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Monitoring Times

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Grove Press, Inc.

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Beyond Christmas Island

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Monitoring Times



Beyond Christmas Island

8

By Deborah Howe

Radio Kiribati broadcasts to a handful of far-flung coral atolls that barely disturb the surface of the vast Pacific Ocean. Deborah Howe offers a rare opportunity to visit this DX catch which has just increased its transmitting power.

Increase Your Scanner Enjoyment

12

By Ed Hesse

Experience is the best teacher; next best is someone who's had experience and learned from it. Based on his own monitoring, here are twenty ways Ed Hesse has discovered for getting more fun out of the scanner hobby.



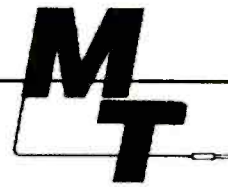
DXing the Planet Earth

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By Larry Van Horn

We're all familiar with the static crashes created by lightning, especially on AM radio stations. But traveling further down the spectrum into the 3-30 kHz basement, the noises of nature take on an almost "other-worldly" character whose origins are almost as eerie as they sound.

COVER: Tomasi Tarau contemplates the 5-element Yagi used by Telecom to reach Christmas Island. R. Kiribati has increased its signal strength by renting a newly erected duplicate of this antenna.



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Radio Reading Services

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By Bob Shreve

Where can you find *Monitoring Times* read on the radio? On the Savannah branch of the Georgia Radio Reading Service, that's where. GARRS is only one of many such services across the country that broadcasts material especially geared to the sight-impaired listener. A nationwide list accompanies the article.

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And More!

This month we really cater to the book-lover on your list. You'll find books for listening to and identifying two-way communications, books for the amateur radio operator, books and catalogs for the satellite TV enthusiast, for the aeronautical buff, and more.

What is it that always comes "not included" with Christmas toys? Right; batteries! To keep tabs on the output of your batteries or other power supply, Demaw has simple instructions on building your own voltmeter/battery tester.

Take a trip to the Virgin Islands, check out the latest and greatest in mobile antennas, and experience the sheer terror of windshear — it's all here in December's edition of *Monitoring Times*!

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American Bandscan	Karl Zuk

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

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LETTERS



Season's greetings to one and all! It is with deep gratitude that I thank you all for your lively involvement in our hobby and in the continued success of *Monitoring Times*. Thanks for your informative and

thoughtful Letters to the Editor and for the enormous pool of knowledge that you comprise. Our readers represent a boundless resource for all our writers, and I know the entire *MT* staff joins me in expressing their appreciation.

No less important are those of you who ask questions and tell us what you don't understand, would like explained, find confusing, or would like to see. Keep those questions coming!—they help determine our future direction as we move into 1993.

Thanks to Radio Shack!

One juicy prize donated for giveaway at the Monitoring Times Convention was inadvertently omitted from the list of prizes in last month's convention recap; Radio Shack donated the superb Realistic® Pro-43 handheld scanner. We apologize for the oversight.

Additionally, we would like to thank Jack Sullivan for the donation of three cases of the *Directory of North American Aviation Communications*; Official Scanner Guide, publishers of many frequency guides, for 13 *Aeronautical Guides*; and Grove Enterprises for a variety of books—all of which went to first arrivals into the exhibit hall. Thanks also to SPEEDX for several gifts, which went to those who correctly answered a few stumblers!

Exercising Free Speech

How far does the right to free speech go? In August, a reader wrote in that he was "shocked" to hear WRNO's relay of National Vanguard Radio's American Dissident Voices programming. He felt that it was irresponsible on the part of the station, which has a responsibility to the public that comes along with their license to broadcast.

Richard Dale, a reader from Independence, Missouri, responded to Charlie Diamond's letter this way: "While the content of the broadcast may be distasteful, it is protected speech under the United States Constitution. The same rights which give Ice-T the freedom to put out "Cop Killer" also give NVR/AD the right to express their viewpoints.

"If public pressure can be brought to bear, as in the case of Ice-T, WRNO may reconsider. The First Amendment gives you the

rights of free speech. It does not guarantee you a platform from which to speak, nor does it guarantee anyone will listen.

"If WRNO wishes to sell time, that is their business. If they decline to sell air time, that is also their business, and it is in no way censorship. Forcing them to broadcast something or forcing them not to broadcast something is [what is] intolerable.

"Let the listening audience decide. The pocketbook will provide more pressure than anything else."

Monitoring Times also received a letter from Kevin Alfred Strom, producer of American Dissident Voices:

"Mr. Diamond's letter to WRNO appears to be an attempt to censor American Dissident Voices by pressuring WRNO to remove us from the air. It seems that free speech protections do not apply to everyone, just to 'rap singers'...Mr. Diamond and his kind are enforcing a double standard of 'permissible opinion,' a standard which declares it is fine and admirable if a Black person or Jewish person is proud of his racial and cultural heritage and wishes to preserve it; but that if a white American does the same thing, it is (to use Mr. Diamond's words) 'racist, xenophobic, anti-semitic...'

"It isn't just white Americans who are threatened by the one-world planners and their Politically Correct control mechanism. Nationalism is the wave of the future. Artificial nations like Czechoslovakia, Yugoslavia and the Soviet Union, in which different races or ethnic groups are forced to live under the same government, are doomed to failure.

"One of the reasons I broadcast on short-wave is so that the listeners worldwide will gain an increased understanding of the realities of power politics in America, and so that they will be exposed to the dissenting views of American patriots who don't always agree with Washington's policies. Surely this is a service to those of good will, whatever their political persuasion. I urge Mr. Diamond to rethink his ill-considered attempt to censor American Dissident Voices."

Is nationalism the wave of the future? That's not a simple issue: I think most of us as short-wave listeners support an increasingly global awareness, but one which respects cultural differences. In fact, most of us find it disappointing when all broadcasters begin to sound alike.

However, I don't agree with Strom when he equates American nationalism with celebrating our "European heritage"; my pride in the U.S. is based on its heritage as the "melting pot" of the world—the nation that has come the closest to success in the peaceful coexistence of races and religions.

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LETTERS

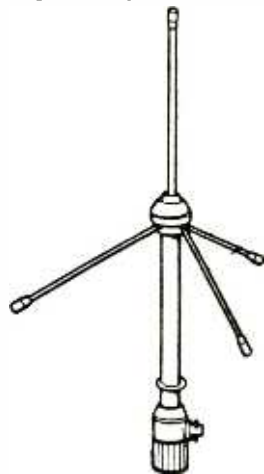
Unfortunately, "nationalism" is too often accompanied by the kind of thinking that lumps everyone different from ourselves into the category of enemy—as demonstrated by such phrases as: "Mr. Diamond and his kind."

Mr. Strom says, "I do not have a hateful bone in my body. I deplore cruelty and violence, and have never advocated such on my program." Well, tune him in and see what you think; he's on 7355 kHz 9pm EST every Saturday evening. Is this more free speech than anyone has a right to? Or are we guilty of "Free speech for me, but not for thee?"

Monitoring Mickey's Parade

Back in October, BH asked for the frequencies likely to correspond with the ground-plane antennas he spotted on the floats at Disney World. Bob Grove reminded us that many Disney World frequencies are contained in his pocket *Sports and Entertainment Frequencies*. It gives the parade frequency as 461.300 MHz.

John Emery responded with a substantial list of frequencies for Disney World and the surrounding area. We have forwarded the full list to the "Scanning Report"; however, John lists the following frequencies for the parade: 206.000, 206.3000, 206.6250, 206.975, 207.350, 207.600, 207.750, 208.175, 208.625, 208.950, 209.100, 209.600, 210.125, 211.850, 212.4750, 462.775, 462.850 MHz. Most of these he says he has monitored personally.



Thomas Muncy of Oak Ridge, Tennessee, observed that the antenna "looks an awful lot like the Sony AN-57 antenna, used with Sony's wire-less mic system."

Thomas continues, "We use the Sony wire-less system in two of our auditoriums at Oak Ridge National Laboratory with the antennas mounted on the back wall of the auditoriums close to the projection booths."

The system operates on frequencies between 902 and 952 MHz in the U.S. and Canada.

RTTY Radio

Last month Walter Chmara of Bensalem, Pennsylvania, bewailed the lack of radioteletype transmissions available to be monitored by those who own decoders and other types of terminals. Are RTTY monitors destined to remain as lonely as the Maytag repairman? After all, says Walter, "How many of us truly find the transmissions of CFH, WLO, or W1AW useful or even interesting? But what else is there, since everything seems to be encrypted or on satellite, or both?"

Well, Walter has an idea to change all that. Why not construct "a radio station aimed at this specific audience!" And furthermore, "take a lesson from the good ol' days of radio, and let the sponsor pay for it! Yes, run commercials!"

Walter waxes enthusiastic: "A powerful transmitter used solely for RTTY to a general audience would have quite a few attractive points. No on-air staff would be required. Being the first station of its kind, it would be assured a worldwide captive audience. Digital signals fare better through interference and noise than voice.

"The same businesses that advertise in *MT* and other such periodicals would be reaching their target customers on a daily, rather than monthly, basis. The advertiser's message can be delivered cheaply without background music or sound effects. The listener who might say, 'Huh? Could you repeat that?' to an audio ad, would be able to re-read the ad on the screen and save it or print it if desired.

"Radio station 'Radio Data International' would not exclude the deaf, either."

Are there any radio entrepreneurs out there waiting for a novel idea? How about it, Fred Osterman? One could always buy time on WRNO...!

Scanner Sleaze from CBS

There was widespread disgust in the monitoring community at the CBS program *48 Hours* which aired a few days before the Monitoring Times Convention. Reader Eric Cutler says, "The public at large probably thinks all scanners should be banned after seeing the program dealing with the loss of privacy in America. One segment showed how scanners could monitor phone calls. The 'enthusiast' they interviewed wore a hat, sunglasses and a pretty bad paste-on beard, and had his voice electronically altered so not to be discovered. Thank you CBS for presenting scanner users in such a positive way!

"This man should be ashamed of himself for giving other scanning enthusiasts a bad name. If scanners are such terrible things, how come almost every newspaper, radio and television station in this country has at least one?"

Frank Etzler of Arlington, Virginia, is also troubled by the tendency on the part of the media

to make scanner listeners appear as "some sort of perverts."

"The public should be aware that radio transmissions in any standard mode (CW, RTTY, Voice, etc.) are public information. In this regard broadcasting, amateur radio, cordless phones, public service radio (police, etc.) are identical. In other words, radio transmissions are not private conversations by their nature. It is, however, reasonable that such information not be used to assist criminal activities."

Well spoken, Frank; tell it to the press! Robert Hambuchen, Jr. of Conway, Arkansas, did even better; he wrote the FCC and sent a copy to his State Senators. Here is his letter in its entirety:

Dear Sirs:

I wish to file an official complaint with the FCC concerning a blatant and offensive violation of the law and FCC regulations.

Last night, CBS Television and all affiliates broadcast a show called *48 Hours*. This particular show was about surveillance techniques and privacy. During the course of the show, an individual whose identity was concealed demonstrated how easy it was to monitor cellular telephone conversations with a handheld scanner. In the next few minutes, several cellular telephone calls were broadcast.

In my opinion, CBS displayed a blatant disregard for the ECPA by intentionally monitoring the cellular communications. CBS further violated the Communications Act of 1934 by broadcasting the conversation to others. In fact, they may even be in violation of wire-tap laws.

I insist that CBS, its affiliates who broadcast the piece, the reporter, and the masked individual be immediately fined by the FCC for these violations. Further, I urge the FCC to consider asking the Justice Department to look into other criminal charges.

I realize this may be considered by some to be an exaggerated view of the situation; however, in the last few years several individuals have been fined for recording and using cellular communications for their own purposes. I believe the ECPA is a misguided and stupid attempt by the cellular industry to give the customer the impression of privacy and should be repealed, but it is the law and I do not believe CBS should be exempted. For the record, I am opposed to any restriction on the monitoring of any radio frequency communication.

Please inform me of your decision in this matter, and any action taken on this complaint.

Sincerely,
Robert Hambuchen, Jr.

Continued on page 97

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Harry Baughn

In Flight Service

The *Wall Street Journal* apparently wasn't all that impressed with USAir's debut of In-Flight Phone Corporation's phone, fax and game service. "Flight Link" is an interactive, liquid crystal computer display that offers travelers telephone and facsimile services, access to stock quotes and games.

"I'd rather read a book," declared Diane Cohen, a New Jersey attorney, after trying Flight Link during a Philadelphia-to-San Francisco flight. Cohen apparently wasn't alone in her apathy. "Although the 5-1/2 hour flight was nearly filled," said the *Journal*, "only a few passengers used the FlightLink system. Three of them simply tried the \$2.00 video games."

The *Journal*, which tested the system's clarity during the Philadelphia-to-San-Francisco flight, found that a fair amount of static and breakup occurs during conversations. One call was disconnected while in progress and two other calls, dialed more than 10 times each, weren't connected. Reached at his office from aboard the flight, Dan Theriault, In-Flight's marketing director, maintained that the company's advanced technology will give it a competitive edge in the air-to-ground telephone industry.

"Usage has been triple that of the competitor's," he was quoted as saying, his voice breaking up and, at times, barely audible.

Strange Bedfellows

Radio Titan, a small station located in Ufa, Russia, has announced that it will begin relaying programs from the Voice of America. Radio Titan is run by the Body Building Association of the Russian Federation and shares 5780 kHz with another station, Radio Shark. Radio Shark's affiliation is not known.

Cold War Memorabilia

Looking for a souvenir of the Cold War? It's a perfect gift and just in time for the holidays.

The Moldavian Television and Broadcasting Association has dismantled its jammers and is now selling the towers. Each weighs about 100 tons. For more information or to order, write Kotovskoye Shosse 64, 277028 Kishinev, Moldavia or call 1-800-TOWERS. Ask for Al.

Gunman Kills at Radio Station

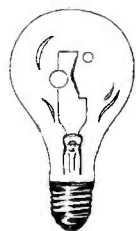
A gunman entered radio station DXAS in Zamboanga, Philippines, and opened fire on the Christian evangelist who was on the air. The Rev. Georgio Hapalla was broadcasting a program for Muslims in the Tausug language when a man entered the station and started shooting. Also slain was a technician and another man who was visiting the station. Muslim fundamentalists were suspected of the shooting.

Neo-Nazi CB

Ringleaders of right-wing attacks on refugee shelters in eastern Germany have been using CB radios to coordinate their efforts. Since the riots started in Rostock in late August, there has been speculation that the attacks were well coordinated. According to Brandenburg's Interior minister, Alwin Ziel, "The rightist extremist criminals had cars with citizen's band radios in them and were directed from outside."

500-Volt Vision

A Public Utility Commission hearing in Harrisburg, Pennsylvania, took a seemingly bizarre twist when a woman claimed electromagnetic fields from a power line near her home allowed her to see through things. Thirty seven year old Dianna McPheat also said that the fields enhanced her hearing and made plants grow in spiral shapes.



McPheat first became concerned about the 500 kilovolt power line when the light in her bathroom would stay on even after it was switched off. Other appliances would start without being turned on and her kids used to bring fluorescent bulbs into the back yard and watch them turn on in their hands. Other alleged problems included frequent nosebleeds, three-week-long headaches, chest pains, sleeping disorders, memory loss and general disorientation.

Pennsylvania Power and Light said that they had conducted "extensive testing" of the five acre property and found "normal levels of EMF"; however, a woman who said that she lived at the house before Ms. McPheat backed up Ms. McPheat's allegations.

More News About Electricity

An article in the *Cortland Forum*, a medical journal, tells about how second year pathology resident, Maria L. Evans, MD, KTSY, of Columbia, Missouri, ran into one of her older ham friends in the lobby of the hospital. He was there for treatment of two recent "syncopal episodes." Dr. Evans, a radio amateur for 16 years, was able to link the recent purchase and operation of a one kilowatt linear amplifier to the patient's attacks. According to the *WSYI Report*, the amplifier was interfering with the man's cardiac pacemaker.

"The patient decided that his old 100 watt rig was plenty, sold his linear, and hasn't had a syncopal episode since."

Dangerous Antenna

A Jefferson County, Kentucky, man died recently when the antenna he was installing came in contact a power line. Johnny Collins, 38, was electrocuted when the antenna dropped into some trees and hit a 7,200 volt line. Collins' wife, Geneva, was badly burned when she touched her husband, trying to help him. Collins was pronounced dead at the scene by Deputy Coroner Bob Carter. Mrs. Collins was taken to a Louisville hospital where she was listed in serious but stable condition.

Fifteen minutes after the accident, the Collins' house caught fire.

Nippon Ham

In case you were keeping track, there are now 2,280,705 licensed ham radio operators in Japan.

Off the Air and On the Air

Someone in New Hampshire is the owner of two new radio stations and the Department of Transportation isn't happy about it. Since the start of expansion projects on the F.E. Everett Turnpike, the DOT has been broadcasting construction and traffic information on 530 and 1610 kHz. This fall, the two stations were stolen.

"We record the information remotely with a telephone and one afternoon the machine didn't answer," said DOT spokesman Chuck Blitzer. "The next morning, one of our project engineers went to check on the station and it wasn't there."

Blitzer said the stations were enclosed in steel cabinets that were mounted on a telephone pole. "The person or persons responsible

COMMUNICATIONS

for this owe the motorists a big apology," said Blitzer.

Cellphone Users Easily Intercepted

According to a report in the *Recorder and Times*, a Canadian judge has ruled that conversations on a cellular phone are not private communications under the criminal code. Cell phone users, said Judge Denis Boisvert, should be aware that their talk can be intercepted by third parties. Boisvert also noted that cellular phone calls can be easily heard by anyone who owns a scanner.

Crown prosecutor Yves Brilliant said that the decision means that police won't have to get prior authorization to listen in if it involves a cellular phone. "Police," said Brilliant, "have been anxiously awaiting this ruling."

Search for ET

NASA has begun what is called "the most ambitious search for alien civilizations" in history. Computerized radio-signal generators attached to giant dish-shaped antennas at Goldstone, California, in the Mojave Desert and in Arecibo, Puerto Rico, are scanning for signs of intelligent life covering millions of radio frequencies. Before the program's inauguration on Columbus Day, John Billingham of NASA's Ames Research Center said, "In just a few minutes, more searching will be accomplished than in all previous searches combined."

Not everyone is so enthusiastic about the \$100 million-plus project. "It's ridiculous to spend money this way when we have a \$4 trillion national debt," said U.S. Rep. John Duncan of Tennessee. Duncan based his objection on the fact that "we're taking money from people who are barely making it and spending it on projects like this."

Others suggest that Congress' main objection to the project is that it will prove once and for all that no intelligent life exists on Capitol Hill.

Industry News

It looks as though the long-awaited Grove SW-100 receiver will have to be awaited a little longer. Unexpected hospitalization of the principal design engineer has bumped the expected production, previously scheduled for this month, well into 1993.

Bob Grove, who conceived the SW-100, expressed his disappointment at the protracted

delay noting that he is in good company: "Icom announced three new receivers that weren't available for another year. But theirs were worth the wait, and ours will be, too!"

Customers who have placed pre-production orders have been notified of the extended delay so that they can choose either to cancel their orders or remain in place for the first units.

In other production news, we have received word that Uniden has released without fanfare three new scanner models. The BC 65XLT is a handheld 10-band scanner with 10 channel memory. A new tabletop model—BC 148XLT—is a 16 channel programmable scanner covering 10 bands with automatic weather alert. The BearTracker BCT 2 is a pre-programmed mobile scanner which has the unique ability to detect the presence of a highway patrolman within a three mile radius. No, it's not a radar detector! Tune in to "What's New?" in January for details on these new arrivals.

