as	9410eu
		9515na	9660eu	9740na	9750eu
		9760eu	11750as	11760me	11820na
		11940af	12095eu	15070eu	15220na
		15310as	15400af	15420af	15575me
		17640eu	17705eu	17790af	17885af
		21470af	21660af		
1300-1400	USA, KJES Mesquite NM	11715am			
1300-1400 vl	USA, KNLS Anchor Point AK	7355as			
1300-1400	USA, KTBN Salt Lk City UT	7510am			
1300-1400	USA, Monitor Radio Intl	7465am	13625as		
1300-1400	USA, VOA Washington DC	6110as	9560as	9760as	11715as
		15160as	15425as		
1300-1400	USA, WEWN Birmingham AL	9350am			
1300-1400	USA, WHRI Noblesville IN	9465na	15105na		
1300-1400	USA, WJCR Upton KY	7490na	13595na		
1300-1400	USA, WWCR Nashville TN	5935am	15685am		
1300-1400	USA, WYFR Okeechobee FL	5950na	9705na	11550as	11830na
		11970na	13695na		
1300-1330	Vietnam, Voice of	6115as	10059as	12025as	15010as
1315-1325	Nepal, Radio	3230do	5005do	7165do	
1325-1400 mtwhf	Kenya, Kenya BC Corp	4935do			
1330-1400	Austria, R Austria Intl	15450as			
1330-1355 mtwtf	Belgium, R Vlaanderen Int	1755na	21810na		
1330-1400	Bulgaria, Radio	11630as			
1330-1400	Canada, RCI Montreal	6150as	9535as		
1330-1400 mtwhfa	Finland, YLE/Radio	15400na	17740na		
1330-1400 tw	Ghana, GBC Radio 1	4915do			
1330-1400	India, All India Radio	11760as	15120as		
1330-1400	Laos, National Radio of	7116as			
1330-1400	Netherlands, Radio	9895as	13700as	15150as	15530as
1330-1400	Sweden, Radio	15240am	17870am		
1330-1400	Turkey, Voice of	9675as			
1330-1400	UAE, Radio Dubai	13675eu	15320eu	15435as	21605as
1330-1400	Uzbekhistan, R Tashkent	7285as	9540as	9715as	15295as
		17815as			
1345-1400 vl	Myanmar, Radio	7185do			
1345-1400	Vatican State, Vatican R	15090as	17525au		

SELECTED PROGRAMS

Sundays

- 1300 Radio for Peace Int'l: Focus on Haiti. See S 0500.
- 1300 Radio Korea: Frequency Announcements.
- 1302 Radio Korea: News in Review.
- 1307 Radio Korea: Shortwave Feedback.
- 1330 Radio Austria Int'l: Report from Austria. See S 0130.
- 1330 Radio for Peace Int'l: Science and Spirit (biweekly). See S 0530.
- 1330 Radio for Peace Int'l: Wisdom School of the Air (biweekly). See S 0530.

Mondays

- 1300 Radio for Peace Int'l: Sound Currents of the Spirit. See M 0430.
- 1300 Radio Korea: Frequency Announcements.
- 1302 Radio Korea: News.
- 1309 Radio Korea: Seoul Calling.
- 1330 Radio Austria Int'l: Report from Austria. See S 0130.
- 1330 Radio for Peace Int'l: World Goodwill Forum. See M 0530.

Tuesdays

- 1300 Radio for Peace Int'l: United Nations. See S 1530.
- 1300 Radio Korea: Frequency Announcements.
- 1302 Radio Korea: News.
- 1307 Radio Korea: Seoul Calling.
- 1315 Radio for Peace Int'l: RFPI Reports. See S 0230.
- 1330 Radio Austria Int'l: Report from Austria. See S 0130.
- 1330 Radio for Peace Int'l: Focus on the Americas (biweekly). See S 1500.
- 1330 Radio for Peace Int'l: Food Not Bombs Radio Network (monthly). See S 1500.

Wednesdays

- 1300 Radio for Peace Int'l: UNESCO Program. See M 2330.
- 1300 Radio Korea: Frequency Announcements.
- 1302 Radio Korea: News.
- 1315 Radio for Peace Int'l: RFPI Reports. See S 0230.
- 1330 Radio Austria Int'l: Report from Austria. See S 0130.
- 1330 Radio for Peace Int'l: WINGS. See W 0530.
- 1340 Radio Korea: Music Box.
- 1345 Radio Korea: Pulse of Korea.

Thursdays

- 1300 Radio for Peace Int'l: United Nations. See S 1530.
- 1300 Radio Korea: Frequency Announcements.
- 1302 Radio Korea: News.
- 1310 Radio Korea: Forward to Reunification.
- 1315 Radio for Peace Int'l: RFPI Reports. See S 0230.
- 1330 Radio Austria Int'l: Report from Austria. See S 0130.
- 1330 Radio for Peace Int'l: Vietnam Veterans Radio Network. See S 0630.

Fridays

- 1300 Radio for Peace Int'l: Dialogue. See T 2330.

- 1300 Radio Korea: Frequency Announcements.
- 1302 Radio Korea: News.
- 1310 Radio Korea: Let's Sing Together.
- 1315 Radio for Peace Int'l: RFPI Reports. See S 0230.
- 1330 Radio Austria Int'l: Report from Austria. See S 0130.
- 1330 Radio for Peace Int'l: Steppin' Out of Babylon. See T 0300.

Saturdays

- 1300 Radio for Peace Int'l: United Nations. See S 1530.
- 1300 Radio Korea: Frequency Announcements.
- 1302 Radio Korea: News.
- 1310 Radio Korea: From Us to You.
- 1315 Radio for Peace Int'l: RFPI Reports. See S 0230.
- 1330 Radio Austria Int'l: Report from Austria. See S 0130.
- 1330 Radio for Peace Int'l: Red Cross Roads (biweekly). See A 0530.
- 1330 Radio for Peace Int'l: Working Together (biweekly). See T2300.

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FREQUENCIES

1500-1600	Algeria, R Algiers Intl	11715af	15205me	17745eu	7360eu	9640eu	9890eu	11690me
1500-1600	Australia, ABC Brisbane	6140do			12045af	12065me	15210na	15320me
1500-1600	Australia, Radio	6060pa	6080pa	7240pa	7260as	15345eu	15380eu	15440eu
		9510as	9580pa	9770as	11660as	15540eu	17760na	17765am
		11680as	11695pa	11800pa		9610do		
1500-1600 vl	Australia, VL8A Alice Spg	2310do			1500-1600 vl	Rwanda, Radiodiff Rwanda	7270af	15240af
1500-1600 vl	Australia, VL8K Katherine	2485do			1500-1600 vl	S Africa, Channel Africa	4875do	
1500-1600 vl	Australia, VL8T Tent Crk	2325do			1500-1600 mtwhfa	S Africa, Radio Oranje	9810as	15330as
1500-1600	Bahrain, Radio	6010do			1500-1600	Seychelles, FEBA Radio	5010do	5052do
1500-1600 s	Canada, CBC Toronto	11955am	17820am		1500-1600	Singapore, SBC Radio One	6075as	9720as
1500-1600	Canada, CFCX Montreal	6005do			1500-1530	Sri Lanka, SLBC Colombo	9420af	9455as
1500-1600	Canada, CFRX Toronto	6070do			1500-1600 vl	Switzerland, Swiss R Intl	4976do	
1500-1600	Canada, CFVP Calgary	6030do			1500-1600	Uganda, Radio	6190af	6195eu
1500-1600	Canada, CHNX Halifax	6130do				United Kingdom, BBC London	9515na	9740me
1500-1600	Canada, CKZU Vancouver	6160do					11750as	11940af
1500-1600	China, China Radio Intl	4200as	7405na	9785na			15260na	15310as
		15165as		11815as			17705eu	17840na
		7375am	7385am	15030am			21490af	21660af
1500-1600 vl	Costa Rica, R Peace Intl	11925am	17490am	17890am	1500-1600	USA, KCBI Dallas TX	7510na	
1500-1600	Ecuador, HCJB Quito	7165do	9560do		1500-1600	USA, KTBN Salt Lk City UT	9355as	
1500-1600	Ethiopia, Voice of	7195af	9735af	11965af	1500-1600	USA, Monitor Radio Intl	6110as	7125as
1500-1550	Germany, Deutsche Welle	17765af	21600af		1500-1600	USA, VOA Washington DC	9700eu	9760as
		9835as					11995af	15205as
1500-1600	Guam, AWR Asia	15610as					19379me	15255eu
1500-1600	Guam, KTWR Agana	7125eu					9350am	17510me
1500-1600 vl	Italy, IRRS Milano	9535na	9750as	11815as	1500-1600	USA, WHRI Noblesville IN	9465sa	15105na
1500-1600	Japan, NHK/Radio	11915na	15355af	11865na	1500-1600	USA, WJCR Upton KY	7490na	13595na
		9560eu			1500-1600	USA, WRNO New Orleans LA	15420na	
1500-1600 vl	Malaysia, RTM Kota Kinaba	5980do			1500-1600	USA, WWCR Nashville TN	13845am	15685am
1500-1600	Malaysia, RTM Radio 4	7295do			1500-1600	USA, WYFR Okeechobee FL	11830na	15215na
1500-1600 vl	Malaysia, RTM Sarawak	4950do	7160do		1515-1600	Bulgaria, Radio	12085as	
1500-1600	Malta, V of Mediterranean	11925eu			1530-1600	Albania, R Tirana Intl	7155eu	9760eu
1500-1513 smha	Mongolia, R Ulaanbaatar	13780as			1530-1600	Austria, R Austria Intl	6155eu	9880me
1500-1600	Netherlands, Radio	9895as	13700as	15150as	1530-1545	India, All India Radio	7412as	9910as
1500-1600 ocasnal	New Zealand, R NZ Intl	9655pa			1530-1600	Iran, VOIRI Tehran	11790eu	11740as
1500-1600	Nigeria, Radio	4990do	7285do		1530-1600 mtwhf	Portugal, Radio	21515me	
1500-1600	Nigeria, Voice of	7255af			1530-1600 vl	Russia, Radio Centre	15185eu	
1500-1600	North Korea, R Pyongyang	9325eu	9640af	9977af	1530-1600 irreg	Tanzania, Radio	11765af	
1500-1600	Philippines, FEBC Manila	11995as		13785eu	1545-1600	Vatican State, Vatican R	11640as	15090au
1500-1600 vl	PNG, Natl BC	4890do						
1500-1530	Romania, R Romania Intl	11775as	15335as	17720as				
1500-1600	Russia, Radio Moscow Intl	5930eu	6055eu	6065as				
		6165na	7105na	7115as				
		7195as	7260na	7330eu				
				7345na				

SELECTED PROGRAMS

Sundays

- 1500 Radio for Peace Int'l: Focus on the Americas (biweekly). Interviews, analysis, and commentary of US foreign and domestic policy, focusing on Central America.
- 1500 Radio for Peace Int'l: Food Not Bombs Radio Network (monthly). North America's homeless problems and government oppression at home and abroad.
- 1500 Radio Japan: NHK News.
- 1515 Radio Japan: Let's Learn Japanese.
- 1530 Radio Austria Int'l: Report from Austria. See S 0130.
- 1530 Radio for Peace Int'l: United Nations. A variable program produced by the United Nations Radio Service.
- 1545 Radio for Peace Int'l: RFPI Reports. See S 0230.
- 1554 Radio Japan: Viewpoint.

Monday

- 1500 Radio for Peace Int'l: World of Radio. See S 0200.
- 1500 Radio Japan: NHK News.
- 1515 Radio Japan: Radio Japan Magazine Hour.
- 1530 Radio Austria Int'l: Report from Austria. See S 0130.
- 1530 Radio for Peace Int'l: United Nations. See S 1530.
- 1545 Radio for Peace Int'l: RFPI Reports. See S 0230.
- 1550 Radio Japan: Commentary.
- 1555 Radio Japan: News Summary.

Tuesdays

- 1500 Radio for Peace Int'l: New Dimensions Radio. See M 0300.
- 1500 Radio Japan: NHK News.
- 1515 Radio Japan: Radio Japan Magazine Hour.
- 1530 Radio Austria Int'l: Report from Austria. See S 0130.
- 1530 Radio for Peace Int'l: UNESCO Program. See M 2330.
- 1545 Radio for Peace Int'l: RFPI Reports. See S 0230.

- 1550 Radio Japan: Commentary.
- 1555 Radio Japan: News Summary.

Wednesdays

- 1500 Radio for Peace Int'l: From the Atom to the Universe (biweekly). See T 2300.
- 1500 Radio for Peace Int'l: Working Together (biweekly). See T 2300.
- 1500 Radio Japan: NHK News.
- 1515 Radio Japan: Radio Japan Magazine Hour.
- 1530 Radio Austria Int'l: Report from Austria. See S 0130.
- 1530 Radio for Peace Int'l: Dialogue. See T 2330.
- 1545 Radio for Peace Int'l: RFPI Reports. See S 0230.
- 1550 Radio Japan: Commentary.
- 1555 Radio Japan: News Summary.

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Thursdays

- 1500 Radio for Peace Int'l: Common Ground. See W 2300.
- 1500 Radio Japan: NHK News.
- 1515 Radio Japan: Japan Diary.
- 1515 Radio Japan: Radio Japan Magazine Hour.
- 1521 Radio Japan: Crosscurrents.
- 1530 Radio Austria Int'l: Report from Austria. See S 0130.
- 1530 Radio for Peace Int'l: UNFPA/FAO. See W 2330.
- 1545 Radio for Peace Int'l: RFPI Reports. See S 0230.
- 1550 Radio Japan: Commentary.
- 1555 Radio Japan: Tokyo Pop-In.

Fridays

- 1500 Radio for Peace Int'l: CounterSpin. See S 0300.
- 1500 Radio Japan: NHK News.
- 1515 Radio Japan: Radio Japan Magazine Hour.
- 1530 Radio Austria Int'l: Report from Austria. See S 0130.
- 1530 Radio for Peace Int'l: United Nations. See S 1530.
- 1545 Radio for Peace Int'l: RFPI Reports. See S 0230.
- 1550 Radio Japan: Commentary.
- 1555 Radio Japan: Tokyo Pop-In.

Saturdays

- 1500 Radio for Peace Int'l: Peace Forum. See W 0400.
- 1500 Radio Japan: NHK News.
- 1515 Radio Japan: This Week.
- 1530 Radio Austria Int'l: Report from Austria. See S 0130.
- 1530 Radio for Peace Int'l: World Citizens Weekly Commentary. See F 2330.
- 1545 Radio for Peace Int'l: RFPI Reports. See S 0230.

1700-1800	Algeria, R Algiers Intl	7155eu			
1700-1800	Australia, Radio	5995pa	6060pa	6080as	7240pa
		7260as	9510as	9580pa	11660pa
		11695pa	11880pa		
1700-1800 vl	Australia, VLBA Alice Spg	2310do			
1700-1800 vl	Australia, VL8K Katherine	2485do			
1700-1800 vl	Australia, VL8T Tent Crk	2325do			
1700-1800	Azerbaijan, R Dada Gorgud	7160eu			
1700-1800	Bahrain, Radio	6010do			
1700-1800	Canada, CFCX Montreal	6005do			
1700-1800	Canada, CFRX Toronto	6070do			
1700-1800	Canada, CFVP Calgary	6030do			
1700-1800	Canada, CHNX Halifax	6130do			
1700-1800	Canada, CKZU Vancouver	6160do			
1700-1800	China, China Radio Intl	4130af	7405af	8260af	9570af
		11575af			
1700-1800	Costa Rica, R Peace Intl	7375am	7385am	15030am	21465am
1700-1800	Ecuador, HCJB Quito	15270me	17790me	21455me	
1700-1800	Egypt, Radio Cairo	15255af			
1700-1800 vl	Eq Guinea, Radio Africa	7190af	7203af		
1700-1800 as	Guam, KSDA AWR Agat	13720as			
1700-1800 vl	Italy, IRRS Milano	7125eu			
1700-1800	Japan, NHK/Radio	9535na	9750as	11815as	11865na
		11915na	17750me		
1700-1730	Jordan, Radio	9560eu			
1700-1730	Kazakhstan, R Alma Ata	15270eu			
1700-1800 s	Lebanon, King of Hope	6280me			
1700-1713 mtwhfa	Lebanon, Voice of	6550eu			
1700-1800	Liberia, Radio ELWA	4760do			
1700-1800 a	Morocco, RTV Marocaine	17815af			
1700-1800 mtwtf	New Zealand, R NZ Intl	9655pa			
1700-1750	North Korea, R Pyongyang	9325eu	9640af	9977af	13785af
1700-1800	Pakistan, Radio	7355eu	9855eu		
1700-1800 vl	PNG, Natl BC	4890do			
1700-1800	Russia, Radio Moscow Intl	6165na	7105na	7170eu	7180na
		7205eu	7250na	7260na	7330eu
		7340eu	7345na	9540na	9550eu
		9575af	9830af	9890eu	11890eu
		12060af	15380na	17760na	
1700-1800 vl	Rwanda, Radiodiff Rwanda	9610do			
1700-1800	S Africa, Channel Africa	7270af	15240af		
1700-1800 vl	S Africa, Radio Oranje	4875do			
1700-1800	Saudi Arabia, BSKSA	9705eu	9720eu		
1700-1715 vl	Somalia, R Free Somalia	7499do			
1700-1730	Sri Lanka, SLBC Colombo	6075as	9720as		
1700-1715	Swaziland, Trans World R	7120af			
1700-1730 m mo	Switzerland, Red Cross BS	7210eu			
1700-1730	Switzerland, Swiss R Intl	9885af	13635me	17635af	
1700-1800 irreg	Tanzania, Radio	11765af			
1700-1800 vl	Uganda, Radio	4976do			
1700-1730	United Kingdom, BBC London	6005af	17860af		
1700-1800	United Kingdom, BBC London	3955eu	6180eu	6190af	6195eu
		7160me	9410eu	9515eu	9630af
		9740me	11940af	12095af	15070af
		15260af	15400af	15420af	17880af
		21470af	21660af		
1700-1800	USA, KCBI Dallas TX	15725am			
1700-1800	USA, KTBN Salt Lk City UT	15590am			
1700-1800	USA, Monitor Radio Intl	13625af			
1700-1800	USA, VOA Washington DC	6040eu	6110as	7215as	9645as
		9700eu	9760eu	11855as	11920af
		12040af	13710af	15205as	15320af
		15395as	15410af	15445af	17790af
		19379me			
1700-1800	USA, WEWN Birmingham AL	13615am			
1700-1800	USA, WHRI Noblesville IN	13760am	15105am		
1700-1800	USA, WINB Red Lion PA	15295eu			
1700-1800	USA, WJCR Upton KY	7490na	13595na		
1700-1800 smtwfh	USA, WMLK Bethel PA	9465eu			
1700-1800	USA, WRNO New Orleans LA	15420am			

1700-1800	USA, WWCR Nashville TN	13845am	15610am	15685am	
1700-1800	USA, WYFR Okeechobee FL	21500af			
1715-1730 mtwhf	Swaziland, Trans World R	7120af			
1715-1730	Vatican State, Vatican R	6245eu	7250eu	9645eu	
1730-1800	Netherlands, Radio	6020af	9605af	21515af	21590af
1730-1800	Romania, R Romania Intl	15340af	15365af	17745af	17805af
1730-1800 vl	Sierra Leone, SLBS	3316do			
1730-1800	Vatican State, Vatican R	9645af	11625af	15090af	
1735-1745 th	Paraguay, Radio Nacional	6025sa	9735sa		
1745-1800	India, All India Radio	7412eu	9950me	11620eu	11860eu
		11935af	15080af		

1800-1900	Argentina, RAE	15345eu			
1800-1900	Australia, Radio	5960as	5995pa	6060pa	6080as
		7240pa	7260as	9580pa	11660pa
		11695pa	11855as	11880pa	
1800-1900 vl	Australia, VLBA 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, CKZU Vancouver	6160do			
1800-1900	Costa Rica, R Peace Intl	7375am	7385am	15030am	21465am
1800-1900	Czech Republic, R Prague	6055eu	7345eu	9490eu	11990af
		13580af			
		21455am			
1800-1900	Ecuador, HCJB Quito	15255af			
1800-1830	Egypt, Radio Cairo	15255af			
1800-1900 vl	Eq Guinea, Radio Africa	7190af	7203af		
1800-1815	Ghana, GBC Radio 1	4915do			
1800-1815	Ghana, GBC Radio 2	3316do			
1800-1900 as	Guam, KSDA AWR Agat	13720as			
1800-1900	India, All India Radio	7412eu	9950me	11620eu	11860eu
		11935af	15080af		
1800-1815	Israel, Kol Israel	7465eu	11587na	11675na	
1800-1900 vl	Italy, IRRS Milano	7125eu			
1800-1900	Kuwait, Radio	9840na	13620na		
1800-1900	Lebanon, King of Hope	6280me			
1800-1900	Liberia, Radio ELWA	4760do			
1800-1900	Netherlands, Radio	6020af	9605af	21515af	21590af
1800-1900 mtwtf	New Zealand, R NZ Intl	9655pa			
1800-1830 s	Norway, Radio Norway Intl	9590eu	11860af		
1800-1900 vl	PNG, Natl BC	4890do			
1800-1855	Poland, Polish R Warsaw	5995eu	7270eu	7285eu	
1800-1830 mtwhf	Portugal, Radio	9780eu			
1800-1900	Russia, Radio Moscow Intl	6165na	7105na	7180na	7250na
		7260na	9540eu	9550na	9565eu
		9575af	9830af	9890eu	11685af
		11890eu	12045af	12050na	12055af
		15380af	17760af	17790na	

1800-1900 vl	S Africa, Radio Oranje	4875do			
1800-1900	Saudi Arabia, BSKSA	9705eu	9720eu		
1800-1900 vl	Sierra Leone, SLBS	3316do			
1800-1900	Sudan, Radio Omdurman	9170do			
1800-1900	Swaziland, Trans World R	3200af	9500af		
1800-1900 irreg	Tanzania, Radio	11765af			
1800-1900 vl	Uganda, Radio	4976do			
1800-1900	United Kingdom, BBC London	3255af	3955eu	6005af	6180eu
		6190af	6195eu	7160me	9410eu
		9630af	9740me	11940af	11955as
		12095af	15070af	15400af	15420af
		17880af			

1800-1900	USA, KCBI Dallas TX	15725am			
1800-1900	USA, KJES Mesquite NM	9510na			
1800-1900	USA, KTBN Salt Lk City UT	15590am			
1800-1900	USA, Monitor Radio Intl	9355pa	21640af		
1800-1900	USA, VOA Washington DC	6040eu	9700eu	11920af	12040af
		13675af	13710af	15205me	15320af
		15410af	15580af	17800af	19379me

1800-1900	USA, WEWN Birmingham AL	13740am			
1800-1900	USA, WHRI Noblesville IN	9485na	13760na		
1800-1900	USA, WINB Red Lion PA	15295eu			
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	15610am	15685am	
1800-1900	USA, WYFR Okeechobee FL	21500eu			
1800-1830	Vietnam, Voice of	9840eu	12020eu		
1815-1900	Bangladesh, Radio	9570me	12030eu		
1830-1900	Bulgaria, Radio	7455eu	9700na		
1830-1900	Sri Lanka, SLBC Colombo	9720eu	15120eu		
1830-1900	Sweden, Radio	6065af	9655me	15145eu	
1840-1850 mtwhfa	Greece, Voice of	15630af	15650af	17525af	
1845-1900 irreg s	Mali, Radio Malienne	4783do	4835do	5995do	
1850-1900 as	New Zealand, R NZ Intl	11735pa			
1851-1855	Gabon, Numero Un	9580af	15475af		

On Again, Off Again

Although the Australian ABC Brisbane and Perth shortwave services were scheduled to be discontinued by year's end, it is believed both were still on the air when we went to press. Because a month's extension was granted to give time for listener feedback, the stations were left in our February Shortwave Guide. If you still hear them, obviously the reprieve was prolonged.

Year	Country	Frequency	Power	Time	Year	Country	Frequency	Power	Time
1900-2000	Australia, Radio	5960as	5995pa	6060pa	6080as	2000-2100	Australia, Radio	5960as	6060pa
		7240pa	7260as	9580pa	11680pa			6060pa	6080as
		11695pa	11720pa	11880pa				11695pa	11720pa
1900-2000 vl	Australia, VL8A Alice Spg	2310do				2000-2100 vl	Australia, VL8A Alice Spg	2310do	
1900-2000 vl	Australia, VL8K Katherine	2485do				2000-2100 vl	Australia, VL8K Katherine	2485do	
1900-2000 vl	Australia, VL8T Tent Crk	2325do				2000-2100 vl	Australia, VL8T Tent Crk	2325do	
1900-2000	Bahrain, Radio	6010do				2000-2100	Bahrain, Radio	6010do	
1900-1925	Belgium, R Vlaanderen Int	5910eu	13685af			2000-2100	Canada, CFCX Montreal	6005do	
1900-1918	Brazil, Radiobras	15268eu				2000-2100	Canada, CFRX Toronto	6070do	
1900-2000	Bulgaria, Radio	7455eu	9700na			2000-2100	Canada, CFPV Calgary	6030do	
1900-2000	Canada, CFCX Montreal	6005do				2000-2100	Canada, CHNX Halifax	6130do	
1900-2000	Canada, CFRX Toronto	6070do				2000-2100	Canada, CHNX Halifax	6130do	
1900-2000	Canada, CFPV Calgary	6030do				2000-2100	Canada, CKZU Vancouver	6160do	
1900-2000	Canada, CHNX Halifax	6130do				2000-2100	China, China Radio Intl	4130eu	6950eu
1900-2000	Canada, CKZU Vancouver	6160do						8260eu	9440af
1900-2000	China, China Radio Intl	6955af	9440me					11715af	15110af
1900-2000	Costa Rica, R Peace Intl	7375am	7385am	15030am	21465am			7375am	7385am
1900-2000	Ecuador, HCJB Quito	15270eu	17490eu	17790eu	21455eu			7375am	15030am
1900-2000	Eqt Guinea, Radio Africa	7190af	7203af					21455am	21465am
1900-2000 vl	Germany, Deutsche Welle	9665af	9765af	11740me	11765me				
1900-1950		11785me	13610af	13790af	15145af				
		15425af							
1900-1910 mtwhfa	Greece, Voice of	7450eu	9380eu						
1900-1945	India, All India Radio	7412eu	9950me	11620eu	11860eu				
		11935af	15080af						
1900-2000 vl	Italy, IRRS Milano	7125eu							
1900-2000	Japan, NHK/Radio	6150as	9535as	9640am	9750as				
		11815pa	11865pa	11875pa	11915pa				
1900-2000	Kuwait, Radio	9840na	13620na						
1900-2000	Lebanon, King of Hope	6280me							
1900-2000	Liberia, Radio ELWA	4760do							
1900-2000 s	Morocco, RTV Marocaine	11920as							
1900-1925	Netherlands, Radio	6020af	9605af	21515af	21590af				
1900-2000	New Zealand, R NZ Intl	9655pa							
1900-2000 as	New Zealand, R NZ Intl	11735pa							
1900-2000	Nigeria, Radio	3326do	4990do						
1900-2000	Nigeria, Voice of	7255af							
1900-2000 vl	PNG, Natl BC	4890do							
1900-2000 vl	PNG, Radio Central	3290do							
1900-2000 vl	PNG, Radio Milne Bay	3365do							
1900-2000 vl	PNG, Radio Western	3305do							
1900-1930 mtwhf	Portugal, Radio	15515af							
1900-2000	Romania, R Romania Intl	9750eu	11810eu	11940eu	15365eu				
1900-2000	Russia, Radio Moscow Intl	7105na	7170eu	7180na	7205eu				
		7260na	9470af	9530af	9550na				
		9685af	11890af	11995eu	12050na				
		12055af	15205af	15380af	15425na				
		15580af	17560na	17710na	17760na				
1900-2000	Saipan, KFBS Marpi	9465as							
1900-2000	Saudi Arabia, BSKSA	9705eu	9720eu						
1900-2000 vl	Sierra Leone, SLBS	3316do							
1900-2000	Spain, Spanish Natl Radio	15375af							
1900-2000	Sri Lanka, SLBC Colombo	9720eu	15120eu						
1900-2000	Swaziland, Trans World R	3200af	3240af						
1900-1915 irreg	Tanzania, Radio	11765af							
1900-2000 vl	Uganda, Radio	4976do							
1900-2000	United Kingdom, BBC London	3255af	3955eu	6005af	6180eu				
		6190af	6195eu	7160me	9410eu				
		9630af	9740me	12095af	15070af				
		15400af	17880af						
1900-2000	USA, KCBI Dallas TX	15725am							
1900-2000	USA, KTBN Salt Lk City UT	15590am							
1900-2000	USA, Monitor Radio Intl	9355eu	9930pa	21640af					
1900-2000	USA, VOA Washington DC	3980eu	6040eu	7415af	9525as				
		9700eu	9760eu	11870as	11920af				
		12040af	13710af	15180as	15205me				
		15320af	15410af	15580af	17800af				
		19379me							
1900-2000	USA, WEWN Birmingham AL	9985am	13740am						
1900-2000	USA, WHRI Noblesville IN	9485na	9590na	13760na					
1900-2000	USA, WINB Red Lion PA	15295eu							
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	13845am	15610am	15685am					
1900-2000	USA, WYFR Okeechobee FL	15355af	21615af						
1900-1930	Vietnam, Voice of	9840eu	12020eu	15010eu					
1910-1920	Botswana, Radio	3356af	4830af	7255af					
1930-2000	Austria, R Austria Intl	5945eu	6155eu	9880eu	13730af				
1930-2000	Finland, YLE/Radio	6120eu	9730eu	11755af					
1930-2000	Iran, VOIRI Tehran	9022eu	15260eu						
1930-2000	Netherlands, Radio	17605af	21590af						
1930-2000	Slovakia, R Slovakia Intl	5915eu	7345eu	9440eu					
1940-2000 mha	Mongolia, R Ulaanbaatar	11790eu	11850eu						
1945-2000	Armenia, Radio Yerevan	4810me	4990me	6065me					
2000-2100 vl	Australia, VL8A Alice Spg	2310do				2000-2100 vl	Italy, IRRS Milano	7125af	
2000-2100 vl	Australia, VL8K Katherine	2485do				2000-2010 mtwhf	Kenya, Kenya BC Corp	4935do	
2000-2100 vl	Australia, VL8T Tent Crk	2325do				2000-2100	Kuwait, Radio	9840na	13620na
2000-2100	Bahrain, Radio	6010do				2000-2030 as	Latvia, Radio	5935eu	
2000-2100	Canada, CFCX Montreal	6005do				2000-2100	Lebanon, King of Hope	6280me	
2000-2100	Canada, CFRX Toronto	6070do				2000-2100	Liberia, Radio ELWA	4760do	
2000-2100	Canada, CFPV Calgary	6030do				2000-2030	Lithuania, Radio Vilnius	9710am	
2000-2100	Canada, CHNX Halifax	6130do				2000-2010 smwha	Mongolia, R Ulaanbaatar	11790eu	11850eu
2000-2100	Canada, CKZU Vancouver	6160do				2000-2025	Netherlands, Radio	17605af	21590af
2000-2100	China, China Radio Intl	4130eu	6950eu	8260eu	9440af	2000-2100	New Zealand, R NZ Intl	9655pa	
		9920eu	11715af	15110af		2000-2100 as	New Zealand, R NZ Intl	11735pa	
		7375am	7385am	15030am	21465am	2000-2100	Nigeria, Radio	3326do	4990do
		7190af	7203af			2000-2100	Nigeria, Voice of	7255af	
		5960eu	7285eu			2000-2100	North Korea, R Pyongyang	6576eu	9345eu
		4915do	3366do			2000-2030 s	Norway, Radio Norway Intl	9590eu	
		9675me	11752eu			2000-2100 vl	PNG, Natl BC	4890do	
		9022eu	15260eu			2000-2100 vl	PNG, Radio Central	3290do	
		7465eu	9435eu	11585na	11603na	2000-2100 vl	PNG, Radio Engea	2410do	
		11675na	17575af			2000-2100 vl	PNG, Radio Milne Bay	3365do	
		7125af	4935do			2000-2100 vl	PNG, Radio Western	3305do	
		9840na	13620na			2000-2100	Russia, AWR Europe	7140eu	
		5935eu				2000-2100	Russia, Radio Moscow Intl	7170eu	7180na
		6280me						7400eu	7205na
		4760do						9470af	9515af
		9710am						9550na	9890eu
		11790eu	11850eu					11890eu	11760na
		17605af	21590af					11890eu	11905na
		3326do	4990do					12055af	12015na
		7255af						15425na	17605na
		6576eu	9345eu	9640af	9977af				
		9590eu							
		4890do							
		3290do							
		2410do							
		3365do							
		3305do							
		7140eu							
		7170eu	7180na	7205na	7260na				
		7400eu	9470af	9515af	9530af				
		9550na	9890eu	11760na	11805af				
		11890eu	11905na	12015na	12050na				
		12055af	15425na	17605na	17690na				
		4875do							
		9705eu	9720eu						
		3316do							
		5020do	9545do						
		3200af	3240af						
		6110af	9885af	12035af	13635af				
		15505af							
		4976do							
		6190af	6195eu	7160me	9630af				
		9740me	15070af	17880af					