For those anxious to see the signals as well as monitor them, the Grove SDU-100 spectrum analyzer will begin shipping in January. Contact Grove Enterprises for more details.

Keep Those Clippings Coming!



Some syndicated stories about radio events or the latest FCC action circulate throughout the country; many other stories only appear in local and regional papers. They are all potential grist for the mill! "Communications" is one of our readers' favorite columns, and it is written by Larry Miller on the basis of material supplied by you.

Items not appropriate to this column are forwarded to other columnists for their use—nothing is wasted. So please keep clipping those news items; the other readers will thank you. Be sure your name (if you wish credit) and the name of the publication are included.

We would also like to solicit your help in another area: station program schedules. Advance programming details are extremely hard to get from most stations. Even frequency schedules can be difficult to come by, which is why we do so much monitoring. But if you have a special relationship with a station or are just lucky enough to be sent a coveted schedule, would you share it? We'd all be grateful.

Credüs: BBC Monitoring Service; David Hunt, Elgin, Ontario; Ken Mason, Washington, DC; James McDonald, Deng, New Hampshire; Clem Small, Montana; Steve Stanbro, Jeffersonville, Indiana; *W5YI Report*

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you live, and eliminate
the rest of the world.
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on one of these tiny
islands, loosely linked
together by
radio communications.*



Beyond Christmas Island Kiribati Strengthens Its Voice

By Deborah K. Howe

A tin roof covers a one story pink building that, by Kiribati standards, is long and rambling. Out front a young breadfruit tree takes hold in soil that supports a stiff island grass. The sign on the front of the building reads "Broadcasting House, Offices of Radio Kiribati."

The front door is painted palm tree green and opens onto a spacious lobby, empty except for one unmanned desk. An inside wall of louvered windows provides a view of a large office filled with desks, typewriters, and a handful of employ-

ees. A young woman dressed in a lava lava and "tibuta" (a loose Kiribati blouse that is gathered around the neckline and armholes) shuffles out in her flip flops (formal island footwear) to receive visitors.

At the end of the linear building is the office of Tomasi Kei Tarau, the Radio Station Manager, a short man with gray hair beginning to intrude on his bearded face. Shorts and a loose cotton shirt are his work uniform. More louvered windows make up the wall between his office and the

one next door belonging to Atiota Bauro, the Program Organizer.

Mr. Tarau and Mr. Bauro are in charge of operations of Radio Kiribati, which recently moved from 14917.7 kHz to 17440. Radio Kiribati beams out to the world from the island of Tarawa, though its sole intention is to carry news and entertainment to the people living on the 33 low-lying coral atolls of the Kiribati (pronounced "kir-EE-bas").

Dots in the Ocean

The islands, a part of Micronesia, lie in the middle of the world, spanning the equator and crossing the international date line. It's a part of the world where large cumulus clouds cling to the horizon reflecting the intense blue of the water and the deep tropical green of the fauna. Humidity is high and the temperature constantly hovers between the high 80's and the low 90's.

Each island is a tiny dot of land, coral atolls that stand no more than 15' above water. The largest is only several miles long, the smallest just a few yards. Rarely are they wider than a football field is long. It's like taking the street on which you live and eliminating the rest of the world. Most islands aren't depicted on maps and globes because they would be smaller than a pin point. They are a part of the world that has a lot to lose from global warming. If the sea level rises too much, bye bye, Kiribati.



Atiota Baura, the Program Organizer, keeps the island people in touch with local events.

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The Japanese fortified several of the atolls and one of the bloodiest battles of World War II was fought on Tarawa. The British governed these islands that were known as the Gilberts until independence in 1979. At this time the Kiribati, Phoenix and Line Islands joined together to form the Republic of Kiribati. The people call themselves "I-Kiribati."

These remote islands are more often visited by missionaries than tourists. The writer, Thurston Clarke, passed through in the '80s while on his four year trip around the equator, and the islands are mentioned in his book of the same name, *Equator*. A century earlier, Robert Louis Stevenson established his Equator Town when he lived on the island of Abemama for several months in 1889. During this time he became good friends with the tyrannical king, Tem Binoka, whose macabre indulgences earned him a less than flattering reputation. It's said that he considered it his royal duty to deflower all beautiful virgins and that he slept on pillows filled with the downy, private hairs of young girls. The skulls that hung from the roof of his "maneaba" (meeting home) were proof of his awesome anger. In other words, he was one ugly customer.

Though Robert Louis Stevenson may have had poor taste in friends, his choice of islands was truly admirable. He described the Kiribati as a

Aneta Mote, journalist, reading the news. Continuing education for staff members is a program in which the station is justifiably proud.



Tomasi Kei Tarau, the Radio Station Manager, in his office at Radio Kiribati.



Radio Kiribati

P.O. Box 78
Bairiki, Tarawa Atoll
Republic of Kiribati

Frequency: 17440 kHz

Schedule: Besides the schedule printed in this article, it has been reported by Arthur Cushen (via Radio Netherland's *Media Network*), that reception in New Zealand is best from 0600-0830 UTC with sign-on at 0600 and BBC news; 0609 local news; 0615, music; and 0630 Pacific Islands news.

land of "blinding sun and bracing wind." And right he was, but there's more. It's also a land of gentle people leading simple, langorous lives. Small in stature, with skin the color of a Costa Rican coffee bean, they live their barefoot lives surrounded by coconut palms, breadfruit and pandanus trees. They love to play cards, drink gallons of weak tea and eat mounds of white rice. Most protein comes from the sea, though on special occasions one of the free-roaming chickens or pigs imprisoned in airy coconut log pens is slaughtered. Adults eat first and children get the leftovers.

Sleeping, eating and relaxing take place in a "kia kia," a raised coconut log structure built without walls and covered with a thatched roof of tightly woven pandanus leaves. The largest buildings in the islands are the churches whose steeples and crosses generally reach higher than the tallest coconut palm. The main island, Tarawa, from which Radio Kiribati broadcasts, is electrified by a building full of large, humming generators. The outer islands plunge into darkness at night.

Life here is an extended family. Social security doesn't mean money deducted from a weekly paycheck, but rather a large family that cares for the young and the old. There's no such thing as a homeless person in the Kiribati. Lifelong friends are the rule rather than the exception. Most I-Kiribati live their entire lives on a small parcel of land bounded by the sea.

A scenario like *Thelma and Louise* would be impossible here. Instead of a gas-guzzling convertible, transportation would be found in a sailing canoe carved from the trunk of a single breadfruit tree. Instead of a highway, the liberated "aines" (women) would head out of town via the Pacific

BWANAN KIRIBATI

Radio Kiribati

Babairean Kaongora (Programme Schedule)

6 July - 4 October 1992

Moanibong

0625: Kaukani Bwanan Kiribati (Station Ident)
0630: Taeka ni ibuobuoki
0635: Uti ao Teirake
0700: World News (Radio New Zealand Internat 11735)
0710: Kawain Kaibuke

0715: TAUAN KANOAN TE BONG

0718: Uti ao Teirake (reitana)
0800: Tokin te Kanakobwana
1155: Kaukani Bwanan Kiribati
1200: Rongorongo
1215: Anene man Abamakoro
1245: Katanoata/Bubuti Katekeraoi
1300: World News (Radio Australia) 17795, 15160
1310: National News/Announcements/Katanoata
1320: Anenen Abara/Bubuti Katekeraoi
1758: Kanoan te Kanakobwana
1800: World News (BBC) 9639
1810: National News/Announcements
1820: SHORT TALK
1830: London this week
1845: The Storyteller
1900: Rongorongo, Kawain kaibuke, tauan kanoan te bong ao Katanoata
1930: Kaoti Ami iango
1945: Bubuti Katekeraoi

2000: TAIAN KUKUNE
2030: Kaokan Katanoata
2045: TAEKA MA RONGORON GOIA
2100: Rongorongo
2110: Bubuti Katekeraoi/Anenen Abara
2130: Tokin te Kanakobwana.

Kaumbong

0625-0800 Tara te Moanibong
1155: Kaukani Bwanan Kiribati
1200: Rongorongo
1215: Anene man te Betebeke
1245: Katanoata/Bubuti Katekeraoi
1300: World News (Radio Australia)
1310: National News/Announcements/Katanoata
1320: Anenen Abara/Bubuti Katekeraoi
1330: Tokin te Kanakobwana

1755 to 1810 As on Monday
1820: SHORT TALK
1830: Pacific News
1845: Pacific Sunrise/The World of Health/Perspective
1900: Rongorongo, kawain kaibuke, taran kanoan te bong ao katanoata
1930: Tararuan te Nauri
1945: Bubuti Katekeraoi
2000: ARA TIA OTOTO/ANENE
2030: Kaokan Katanoata
2045: Rongorongo te Betebeke
2100: Rongorongo
2130: Tokin te Kanakobwana

Katenibong

0625 to 0800 Tara te Moanibong
0745: Rongorongo Kiribati (RNZI 11735)
1155: Kaukani Bwanan Kiribati, Kanoan te Kanakobwana
1200: Rongorongo
1215: Anene man taian Band. (Local)
1245: Katanoata/Bubuti Katekeraoi
1300: World News (Radio Australia)

1310: National News/Announcement's
1320: Anenen Abara/Bubuti Katekeraoi
1330: Tokin te Kanakobwana
1755 to 1810: As on Monday
1820: SHORT TALK
1830: From ticker tape and telephone/ The World of Science
1900: Rongorongo, kawain kaibuke, tauan kanoan te bong ao katanoata.
1930: Ataei Ataei Oh
1945: Bubuti Katekeraoi
2000: Te karikirake ..
2030: Kaokan katanoata
2045: Marewen te iango
2100: Rongorongo
2130: Tokin te kanakobwana

Kaobong

0625 to 0800: Tara te Moanibong
1155: Kaukani Bwanan Kiribati, Kanoan te kaongora
1200: Rongorongo
1215: VOA PACIFIC
1245: Katanoata/Bubuti Katekeraoi
1300: World News/Announcements/ Katanoata
1320: Anenen Abara/Bubuti Katekeraoi
1330: Tokin te Kanakobwana
1755 to 1810 As on Monday
1820: SHORT TALK
1830: American stories/Bruno Butterfly's Fluttery Flights
1845: Get Set
1900: Rongorongo, kawain kaibuke, tauan kanoan te bong ao katanoata
1930: Ngaira te Roro n Rikirake
1945: Bubuti Katekeraoi
2000: TE BAI MAIU
2030: Kaokan katanoata
2045: Bubuti Katekeraoi

Ocean. Well, okay, they could also hop a ride on an Air Marshall Islands regular flight.

Far-Flung Communications

The radio station has replaced coconut communication and keeps everyone in touch. It provides a way for island residents to pass information, two of the most important being birth and funeral announcements. Local news, along with the world news from Radio Australia, BBC and Radio New Zealand, is broadcast several times a day. Programs on health, agriculture and those dealing with issues concerning youth and women

fill in part of the air time and English programs broadcast daily for the sole purpose of improving the English skills of the next generation.

The mainstay however is music. Though much of the music is American, at least 50% is Kiribati. Since Capital Records has not yet built facilities here, anyone can go into Radio Kiribati to record their music on reel-to-reel tapes, and on occasion the station travels to the outer islands to record.

At the time Radio Kiribati went on the air in 1954, it was owned by the government, but in 1987 they were cut loose from the gubernatorial purse strings. The station operates on a small

budget with 33 employees and can only afford to broadcast a few hours a day. Since the shift to a 5-element Yagi antenna, Kiribati has upgraded from 250 to 500 watts of power. Shortwave is used in order to reach the Phoenix and Line Islands, which lie as far as two thousand miles to the east.

Mr. Tarau finds it fascinating that someone sitting in a New York highrise in the middle of a blizzard might be listening to Radio Kiribati. He takes interest in the file folder full of letters from shortwave listeners. All letters that include \$1.00—enough money to cover postage and handling—receive a QSL card in return. Unfortunately, the post office in Tarawa does not accept international coupons. The station receives signal reports and QSL cards from countries as far away as Finland, Germany, the State of Qatar, Japan, U.S. and Canada. With only 250 watts of power in the past, it's no wonder that most signal reports were poor, but all of the DXers that write are elated that they were able to tune in Radio Kiribati.

One of the most enthusiastic letters came from Lowell, Massachusetts. When one member of a local DX club happened to tune in Radio Kiribati, he woke his fellow members with phone calls at 1:20 am. "I was thrilled," the letter said. "We DXers here in Massachusetts have never had much luck hearing Pacific stations."

Another listener from Japan wrote: "The local media here in Japan place very little emphasis on international news while I find news from outside of Japan to be very interesting. I was very delighted to receive your transmission."

Mr. Tarau takes pride in Radio Kiribati. Education for employees is a constant. Last year an exchange program took place—a Kiribati news broadcaster traded places with a public radio announcer from the US, Joe Zupan of Spokane, Washington. It's a small world! Joe was a high school classmate of mine from Indiana. The beauty of the coincidence was definitely lost on the I-Kiribati who find run-ins with school chums to be an everyday event.

The Pacific Islands Broadcaster Association provides training and education for the Kiribati and 12 other Pacific Islands. The station believes in self-improvement which is evident by their smooth on-the-air readings.

The words to Kiribati music may be indecipherable to English ears, but the thrill of bringing just a part of this island into one's home is an exciting prospect indeed. What a thrill to catch the announcements broadcast in English, to hear what is considered newsworthy to people living geographically isolated in the middle of the world. It's the true beauty of shortwave radio.

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Radio Kiribati rents a Yagi antenna from the Telecom Kiribati antenna farm.



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Experience is something one picks up piece by piece, and the same is true when it comes to learning a new hobby. Back in July of 1989, Ed Hesse shared some of his insights into getting the most out of your scanner. Now he offers 20 more ways to increase the fun of monitoring. Ed says they're all practical and he's used every one of them.

Increase Your Scanner Enjoyment

By Ed Hesse, WB2RVA

#1 *Go back to all your past issues of Monitoring Times and similar publications and read them again.*

Yes, you've read them before, but it's amazing what you'll find when you read them again. You may not have been interested in, say, QSLing, a year ago, but something may have happened recently to shed a new light on such information. Many of us find that our monitoring interests grow and change; going back to older issues of publications can provide us with material to help this growth.

#2 *Rig your station for emergency power.*

Let's assume a major storm has just hit your town. The power's off and may stay off for days. What do you do? How do you monitor the action?

One way to assure that you'll be in the monitoring business in such a situation is to have a battery back-up plan for your equipment. For your handhelds, be sure there are enough fresh batteries on the shelf—for emergency purposes only. Be sure you have a DC power cord for your base scanner so that you can operate it from the car battery.

If you have outdoor antennas, have back-ups you can use in the house if the wind takes your antenna system down. Why not take a look at the tree branches that are near your antenna, and see if now would be a good time to trim them?

#3 *Get into "banking."*

No, we don't want you to buy a defunct Savings and Loan Association. We're talking about the ability of many scanners to subdivide total channel capacity into more manageable sections. For example, the PRO-2004 scanner has 300 channels, and "banks" enable you to separate your listening into 10 separate areas. Bank 1 might be where you put local police frequencies; bank 2, fire; bank 3, aircraft; and so on.

In this way, if you're in a mood to see what's going on in the air, you simply choose bank 3 in the scanner and monitor only that. There's no need to go through 300 channels again and again, just to catch an occasional airplane transmission. Banking leads you to the next suggestion.

#4 *Get into "frequency management."*

Our monitoring "files" just can't be assorted pieces of paper squirreled away on the top of a desk and in drawers or notebooks. If we want to follow the action as it develops, we have to

manage our frequencies. And you don't need a computer to do it. I started my management process with a loose-leaf notebook, separated by alphabetical dividers. If I want to review telephone frequencies, I simply turn to the "T" section. The system is simple and it works, but I'm getting the itch to improve on it. As time permits, I'll probably list frequencies in my word processor so that I can move information, add, delete, and so on.

The point is this: the deeper you get into monitoring, the more you want to know and the quicker you want to be able to recall what you already know. For example, when the Avianca plane crashed in Cove Neck, New York, a couple of years ago, my PRO-2021 scanner let me follow the action because most of it took place on three banks: amateur radio, Nassau County P.D. and Suffolk County P.D.

#5 *Make scanning comfortable.*

Is scanning really a part of your life? Are you as crazy as some of us, with scanning following you into your car, your garden and your bed? When I'm working in the garden, I have a little speaker plugged into my scanner so that I can hear it comfortably. As I fall asleep at night, it's generally to the occasional transmissions of the Nassau County Police Department, as I hear them on my pillow speaker (this permits my wife to listen to the TV without distraction). As I ride the train to work, my PRO-34 sits in a coat pocket, and I use a simple earphone to listen. Other riders assume it's my "Walkman." These extra gadgets cost little, but they add immensely to our pleasure.

#6 *Become an "expert" in one field.*

What's your favorite area of monitoring? Whatever it is, there's your opportunity to become an expert. Since I'm a ham, I feel I know more about ham frequencies than the average scanner listener. I listen to two meters so much that I practically know the names of the children of the people I hear so often. I'm trying to become more expert on the Long Island Railroad, the



world's largest commuter railroad—and the way I get to and from work every day. It takes digging and persistence, but sooner or later, I'll know all that there is to know about the LIRR's communications. Why not pick out a field of interest and then explore ways to learn more and more about it?

#7 Build a monitoring library.

It takes time and it takes some money, but a library is a wonderful thing to have to maximize your scanning enjoyment. I keep every issue of *Monitoring Times* and related publications. I've bought *Passport* and *World Radio TV Handbook*. I want to develop my knowledge of government frequencies so I bought Tom Kneitel's *Top Secret Registry*. Of course, I have *Police Call* and *Scanner Master* for my area. Look at the ads for books in the magazines you read, and see which ones interest you. Books will last for a lifetime and can add greatly to your understanding and enjoyment.

#8 Encourage someone to join our hobby.

One of my sons showed a slight interest in scanning and I lent him one of my scanners. He's a police officer and, coincidentally, his partner is a scanner enthusiast. My son's casual interest in scanners accelerated when he injured himself chasing a "perp," and he was confined to his home for a number of weeks. The scanner was his way of keeping in touch not only with what was happening at his precinct but what was taking place citywide. He plans to keep the scanner, and I'm happy to have him do so.

How many times have you had someone ask you a number of questions about your scanning activity? There are many people out there who could easily become enthusiastic about scanning if we take some time with them. Why not make it a goal for the coming year to get one "convert" to the hobby?

#9 Expand your horizons. Become a shortwave listener.

Yes, it's exciting to hear a police car chasing someone who just robbed a store, and it's a trip to hear the traffic helicopter before its report gets on the air. Monitoring is a wonderful way to know what's going on in your community.

As our world shrinks around us, shortwave listening can also offer a great appeal. As night falls, I reach for the low-band general receiver and punch up 5975—BBC. I count on them for up-to-date news with virtually no bias—and absolutely no commercials. I move up the dial to Voice of America and get "our" point of view on world news.

On weekends, I use the frequency listings in *Monitoring Times* to track down daytime broad-

casts from assorted world capitals. It's a different ball game, and a great change of pace. A good receiver (for example, the Sangean ATS 803A) runs less than \$200, and it can last for a lifetime.

#10 Become a Frequency Finder.

Until recently, I was content to read frequency listings and put them in my scanners. Then I began to listen to a fellow ham (who's also a scanner enthusiast) describing his activities on two-meter radio. I'll call him Al (not his real name). Al has a little handheld scanner—nothing like the assortment of high-priced scanners I have. He uses a little antenna on his handheld, nothing like those big hunks of aluminum high above my house. Al has something I don't have (but I'm working on it): he has the patience to put his scanner into the search mode and to look for new frequencies.