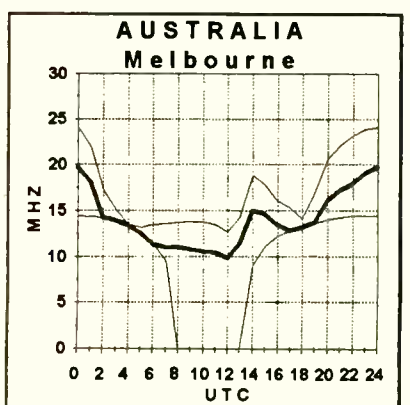
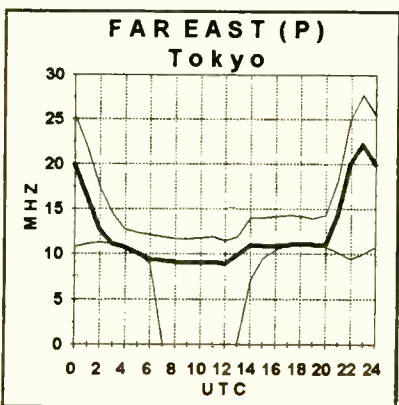
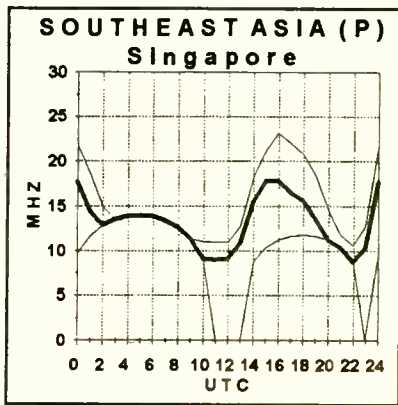
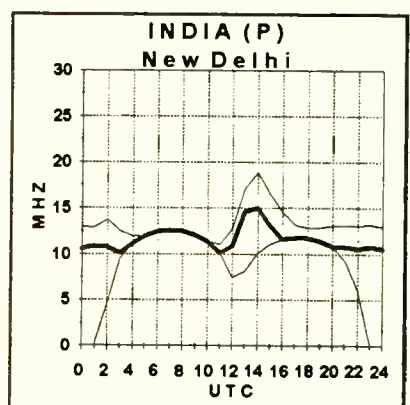
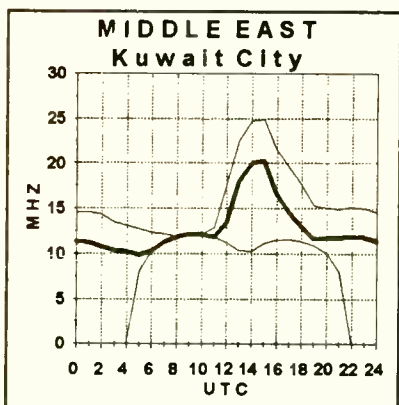
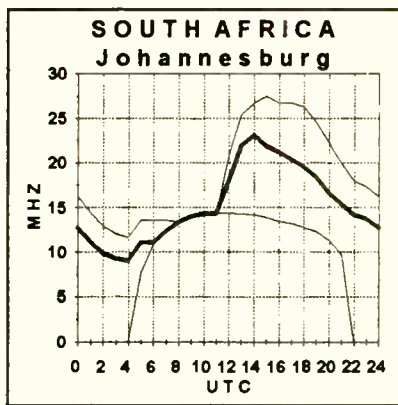
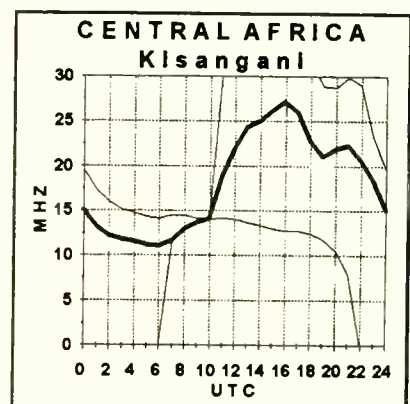
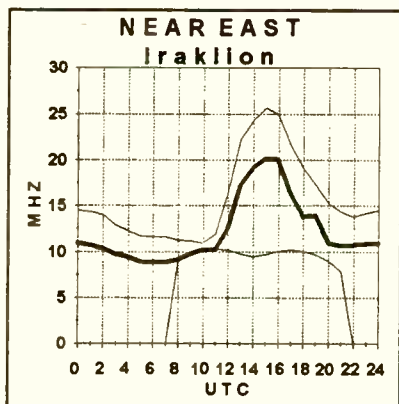
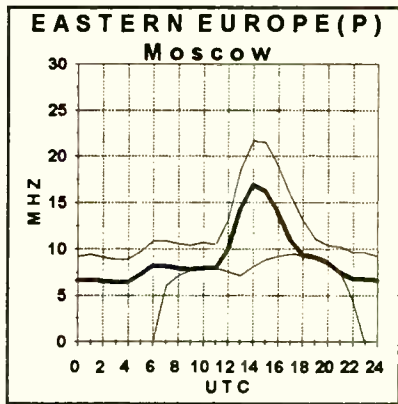
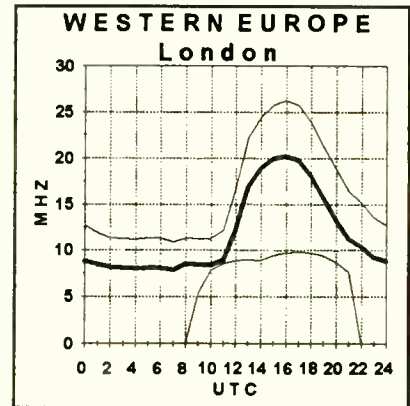
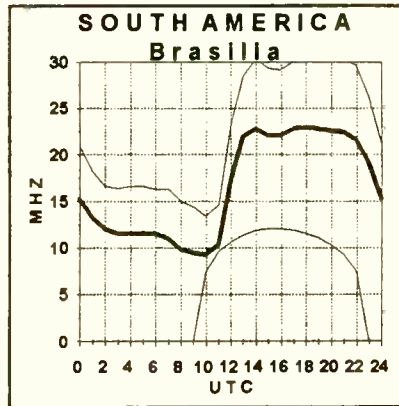
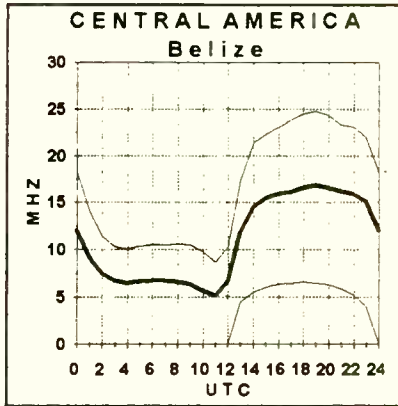
2100-2200	Australia, Radio	9645as	11720pa	11855as	
2100-2130 vl	Australia, VL8A Alice Spg	2310do			
2100-2130 vl	Australia, VL8K Katherine	2485do			
2100-2130 vl	Australia, VL8T Tent Crk	2325do			
2100-2106	Bahrain, Radio	6010do			
2100-2200	Bulgaria, Radio	6085eu	9700eu		
2100-2200	Canada, CFCX Montreal	6005do			
2100-2200	Canada, CFRX Toronto	6070do			
2100-2200	Canada, CFVP Calgary	6030do			
2100-2200	Canada, CHNX Halifax	6130do			
2100-2200	Canada, CKZU Vancouver	6160do			
2100-2200	China, China Radio Intl	4130eu	6950eu	8260eu	9920eu
		11715af	15110af		
2100-2200	Costa Rica, R Peace Intl	7375am	7385am	15030am	21465am
2100-2200	Cuba, Radio Havana Cuba	15165eu			
2100-2130	Czech Republic, R Prague	6055eu	7265eu	7345eu	9490eu
2100-2130	Ecuador, HCJB Quito	21455am			
2100-2200	Egypt, Radio Cairo	15375af			
2100-2150	Germany, Deutsche Welle	6185as	9670as	9690af	9715af
		9765as	11785as	15425af	
2100-2200	Honduras, R Copan Intl	15675am			
2100-2200	Hungary, Radio Budapest	6110eu	7220eu	9835eu	11910eu
2100-2200	India, All India Radio	7412eu	9910au	9950eu	11620eu
		11715pa	15265pa		
2100-2200 vl	Iraq, Radio Iraq Intl	11810na			
2100-2130 vl	Italy, IRRS Milano	7125af			
2100-2200	Japan, NHK/Radio	6035as	6185as	9640pa	9660as
		11915as	11925eu		
2100-2200	Lebanon, King of Hope	6280me			
2100-2200 mtwtf	Lebanon, Wings of Hope	11530me			
2100-2200	Liberia, Radio ELWA	4760do			
2100-2137	New Zealand, R NZ Intl	9655pa			
2100-2137 as	New Zealand, R NZ Intl	11735pa			
2100-2200	Nigeria, Radio	3326do	4990do		
2100-2200 mtwhfa	Palau, KHBN Voice of Hope	11980as			
2100-2200 vl	PNG, Natl BC	4890do			
2100-2200 vl	PNG, Radio Central	3290do			
2100-2200 vl	PNG, Radio Enga	2410do			
2100-2200 vl	PNG, Radio Milne Bay	3365do			
2100-2200 vl	PNG, Radio Western	3305do			
2100-2125	Poland, Polish R Warsaw	5955eu	6135eu	7285eu	
2100-2130 mtwhf	Portugal, Radio	15250af			
2100-2200	Romania, R Romania Intl	7195eu	7225eu	9690eu	9750eu
		11940eu			
2100-2200	Russia, Radio Galaxy	11880eu			
2100-2200	Russia, Radio Moscow Intl	4795af	4860eu	5920eu	5950eu
		6055eu	7115af	7150na	7170eu
		7180eu	7205eu	7330eu	9520af
		9550na	9620na	9750na	9795eu
		9890eu	11890eu	12050na	15425na
		17605na	17690na		
2100-2200 vl	S Africa, Radio Oranje	4875do			
2100-2200 vl	Sierra Leone, SLBS	3316do			
2100-2200 vl	Solomon Islands, SIBC	5020do	9545do		
2100-2130	South Korea, Radio Korea	6480af	7550me	15575eu	
2100-2200	Spain, Spanish Natl Radio	6125eu			
2100-2200	Sri Lanka, SLBC Colombo	15120as			
2100-2105	Syria, Radio Damascus	12085eu	15095eu		
2100-2200	Turkey, Voice of	9445eu	11895		
2100-2200	United Kingdom, BBC London	3255af	3955eu	5975am	6005af
		6180eu	6195eu	7325eu	9410eu
		9590na	11955as	12095na	15260sa
		15400af			
2100-2200	USA, KCBI Dallas TX	15725am			
2100-2200	USA, KTNB Salt Lk City UT	15590na			
2100-2200	USA, Monitor Radio Intl	7510eu	9355eu	13840au	
2100-2200	USA, VOA Washington DC	6040eu	6095eu	6125me	7415af
		9760eu	11760eu	11870as	13710af
		15185as	15205me	15290af	15320af
		15410af	15445af	15580af	17735as
		17800af	19379me	21485af	
2100-2200	USA, WEWN Birmingham AL	13740eu			
2100-2200	USA, WHRI Noblesville IN	13760am	17830am		
2100-2200	USA, WINB Red Lion PA	15185eu			
2100-2200	USA, WJCR Upton KY	7490na	13595na		
2100-2200	USA, WMLK Bethel PA	9465eu			
2100-2200	USA, WRNO New Orleans LA	15420am			
2100-2200	USA, WWCR Nashville TN	13845am	15610am	15685am	
2100-2200	USA, WYFR Okeechobee FL	7355eu	15566eu	17750af	21525af
2100-2110	Vatican State, Vatican R	5885eu	7250eu		
2103-2110	Croatia, Croatian Radio	9830eu	13640eu	13830eu	
2105-2135 as	Yemen, Rep of Yemen Radio	9780eu			
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	15240pa	15320pa	15365pa	17795pa
		21740pa			
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	Canada, RCI Montreal	5995eu	7260eu	11945eu	13650eu
		13690af	15140af	15325af	17820af
2130-2200	Ecuador, HCJB Quito	15270eu	17490eu	21455eu	
2130-2140 mtwhf	Latvia, Radio	5935eu			
2130-2200	Sweden, Radio	6065af	9655eu		
2138-2200	New Zealand, R NZ Intl	15115pa			
2145-2200	South Korea, Radio Korea	6480eu	15575eu		

2200-2300	Australia, Radio	9645as	11720pa	11855as	15240pa
		15320pa	15365pa	17795pa	21740pa
2200-2300 vl	Australia, VL8A Alice Spg	4835do			
2200-2300 vl	Australia, VL8K Katherine	5025do			
2200-2300 vl	Australia, VL8T Tent Crk	4910do			
2200-2225	Belgium, R Vlaanderen Int	5910eu			
2200-2230	Canada, CBC Toronto	11705am			
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, CKZU Vancouver	6160do			
2200-2230 as	Canada, RCI Montreal	5960eu	5995eu	7195na	9755na
		11705eu	11730eu	11875na	13670eu
		15305na			
2200-2300	China, China Radio Intl	7170eu			
2200-2230	China, China Radio Intl	3985eu			
2200-2220 s	Congo, R Natl Congolaise	4765do	5985do		
2200-2300	Costa Rica, R Peace Intl	7375am	9375am	15030am	21465am
2200-2300	Cuba, Radio Havana Cuba	6180na			
2200-2230	Czech Republic, R Prague	6055eu	7265eu	7345eu	9490eu
2200-2245	Egypt, Radio Cairo	9900eu			
2200-2300 vl	Eq Guinea, Radio Africa	7190af	7203af		
2200-2300 mtwhfa	Honduras, R Copan Intl	15675am			
2200-2230	India, All India Radio	7412eu	9910au	9950eu	11620eu
		11715pa	15265eu		
2200-2230 vl	Italy, IRRS Milano	7125af			
2200-2225	Italy, RAI Rome	9710as	11800as	15330as	
2200-2300	Lebanon, King of Hope	6280me			
2200-2300 mtwtf	Lebanon, Wings of Hope	11530me			
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	4990do		
2200-2300 mtwhfa	Palau, KHBN Voice of Hope	11980as			
2200-2300 vl	PNG, Natl BC	4890do			
2200-2300	Russia, Radio Moscow Intl	4795af	4860eu	5950eu	5975eu
		6005af	6100eu	7115eu	7150na
		7180na	7185eu	7300eu	7380eu
		9550na	9620na	9750na	9890eu
		12050na	13775na	15425na	17570na
		17605na	17655na	17665na	17690na
2200-2300 vl	S Africa, Radio Oranje	4875do			
2200-2300 vl	Sierra Leone, SLBS	3316do			
2200-2300	Singapore, SBC Radio One	5010do	5052do	11940do	
2200-2300 vl	Solomon Islands, SIBC	5020do	9545do		
2200-2230	South Korea, Radio Korea	7275as	9640as		
2200-2245	South Korea, Radio Korea	6480eu	15575eu		
2200-2210	Syria, Radio Damascus	12085na	15095na		
2200-2300	Taiwan, VO Free China	9850eu	11915eu		
2200-2300	UAE, Radio Abu Dhabi	9605na	9770na	11885na	
2200-2300	Ukraine, R Ukraine Intl	4825eu	5960eu	6010eu	6020eu
		6055eu	7195eu	7240eu	9505eu
		9685eu	9745eu	9860eu	
2200-2300	United Kingdom, BBC London	3955eu	5975am	6195eu	7325eu
		9410eu	9590na	9915am	11750sa
		11955as	15260sa	15400af	
2200-2300	USA, KCBI Dallas TX	15725am			
2200-2300	USA, KTNB Salt Lk City UT	15590am			
2200-2300	USA, Monitor Radio Intl	7510am	9430as	13625as	17555sa
2200-2300	USA, VOA Washington DC	6070as	7215as	9770as	11760as
		15185as	15290as	15305as	17735as
		17820as			
2200-2300	USA, WEWN Birmingham AL	13740am			
2200-2300	USA, WHRI Noblesville IN	13760eu			
2200-2245	USA, WINB Red Lion PA	15185eu			
2200-2300	USA, WJCR Upton KY	7490na	13595na		
2200-2300	USA, WRNO New Orleans LA	15420am			
2200-2300	USA, WWCR Nashville TN	12160am	13845am	15685am	
2200-2300	USA, WYFR Okeechobee FL	17750eu	21525af		
2200-2230 s	USA, KGEI San Francisco CA	15280sa			
2203-2209	Croatia, Croatian Radio	5920eu	9830eu	13830eu	
2230-2300	Finland, YLE/Radio	9615na			
2230-2300	Finland, YLE/Radio	9615eu			
2230-2300	Israel, Kol Israel	7465eu	9435eu	11585na	11603na
		11675na	17575sa		
2230-2300	Libya, Radio Jamahiriya	7245eu			
2230-2300	Lithuania, Radio Vilnius	9710eu			
2230-2300	Sweden, Radio	6065eu			
2240-2250 smtwhf	Greece, Voice of	11645au			
2245-2300	Armenia, Radio Yerevan	7440eu	9480eu	9705eu	10344eu
		11920eu			
2245-2300	Bulgaria, Radio	7455eu	9700na		
2245-2300	Ghana, GBC Radio 1	4915do			
2245-2300	Ghana, GBC Radio 2	3366do			
2245-2300	India, All India Radio	9910as	11745as	11785as	15110as
2245-2300	USA, WINB Red Lion PA	15145eu			
2245-2300	Vatican State, Vatican R	9600au	11830as		

Propagation conditions: Eastern United States

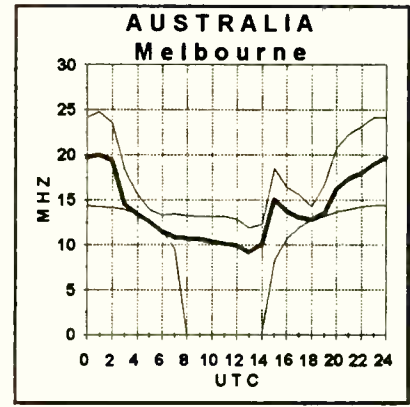
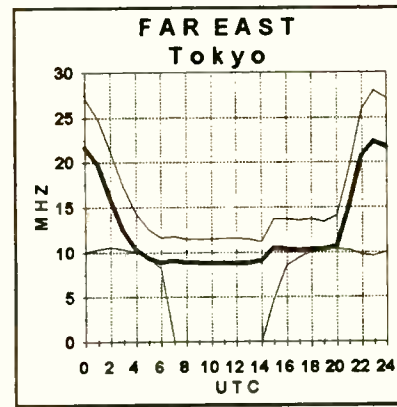
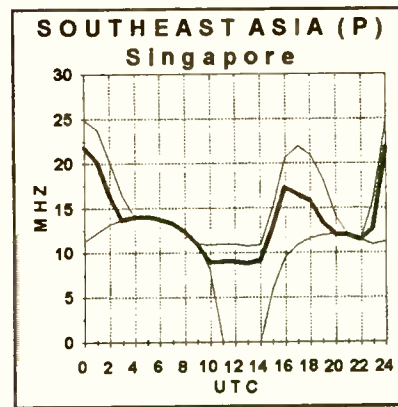
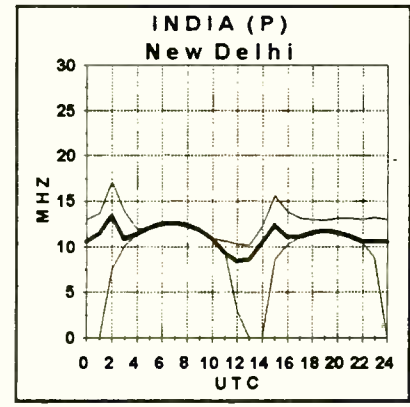
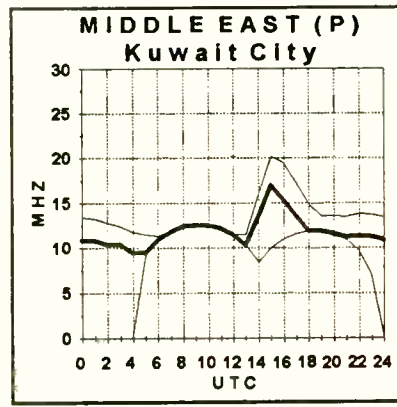
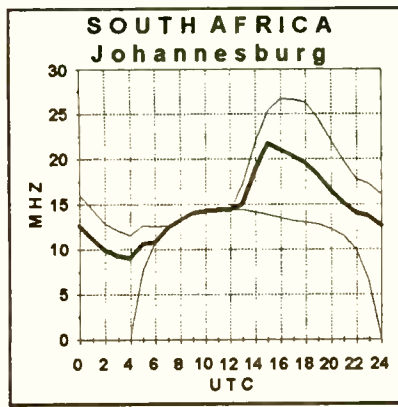
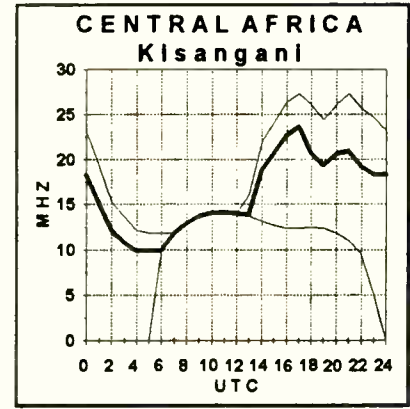
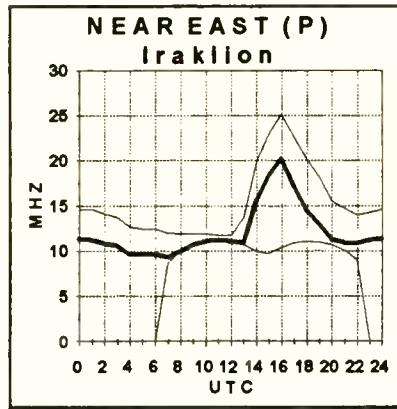
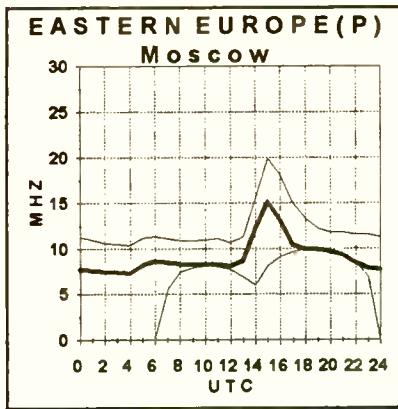
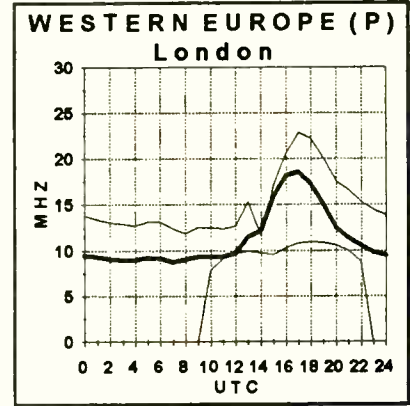
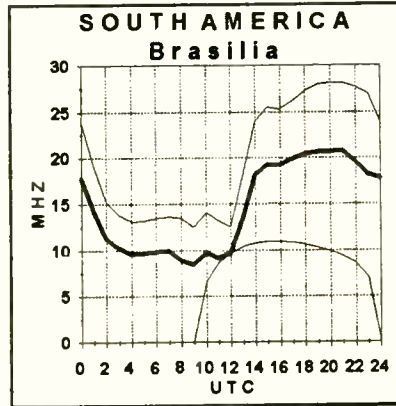
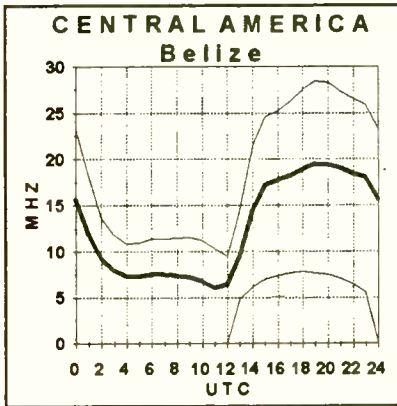
How to use the propagation charts: Propagation charts can be an invaluable aid to the DXer in determining which frequencies are likely to be open at a given time. To use the propagation charts, choose those for your location. Then look for the one most closely describing the geographic location of the station you want to hear.

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



Propagation Conditions: Western United States

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. Due to the decrease in the sun cycle, the graphs have been adjusted so that the maximum frequency is now 30 MHz instead of 40 MHz.



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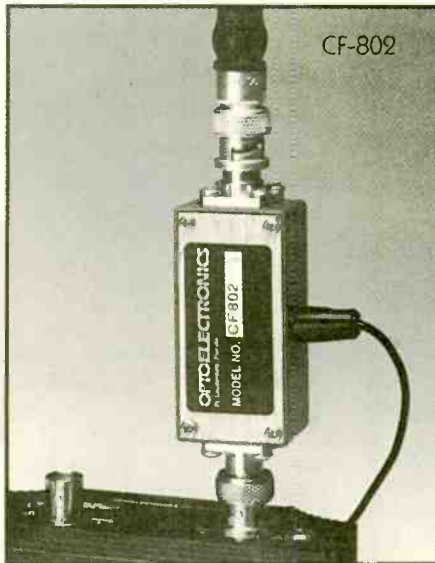
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OPTOELECTRONICS

Pioneer Days and Broadcast Thrills in Phoenix Arizona

By William A. Rhodes, W7KLA

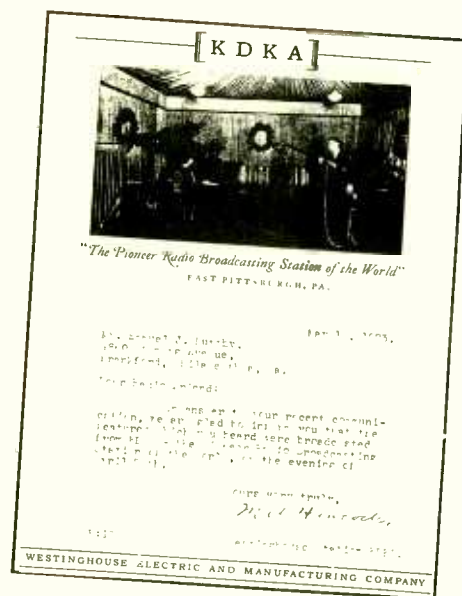
As a youngster over one half century ago, I bolted from a strict upbringing as a classical pianist and learned jazz to keep from starving. To make life more interesting, my ham ticket provided an insight into technical matters of radio. In those days there were two pioneer stations in Phoenix: KOY and KTAR. They are both active today.

KTAR was a jewel of a station. The operating room had its motor generator embedded in the white tile floor and their two studios each sported a grand piano. KOY, on the other hand, was a rag-tag station up Central Avenue, and I decided to break into playing programs there because anybody that could saw a Chinese fiddle was acceptable.

The program director and part owner of KTAR was a strict disciplinarian, Howard Pyle. KOY had Jack Williams, announcer and eventually owner. Many decades later they both were elected governors of Arizona. If you worked for either station, you were barred forever from the other.

Two live programs were played on KOY. The one at noon was the *Sunshine Hour*, for more experienced musicians. The other at 5:00 pm, *The Gloom Chasers*, brought together a collection of hopefuls including myself and another ham friend who played vibes. All without pay, of course. I even volunteered to cart a pretty 16 year old pop singer to and from on my bike.

I was over 6 feet tall and was dubbed, "Wee Willie" and despite the secondary nature of the



Drapes lined the walls of many early broadcast studios, whether elegant ones as at KDKA, or a rag-tag operation like KOY in Phoenix, when every day was an adventure. (QSL courtesy ANARC Committee to Preserve Radio Verifications)



Controversy at the Core

Anyone who has followed stories about radio pioneers and the first days of radio is well aware that its scientific development was very competitive and the methods of new industrialists not always scrupulous. One of the most brilliant researchers into the fascinating world of radio waves and electricity was Nicola Tesla, who was pursuing a wireless radio system based on non-electromagnetic propagation.

Although as with many groundbreaking discoveries both then and now, Tesla's work never translated into modern radio and economic success, his theories have nevertheless continued to fascinate experimenters worldwide. One follower in particular, Eric Dollard, has apparently devoted his life to preserving and furthering Tesla's theories and is attempting to recover and preserve a historic Marconi Wireless site as well in Bolinas, CA. For information on the research reported by Eric Dollard, write Borderland Sciences Research Foundation, P.O. Box 429, Garberville, CA 95440.

There is also a society formed around a common fascination with the Tesla coil—the Frankenstein-like device that creates dramatic static discharges. Their statement of purpose reads: The Tesla Coil Builders' Association was formed in 1982 to fulfill an urgent need for a source of information on the construction, function, and theoretical analysis of the Tesla coil. The common bond among the members is a desire to either learn about or a willingness to teach others about the amazing Tesla coil.

A four-issue subscription to TCBA News is \$24 in the U.S., or \$12 for junior/senior high school students. For more information contact TCBA, 3 Amy Lane, Queensbury, NY 12804, [518]792-1003.

Many of the grounds for controversy between the early radio pioneers are as valid and as hotly disputed as they ever were. Is modern radio technology too far committed to one approach to change horses in midstream? Some people don't think so.

program we all became big toads in a little puddle. Phoenix' population at that time was about 60 thousand.

At that time, the single studio and transmitter was in the rear of the Nielson Radio and Sporting Goods Co. In the basement was a bowling alley. The 15 foot square studio was hung with very heavy dark blue drapes to promote the vogue of the time—absolute sound absorption. When the station was purchased by WLS Chicago (the old "Barn Dance" station), the drapes were cut loose. They fell with a thud after so many years of desert dirt accumulation that the dirt had to be piled up and shoveled out.

On damp days they sprayed wintergreen around to mask the choking cigarette stink. No one could imagine how it was like in there during 110 degree summers. In one corner sat an ILG Spot Cooler. That's exactly what it did—cooled a spot—because its condenser blew heat out into the studio. Net cooling effect—zero.

They had an old beat-up Schiller grand piano which was a dog to play. Several starving pianists hung around. One old guy, Percy Howard, had a beautiful technique for that period. I learned a lot from him. He also smoked pot. One day while I played the last tune of the program, he placed both elbows on the piano to watch while dragging

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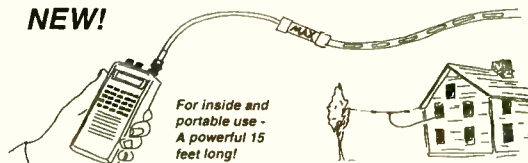
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on his fag. Being tall, with my feet flat on the floor, my knees were crowded under the keyboard. Without missing a lick, I raised the front legs of the piano slightly off the floor with my feet, causing it to sway gently from side to side. We cut away to the control room and he mumbled "OMAGOD," covered his mouth and rushed for the door to upchuck.

Double-button carbon mikes were about to be replaced by condenser mikes, but their gain control was manual and we were told we could applaud lightly but were warned not to whistle because it knocked the station off the air.

Their antenna was a peach: 120 feet of vertical 8 inch metal well casing stuck through a hole in the center of the roof. It sat on a pine board on the concrete floor. The loading coil was strapped to the pipe. Early one morning I was there for a special program. I absolutely knew the transmitter wasn't on the air yet and casually leaned against the pipe with the heel of my hand while talking to someone. Suddenly, I could feel my hand getting warm and pulled away. A red arc blasted a hole in my palm. The scar remains today. Total antenna length/frequency relationship placed the entire vertical well toward the voltage end.

One evening after the program, I went outside to find a brutal dust storm raging. Looking up, one of the four guy cables was flapping loosely from the building corner. I rushed inside to inform Mr. Nielson. In his bass voice he boomed, "Son, you take care of the playin'; I'll take care of the station."

Next morning, KOY was off the air. I biked over and wasn't surprised to see the behemoth draped over the tops of several buildings down the street — including a mortuary. Inside where it stood was a disaster. Besides the exterior damage, the base pried off a good portion of the roof, its lower end demolishing an old upright piano and a wall. They got back on the air by stringing a wire out the operating room window to the roof of a church across the street.

The transmitter room was a whole 'nother story. The several operators all nipped booze on duty. During commercials one could eventually hear a "hic."

At that time, downtown Phoenix streets were paved with pure asphalt. Under our blistering summer sun it became pudding. Pedestrian crossing was done with dispatch. Standing more than a few seconds could result in walking out of one's shoes. When the operator had to discard damaged

recordings, they were sailed through the barred window onto the street. Many years after the station moved, one could still see recordings and their labels as part of the pavement. Also myriad bottle caps.

During those years the station would suddenly lose its carrier with an immediate return with the usual, "Due to technical difficulties beyond our control."

After the station went on the air with a new transmitter from a new studio location, my friend and I snooped around the original transmitter room while they were wrecking it out. The old rig was a handsome caged RCA unit which sat on a false floor two feet above the basement ceiling. To admit cables, the floor was open under where the rig sat. The front door of the rig had an interlock switch to kill power when opened. We opened the door and peered down — and discovered why the transmitter periodically left the air.

There on the basement ceiling was a pile of whiskey and wine bottles extending up to the transmitter base. And to think, this stupid kid had been listening for a whistle to kill the rig!

MT

Say Hello to Helsinki!

Are you looking for a new experience in radio listening? Have you grown tired of the same familiar local stations? Turn off your radio and turn on your imagination! Travel with us to Helsinki, Finland, for a tour of the AM and FM bands by ace DXer Mika Palo, pictured below.

Welcome to Finland: a nation situated high in the northern latitudes, intersected by the Arctic Circle, and filled with large forests unaltered by man. The Baltic Sea surrounds the populated southern part of the country, Sweden and Norway border Finland up north, and Russia is found to the east. Only 5 million people live in "The Nation Under The North Star."



Photo by Jynki Jantunen

Every Finn listens almost exclusively to FM radio, where you'll find an amazing potpourri of unusual stations in stereo. YLE, The Finnish Broadcasting Company, is a government supported public service offering four nationwide networks on FM. Network FM 1 is a cultural service offering classical music and very elevated talk shows. Sporting a very unusual name, "Radio Mafia," Network FM 2 features mostly rock music. "Some people thought it was funny, but I don't like the name," comments Mika. The most listened to station is FM Network 3, called Radio Suomi, (Finland), a generalist channel with talk programs, news and Finnish light music.

The fourth FM service "is a Swedish language channel, because we have two official languages here. We have a Swedish minority, and they have their own radio channel which is audible in all the Swedish speaking parts of Finland, mainly on the western and southern coasts, and in the Åland Archipelago."

There are no nationwide commercial radio networks, but there are lots of private local stations. "In 1985, the first private commercial station started in Finland, because the legislation

was changed. Until then, YLE had a monopoly in broadcasting. Since then, we've had a proliferation of local FM stations, mainly private and commercial, but some stations are operated by community groups, like the Boy Scouts. There are fifty, perhaps, in the entire country. In the Helsinki area, we have Radio City, 96.2, with hit rock music, and Radio One, 91.1, playing a lot of American hit music."

Lähi Radio, 100.3, is a community station. "It offers the transmitter for various organizations like Christian groups. There is even a program for the few Latin Americans living here, so there's some Spanish on this frequency. Any organization that is interested, and has some volunteers willing to make these programs, can go and use the studios of this station. But they tend to be one of the least listened to stations. The quality of the programs is not the same, as with the professional stations."

"Then we have another station called Pasilan Asema, 102.4, which simply means the Pasilan station, which is one part of Helsinki. You'll hear lots of popular music, but it's a very small operation. We also have a private classical music station, called Classic Radio, 92.9. Radio Three is located in Nurmijärvi and Vantaa. It has two transmitters, one in each city. They used to have two separate stations, but Radio Three bought the station in Vantaa. It serves the area just north of Helsinki, but it is audible in Helsinki."

"Capital FM is a local service operated by YLE in Helsinki on 103.7 in mono. A couple of years ago, they only had relays of YLE external broadcasts. When they transmitted something on shortwave, they broadcast the same programs at the same time on FM for the local audience of foreigners who are living here in Helsinki. Until two years ago, they didn't have YLE programs going out externally all the time, which meant they had some empty spaces. They got the idea to fill these empty spaces with programs from other international broadcasters, like the BBC, the VOA, Radio France International, Deutsche Welle, and now they even have National Public Radio and Radio Australia."

"The international population (in Helsinki) has been growing. In the last few years we've gotten more refugees, for example, from Somalia, some from the former Yugoslavia, but mainly from Russia and Estonia. And we have some people from Sweden, and a community of Britons and Americans. Helsinki is the most international place in Finland. If you compare this to Stockholm, or Copenhagen, it's probably nothing, because they have a lot more foreigners living there." Mika has noticed Finland is very

different compared to Central Europe. "The population here is almost completely Finnish. There's hardly any immigration."

After you have sampled the local FM fare, you can join Mika searching for DX! "If I point my telescopic aerial in the right direction to the south, I can get two Estonian stations from the other side of the gulf of Finland, in Tallinn, the Estonian capital. There's a station called Raadio Top, (with two A's) which is a private Estonian pop music station on 90.6. At 100.6 there's Estonian Radio, the national broadcaster."

"In Helsinki we don't hear Sweden. On the Western Coast of Finland, or in the Åland Archipelago, you'll hear some Swedish stations; and closer to the Russian border you can get some Russian stations on FM. The Russians are still mainly using a different FM band, called the OIRT FM band (66-73 MHz), so if you have a receiver with that band you may be able to hear some Russian and Estonian stations. But the trend in Russia, Estonia, and all the Baltic countries is to move to the western FM band.

"More and more you can hear stations on the normal FM band. If you are an FMDX specialist, you might hear things from all over Europe. Some Finnish FM DXers have even been able to receive FM stations from Morocco, Tunisia, and the Middle East, like Turkey and Israel. The more usual catches, during the summer, are Italy, France, Germany, and Britain, using special antennas and a lot of effort."

The medium wave AM band in Finland is almost like shortwave listening. Finns almost always listen to FM! "They hardly even know about the existence of other bands. Everybody is listening to FM all the time, because the national FM networks cover the entire country. They built all these networks pretty early during the 60s, and after that hardly anyone was listening to AM. So, if someone is listening to AM, it would be somebody really interested in listening to foreign stations.

"There are no private Finnish stations broadcasting on AM, or long wave, only Radio Finland, the external service of YLE. They have two medium wave stations: one in Helsinki on 558 kHz (50 kW), and another one in Pori, which is a lot stronger with 600 kW, on 963 kHz. These are meant to reach Scandinavia, and Northern Europe and the Baltic areas. They carry YLE external service programming in Finnish, German, French, Russian, Swedish. There used to be a YLE long wave station in Lahti on 252 kHz, but they closed it down last summer."



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"On medium wave and long wave, you can hear lots of things because there are so few local stations on the air." You might hear North America, but you must travel north to Lapland! "There's about 100 DXers who like to go on DXpeditions to Lapland every winter, mainly between October and February. They go for about two weeks to the north of the Arctic Circle. There they put up one kilometer long Beverage antennas and they direct them mainly to North America and South America, and they get really amazing results. I've been there twice, and it's really fascinating to be able to hear all these low powered AM stations. Once it was Christmas, and I was listening to KFQD Anchorage, Alaska, broadcasting a program called *Christmas in Alaska*. And what's nice is that very often, if you have good conditions, you can really enjoy the reception, if you have long Beverage antennas. If you are hunting for some of the more difficult weaker stations, often reception isn't that good, but with the stronger stations, you can really enjoy the reception."

North American stations are very difficult to receive in Southern Finland. "In the north, partly because the distance from the powerful Central European stations is greater, it's a different world for radio listening. The north of Finland, and the north of Sweden or Norway, for that matter, is a real paradise for DXers. The AM reception is really spectacular. Otherwise, Finnish DXers are quite interested in Tropical Bands DXing (2000-5900 kHz). You get a lot of interesting stations from Asia, Indonesia, Africa, and from all parts of the world."

What can you expect to hear on AM radio at night in Helsinki? "The neighboring countries, especially Russia, the Baltic States, Estonia, Latvia, Lithuania, Poland, Romania, the Czech Republic and Slovakia. We get Sweden, Denmark and Norway very strongly. You don't need any special antennas. They are all very easy to listen to. Central and Eastern Europe are where most of the stations are located in the evening. If you listen more carefully, you're able to get pretty good reception from Saudi Arabia, because they have amazing transmitting power. For example, on 1440 kHz, you can often hear a Saudi station with virtually perfect reception. On other evenings, Luxembourg dominates the frequency."

Are there popular DX clubs? "The main DX club is the Finnish DX Association. It was already established in the late 1950s. There's a Finnish speaking club, a Swedish speaking club, and an international club, called the Friendly DX Club. These member clubs hardly have an independent existence, so it's better to just call the whole thing the Finnish DX Association! We have more than 1600 members at the present time. Their maga-

zine, *Radiomaailma*, is sent to every member. Virtually all the articles come from members. It's a completely

voluntary operation, except that we have one full-time worker who is the managing editor of the magazine."

Mika serves as Editor-in-Chief of *Radiomaailma*, and is one of its leading contributors. Now 28 years old, Mika also writes for Finland's largest newspaper, *Helsingin Sanomat*, and is working on a master's degree in theology at The University of Helsinki. The topic of his thesis comes as no surprise! "Radio Voice of the Gospel—The Shortwave Broadcasting Activity of the Lutheran World Federation in Ethiopia, 1963-1977."

Mika says: "Most of my radio listening now is just program listening to the BBC World Service and Radio Portugal. I also study Portuguese! But I do hope to find time, later on, for more station-hunting and QSLing. I have QSLs from 151 countries now!"

Thank you, Mika, for a wonderful tour of the airwaves in your beautiful country!

Bits 'N' Pieces

A historic DXpedition was held in Newfoundland in late October. Medium Wave DXers Mark Connelly, Jean Burnell, Neil Kazaross, and Bruce Conti returned to "The DX Inn," Lawlor's Hospitality Home, in Cappahayden, Newfoundland, Canada, and logged 92 different countries on medium wave in five days! (Their first DXcellent adventure was chronicled in the February '92 edition of *MT*.)

Great radios, amazing antennas, and innovative accessories produced astounding results! Their equipment roster: An Icom R70 and R71, a Drake R-8, and a Sony ICF-2010 connected to six antennae placed in carefully selected directions. Four of the antennas were 2000 to 3000 foot long Beverages. Complete control of their pick-up patterns was achieved using Connelly-designed phasing devices, noise-reducing transformers, regenerative tuner/preamps, and a remotely tuned medium wave loop antenna.

Reception highlights included an exciting logging of the long elusive AIR from Nagpur, India, on 1566 kHz, Latvia on 1350 kHz, and the VOA's relay in Greece on 792 kHz. Mark was thrilled to pull in Aberdeen, Scotland, on 1035 kHz by phasing out powerful signals from Portugal. Deutsche Welle's Sri Lankan relay on 1548 kHz was the "fish that got away." The four could swear they heard audio parallel to DW's shortwave broadcasts, but could not confirm these tentative loggings. What an amazing week it was! And until next month, happy trails! *MT*

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The DOT is charged with the enormous task of making sure that the millions of miles of highways, waterways, railways, boatways and skyways run smoothly and efficiently. This is quite an accomplishment in a country whose life blood depends on being able to *get there from here*. When problems arise, such as a major transit strike or a natural disaster, the whole system is affected. Everything slows down — traffic, trade and more importantly, money.

You can keep tabs on the pulse of America by monitoring the administrative communications of the Department of Transportation. It's exciting stuff, especially during times of disaster. If it affects transportation, chances are it involves the DOT. Just a few of the agencies that fall under the DOT's auspices are the Federal Aviation Administration, Federal Maritime Administration,

Federal Railroad Administration and the National Highway Traffic Safety Administration. Take a look at the frequencies used by these agencies listed in Table 1.

Mailbag

Out Foxing the Foxes

Many Federal File readers already know how handy a frequency counter can be in ferreting out unpublished frequencies. Inexpensive and easy to use frequency counters have found their way off the test bench and into the field, becoming an indispensable tool of monitoring enthusiasts.

One monitor who has found a unique use for frequency counters is Groom Lake/Area 51 resident Glenn Campbell. Military enthusiasts might recall that Glenn is the author of the *Area 51 Viewers Guide*, a controversial travel guide for the area surrounding America's super secret military test base. Glenn is also leading a public fight to keep the Air Force from laying claim to thousands of acres of public land surrounding Groom in an attempt to keep the curious from visiting viewing sites overlooking the base.

In any event, the area around Groom Lake is one of (if not *the*) most closely guarded military installations in the world today. The area is patrolled constantly by an elite professional security force whose job it is to see that the curious aviation buff, or international spy, doesn't get close enough to catch a glimpse of a secret aircraft prototype.

Glenn Campbell lives in Rachel, a very small town just a hoot and a holler from Groom Lake. Glenn travels the roads around Groom very frequently and he noticed that whenever he (or others) travel the roads near the base that soon one of the security patrol's white Jeep Cherokees appear to shadow them. Glenn began

wondering how they knew when anyone was on the road. Putting two and two together Glenn surmised that they must have some kind of

Table 1

Federal Aviation Administration Nationwide

Freq MHz	Description
162.275	FAA facilities maintenance and site integrity
162.300	FAA maintenance
162.325	FAA maintenance
165.7125	FAA maintenance
165.6625	airport lighting control/civil aviation security
166.175	civil aviation security
165.6625	civil aviation security
165.750	civil aviation security common
165.3375	civil aviation security repeaters (165.750 output)
408.825	FAA facilities maintenance
409.025	FAA facilities maintenance
406.725	FAA facilities maintenance
416.550	FAA facilities maintenance
410.300	FAA facilities maintenance
416.875	FAA facilities maintenance

Other FAA frequencies to monitor: 172.850, 172.875, 172.900 MHz.

Federal Railroad Administration

Freq MHz	Description
173.9125	operations
171.2375	operations
172.300	operations repeater (170.750 in)
171.650	operations
172.825	fire and railroad security
173.050	telemetry
173.150	security
173.6375	security primary (paired with 172.700)

Federal Maritime Administration

Frequency	Description
166.150	operations and security
169.075	operations and security
165.5875	operations

National Traffic Safety Administration.

Freq MHz	Description
40.390	tactical (4)
40.260	tactical (3)
40.970	tactical (2)
40.390	operations
158.490	Investigators: old RCC (radio common carrier) telephones (output 152.030)
158.520	Investigators: old RCC telephones (output 152.060)
158.580	Investigators: old RCC telephones (152.090)
158.640	Investigators: old RCC telephones (152.180)
158.670	Investigators: old RCC telephones (152.210)

Other DOT frequencies(VHF low) to watch for activity include: 27.575, 27.585, 32.13, 32.21, 33.21, 34.05, 36.25, 38.52, 40.39, 41.21, 41.37, 41.41, 41.73 MHz.



Federal Aviation Administration Regions and Facilities

Region	Location
Alaskan	Anchorage
Eastern	Jamaica
Great Lakes	Des Plaines
New England	Burlington
Northwest-Mountain	Seattle
Southern	Atlanta
Southwest	Fort Worth
Western-Pacific	Los Angeles
Europe-Africa	
Middle East	Brussels, Bel.

detector system, possibly relaying data back to the security command post at Groom. Hiking through the area Glenn stumbled upon one of them.

Glenn writes: "The detection apparatus consists of two detection units—plastic canisters about the size of soft drink cans buried beside the road. Inside each are some primitive electronics and a coil, which senses any big hunk of metal passing nearby.

"The two detection units are wired to a transmitter hidden in bushes about twenty feet away. The transmitter is about the size of a gallon paint can and takes its power from some batteries contained in a nearby ammo can. Given the vastness of the desert here, finding these devices seems almost impossible at first, and it took us many months to locate even one. The solution? We cruise the roads with a frequency counter, set on its fastest gatime. When 496.25 MHz comes on to the display, we know we just passed one of those top secret sensors. We get out, comb the sides of the road and sure enough, there is another transmitter hiding in the bushes.

There is much more aviation to listen to than on the 118 to 136 MHz bands. The FAA can be found on VHF and UHF.



"We never cease to be amazed at how the apparatus of secrecy can be turned into a spotlight on its makers. The transmitted pulse is available for anyone to pick up, so we are working now on ways to monitor the sensors ourselves. We'll use them to keep track of the cammo dudes in the white Jeep Cherokees.

"Alas, we may not get the chance to implement this particular plan. We gave a copy of a map we made of the sensor's locations to local officials of BLM (Bureau of Land Management), the custodian of public lands. BLM is not happy. The Air Force has no jurisdiction on public land and is supposed to apply to BLM before it does this sort of thing. Bad Air Force. If you want the challenge of finding these sensors for yourself, you had better come soon, because we predict they won't remain in place for very long."

Bat Plane!

Rich Dixon from New York writes us about a military aircraft callsign identification he needs.

Rich writes: "Today I heard an aircraft on my PRO-2006 that I can't figure out who or what it is. The callsign was 'Bat 10.' I live about 65 miles from Syracuse which flies F-16s from their ANG base and about 120 miles from Griffiss AFB. I have spent quite a bit of time monitoring these two bases but have never heard that callsign. The call was first heard on 364.200 MHz and then again later on 11.176 MHz (USB) with a radio check with MacDill. Any idea who this could be?"

The callsign "BAT + #" is heard quite often here in Texas. I hear it from B-1B bombers and sometimes KC-135 tankers based at Dyess AFB (near Abilene). However, it could be in use by other aircraft based near you. Any ideas, readers?

In The Blind

From Ojai, California, and Roy Hooper comes a possible explanation for the radio term "in the blind" that was mentioned in the November Fed File. Roy says, "In Ventura County, CA, I sometimes hear the dispatcher say 'in the blind.' A fellow ham who is also a watch commander at the Ventura CHP station says that 'in the blind' means: the following broadcast is for information purposes only, no replay is needed."

Roy (KCGWVP) is a confessed "scanner freak" and monitors all the action on his AR1000, BC-760, BC-200, Opto 2810, PRO-32, PRO-38 and Kenwood 241A.

MT

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ARINC

ARINC, Aeronautical Radio, Inc., is a company that handles air/ground communications (among other services) to airlines, corporate, private and military aircraft. The company provides these services on VHF, where it operates a national domestic network, and also on HF for aircraft flying over oceanic routes.

On HF, ARINC is the middleman between aircraft and Air Traffic Control. ARINC Radio Operators do not control the aircraft themselves, but are the liaison between ATC and aircraft which are flying over non-radar areas. The radio operators also handle communications on the HF LDOC (Long Distance Operational Control) frequencies, called 'operational messages' which are separate from those used for the passage of ATC information.

Today we'll visit ARINC's San Francisco Communications Center. We'll be talking with Chris Morales, Chief of Communications, who's been with ARINC 26 years after a long career in communications with the Navy; Henri Bronsgeest, Director of the Communications Center and an Air Force veteran with expertise in communications and computers, who has worked for ARINC for 13 years; Malcolm Emhart, Training Analysis Coordinator, who started out as a radio operator for ARINC 26 years ago and worked for Braniff Airlines prior to that; and Carolyn Stone, Radio Operator, with a background of 18 years with Eastern Airlines, 15 of which were worked in the radio room of Atlanta Flight Support.

MT: Let's start with frequencies. Have any new frequencies been added to the Central Pacific families lately?

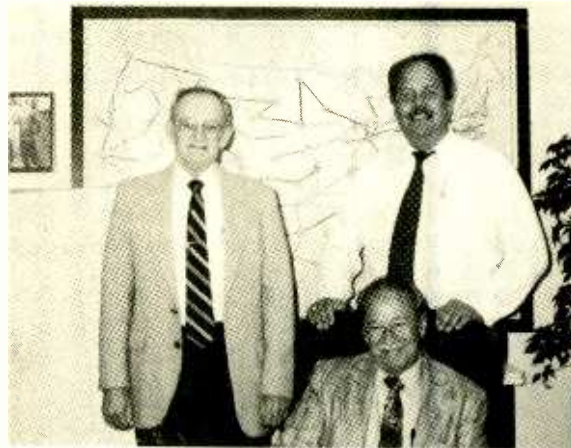
MORALES: No. However, we move frequencies in different groups so there's an equitable distribution and we don't have all the airlines on one particular frequency.

MT: Does this happen often?

BRONGEEST: Well, we've had to move some of the popular daytime frequencies due to interference from different sources. It's easier to rearrange and find other frequencies to use than to track interference and get it to stop. A lot of times even if we find out where it's coming from, stopping it can be difficult because it's coming from a different country. Especially if, for instance, it comes from China; in that case, it has to go through the State Department. That takes some time and we need to talk *now*.

On the plus side, we've had days when we've taken contacts on the ground in Australia. And just recently, we had a contact with a pilot on the

Center: Chris Morales, Chief of Communications; Left: Malcolm Emhart, Training Analysis Coordinator; Right: Henri Bronsgeest, Director of the San Francisco Arinc Communications Center.



ground in Sao Paulo, Brazil, that was crystal clear. We've even had times when VHF reached all the way to Honolulu loud and clear.

EMHART: The other day one of our operators even worked a military flight all the way down to the Falkland Islands on HF.

MT: What is the dividing line, geographically, between San Francisco and Honolulu ARINC when taking radio guard for a flight?

BRONGEEST: 140° West to 37° North, then it moves over to 150° West.

EMHART: That's the official radio guard change boundary. What we do here is to take a report on one side of the boundary and tell the pilot to call Honolulu when they've passed the boundary at the next tracking point.

MT: One thing that a lot of us are curious about is if pilots have trouble remembering that you are not ATC?

MORALES: Sometimes. Especially on overseas flights a pilot can function a little more efficiently if he has an overview of what we do. Sometimes a pilot will contact us and say he needs 370 (37,000 feet). The operator will say "Roger, stand by," and the pilot may interpret that as our having some authority. We have to watch our words very carefully. Some pilots say "Well, why can't I have it (the requested flight level)?"

We do what we can to facilitate the request, but remember, we're not doing it in the first person. A pilot's request has to go from us to Air Traffic Control. The controller is working manually (in a non-radar environment since it is oceanic), and in doing so, there's that natural delay. It can be tough for a pilot to understand that "gee, someone is making the decision, but why is it taking 10 minutes?" He may not realize when he talks to us that he's talking to the middleman who in turn will get the clearance or whatever from the actual controller himself.

However, there's usually very good rapport

and the operator's skill level can be like a conductor of an orchestra: they can make things run smoothly or make it rough on themselves—and some people do.

MT: Would you tell us a bit about the radio operators?

MORALES: Sure. We have 40 operators currently. The operations are split 50-50 where half of them are working VHF (domestic) and the other half are working oceanic (HF). Operators work both voice and data. By data, I mean they handle satellite comms: all the up and down links which are in data form.

As far as qualifications go, they need to have command skills, for one thing, stability for another, and preferably, some background in communications. One of the most important skills is being able to type at least 40 wpm, and that requirement will probably increase in the future. Parallel communication experience, for instance in the military or in airline dispatching, can qualify. There's a great deal to learn in radio ops, so that calls for someone with good memory retention and the ability to remember a lot of disassociated facts. A good knowledge of geography is also important.

Flexibility is very necessary, because as a junior operator, you may not get the day watch; you will probably be on the midshift or locked into an evening watch, or even on some of the relief watches such as noon to 8 pm. They have to work all shifts and positions to the satisfaction of their instructor and management personnel. It generally takes two years for a radio operator to mature to the point where they're really comfortable with themselves and the job.

What do you think, Malcolm? You're the one who has to do the training.

EMHART: I agree. Also, we figure it takes about six months or so to get them through the training period if they have no aviation communications experience. If they have background in military or airline communications, then we can train them a lot faster because they're familiar with the

jargon, codes, frequencies, etc. In that case, we can usually get them through training in about three months.