One night, he was telling of how he had tracked down a "remote" from the Nassau Coliseum (which holds about 15,000 people and is located only four miles from my house). It was a rock concert (a big name group), being fed to a local radio station for later broadcast use. Al heard the whole concert from the comfort of his apartment ("arm-chair copy," he called it). And I'd guess that Al was the only one who heard it in this fashion. Al is a searcher, a frequency-finder. I admire him, and I'm trying to emulate him.

The search button on our scanners can lead us to some pretty exciting listening. It takes time and patience, but it's the essence of monitoring.

#11 Buy another scanner.

Buy it, that is, if your budget permits you to do so. Most of us start off with a simple, basic scanner. My first scanner as a 10 channel job, but it opened up a whole new world to me. I eventually upgraded to a more complex one, and then went on to a Yaesu FRG-9600 and a PRO-2004, among others. Scanners seem to be like salted peanuts—just one doesn't satisfy you. You may be one of those persons who can spend a lifetime with just one scanner, but from what I've seen and heard, most monitors go on to more than one. As the world of scanning develops, it's hard to see anyone keeping up with the action if he or she has only one scanner.

#12 Schedule monitoring for trips.

Whenever my wife and I leave on a vacation, I already have worked out the monitoring I plan to do as we travel and during our stay. Monitoring gives you a "feel" for the area as well as letting you know what's going on. It's that little extra "edge" you have when you deal with the local people, to be aware of something that might have

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taken place that morning—a fire, a crime, an accident. Of course, you have to be discreet in your handling of a scanner (especially with local police) and be sure you comply with state listening laws. If you're going on a business or pleasure trip, check out the frequency listings and see what's of interest along the way and at your destination. It will add to your enjoyment.

#13 *Read the newspapers and see what's going on that can affect your monitoring.*

A local article on boating alerted me to the problems that can arise on the water and how the Coast Guard Auxiliary handles them. This led me to a study of Coast Guard frequencies which further led to monitoring the interaction between the Coast Guard and pleasure boaters.

One boat I heard had called the Guard for help, and the Guard officer went through a series of questions designed to determine the seriousness of the situation. The outcome of the questioning: the Guard determined that the situation at that time did not warrant its intervention, and the boater was told to stand by on another frequency (which immediately went into my scanner). Had I not gone beyond reading the article, I would have missed another avenue of monitoring. Read your local newspaper and ask yourself: would this have been handled on radio? If the answer is yes, determine how you can find the appropriate frequencies and be prepared to monitor future action.

#14 *Keep a log of significant monitoring.*

You may never want a QSL for your monitoring, but a log (a written record of details) can add to your enjoyment. Record the time, the frequency, and a brief sketch of the events. The night the Avianca plane crashed on Long Island, I listened to all the action on an amateur radio repeater frequency, switching periodically to other key channels. I wrote details, times, people, units and so forth. These details formed the basis for an article for *Monitoring Times* (April 1990). Your log may never be published, but it's an interesting way to record what you hear and to track your interests over the years.

#15 *Give back something to the hobby.*

When we get into this hobby, we're on the receiving end of a lot of information. As we become more experienced, the time comes to start being a giver. One way to do this is to send items to the columnists of magazines like this one. If you discover a frequency, send that item to the appropriate columnist. If you see something in the newspaper which affects monitoring,

send that to the editor. Magazines like this depend on readers for a substantial amount of input. If you have writing skills, write an article on an area of your expertise or experience. Share what you know, and we'll all benefit.

#16 *Get out of your monitoring rut.*

It's hard to believe that scanning could be boring to anyone, but sometimes we get into a rut. We put in 20 frequencies when we buy the scanner, and then we listen to the same old 20. Why not throw out every frequency and put in a whole new set? If you're presently listening to fire and police, try aircraft and media. If that doesn't do the trick, search some itinerant ranges and see what you find. If scanning seems to have lost its luster, drop what you've been doing and find something new. You've got a gigahertz and more to look through.

#17 *Get supplementary equipment for your activity.*

Sometimes a few pieces of relatively inexpensive equipment can make your scanning more enjoyable. I bought a low-cost battery checker from Radio Shack, and it's helped me immeasurably to instantly determine the status of the batteries in my handhelds (or batteries I've just purchased). An amplifier from GRE helps my handheld monitoring when I can't use an appropriate antenna (it's hard to extend a two-foot antenna on the Long Island Railroad during the rush hour). Although the receiver is the major factor in our activity, other gadgets can make life easier.

#18 *"If I had my life to live over," I think I'd buy a portable scanner as my first unit.*

If you—or someone you know—will be buying a scanner, seriously consider a portable unit. For more bang for the buck (especially on a limited budget), a portable can be a good investment. You can carry it with you, use it in your car (if local law permits), and use it as a base unit. For a few dollars, you can buy a DC adapter for the car and an AC adapter for the base. Throw in some Nicads and a battery charger for a few more bucks. If you can put up an outside antenna, you could be a happy camper for quite some time.

#19 *Go out of your way to get to know other scanner enthusiasts.*

I went to our local Radio Shack store the other day to buy some batteries. There was a young man there with a handheld scanner, contemplating the purchase of *Police Call*. We got into a conversation, and he mentioned that he was



P.J. Richardson

NOAA Weather Radio is pre-programmed into many scanners. Volunteer ham spotters may be heard reporting in during a weather watch.

really interested in local frequencies that were "active." I took out a piece of paper and started to write the local police and ham radio repeater frequencies. As I was doing this, two clerks and the store manager came over and asked for a copy of this information. We used the store copying machine. I also gave the young man information on the next ham radio course in our area.

When one of my daughter's friends visited us, her fiance accompanied her. You guessed it—he was a scanner enthusiast. I gave him a tour of my shack, as well as last year's copy of *Police Call* and a recent copy of *Monitoring Times*. It's incredible how many young people today are interested in scanning! As we get to know them—and encourage them—the results can only be good for our hobby.

#20 *Realize what you've got and enjoy it—probably the best hobby in America!*

How else could you enjoy—for a minimum outlay of dollars—the opportunity to be in on what's taking place in your town, your country and your world? Your scanner puts you where the action is, whether it's a police officer investigating a "family disturbance" or a firefighter racing to a home in flames. You hear airplanes taking off for foreign capitals, you hear ship-to-shore calls, and if you're a bit lucky, you may even hear the chief executive on Air Force One.

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M

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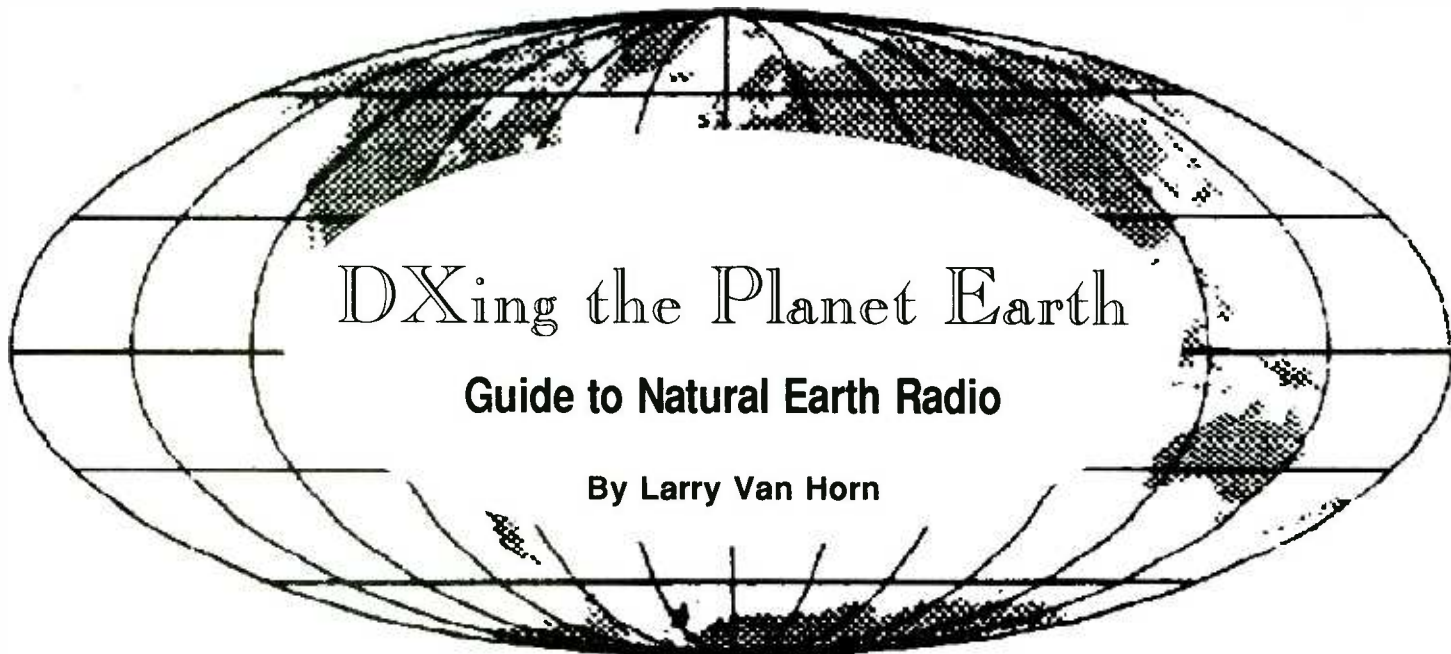
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DXing the Planet Earth

Guide to Natural Earth Radio

By Larry Van Horn

It's the weekend. You're off from work and looking for just the right challenge to help you relax on your two days off. Are you tired of tuning around on that old receiver and listening to the same old signals? I have just the thing for you, oh great master of the aerial; how about DXing the Planet Earth?

Before you get the wrong idea, I am talking about really DXing the "Planet Earth"—those natural earth sounds that occur in the VLF (Very Low Frequency) and ELF (Extremely Low Frequency) portions of the frequency spectrum. What you'll find in the radio spectrum's basement will simply amaze you.

The earth is alive with natural electromagnetic activity. On any given day, we can expect roughly 44,000 thunderstorms to occur. This adds up to around 8 million lightning strokes a day. With voltages on the order of 250 million volts, currents of 200,000 amperes, and internal temperatures reaching 30,000 degrees centigrade per stroke, any one of these awesome sparks is a major event on the human scale of things. Needless to say, there is a lot of energy in lightning. Not all that energy dissipates in the flash and bang.

Lightning is a spark discharge which also generates huge amounts of radio energy—millions of watts at very low frequencies (3 to 30 kHz). This impulse of radio energy occurs not just on one frequency, like a broadcast station, but on all frequencies simultaneously. The spark channel acts as an antenna, briefly radiating a burst of static. But not *only* static.

At these frequencies the static bursts propagate with particular efficiency in the wave guide formed by the earth's surface and the lower regions of the atmosphere. This allows some of the lightning's energy to travel great distances, as you will see.

'Tweaks'

Tuning through most of this frequency range, you will hear static that sounds pretty much like what you hear on your AM receiver. But if you tune below 5 kHz, you will discover that sometimes (though not always) the crackle becomes a liquid musical pinging or chirping notes. Each pop of static produces a rapid descending note. These sounds are called tweaks. Typically, they drop a few hundred Hz in a fraction of a second, then cut off abruptly.

Tweaks are the result of propagation in a wave guide near the cutoff frequency. The mechanism for the production of tweaks is understood, but very difficult to explain. Technically-minded readers wishing a more thorough explanation, are encouraged to consult the recommended reading list.

The degree of "tweaking" is an indication of how far signals have traveled. A tweak's duration is roughly proportional to its path—the longer the path, the longer the tweak. Tweaks coexist with the more familiar crackling noises, the mixture varying from a scattering of tweaks among the static, to the rare occasions when almost everything is "tweaking."

Tweaks are generally heard at night, though they will sometimes appear late in the afternoon, and winter is probably their best season.

'Static'

Receivers designed for man-made signals are not kind to 'sferics (natural atmospheric radio noise). But with the proper receiver, listening even to "ordinary" static can be engaging.

If you hear crisp sharp clicks, this indicates that lightning is relatively close by. When such clicks get very strong, and especially if they are accompanied by sizzling, frying sounds, it is

time to stop listening, ground everything and prepare for a thunderstorm!

By the time the lightning static has traveled a few hundred miles, its sound is less distinct. As the distance from the listener grows, the received strength of each impulse decreases. More and more signals of smaller and smaller magnitude blend into a fluctuating background texture. Foreground and background inter-penetrate in complex subtle rhythms that never quite repeat. Layers of tweaks may thread their way through the clicks and crackles. Sometimes, when least expected, another signal called a whistler may come howling through like a voice from another world.

'Whistlers'

If you spend long enough listening to static and tweaks below 10 kHz, you are almost certain to hear a few whistlers. These, too, are descending notes but the frequency range is wider. These signals are of much longer duration as they occupy seconds rather than milliseconds. They can be extremely loud, and they usually command the listener's attention in no uncertain terms.

These strange radio visitors have been heard as high as 40 kHz, though they usually commence around 6-10 kHz and glide down to 4 kHz. This can take three seconds or more. Last August, I actually received a whistler on my shack receiver at around 59 kHz, probably one of the highest frequencies recorded for a whistler transmission.

Whistlers can come thick and fast, sometimes too fast to even count them. At other times there may be fewer than one whistler per minute, or fewer than one in ten minutes. For hours or even days at a time, there may be no whistlers at all. Whistlers can appear singly or in clusters, or with resounding 'echo trains' that may last for minutes, each successive echo longer and lower in pitch than the one before it.

Sometimes a sharp click is heard just before the whistler arrives at your antenna. This is static from the originating lightning traveling to the listener via the earth-ionosphere wave guide, while the whistler has been on another, longer journey. When you hear a scenario like this it usually means that the lightning that triggered that particular whistler was within a couple of thousand miles of your location.

The subject of research since WWI, it turns out that the long dispersive whistler paths were found neither in terrestrial propagation nor in the depths of space. They were traced to an intermediate region known as the magnetosphere. This is the region where earth's magnetic field interacts with the continuous (but varying) influx of charged particles known as the solar wind.

In essence, the magnetosphere's magnetic field lines capture charged particles (ions) from the solar wind in tubular vortices that follow the lines of magnetic force. These vortices act as VLF wave guides or ducts. If VLF energy from a lightning bolt penetrates the ionosphere, it, too, may get trapped into this magneto-ionic duct. It then follows this duct far out into space, crossing the equator and returning to earth in the opposite hemisphere. Then it may reenter to earth as a whistler, its spectrum dispersed by the long path it has taken to get to your receiver. (Fig. 1).

Some energy may also bounce and return to the duct and the other hemisphere one or more times. This is what causes the previously mentioned echo trains that have been associated with whistlers. These echoes become even longer in duration and lower in pitch as the number of hops increases.

Scientists have been quick to realize that the study of whistler dispersion could yield valuable data about the characteristics of the magnetosphere. Every whistler is a magnetospheric probe!

One gentleman who has done a lot of work in this field is Mike Mideke. Mike and his wife manage a remote 3,000 acre ranch. This gives him plenty of time and room to grow antennas and enough quiet to hear them sing with natural radio noises.

Mike has performed all kinds of related studies on these phenomena including a project which involved a recent space shuttle mission. In fact, the bulk of the material used to prepare this article has come from Mike for which I am deeply indebted.

Here is Michael Mideke's "Basic Guide to Whistlers, Emissions and Associated Phenomena."

Static is the impulsive crackling and popping of lightning generated broad spectrum radio bursts. Static can be heard throughout the radio spectrum. Its character varies according to the structure of the lightning producing it, distance from the receiver and the path which it propagates. Static impulses are also referred to as 'sferics'.

Tweaks are sferics subjected to dispersive distortion by subionospheric propagation. They

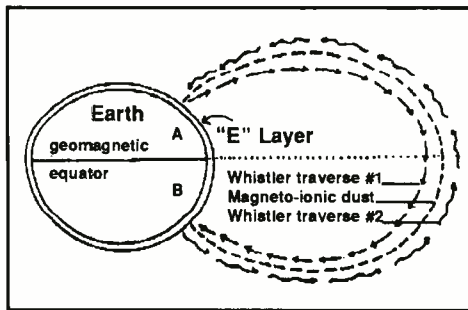


Figure 1: Whistler Paths- a lightning impulse near "A" propagates between earth and E region until it is trapped by a duct. The signal is then ducted to "B" in the opposite hemisphere. A single hop whistler emerges into the earth-ionosphere waveguide at "B." A reflected signal may be returned to "A" to be heard as a two hop whistler.

are sharp falling notes with a duration of 25 to 150 milliseconds.

Whistlers are descending tones generated through the propagation of sferics over very long paths formed by field-aligned plasmas (ducts) in the magnetosphere. The magnetospheric propagation of whistlers is between magnetic conjugate regions in the northern and southern hemispheres. Terrestrial reception of whistlers results from subionospheric propagation of these signals.

Whistler duration ranges from a fraction of a second to several seconds. The frequency range of whistlers can extend from above 30 kHz to below 1 kHz, but those readily heard with simple equipment will mostly lie between 1 and 9 kHz, with their maximum energy usually concentrated between 3 and 5 kHz.

Whistlers are categorized according to hops. One hop equals a single traverse between conjugate regions. A one hop whistler is generated by lightning in the opposite hemisphere from the listener. It has traversed the magnetosphere just once and, as a consequence, it tends to be a high pitched whistler of short duration. Since the causative sferic is very far away, it is rarely heard in association with single hop whistlers.

Two hop whistlers are produced by lightning in the same magnetic hemisphere as the listener. The signal has traveled to the opposite hemisphere and echoed back to the region of its origin. Subject to roughly the dispersion of a single-hop whistler, its duration is longer and its pitch lower than its one-hop cousin. Causative sferics can often be heard in very distinct association with 2-hop whistlers. Delays of 1.5 to 3 seconds between sferic and whistler are typical.

Odd order hops (1,3,5, etc.) indicate opposite hemisphere lightning while even order progressions (2,4,6, etc.) follow from the same hemisphere lightning. On occasion, whistlers generate multiple echoes or progressions known as echo

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trains. While trains exceeding a dozen echoes are uncommon, progressions of more than 100 have been observed on rare occasions.

Whistler notes range from extremely pure tones to breathy, diffuse swishes. The breathy quality is described as diffuseness. It results from whistler mode excitation of multiple ducts; the slightly different travel time for each duct serves to spread or diffuse the signal.

Whistlers were the first-studied and most easily understood class of magnetospheric radio events, but they are far from being the only ones that can be observed by a patient listener using basic tools.

VLF/ELF Emissions

In his book "Whistlers and Related Ionospheric Phenomena," Robert Helliwell divides other naturally occurring phenomena found on Very Low and Extra Low Frequencies into six basic categories:

Hiss as the term suggests, is a hissing sound. Unlike white noise, it is more or less band-limited. Its center frequency and bandwidth can vary widely with different conditions. Hiss may be stable in amplitude and frequency for minutes or hours. Or it may show distinct short-term fluctuations which may or may not be periodic in nature. Hiss is often found in conjunction with other emissions.

Discrete Emissions are brief, transient events more like whistlers. They may be pure or fuzzy tones which rise ("risers") or fall ("fallers") in frequency. Sometimes fallers abruptly turn about

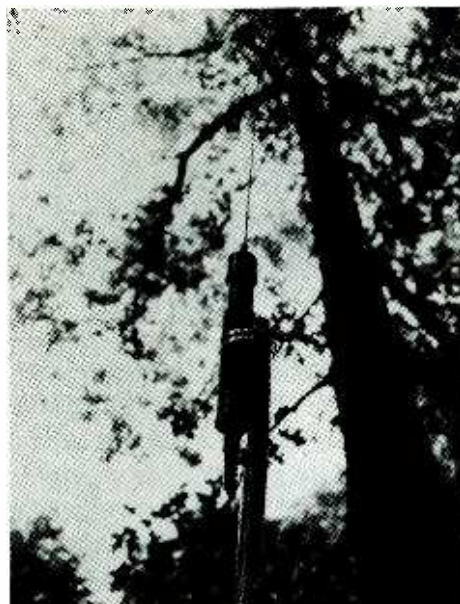
Noise As A Signal

Most of us over our years of listening have developed very distinct feelings about radio noise. Here is another way to look at noise from Michael Mideke's perspective.

Noises are signals we don't want to hear—usually because they happen to interfere with signals we do want to hear. Every bit of noise comes from somewhere, is caused by something, is a report of an event like the report of a distant gunshot. Considered as a signal, noise can tell us in great detail about the location and conditions of its origin and about the path it took to reach us.

The static impulses created by lightning are now routinely plotted by computerized direction-finding networks (NOAA's National Lightning Network) to produce accurate, nearly real-time maps of lightning incidence.

The more we listen to these "noises" the more informative they become. There is accumulating evidence that whistlers, generated by lightning, may themselves trigger lightning discharges. The Earth communicates with itself—and it's not just random mumbling.



LFE's L-700S ELF Natural Radio Active Probe Receiver.

and rise in frequency as "hooks." Other descriptive terms that come to mind are "chirps," "croaks," "honks," "pops," "roars," "barks" and other complex sound patterns that defy description.

Periodic Emissions - When clusters of discrete emissions form regularly spaced repeating patterns, they are known as periodic emissions. They may be singular or multiple, relatively stable in frequency or drifting.

Chorus - Multiple closely-spaced or overlapping events are known as chorus. Chorus may resemble the sound of birds at sunrise but more often it is reminiscent of croaking frogs or seals barking. Chorus is frequently found rising out of the upper edge of a band of hiss and occasionally goes on for hours.

Quasi-Periodic Emissions - These are events consisting of discrete emissions, periodic emissions or chorus which appear at long but fairly regular intervals on the order of tens of seconds. They are less regular than periodic emissions.

Triggered Emissions - Sometimes one magnetospheric event triggers another. Triggered emissions are those which appear to be clearly associated with a triggering source. Whistlers, discrete emissions, manmade VLF signals and atmospheric nuclear explosions may all serve as triggers. Whistlers and other signals may also be seen to modify the spectrographic signatures of other events occurring in the same duct.

In short—to take a simplistic view—the whole system can be considered to be a gigantic electronic synthesizer programmed by solar and terrestrial processes. The resulting music can be complex, sustained and hauntingly beautiful.

Stalking the Elusive Whistler

Whistlers and chorus signals are among the most exquisite and exciting natural radio phe-

nomena that one can hear. These signals occur at frequencies that are within the range of the human ear. Since this is the case, to hear these signals all that is required is to amplify the antenna output and convert the electrical energy into sound waves.

The simplest of receivers used for whistler work is just an audio amplifier with the chassis grounded and the high impedance input connected to a long wire antenna. That antenna can be strung through trees and bushes.

There are some obstacles when monitoring this frequency range using our simple receiver. You will find a wide assortment of obnoxious hums and buzzes from power lines, and voices and music from nearby communications signals.

Trying to listen in residential areas is far from optimum when listening to sferics. Most of these areas are saturated with 50 and 60 Hz power systems. Other sources of noise in a residential area will include electric motors and car ignitions. Hunting for whistler signals has a tendency to make you all too aware of the pervasiveness of man made noise pollution.

About one quarter mile is the minimum distance you need to be from power line sources to have a reasonable chance to hear whistlers and VLF emissions. The rule of thumb for the experimenter is: the farther away from the noise source, the more sensitive the receiver and the better the chance for success.

Receivers

Two companies now are currently manufacturing Whistler receivers. Just two years ago, no one was producing a commercial model.

LF Engineering Co., Inc (LFE) has definitely been bitten by the "natural radio" bug. In a recent letter, William Green admits they have been on a serious research binge. He says the most difficult obstacle in designing equipment for ELF has been working in a noisy (AC hum) environment, until they discovered an ideal location within a nearby state park. Located one mile from the nearest electricity and two miles from a powerful VHF TV station, this site now provides optimum listening for Natural Radio recordings and a chance for LFE to tweak their designs.

Some of the products you might consider from LFE include:

- L-500L ELF Natural Radio Long Wire Receiver \$79.00
Sharp band pass, 300 Hz to 5 kHz, designed for long wire antennas includes earphone, belt clip and experimental tree probes.
- L-600S ELF Natural Radio Loop Antenna Receiver \$119.00
300 Hz to 8 kHz, H-field, built in high pass filter to cut 60 Hz harmonics, includes 24 inch loop antenna with tripod mount and earphone.
- L-700S ELF Natural Radio Active Probe Receiver \$109.00

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Offer expires promptly 1/31/93



RCV-6 -- ICOM R71A

This receiver is as professional as it looks. The brilliant fluorescent display provides frequency information down to tenths of a kilohertz and alerts the listener to other dial settings (mode, memory, channel, VRO).

Signal resolution of 10 Hz eliminates the need for RIT, even on SSB or RTTY mode and may be scanned or searched. An effective noise blanker has adjustable controls for optimum reduction of a wide variety of impulse noises, from power line hash to the Russian woodpecker. This latest version also reintroduces passband tuning. Filter selectivities of 6, 2.3 and 0.5 kHz are provided; you may add one more for use in any mode.

Of interest to the visually impaired is the optional EX-310 speech synthesizer which announces the displayed frequency in English.

Only \$999.95 plus \$14.50 UPS shipping!



RCV-8 -- ICOM R72

For the serious shortwave enthusiast on a budget, the new R72 offers full 100 kHz-30 MHz frequency coverage and direct keypad entry with advanced features. A backlit LCD shows the receiver's 10 Hz frequency resolution, while 101 scannable memory channels store frequencies in AM, LSB, USB, RTTY, and CW. Dual-range search is included as well as an analog S meter and a recorder activator coupled to a 24 hour dock timer.

Only \$919.95 plus \$14.50 UPS shipping!



RCV-14 -- ICOM R9000

- Continuous 100 kHz - 2000 MHz frequency coverage
- Built-in CRT spectrum display
- Eight different scan functions
- Challenging sensitivity
- Passband tuning
- Fully-adjustable noise blanker
- 60 dB tunable IF notch filter
- and much more!

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SCN-4 -- ICOM R7000

Used by government and military agencies worldwide, the ICOM R7000 provides total spectrum 25-1000 (triple conversion) and 1825-2000 (quadruple conversion) MHz frequency coverage with 100 Hz fluorescent readout accuracy! Add to this enormous tuning range 99 memory channels with priority function, keyboard entry or dial tuning, FM/AM/SSB modes, five tuning speeds, S-meter/center tuning meter, 2.8/9/15/150 kHz filter selection, noise blanker, internal speaker with 2.5 watts of audio power, spurious signal suppression greater than 60 dB, high sensitivity, and programmable scanning with auto-write memory, and you have the most advanced scanner receiver ever designed for the serious VHF/UHF listener.

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SCN-15 -- ICOM R7100

ICOM has done it again! They took the most popular features of the legend R7000, added a few new features that listeners wanted, and released this new, compact receiver.

The R7100 offers continuous frequency coverage (no gaps) from 25 to 2000 MHz on a brilliant LCD readout, selectable tuning steps, USB/LSB/AM/FM modes with wide and narrow selectivity switching.

900 scannable memory locations store frequency, channel number, mode and search steps; ten search banks with memory channel lockout, 5 or 12 channel-per-second scan speed and scan-resume delay are also found on this model.

High sensitivity and stable SSB reception are additional perks, as are sensitive, all-mode squelch and easy pushbutton function selection.

Only \$1199.00 plus \$14.50 UPS shipping!



SCN-14 -- ICOM R100

For the full-spectrum listener, this compact scanner is hard to beat: continuous tuning range from 100 kHz through 1856 MHz with direct keypad entry or knob tuning, 100 channel memory, switchable preamp and attenuator, programmable 24-hour dock timer, 10 search ranges, LCD bargraph S meter, AM and wide/narrow FM mode detection (no SSB) just begin the list of features.

Only \$599.95 plus \$8 UPS shipping!




GROVE ENTERPRISES, INC.
(800) 438-8155
140 Dog Branch Road
Brasstown, NC 28902




300 Hz to 5 kHz, designed to operate with supplied 28 inch E-field probe antenna. Similar specifications to L-500L.

LFE also has equipment for VLF/LF (1750 meters), AM broadcast, and Electronic Countermeasures. You can contact Sal and William at LF Engineering Co, Inc, 17 Jeffry Road, East Haven, CT 06512 or telephone 203-467-3590.

The second company was actually the first to enter this field. Conversion Research in California offers one Whistler receiver called the WR-3. This receiver is a portable, broadband (0.1-10 kHz) VLF/ELF receiver which receives naturally occurring VLF electromagnetic emissions. The receiver employs a 33-inch telescoping whip antenna (detachable) and is powered by a 9-volt battery. The unit's aluminum case measures 4.5 x 2.5 x 1.2 inches. The manufacturer recommends you use this receiver with stereo "mini" headphones, not included.

A 7-page listening guide is included that explains the operation of the receiver as well as the theory behind naturally occurring VLF/ELF emissions. You can also get a 30-minute demo cassette tape of VLF emissions for \$8.00 (PPD). The receiver costs \$58.00 (PPD; \$66.00 overseas) and California residents need to add tax. For more information see the review in the February 1992 *MT*, page 43, or write Conversion Research, P.O. Box 535, Descanso, CA 91916.

You can also build your own natural radio receiver; see the end of this article for more information.

Whistler Hunting

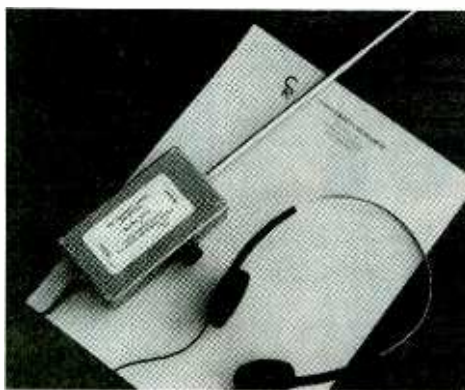
Once the receiver system is working properly and you've gotten accustomed to setting it up, the time has come for more serious whistler hunting. The questions are "When?" and "Where?"

When?

Whistlers and other emissions may be heard at any hour of the day or night, but odds are best around dawn. Atmospheric and manmade noise are usually at their lowest then and the magnetosphere seems to be especially sensitive, as well. If you begin listening at the first glimmer of daylight and continue until the sun is well above the horizon, chances are fairly good that you'll catch the day's best activity. But this is only a general rule. Sometimes nothing will happen at dawn and there will be a peak of activity at sunset or a few hours after dark.

Whistler and emission activity seems to occur in "runs" of about three to seven days. There can also be periods of days or even weeks with very little activity. At one extreme you'll find more than 20 whistlers a minute; at the other—less than one per hour or none at all.

VLF/ELF emissions often appear during or shortly after magnetic storms (this should not



Conversion Research's WR-3 VLF Natural Radio Receiver.

surprise you). Magnetic storms are produced by interactions between the earth's magnetic field and particles ejected from regions of the sun undergoing violent activity. Listening to WWV on 5, 10 or 15 MHz at 18 past the hour will alert you to solar activity.

Sometimes the activity persists through the sun's 27 day rotation period. This can lead to terrestrial magnetic storms and VLF/ELF emission events that follow a periodicity of roughly 27 days. Long, spectacular echo trains are most common during and after magnetic storms as well.

Where?

Locally speaking, the place to go is as far as you can from AC power lines. It's all relative: If you are a kilometer from the power lines, you'll have a moderate hum level unless atmospheric noise (lightning static) is strong. Doubling the distance (2 kilometers) will make a quite noticeable improvement, as will doubling that to 4 kilometers.

Surprisingly good sites can often be found along public roads. Look for new roads and scenic routes that have been built away from power lines. Seek out rough terrain and complex shores that tend to separate roads from power lines. Elevated scenic lookouts sometimes diverge from the power lines. Even 1/2 kilometer can make a difference.

If you're into mountain climbing or backpacking, the place to listen is wherever you feel like stopping. Overnight camps are probably best because they get you set for the dawn window.

If you have access to a boat and even a medium-sized body of water, by all means give it a try. Use a whip antenna with its base at least a couple of meters above the water (or the boat's structure if it is metal) and ground the receiver with about 30 meters of wire in the water.

In general, whistler reception is best at middle latitudes and worst in the equatorial regions. Whistlers and emissions can certainly be heard in fair numbers anywhere in the US. There appear to be differences in the character and occurrences of whistlers heard in Eastern and Western North America. Amateur observations could readily address questions of how reception dif-

fers between the two coasts and how either coast may differ from mid-continent.

Relatively little research has been carried out on reception below 20° latitude. Patient investigation of the tropical VLF environment might yield some interesting surprises.

Recording Your Catches

You don't have to record the VLF phenomena you hear, but if you don't, who's going to believe your wild tales of strange sounds overheard while anyone with any sense is sound asleep? Very little research can be accomplished in the absence of recordings.

Unless you can get your hands on quality portable tape equipment, the most convenient way to get into whistler recording is with standard audio cassettes.

Additional Information

There is a lot of material available on monitoring our Earth. At the top of our Christmas list should be a membership in the Longwave Club of America (LWCA). Dues are \$18.00 in the US, \$19.00 in Canada and \$26.00 a year for airmail overseas delivery. In addition to the latest developments in Natural Radio, the LWCA also covers most everything that occurs below 550 kHz. The address for memberships is: Longwave Club of America, 45 Wildflower Road, Levittown, PA 19057.

The absolute leader in the field of Natural Radio is Mike Mideke. I am deeply indebted to Mike for his assistance and material in preparing this article. In fact, without his expertise and material, this article could not have been done. Mike has a couple of interesting items you can purchase from him directly.

Mike's *A Whistler Hunter Guide, 2nd Edition* is available for \$6.00 postpaid. This is an excellent written guide to whistlers and the other exotic sounds of Natural Radio. And speaking of sounds, Mike also has a cassette tape that will help the beginner sort through the sounds in this spectrum. This 60 minute narrated tape is the best I have seen and is available for \$10.00 postpaid. The mailing address for both products is Mike Mideke, Box 123, San Simeon, CA 93452-0123.

Mike also wrote an excellent article for the July 92 issue of *Science Probe* called "Listen to Natural Radio." The article shows in detail how to build and use a very simple whistler receiver. Check your local library and if they don't carry the magazine, ask for an inter-library loan.

Now let's see: 'sferics receiver - check; fresh batteries - check; flashlight - check; tape recorder - check. OK, folks, how about joining me this weekend and let's go listen to our planet?

MT

TWAS THE NIGHT BEFORE DXMAS

by Uncle Skip Arey

(with apologies to Clement C. Moore)

'Twas the night before Christmas,
and all through the house
The "Harmonics" were sleeping,
and so was the spouse;

The antennas were hung
from the chimney with care
in hopes that some signals
would come through the air;

The receivers were nestled
all neat in a row,
With filters and tuners
all ready to go;

With a strong cup of coffee,
sitting at my right hand,
I had just settled in
to some radio band,

When out of my headphones
there arose such a clatter,
I sprang from my desk
to see what was the matter.

Away to the window
I flew like a flash,
To determine the cause
of this odd static crash.

The Moon on the breast
of the new-fallen snow,
Gave my antenna wires
an unusual glow;

When what to my wondering
eyes should appear,
But a weird little sleigh
and eight tiny reindeer.

With a strange little driver,
who looked like a "Hippie,"
I thought for a moment
my brain had gone dippy.

More rapid than eagles
his coursers they came,
And he wheezed, and he cursed,
as he called them by name:

"Now Ten-Tec! Now Icom!
Now Yaesu and Philips!
On Grundig! On Sony!
On Kenwood and Collins!

Watch out for the porch!
Watch out for the wall!
Stay out of the way,
and don't let me fall!"

As dry leaves that before
the wild hurricane ride,
When they met with an obstacle,
they kicked it aside.

So up to the house-top
the coursers they flew,
And got tangled in wire;
the old Hippie did too.

And then, in a twinkling
I heard through the ceiling,
a great deal of cursing,
and swearing, and squealing.

As I shook my head,
and hollered out "Stop!"
Down the chimney the bearded one
fell with a plop.

He was dressed all in denim,
from his headphones to tail,
His clothes smelled like sweatsocks,
and his breath like cheap ale;

The stump of a stogie
he held tight in his teeth.
And the rancid smoke circled
his head like a wreath;

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Write or call for more information. Complete systems including MultiFAX demodulator, receiver and antenna available. Demodulators with software start at \$289.

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He had a fat face
and a great big beer-belly,
That shook when he burped,
like a bowlful of jelly.

He spoke not a word
but went straight to his work,
Opened up my receiver,
and tuned with a jerk.

Then sticking a finger
inside of his nose,
And giving a burp,
up the chimney he rose.

The receiver it squealed,
and gave out a whistle,
And the stations I heard that night,
would fill an epistle.

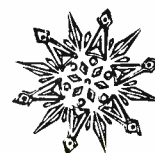
And I heard him exclaim,
ere he drove out of sight,
"Happy DX, Old Man,
next time, leave on a light!"

(Original printing in *FRENDX* December 1987)

Postscript:

Uncle Skip says, take note:
do maintenance this summer,
and getting repairs done
Won't be such a bummer!

The kind of repairman
who'll come Christmas night
is either expensive
or not worth the fright!



Where can you hear Monitoring Times —
the magazine about radio — on the radio?

Tune In To The Georgia Radio Reading Service

By Bob Shreve

Robert Rowlette hops off the bus at one of downtown Savannah's busiest street corners, says 73's to his friends, and strides briskly eastward. It's 8:30 on a fine spring morning, and Robert doesn't need to rush. As he pauses for a traffic light to turn green in his direction, he takes pleasure in the myriad sounds: autos and trucks roaring by, the barking of a dog, people talking earnestly as they pass on the sidewalk and the songs of birds in the trees which line the streets of this beautiful old city. In five minutes he arrives at the building housing his office, bounds up two long flights of stairs and unlocks the office door. He's ready for a day's work.