BRONGEEST: Most things we've mentioned can be learned but one thing which almost has to be an inborn skill, is to be able to type while listening to the transmission. If you don't have the capability to do that, it doesn't matter how good your memory is, you won't make it as a radio operator. These operators sometimes get 60 contacts per hour—one per minute. You have to get it, and get it correctly, the first time.

MT: I can readily understand what you're saying; just for fun, I've tried to type what I hear while monitoring—and as good a typist as I thought I was, I couldn't begin to keep up! Speaking of operators, let's talk with Carolyn Stone for a moment. We met Carolyn a few years ago when she was with Atlanta Flight Support. Will you tell us about your duties as a radio operator with ARINC, Carolyn?

STONE: I came aboard with ARINC two years ago this past June and I work both oceanic (HF) and domestic VHF positions. At the present time, I'm on the midshift (nights) and that's a whole different ballgame from working days. During the week I work domestic and on weekends I'm on oceanic. I really enjoy my work on both positions—there's never a dull moment!

MT: Since New York ARINC only handles VHF in their immediate area and in the Gulf of Mexico, does handling 98% of the VHF communications in the country put a heavy load on San Francisco ARINC?

MORALES: No. Before ACARS (air-ground-air data link) came into being, we used to handle "out, off, on and in" (OOOI) reports and other regular transmissions by voice. But ACARS now does the majority of our mundane communications. What we're involved in now is a lot of hookups between pilots and their companies. We interface with a direct phone patch between the aircraft and various users, such as maintenance and dispatchers. There's nothing wrong with a data link, but it greatly restricts getting exact thoughts across. The operator can track along at 40 words a minute and give him some text copy so he knows what he said. So you see, voice will not leave us, because it is still important.

MT: Which brings up my last question. Is there a chance that eventually ARINC's communications will be going completely digital and/or to satellite? Will this happen or am I confusing my terminology?

BRONGEEST: Yes you are, but a lot of pilots do it, too. Satellite does not mean digital—digital is the format. When a pilot says they're going digital, they mean they're sending it by computer.

Use of satellite includes satellite voice, and that means you'd get a much clearer voice transmission than we do now on HF. Using satellite voice will be like dialing a phone number, only you get an aircraft in this case. It'll be clearer, safer, and quicker.

Passenger services will use the satellite system as will voice communications between the captain and maintenance, dispatch, etc., in emergency cases.

As far as the future of HF voice itself is concerned, it will always be there, just like domestic VHF will always be there, but as a back-up system. HF voice will be utilized as a safety system because, as you know, satellites can fail and unforeseen things can happen. The best part is that, as satellites increasingly take over, the High Frequencies will become less congested, so that people who do have emergencies will be able to access the frequencies a lot quicker.

MT: That will relieve a lot of folks' minds—including my own!

We thank Chris Morales, Malcolm Emhart, Henri Bronsgeest, and Carolyn Stone of San Francisco ARINC for a very informative and interesting visit and appreciate the time they spent with us.

Bay Area Scanner Enthusiasts

During our convention in Atlanta this past October, I had the opportunity to talk with several members of Bay Area Scanner Enthusiasts Club. I was delighted to find that they have quite a few members and staff who are heavily into VHF/HF aero comms monitoring. Their newsletter, which is published bimonthly, is chock full of news and articles concerning the subject and the club has aero comm info and frequency handouts available for a very nominal copying/mailling fee to members. Additionally there's a very active computer bulletin board. Yearly membership dues are only \$25.00. For more information and/or a membership application contact:

Bay Area Scanner Enthusiasts Club
(BASE)
105 Serra Way, #363
Milpitas, CA 95036

That's it for this time. In April we'll see some photos from the Delta convention tour, have some more airline addresses and other goodies. Until then, 73 and out. **MT**

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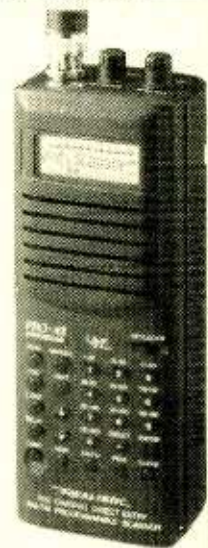
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A Used TVRO Primer

MT readers enjoy their electronics hobbies in many ways. The fortunate few thumb through the mail order catalogs, whip out their Gold Cards and order their dreams delivered by UPS. More common are those of us who can afford one thing off the shelf and try to cobble together the rest. Still others prowl the flea markets, hamfests and Dumpsters for priceless components somehow overlooked by the rest of civilization.

It's the same for those of us who have been ensnared by the TVRO hobby. The purpose of this month's column is to guide readers through what can be a bewildering experience: buying used satellite TV gear. I'll begin by referring to diagram number 1 which is the basic TeleVision Receive Only (TVRO) Earth Station known commonly as a "satellite TV set-up," or more likely, "that danged dish in the backyard."

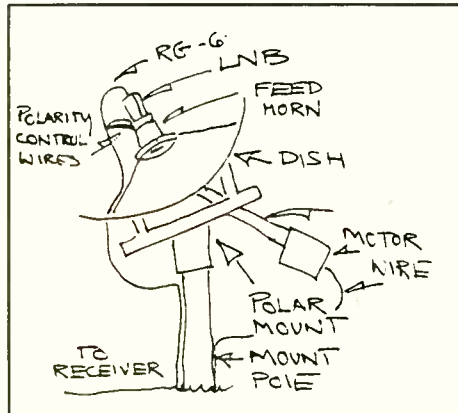


Diagram #1

Most mail order businesses will sell a decent 10 foot dish for \$450, including polar mount on which the dish moves and the actuator motor to move the dish from one part of the sky to another. Shopping at discount places may bring the price down another hundred bucks.

The only thing you'll have to come up with yourself is the mounting pole which will need to be a quarter inch thick steel post at least 8 feet long and anywhere from 3-1/2" to 6" in diameter, depending on the dish mount used. Check scrap metal yards first, plumbing and well supply houses next. Such poles may be had through the mail order businesses for around \$60. You'll find it locally for about a third that price.

The Basics

In the basic TVRO system there are four components. First, and most obvious, is the dish, or, to you sticklers for proper labels: a parabolic reflector. I don't recommend buying a used dish for two reasons. First, the dish is truly the most important part of the installation. Buying a used dish, which may not be parabolically accurate, Ku compatible or have a properly tracking mount, is a waste of time and money. You will be forever dissatisfied with what you're seeing. Second, new dishes are relatively cheap. Unless someone says, "I'll give you \$50 to take this thing off my hands," buy a new dish.

Table # 1: Basic TVRO System Components and Their Prices

Item	New	Used	Notes
Dish (includes actuator/mount)	\$450	Not Rec.	Save your experimenting for your second dish.
Feedhorn	\$65	\$25	C/Ku will be double price
LNB (C-Band)	\$50-120	\$25	
LNB (Ku-Band)	\$100-200	\$25	
Wire (TVRO Bundle)	\$.60-.80/foot		Not recommended used.
Receiver	\$400-1,500	\$50-200	See other chart
Mounting Pole	\$60	\$20	

Table #2: A Few Good Used Satellite Receivers

Receiver Manufacturer	Model	Notes
Chaparral	Sierra, Sierra II	All top of the line with rem.cont./stereo/actuator
Drake	Cheyenne	Stereo/actuator/Ku Capab.
DX Communications	ESR 9241	Actuator/no stereo/Ku
Echosphere	DSB-800	Ku capab/stereo/actuator
Janeil	SRD 8000	Remote/no Ku/actuator
Kenwood	BCR 5000	Ku/Remote/Stereo/Stereo
Luxor	KSR 1200P	No Ku/Remote/Stereo/Actu
Norsat	9900	Ku/Remote/Stereo/Actuator
Panasonic	JR300	Ku/Remote/Stereo/Actuator
Prosat	C-2600	Ku/Remote/Stereo/Actuator
Scientific Atlanta	390	Ku/Remote/Stereo/Actuator
STS	HS900	Ku/Remote/Stereo/Actuator
Uniden	SR110	No Ku/Remot/Ster/Actuator
Zenith	7000	Ku/Remote/Stereo/Actuator
	ZS-4000	

Dish Electronics

Sitting out on the support legs and looking in to the center of the dish is the feedhorn. This device collects the microwave energy which is reflected from the dish and channels it into the waveguide portion of the feedhorn. The feedhorn has a rectangular shaped hole on its back to which is bolted the Low Noise Block-downconverter (LNB). This device amplifies

the microwave energy which has just been fed to it and sends the resultant signal down a coaxial cable into your house to the satellite receiver.

New C-band only feedhorns will cost around \$65. Expect to pay \$25 for a used one. Just make sure its little blue servo motor, which turns the "probe" (C-band antenna) for proper polarity, works. If it doesn't, it will cost an additional \$25 to \$35 to replace the servo.

The C-band LNB will cost, depending on the "noise figure," anywhere from \$50 to \$75 for a 40 degree to \$120 for a 25 degree LNB. The lower the noise figure the better the amplification. Some experts say that the average noise temperature of the average C-band dish is 40 degrees and that a lower temperature rated LNB is a waste of money. A used LNB will be considerably less. Expect to pay \$25 for a nice 50-60 degree used LNB.

A new LNBF (Low Noise Block-downconverter/Feedhorn) runs about \$130 new. The advantage of the LNBF is that it combines the LNB with the feedhorn and the polarity is electronically switched (in other words there's no little blue servo-motor) by means of one thin little wire. This is such a new product that I would be surprised if there are many used LNBFs around. Their noise figures tend to be in the 25 to 45 degree range.

Virtually all dishes used today are Ku band compatible. All that's needed to receive Ku band satellites is to add a C/Ku band feedhorn, a Ku LNB (assuming you already have a C-band LNB) and another run of coaxial cable. Expect to spend about \$125 for a C/Ku feedhorn. You should be able to get one used for about half that. A new Ku band LNB will cost around \$100. A used one will cost around \$25. The big difference is that the new one will have a much lower noise figure, this time given as dB's. A .6 dB Ku LNB is considered very good. A used 1.9 dB Ku LNB is not so good but can be had for around \$25.

The Question of Wire

Wire is not a particularly good place to scrimp. In the first place, even the best wire is relatively cheap. Secondly, TVRO wire is often conveniently sold in "bundles" or "ribbons" which means that everything you need to wire up your entire installation is in one big cable. Typically, you'll get two 75 ohm coaxial cables, three stranded #22 gauge insulated polarity wires, and two heavy gauge motor drive cables and attendant sensor and ground wires.

The big thing to look for here is that the coax should be RG-6. At LNB frequencies (950-1450 MHz) the higher rated RG-6 will have less loss than the RG-59 which is common in over-the-air antenna lines. It is also helpful if the RG-6 is fully

Table 3: The Sources

The following mail order retailers sell new TVRO and related equipment and have catalogs available:

DBS Satellite Television	2316 Channel Dr., Ventura, CA 93003	Orders: 800-DBS-4SAT
		Tech: 805-652-0255
Long's Electronics	2630 S. 5th Ave., Irondale, AL 35210	US: 800-633-4984
		AL: 800-292-8668
NBO Distributors, Inc.	5631 Palmer Way, Carlsbad, CA 92008	Phone: 800-346-6466
Satman, Inc.	6310 N. University No. 3798, Peoria, IL 61612	Phone: 800-472-8626
Skyvision, Inc.	1050 Frontier Dr., Fergus Falls, MN 56537	Orders: 800-334-6455

shielded with copper braid and not the aluminum wrapping foil. Expect to pay \$.66 to \$.80 per foot for "all in one direct burial" cable in 100 foot lengths. Always measure as accurately as you can what you will need for the length of the total cable run. Cutting and splicing RG-6 cable is counter-productive.

The Receiver

Over a decade ago, when the satellite TV industry was first beginning, equipment was slightly different. The old Low Noise Amplifiers (LNA) actually amplified the C band frequency range (4 GHz) and sent that signal to a separate downconverter via a RG-213 cable. (For the curious: RG-213 is large, heavy coax with a large diameter center conductor and is outfitted with "N" connectors.) The downconverter, usually fixed to the mounting pole at the dish, converted the 4 GHz signal to 70 MHz which was sent to the receiver in the house. (This is why old TVRO cable bundles have RG-59 and not RG-6 coax in the bundle.) The input to the receiver was 70 MHz, hence, they are known today as 70 MHz receivers. This system of downconversion is not compatible with today's system of Block conversion where the satellite's entire output can be tuned by several receivers hooked up to the same LNB.

These old LNA driven 70 MHz systems were good, simple and some are still in use today. If you are looking for a used system, however, this is not the place to start. They're just not as versatile as block systems. For one thing, getting SCPC (Single Channel Per Carrier) reception from them was frustrating at best. The downconverters, while fine for video, drifted wildly for SCPC purposes. Still, if someone is going to pay you to take one of these systems off their hands or you need to have only one part replaced it could be worthwhile to have the system repaired. There is a repair firm listed at the end of this column.

Contemporary Block Downconversion systems have been in use for nearly ten years. In that time millions of components have been built and put into circulation. Old receivers, especially those built before the advent of scrambling (1986) worked fine and may still, but they lack the "bells and whistles" which most think are necessities now.

Prices for these older receivers vary widely depending on the model, supply, and condition. First you have to know where to look. I avoid flea

markets and hamfests. These are private dealers who have no public reputation to uphold and as a consumer you have very little recourse for the eventual ripoff. I prefer to hound the local dealers within driving distance. Call them all one afternoon and take extensive notes. A few long distance calls is far cheaper than driving around several cities. It won't be long before you fill several sheets with specs and prices.

When you call, tell the dealer you're looking for a back up receiver for your new system—this will short circuit their high-end new receiver sales pitch and get you directly to the information you want. Ask for: The manufacturer's name, the model, is it a stereo receiver, does it have a built-in actuator drive, does it have a remote control unit; is it working and if so what is the warranty? Haggle. Assume that the price quoted is the price from which the dealer is prepared to come down.

Table 1 is a list of some of the brand names which you may come across. They have a good reputation and repairs will not be impossible. All models listed are standard 950-1450 Block Downconversion receivers. Where no stereo is listed a stereo processor can easily be added. I've singled out only those with remote control units, Ku compatibility, and built-in actuators. The list is from a satellite TV buyer's guide which came out at the end of 1986 and heralded the "new '87 models." Retail prices for models listed ranged around the \$1,000 mark. Depending on condition, I wouldn't pay more than \$200 for any of them. Remember that this is just a partial list, there are many more manufacturers and many, many more models. The point remains that these old receivers will deliver great pictures and lovely audio.

If you have older equipment which is not functioning, there may be help. A number of companies around the U.S. repair equipment. One in particular is well known as a repair service for TVRO equipment which is no longer manufactured. The company is called PTS Electronics and as their catalog says, "PTS rebuilds all major makes and models of receivers, downconverters, antenna actuators, actuator arms and hand remotes." This includes LNAs and downconverters. Call for their catalog and prices for these services. They do not repair Amplica or Birdview equipment. Write PTS Electronics, Corporate Headquarters, 5233 South Highway 37, Bloomington, IN 47401 or call: 800-844-PTS1.



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Your Letters

To keep pace with changes in the basement, you have to keep an ear to the band. Bob Fraser of Cohasset, MA, has really done his homework when it comes to marine beacons in the New England states. He sent along a complete package covering frequency changes, power level adjustments and sadly, some complete shutdowns.

One of the most notable changes has to do with beacon NCE (formerly 322 kHz) in Portsmouth Harbor, ME. This widely reported beacon is now on 288 kHz and has been retrofitted to send GPS correction signals. These special signals put a warbling sound on the Morse ID but don't affect the way the beacon is used for traditional direction finding.

Somewhere along the way "NCE" was listed as "NC" on some official charts. At first I thought maybe these were two separate beacons, but the correct ID has now been verified as "NCE."

Perry Crabill (Winchester, VA) has done it once again! In his continuing quest for new stations, he's exceeded 800 loggings, many from far away places. Check out his catches in Table 1. One logging that Perry is rightfully proud of is "SPP" on San Andreas Island, Colombia.

Perry makes an excellent case for DXing beacons as opposed to other forms of DX. He writes: "One reason I like DXing beacons instead of BCB stations is that stations identify several times a minute; also, you can frequently log several stations on the same frequency if their IDs don't overlap too much."

Strange Signals

An interesting letter came from Frank Bergman in Whitehall, WI, relating to a mystery signal at around 443 kHz. He describes the sound as that of a small gasoline engine extending from 443 to 465 kHz. His attempts at direction finding have been unsuccessful so far.

One possibility is that a signal is being generated by the receiver itself. Speaking from personal experience, I know that my Sangean ATS 803A/DX 440 receivers exhibit this same problem due to the 455 kHz IF. The cure in my case was to use an outside antenna (loop or random wire, for example). I would also suggest trying to hear the signal with another receiver of different manufacture to see if it is still present.

Speaking of antennas, John Sedlacek of Omaha, NE, also made an interesting discovery. He found that connecting an external antenna to his Grundig Satellit 500 receiver *does not* disable the internal ferrite rod antenna when listening to longwave. A call to the company's service department confirmed this as being normal operation.

The radio is probably designed to automatically switch to the internal ferrite antenna (when on LF) because it will often outperform a "random wire" antenna on these frequencies. However,

if you plan to experiment with a high performance antenna, such as a tuned loop or active whip, you're out of luck.

If you're technically inclined, it may be possible to go inside the set and install a separate antenna jack for LW, wiring it in place of the ferrite antenna. Otherwise, my advice would be to keep the portable set intact, and look for something else for DXing use.

Across the Pond

Can you imagine checking into your hotel room and finding a longwave set as part of the entertainment system? Al Kaiser of Cherry Hill, NJ, did during a mid-80's sightseeing trip to Cork, Ireland. Despite the brutal static, he managed to pull out a few longwave broadcast stations during his brief stay. Recently, he returned to Europe—Italy, this time—armed with his own receiver.

The results were much better, and several new loggings were made. Most of the stations he heard had announcements in French, Italian and German, but the music was mostly pop and rock in English. Al was able to identify the stations using his copy of the *World Radio TV Handbook*.

Al is a true veteran of the longwaves. As early as the 1940's, he was busy converting old broadcast sets and during his Naval service in WWII, he occasionally monitored the band using military equipment. After the war, he bought a surplus RAK receiver which covered 15 to 600 kHz. Congratulations, Al, for sticking with the band so long. I'm sure you've seen some big changes over the years.

Listeners living near the East Coast of the US may want to try for the European broadcasters, too. Try listening anytime between dusk and 1 am local time. This is the approximate time that a path of darkness exists between the US and Europe. A few kingly pins to try for: Allouis, France (162 kHz), Saarlouis, Germany (183 kHz), and Roumoules, France (216 kHz). Good luck!

The Long and Short of It

Finally, here's a good question about LF propagation from Bob Rydzewski of San Diego, CA. Bob has noticed that certain far-off, low powered (25 Watt) beacons are often easier to hear than higher powered (or closer) stations. Bob wonders what's happening in these cases.

Output power and distance to the beacon are certainly major factors, but *near-field terrain* and *antenna efficiency* are also important. A large land mass such as a hill or mountain near the beacon site or your listening post can have a dramatic blocking effect, much the same as when you go under a bridge with an AM radio.

The efficiency of a beacon's antenna is also important. Some installations have a modern "tophat vertical" antenna with a very elaborate

Table 1: LF Loggings

FREQ.	ID	LOCATION	BY
175	KRY*	Chardon, OH	PC
188	GSR*	Frederick, MD	PC
216	CLB	Wilmington, NC	DJ
265	SXD	Springfield, VT	PC
266	ICK	Metlakatla, AK	PW
266	CQJ	Asheboro, NC	DJ
323	GTN	Washington, DC	FC
326	MA	Midland, TX	PW
332	DC	Oxon Hill, MD	FC
342	MTN	Baltimore, MD	FC
344	CL	Cleveland, OH	DJ
353	LI	Little Rock, AR	PC
353	LLD	Lanai Is., HI	PW
365	AA	Fargo, ND	PC
385	BF	Bakersfield, CA	PW
387	SPP	San Andreas Is., Col.	PC
391	DDP	San Juan, PR	PW
392	BZE	Belize City, Belize	PC
396	ZBB	Bimini, Bahamas	DJ
420	GAS	Gallipolis, OH	DJ
451	USC	Santa Clara, Cuba	PC

*Experimental Lower (1 Watt)

array of buried radials. These antennas can be very efficient especially when the ground conductivity at the site is favorable. On the other hand, an older installation may use a less efficient "flat top" wire antenna. Combine this with poor ground conductivity and you have significantly reduced range.

The decision on what type of transmitting antenna to use is based purely on the service range required for the beacon. The operators of beacons aren't necessarily interested in achieving long range coverage, just sufficient coverage.

Loggings

Loggings have always been an important part of *Below 500 kHz*. Many readers use the listings to identify catches that they have made, while others are simply interested in seeing what others can hear. Feel free to send your favorite catches to me *c/o Monitoring Times*.

This month's list includes loggings from Frank Carson (MD), Perry Crabill (VA), Peter Warncke (CA), and Dave Johnson (NC), identified by their initials in Table 1.

Classics Revisited

The September column "Classic Longwave" drew a lot of positive response from listeners who use old time equipment on the longwaves. The hobby of collecting and restoring classic gear keeps becoming more popular. Another resource that may be of interest to classic buffs is *Electric Radio*.

This specialty publication covers all facets of collecting, restoring and operating classic radio gear. A one year subscription costs \$24.00. The address for *Electric Radio* is P.O. Box 57, Hesperus, CO, 81326.

Also useful for buying, selling, trading old radio equipment is *Antique Radio Classified*, P.O. Box 2, Carlisle, MA 01740. A yearly subscription is \$29.95; a sample is available on request.

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What Frequencies Can Hams Use?

I recently received a very interesting letter from Alan Vigeant, a reader in California. The letter contained the same San Diego newspaper article addressed by Bob Grove in last month's "Closing Comments." As a reminder, it concerns radio ham Chris Boyer, call unknown.

The ham called for emergency help for a friend who had taken a fall on a mountain bike and was bleeding. The amateur claimed he could not access any of the local two meter repeaters from the location of the accident, so he rode a half mile up a trail to attempt to access the repeater from a better location. Upon failing to access the repeater he was urged by friends to call on the police frequency with his modified hand held; the ham did so and identified himself. An emergency crew was dispatched, and transported the injured person to a hospital. As it turned out, the injuries were not life threatening although the individual did require plastic surgery.

A short time later the FCC asked Chris Boyer to surrender his radio, which he did. The FCC field office is maintaining that it is not legal for a ham to use the public service bands under any conditions!

I am in full sympathy with the ham and think some consideration should be given him in a situation like this. The ham might have travelled to a higher place and made connection with a two meter repeater and gotten help; but, then again,

he may not have been successful. This is not a case of malicious interference, but someone trying to help.

A case like this is difficult; to be sure the ham had operated in a restricted band, but the reason was consistent with the FCC ruling which states that an amateur may use "any means of radio communications at his disposal" in connection with human safety. I can only liken the FCC's stance to the civilian who subdues a criminal attacking someone and is then subjected to a lawsuit or criminal proceedings!

There are many of us who have modified VHF handheld units that are capable of going on frequencies not assigned to hams. Should you find yourself in a situation such as Chris Boyer's, what would you do? Let me know and I will publish the best letters.

Help

The above-mentioned Alan Vigeant is searching for someone in the San Diego, CA, area to help him modify his ICOM R-71A. He is unable to pay a lot of money but is willing to trade his cabinet building skills for assistance. Contact him at 434 1/2 Idaho St. San Diego, CA 92104-1254. Thanks.

Power

Over the years, one question that comes up over and over again from readers of this column is; how much power should I run?

Personally, I usually run between one and five watts of power and have a lot of fun. I am what is called a QRP NUT. I do run about a hundred watts when working Slow Scan TV and often wish I had the full limit when working this mode.

However, it can be generally said that on the HF ham bands one or two hundred watts will work any place on earth on CW, SSB, AM, RTTY, or any of the digital modes (AMTOR is especially effective on low power).

Assuming you have a normal location and well matched antenna, a one hundred watt transmitter will be satisfactory 99% of the time. If you do use the full limit, use it with reservation!

On VHF a hundred watts is often considered medium power. The average station will run 25 to 50 watts on CW, and SSB. FM and Packet stations will frequently only use a half watt to about 25 watts. If you are attempting moon bounce,

meteor scatter or any of the other unusual propagation modes, higher power is often required although not always necessary. Again, vary your power according to the task at hand.

The VHF operator living in a deep valley or center city (surrounded by high buildings) has a terrible location and increasing power will not help. However, the same deep valley or center city QTH usually does not affect HF signals unless there is a lot of electrical noise in the area; increasing your transmitting power in this case will not help. If you can't hear the signals, you won't be able to work them with any amount of power.

40 Meters

Last month we began an overview of the amateur bands with a look at the 75 and 80 meter band. We will continue this month with the popular 40 meter band, which extends from 7 to 7.3 MHz in the USA (7 to 7.1 in other countries).

Like 80 meters, this band is most active after dark, although during daylight, signals from 3 or 4000 miles can often be worked. The best time for DX is shortly before sunset to shortly after sunrise. Normal range is from 500 to 800 miles during daylight. The primary limiting factor on this band is summer static from electrical storms (though not as bad as on 80 meters).

Phone activity on this band in the USA is limited to 7.150-7300 MHz. Overseas hams are not allowed above 7.1 MHz, so their phone activity is limited from about 7.040 to 7100. Consequently, when attempting to work overseas DX on 40 SSB, the US operator must transmit between 7.15 and 7.3 MHz and listen from 7.040 to 7.1 for a reply.

The Novice subband extends from 7.050 to 7.075 MHz. CW activity is the most popular mode and the greatest activity will be from 7 to 7.075 MHz.

The greatest problem on 40 is the tremendous interference caused by shortwave broadcast stations. Although the SWBC band begins at 7.1 MHz, many SWBC stations unfortunately operate below these assigned frequencies, which creates a big problem for novice users, especially. In addition, many amateurs in other countries operate SSB inside the US novice subband. As a result, much of the novice subband is unusable after sunset. Careful searching will usually turn up a clear spot, eventually.

It's the month for Valentines; don't forget to write! 73 de Ike, N3IK

Looking For Vocal Young Hams

According to Carole Perry, WB2MGP, the Dayton '94 Hamvention Youth Forum will be bigger and better than ever. Preparations are already underway to interview speakers for this important forum. Any youngster under the age of 18 who is a licensed ham radio operator may be considered. Applicants should be articulate and enthusiastic about their amateur radio activities.

Each child will be allotted 10 minutes to address what we hope will be an audience filled with young people who have come to hear what their peers have to say about amateur radio. In the past many young people have gone on to get licensed after being motivated by the terrific young speakers who have conveyed the fun and enjoyment to be had in radio.

Interested children should send a brief outline of their radio activities to Carole Perry, P.O. Box 131646, Staten Island, NY 10314. Please include a phone number. All hams are invited to bring a child with them to this forum.

Bob Seavel's

Ham DX Tips

February is considered the month of love, and if you are like me you "love" to DX! So, here are some DX tips to help you with your "love life," hi, hi! ("Hi," by the way, is the telegrapher's laugh)...

ARUBA AA1M (Bob Reiser, 6 Savin St., Burlington, MA 01803) along with W1HL (Jim Fisk), and NW1J (Mile Rioux) will be operating P4/WIEKT 160 to 10 meters SSB, and CW. RTTY on 10, 15 and 20 meters (maybe trying 40 meters) 10 to 17 January. QSLs go to Bob.

ALBANIA ZA1B is on 21290 kHz SSB at 1800 UTC. QSL requests should be sent via HB9BGN, Albert Mueller, im Hubacker, CH-8311 Brütten, Switzerland.

BERMUDA VP9MZ has been active on or near 14085, 21085 and 28085 kHz (+/- kHz due to other active stations) when those bands are "open." QSL to WB2YQH, Robert E. Madolny, 135 Wetherstone Dr., West Seneca, NY 14224-2540.

BOSNIA To help clear up any confusion, Bosnia is considered an independent country by both the UN and Council of Europe. For most major amateur awards, including DXCC, it is considered a country. The prefix for amateurs here is T9. Recently, several X5 prefixed stations have been appearing on the bands. These stations are operating from the Serbian controlled areas of Bosnia. As they are not licensed by the recognized government of Bosnia, they are not valid contacts for DXCC, Worked All Europe, or any other major amateur radio award. OH6XY is part of the United Nations High Command for refugees here and operates when time permits as T9/OH6XY and or 4U/OH6XY. He also often operates from CROATIA as 9A/OH6XY. No QSL route has yet been announced.

CENTRAL AFRICAN REPUBLIC TL8NG is offering this country not only on CW but on some of the WARC bands as well. Check: 10105 kHz CW at 0430 to 0530 UTC and 24900-24905 kHz at 1500 UTC. TL8NG's QSL manager is: WA1ECA, Frank J. Dlugoknski, West St., P.O. Box 772, Litchfield, CT 06759.

EL SALVADOR YS1XS (QSL to WD4PDZ, David L. Purifoy, P.O. Box 3437, New Bern, NC 28564) is on 18120 kHz SSB at 1600 UTC.

GUINEA BISSAU J52AK is Alda (P.O. Box 359, Bissau, Guinea) who has been reported on 28,523 kHz SSB at 1700 UTC when that band is open.

LATVIA YL2GD (who is Gunars Ausklis, pk 53, 228730 Aluksne, Latvia) is active on RTTY 14080 to 14090 kHz starting at 1430 UTC most days each week.

REUNION ISLAND Another rare spot on RTTY these days, thanks to FR5DX (J.H. Vandersteen Mauduit Larive, 67 Rue des Palmiers, F-97430 Le Tampon, Reunion Island, via France) who appears on or near 21085 kHz at 1830 UTC daily.