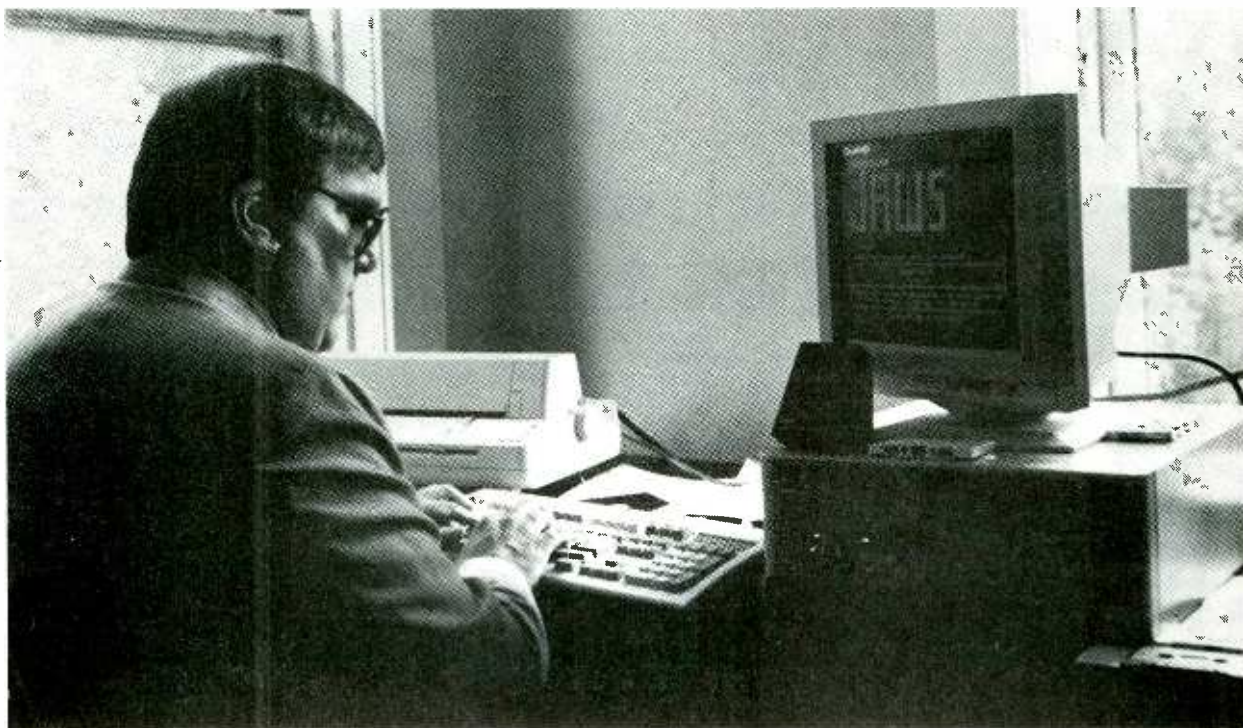
Up to this point you'd say that's pretty much the same way thousands of other men and women start the day in this town. But there is one significant difference: Rowlette is totally blind. Try, as I did, to negotiate just a half block with your eyes closed, and you can begin to appreciate the skill he has developed in coping with a world that is geared entirely to the sighted.

Of course, getting to work is just the beginning, for Rowlette has an unusual job: he manages the Savannah Studios for Georgia Radio Reading Service, broadcasting to blind and print-handicapped people in the area. And although Robert now earns a salary, he was first involved as an

unpaid executive serving as President and member of the Board of Directors in the early days of the operation.

Reading for the blind on the radio started in the Savannah area about five years ago, with local volunteers reading *The Savannah News-Press* as well as selected books and periodicals a few hours a day. The In-Touch Network in New York provided additional scheduling. This was all broadcast by a sub-carrier of Savannah public radio station WSVH on a frequency of 67 kHz, requiring the listener to rent a special little black box to receive the programming.

Robert Rowlette, manager of the Savannah studios, is himself a handicapped radio hobbyist.





Volunteer reader Jack McCarthy, KB4GQA.

The early days were not easy, as the parent station changed ownership and public financial support was lost. For about a year there was no paid staff, and part-time volunteers did their best to keep the operation alive.

This has all changed for the better. Nearly two years ago, the local group affiliated with Georgia Radio Reading Service (GARRS), headquartered in Atlanta. Robert Rowlette became General Manager in Savannah, and a secretary was hired. Now listeners can hear eighteen hours of daily programming, including a wide variety of magazines, newspapers and best-selling books. Much of this schedule originates in Atlanta, but a significant portion does come from Savannah. Local volunteers read *The Savannah Morning News* and *The Florida Times Union* live for two hours each day, selections from *Monitoring Times* are read each Monday, and food ads are read on Wednesdays. Rowlette is planning to extend the local scheduling to include the reading of the evening paper. It's hoped that other additions can be made in the future.

The most significant change that has been made in recent months, however, is in listener access to the programming. Rowlette has been able to convince local TV cable operators to carry GARRS programming as the voice-over on channels which continually scroll the day's TV schedule. Now listeners in Savannah as well as the neighboring communities of Tybee Island and Skidaway Island can hear the broadcasts merely by turning on their TV sets, rather than relying on little "black boxes" which they formerly had to rent. In addition, many hospitals and health care facilities are now broadcasting GARRS programming over their public address systems.

Many blind people, or others who are print-impaired, have used radios for entertainment and communications through amateur and citizens band radio. Now they have the additional benefit of hearing the newspapers and other periodicals and books being read to them every day over the radio. In Savannah, they have Robert Rowlette and a dedicated staff of volunteers to thank.



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RADIO READING SERVICES

Reading services are relayed in a variety of ways: via audio subcarrier of FM stations (requiring a simple converter, often available from the station); via a second audio program (SAP) channel on stereo televisions and some cable carriers; and via satellite.

Consult the following by-state list of reading services for one in your area, and they can advise you how to access their programming.

We are indebted to In-Touch Network (15 West 65th St., New York, NY 10023; 1-800-456-3166), the leading nationwide radio network for the visually impaired, for the information below which was updated as of last spring.

For a list including the full station address, send \$2 plus an SASE to Monitoring Times, Reading Services List, P.O. Box 98, Brasstown, NC 28902-0098.

AIRRES Radio Reading Service	Anchorage, AK	907-563-2121	Dakota Radio Information Service	Bismarck, ND	701-224-2497
Alabama Radio Reading Service Network	Birmingham, AL	205-934-2606	Radio Talking Book Service Inc.	Omaha, NE	800-729-7826
WHIL Radio Reading Service	Mobile, AL	205-460-2248	ETES of New Jersey	South Orange, NJ	201-762-0552
WTSU Radio Reading Service	Montgomery, AL	205-566-5814	Audiovision	Trenton, NJ	609-530-3260
WLRH-FM Radio	Huntsville, AL	205-532-5940	NM Talking Newspaper	Albuquerque, NM	505-841-8847
Arkansas Radio Reading Service	Little Rock, AR	501-663-4540	Niagra Frontier Radio Reading Service	Buffalo, NY	716-683-9000
Sun Sounds Radio Reading Service	Tucson, AZ	602-296-2400	Update Radio Reading Service	Jamestown, NY	716-484-7135
KCHO Radio Reading Service	Chico, CA	916-898-5896	Radio Vision Ramapo	Middletown, NY	914-343-1131
Audiovision	Sacramento, CA	916-447-7323	Northeast Radio Reading Service	Plattsburgh, NY	518-562-1954
KPBS-FM	San Diego, CA	619-265-6486	WMHT/RISE	Schenectady NY	518-356-1700
Broadcast Services for the Blind	San Francisco, CA	415-431-3128	WCNY Read-Out	Syracuse, NY	315-453-2424
Connecticut Radio Information Service	Wethersfield, CT	203-246-3579	WCBS	Akron, OH	216-784-3393
WLRN Radio Reading Service	Miami, FL	305-995-2212	RRS of Greater Cincinnati	Cincinnati, OH	513-621-4545
WUSF Radio Reading Service	Tampa, FL	813-974-4193	Cleveland Radio Reading Service	Cleveland, OH	216-791-8800
WSFP Radio Reading Service	Fort Myers, FL	813-489-9580	Central Ohio Radio Reading Service	Columbus, OH	614-464-2614
Georgia Radio Reading Service	Atlanta, GA	404-873-3930	WORDS Miami Valley Radio Reading Svc	Dayton, OH	513-294-1829
CSRA Radio Reading Service	Augusta, GA	404-737-1661	The Sight Center Audio Network (SCAN)	Toledo, OH	419-241-1183
Georgia Radio Reading Service	Savannah, GA	912-233-2822	Youngstown Radio Reading Service	Youngstown, OH	216-788-2444
Hawaii Library for the Blind	Honolulu, HI	808-732-7767	Oklahoma Radio Reading Service	Oklahoma City, OK	405-521-3514
IRIS	Des Moines, IA	515-243-6833	Golden Hours Inc.	Portland, OR	503-293-1902
Idaho Radio Reading Service	Boise, ID	208-334-3220	KBPS Seeing Sound	Portland, OR	503-280-5828
Radio Information Service for the Blind	Belleville, IL	618-397-6700	Keystone Radio Information Service	Altoona, PA	814-944-2021
Southern Illinois Radio Information Svc	Carbondale, IL	618-549-5604	RADPRIN-Greater Lehigh Valley RRS	Bethlehem, PA	215-861-5583
Illinois Radio Reader	Champaign, IL	217-333-6503	Talking Library	Erie, PA	814-455-0995
Chicagoland RIS	Chicago, IL	312-645-9800	Harrisburg Area Radio Reading Service	Harrisburg, PA	717-238-2531
NIRIS	Dekalb, IL	815-753-0212	Radio Talk Library Sight Saving Center	Lancaster, PA	717-394-7644
West Central IL Radio Information Svc	Macomb, IL	309-298-3403	Radio Information Center for the Blind	Philadelphia, PA	215-627-0600
Radio Information Service	Mt. Carmel, IL	618-262-8641	Radio Information Service-GTRIC	Pittsburgh, PA	412-434-6023
WCBU-FM	Peoria, IL	309-677-3585	Pell Radio Reading Service	Scranton, PA	717-348-1812
APRIS	Rock Island, IL	309-794-7500	WRKC Radio Home Visitor	Wilkes Barre, PA	717-826-5811
WSSU Radio	Springfield, IL	217-786-6516	North Central Radio	Williamsport, PA	717-323-9401
WAMN Radio Reading Service	Evansville, IN	812-423-2973	York City Blind Center Radio Reading Svc	York, PA	717-848-1690
NE Indiana Radio Reading Service	Fort Wayne, IN	219-422-8230	In-Sight Radio Reading Service	Warwick, RI	401-941-3322
Central Indiana Radio Reading Inc.	Indianapolis, IN	317-283-6352	SC Educational Radio for the Blind	Columbia, SC	803-734-7555
Audio Reader of Cloud County	Concordia, KS	913-243-1414	DVR Service to the Visually Impaired	Pierre, SD	605-773-4644
Radio Reading Service of KMCC	Hutchinson, KS	316-665-3555	WTTL-West Tennessee Talking Library	Memphis, TN	901-725-8833
Kansas Audio Reader Network	Lawrence, KS	913-864-4600	WPLN Talking Library	Nashville, TN	615-259-5081
High Plains Public Radio	Pierceville, KS	316-335-5120	South Texas Audio Reader	Austin, TX	512-836-2414
Wichita Radio Reading Service	Wichita, KS	316-682-9121	Soundsight News and Information	Austin, TX	512-471-1631
Central Kentucky Radio Eye	Lexington, KY	606-254-8727	North Texas Radio Reading Service	Dallas, TX	214-871-7669
WRBH Radio for the Blind	New Orleans, LA	504-899-1144	El Paso Radio Reading Service	El Paso, TX	915-532-4495
Talking Information Center	Marshfield, MA	617-834-4400	Houston Taping for the Blind Radio	Houston, TX	713-622-2767
Audio Journal	Worcester, MA	508-797-1117	Utah Radio Reading Service	Salt Lake City, UT	801-466-6363
RRS of Western New England	Indian Orchard, MA	413-543-8558	KUSU-FM	Logan, UT	801-750-2655
Baltimore Radio Reading Service	Baltimore, MD	301-396-0990	Valley Voice Radio Reading Service	Harrisonburg, VA	703-568-3811
The Metropolitan Washington Ear	Silver Spring, MD	301-681-6636	Hampton Roads Voice for Print Handicapped	Norfolk, VA	804-489-9476
Detroit Radio Information Center	Detroit, MI	313-577-4146	Virginia Voice for the Print Handicapped	Richmond, VA	804-266-2477
WKAR Radio Talking Book	East Lansing, MI	517-353-9124	Virginia Tech Radio Reading Service	Roanoke, VA	703-857-8900
Newspaper for the Blind	Flint, MI	313-230-8866	Voice of the Peninsula	Yorktown, VA	804-898-0858
The Sight Seer	Grand Rapids, MI	616-363-8838	Evergreen Radio Reading Service	Seattle, WA	206-464-6930
Minnesota Radio Talking Book Network	St. Paul, MN	612-642-0502	EARS Educations Reading Service	Kenosha, WI	414-552-9483
Audiovision	Kansas City, MO	816-276-1549	Wisconsin Radio Reading Service	Madison, WI	608-255-7730
Radio Reading Service of Mississippi	Jackson, MS	601-982-6301	Insight-WYMS	Milwaukee, WI	414-475-8389
East Montana Radio Reading Service	Billings, MT	406-657-2337	Hears to You	Charleston, WV	304-848-4061
Western Montana Radio Reading Service	Missoula, MT	406-721-1998	WJGF Educational RRS	Romney, WV	309-322-3521
WNC RRS Inc.	Asheville, NC	704-251-2166	Australian Council	Victoria, Australia	03-598-8555
CPCC Radio Reading Information Service	Charlotte, NC	704-342-6994	Calgary Radio for the Print Handicapped	Alberta, Canada	403-261-4240
Southeastern NC Radio Reading Service	Fayetteville, NC	919-486-7007	In Touch-Voice Print	Ontario, Canada	416-489-4222
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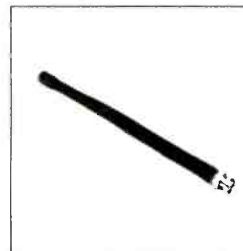
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Shortwave Broadcasting

Glenn Hauser

Box 1684-MT

Enid, OK 73702

All times UTC; all frequencies kHz.

AFGHANISTAN R. Afghanistan domestic Pgm I again heard on 7200v and 4775, 0130-0430 and 1330-1730. External back on 9635, same sked as last winter (BBCM)

ALASKA One possible site for proposed R. Free Asia is Shemya, Aleutian Islands (via Ken Mason, DC)

ARGENTINA DST in Buenos Aires, but not throughout the country, makes external English earlier during our winter: Mon.-Fri. 1800 on 15345, Tue.-Sat. (not Tue.-Fri. as in *SW Guide*) 0100 on 11710; started Oct. 19 (via Eugene, *RVI Radio World*)

AUSTRALIA RA plans to start Khmer service on SW soon (RNMN) Papua Niugini Sevis Program Gaid includes: Mon. & Sat. 0840 *Smol Bisnis*; Thu. 1000 *Kantri Singing*; on 6080, 7240, 9710, 11720, (via Bill Westenhaver, PQ)

BANGLADESH R. Bangladesh, English at 1815-1900 left 11570 for 9565, but mixed FEBA after 1830 (N. Takahashi, R. Japan *Media Roundup*)

BELGIUM RVI still has weekly program for UN forces in Croatia, Sat. 1800-1900 in Dutch and French on 9905 (Guido Schotmans, Antwerp, *SW Echo* via Kirk Baxter)

BOLIVIA R. Fides on new 9625 as well as 4845, 6155, until 0558 sign-off (Ernie Behr, Ont., *World of Radio*) 9625 announced as 15 kW (BBCM) R. San Miguel, Riberalta, uses 3310 in the morning, 4924.9 in the evening (Cecilia de Salas, *pseud.*, Peru, via Barrera, *Radio-Enlace*)

BOTSWANA R. Botswana shifted to 9595, daytime such as 1015 (Vashek Korzinek, RSA, DSWCI)

BOUGAINVILLE R. Free Bougainville is on new 3387 at 1000 past 1100 (Arthur Cushen, RNZI *Mailbox*) Presumably mis-spoken tho repeated by Tony King, as two weeks later they gave it as 3870 (*W.O.R.*) PNG invasion Oct. 21 damaged RFB building in Arawa, but resumed broadcasting two days later from hide-out jungle location (IARN via John Norfolk, OK)

BRAZIL R. Amarela, 4775, heard around 2300, so new on the air, after listing as CP (Jean Burnell, Nfld., *Fine Tuning*) Is in Rondonia (*W.O.R.*)

BULGARIA R. Sofia new English sked: 1130 on 11630, 11720, 13670, 17780, 17825; 1830 on 6235; 2045 on 6235; 2245, 0100 and 0400 on 11720, 9700 (Andy Sennitt, RN *Media Network*)

BURMA (non) Democratic Voice of Burma, via Norway, 1430-1520 on 17840; possible alternate frequency is 15360 (BBCM)

CANADA Ian McFarland plans to return to Canada in April, and tho officially retired from RCI, hopes to work there part-time (Diane Mauer, WI) RCI expanded Canadian Peacekeepers service to include Cyprus and Somalia as well as Yugoslavia, weekdays, 2000-2029 on Sackville 11945, 13650, 13670, 15140, 15325, 17820, 17875, Skelton 5995, 7235. Programs on RCI include—usually a few minutes later after RCI or CBC news—*Spectrum* weekdays 0400, 1330, 1630, 1700, 1800, 1900, 2030, 2130. *Innovation/Arts Canada*, Sat. 1330, 2030, Sun. 0400, 2200, 2300, Mon. 0030, Tue. 0630. *Quirks & Quarks*, Sat. 2200, Sun. 0100, 1800, 2300. *Royal Canadian Air Farce*, Sat. 2000, Sun. 2130, Mon. 0000. *Coast to Coast*, Sat. 2300. *Open House*, Sat. 2130, 2200, Sun. 1330, 2030, Mon. 0100, 1300, Wed. 0630. *Inside Track*, Sat. 1800, 2300, Sun. 0000, 0100, 1630, Mon. 0400, 0630. *Arts Tonight*, Thu. & Fri. 0630. *Weekend Review*, Sat. 1515. *Sunday Talk*, Sun. 1515. *Sunday Morning* hour 3, *Centerpoint*, is at 1605 on 17820, 11955, 9625, repeated 2205 on 11945, 9760 (via Bill Westenhaver, RCI)

West Coast Broadcasting Corp. is a working title; trying to get donated used 100 kW SW transmitter to relay overseas SW into western US; preferable site near Vancouver or Victoria such as ex-Coast Guard

station; goal is to do it for C\$300,000; investors wanted; inquire at 604-521-6286; or W.C.B.C., P.O. Box 395, 720 Sixth St., New Westminster, BC V3L 3C5 (Mr. Hackett, CEO, WCBC, *W.O.R.*)

CHAD RNT, 6165, from 2050 to closing at 2200, drums at hourtop, 2115 hi-life; Saturday ran to 2300 (Dave Valko *et. al.*, PA, *FT*) Remember, in Catalan it's TXAD (Olympic sign)

CHINA (non) CRI surprisingly good during the 1600 English broadcast on 15130; hum, listed as from Mali to South Africa (gh, OK)

COLOMBIA R. Nacional on new 9660 despite Rumbos/Venezuela, at 1819 // 11822 (Yimber Gaviria, Popayan, RN *Radio-Enlace*)

COSTA RICA Spain's new Cariari relay started Oct. 6, but it took almost a month for REE to announce the full schedule: 2200-0200 17845 to S. America; 2300-0100 21460, 0100-0300 15110 to N. America; 0100-0500 5970 to C. America; additional sports on weekends: Sat. 1830-2100, Sun. 1500-2000 on 17845, 15365, 9745 respectively. Reports wanted from target areas by fax/phone to RNE's Juan Luis Diaz Pratt in Costa Rica: +506-252938. 5970 uses a vertical incidence antenna (Josefina Penya, *Amigos de la Onda Corta* on REE) Cariari is a small banana-plantation town only ten years old, flat terrain about 50 km inland, Limon province (Raul Saavedra, *W.O.R.*)

Radio for Peace International announced tests on 6200 overnight, ex-7375, allowing 7385-USB to function better; but not heard on 6200. New tower is heavy steel, not bamboo, which is used only for spreaders in new cubical quad antennas. Antennas on old tower behind it to the south may have radiation distorted by new tower; later will add curtain array between the towers. New antennas and tower will boost strength before 30-kW transmitter is finished, soon, ultimately estimated 240 kW ERP. R. Fax, Ireland, may relay RFPI if it can return to air (James Latham, RFPI *Mailbags*) *World of Radio* times: Sun. 2300, Mon. 0700, Tue. 1900, Wed. 0300, 1100, Fri. 2000, Sat. 0400, 1200, 1800, Sun. 0200, 1000—also check 13630-USB, 15030 (gh). 6201.2 poor at 1128, 0207 (Brian Alexander, PA)

Faro del Caribe, weak on 10110 harmonic, strong on 5055 at 0316 (Dave Valko *et al.*, PA, *FT*)

CROATIA Zagreb, 13830 and 9830 with English news 2203-2209 (Stewart Todd Morgan, KM4IC, NC) Same also on 6210; later at 2345 also back on 5085 (Brian Alexander, PA, *W.O.R.*) Site is Deanovec; claims 10 kW on 6210, 125/305°; 10 kW on 9830, omni; 2 kW on 13830, 270°

(Andy Sennitt, RNMN)

CUBA RHC's revised winter sked in English: 2200-2300 6180, 0000-0700 6060, 0000-0200+ 9815 USB, 0200-0430 9655, 0400-0500 6180; 2100-2200 17705 may move lower. Earlier planned 6000 for SSB, 5965 instead of 6180 (*W.O.R.*)

(non) Castro must be worried about his would-be successor Jorge Mas Canosa, jamming most broadcasts of his *Voz de la Fundacion*, announced schedule: Mon.-Sat. 1100-1400 on 9850=WHRI; Tue.-Sun. 0100-0600 9495=WHRI; 0300-0600 9985=WHRI, 0400-0600 7395=WRNO (*W.O.R.*)

Mario Quevedo, news director of WQBN, 1300, Tampa, has been accused by the FCC of illegal broadcasting to Cuba over *La Voz de la Federacion Mundial de Ex-Presos Politicos Cubanos*; faces \$10K fine, year in prison or both (Cloe Cabrera, Tampa *Tribune* via Wm. F. Sandrowsky and Rusty Serenberg)

DENMARK See NORWAY.

ECUADOR Visited Ecos del Oriente, Lago Agrio; government wants to change town name to Nuevo Loja. Uses 3270 at 2000-0400 only, beautiful QSL certificate (Ken MacHarg, HCJB *DX Partyline*)

EGYPT R. Cairo at 0200-0330 now on 9475, 11865 (Andy Sennitt, RNMN)

ETHIOPIA (non) V. of Ethiopian Patriotism (Amharic: *Admas Ethiopia Yeager Fikir Dims*) new claud via Moscow, Sundays & Wednesdays 1530-1600 on 21785, 17570 instead of RM Amharic service in the daily 1500-1600 period. Gives US address: P.O. Box 21307, Washington, DC 20009 (BBCM)

FRANCE RFI budget increase will allow half an hour more in English per day; start of broadcasts in Laotian and Cambodian via Russia; three-transmitter relay in Thailand (AFP via BBCM) English is now only: 1230-1300 21645, 15365 to N. America, plus 9805, 11670, 15155, 15195; 1400-1500 on 11910, 17650, 17695; 1600-1700 on 6175, 11705, 12015, 15530, 17620, 17795, 17850 (RFI)

GREECE VOG English news: daily 1235-1245 15635, 15650, 17515; Mon.-Sat. 0130-0150 & 0340-0350 on 9395, 9420, 11645; 1530-1540 on 15630, 15650, 17525 (John Babbis, MD, *W.O.R.*) R. Stn. Macedonia no longer uses 250 kW VOA Kavala, just 3 x 35 kW at Thessaloniki in Greek: 1000 (Sundays and holidays 0600)-2215 11595, 9935, 1700-2215 7430 (Christos Rigas, IL)

GUAM By Sept. 30, KSDA had repaired three of the four antennas; parts from two damaged transformers combined to make one usable, for one transmitter, including English at 1600-1700 only on 11980 (Philip Smith, KSDA via Gigi Lytle) Despite fervent prayers, evidently not satisfied with their spokespersonship, God sent another typhoon, Bryan, at KSDA in October (gh) Not as bad as Omar, still on with no major damage tho eye passed directly over (Gary Banton, KSDA, RNMN) Still not having finished them off, God sent yet another typhoon toward Guam in early November (gh)

HAITI (non) RFPI's Haitian-Creole program is spelt *Neg-Mawon*; also started doing English features promoting fund-raising (gh)

HAWAII LeSea fund-raiser did not amass \$1 million; actually needs \$2.5 million for KWHR project. "New Life" station just used for this, not by KWHR. Site is near old lava flow, awaiting zoning clearance; backup site nearby (Doug Garlinger, WHRI, *W.O.R.*) HCJB still looking at additional sites; Hawaii not a dead issue (Ken MacHarg, RNMN)

HONDURAS La Voz de la Mosquitia back on 4910.66, 0135-0238 s/off, with US religion in English from 0205 (Brian Alexander, PA, *W.O.R.*)

ICELAND RUV sked: 1215-1300 13835, 15770; 1510-1550 13855, 15770; 1855-1920 11402, 13855; 1955-2010 13855 15770; 2300-2335 13855, 15790 (Jari Perkiomaki, USENET, via Risto Kotalampi, *SW Echo* via Kirk Baxter)

INDIA New 10 kW transmitter for AIR Gangtok, Sikkim, testing 0000-0400 & 1415-1730 on 3390, 0000-0430 & 1130-1800 on 4775; Guwahati, also on 4775 may move (*DX Grapevine* via DSWCI)

INDONESIA New NEC transmitters are being installed, 50 kW at Pontianak, Palangkaraya, 10 kW at Merauke, Jambi; in regular use from January (RJMR via BBCM) RRI Nabire, Irian Jaya, 6127.55, on early before 1135, heard past 1213, 80 minutes after sunrise here in Sept. (David M. Clark, Ont., *DX Ontario*)

IRAN VOIRI moved English an hour later, 0030 heard only on 9022, also giving 11790, 15260 (Bob Thomas, CT, *W.O.R.*) Mashhad regional station, 6005, began service to Tajikistan at 1530-1600, followed by Uzbekistan service in respective languages (BBCM) (non) V. of Mojahedin in Farsi 0230-0350 on 6520, 6530, 6990, 7460; 1530-2020 on 5710, 6270, 6520, 6990, 7020, 7470 (Rumen Pankov, Bulgaria, RN *Radio-Enlace*)

ISRAEL Israel Radio feature programs after *News Magazine* at 2000: Sun., *Calling All Listeners* [*& DX Corner*, sometimes first]; Mon., *New from Israel*—science; Tue., *Talking Point*; Wed., *Jewish News Review*, *This Land*—travel; Thu., *Studio 3*—arts, *Postmark*—stamps; Fri., *T.G.I.F.*; Sat., *Spotlight*. After 2230: Sun., *Israel Sound*—latest releases; Mon., *Calling All Listeners*, *DX*; Tue., *Israel Mosaic*; Wed.,

Talking Point; Thu., *This Land*; Fri., *Review of Newspapers*; Sat., *Spotlight*. Both are on 7465, 9435, 11587, 11603, 11675, 17575.

ITALY AWR, Forli, English now 0730-0800 on 7210, 1030-1100 on 7230 (via Frank Orcutt, BBCM) Actually 7210.4 hetting CIS (AMID via WWH *Weltschau*)

JAPAN This winter, R. Japan on 9535, not 9505 at 1400-1600, 1700, 1900; usual switch to 0300-0400 for RCI 5960 relay puts *Media Roundup* back on it, UTC Suns. 0330 (Via Diane Mauer, *W.O.R.*)

JORDAN R. Jordan, 7155, in Arabic as early as 1935-1945 (Dave Valko, *et al.*, PA, *FT*)

KASHMIR AZAD AKR, Muzaffarabad, new 3517v, ex-3665 at 0045-0410, 1045-1810; unstable (Kanwarjit Sandhu, Punjab, RNMN)

KENYA HCJB has a good chance of putting on a station here in cooperation with FEBA; 100 kW transmitters are always under construction in Elkhart, IN (Ken MacHarg, RNMN)

KOREA NORTH Two different non-parallel transmitters on 3000 and 3025 around 1430-2100 with movie soundtracks, music, are known as "Broadcasting for Young Soldiers on Sentry Duty" (Tooru Yamashita, *pseud.*, RJMR)

KOREA SOUTH R. Korea direct at 0600-0700 on new 11945, 15155 (R. Korea)

LIBERIA LBC back on 3255, 2340-0002 s/off (Art Delibert, MD and Dave Valko, PA, *FT*)

LUXEMBOURG RTL's final English broadcast will be Dec. 30; perhaps 15350 will then be in German (Arthur Cushen, RNZI)

MEXICO By accident in the expanding AM band, XERI, Radio Rey, Reynosa, audible evenings on 1620, second harmonic of 810 (gh, OK) XERMEX, RMI runs 11770 and 5985 at 1255-1700 with news weekdays 1300-1400, weekends 1400-1430; 9705 at 2000-0505 with news daily 0100-0130, weekdays 2000-2100, weekends 2000-2030 (BBCM) Heard on 9704.7 from 0100 to 0400 best on LSB, (Ernie Behr, Ont.) Irregular

MOZAMBIQUE Em. Prov. Sofala, Beira, presumed on 3279.22v, 0334 past 0406 with news on the hour; R. Mocambique, 3338.17 at 0350 (Al Quaglieri, *et al.*, PA, *SW Echo* via Baxter) (non) V. of Renamo announced its domestic service in Portuguese would be on 6155 at 0515, 5916 at 1615 (BBCM)

NEW ZEALAND RNZI best heard on 9700 in the 0700 (weekends 0600)-1206 period; some programs: Sunday 0705 *Focus on Politics*, 0718 *Sunday Supplement*. Mon.-Fri., *Pacific Regional News* at 0700, 0800, 1000; *Pacific Island News from N.Z.* ("PINNZ") at 1025; M/W/F 1005 *Talk-about: Tue./Fri. 0805 Pacific Beat*; Wed. 1030 *Mt. Cook Travel* (RNZI) *Orient Express*; partly in Chinese at 0900 is on first Wednesday only (Nobuyoshi Aoi, Japan, DSWCI & RJMR)

NORWAY On frequencies above 15 MHz, Kvitsoy and Sveio are only using USB + carrier. R. Denmark has two different Danish programs starting at 1430 and 1530, each repeated 11 times in alternation every hour; Mailbag Saturdays of even weeks at 1443; no QSL (Erik Koie, DSWCI *SW News*)

PERU R. Onda Verde, new from Pichanaki in the jungle, 4925 at 1035, 0010; R. Emisora Orion, Huaca Huamalies, 4297 at 1120 (Cecilia

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de Salas, *pseud.*, Peru, via Barrera, FT) R. Lider, 5304.6v, 0948-1014, Cajamarca, ex-4418? On 5316, sounds like R. Tayabamba at 1016, ex-3290? (Hans Johnson & Dave Valko, *et al.*, PA, FT) La Voz de San Antonio, 6628.5 is 300 watts for Ronda province, (Lars-Eric Svensson, SWB via DSWCI)

PHILIPPINES R. Veritas Asia has news in English during Tagalog program, 15140, at 1540/1555 Sat/Sun/Mon., 1525 other days (BBCM) FEBC regional, 3329.8, 1035-1144 s/off (Ralph Famularo, Japan, SPEEDX)

POLAND P.R. Warsaw did shift English an hour later for winter: 55 minutes at 1300 on 6135, 7145, 9525, 11815; 1600 on 7285, 9525, 11840; 1800 & 1930 on 7270, 9525; 2030 on 6095, 6135, 7145, 7270, 9525; intended only for Europe (Reid Kelly, SW Echo via G. Thurman)

QATAR QBS, Doha in Arabic 0707-1307 on odd 21555.4 (Wolfgang Bueschel, Germany, WWH)

RUSSIA AWR Europe in English found at 0530-0600 on 15125, 1700-1730 on 12030, the latter with co-channel Russian (Edwin Southwell, UK) R. Black Sea International is a free radio on 6860 (Viktor Puzanov via Peter Oliver, WDXC Contact) Deutsche Welle relays planned for winter: Zhigulyovsk (Samara) 7315 1500-1800; 12055 0200-0250, 0300-0350; 17625 0800-0850; 17735 1000-1050; Novosibirsk, 7340 1000-1400; 9875 1430-1700; 11795 2200-2400; 12045 2230-2320; 15350 1200-1320; 15550 0100-0150; Irkutsk, 15350 1100-1150 (Wolfgang Bueschel, DSWCI) R. Galaxy, Moscow, 2000-2100 on 11880 in English, mostly modern Russian pop and rock Friday through Monday; Tuesday, classical music and *Musical Talent*; Thursday, business news, rock/pop music; Wednesday in Russian language with rock and pop (WDXC Contact) *Gorod u Morya* [City at Sea] is special Saturday program for foreigners, 0610-0658 on 13625 from St. Petersburg (Mikhail P. Timofeyev, DSWCI) R. Moscow with Mideast news on 29850 at 2024, poor (Mary McPhillips, UK, BDXC) 5 x 5970? (gh) R. Pamyat announces only one transmission, 1430-1600 on 7230. R. Polis, St. Pete, 0430-1700 on 6045. R. Titan, Ufa, run by body-building federation, shares 5780 with R. Shark; 1000-1100 daily, Saturday to 1200, including programs from VOA, R. Sweden (BBCM) 6090 station from Irkutsk last month is called *Vid Irkutsk* (Nikolai Rudnev, *Australian DX News*)

ST. HELENA R. St. Helena Day, Oct. 23 was quite successful, widely heard, airing almost continuous phone-ins; among those quickly reporting 11092.5 to us were Diane Mauer, WI; Chuck Albertson, WA; Brian Alexander, PA.

SA'UDI ARABIA BSKSA Riyadh feeder on 10990 at 1436, Arabic music (Zdenek Elias, Czechoslovakia, WDXC Contact)

SENEGAL Dakar drifting steadily up from 7167.4 to 7167.7 between 0725 and 0740, excellent sig and strong audio, really enjoyable local string music (Dave Valko, PA, FT) 7169.64 until 0101 (Brian Alexander, PA)

SERBIA R. Yugoslavia at 2200-2229 on 9505, 7200, 6100 (Brian Alexander, PA, W.O.R.)

SOUTH AFRICA New BBC relays, from Sept. 25, perhaps still: Swahili 0300-0330 11845, 1745-1800 7230; Portuguese 0430-0445 9515, 11940, 6175; 0530-0545 9515, 15105, 6005; 1700-1715 9515, 7230, 6070; English 0700-0730 17790, 1700-1900 15420; all 500 kW except: 250 on 6175, 6005, 15420, 100 on 6070 (via Bill Westenhaver, PA) Channel Africa now accepts advertising (BBCM) New Channel Africa sked in English to March 6: 0200-0400 11745, 0300-0500 7270, 0400-0700 15430, 1000-1100 17780, 1100-1200 11900, 1600-1800 5960, 15430. Domestic SW Relays: Afrikaans Stereo: 0300-0530 and 1630-2300 4810, 0500 to 1640 9665; R. Orion 2300-0300 4810; R. Oranje 0300-0505 and 1620-2200 3230, 0510-1615 9630 (via Westenhaver)

SPAIN Spanish National Radio announces program lineup at 0000, 0100, 0500 on 9530; *DX Spot* reduced to 10 minutes and moved to UTC Mondays at 0015, 0115, 0515; followed by *What's Cooking in Spain*,



Spain and the American West, Radio Club (John Norfolk, OK) see COSTA RICA

SUDAN Omdurman's 9170 transmitter carried R. Juba instead Oct. 2 only, Arabic except for English news at 1515-1530 (BBCM) **UKOGBANI** (non) BBC's Canadian relay expands again: 15260 now 1400-1745 daily (W.O.R.)

UKRAINE 11735 station last month is R. *Vosraschdenye* [Rebirth], (Hans-Peter Tillmann, Germany, BDXC Communication)

URUGUAY SODRE on new 6125 at 1036-1102, ID for 1290 kHz, also at 2230, not on 9620 (Gabriel Ivan Barrera, Argentina, FT)

USA Due to budget cuts for audience research, VOA had about 100,000 unanswered letters in mid-1991; discarded most of them without opening, says a GAO report dredging up a lot of dirt about VOA management—a real scandalous eye-opener (George Zeller, A*C*E)

KCBI, Dallas, planned to finally use the paid-for frequencies in November after years of inactivity; check 9815 at 0230-1400, 15375 at 1400-0230. New ownership, not Dr. Gene Scott, but may carry some of his programming (George Jacobs via George Thurman, W.O.R.)

KJES, NM, vanished again in late Sept; still off early Nov. when Michael Reuter told us transmitter capacitors would burn when power applied; engineer who made it could not get away from Costa Rica, but a local engineer was working on it. Will resume on previous UTC sked: Mon./Tue./Wed./Fri. 1300-1600 11715, 1800-1900 & 2000-2100 9510 (W.O.R.)

WEWN, AL, to start low-power antenna tests Oct. 15 on 21840 at 1800, code IDs (Bob German, WEWN, RNMN) Nothing heard. Final W-92 sked effective Dec. 28 if not earlier is close to that shown last month, but all four take a break at 1000-1300 so 9870 is 0800-1000, 1300-1600. 13710 is at 1800-2000 only. Primary English schedule to N. America is on 9870 as above, plus 13615 1600-2400, 7540 0000-0800. Conflicts if somebody doesn't give: WJCR already on 7465; BBC on 9410 from 0300, etc. (Via Reid Kelly, SW Echo via Thurman)

WWCR, TN, finally ordered transmitter No. 3, another Harris 100-B, to be on around March with more diversified programming including radio hobbyist shows from *Let's Talk Radio*. Daytime Scott service shifted to 13845. *Jazz Across America*, Sat. 1900-1915, Mon. 1230-1245 on 15690. *Old Time Radio*, Mon. 1105-1200. Radio Newyork international lost an hour including *Crossband* due to bills in arrears, now Mon. 0300-0600 on 7435. Now a possible 4th WWCR transmitter is on the horizon. *World of Radio* times on WWCR, WRNO remain as given last month (gh) See COSTA RICA

Brother Stair, Overcomer, predicted Soviet nuclear attack on U.S. Oct. 14; we noticed no sign of it. Also on WRNO Sats. 2100-2300 on 15420, Mons. 0300-0400 on 7355 (gh) see CUBA

WHRI has Portuguese—not Brazilian—program from California, *Radio Boas Novas Internacional*, weekdays 0900-1000 on 7315, 7355; 1500-1600 on 9465, 15105 (W.O.R.)

WFLA, 25870 NBFM, should have own alphanumeric call sign, never given; heard more lately with high MUFs, sporadic E but mostly national talkshows daytime. A SW source for Paul Harvey, though: weekdays 1330, 1715, 2235, Saturdays 1705 as announced (W.O.R.) WFLA talkhost promoting SW, Jay Marvin, got an unexpected job offer doubling his salary in the north (Paul de la Garza, St. Pete *Times* via Rusty Serenberg)

UZBEKISTAN BBC via Tashkent in Hindi, Urdu: 0045-0200 7315, 1410-1545 9725 (Manosij Guha, India, RNMN)

VIETNAM R. Bac Thai on new 6670 ex-6525 at 1200-1400. R. Lao Cai expanded on 5572 to 1000-1600 (Isao Ugusa, Japan, RJMR) (non) R. Irina, 15580 is 500 kW due south from Irkutsk, reports in English welcome (Y. Kato, RJMR) US address 6433 Northanna Dr., Springfield, VA 22150 (Takuji Sahara, FT) Briefly at 1500, back to 1400-1500 on 15580 (BBCM) Spurs 15538.6, 15621.4 (Robert Chester, ADXN) WWCR had test program translated—"hot stuff" calling for death of leaders (gh)

Until the next, 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.