SAUDI ARABIA HZ1AB is on 7085 kHz LSB daily starting at 2230 UTC looking for N Americans and again on 7005 kHz CW between 1300 to 1330 UTC. QSL manager for this club station is Leo W. Fry, 5740 N. Meadows Blvd., Columbus, OH 43229-4165.

TURKEY TA1BY can be found or near 21250 kHz at 1430 UTC. QSL to WA6JCD, Bruce Croskey, 4312 Rainier Place, Pittsburg, CA 94565.

WALVIS BAY This South African enclave on the coast of Namibia may soon be turned over to Namibia, thus ending its separate country status. Until then, you can add this country to your log books by checking for ZS4KK/ZS9 on 14195 kHz SSB at 2000 UTC and later on RTTY on 14084 kHz at 2030 UTC. QSL to ZS4NS, Nico J.H. Schoonwinkel, Box 472, Welkom, TV 9460, South Africa.

USA Are you always eager to learn more about amateur radio? Now there is a new and interesting way! *Ham Radio and More* is a new radio talk show being aired on over 80 stations of the "Talk America Network." The program originates in the studios of KFNN, which has been putting it on the air since mid-1991. Hosted by Len Winkler, KB7LPW, the program carries news of amateur radio events, DX news, listener questions and answers, and general discussions and explanations of all aspects of ham radio with guests and listeners.

Enjoy the DX and, of course, let that special someone know you love them, as well, this month. 73 de Rob.



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La Voz Popular Releases Schedule

Regular *MT* contributor Robert Ross of London, Ontario, has uncovered some very newsworthy information from Guatemalan clandestine **La Voz Popular**. Rob interviewed Lt. Julia Batres Lemus of the guerrillas associated with this difficult DX catch. She provides a station schedule, a contact address, and a prized rare QSL for Rob!

La Voz Popular is scheduled local Tuesdays and Fridays from 2300-0045 UTC on 7000 kHz, and from 0200-0300 UTC on 3500 kHz. Both frequencies are variable. Don't let the dates confuse you. The second broadcast is actually heard on UTC Wednesdays and Saturdays. The first show obviously operates during a UTC date change.

They say that their two kilowatt transmitter is located near the Tajumulco volcano in the Sierra Madres mountains of Guatemala. It feeds two kilowatts into a dipole antenna. Reception reports should be sent c/o Fernando Garcia, Centro de Promocion Popular, Apartado 20-668, Mexico DF, Mexico.

Most of this information was previously unavailable. Rob's new QSL was for a 1988 reception. Our congratulations and thanks go to Rob for a fantastic DX success!

Cuban Clandestines Moving to WRMI

On many prior occasions we have mentioned Jeff White's plans to operate **Radio Miami International** via its own new transmitter in Miami, FL. This **WRMI** transmitter finally went on the air on November 11, using a reduced test power of 400 watts. *MT* reader Mike Hardester of Jacksonville, NC, was one of the very first lucky DXers to log these 9955 kHz tests on the first day. There have been many irregular tests since then.

Jeff White reports that the full power 50,000 watt transmitter should be in operation by the time that you read this. Programs in Spanish, English, and other languages are anticipated. Jeff says that he wants to operate a station run 'by' shortwave listeners 'for' shortwave listeners.

One key purpose of **WRMI** is a relay transmitter for numerous anti-Castro clandestines. A schedule shakeup by these clandestines is obviously underway. Jeff offers to mail program schedules and station memorabilia to shortwave hobbyists upon request. Send him return postage, and write to 8500 SW 8 Street, Suite 252, Miami, Florida 33144. The **WRMI** telephone number is (305)267-1728. Faxes go to (305)267-9253.



WRMI's brand new tropical QSL.

Jeff has an excellent track record of verifying reception reports. He will specify individual clandestine stations on the QSL if you ask for this. Many new **WRMI** verifications are already in the mail; one is pictured here.

Patria Libre

There is news from the anti-Colombian clandestine **Radio Patria Libre**. Their transmitter has been operating in upper sideband mode for the first time in history. Bud Stacey of Satsuma, AL, heard this new mode several times on 15050 kHz around 2130-2200 UTC. Bud is searching for an address for this station or its sponsoring group, the ELN. Unfortunately, *all of us* are looking for this address, which remains unknown.

News Items

- The *Orlando Sentinel* reports that Alpha 66 guerrillas still hold regular military training exercises near Homestead, FL, in anticipation of an invasion of Cuba. U.S. District Judge James Lawrence King has ruled that these paramilitary activities are not illegal. The group's clandestine voice is **La Voz de Alpha 66**. Thanks go to *MT* reader Nick Pappas of Goldenrod, FL, for a copy of the Orlando article.
- Alan Weiner's press machine is still at work. Rob Stiglitz of Hewlett, NY, forwards a *New York Newsday* article about plans for Weiner's shipboard shortwave transmitter in association with Brother Stair of Walterboro, NC. *Newsday* reports that the ship, the *Fury*, is owned by the Nevis Corporation.
- Rob Ross says that his reception reports to Bosnia-Herzegovina have been returned to sender by Canada Post after long delays. Mail service is currently disrupted for obvious reasons.

What We Are Hearing

The North American pirate broadcasting bands are still brimming with activity, but all stations transmit on an erratic and intermittent basis. If you want to hear a pirate station, you should search near the frequencies reported by our readers around the UTC times that are listed. With patience, you should be able to hear some stations, especially on weekend or holiday evenings. Listeners east of the Mississippi might also want to check out the 7415 kHz area just before 1500 UTC on Sunday mornings.

Winter is always a good season for Europirate reception from North America, and the declining sunspot count may actually improve our chances this year. The 6200-6300 kHz range is usually the best place to look, primarily on UTC Sundays for about three or four hours prior to your local sunrise. East Coast listeners usually have the best chance, but many inland DXers report Europirate logs. If you hear some stations, let us know!

Maildrop addresses used for correspondence with stations reported this month include PO Box 452, Wellsville, NY 14895; PO Box 109, Blue Ridge Summit, PA 17214; PO Box 923, Saratoga, CA 95071; PO Box 605, Huntsville, AL 35804; PO Box 17534, Atlanta, GA 30316; PO Box 111, Wadsworth, IL 60083; PO Box 293, Merlin, Ontario NOP 1W0; and PO Box 220342, 5600 Wuppertal 22, Germany. All letters and reception reports should include three mint postage stamps to domestic stations to pay forwarding costs. Foreign stations usually require \$1 US or two International Reply Coupons.

ACID- 15053 at 2000. This psychedelic music station has resurfaced after a long period of inactivity. Its highly unusual QSLs arrive in the form of microscopic multicolored plastic sheets. ADDR: None, but has verified logs in the *ACE* bulletin. (Mike Leclerc, Somers, CT)

Bob Dylan Radio- 7465 at 0200. I'll give you three guesses as to what music is played on this station. The first two don't count. ADDR: None. (Adam Andrews, Clarkston, WA; Leclerc)

CRSM- 7470 at 0000. Skip enjoys Rob Roy's productions of traditional Scottish music and Quebec ethnic activities. The call letters have largely replaced their old "Radio Scottish Montreal" identification. ADDR: Merlin and Blue Ridge Summit. (Skip Arey, Waterford Works, NJ; Leclerc)

CSIC- 7414 at 2330. Pirate Rambo still ranks high among the most active and popular North American pirates. His signature tune has always been "Psycho Chicken." ADDR: Merlin and Blue Ridge Summit. (David Bland, Columbia, SC; Arey; Leclerc)

East Coast Beer Drinker- Some stations have an accurately descriptive name. It's certainly true for this one, which promotes beer consumption between rock music tunes. ADDR: Blue Ridge Summit. (David Dittow, Los Angeles, CA; Bland)

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Heavy Dude Radio- 7416 at 2300. This rock and reggae Europirate features an announcer with a Caribbean accent. They use 6210 kHz in Europe with an address in Lord, Sweden. The **North American Pirate Relay Service** provides broadcasts from our side of the Atlantic. ADDR: Wellsville. (Ross)

Hello Radio- 7465 at 0200. This guy does nothing but yell "Hellooo Radiooo" over the air. There is controversy about whether he is a pirate, a jammer, or a phenomenon that should be ignored. ADDR: None. (Bland)

He Man Radio- 7415 at 2230. He Man's realistic parodies of sexism are transmitted using upper side-band modulation, which he says is "the manliest of all modes." ADDR: Blue Ridge Summit. (Max Syko, Gaylord, MI; Gigi Lytle, Lubbock, TX)

Jolly Roger International- 7465 at 0445. Pirate Blackbeard probably transmits the slickest rock music productions that are audible from a currently active pirate station. ADDR: Wellsville. (Peter Stawicki, Norman, OK)

KMCR- 7415 at 0200. Magic Mike says that although Wanda has resigned from Magic Carpet Radio, they nevertheless continue to serve pirate listeners on the West Coast and serious DXers out East. ADDR: Blue Ridge Summit. (Andrews)

Omega Radio- 7467 at 0015. Dick Tator's Christian rock programming is quite different from the deluge of preachers that dominate programming on most USA licensed shortwave broadcasters. ADDR: Wellsville. (LeClerc)

Radio Airplane- 7465 at 0000. Pirate Captain Eddy's airborne transmitter has added talk shows to his rock music format. Some callers are supposedly from the FCC. ADDR: Huntsville. (Ditlow, Andrews, Syko, Bland)

Radio Anarchy- 7419 at 0100. They are a veteran pirate, but their activity is intermittent. Look for punk rock music and anti-government commentary. ADDR: Blue Ridge Summit. (Andrews)

Radio Azteca- Bram Stoker's parodies of DXers and the shortwave monitoring hobby are hilarious. He produced seven different shows in 1993, and announces that more will follow this year. ADDR: Blue Ridge Summit. (Andrews)

Radio Doomsday- 7415 at 2245. This new one featured test transmissions of classical and cowboy music during their November debut, with announcements that their regular service would begin on New Years of 1994. ADDR: Wellsville. (Rick Havner, Matthews, NC; Bland)

Radio Halloween- 6295 at 1930. We don't expect more activity from this seasonal operation until next fall. Skip received their nice logo QSL. ADDR: Wellsville. (Arey, Leclerc)

Radio Marabu- 7468 at 0000. Here's another Eurcpirate that has a North American relay service for its rock music programming. ADDR: Wuppertal. (Ross)

Radio Strangelove- 7465 at 0035. They were widely heard during their initial broadcast of nuclear madness film audio from "Dr. Strangelove," but subsequent activity from the station has been sparse. ADDR: None. (Leclerc)

RBCN- 15050 at 2000. The "Radio Bob Communication Network" carries a genuinely funny mix of southern humor and music. ADDR: Atlanta. (Leclerc)

Solid Rock Radio- 7465 at 0015. Mike heard their rock music show. Skip received their QSL. This is the way it should be. ADDR: Wellsville. (Leclerc, Arey)

Voice of Stench- 7415 at 2230. Eddie Egghead Johnson now tends to play rock songs, with fewer puns on his station name. ADDR: Wellsville. (Leclerc)

Voice of the Bizarre- 7468 at 0000. This station was Curt's first pirate, and he was our only reporter that logged it. Quite a catch, Curt! ADDR: None. (Curt Vogt, Universal City, TX)

Voice of the Smooth- 7415 at 0500. Adam proudly reports the #2 QSL from Collin Hey at this station; *PopComm's* Harry Helms bagged #1. They feature

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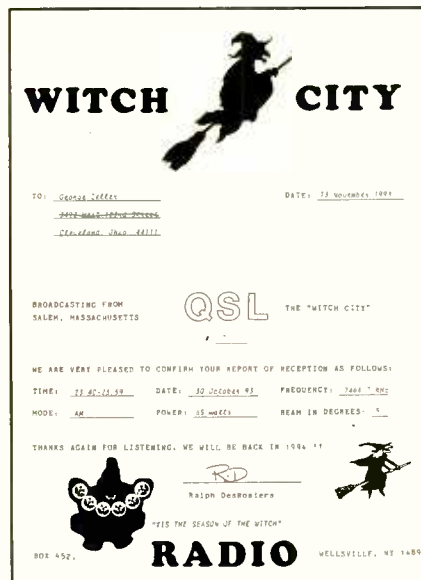
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Ralph DesRosiers' Salem, MA, holiday pirate is now verifying.

music from the "Church of the Smooth." ADDR: Saratoga. (Andrews)

WBBD- 7414 at 2330. Conventional wisdom says that

this is the correct call for a new oldies rock operation that uses a heretofore unknown maildrop. ADDR: Wadsworth. (William Hassig, Mt. Prospect, IL)

WEED- 7465 at 0100. Their slick productions still mix rock, comedy, and drug advocacy in a distinctive style. However, they claim no endorsement from the Surgeon General. ADDR: Huntsville. (Stawicki, Leclerc, Andrews, Arey)

Witch City Radio- 7435 at 1915. Here's another Halloween seasonal station that could reappear in October. Their logo QSLs are rapidly arriving in DXers' mailboxes. ADDR: Wellsville. (Leclerc and direct from the station)

WKIK- 7465 at 0300. This odd one still programs rock and relays of local licensed stations around Jacksonville, FL. It recently added new age music to its format. Their announcer mocks the QSL process, and only one has ever been received. Addr: Wellsville is ineffective. (Bland)

WKND- 7415 at 2330. Max heard the return of Radio Animal's veteran pirate station, noting a new slogan of the "Voice of the Deadly Nightshade." ADDR: Blue Ridge Summit. (Syko)

WLIS- 7417 at 0400. Charles Poltz still cranks out the latest hit interval signal tunes from international short-wave broadcasters. ADDR: Blue Ridge Summit. (Andrews, Leclerc, Syko)

WREC- 7461 at 2345. David just caught P.J. Sparx's sign-off at Radio Free East Coast, but they are a relatively regular occupant of the pirate bands, sometimes with relays of other unlicensed stations. ADDRS: Wellsville and Blue Ridge Summit. (Bland, Leclerc, Syko)



what's new?

Larry Miller

Uniden SportCat

A few months ago, we started to hear rumors that Uniden was going to be coming out with a rather unusual scanner. We even heard that the scanner was going to be bright yellow. We shuddered in anticipation. The scanner, we've since found out, will in fact be available in yellow, but also traditional charcoal grey.

The new SC 150XLT is actually a very interesting approach. "Through our research," says Uniden Vice President Tony Mirabelli, "we discovered that many of our 800 MHz scanning radios are being used at racing and sporting events. The '150XLT was specifically developed to allow the user easy adaptability for these situations. It's the perfect scanner for sports enthusiasts."

Also being marketed as the "SportCat," the '150XLT is a 12 band 800 MHz scanner with 100 channels. In order to make programming easier for users at sporting events, there are also 10 one-touch access channels. So, before you head out the door for the track, you punch in ten of your favorite frequencies. Then, while at the race, you don't have to be doing a lot of programming.

Also included is one-touch weather, turbo scan, channel lock-out, and something called "dataskip," which Uniden says will eliminate data channels and substantially reduce birdies. The SC 150XLT/SportCat comes with a rechargeable battery pack as standard equipment.

We're pleased to see Uniden reaching out as radio evangelists to people of other hobbies. Perhaps through scanning races, others may come to realize there's a whole world of activity going on around



them on the radio waves—and they can tune it in!

There's no word on price for the SportCat. Release date is set for April of this year.

Realm WHS150

The new Realm WHS150 is one of the smallest, most powerful, scanning radios on the market today. The reason why most monitors haven't heard of Realm scanners is that they also transmit.

The WGS150 packs a 5-watt punch and goes on the air between 150 and 174 MHz. It has 16 channels and measures just 6.4" high by 2.45" wide by 1.3"



thick (including battery). That's small enough to fit into the palm of your hand.

Channels can be accessed by a keypad or by a rotary knob located on the radio's top panel. The scan function can be enabled by simply touching the scan button. The WHS150 also features built-in CTCSS signaling and a full-function keypad which is DTMF compatible.

There's no price listed for the WHS150. Realm wants you to contact them directly. Their phone number is 1-800-874-4665 or write 7707 Records St., Indianapolis, Indiana 46226.

Invisible Mobile "No-Tenna"

City dwellers, investigators, reporters, travelers—anyone who doesn't want a visible monitoring antenna on his vehicle—will welcome the new Grove "No-Tenna." This unique accessory utilizes the entire vehicle body as a continuous 1-1000 MHz receiving antenna.

The new product is designed to pull in scanner and shortwave signals alike without having to mount an antenna anywhere on your car, truck, van or RV! Think of the implications—no invitation to theft, suspicion, breakage, low overhangs, hole drilling, scraped paint, or cables through doors or windows.

There is no visible antenna whatsoever, and the No-Tenna mounts in seconds. A spring clip accessory also allows it to be attached to metal window frames, curtain rods and other temporary make-do antennas for motel and apartment listening.

The Grove ANT-20 No-Tenna includes universal connectors for RCA, BNC and 1/8" (3.5mm) miniplug, all for \$19.95 plus \$3.50 first class mailing from Grove Enterprises, P.O. Box 98,

Brasstown, NC 28902; toll-free order line 800-438-8155.

Interference Filters

Grove Enterprises has also introduced a series of interference filters for shortwave receivers and scanners. Designed to reduce interfering signals—even entire bands of interference—by 40 dB or more, these filters can effectively crush intermod (strong signal overload) by over 120 dB!

When connected between the antenna and the radio, these small wavetraps, notch filters and bandpass filters are ideal for suppressing overload interference from nearby paging, weather, broadcasters, dispatchers, hams, aircraft and more.

The filters are priced in the \$20-\$30 range (plus \$4 shipping) and are fitted with standard F connectors; adaptors for other fittings are also available. See address and phone above to order.



Opto DC440 Tone Decoder

Optoelectronics has announced a new, low-cost communications decoder. The DC440 reads 50 sub-audible (CTCSS) tones, 106 digital (DCS) codes and 16 Touch Tone (DTMT) characters.

The '440 monitors the demodulated audio output from your receiver and automatically detected and displayed on a two-line, back-lit alpha numeric LCD.

Three front panel push buttons switches are used for power, mode, and recall.

The DC440 is 1.8" high, 4.5" wide and 4" deep. The cabinet is anodized aluminum. An optional internal NiCd battery provides up to five hours of portable operation. The DC440 is \$259; the optional battery pack is \$39. Optional CX12 RS-232C interface is \$89 and the ToneLog Data Logging Software is \$49, bringing a complete package in at under \$450.

For more information contact Opto at 5821 NE 14th Avenue, Ft. Lauderdale, Florida 33334, 305-771-2050, and watch for *MT's* review in March.

R-5000 Handbook

David Corney is a Kenwood R-5000 owner who began compiling information about his receiver shortly after its purchase. The result is a compilation of modifications, options and more, for this well-known dream machine. The book runs 35 pages.

Included is information on several mods, a handful of adjustments (including scan speed), options like IF filters, external speaker, DC power cable kit, and remote control, plus many other areas of concern for R-5000 owners.

Corney is selling his book for \$8.95 postpaid. The address is 1552 Starflower Ct., Walworth, New York, 14568. The *Kenwood R-5000 Communications Receiver User's Handbook* is a professionally produced, clearly illustrated effort worthy of every R-5000 owner's consideration.

Chicago Area Directory

A couple of years ago Ed Heyer, a scanner listener and retired Chicago-area police officer, called and told us that he was thinking of publishing a frequency directory. We encouraged him in his endeavor and

shortly after received the first edition of Ed's book. It was a nice piece of work, especially for a first-timer. Now comes Ed's second edition and it's apparent that he's really caught on to how to do this thing right. This is one nice book.

County Scanner Talk is 240 pages of very hot information for Cook, Du Page, Kane, Lake, Mc Henry and Will counties. There are city, county and state police and fire departments, plus aviation, news media, military, utilities, ham radio and more. Perhaps what makes this a hot book is not just the information that it contains, but Ed's experience as a user of these frequencies. It's well organized and easy to use. We recommend *CST*.

County Scanner Talk is \$19.95 from Ed Heyer, 1800 S. 48th Ct., Cicero, Illinois 60650. Tell him that *MT* sent you.



Amateur Handbook

Tab Books has released a new 3rd edition of Clay Laster's *The Beginner's Handbook of Amateur Radio*. The book, some 416 pages long, provides "complete information on how to get started in the exciting hobby of ham radio operation."

Laster, a ham of some 40 years, brings together his experience as both an engineer and a college instructor to produce this guide to getting your ham license.

The book is \$21.95 from your favorite book store or direct from Tab at 717-794-2191.

FILTER YOUR PROBLEMS AWAY with the Grove FTR5 series!



Years ago, our first scanner filter allowed the listener to reject any one signal in the VHF high band which was causing overload problems. It was a step in the right direction.

But interference problems are far more severe now, with multiple sources disrupting listening. A simple notch filter is no longer the answer. Enter: the **Grove FTR5 Scanner Filter!** Ideal for use with outside antennas and with signal boosters (preamplifiers)--anytime interference is troublesome.

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FTR5	F connectors	\$39 ⁹⁵
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FTR5M	Motorola adaptor	\$44 ⁹⁵
FTR5P	PL259 adaptor	\$44 ⁹⁵
FTR5N	N adaptor	\$44 ⁹⁵

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Phone Pirates

In 1988, the theft of long distance services was considered a manageable problem by the communication industry, hitting "only" \$500 million a year. Today, the bill for unauthorized long-distance calls tops \$2.5 billion.

Phone Pirates is a 246-page softcover report filled with phone-theft horror stories, like the hospital which was billed \$750,000 for fraudulent calls.

(The volume, says the authors, was so great that legitimate users couldn't get through at all.) One insurance company was hit for \$200,000—in just four days.

Phone Pirates doesn't just weave interesting stories. It talks to hackers and finds out how it's done and then gives recommendations on how you can avoid it. Our friend, Jim Ross, who edits *Privacy and Security 2001*, "highly recommends" *Phone Pirates*.

Phone Pirates is available for \$55.00 plus \$4.00 shipping from Telemangement Press, 8 Old Kingston Road, Ajax, Ontario L1T 2Z7 or call 416-686-2655. Tell them that you read about it in *Monitoring Times*.

First Responder

A couple of issues back, *MT* ran a story on what to do if you

arrive first at an accident scene. Shortly after that article came out, we received a copy of a new book from Tab. Entitled *Commonsense Outdoor Medicine and Emergency Companion*, its authors call it "an essential medical, first-aid, and survival guide for backpack, home, boat, airplane, camp, car or RV." Included in the book is an introduction to common medical emergencies, techniques of emergency care, and specific instructions for dealing with everything from shock, to heart attacks, to bug bites. Best of all, it's written in clear, easy-to-understand text, complete with illustrations.

Commonsense Outdoor Medicine is available from your favorite bookstore or direct from Tab at 717-794-2191. Cover price for 432 pages is \$14.95. Get it. It could literally save lives.

QSL Cards

Trader is a Kennesaw, Georgia, firm that specializes in printed matter for the radio hobbyist. The company offers everything from ham and shortwave monitoring QSL cards to personalized station notepads and even station certificates for amateurs as well as those who hold other non-official call signs.

Bill Howard will be happy to drop you a catalog in the mail if you write to him. His address is 4290 Bells Ferry Road, Suite 106, Kennesaw, Georgia 30144.



Circuit Works

If you're into modifications, kit building or just tinkering, you'll want to take a look at Planned Products' Quick Bond

Gel Kit. The kit is a glue for tying down jumper wires to circuit boards, affixing surface mount components, strain relief, shallow potting and general instant bonding of metals, rubbers, and plastics.

The kit, which was designed for prototype and repair applications, contains a cyanoacrylate gel that does not migrate to unwanted areas after application. It can be used alone or with the supplied accelerator for instant bonding. Cured Quick-Bond Gel is colorless, resists shock, impact and temperature cycling.

Suggested retail price for the Circuit Works Quick-Bond Kit is \$6.95. For more information or to order, call 408-459-8088 or write Planned Products, 303 Potrero St., Suite 53, Santa Cruz, California 95060.

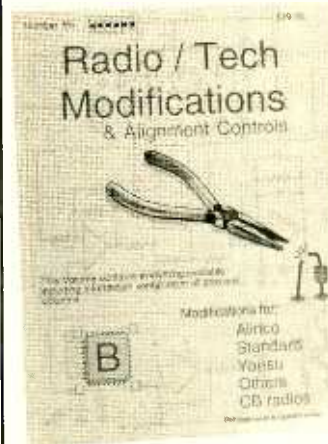
Antennas West

Jim Stevens' catalogs have been among my favorites for years. Although the merchandise is almost exclusively ham, his informative, easy-to-read text and innovative ideas always get the imagination going, especially in the area of antennas. The latest version is called "Radio Adventure."

If you're not on the Antennas West mailing list, write to them and ask for a copy of their latest catalog. Their address is Box 50062-MT, 1500 North 150 West, Provo, Utah 84605. Call them at 801-373-8425.

Radio Tech Mods

For the do-it-yourselfer who wants to tweak every bit of potential out of his ham, CB or scanner radio, *Radio Tech Modifications Volume B* makes an excellent companion to volume A, the original, which concentrates on scanners as well as ham rigs from Kenwood and ICOM.



If you've wondered how those freeband CB'ers (illegally) transmit out of band, it's all here. Volume B concentrates on modifications to CB radios from virtually every manufacturer—dozens of them.

But ham equipment is included in this volume as well, with frequency-extending, alignment and other enhancement procedures for Azden, KDK, Ten Tec, Ranger, Uniden, Radio Shack, Alinco, Heath, Yaesu and Standard.

Written step by step and profusely illustrated, *Radio Tech Modifications, Volume B* (as well as A) is published by Artsci, Inc. and is available for \$19.95 plus shipping from Grove Enterprises and other *MT* advertisers.

Utility Guide

Many long-time shortwave utility listeners consider Joerg Klingenfuss' *Guide to Utility Stations* to be the "bible" of the ute DXer. The 1994 12th Edition contains over 500 pages which detail some 20,000 frequencies up to 30 MHz, all modes, monitored and verified during 1993.

Identifications include callsign, agency, location, mode and other details as well. Hundreds of RTTY press service frequencies as well as meteorological FAX and RTTY are included.

Special appendices contain international callsign identification, CW and RTTY Q and Z codes, emission designators, frequency allocations, station

classes and services, telegram formats, NATO routing indicators, phonetics and much, much more.

Introductory chapters provide excellent insight into shortwave utility monitoring, explaining systems and terms accurately and simply. A special foldout map section reveals maritime sub-bands, aeronautical routes and frequencies, and VOLMET areas.

Guide to Utility Stations is \$36.95 plus shipping from Grove Enterprises; also available from other *MT* advertisers.

Uniholder Handheld Cases

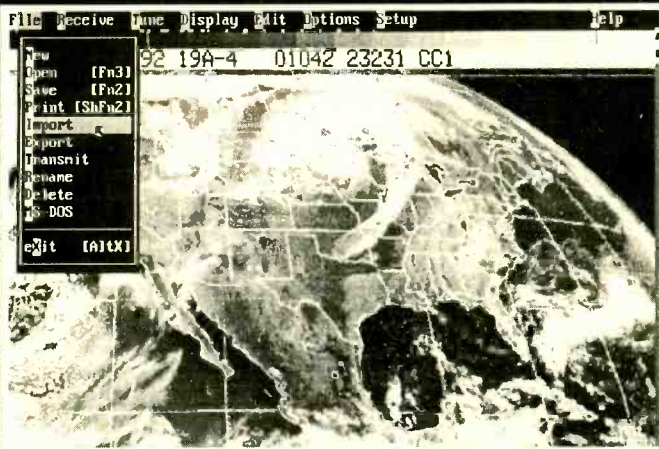
Communications Data Systems has announced their flexible Uniholder series of ballistic nylon handheld radio holsters. Selling for under \$25, the design of the Uniholders is such that one model may fit several radios. Contact the factory for information at 8690 Aero Drive, M-370, San Diego, CA 92123; ph. 619-268-8500. Dealer prices are available.

Newsletter Stops

Jerry Pickard, who has edited the how-to-do-it scanner mod guide called the *DMS News*, has informed us that he has temporarily suspended publication. Pickard specialized in making technical modifications accessible to a wider audience. The author, however, was hospitalized for lengthy periods in late 1993 and early 1994, prohibiting him from maintaining a regular schedule.

Mr. Pickard asks your patience as he fights a debilitating illness, and has indicated that he will return any uncashed checks. However, we have received no reports of his following through on this promise, and he admits there are no funds available at this time for refunds on existing subscriptions.

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PC HF Facsimile is a simple, yet comprehensive shortwave fax system for the IBM PC and compatibles. It includes an FSK demodulator, advanced signal processing software, tutorial cassette, and complete reference manual. With your PC and SSB receiver getting FAX is a snap. Here are just some of the features:

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The weatherproof remote booster module may be attached at the antenna for maximum effectiveness to overcome coax cable losses, or may be mounted on the back of the control box for convenience. Power is supplied to the remote module through your coax.

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Review

By Bob Grove

Optoelectronics 3300 Pocket Frequency Counter

Optoelectronics, a strong leader in the frequency counter market, has just released their \$129.95 model 3300 pocket frequency counter to compete with the Radio Shack \$99.95 RF Frequency Counter reviewed last month in "What's New."

So what does the 3300 offer for an additional \$30? Built-in rechargeable batteries, wall charger/adaptor, a 50% reduction in size and weight, higher sensitivity (3-10 times depending on frequency), higher frequency range (2.8 GHz vs. 1.6 GHz), four (vs. two) gate speeds, and a display hold switch. Measurements can be made as precise as seven decimal places as compared to four on the Radio Shack.

The Opto display, however, is quite tiny (3/16" vs. 7/16") and is not illuminated like its competition. It's case is Spartan—silkscreened sheet metal—while the Radio Shack has sleek, custom styling with molded features. No antenna is included as with the competitor.