0000 UTC on 9942

CLANDESTINE: La Voz Del CID. Spanish. Station sign-on into news topics on Cuba and the United Nations. (John Carson, Norman, OK)

0020 UTC on 11950

CUBA: Radio Havana. *Spotlight on the Americas* discussing the Latin American debt crisis. (Bob Fraser, Cohasset, MA) Station noted on 13660 USB at 0040, with SSB test. (GVH)

0125 UTC on 9735

PARAGUAY: Radio Nacional. Spanish. Local interest chat to "Nacional" ID and time check at 0130 UTC. Paraguayan instrumentals to announcers chat and interviews. (Sam Wright, Biloxi, MS)

0159 UTC on 11710

ARGENTINA: RAE. Interval signal and sign-on into Argentine folklorica music program. *DX Special* show at 0236 UTC. (Carson, OK)

0230 UTC on 4844.8

GUATEMALA: Radio Kek'chi. Kek'chi. Religious text at tune-in. Marimba music to *La Voz Evangelica de las Casas* ID. Additional monitoring at 1130 with ID and text. (Wright, MS)

0245 UTC on 4760

VENEZUELA: Radio Frontera. Spanish. Pop tunes. Chat, IDs, and commercial jingles. National anthem to 0300 sign-off. Recheck at 1000 to sign-on anthem. Fair signal quality (Steven Vincent, Jacksonville, FL)

0305 UTC on 15345

TAIWAN: Voice of Free China. World news, local news, and weather report. Station ID followed by a "radio-tour" of an antique/curio market specializing in jade. (Jerry Witham, Keauu, HI)

0320 UTC on 7200

SUDAN: Radio Omdurman. Arabic. Local announcements to national topics on Sudan. Brief *Nutcracker Suite* music bridge to clear station ID at 0330. Sudanese music and Islamic prayers. (Witham, HI) *Jerry, this station continues to appear nightly, with a powerhouse signal; now for the QSL!* (GVH)

0359 UTC on 11588

ISRAEL: Kol Israel. Sign-on, discussion on U.S./Israel loan guarantees. (Carson, OK) *Calling All Listeners* on 15640 kHz at 2015 UTC. (Fraser, MA)

0400 UTC on 5097

PERU: Radio Eco. Spanish. "Eco" ID and program talk at the hour. Vocal ballads and Peruvian instrumentals. Peru's Radio Altura noted on 3339 kHz at 0420 UTC. IDs and music included. (Wright, MS)

0400 UTC on 9560

NORWAY: Radio Norway. Newscast, sports report, and feature on a Norwegian knife maker. (Greg Keskinen, Ashaway, RI)

0405 UTC on 7165

TANZANIA: Radio Tanzania. Swahili. News of Africa to "Hil Nii Idhaa ya tailaya Radio Tanzania Dar es Salaam," ID at 0415. Lions roar sound effect to regional music. (Witham, HI)

0430 UTC on 4926

MOZAMBIQUE: Radio Mocambique. Portuguese. Fair signal of local music on xylophones. Morning national news topics to ID break.

0500 UTC on 11685

RUSSIA: Radio Ala. Russian/English. Multilingual newscast to pop music at 0505. Interval signal and "Radio Ala Moscow" ID at 0530 UTC. Weaker signal on 12030 kHz. (Witham, HI)

0530 UTC on 9720.2

ANGOLA: Radio Nacional. Portuguese. Programming updates at tune-in. African hi-life music to Portuguese ballads. Parallel frequency 11954.8 kHz. National heard on 4950 kHz at 2310, with pops and IDs. Regional station EP da Huila audible at 2300 on 4850 kHz with "Emissora Provincial da Huila" identification. Parallel 4950. (Brian Bagwell, St. Louis, MO)

0535 UTC on 6150

COLOMBIA: Caracol-Bogota. Spanish. Clear station ID as, "esta es Caracol," radio play to ads and newscast at 0600 UTC. (GVH)

0555 UTC on 4845

BOLIVIA: Radio Fides. Spanish. Bolivian huaynos music. Announcer talk. Sign-off routine to National anthem to 0605 UTC. Tentative ID on Bolivia's Radio Eco at 0115 on 4409.9 kHz. (Duane Hadley, St. Petersburg, FL)

0555 UTC on 6070

CANADA: CFRX. Talk show discussion on U.S./Canadian politics and the politicians. CFRB/CFRX monitored on 6070 past 0605. (Carson, OK)

0625 UTC on 5995

MALI: RDTV-Du Mali. French. DJ format for African pops and hi-life tunes. Clear ID and news updates audible on 4783//4835 kHz. (Jack R. Davis, Birmingham, AL) Radio Beijing Mali relay audible on 11715 kHz at 0015 UTC. (Fraser, MA)

0700 UTC on 11850

RUSSIA: Radio Rezonas. Russian. Pop music with station promos, commercials and several IDs/interval signals. (Witham, HI)

0900 UTC on 3205

BRAZIL: Radio Ribeirao Preto. Portuguese. Station ID with time check. Commercial jingles and program chat. Portuguese pops and ballads. Closing sign-off of Brazilian Radio Alvorada heard on 3335 kHz at 0345 UTC. (Bagwell, MO)

0920 UTC on 3285

ECUADOR: La Voz del Rio Tarqui. Spanish. Fair signal for pop vocals to "Radio Tarqui" ID. Time check at 0930. Music program to canned ID. Programming audible to 1030 UTC. Ecuador's Radio Centro heard on 3290 at 0755, Radio Nacional Espejo heard on 4879.8 kHz at 0250 to 0300 sign-off. (Bagwell, MO)

1000 UTC on 3335

PAPUA NEW GUINEA: (New Guinea) Radio East Sepik. Pidgin/English. Interval signal and station ID at 1000. News format to pop music. Additional PNGs monitored: Radio Manus (Admiralty Islands) on 3315 kHz at 0957, Radio Enga (New Guinea) on 2410 kHz at 1140 UTC, regional music to Pidgin news updates. (Thomas Banks, Dallas, TX)

1254 UTC on 11800

AUSTRALIA: Radio Australia. Interval signal to ID. 1257 UTC opening music, 1300 newscast into sports news. (Carson, OK) *Back Page* program sports feature. (Fraser, MA)

1300 UTC on 15400

FINLAND: Radio Finland. News on Finland, economic review, and sports update. Excellent reception. (Greg Keskinen, Ashaway, RI)

1715 UTC on 6910

RUSSIA: Radio Trak, Yekaterinaburg. Russian. Chatter and giggles from two female announcers. Russian folk music to more of the same past 1730. Weak signal under interferences. (Witham, HI)

1745 UTC on 11620

INDIA: AIR. Clear reception with occasional fading for features, ID, and Indian sitar music. Newscast at 1800 UTC. (Keskinen, RI)

1750 UTC on 15550

PAKISTAN: Radio Pakistan. International newscast and enjoyable Pakistani music. Fairly strong signal. (Keskinen, RI)

1940 UTC on 11880

RUSSIA: Radio Galaxy. Russian pop music, jingles, and English IDs. Radio Alma Ata audible on 21490//17765 kHz with low level modulation at 1930-1955 UTC. (Richard Jackson, Kansas City, MO)

2010 UTC on 15070

UNITED KINGDOM: BBC-World Service. *The World Today* on factions in Iraq's leadership. (Fraser, MA) BBC noted on 6195 kHz at 0540 UTC. War in Afghanistan frankly discussed. (Carson, OK)

2045 UTC 13620

KUWAIT: Radio Kuwait. *Eyewitness* program featuring text on the Iraqi occupation of Kuwait, with comparisons between Iraq and Nazi Germany. Excellent signal. (Martin H. Gallas, Jacksonville, IL)

2050 UTC on 13830

CROATIA: Radio Zagreb. Croatian/English. European pop song at tune-in. Station ID at 2100 UTC into world headlines in Croatian. English newscast at 2105 with fair signal quality. (Carson, OK)

2145 UTC on 9450

ARMENIA: Radio Yerevan. English world newscast at tune-in. Station ID to easy-listening music. Presumed Armenian service at 2200 UTC. Yerevan noted on 11675 kHz at 0255, with easy-listening music and ID. Russian service at 0259 UTC. Azerbaijani Radio heard in Russian on 4785 kHz at 0300. News and talk format with fair signal quality. (Bagwell, MO)

2150 UTC on 6910

EQUATORIAL GUINEA: Radio Africa. Spanish. Spanish religious tune. Announcer chat to sign-off routine. Station ID and national anthem at 2200. Radio Nacional Malabo heard at 2155 on 6250.3 to 2300 sign-off. (Hadley, FL)

2255 UTC on 11780

BRAZIL: Radio Nacional-Amazonia. Portuguese. Brazilian pops. "Nacional" ID and promo to 2300 sign-off. Tentative logging on Brazil's Radio Pioneira. Observed at 0150 on 5015 kHz. Pop tunes and sign-off 0200 UTC. (GVH)

2259 UTC on 15580

LITHUANIA: Radio Vilnius. Interval signal and sign-on into *News About Lithuania*. (Carson, OK) (Vincent, FL)

2300 UTC on 6089.8

NIGERIA: Radio Nigeria, Kaduna. African Vernaculars. Native African music to religious text. Sign-off ID to Nigerian anthem at 2300 UTC. Radio Nigeria, Ibadan heard on 6050 kHz at 2258. English ID and talk to 2300 newscast. Nigerian pledge to sign-off anthem at 2307 UTC. (Bagwell, MO) Voice of Nigeria audible on 7355 kHz at 0447 UTC. ID and sign-on at 0455 into morning show. (Carson, OK)

2345 UTC on 7125

GUINEA: RTV-Guineenne. French. African hi-life music. Fair signal quality. Sign-off ID to national anthem at 0000 UTC. (Hadley, FL) (Vincent, FL)

2345 UTC on 9930

BELGIUM: BRT. Economic report on the port of Antwerp, to 2355 sign-off. (Carson, OK) (Vincent, FL) (Fraser, MA)

Utility World

Larry Van Horn
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To the Giver and the Gifted

This is one of my favorite seasons: Christmas and Mardi Gras (a "N'awlins" thing) are upon us, bringing family, gifts, food, gifts, friends, gifts, time off, and oh yeah—did I mention gifts?

I would hope by now that you have your holiday gift list together for your significant ute DXer. If not, here's a last-minute "books that ute folks need in the shack" gift list.

First on your list should be a good reference book. *The Confidential Frequency List (CFL)*, for short, eighth edition, produced by Gilfer Associates, Inc., is my personal favorite. Longtime friend and colleague, Geoff Halligey, compiles the *CFL* and does a very nice job at it. The book is put together the way we spend time at the dials, by frequency, with a nice by-callsign cross reference towards the back. The binding is spiral—really great at the receiver—a nice touch that's new with this 8th edition.

After the *CFL*, the next standard reference you might consider is the Klingenfuss *Guide to Utilities* 1993. The 1992 edition is very good as a standard reference for RTTY/Marine-CW/FAX signals. You will find very little voice communications in its pages and even less military. Strange and exotic signals (i.e. - number stations, foghorns, etc) are non-existent in this book. Probably my biggest criticism of this book is the overall scope and coverage. Don't be surprised by the European slant as Joerg Klingenfuss does most of his monitoring from Germany.

The other major failing of this year's *Utility Guide* is the book binding; a good reference book should last longer than one week. It is totally aggravating for a fine reference book to have such poor binding, especially at \$34.95. But if a book on RTTY, FAX and marine band CW signals is what you're looking for, there is none better. The 1993 edition of Klingenfuss' *Guide to Utilities* is expected in January.

To complete the "big three frequency directories" is the Grove *Shortwave Directory*. While some of the information is in need of updating, this guide also deserves some space on your shelf.

For instance, say you get a tip that STRATCOM is having a major exercise and you want to monitor what is going on. You need all the STRATCOM channels fast. Klingenfuss doesn't have much military coverage and 387 pages of 'by frequency' listings in the *CFL* is going to take you awhile to look through. This is where the Grove *Shortwave Directory* fits into the picture.

This book is segmented into major divisions such as military, aero, marine, etc. Within each major division the frequency lists are further divided into various branches and services. There is also a frequency cross reference in the back of the book.

A new reference book appeared in the market place last summer. Gayle Van Horn's *International Callsign Directory (ICD)* has filled a long-standing need in utility DXing. After years of collecting and verifying utility, NDB (non-directional beacons) and tactical call signs, she has published the most exhaustive list of ute callsigns ever assembled. Military and government callsigns, tactical, US and foreign military are just a few of the entries in this book. To quote an old saying: "You can't tell the players without a program"; You can't know who that call belongs to without Gayle's book.

All the above books are available from Grove Enterprises, P.O. Box 98, Brasstown, NC 28902-0098; 1-800-438-8155. Grove supports utility listening by carrying the following books as well. All books are \$4 UPS shipping/handling or \$2 bookrate.

Title	Order	Price
Confidential Frequency List - Gilfer	BOK4	\$19.95
Guide to Utility Stations - Klingenfuss	BOK54	\$34.95
Shortwave Directory - Grove	BOK14	\$15.95
International Callsign Directory - Van Horn	BOK51	\$24.95
Color Wall Chart of the Radio Spectrum (Who's where; Helps you locate utility traffic)	CHT 1	\$9.95
World Press Services Frequencies - Harrington (Previous editions have been good)	BOK20	\$8.95
Canadian Military Radio Frequency Guide - Ing (Previous editions have been good for Canadian frequencies)	BOK55	\$13.95
Federal Frequency Assignment Master File - CRC (Covers HF/VHF/UHF; Great book for government and military buffs)	BOK1	\$24.95
U.S. Maritime Frequency Directory - Coburn (Covers HF/VHF/UHF; Some interesting listings from FCC data base)	BOK52	\$24.95
Official Aeronautical Frequency Directory - Coburn (Covers HF/VHF/UHF; Haven't seen personally, probably similar to above)	BOK6	\$24.95
Air Scan - Kneitel (Covers HF/VHF/UHF US and Canada; OK but needs updating)	BOK7	\$14.95
The "Top Secret" Registry - Kneitel (Most lyVHF/UHF; also need updating)	BOK8	\$19.95

Another MT advertiser worth your support is Universal Radio, Inc. Fred Osterman has been a long time friend and supporter of this column and he has many other books on his shelf worthy of your notice, in addition to carrying most of those mentioned above.

Title	Order	Price
Communications Satellites, 3rd Edition - Van Horn (Yep, still available and there is HF stuff in there)	2732	\$12.89
Time Signals Stations - G. Klawitter (Looks a little pricey, though have not seen; German & English)	3091	\$16.95
HF Aeronautical Communications Handbook - Evans (Best aero ute handbook on market for beginners and oldtimers alike)	3020	\$19.95
Worldwide Aeronautical Communications (2-28) - Evans (Updater to book above, good stuff)	3005	\$6.95
Weather Radio - Curtis (Have not seen to recommend)	1912	\$14.95
The U.S.S.R. Merchant Ship List - Berri (Simply the best book in this field)	3012	\$10.95
The Soviet Maritime RTTY Dictionary - Osterman (Good stuff for those wanting to specialize)	1635	\$11.95
Air & Meteo Code Manual - Klingenfuss (If decoding weather via RTTY is your bag, this is your book - pricey)	3046	\$29.95
Radioteletype Code Manual - Klingenfuss (Describes different RTTY codes; not for the beginner)	0379	\$16.95
Guide to World RTTY Stations - Klingenfuss (Nice guide—somewhat dated; Guide to Utilities more current)	0987	\$12.95
Radioteletype Monitoring - D. Williams (Dated, better stuff out there)	0967	\$9.95
RTTY Press Broadcasts by Time and Agency - Schaaay (Dated, better stuff out there)	0986	\$12.95
The RTTY Listener - Osterman (Good stuff if you own one of their demodulators)	0943	\$19.95

Guide to Facsimile Stations - Klingenfuss	2365	\$24.95
<i>(One of his better books; pricey, but a must for the FAX freak)</i>		
Worldwide Marine Radio Facsimile Guide - NOCC	2275	\$14.95
<i>(A little dated)</i>		
Shortwave Facsimile Frequency Guide - Schaay/Balneger	1108	\$14.95
<i>(Nice little guide —others available more current)</i>		
Mariner's Guide to Single Sideband - Graves	1046	\$11.95
<i>(Have not seen to recommend)</i>		
Coast Guard Radio - Pogue	1854	\$12.95
<i>(Good beginner guide - frequencies need updating)</i>		
The Warship Directory - Pogue	2986	\$14.95
<i>(Nice little directory, somewhat dated now)</i>		
U.S. Military Communications (3 volumes) - Schaay	---	\$12.95 ea
<i>(This series now dated also)</i>		
Guide to Embassy and Espionage Communications-Kneitel	0480	\$10.95
<i>(Needs major revision; 1986 last update)</i>		
Embassy Radio Communications Workbook - Schaay	1071	\$8.95
<i>(A little dated also)</i>		
Uno, Dos, Cuatro - A Guide to Number Stations	2131	\$13.95
<i>- Havana Moon (Last published 1987; have not seen to recommend; looks pricey for 72 pages)</i>		
Utility QSL Address Guides, Vol 1 & 2	--	\$12.95
<i>(Well worth the price; a must for those of you who QSL)</i>		

Add \$1 per book for shipping. To order, write Universal Radio at 6830 Americana Parkway, Reynoldsburg, Ohio 43068, or call 1-800-431-3939. Be sure to tell them that *MT* sent ya.

Now before you jump me about the above list, yes, there are more books out there. Unfortunately, I either haven't seen them or don't have the current mailing address and order information. If you have a ute book and want to get it on our list, send a copy of the book and ordering particulars to me care of the Brasstown address. Be sure to mark it for my attention. I'm always interested in showcasing new references in this column. If the above list proves useful to you, we can make it an annual list. Be sure to let me know.

Convention Gossip!

One of the great things about going to *MT* conventions is the one-on-one or group discussions after hours. This year's convention was no exception. In fact, some pretty interesting information came out of this convention that our readers might be interested in hearing about. For instance...

- The location of KWA80 has been DF'ed now. Using sophisticated long range HF direction finding techniques, the location for this Department of State (sic) station is Bangkok, Thailand.
- For some time now this column has speculated on the identity and purpose of the water dripper signal heard around 6 MHz, especially during the evening hours. According to one source at the convention (very, very reliable I might add) the water dripper identity was accidentally revealed by the source of the signal.

The story is quite lengthy but, in a nutshell, the water dripper is a Canadian Over-the-Horizon radar system located in Halifax, NS. Yep, I was quite surprised, but I have at this point no reason to doubt the story or the person who provided the background. Interesting that the Canadian government would still be operating such a system, especially since the US has virtually shut down its Over-the-Horizon capability. Though this mystery is hopefully put to bed now, I will provide more information as it becomes available.

- The saga of the Global HF System (GHFS) continues. This radio system is a Joint Chief of Staff HF broadcast system. One source at the convention said that the GHFS radio system (eight frequencies) com-

pletely replaced the Giant Talk (six frequencies) and Global Command and Control System (21 frequencies).