A Quick Test

We spot-checked both units on our lab equipment. Frequency accuracy was excellent on both units (the Opto has an adjustment hole for touch-up if ever necessary). Sensitivity of the Radio Shack was about 20 dB better at 1 MHz, while the Opto was approximately 20 dB better at 1.1 GHz. Spot checks in the 30-800 MHz range showed much closer sensitivities.

The Bottom Line

For compact convenience, high frequency response and sensitivity, rechargeable batteries, precise readout, and display hold, choose the new Opto 3300. For a high-visibility display, overall appearance, better low frequency sensitivity, replaceable/rechargeable battery choice, and lowest cost, pick the Radio Shack.

MT



So, You Got a New Scanner

The gift season often brings new tech-toys, some of which are nearly impossible to figure out even with the instructions. If your new owner's manual leaves you with more questions than answers, this scanner tutorial should help.

Basic Differences

You may have acquired a desktop, mobile or hand-held portable scanner. Other than size of the cabinet and controls, and speaker quality, there is no inherent performance superiority of one over the others.

Frequency range, weak-signal sensitivity, adjacent-channel interference rejection, and strong-signal overload immunity are not governed by size. Generally speaking, price and performance go hand in hand.

Let's Turn It On

You've probably done this already, but there are a few basic rules of the road to make scanning simpler. When first turning on most scanners, they are automatically in the scan mode, but unless they are preprogrammed, there will be no frequencies in the memory banks.

The squelch control removes the irritating background "hiss" between transmissions; turn the knob until the noise disappears. The farther you continue to turn the knob, the less likely you will hear weak signals.

To get ready to program your receiver with known frequencies, press MANUAL, 1, MANUAL; this prepares memory channel 1 to receive the frequency of your choice. Pressing MANUAL prepares the scanner to receive a new command, no matter what it's doing at the time. Follow your manual's instructions for programming its many functions. There are subtle differences in programming steps among the different models and manufacturers.

Frequency Coverage

Just as with TV sets, scanners are channelized. A channel is nothing more than a specific frequency assigned to a licensee by the Federal Communications Commission (FCC). Unlike hams who can pick ANY frequency between a lower and upper limit, other users of the radio spectrum must select specific frequencies which are spaced by standard intervals.

There are four primary land mobile "bands" (frequency ranges): 30-50 MHz (megahertz) (VHF low band), 151-174 MHz (VHF high band), 450-512 MHz (UHF and 806-960 MHz (microwave).

Additionally, civilian and military aircraft may be heard communicating between 118-136 and 225-400 MHz respectively.

Modes of Reception

In the United States, virtually all land mobile users operate in the frequency modulation (FM) mode because of its relative immunity to vehicular electrical noise interference. The aircraft industry uses amplitude modulation (AM) inherited when they purchased their fleets as military surplus following World War II.

Scanners automatically default to the major mode when the user chooses the frequency range of interest.

Frequency Information

There are many excellent frequency directories on the market for scanner listeners. Probably the best known is *Police Call Radio Guide* edited by Gene Hughes. This book and many specialty directories for aircraft, government, amateur, military and other services and regions are carried by Grove Enterprises and other MT advertisers. Each month *Monitoring Times* publishes frequencies of interest to scanner enthusiasts as well.

Antennas

Because of the ease of mounting, mobile radio services always use vertical antennas; your receiving antenna must be vertical as well for strongest reception.

The best location for a scanner antenna is high and in the clear: car roof, house roof or tower. Masses of metal near the side of the antenna (aluminum siding or window frame, refrigerator or filing cabinet, reinforcement rods, wiring and conduit, etc.) will reflect and absorb radio signals, affecting reception.

The attachable whip that came with your scanner has limited range, probably no more than 20-30 miles on powerful base stations and 1-5 miles on mobiles, depending upon location.

An elevated outdoor antenna may bring in signals from distances of 100 miles or more, considerably expanding your listening horizon.

Don't be tempted to use a CB, shortwave or ham antenna for wide-frequency-coverage scanners; use an antenna specifically designed for scanner reception.

Coax Cable

Signals are carried from the antenna to your scanner by a "feedline" or "transmission line"; this will always be coaxial cable ("coax").

Coaxial cable is rated several ways. The most important specifications for scanner reception are attenuation (signal absorption loss) and percentage shielding (the closer to 100%, the better).

You may use RG-58/U for installations of not more than 50 feet. Cable TV indoor RG-59/U and outdoor RG-6/U are excellent choices for lengths of up to 100 feet. For greater lengths you may need a premium cable like Belden 9913, but finding suitable connectors can be a nightmare.

Never splice coax; use mating connectors and adaptors when extension is necessary. Coax has a maximum life which is affected by the weather. Cycles of hot humidity and dry cold eventually take their toll. Most manufacturers recommend replacing coax every five years.

Antenna Connectors

Early scanners were equipped with car-radio-type Motorola connectors for use in factory-equipped vehicles. Motorola connectors are not satisfactory at scanner frequencies, so professional BNC types are now provided on all hand-held scanners and the better desktop and mobile models. Satisfactory Motorola/BNC adaptors are readily available.

Too Much Signal?

Is it possible to receive too much signal? Absolutely! Since scanners are mass produced to be price-competitive in the marketplace, some compromises are made in performance. Probably the worst is poor dynamic range, the inability of a receiver to process weak and strong signals equally.

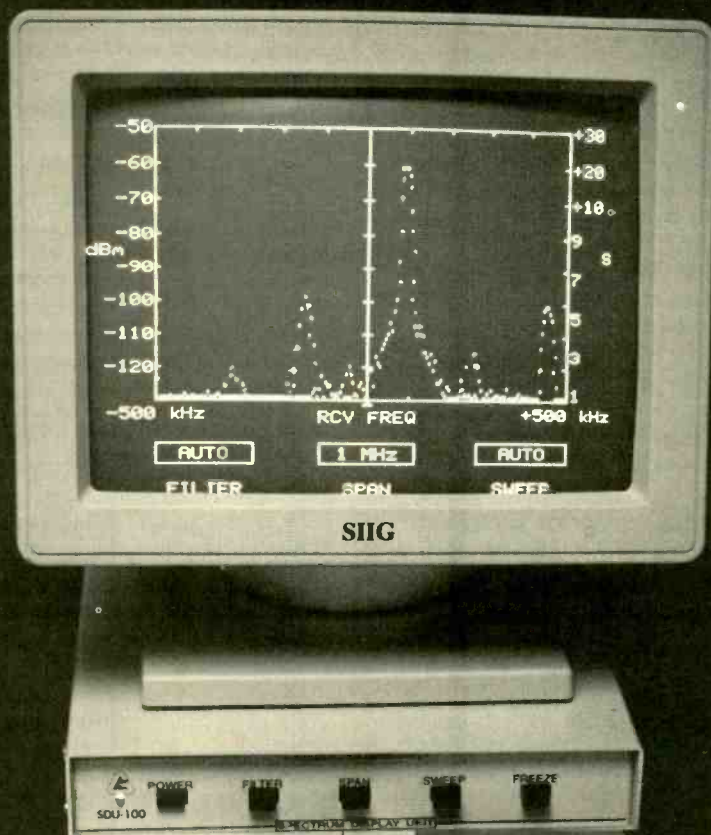
Strong signal overload is characterized by two symptoms: intermodulation (two or more signals are heard simultaneously, often distorted) and desensitization (an overall reduction in weak signal reception).

Can overload be prevented? Yes. Never use a preamplifier (signal "booster") in a metropolitan area or near a transmitter tower. Choose an antenna adequate for your needs, but don't over-design for maximum range if you live in a strong-signal area. Use a directional ("beam") antenna, rotated to minimize interference. Custom interference-reducing scanner filters are available from some specialty manufacturers like Grove Enterprises.

Hopefully, these observations will provide you a little more understanding about the high-tech marvel you now own. If you have further questions, feel free to write, enclosing a self-addressed, stamped envelope (SASE) and we will try to answer your question directly. Questions without an SASE will be answered as space permits in the popular "Ask Bob" **MT** column.

ICOM R7100 OWNERS: You will be particularly interested in the item on page 99 on programming your receiver to scan correctly.

SEE THE SIGNALS YOU COULD BE HEARING!



Put professional power in your radio monitoring with the surveillance technology the pros use! Now you can see hidden radio signals with Grove Enterprises' new SDU-100 Spectrum Display Unit.

The SDU-100 attaches to the IF output jack on the back of your receiver, and it shows you all the signals in a slice of the radio spectrum you select — from 100 kHz up to 10 megahertz wide. Each signal appears as a "spike" on the display (the higher the spike, the stronger the signal).

Use Your Eyes to Spot Hidden Signals

Just the way surveillance countermeasures teams do, you'll be able to use both your ears and eyes in hunting new signals. With the power of spectrum display technology, you'll be able to track down elusive signals faster and more efficiently.

While you can listen to only one signal at a time, the SDU-100 can show you a whole band of signals at once. So, if you are listening to a particular transmission and suddenly a new spike appears on the monitor, you'll know immediately that there's a new signal to be checked out. Without the power of the SDU-100, those momentary transmissions would go undetected.

The Grove SDU-100 Spectrum Display Unit, and a nine-inch video monitor — the same spectrum surveillance technology that the pros use — costs just \$599.95. For a limited time, you can purchase the SDU-100 in combination with a compatible receiver from Grove, and you'll save \$50!

The Grove SDU-100 Spectrum Display Unit is now available for:

- ICOM R7000, R7100, R9000
- Yaesu FT1000, FRG-100*
- Kenwood R5000*
- Drake R8*, TR-7*
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*Requires receiver modification, available from the Grove service department.

Realistic's® \$99.95 Digital DX-375

plus...

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- Optional Keypad for FRG-100

At last, it's happened: a good digital world band portable for under \$100!

From Radio Shack, of all people. How many years back was it that Radio Shack's shortwave radios were ill-conceived, poorly executed, or both? Yet, in recent years they've flipped almost 180 degrees to market a wide variety of worthy models. Until recently, nearly all of these were made for Radio Shack by Sangean of Taiwan. While Sangean shortwave radios are exceptionally well-assembled, they are becoming increasingly less competitive in price and technology.

Made in China

So, for its new compact portable, the DX-375, Radio Shack left the Sangean fold by obtaining production in China. China has the immense advantage of being the lowball-price producer of world band radios. Yet, it also has a richly earned reputation for turning out shoddy products. We've seen several examples of this in our earlier tests, reported on in *MT*.

Because of that, we've been reviewing the '375 for somewhat longer than usual to see whether it can hold up to the daily routine of key-bashing. We haven't fully completed this aspect of testing as yet, but there are enough results that we can make at least an interim report.

Wide array of tuning and other features

The Realistic® DX-375, which operates off two "C" cells, tunes via a keypad in handy telephone format. It also has ten shortwave presets (20 more for non-shortwave bands); up/down slewing and "signal-seek" scanning; memory scan of presets; and a carousel button to select shortwave bands. The only significant tuning feature that's missing is a conventional knob.

Shortwave is covered from 2300-6250 and 7100-21850 kHz in 5 kHz steps; AM from 530-1710 kHz in 10 kHz steps, or 531-1710 kHz in 9 kHz steps. There's the usual FM coverage, but no longwave. Single-sideband signals aren't demodulated, either.



The digital LCD, which has exceptionally high contrast regardless of viewing angle, shows shortwave frequencies in real kHz, which is what most listeners and stations actually use, rather than the MHz format used by many other radio manufacturers.

Other useful features include a weak-battery indicator, stereo FM through headphones, travel power lock, flip-down elevation panel, telescopic antenna that rotates and swivels, hi-lo tone switch and sleep-off timer (60-minute cycle only). While there is a signal-strength indicator, it's only a single LED. Omitted altogether are a clock, display illumination and AC converter.

Performance superior for price

By and large, shortwave performance is surprisingly good for a \$100 digital radio, especially one emanating from China. Sensitivity to weak signals, a key criterion of shortwave performance, is very good. So is selectivity, another "must" for enjoyable reception. Audio quality fares reasonably, although it's not pleasant enough to make it the model of choice for hour-after-hour listening.

Image rejection is only fair, with spurious reception occurring 900 kHz down. It's obvious that this is a key area where Radio Shack's engineers chose to cut corners to keep the price down. Even then, it performs better in this respect than the vast majority of under-\$100 models.

Give this radio an onion, though, for its nearly two-second muting when tuned from one channel to another. If you're into bandscanning, you'll gnash your teeth when you find that if you use the slew controls it's 15125 kHz (wait two seconds), 15130 kHz (wait two seconds), 15135 kHz (wait two seconds), and so on. Whatever else the DX-375 is, it is clearly not the model of choice for cruising up and down the bands. While its "signal-seek" scanner is less annoying in this regard, it skips over all but the stronger stations.

Overall, though, the DX-375 sets a new standard for under-\$100 radios. It has nearly all the desired tuning controls, and its performance is generally quite good. Yet, there may be a rub.

Possible microprocessor hangup

After many weeks of flawless performance, our unit, with fresh batteries, went stone dead. At the same time, the tuning LED became stuck in the lit setting, shutting off only when the batteries were removed. Collaborator Marie Lamb notes that at least one other such report has come across the Internet wire from Kenneth Zichi of Ohio, who has made the problem known to his Radio Shack store.

Both failures appear to result from a microprocessor hangup, which could originate with a software bug or hardware glitch. That, in turn, might be, as Bob Grove suggests, the result of local static during dry weather. Indeed, with both users this seems to have occurred during periods of dry, cold weather. These conditions are favorable to static charges building up within people's bodies, causing sparking onto whatever they touch, including radios.

Our unit was "cured" when the batteries were removed for an extended period, then reinserted. The extent to which this may turn out to be a significant problem remains to be ascertained, but Radio Shack has a 30-day no-questions-asked return/replacement policy, plus another 60 days thereafter for warranty repair or replacement. That firm also has a long track record of being sensitive to problems like this, so it's unlikely that a complaining consumer will be left holding the bag — even after the warranty expires.

Whether this is a common problem can be properly judged only by seeing how a number of radios have fared over time. You can help. If you own a DX-375, please let us know your experiences. You can write me via *MT*, or fax me direct at 215-598-3794.

Overall, a potential real winner

Withal, the DX-375 is a most welcome new entry. For all the talk in certain lofty circles about the "decline" of shortwave listening, within North America, at least, shortwave listening is at an historic all-time high. (Recently, one European broadcaster actually apologized over the air for having built a new shortwave facility in the Americas; yet, went on to admit that there is scant listenership to the direct satellite broadcasts they have been using to try to replace shortwave.)

Listenership grew nicely for several years in the late Eighties and early Nineties, spiked during and right after the Gulf War, digested that spike for a couple of years, and is now once again beginning to stir.

Yet, international broadcasting can't expect to have a significant audience so long as receiving devices are pricey, cumbersome or of poor quality. The Realistic® DX-375 and such affordable models as the Sony ICF-SW30, if properly marketed, should go a long way toward setting the stage for a broader listening base.

Yacht Boy 400 Reportedly Also Made in China

Radio Shack isn't the only major firm turning to China for its production. So, too, is Grundig, which states that its new Yacht Boy 400 is being made in both China and Malaysia. Thus far, we haven't heard of any reports of problems with this model, which we reviewed some months back. If you own a '400, please take a moment to let me know your experience with it (see above)—and where your unit is manufactured. Thank you!

Yaesu Revises FRG-100 Selectivity

If you've been considering a Yaesu FRG-100 tabletop receiver, but have steered clear because of its mediocre selectivity and lack of a keypad, take heart. The factory finally has come to grips with the problem of excessively wide bandwidth filters by producing a revised version. In our lab, the original version's three filters measure (at -6/-60 dB) 7.6/17.9, 6.9/17.2 and 2.6/3.7 kHz; the revised version at 9.1/15.3, 4.5/7.7 and 2.6/4.3 kHz. It's a much better showing, particularly for the intermediate filter, and you can hear the difference immediately.

According to Yaesu, there is no serial-number demarcation to tell which units have the better performance, as it claims that some of the original units exhibit better selectivity than others. In any event, if you own a '100 that you feel doesn't meet Yaesu's filter specifications and would like to have it retrofitted with the current filters, Yaesu has informed *Passport to World Band Radio* that they will do this for free as part of their normal warranty service. It's an offer we strongly urge you to take up, as the new filters result in a considerable improvement.

For consumers, Yaesu's offer is worthy of a tip of the hat. Cleaning up a problem like this is commendable, as well as good longer-term marketing. Yet, as they now publicly refer to the matter as a "deficiency," it would seem fitting for that firm to issue a formal recall to as many FRG-100 owners as can be reached, rather than depending solely upon word-of-mouth.

Outboard FRG-100 Keypad Now Available

More good news is that Stone Mountain Engineering Company (Box 1573, Stone Mountain GA 30086; 404/879-6756) offers a handy mouse-type outboard keypad, the "QSYer," for the FRG-100. Priced at \$112, including power supply and shipping, it simply plugs right into the radio's computer port. Another American firm tells us it is considering coming up with a more elaborate outboard keypad for less money, but as of now we've seen nothing concrete.

The Stone Mountain keypad is easy to use and tests out well, although we found two limitations. First, while it selects frequencies, it won't select memory presets. Second, if you tune within a band, notably 3900-4000 and 7100-7300 kHz, that is shared by hams and world band broadcasters, the keypad causes the radio to operate in the lower-sideband mode used by hams, rather than the AM mode used by broadcasters. If you tune world band often within these two frequency segments, using this outboard keypad could be a nuisance.

Fortunately, this second limitation is about to change. Stone Mountain informs us that they will shortly issue a special "SWL Version" that will not change the mode within the 3900-4000 and 7100-7300 kHz ranges. By the time you read this, that new version should be available.

In all, the Stone Mountain keypad is pretty slick. It's much nicer to use than the usual vertical keypad mounted on a radio, and its software is intuitive. Along with Yaesu's improved bandwidth filters, this keypad makes the FRG-100 a very nice little receiver, in- *MT*

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Keeping Track: Databases On a Budget

If you have been reading this column for the past few years you know that my favorite type of program is the Total Monitoring Environment program: one that does everything from controlling the receiver, decoding digital signals (such as RTTY), to storing the frequency and station data. This last feature is really important if your companion refuses to read hundreds of frequencies to you, day after day, so you can dial them into your receiver. (It was not for a technocratic purpose that I first put together a computer controlled monitoring station, so many years ago. No, it was for a far higher purpose...Domestic Tranquility!)

I realize, however, that many monitors are using receivers which, while not computer controllable, are still excellent for their monitoring purposes. Let's face it. Regardless of what the papers say about the economy, to spend when you don't have to is foolish anytime. Therefore, in order to do my bit for your budget, this month we look at simple database programs: no fancy receiver control capability; no decoding of RTTY displays; just good solid use of your computer for something other than word processing or spreadsheet sheets. We are going to replace your log book.

Let's enumerate, in general and not specific to any program, what a database can do for us:

1. Store frequency, time, signal data, station identification and our comments. This data can be entered by us from a keyboard, or as we will explore in a future column, be "imported" from other sources, such as other database files or even the printed page.

2. Retrieve the data. Once we have all this info, a database gives us flexibility as to how we recall it. With a paper logbook we are restricted to retrieving the data chronologically, because that's the way we put it on paper: as we receive a station we write it down on the next line. But this is where a database really shines. We can sort all the stored info in a number of ways; for example, most databases can sort by date/time, frequency or station name. So if we hear a station on a certain frequency we can "sort" our database by frequency and find out what, if any, stations are stored in our data on that particular frequency.

3. Reporting on what's going on. Some of the databases we are about to look at include a feature which allows the user to organize the data to produce a printed report with headings of columns and a neat looking presentation. To

what use? Paper filing or operating away from the computer.

4. The number of data fields, or columns of information available for each station entry is a factor in deciding which database will suit your listening requirements.

The databases we will look at have been collected over the past few years. Therefore a disclaimer: Since software is constantly being refined by the authors, you may want to check with them for the latest version of their program.

Figure 1 is an overview of monitor database programs, some of which we have seen in past columns. Because of their similarities and number, we will look at interesting features of each program and not do an in-depth operational review, as we usually do.

Let's start in alphabetical order (see - you software writers should have watched Road Runner and named your program Acme Software) with DXLOG, version 3.2.

DXLOG is a basic DB (database) and comes with a seventeen page stapled manual which is adequate for getting you up and operating. There are a number of preprogrammed "reports," that enable you to retrieve your data by time, frequency or address of station. DXLOG also allows you to make different log book files for your different types of monitoring; for example, an SWL broadcast logbook file and a separate one for utility stations. DXLOG also has an address label and QSL report printing feature. For 22 bucks it ain't bad for a basic DB.

Frequency Manager version 1.0, is at the other end of the user spectrum. It is also a basic DB, but uses the Windows, point and click control and display method, which gives it a very different feel. A page or two of very basic installation instructions are all that came with the program. However, there is an extensive Help file in the program, once you get it running. From there it's just like using any other Windows program.

The six ways of retrieving data with Frequency Manager are: Class, Service, Frequency, Mode, Callsign or Notes (details of files which you have typed in). Searching the data can be done on either one, or a combination of all of these data fields. For example: asking for a station with a frequency of 122.2 MHz and an AM Mode, the program will display Air FSS/Weather, Dallas, in the Class and Service categories.

Don't forget: Until you build or add in your own database, most of the data provided with

these programs will probably be useful to you only as data to play with. More about data entry another time. For those of you who love your Windows, at \$25 **Frequency Manager** is a good deal.

Now from Florida where orchids grow like grass, comes Orchid City Software's **Shortwave Radio Station Database**. The opening screen is a menu which lists all the functions that the program can do. No instruction manual is required here. Just choose a number on the menu and go (instruction is one of the menu choices). The data fields are Station Name, Frequency, Time, Language and Location. The entries can be sorted and displayed using any of these fields individually. No provision is made for sorting using combinations of these fields as in the previous program.

Interesting lists can be generated by sorting on language, giving you a choice of any language to listen to. You'd be surprised at the number of stations speaking Urdu! At \$20 SRSD is a basic way of getting into SWL databases without breaking the bank.

PC Shortwave Monitor, Version 1.0, is a very basic menu driven database. Although each entry contains frequency, language, country, program description, reception quality, time, target area of broadcast and a comments line, you can only sort and view this information after it has been printed on a piece of paper. I couldn't find instructions telling me how to see this stuff on my screen without using up a forest! Once you print the file you can call each entry on the screen by using its record number. Interesting idea, but still based on a paper logging system (no pun intended). Nice concept, easy to use, but it needs work relative to its competition, even at \$22.

Next in the box is a program we visited a while back, **ProScan, Version 1.0**. This program is interesting in its attempt to make the user feel that they are operating a scanner, with channel number, frequency, name, location, class, type and callsign being the primary data fields. It even arranges the entries into blocks like the AOR and Uniden scanners. If you enter a frequency, ProScan will check to see if it is a duplicate of one previously stored. We are getting into the realm of smart databases now.

Frequencies, names and channel number data can be retrieved by a few logical keystrokes. Each entry has its own, unlimited, note section which automatically records the date/time you wrote the note. This is a very nice feature. But, as it explains in the fifteen or so pages of computer printout manual, keeping track of your different logging files is up to you! The program

MONITORING DATABASE SOFTWARE

Program/Version	Price	Source
DXLOG/3.2	\$19.95 +\$2 S/H	Data Design Yester Oaks Dr. Mobile, AL 36608 (205) 380-9368
Frequency Manager/1.0	\$24.97	Ben Saladino 660 West Oak St Hurst, TX 76053 (817) 282-0331
Orchid's Shortwave Radio Station Database	\$20.00	Orchid City Software POB 18402 West Palm Beach, FL 33416 (407) 968-2099
PC Shortwave Monitor/1.0	\$19.95 +2.50 S/H	S. Gitlin 86-29 155th Ave Howard Beach, NY 11414 (718) 738-8943
ProScan	\$24.95 +\$3.50 S/H	DataFile, Inc. POB 20111 St. Louis, MO 63123 (314) 842-7654
ProXport (for use with ProScan)	\$19.95 +3.50 S/H	DataFile, Inc. POB 20111 St. Louis, MO 63123 (314) 842-7654
RAC Catalog/2.02	\$44.95	RAC Publications 22320 SW 63rd Ave Boca Raton, FL 33428 (407) 451-2137
Scanner Buff!/3.68	\$25.00	Vista Software & Comms 172 North Lima Ave Sierra Madre, CA 91024 (818) 355-2365

could use help in this area of file management.

For you readers who want a simple, user-friendly, paper-like database, to use only with your scanner, never with shortwave broadcasts or utilities, ProScan may be the ticket at around \$28 including shipping and handling. By the way, Datafile, who makes ProScan, also produces several other monitoring programs including ProXport, which facilitates the use of other databases with ProScan.

If you've noticed that the price of monitoring DB programs has been steadily rising from the \$20 with which we started, take a Valium because the next one tops the list at \$45!

The RAC Catalog is probably one of the first monitoring DBs I ever saw. It spent its early years as a shareware program and has been widely distributed around the world. The new version, 2.02, is no longer shareware and must be purchased from RAC Publications (see Table 1).

With its data in four long columns it looks much like the other programs we've looked at so far. The user can find entries by Frequency, User (name), or Service Code. Although RAC does not look for duplicate frequency entries at the time they are inputted, it has a DupCheck command in its utility menu.

RAC operation and presentation is very smooth, but then it should be, coming in at the top of the pack in cost. With a very comprehensive forty page bound instruction manual RAC is very easy to use and well presented, although a bit limited by its three search methods.

Next comes a program with a name that conjures up all kinds of images: Scanner Buff! Pro v3.68! In an optimistic start, the \$25 program comes with an on-disk, thirty page manual that can be printed by the user. The opening screen is very colorful with the four main menu titles listed across the top of the screen, accessed via the arrow keys and hitting "enter."

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 - KENWOOD R-5000, TS-50, TS-440 TS-450 TS-850
 - YAESU FT-757GX, FRG-100, FRG-9600
 - REALISTIC PRO-2004/5/6 for HB-232 interface
- Most ICOM and Kenwood radios - consult your radio's owners manual.



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The Search Menu shows that we can retrieve information via six data fields: Name, Frequency, Callsign, Municipality, Group (keeping similar stations together) and Position (in memory in your radio). Or we can view all the files in a four column form. The "Help" function in the program is great. At any place you can hit F1 and get detailed help. You can't get lost. Also when searching the records we can use sophisticated logic methods, not only full names or numbers. For example we can retrieve all files whose frequencies are between two limits, or find stations with similar, but not exact, names or callsigns. This "Query" search function separates the listing programs from the real databases. But let's see what else the program with the funny name has for us.

By hitting the File Menu we can make different files for our different types of listening. Or Scanner Buff! allows the user to save and retrieve files to/from different disk drives and subdirectories. It is a very well set-up program capable of far more than scanner use. So much for the limitations of a name and \$25!

The second menu in Scanner Buff! is the Code menu where you can store 10 signal or Q codes used by Police and Hams. By accessing this menu with the arrow keys and then typing in the code you just heard, the plain language translation appears. For example, a 10-61 is...oops, "Record Not Found" just appeared. Okay, if it's not in the database you can look it up elsewhere and add it. Now when you type 10-61 it says, "Supper is Getting Cold...Come Down or Face Your Own 10-61." Hey! Who has been messing with this computer?!

Ah, I think we covered enough monitoring database programs for one month. Watch your dollars, look over the table and see which one fits your needs. Except where noted, many of the programs can be used for all types of monitoring. Try one. And don't forget, if you have a computer controlled receiver, previous columns have reviewed programs which do control and provide databases simultaneously.

What did you say? What's a 10-61? Domestic disturbance, of **M**_T course.

An Inexpensive Ground-Plane Vertical for DX

Short-wave reception of DX signals is dependent upon an antenna that has a characteristic low-angle radiation or launch-angle property. Simple random-length, end-fed wires or dipoles that are close to ground have a high-angle signal response, which is suitable for good reception of signals out to 500-600 miles typically. Therefore, if the SWL lives in the USA and wants to monitor signals from Europe or Asia, an antenna with high-angle characteristics will seldom yield good copy for signals that originate 1000 or more miles away.

The radiation angle of an antenna, respective to the horizon, is associated with its lobes (maximum signal response during reception or maximum radiation during transmit). Antennas usually have several lobes and each one has a different angle respective to the horizon, but we're interested primarily in the largest of the many lobes that sometimes exist. Figure 1 illustrates multilobe radiation at low and high angles.

Ideally for DX, an antenna exhibits a radiation or response angle on the order of 15-20 degrees, respective to the horizon. This means that outgoing signals reflect from the ionosphere only one or two times to reach distant locations. This is called skip (like skipping a stone on water). The greater the number of hops from the source to the destination the greater the signal loss and hence the weaker the received signal. Skip, no matter how many hops the signal undergoes, involves the signal being refracted from the ionosphere and bounced back to earth. During multiple-hop signal propagation the signal can hop several times in order to reach its destination, and that weakens the signal progressively. The skip phenomenon is shown in Figure 2.

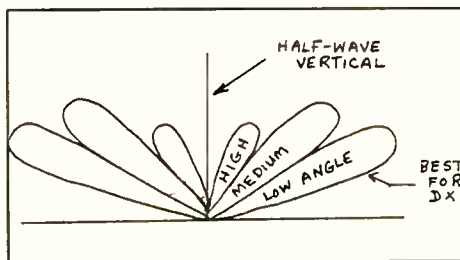


Figure 1: Example of lobes associated with a half-wavelength vertical antenna. The one marked HIGH would be suitable for short distance skip out to a few hundred miles. During sporadic-E skip the high angle lobe would be ideal for communication. The medium angle lobe would be good for distances out to 2000 miles, while the low angle lobe would be ideal for worldwide communications.

A Ground-Plane Vertical Antenna

Quarter-wave vertical antennas erected over a ground plane or screen (artificial ground) produce low radiation angles and have an omnidirectional response pattern. A well placed and properly constructed ground-plane vertical has a radiation angle on the order of 15-20 degrees — ideal for DX. The greater the elevation of this antenna above ground the better its performance. This is because it is above nearby conductive objects such as power and phone lines which can affect the radiation pattern and absorb signal energy. Care must always be taken to avoid

erecting these antennas in locations where they can fall into a power line or be pushed into a power line during erection! One must always be extremely cautious in this regard! Furthermore, the closer the antenna is to phone or power lines the greater the chance for pickup of unwanted man-made noise. Vertical antennas are especially responsive to man-made noise because it is vertically polarized, as is the antenna.

Drooping or Horizontal Radial Wires?

A vertical antenna that has its four (or more) ground-radial wires at 90 degrees to the vertical element exhibits a feed impedance on the order of 30 ohms. By drooping the radials at roughly 45 degrees the feed impedance approaches 50 ohms and this provides a good impedance match to the receiver input circuit. The better the impedance match the greater the signal transfer from the feedline to the receiver. Maximum power transfer always occurs when unlike impedances are matched — an important rule to remember.

End- or center-fed half-wave verticals are also excellent DX performers because of their low radiation angles. When the vertical antenna is one half wave long it does not require a ground screen under it to ensure good performance. This makes it a simple matter to erect a half-wave dipole vertically from a convenient support, such as a tree limb.

Constructing a Ground-Plane Vertical

You have the option of building your ground-plane vertical from aluminum tubing or low-price aluminum electrical conduit. I have seen homemade antenna elements made from bamboo fishing poles that were wrapped with household aluminum foil, with black vinyl tape added at intervals to keep the foil wrap in place. The four radials were made from wire, but you may also use metal tubing to construct your radials. Expediency and economy often dictate the type of construction that is chosen.

Our project this month centers around an antenna made from wire, but the design rules remain the same if tubing is used. The choice is yours to make.

Figure 3 shows a vertical antenna that is made from no. 14 copper antenna wire. Any wire size may be used, consistent with antenna strength. In fact, insulated wire may be used if you don't wish to employ stranded copper antenna wire. Five insulators are required. One of them is placed at

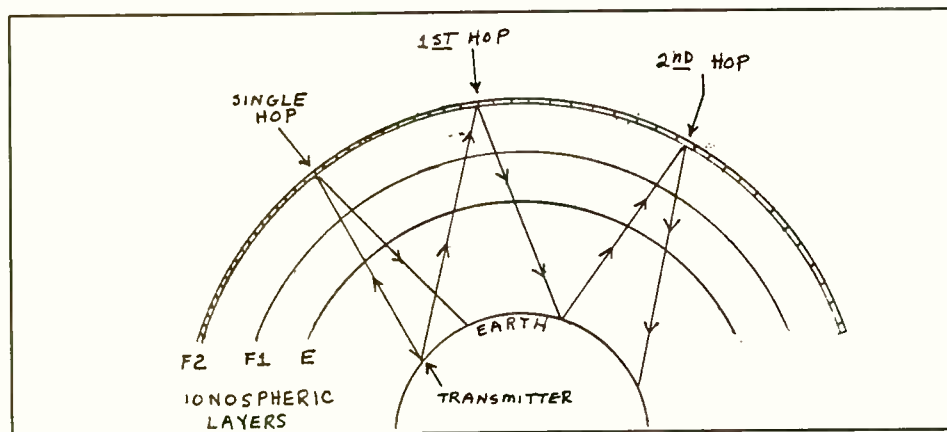


Figure 2: Two examples of how a transmitted signal "skips" from the transmitting antenna to a distant receiving point on earth. The F2 layer is the more common medium for communications in the upper part of the HF spectrum. It can be seen that a single hop can sometimes provide communications over a short distance. The two-hop refraction can provide solid signals at great distances around the world.

ICOM R-7100 Manual Error

By Larry Van Horn, Grove Enterprises Technical Staff

The ICOM R-7100 VHF/UHF communications receiver is an extremely powerful radio with approximately 40 basic and advanced scan functions at the user's disposal. The effective use of this built-in scan capability requires considerable study of the manual that comes with the radio. Unfortunately, the manual has errors regarding two of the basic scans that the 7100 performs: memory and selected memory.

The R-7100 has 900 channels; however, on page 23, if you follow ICOM's instructions, you will only be able to scan one bank of 100 channels. If you want to scan up to 900 channels, make sure that BANK is not displayed on the function display on the radio. You can do this by depressing the BANK switch in the upper right hand corner of the radio prior to depressing the SCAN button.

Selected memory scan function is another useful feature of the ICOM R-7100. A diagram on the bottom of page 24 leads you to assume that this scan mode only works one bank at a time. Like memory scan, if the BANK indicator



is turned off using the BANK switch, then whatever memory scan you have selected regardless of channel placement will be scanned.

This scan function is particularly useful if you itemize the programming using the selected scan mode. You could, for instance, program police frequencies using selected scan '0' designator, fire frequencies using '1', civilian aircraft frequencies using '2', military aircraft frequencies using '3', etc. Regardless of frequency placement in the scanner's memory, you could now just scan

military aircraft frequencies by doing a selected scan '3'. Once you press the SCAN button, then the 6 (MEMO) button, rotate the main tuning dial to indicate 3 and the receiver will scan only those channels you have previously marked with a 3.

We would like to thank the ICOM tech support staff (a very nice bunch of folks), who helped to troubleshoot these manual errors so that you can make full use of the wonderful capabilities of your R-7100.

the junction of the vertical element and the four radial wires (the feed point). The other four insulators are placed at the outer ends of the radial wires. Almost any type of plastic will be suitable for insulators, such as sections of plastic coat hanger or 3/4-inch PVC tubing. You need not buy insulators.

The vertical element length is calculated by dividing 234 by the antenna frequency in MHz. This gives you the length in feet. The radial wires are cut 5% longer than the vertical (driven) element. Thus, if we desire a ground-plane antenna for 12 MHz the vertical element will be 19.5 feet (19 feet, 6 inches) long. Each radial will be 20.47 feet (20 feet, 5-3/4 inches) long. This example illustrates clearly that such an antenna made from wire is less costly than one that is made from tubing. Also, it will be much easier to erect in accordance with Figure 3.

The radial wires are drooped at 45 degrees, as in Figure 3, to provide an approximate 50-ohm feed impedance for using RG-58 coax cable. There is nothing to be gained by adding more radials. There is little change in performance if more than four radials are used.

Wooden stakes may be driven into the ground for use as anchor points for the radials. The coaxial cable at the feed point should be sealed to prevent moisture and dust from migrating along the cable between the shield braid and the vinyl jacket. Epoxy cement, "Coax Seal" or flexible silicone cement will do the job nicely.

Some Final Comments

This article is tutorial as well as practical. You can dimension your antenna to suit your favorite listening frequency. Although the design parameters focus on a specific frequency, the antenna will respond well to signals over a spread of a few MHz. The situation is different when transmitting with the antenna. This is because the SWR (standing wave ratio) will increase above and below the design frequency, and this is unsuitable for most modern transmitters or transceivers.

City dwellers with small yards should find this type of antenna

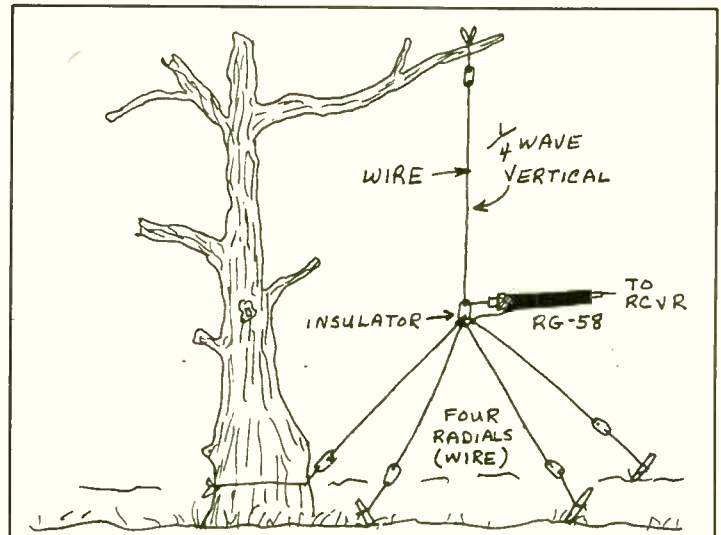


Figure 3: A quarter-wavelength vertical antenna is useful for DX reception and communications. It can be fashioned from wire as shown here. The four radials are soldered together below the base insulator and are attached to the shield braid of the coaxial cable. The center conductor of the cable connects to the vertical element. This antenna has a low radiation angle similar to the low angle one in Figure 1.

desirable because it does not require a lot of lateral space. In such situations it is always easier to go up rather than out! Certainly, a ground-plane vertical will outperform a short, random-length horizontal wire.

Connect the center conductor of the coax cable to the bottom of the vertical element. The four radials are joined at the antenna feed point and are soldered to the coax shield braid.

MT

Hot Glue and Pin-Line Sockets

Hot stuff this month. Literally. When did those new-fangled "hot glue" guns and glue sticks come out? Maybe 15-20 years ago? Yeah, well I ignored them with a passion until a couple of years ago when my daughter, Ali, tapped me on the shoulder and asked if I'd like to have her hot glue gun. (You may remember this part of the story from around a year ago.)

Now mind you, I had absolutely no earthly use for "hot glue" because of a long love-affair with super glues and epoxy resins. What could possibly be better? Besides, a pro wouldn't be caught dead with some new-fangled, make-life-easier, consumer product, anyway. But later, when daughter was out of sight, curiosity got the better of me. I plugged in that stupid-looking glue gun; rammed a .50-caliber glue stick into the magazine; and commenced to fire away at the first thing that moved.

Gluuuuuuubbbb, out oozed a gob of liquid plastic with the consistency of thick honey, and landed smack-dab on the carpet of my workbench! (The stuff is still embedded there!) Now, I use "hot glue" for just about anything and everything, no holds barred! And so should you!

Here's the deal: First, we're not really talking about "hot glue." Maybe there is such a thing, but what I'm referring to here is really a type of plastic. The product package uses terms like, "hot melt adhesive" and "glue sticks," but the stuff is really some sort of plastic (which just happens to be OK for occasional gluing needs), but absolutely superb for the electronics experimenter in a wide variety of applications. It can replace black electrical tape and cable tie wraps; a little glop makes a great anchor for a wire bundle or a small circuit board; and I can think of a host of insulating and other anchoring uses. Tiny applications of hot glue can be fairly easily removed where permanency is not desired.

I use the stuff to make "molded plastic" connectors; to hold loose things in place; to reinforce weaknesses; to hold LEDs in place; and sometimes just for sticking things together, too.

Hot glue is an excellent insulator for exposed solder joints, wire splices and electrical conductors which are prone to be shorted out against something. I would not use hot glue as an insulator for high voltage applications, say over 55-volts, without first checking with the manufacturer for electrical specs at high voltages and currents. I doubt you'll find anything more utilitarian and useful for low voltage (5 and 12 volt) hobby needs, though.

PROFESSIONAL NOTE:

Clearly this process of "home made" mini-connectors is one that would not be employed in manufacturing, but what about in the R & D lab? Why not? In the pre-prototype phases of a design project, costs are high and results often dismal. A handful of pin-line sockets and a hot glue gun are inexpensive "breadboard" items available when the exact part isn't in the supply room!

These homebrewed parts will get you back on schedule and within the budget.

Another great application for hot glue is as "injection plastic." How many utility patch cables have you made over the years to save a few bucks? And then had them fail after a period of use? Most failures of homemade audio, RF and other patch cables occur in or at the connector. After you've made and tested a cable to be flawless, assemble the connector and its shell; squirt hot glue plastic into the shell to metamorphose the plug into a unit construction for ultra-high reliability!

I'm not sure there is a limit to the practical application of a hot glue gun and glue sticks! I now use two different models or styles: one is a larger type that uses glue sticks 4" long and 1/2"

diameter. This type is great for bulk needs such as moldings and insulated surfaces for printed circuit boards. Then there is a dainty, petite type with glue sticks 2" long and 5/16" diameter for situations that need finer control and less glue. You'll need a separate glue gun for each size, but if you can have only one or the other, get the smaller size for most bench uses.

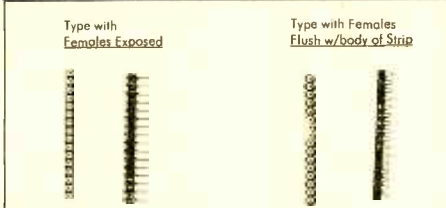
There's nothing to using a hot glue gun; just squeeze the trigger and out comes a gob of liquid plastic, the size and quantity of which is proportional to the amount of squeeze on the trigger. In most cases, small amounts are best until you determine the needs of the application. When not in use, the hot glue gun seems relatively safe, but you should devise a holder for it to point straight up so as to minimize leakage of the hot plastic. This will also help prevent the hot tip from touching your benchtop and maybe causing a fire.

Apply the hot glue with the nozzle as close as possible to the point of contact. As with solder, the adhesion of hot glue plastic is enhanced if the point of application is warmed up to the same temperature as the glue. In other words, adhesion can be inferior if the hot glue is applied to a cold surface. I use a soldering gun and sometimes a butane lighter to preheat larger metal surfaces for best adhesion of hot glue. Now let's find another great use for the gloppy stuff!

Pin-Line Sockets (and Plugs)!

One of the slickest, wickdest commodities for the experimenter shop is what is called a "pin-line" strip or "pin-line" socket. Radio Shack doesn't have them, so a common reference is difficult, but DigiKey's "Pin-Line Sockets with 'break' feature," part number A-208 is one example. Hosfelt Electronics' "Machine Pin SIP Sockets," part number 21-161 or 21-234 is another. Mouser Electronics offers their "SIP Breakaway IC Sockets," part number 151-5530. All three of these suppliers have a variety of pin-line sockets in various configurations and

FIGURE 1: PIN-LINE SOCKET STYLES



NOTE: One is as good as the other, but I prefer the type with flush seated female leads. This type easily breaks apart; the other has to be clipped, which causes loss of one pin. ABC

FIGURE 2: A PIN-LINE CONNECTOR

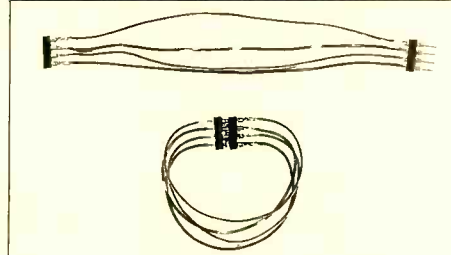
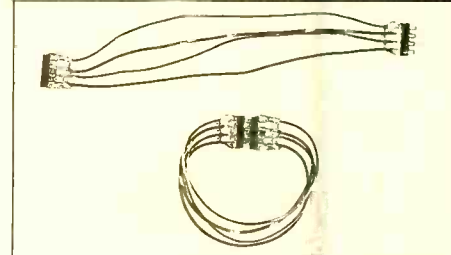


FIGURE 3: A PIN-LINE CONNECTOR MOLDED WITH HOT GLUE



pin-counts, so get their catalogs (see sidebar) if you want to shop for the best "deals" for your needs.

Imagine, if you will, a precision machined IC socket cut apart so that you have two strips. One of these strips resembles what we're talking about by way of pin-line sockets. The neat thing about them is that the male plug part mates perfectly with the female socket part. Because they are so small, the most immediate experimenter's application is that of a miniature, quick-disconnect plug and socket combination. Pin-line sockets are available in strips of as many as 56 pins each, and can be cut or broken apart for a lesser number.

Suppose, for example, you had a pair of wires in your shortwave rig that you wanted to quickly and easily disconnect from some special modification board you had installed—an excellent application. Cut the two wires, and solder the four cut ends: one pair to the male ends of a pin-line pair, and the other pair of wires to the female ends of a pin-line pair. In this fashion, then, the plugs for one pair of wires will mate with the sockets of the other pair—quick and dirty, neat and functional, and extremely low profile. You'll not readily find a connector any smaller, handier, more functional, and less expensive! See Figure 1 for views of two styles of pin-line sockets, and Figure 2 for how they can be easily pressed into duty as plug and socket connectors!

Pin-line sockets are machined to precision tolerances, spaced precisely 0.1" apart, center to center, just the same as the holes in "perf board" and "vector board." This lends an easy use as IC-sockets for experimenter projects when you happen to be short of a socket or two! Just break apart a strip of whatever number of pins you need into two equal strips to match the IC and position them on the board for an instant IC socket! Drill 1-mm holes in the perf board or circuit board surface for a snug fit of the upper body (fat parts) of the male pins.

Three adjacent pin-line sockets make a great TO-98-style transistor socket. The machined plug and socket offer a better electrical contact than conventional, spring contact IC sockets. Over the years, I have observed a number of conventional IC sockets to fail for no good reason other than poor electrical contact. I have never seen machine-pin, pin-line sockets fail in this manner.

Another use I have found for pin-line sockets is as a wire splice, with a slight difference. For instance, you may know that a lot of modification procedures call for the soldering of a wire or a component lead to a pin of an IC somewhere in the radio. Instead of that, I first solder the male end of a pin-line socket to the IC-pin and then use the exposed socket to accept either a male pin soldered to the end of a wire, or a component lead

which sometimes will plug into the socket for a nice fit, and allows for easy disconnect if needed.

When you mix hot glue with pin-line sockets, you're looking at one heck of a molded-connector possibility. Talk about reliability! Just solder your pin-line sockets to a wire bundle and after an examination and test for errors, squirt some hot glue between and around the soldered points of contact so that all metal is insulated and all pins are separated by a layer of the plastic molding glue. The results may not look great, but I'll tell you what: you can't get a more reliable connector for the size and cost. Figure 3 shows the same plug and socket combination as in Figure 2, but molded with the hot glue plastic into a permanent, long-lived connector. Besides the reliability factor, the great advantage of pin-line sockets made into quick-disconnect connectors is their very small size! They're great for mod jobs in very small radios!

In closing, hot glue and pin-line sockets have become absolutely vital commodities around my shop where 80% of my work is related to some form of R&D or testing and evaluation, in which I need to connect things for a quick observation and then pop them back out for modification or redesign. Time and reliability are essential, and I just can't be bothered with a lot of wire splicing, soldering and desoldering, etc. Pin-Line sockets and hot glue have boosted the efficiency of my work and reduced a lot of the drudgery. Give these two items a trial run on your bench and see if you don't agree. See ya next month.

M
T

SOURCES

Pin-Line Sockets

Digi-Key Corporation
701 Brooks Avenue South
PO Box 677
Thief River Falls, MN 56701—677
(800) 344-4539 Fax (218) 681-3380

Hosfelt Electronics, Inc.
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When is Half an Antenna Actually a Whole Antenna? The Half-Rhombic

Actually, many antennas are "half-antennas." For instance, the grounded quarterwave antenna was invented by Marconi by taking half of the Hertzian halfwave, horizontal dipole and placing it vertically above ground. Thus a grounded quarterwave is, in one sense, half a vertical dipole. A longwire V-antenna is just half a rhombic (but not the half we're about to discuss); indeed, the rhombic was devised by connecting two longwire V-antennas together "mouth to mouth."

This month we are going to take the rhombic antenna design and "cut" it in half to make a "half-rhombic" antenna. The military has long used an antenna similar to this month's design with good success on the VHF band. With its low angle radiation and vertical polarization it should also give excellent DX performance on HF if you happen to have enough space to put one up on that band.

Queen of Antennas?

Historically, the full-rhombic antenna has become a legend, sometimes known as the "queen" of antennas due to the excellent directionality and gain it affords across its very wide bandwidth. A full-rhombic is somewhat like a large diamond-shaped loop (rhombus) constructed horizontally to the earth (fig. 1A), or a distorted horizontal loop antenna.

The main reason the full-rhombic is not frequently utilized is that putting one up takes a lot of space. The half-rhombic takes much less space; it is as if we took a full rhombic, cut it in half lengthwise, and stood it on edge (fig. 1B). In this configuration the half-rhombic takes no more space on the ground than a long-wire antenna. But, in comparison to a simple long-wire beam antenna, the half-rhombic beam's radiation pattern is more compact, and has no null in the direction in which it points as does the long-wire beam.

The half-rhombic can easily be made unidirectional by connecting a resistor between the end opposite its feedpoint and ground (or counterpoise). Making the antenna unidirectional improves reception, not only by reducing interfering signals from the reverse direction, but also by improving the signal-to-noise ratio by reducing the received noise coming from the antenna's reverse direction. If you use this antenna for transmitting, the resistor should have a power rating equal to at least 1/2 of the transmitter's power output. Across its bandwidth the antenna should present a 2:1 or better SWR to a 50-ohm transmission line.

Let's Make One

1. For this particular rhombic design each leg is one wavelength long at the antenna's lowest

operating frequency. Choose the lowest operating frequency which you wish the antenna to cover: the antenna's highest operating frequency will then be three times this lowest frequency. For example, if your lowest operating frequency is 150 MHz, the antenna's bandwidth will be from 150 MHz to 450 MHz. Of course the antenna will perform to some degree at frequencies outside its bandwidth, but its performance progressively drops beyond these limits. Calculate the length of each leg of the antenna as follows:

$$\text{LEG LENGTH (in feet)} = 936 / \text{lowest frequency in MHz}$$

$$\text{LEG LENGTH (in meters)} = 285 / \text{lowest frequency in MHz}$$

For an antenna that would cover from 150 MHz to 450 MHz, the leg length would be $936/150$, or 6.24 ft (6 ft 2-7/8 in).

2. To find the antenna height, multiply the leg length by 0.625. At 150 MHz this would be 0.625×6.24 ft, or 3.9 ft (3 ft 10-7/8 in). This gives the antenna's peak height above ground or above the counterpoise (radials which create an artificial ground), if one is used. Obviously, if the antenna is only 3 ft 10-7/8 in above ground it will be too low for much coverage so, at VHF or higher frequencies, a counterpoise should always be used to allow elevating the antenna above ground. For a 150 MHz to 450 MHz antenna, if your counterpoise is 10 ft above ground, the antenna's peak height will be 10 ft plus 3.9 ft, or 13.9 ft.

If a counterpoise is used it should be at least 3 ft or higher above ground (the higher the better) for VHF or above. If you use a counterpoise on HF, elevating it at least 10 ft is recommended, but in practice that may not be possible.

3. The length of the counterpoise is determined by multiplying the leg length by 1.56. Thus our 150 to 450 MHz antenna would have a 6.24×1.56 , or 9.73 ft (9 ft 8 3/4 in), counterpoise length.

4. Cut the antenna wire to be two leg-lengths long. Add about 4 or 5 inches to this length to allow wire for wrapping around the insulators which are attached at each end of the wire. Slip the cut wire through the hole in one end of an antenna strain insulator. Then attach a strain insulator to each end of the antenna as pictured in fig. 1B. Adjust the wire at the insulators to make the antenna the correct length before soldering the wires together.

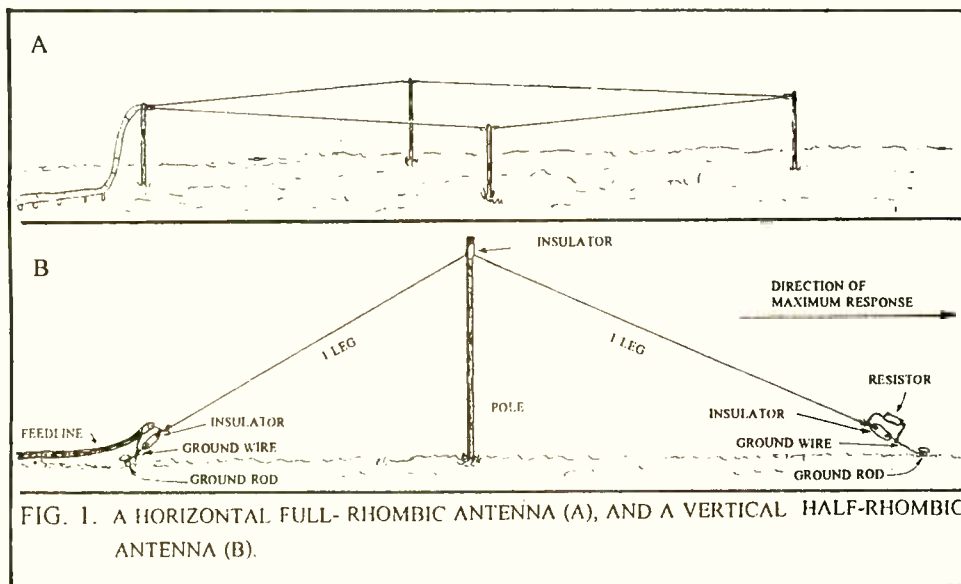


FIG. 1. A HORIZONTAL FULL-RHOMBIC ANTENNA (A), AND A VERTICAL HALF-RHOMBIC ANTENNA (B).

5. Cut the counterpoise to length, adding 4 or 5 in for attaching the insulators. Add a strain insulator to each end of the counterpoise and adjust for length and solder the ends as for the antenna wire.

6. Select an appropriately high tie-point for the antenna's middle insulator and mount the antenna to form an inverted-V shape with the dimensions given for height and counterpoise length. If you use a counterpoise, keep it free of touching vegetation or other conductors. Mount the antenna on a straight line with one end pointing in the direction from which you wish to receive signals.

7. Attach the center conductor of a length of 50-ohm coax to the antenna wire and the coax shield to the counterpoise or ground as shown in fig. 1.

8. If you want the antenna to be unidirectional, connect a 500-ohm to 600-ohm noninductive resistor from a good ground (or the counterpoise if it is used) to the other end of the antenna (fig. 1B). The end of the antenna with the resistor attached must point in the direction from which you wish to receive signals.

For complete cancellation of interference from the antenna's reverse direction you can use a 1000-ohm carbon (not wirewound) potentiometer for the resistor and adjust its value for minimum signal while listening to a signal coming from the antenna's reverse direction. Solder all connections and seal the potentiometer and end of the coax with coax sealer.

9. If you live in lightning country be sure to use protection against lightning-induced damage. At a minimum, never use the antenna in weather likely to produce lightning and both disconnect and ground the antenna when it is not in use.

RADIO RIDDLES

Last Month

Last month I asked you, "If the earth, or at least radio ground, is a conductor of radio currents, then is it possible in some way to make an antenna out of earth? How could you go about such a strange task? Do you suppose this has ever been attempted or even actually done? And if water is conductive also, how about a "water antenna"?"

Well, believe it or not, there has been at least one earth antenna designed and used. In 1962, the *Proceedings of the Institute of Radio Engineers*, Morgan reported experimental utilization of—get ready for this—an *entire island* as an antenna. And it worked! As for a "water antenna," the

great radio pioneer Aubrey Fessenden used pumps to shoot a stream of water skyward to form a grounded vertical antenna over which he actually held communications.¹

This Month

One famous radio pioneer, when he was a teenager, used to frighten his neighbors by swinging high above the ground in a bosun's chair from his tall, experimental antenna-mast just for the

fun of it. Later, to the delight of the public and the chagrin of RCA officials, he swung from an element of a large RCA TV transmitting antenna high atop a skyscraper. Who was this daring radio engineer and what do you suppose that his mother told a neighbor who complained that it frightened her to watch this teenage radio nut swing from his tall antenna?

We'll have the answer to this month's riddle in next month's issue of *Monitoring Times*. 'Til then, Peace, DX, and 73.

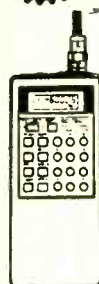
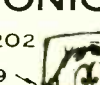
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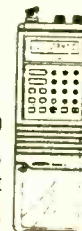


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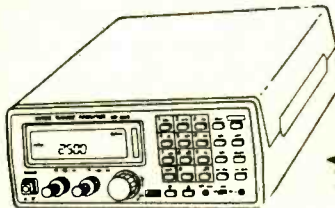
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Q. With more and more law enforcement agencies switching to 800 MHz trunking, what is the likelihood of scanner manufacturers producing products that will track these elusive signals? (Jim Lawrence)

A. Not soon. There are several problems: (1) It must be determined that trunking is not an encryption method (which would make it illegal to follow); (2) the scanner will have to track several different types of trunking (i.e., Motorola, Johnson and GE); and (3) such tracking must not violate any patent rights.

There is no desire on the part of manufacturers to standardize their trunking architecture; they aren't interested in compatibility with other manufacturers, and certainly don't want scanner listeners tuning in.

Q. Power lines run right through my backyard. If I put up an outdoor antenna, can I expect electrical noise on my shortwave receiver? (Tim Rapps, Springfield, IL)

A. The closer your antenna is to a power line, the more likely you will experience radiated noise interference. Some power lines are worse than others. Factors include the age of the power line, looseness of hardware fittings, condition of insulators, humidity and temperature, and presence of tree branches touching the lines.

Q. I realize that you have a vested interest in presenting the positive side of monitoring. Are there limitations as well? (Name withheld).

A. Sure. If you can't afford it, don't buy it. That answer may sound flip, but it's true. For most of us, radio monitoring is a fascinating hobby, but it should not come before more responsible financial obligations.

Generally speaking, you get what you pay for. Low cost equipment and accessories do not work as well as expensive products. Low cost publications are not as thorough, and sometimes not as accurate, as more expensive printings.

But don't overbuy. Just because an expensive receiver touts dozens of bells and whistles doesn't mean that you really need, or may ever use, all of them. Read the specifications and features; don't be dazzled by the hype.

Listen to the wisdom of long-time hobbyists; their insights can save you grief and unnecessary expense.

Q. Are there any land mobile users in the 470-512 MHz range? (Bob Brock, Phoenix, AZ)

A. Originally, the "UHF land mobile band" was 450-470 MHz, with UHF-TV channels 14 through 83 allocated 470-890 MHz. As land mobile frequency congestion grew, the Commission gave them the "UHF-T band" from TV's 470-512 MHz, and gave them 806-890 MHz as well. The two expanded ranges are assigned in areas where they will not interfere with existing UHF-TV stations.

Bob's Tip of the Month

Yaesu FRG8800 Display Correction

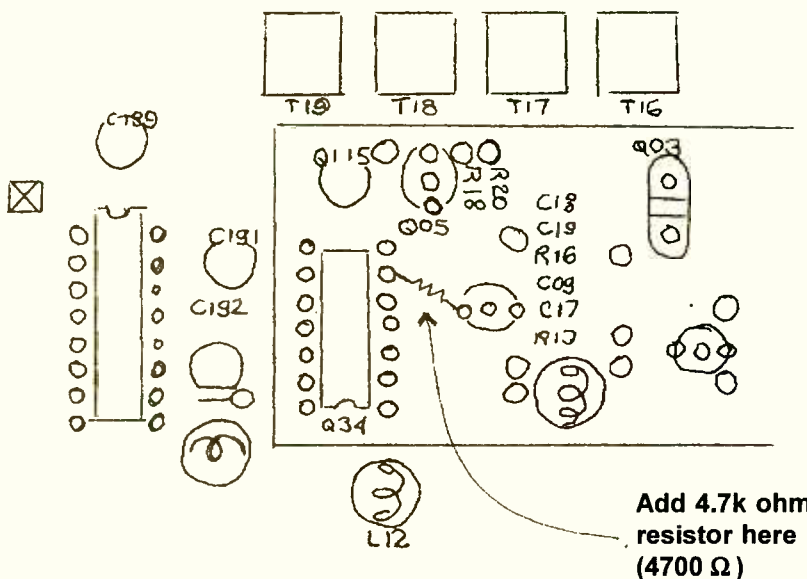
In our December issue we passed along a hint from an authorized Yaesu service center as to how to repair a flashing display and accompanying intermittent reception problem in some FRG8800 receivers. Long time *MT* reader Rich Newbould tried the fix but found that there was more to it. Rich's fix is described below.

(NOTE: Do not attempt this repair unless you are thoroughly familiar with electronic components and soldering techniques. *MT* takes no responsibility for the consequences of following this procedure)

SUPPLIES NEEDED: Small Philips screwdriver; small soldering iron and solder; 4.7K ohm, 1/4 watt resistor.

1. Disconnect the power cord and face the radio; remove the top cover.
2. Remove the screws holding the circuit board in place; carefully unplug the gray shielded cable at the rear left of the board.
3. Remove the two black snap pins which hold the N.O./N.C. phono jacks in place on the right rear of the cabinet.
4. Remove the metal shield lid from the metal housing for the PLL board; turn the board solder-side up and lay the circuit board carefully on the radio.
5. Locate the metal shield over the area where the resistor is to be installed and unsolder two of the lugs holding the shield; lift the shield to reveal the components.
6. Solder the 4.7k ohm, 1/4 watt resistor as shown on the accompanying drawing. This completes the modification. Reassemble the radio in reverse order, steps 5-1.

F2666000A



In an earlier column, we were asked the frequency of dog fence perimeter training devices.

Recently a Tri-Tronics dog shocking collar training system was brought into MT headquarters, and we immediately put it on the spectrum analyzer. Surprisingly, it transmitted on 26.995 MHz—right between CB channels 3 and 4!

470-499 MHz is found in some metropolitan areas where signal congestion is rampant, but 500-512 MHz is rarely licensed (it is in Los Angeles).

Q. I have an AC wall adaptor designed to provide 12 volts at up to 0.5 amps; how much power does it draw when it is switched off? (John W. Hilton, Houston, TX).

A. A typical wall adaptor idles along at just a few watts, about the same as a night light. It won't make much difference whether or not it is powering an accessory at the time since the accessory will draw under half a watt.

Q. My AC wall adaptor is marked "12 VDC @ 100 mA," yet when I measure its voltage with a meter, it shows closer to 16 volts. What gives? (Numerous inquiries).

A. AC wall adaptors are filtered to reduce hum, not regulated to provide a steady voltage. The markings indicate that if the accessory is pulling a current of 100 milliamperes (0.1 amps), the voltage should be approximately 12. At lower current drains, the voltage will be higher. Most accessories are built with a tolerance for voltage variances of at least 10%.

It is important to select a wall adaptor with a current rating near that of the requirement of the accessory to which it is to be attached. Contrarily, if you choose an adaptor rated at 500 mA to be used with an accessory requiring only 100 mA, chances are that the voltage will be much too high.

If you have a universal type (typically switched among 3, 4.5, 6, 7.5, 9 and 12 volts), select a voltage slightly less than that called for by the accessory. If it is underpowered, then switch to the next higher voltage.

In all cases, an inexpensive test meter, available nowadays nearly everywhere, is a handy accessory that will put your mind to rest. **MT**

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the room, even if it is large. The 'minute' dial in the inner circle is practically useless.

"I still think a 12-hour, regular clock is much easier to read. Even the control room of many radio stations use 12-hour instead of 24-hour clocks, don't they? The ideal solution for me would be a digital, battery-operated clock with big enough numbers (4 inches) that could be dimmed at night. The MFJ 'Dual Digital Clock' (CLK2 from Grove) and the 'Bright Time' (No. 2616 from General Time Corp.) are steps in the right direction." If anyone knows of a clock such as he describes that's already in existence, Ricardo asked if someone would let him know.

• Joel Thames of Los Angeles takes exception to *MT's* review of the Junghans Mega radio controlled clock in the December issue, which called it "the most accurate clock in the world." Joel says, "Approximately three years ago, Heath released their 'most accurate clock,' the GC-1000 (a kit). Like the Junghans Mega, this clock also operates from radio signals transmitted by the National Institute of Science and is equally accurate. Unlike the Junghans Mega, the Heath clock has built-in internal antenna and a BNC connector for an external antenna if needed.

"The clock features a seven segment digital display indicating the correct local time to 1/10 of a second and houses three radio receivers located at 5 MHz, 10 MHz and 15 MHz. The clock automatically selects the optimum radio signal, and announces the Coordinated Universal Time along with occasional weather forecasts and navigational information. The current model is now called the GCW-1001 and is available from Heath Company for \$349.95, assembled.

"Perhaps the Junghans Mega people and *Monitoring Times* should be aware that there is another 'most accurate clock' available that does much more for about the same price."

Joel adds that he built all three of the models offered by Heath over the years. "All of which are still in daily use and operating perfectly. My GC-1092A is nearly 18 years old."



Complaint Corner

"I have a couple of bones to pick," says David Lewis of Islesboro, ME. First, "I would like to take Glenn

Hauser to task. Quoting from his column of October 1993: 'Christian Science Monitor World Service didn't admit that it was a bad idea to situate a SW outlet in Maine in the first place—anyone with a minimal knowledge of propagation could have told them to go south, avoid the auroral zone,' etc.

One wonders how BBC and Radio Moscow, with many of their transmitters placed in latitudes much deeper within the 'auroral zone' than Maine's, have managed to be heard for all these years.

"But look whose name he drops just three words before this criticism: George Jacobs, propagation guru, who wrote the book on the subject (*The Shortwave Propagation Handbook*, CQ Publishing) and who—surprise!—worked as a consultant to the CSM in establishing WCSN's facilities and schedules in the first place!

"Next: In the September 'Ask Bob' column, Russ Conte asks about calculating gray-path propagation without a computer, and he is told, 'it is not all that easy with a pencil and pad ... after you give up, ...' Well, Mr. Conte, don't give up quite so fast. The book by Mr. Jacobs, mentioned above, devotes a couple of pages to a nifty and simple method of grayline prediction requiring nothing more than a large piece of cardboard, a world globe, and reference to a half-page printed table. Using this method, I have contacted Japan, New Zealand, Antarctica, and Australia, on both long and short paths."

"I have two complaints to lodge," says Robert Barber of Gardner, Kansas, who has long been a dispatcher in several Kansas City suburbs. "The first deals with the article in the October issue entitled *Don't Tune Out Those Sleepy Suburbs*. The frequency list is simply awful! Dixie Daniel's list has 369 entries and 143 errors, ranging from an incorrect type of service, having a frequency that is not according to FCC spacing, to listing the wrong frequency to the wrong agency. Many novice scanner nuts in the KC area are going to take her list to heart and be disappointed.

"Second, Bob Kay has written about Computer Aided Dispatch three times in 'The Scanning Report.' Each time he has mistakenly described CAD as a system used to send units to calls via a mobile computer. CAD is merely the use of a computer to maintain unit status. What Mr. Kay described are Mobile Data Terminals. CAD and MDTs can be interfaced in varying degrees of complexity, and in some of those systems they might be used to dispatch units." However, Robert knows of no such cases and seems to think it would be exceedingly rare.

"I fear one of my favorite publications is in danger of developing a credibility problem. Of course there are bound to be a few mistakes here and there, but such gross inaccuracies are frustrating."

"*Not having* seen any reader question it," begins Rory McEvoy of Scarborough, Ontario, "I must ask the obvious of Jack Sullivan's October article on the *Navy's Crystal Box*. Two frequen-

cies, 3-9 and 3-10, are omitted from the listing. Obviously these are between 277.0 and 280.2 MHz, and the text provides one answer, 277.800. May we have the other answer, please?"

Jack Sullivan was gratified to know the article was read so closely by at least one reader. As Rory surmised, 3-9 is 277.8 MHz, a Fleet Common frequency, and 3-10 is 279.4 MHz, a Navy tactical frequency. Thanks for calling the omission to our attention.

John Hoot of Software Systems Consulting writes, "As an advertiser in your magazine for the last several years and a maker of weather satellite receiving equipment, weather facsimile decoding equipment, weather telex decoding equipment, antennas and ground stations, I was appalled not to see us included in the table of sellers of weather reception and related products" [in the December article on NOAA weather radio].

Our apologies to SSC: it is very difficult in editing to see that all sources are mentioned who should be. Software Systems Consulting has an excellent reputation for weather transmission decoding equipment; contact them at 615 S. El Camino Real, San Clemente, CA 92672, (714) 498-5784.

There are also several other companies that sell weather facsimile decoding equipment and software that were not listed in the "starter list," such as AEA (P.O. Box C2160, Lynnwood, WA 98036, (206) 774-5554; MFJ (Box 494, Miss. State, MS 39762, (601) 323-5869; Universal Radio (6830 Americana Pkwy, Reynoldsburg, OH 43068; 614-866-4267)...and I'm sure there are others!

Luis Maillo Garcia of Madrid, Spain, has decided that getting *Monitoring Times* a month late is better than not getting it at all. That's why he has switched his subscription from Interbooks in Scotland to a direct subscription from Brasstown. He says his complaints to the company either brought no response, or a supposedly humorous suggestion that his postman also liked *MT*; a final offer to extend his subscription three months was never enacted.

For several years Interbooks has performed a much-appreciated service by fulfilling many European subscriptions more promptly than if the magazine were mailed by surface mail from the U.S. However, during a split-up of the company about a year ago, we did receive many complaints about unfulfilled or irregular service.

Complaints have lessened since then, and we trust customers are finding Interbooks to be a reliable source once again. The primary disadvantage of taking one's subscription through a subscriber service is that, if you do miss an issue,

Continued on page 111

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The widely-respected AOSC was founded in 1979 to serve scanner enthusiasts in Ohio and surrounding states (Illinois, Indiana, Kentucky, Pennsylvania, West Virginia), but it boasts members from 40 states and Canada. Its bi-monthly newsletter, *American Scannergram*, includes public safety columns by state, and special interests such as sports, aviation, railroads, federal and state government, business, and the military. HF utilities, product and book reviews, and technical articles are also of interest.

Dave Marshall adds: "We run a scanner/SW information net on the Dayton Amateur Radio Association 146.940 repeater on Monday evenings at 9:30 pm." An annual summer picnic is generally held in the Columbus, Ohio, area, and social gatherings are sched-

uled to coincide with the Winter SWL Festival, the Monitoring Times Convention, and the Dayton Hamvention (AOSC co-sponsors a forum for shortwave/scanner listeners).

Membership is \$18 per year (\$21 Canada and Mexico; \$28 elsewhere). A sample newsletter is \$3 from 50 Villa Road, Springfield, OH 45503-1036. The AOSC can also be reached on the Listening Post BBS at (513)474-3719 by leaving a message for Dave Marshall.

Association of Manitoba DXers (AMANDX)

"AMANDX is a group of SWLs and DXers that was established to promote the hobby and to help out members in any way possible. Monthly meetings are held and any member can bring up a topic or ask for help in any area of the hobby he or she wants. As no publication is produced

membership is \$2.00. Information on any aspect of the hobby is available to non-members as well for those living in the area."

Contact Shawn Axelrod, 30 Becontree Bay, Winnipeg, MB, R2N 2X9 Canada; (204)253-8644.

Radiocom '94

You have to be deaf and dumb not to have heard or seen the big plans for a West Coast all band radio convention August 10-14, 1994, in Costa Mesa, California. The convention is being sponsored by the Southern California Area DXers (SCADS) and its members club. For more information and to find out about their pre-convention mug offer, write SCADS at 6398 Pheasant Drive, Buena Park, CA 90620. West Coasters shouldn't miss this rare event!

Club Listings M-Z

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. Michigan & surrounding; All bands. *Great Lakes Monitor*.

Minnesota DX Club: Al Samson, P.O. Box 10703, White Bark Lake, MN 55110, 612-786-5915. Twin cities area; SW, MW, TV, FM, utilities. *MDXC Newsletter*.

MONIX (Cincinnati/Dayton Area Monitoring Exchange): Mark Meece, 7917 3rd St., West Chester, OH 45069-2212, (513)777-2909. Cincinnati/Dayton area; Full spectrum SW and scanning.

Mountain NewsNet: James Richardson, P.O. Box 621124, Littleton, CO 80162-1124, (303) 933-2195. Colorado statewide. Public Safety notification group.

National Radio Club: Paul Swearingen, Publisher, P.O. Box 5711, Topeka, KS 66605-0711. Worldwide; AM/FM. *DX News* 30 times yearly, sample for a 29 cent stamp.

NYC Radio Fre(ak)Qs: Joe Alverson, 199 Barnard Ave., Staten Island, NY 10307, 718-317-5556. NY boros & LI; VHF/UHF/HF utilities.

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 American SW Assoc.: Bob Brown, Executive Dir., 45 Wildflower Lane, Levittown, PA 19057. Worldwide; Shortwave broadcast only. *The Journal*.

North Central Texas SWL Club: Alton Coffey, 1830 Wildwood Drive, Grand Prairie, TX 75050. 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.

Northeast Scanner Club: Les Mattson, P.O. Box 62, Gibbstown, NJ 08027, (609) 423-1603 evenings. Maine thru Virginia; UHF/VHF, public safety, aircraft, military. *Northeast Scanning News (NESN)*.

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. Predominantly Province of Ontario; SWBC, utility, MW, FM-TV, scanning, technical, propagation. *DX Ontario*.

Pacific NW/BC DX Club: Phil Bytheway, 9705 Mary NW, Seattle, WA 98117, (206) 356-3927. WA, OR, ID, BC; DXing all bands.

Pakistan SW Listeners Club: Mrs. Fatima Naseem, Sultanpura, Sheikhpura, 39350 Pakistan; Pakistan; SWBC.

Pitt Cty SW Listeners Club: L. Neal Sumrell, Rt. 1 Box 276, Sumrell Rd., Ayden, NC 28513-9715. Eastern NC; Shortwave bands. *The DX Listeners*.

Puna DX Club: Jerry Witham, P.O. Box 596, Keaau, HI 96749; Puna, HI; SW and MW.

QSL Club de France: Patrick Frigerio, 40 Rue de Haguenu, 67700 Saverne, France. SWBC, pirates, CB-DX, hams, etc. *Courrier* (in French). 6 bulletins, 72 FF, EEC=16 IRCs, elsewhere 20 IRCs.

Radio Monitors of Maryland: Ron Bruckman, P.O. Box 394, Hampstead, MD 21074. Maryland; VHF/UHF/HF utilities. *Radio Monitors Newsletter of MD*.

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): Bill Morris, Public Info. Officer, Box 83-M, Carlstadt, NJ 07072-0083. 50 mile radius of NY City; 2-way Radio Public safety notification group.

Rocky Mountain Radio Listeners: Mike Curta, P.O. Box 470776, Aurora, CO 80047-0778. Colorado Front Range; All bands. Annual meeting calendar for an SASE.

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.

Southern Cross DX Club Inc.: G.P.O. Box 1487, Adelaide, SA 5001, Australia. Australia, New Zealand, South Pacific; All bands. *DX Post*.

SPEEDX (Society to Preserve the Engrossing Enjoyment of DXing): Bob Thunberg, Business Mgr., P.O. Box 196, DuBois, PA 15801-0196. Worldwide; SWBC, utilities. *SPEEDX* monthly newsletter.

New Listings:

Hudson Valley Monitors Association (HVMA): Patrick Libretti, P.O. Box 706, Highland, NY 12528; (914)831-6600 x220. Mid-Hudson valley and surrounding counties; VHF/UHF, public safety, etc. *The Hudson Valley Monitor*.

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.

SPECIAL EVENT CALENDAR

Date	Location	Club/Contact Person
Feb 12	Blaine, MN	Robbinsdale ARC Midwinter Madness/Hotline 612-537-1722 Location: National Sports Center, 7 am to 2 pm, \$4 advance admission. Talk-in on 147.60/00 repeater
Feb 20	Dayton, OH	Dayton's Computer Blowout/Hank 1-800-798-2680 Location: Dayton Hara Complex, 10 am to 4 pm, \$5 admission.
Feb 26	Milton, VT	Northern VT/NY Winter Hamfest/Mitch Stern, WB2JSJ, 802-879-6589. Location: Milton HS, Route 7, \$3 admission, 8 am to 5 pm, talk-in on 145.47 or 146.85.
Feb 26-27	Cincinnati, OH	ARRL 1994 Great Lakes Convention/Stanley Cohen, WD8QDQ 2301 Royal Oak Court, Cincinnati, OH 45237; 513-531-1011. Location: Cincinnati Gardens Exhibition Center, 8:30 am to 5:00 pm.
March 5	Twin Mtn, NH	North Country ARC Hamfest and Fleamarket/Richard C. Force, WB1ASL, 12 Cottage St., Lancaster, NH 03584; 603-788-2202. Location: Town Hall near intersections of US Routes 3 and 302; 8am to 3pm, \$2 admission, talk-in on 146.55 MHz simplex.
March 5	Absecon, NJ	Shore Points ARC Springfest '94 Hamfest/SPARC, P.O. Box 142, Absecon, NJ 08201. Location: Holy Spirit HS, Route 9, approx. 1/2 mile south of Route 30. Doors open 9 am, \$4 admission, talk-in on 146.385/985.
March 20	Maumee, OH	TMRA Hamfest/Computer Fair/Jim Old, WD8DCT, 6632 Santo Lane, Maumee, OH 43537. Location: Lucas County Recreation Center, Key Street, \$5 admission.
March 26	Ontario, Canada	Ontario DX Assoc. SWL Fleamarket/John Grimley, 416-444-4771. Location: Trinity Presbyterian Church Hall, Willowdale, Ontario, \$5 admission, 9 am to 12 noon.
March 27	Madison, OH	Lake County ARA Hamfest/6899 Melridge, Concord, OH 44060; 216-352-6756. Location: Madison HS, \$5 admission, 8 am to 3 pm, talk-in on 147.1 and 224.50.
March 27	Grayslake, IL	LAMARS Fest 1994/650 Green Bay Rd., Lake Bluff, IL 60044. Location: Lake County Fairgrounds, Doors open 8 am, \$5 admission, talk-in on 146.52, 147.945-345.

Monitoring Times is happy to run brief announcements of radio events open to our readers. Send your announcements at least 60 days before the event to:

Monitoring Times Special Event Calendar,
P.O. Box 98, Erasstown, NC 28902-0098

DX RADIO TESTS and DX NEWS

Information on more tests such as these can be found in *DX Monitor*, the publication of the International Radio Club of America (IRCA) and *DX News*, the publication of the National Radio Club. Both clubs are devoted to the hobby of hearing distant stations on the standard AM broadcast band.

For a sample copy of *DX Monitor*, send one 29 cent stamp (\$1 US or 1 IRC overseas) to: IRCA, P.O. Box 70223-MT, Riverside, CA 92505, USA.

For a sample copy of *DX News*, send one 29 cent stamp to: NRC, P.O. Box 5711, Topeka, KS 66605-0711.

This month's tests were arranged by J.D. Stephens for IRCA.

Thursday, February 3, 1994: WRDB-1400, Reedsburg, WI, will conduct a DX test between 3:00 and 3:30 am EST. The test will include Morse code and voice IDs. Reception reports may be sent to: Mr. Clifford J. Groth, Director of Engineering, WFAW Radio, P.O. Box 94, Fort Atkinson, WI 53538-0094.

Monday, February 7, 1994: WHVW-950, 507 Violet Avenue, Hyde Park, NY 12538, will conduct a DX test between 12:00 and 12:30 am EST. The test will include country music, test tones, and Morse code IDs. During the test, WHVW will switch between powers of 500 watts and 57 watts. Reception reports may be sent to: Mr. Al Weiner, General Manager.

Monday, February 7, 1994: WDMJ-1320, Marquette, MI, will conduct a DX test between 1:00 and 2:00 am EST. **This test will be simulcast on WIAN-1260, Ispeming, MI.** The test will include voice IDs and dual Morse code IDs for both stations. Reception reports may be sent to: Mr. Clifford J. Groth, Director of Engineering, c/o WFAW Radio, P.O. Box 94, Port Atkinson, WI 53538-0094.

Monday, February 14, 1994: WGTO-540, 821 Marshall Farms Road, Ocoee, FL 34761, will conduct a DX test between 2:00 and 3:00 am EST. The test will include Morse code IDs. **Power will be 50 kW, day pattern.** Reception reports may be sent to: Mr. Dave Edwards, KD4OLZ, Technical Assistant.

Monday, February 14, 1994: KIEZ-540, 1188 Padre Drive, Suite 202, Salinas, CA 93901, will conduct a DX test between 3:30 and 4:00 am EST. The test will include Morse code, telephone tones, and Latin music. Reception reports may be sent to: Chief Engineer.

Sunday, February 20, 1994: KLER-1300, P.O. Box 32, Orofino, ID 83544, will conduct a DX test between 2:01 and 2:30 am EST. The test will include TV/movie themes and Morse code IDs. Reception reports may be sent to: Mr. Jeff Jones, Owner.

Monday, February 21, 1994: WDLB-1450, Marshfield, WI, will conduct a DX test between 2:30 and 3:00 am EST. The test will include Morse code and voice IDs. Reception reports may be sent to: Mr. Clifford J. Groth, Director of Engineering, c/o WFAW Radio, P.O. Box 94, Fort Atkinson, WI 53538-0094.

Monday, February 28, 1994: WHND-560, 5305 Vineyard Drive, Monroe, MI 48161, will conduct a DX test between 12:00 and 12:30 am EST. The test will include oldies music, test tones, and Morse code IDs. Reception reports may be sent to: Mr. Tom Gardulf, Chief Operator.

Monday, February 28, 1994: WIXN-1460, Dixon, IL, will conduct a DX test between 1:30 and 2:00 am EST. The test will include Morse code and voice IDs. Reception reports may be sent to: Mr. Clifford J. Groth, Director of Engineering, c/o WFAW Radio, P.O. Box 94, Fort Atkinson, WI 53538-0094.

Monday, February 28, 1994: KOVO-960, 651 W. 1560 South, Provo, UT 84604, will conduct a DX test between 2:00 and 2:30 am EST. The test will include Morse code, tones, and Glenn Miller swing music. During the test, KOVO will switch between a 5,000 watt omnidirectional pattern and a 5,000 watt directional pattern. Reception reports may be sent to: Mr. Benjamin J. Reed, Program Director.

INDEX OF ADVERTISERS

Advanced Electronics Applications	3
Aerial Dev. of New England	77
Antique Radio Classified	77
ARRL	15
ASA	21
Ashton ITC	85
BBC World Service	57
Cellular Security Group	73,87
Commtronics	19
Communications Electronics	5
Communications Specialists	83
Computer Aided Technologies	97
Dallas Remote Imaging	83
Datametries	73
Jacques d'Avignon	61
Delta Research	107
Electronic Access	105
EEB (Electronic Equipment Bank)	11
Electronic Outlet of America	83
Galaxy Electronics	103
Grove Enterprises	13,21,25,47,60,62,83, 89,91,93,101,107
Grundig	17
Glenn Hauser	39
ICOM America	Cover IV
Intercepts Newsletter	77
J&J Enterprises	97
Japan Radio Company	Cover III
JPS Communications	57
KIWA	85,95
Klingenfuss	33
Lentini Communications	7
Marymac Industries	9
Microcraft Corporation	85
Monitoring Times	87
Motron Electronics	105
National Scanning Report	7
Naval Electronics	107
OptoElectronics	70,71, Cover II
Orchid City Software	75
Palomar Engineering	19,75
Percon	37
Pioneer Data	23
Pioneer Hill Software	21
Radio Accessories	105
Radioware Corp.	21
RDI White Papers	77
Satman	9
Skyvision	95
Software Systems Consulting	23,91
Startek International	35
The Ant Farm	7
Tiare Publications	81
Tranself Technologies	95
TRS Consultants	75
Universal Radio	107
US Radio	79
V-Comm (ScanStar)	79
Viking International	77
Worldcom Technology	9

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LETTERS cont'd

Monitoring Times is unable to replace it for you. All we can offer is that if the issue is still in stock, you may purchase it directly if the subscriber service is unable or unwilling to replace it.

Nancy Blossom of Haverford, PA, complains that for the past three years *MT* has not carried advance programming details for BBC Christmas programming, including the Queen's Christmas broadcast, although she says she was promised it would be in future issues when she complained two years ago. Understandably, she had to give up subscribing to the BBC magazine as too expensive (about \$40 US).

When the BBC replaced *London Calling* with the *BBC Worldwide* magazine a little over a year ago, its delivery date was too late for programming details to make it into the appropriate issue of *MT*. Special arrangements were worked out so that *MT* can get the bulk of the programming in time for our issue, but plans sometimes go awry (as with this February issue in which no advance programming was received). Even at that, the BBC does not always have full details yet printed up. This is likely to become a more common problem, now that our deadlines are earlier as well.

Broadcasters are you listening? There are a great number of listeners who rely on *Monitoring Times* as their single source of program details and broadcast times and frequencies, and appreciate your prompt notification of changes.

Short Subjects

"In the article *Inside NOAA Weather Radio* in the December issue, Ken Reitz refers to January 1975 as 'during the Nixon administration.' 'It wasn't.'"

Ruskin Langley, Glendale, CA

Oops, apologies to President Gerald Ford. President Nixon resigned the previous August. Reitz's info came from a Dept. of Commerce publication!

"I read with interest Dr. Adrian Peterson's *Australian Army Radio* in the October issue. I was a member of a Royal Air Force Unit which was part of the British Commonwealth Occupation Forces in Japan after World War II. The unit was based near Kune and we shared a base with the Australian Army. I well remember hearing station 9AQ and its relay of news, etc. from Radio Australia. Its signing off music at night was 'Out of my Dreams' from Rodgers & Hammerstein's *Oklahoma*. It used to remind me of a woman friend in England!"

Phil Barton, Wellington, NZ

"I am a stroke victim two times and wonder if any of your subscribers know of any one who would like to send me a CB radio. I can't get out of the house and radio and scanning is my only pleasure in life. If anyone is throwing out an old CB, I will send a check for having it sent to me..."

Martin Theil

If anyone can help Martin out, call Beverly or Rachel at the Monitoring Times office and we will give you Martin's address.

"Would the person named Kim who lives in the Catskill Mountains area of New York State, please call the European DX Council at the number you already know. The best time to get an answer is Saturday or Sunday between 9am and 5pm EST."

Michael Murray, EDXC

Don't let the winter doldrums get you down... There's never an excuse for cabin fever as long as you can tune in the radio and travel the world. Only the clock can place a limit on the endless promise of more great monitoring times!

*Rachel Baughn,
Editor*

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Canadian Scanner Ban Looms and the US Rewrites the Communications Act

You thought the cellular cartel was pushy with their 1986 privacy act and 1992 cellular scanner ban? Now they're going after our Canadian neighbors!

The RadioComm Association of Canada, a cellular telephone industry group, has proposed to the Department of Industry a ban on the sale, manufacture and importation of ALL scanners.

The submittal states, "The monitoring of radio-based telephone or any telephone conversation is simply not tolerable." RadioComm president Roger Poirier added, "This activity is an invasion of people's privacy."

The Canadian government's interest in scanners follows Princess Diana's intimate conversation with her riding instructor; Prince Charles's call to a lady friend; a Canadian politician's conversation compromising another's constitutional position; and, of course, the U.S. ban on cellular-capable scanners.



But what is outrageous about Poirier's recommendation is that it is so sweeping, a ban on ALL scanners, whether or not they

are capable of cellular reception. This ill-conceived proposal might logically be compared with banning all telephones because some can be used as taps. At this writing, calls to Mr. Poirier for clarification have not been returned.

If the proposal is made into law, it may only be a matter of time before the American cellular lobby proposes a similar ban in the United States. Would they be successful? So far they're batting one thousand with their self-serving campaign. That's frightening.

The Canadian debacle comes fresh on the heels of a release from the Clinton administration that the entire 1934 Communications Act is up for a rewrite during the new "Information Superhighway" push. What will happen to section 705 (formerly 605) regarding the right of Americans to monitor non-broadcast transmissions?

With sweeping reforms in the federal government now in dynamic evolution, we must be especially vigilant regarding this possible erosion of a fundamental freedom.

*Bob Grove
Publisher*



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