There is one problem with this premise: We have identified nine frequencies involved with the system. At one point I thought this might be a system within a larger system, and it still might be.

The frequencies that have been identified all carry EAM broadcasts which is the purpose of the GHFS network. These frequencies are: 4725, 6738, 8967, 8993, 11176, 11243, 13201, 15015, and 17975. Only time and additional monitoring will tell what's up for sure.

- On a final note, there has been a change in message format of STRATCOM's EAM broadcasts. For years, the preamble to these messages were five characters. Now they are six characters usually repeated twice then into the message twice. It is widely believed that these messages contain the go-code or operational messages for aircraft and nuclear-capable ships in the system. The message lengths still run up to 85 characters long for EAM broadcasts. Several stations in the GHFS have the responsibility to echo these messages worldwide at various times and on various frequencies. Since the shake-up, will have still not fully assessed how these broadcasts are being handled.

The other broadcast you will hear on the GHFS is the foxtrot message. These are broadcast again on GHFS frequencies. They are very recognizable as they usually start out: [Call sign] request you echo the following: Skyking, Skyking [Callsign] Do not answer time [in minutes] authentication [letters+numbers], I say again... then the message is repeated followed by the word 'out'. Interesting little messages but not much is known about them.

Nearly Time to Move

As announced by Bob Grove in Atlanta, I will be retiring from the U.S. Navy this spring after nearly 23 years of service and I have been hired full time to join the Grove Enterprises staff in Brasstown starting July 1, 1993. Yes, folks, Gayle, Loyd and I are heading to B-Town next summer. To say the least, we are very excited about the job and the move to North Carolina and I am looking forward to serving you all full time on the Grove Enterprises staff.

Early Sunday morning during the shortwave experts forum, I was given my first job assignment: to update Bob's *Shortwave Directory*. I can think of nothing more exciting than working on an industry legend. Before I get started, however, I want to hear from you.

What do you like or dislike about the *SD*? What else would you like to see in it? How do you want to see the *SD* bound? Is the current size acceptable or do you want it the size of the *CFL* and *Utility Guide*?

I know that the contents need updating; would you be willing to send in material in your area of expertise verified by off-the-air monitoring? Do you want addresses for stations included in the book?

These are just a few of the questions I have running through my head as I take my first hard editorial look at the current edition of the *Shortwave Directory*. I want to hear from those who will be using the book. I can't promise that everything you submit will be incorporated, but each idea will get a fair and equal hearing. Send your material, frequency list, pictures, graphics, comments and suggestions to Larry Van Horn, Shortwave Directory Update, care of the Brasstown address. I look forward to hearing from each of you regarding this exciting project.

While you're at it, why not jot down some of your more recent logs and drop them in the mail for the ute world logging section? I always look forward to your logs and it is especially nice to hear from first time reporters. Look at the format I type them in, emulate that style and you will do just fine. So right now, let's check out what you have been hearing this month in the world of utility listening.

MT

Utility World

Utility Loggings

Abbreviations used in this column

AB	Air Base	MCAS	Marine Corp Air Station
AF	Air Force	Meteo	Meteorology
AF1	Air Force One	MFA	Ministry of Foreign Affairs
AFB	Air Force Base	m/v	motor vessel
CAR-1	Caribbean Aero area 1	NASA	National Aeronautics and Space Administration
CG	Coast Guard	nav	navigation
COMCEN	Communications Center	NDB	Non-directional beacon
comms	Communications	NTM	Notice to Mariners
COMSTA	Communications Station	ops	Operations
CQ	General call for any station	OSC	On-scene commander
CW	Continuous Wave (Morse Code)	OTHB	Over-the-horizon backscatter radar
db	decibel	QRM	Interference
EAM	Emergency Action Message	PAP	Polish Press Agency
Fax	Facsimile	PTT	Post & Telegraph Administration
FEMA	Federal Emergency Management Administration	RTTY	Radioteletype
GHFS	Global High Frequency System	SAR	Search and Rescue satellite
HF	High Frequency	SATOR-A/B	Simplex Telex over radio, modes A/B
HMS	Her Majesty Ship	SUNA	Sudan National News Agency
In the green	Rolling code frequency hopping	s/v	sailing vessel
IRNA	Iranian News Agency	Unid	Unidentified
LDOC	Long Distance Operational Control	USB	Upper Side Band
MAC	Military Airlift Command (no longer exists)	VFT	Voice Frequency Telegraphy
MAP	Maghreb Arab Press (Morocco)	wpm	words per minute
MARS	Military Affiliate Radio System		
mb	millibar		

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

- 119.3 OLT21-Prague Meteo, Czechoslovakia, with fax weather chart at 1610. (Ary Boender-The Netherlands)
- 206.0 OEX-Unid NDB station at 0258. (Bob Pettengill-Blanchard, OK) *Probably OEK on 211 kHz from Roanoke, TX-Larry.*
- 226.0 SNL-Unid NDB station at 0256. (Pettengill-OK) *SNL-Shawnee, OK, on 227 kHz-Larry.*
- 260.0 OUN-Unid NDB station at 0255. (Pettengill-OK) *OUN-Norman, OK, on 260 kHz-Larry.*
- 290.0 OLR-Unid NDB station at 0254. (Pettengill-OK) *OLR-Chickasha, OK, on 290 kHz-Larry.*
- 315.0 GGU-Unid NDB station at 0300. (Pettengill-OK) *GGU-Prague, OK, on 314 kHz-Larry.*
- 320.0 CLK-Unid NDB station at 0253. (Pettengill-OK) *CLK-Clinton, OK, on 320 kHz-Larry.*
- 334.0 RQO-Unid NDB station at 0252. (Pettengill-OK) *RQO-EI Reno, OK, on 335 kHz-Larry.*
- 385.0 OFZ-Unid NDB station at 0249. (Pettengill-OK) *OFZ-Lawson, OK, on 388 kHz-Larry.*
- 405.0 OK-Unid NDB station at 0302. (Pettengill-OK) *OK-Oklahoma City, OK, on 406 kHz-Larry.*
- 434.0 WLO-Mobile radio, AL, with CW weather and traffic list at 0309. (Pettengill-OK)
- 439.0 OST-Oostende Radio with CW traffic list at 1000. (Boender-Neth)
- 442.5 FFB-Boulogne-Sur-Mer Radio, France, with CW traffic list at 0810. (Boender-Netherlands)
- 510.0 XKQ-Unid NDB station at 0246. (Pettengill-OK) *Probably XKQ-Ft. Sill, OK-Larry.*
- 518.0 GNI-Niton Radio, England, with SITOR-B nav warnings at 0820. GCC-Cullercoats Radio, England, with SITOR-B nav warnings at 0850. (Boender-Neth)
- 525.0 DAN-Norddeich Radio, Germany, with CW nav warnings at 2105. (Boender)
- 1705.0 OXB-Lyngby Radio, Denmark, with USB nav warning at 2140. (Boender)

- 2670.0 NMN13-CG COMSTA Cape Hatteras, NC, with NTMs and weather, full ID at 0143 then sign off in USB. (Neal Perdue-Madison, AL)
- 3207.0 Unid stations CJDJ5 working KAQ5 using SITOR-A at 2257. (Boender)
- 3241.0 NMF-Boston, MA, with fax surface analysis at 0530. (Oldbridge-NJ)
- 4045.0 Unid fax station with 50 mb prog chart and sat photo at 0745. New NPM frequency? (J.F.Oldbridge-NJ)
- 4175.0 FNEB-m/v Folgoet with SITOR-A message at 1638. (Boender-Neth)
- 4178.0 LYOB-m/v Mindaugas with SITOR-A traffic at 2315. (Boender-Neth)
- 4180.0 PHSL-m/v Stella Procyon with SITOR-A messages at 2325. (Boender)
- 4372.8 Giant Killer working various letter-number-letter call signs in USB at 0000. I am new to utes, who am I listening to? (James Ashe-Weymouth, MA) *Welcome James, you have caught a neighbor of yours, the US Navy. This group is down the coast in the Virginia Capes (VaCapes) operating area. All the letter-number-letter stuff is primarily aircraft and ships-Larry.*
- 4470.5 Navy type communications heard here in USB at 0048, possibly MARS. (Henry Brown-E. Falmouth, MA) *Bingo, my notes indicate Navy MARS-Larry.*
- 4543.0 FDY-French AF Orleans with RTTY test tape at 1740. (Boender-Neth)
- 4926.0 FDC-French AF Metz with V CW marker at 1750. (Boender-Neth)
- 5080.0 Sierra 1 working unid station, told to check his XAE in USB at 1400. (SKG-CA)
- 5150.0 Fireworks 32A and 10 working each other in USB at 1400. (SKG-CA)
- 5211.0 WGY933-Pikesville, MD, working WGY912-Special FEMA facility at Berryville, VA, in USB at 0010. (Ed Rausch-Cedar Grove, NJ)
- 5301.0 OLX-PTT Prague, Czech? with CW V marker at 0855 parallel 8142.0. (Boender-Neth) *I think, Ary, that Prague has returned to the air-Larry.*
- 5550.0 Conversation in French concerning a moose hunt! One moose was already in the bag and more had been seen. What is interesting about this is that the frequency is an aero frequency in the CAR-1 family. I know where it came from Northern Quebec, but I cannot tell you more, in USB at 2330. (Jacques d'Avignon-Cornwall, ON Canada) *Welcome back, Jacques, nice to meet you in Atlanta, hope we can do it again-Larry.*
- 5690.0 Caribbean Inter Island Police Network. Sierra 1 working Sierra 2 and 3 in USB with an all points bulletin at 2345. (Rausch-NJ) Two aircraft calling Portishead and Prestwick in USB at 0217. (Perdue-AL)
- 5695.0 Plymouth Rescue working Rescue 51-R193. Mentioned this was RCC England secondary frequency and gave COMSTA Boston a fit on 5696 at 0002 in USB. (Roger-Cape Cod)
- 5696.0 Rescue 1485 working COMSTA New Orleans with flight ops message in USB at 0245. (Brown-MA) *US Coast Guard air to ground channel-Larry.*
- 5777.5 LRO-Buenos Aires, Argentina, with Spanish fax photos at 0030. (Oldbridge-NJ)
- 5785.0 AOK-US Navy Rota, Spain, with fax weather chart at 0615. (Oldbridge-NJ)
- 5908.0 Unid station sending a fax USA weather chart at 0645. (Oldbridge-NJ)
- 6200.0 WMVF-NOAA Ship *Albatross 4* with phone patch to Maryland Marine Medical Advisory Service via NMN-Portsmouth on 6501.0 in USB at 1535. (Mike Muth-LaPlata, MD)
- 6227.0 s/v *Moonbow* (in US Virgin Island) working m/v Serious (at Fort Lauderdale, FL) in USB at 0001. (Perdue-AL)
- 6288.0 IGJB-m/v *Bormida* with V CW marker at 2138. (Boender-Neth)
- 6425.0 URD-St. Petersburg Radio, Russia, with DE CW marker at 2134. (Boender)
- 6460.0 SAB33-Goteborg Radio, Sweden, with SITOR-A transmission at 2130. (Boender)
- 6501.0 Aircraft B6T working District 7 Miami Ops via simplex phone patch from COMSTA Portsmouth. B6T was OSC in SAR case involving tug taking on water, tug was enroute to San Salvador. CG Rescue 2122 dropped pumps to vessel which continued to its destination. In USB at 0405. (Rausch-NJ)
- 6684.9 Fisherman chatting in USB at 1719, 2041 and other times. Heard daily at these hours. Unlike most others reported, this guy's language would make his mama proud. (Chris Hulse-Eugene, OR) *Hummm, totally new concept-Larry.*
- 6716.0 Comak Flight Maintenance working Trenton Military in USB at 2258. (Hulse-OR)
- 6830.0 Unid fax station with weather chart at 0645. Bracknell?(Oldbridge-NJ)
- 6928.0 Fisherman chatting in USB about gear, fish, and fax pictures at 1656. (Hulse-OR)
- 7628.0 Unid fax station sending sat image of Europe at 0545. (Oldbridge-NJ)
- 7880.0 DDK3-Hamburg, Germany, with fax weather charts at 0230. (Oldbridge-NJ)
- 8049.0 9BC25-IRNA Tehran, Iran, with RTTY news at 1935. (Boender-Neth)

- 8130.0 FDC-French AF Metz with V CW marker at 0902. (Boender-Neth)
8142.0 OLX-PTT Prague with V CW marker then numbers (female voice in USB) at 0855. (Boender-Neth)
8297.0 WHW337-Mobile, AL, limited coastal working m/v *Ft. McHenry* at 2105 in USB. KGR-Harvey, LA, limited coastal working unid m/v off Maracaibo, Venezuela, in USB at 0015. WAC-Morgan City, LA, working m/v *S.T. Todd* in USB at 2000. (Perdue-Al)
8379.0 LAIJ2-m/v *Dyvi Baltic* with SITOR-A messages at 1010. (Boender)
8382.0 ESAY-m/v *Tourguene* with SITOR-A messages at 0914. (Boender-Neth)
8385.0 TCGA-m/v *Geyve* with SITOR-A messages at 1000. (Boender-Neth)
8357.0 SPE41-Szczecin Radio, Poland, with DE CW marker at 0928. (Boender)
8764.0 GDKG-British warship HMS *Coventry* working traffic with Portishead Radio. Coventry was off the Bermuda coast in USB at 2320. (Rausch-MA)
8806.0 WLO-Mobile Radio, AL, working P3PT4-m/v *Apache* in USB at 1415. (Gordon Levine-Anaheim, CA)
8846.0 New York LDOC working Cayman 631 aircraft in USB at 2046. (Perdue-Al)
8930.0 Stockholm LDOC working many Delta and Alitalia flights with weather for Europe in English, Spanish, French, and German. Suspect United Nations relief operations 0530-0630 in USB. (Perdue-Al)
8967.0 Foxtrot Tango working Lima in USB at 0201. Tribe 61 answering signal check request from MAC Aircraft 267 in USB at 0229. Papa working Screwtop 01 and FT in USB at 0230. (Brown-MA)
8972.0 7ED working Card File 711 at 0120 in USB. (Bob Madorin-Lenexa, KS)
8984.0 CG Rescue 1482 1712 and MAC 95302 working SAR comms with COMSTA New Orleans. Case was rescue ops for freighter *Holstein* which sank in storm in Gulf of Mexico. (Rausch-NJ) San Diego Air calling JX Tac in USB at 1540. Also heard Portsmouth and Miami working various aircraft in USB. (Hulse-OR)
8993.0 Whiskey-Whiskey 534 working MacDill GHFS with phone patch to Autovon 476-2547. Call was to Goldenhawk and Asroc. Mentioned HF antennas being down for the day. Goldenhawk is designator for Maine OTHB radar site. In USB at 1106. Ascension Island GHFS working Camp Lejuene MARS station in USB at 0244. (Brown-MA)
9017.0 Unid aircraft calling Andrews AFB in USB at 2355 for phone patch to Crown Control. Problem: keying of a transceiver creates QRM that thwarts Air Force 1 use of frequency. Apparently this plane shadows AF1 and uses the same frequencies during routine ops. Its pilot is alerting Crown of problem and why he will not respond to its calls - he doesn't want to step on AF1. Crown says AF1 doing a "Nationwide Timberwolf call" at moment. (Hulse-OR) *Timberwolf is George Bush and Nationwide is UHF radio system with 415.7 being the downlink from AF1 or other VIP aircraft-Larry.*
9023.0 Toll Gate working Apparatus with some sort of exercise in USB at 2330. (Robert Thomas-Bridgeport, CT)
9240.0 LRO64-Buenos Aires, Argentina, with Spanish fax photos at 2345. (Oldbridge-NJ)
9318.0 Unid fax station on same schedule as NAM with sat photo of North Atlantic, so QRM from a RTTY station at 0545. (Oldbridge-NJ)
9459.0 ZKLF-Auckland, New Zealand, with fax weather chart at 0815. (Oldbridge-NJ)
9814.0 GFH-COMCEN Hong Kong with CW CQ marker at about 7 wpm in 1835. (Zealor-Hackensack, NJ)
10015.0 NOAA 43 (WP-3) working KJY-74 with hurricane traffic between 0106-0230 in USB. (Brown-MA) Two Spanish men laughing and discussing kilos. Suspect drug runners in USB at 0450. (Perdue-Al)
10069.0 HEE51-Berne, Switzerland, working aircraft 5NAWE10 in USB at 0430. (Perdue-AL)
11176.0 Reach 60181 working Hilda via Ascension GHFS station in USB at 0220. Shark 38 working Albrook GHFS for signal check in USB at 0226. Whiskey 534 working Loring GHFS in USB at 1056. Shark 84 with phone patch to Raymond 9 (Howard AB, Panama) via Albrook in USB at 2319. Shark 84 was airborne out of Columbia for Howard. Bear 16 (Marine KC-130) out of MCAS Cherry Point working unid station in USB at 2319. (Brown-MA)
11198.8 LYNX-MFA Lagos, Nigeria, with SITOR-A traffic at 0540. (Robert Hall-RSA) *I hope everyone is paying attention; yes, this is the same LYNX on CW. This independent logging confirms what I heard from another source at the Atlanta MT convention. Thanks, gentlemen, for helping solve another major HF mystery by staking out a station and its associated frequencies for some meaningful traffic to identify the station. Very nice job!-Larry*
11201.0 CG COMSTA Portsmouth working CG 1485 in USB at 1432. (Levine-CA)
11214.0 Papa and Mike working Black Eagle 02 in USB at 0301. FT/XAA/XBW working each other mentioned "Playground Yankee". (Brown-MA)
11243.0 Offutt AFB working Mainsail in USB at 2345 with EAM broadcast. (Stafford-IL)
11396.0 Jakarta aeradio working Qantas 32 in USB at 1406. (Levine-CA)
11422.5 AF Comms? Mercedes working Unid station, heard MacDill mentioned in USB at 0140. Also heard some comms in the green. (Pettengill-OK)
11467.0 SNN299-MFA Warsaw with RTTY 5F groups and plain messages at 1610. (Boender)
12486.0 9HAM3-m/v *Xanadu* calling Berne Radio using SITOR-A at 1322. (Boender-Neth)
12495.0 SQCW-m/v *Uniwersytet Warszawski* with SITOR-A messages to Polsupply Szczecin at 2030. (Boender-Neth)
12736.5 TAH-Istanbul Radio, Turkey, with CQ CW marker at 2006. (Boender)
12801.0 TAH-Istanbul Radio, Turkey, with CQ CW marker at 2003. (Boender)
12815.0 LYL-Klaipeda Radio, Lithuania, working LYNF in CW at 1950. (Boender) *Note new callsign from Lithuania callsign block-Larry.*
12877.0 UJY-Kalinigrad Radio, Russia, working unid vessel in CW at 2032. (Boender)
12933.0 URL-Sevastopol Radio, Ukraine, with RTTY messages at 1455. (Boender)
12940.0 LZW53-Varna Radio, Bulgaria, working several ships in CW at 2027. (Boender)
12997.5 UFB-Odessa Radio with CW traffic list at 1500. (Boender-Neth)
13155.0 W9F working J7Z in USB at 0130. Overwork working J7Z in USB at 0140. (Madorin-KS)
13217.0 Nobleman working Sandblade in USB for radio check at 1831. (Hulse-OR)
13267.0 Khabarovsk, Russia, VOLMET with aviation weather in Russian in USB at 2315. Khabarovsk is about 250 miles south of Vladivostok. (Rausch-MA)
14483.5 NNN0ZZ-USS Kitty Hawk (CV-63) working NNN0UTO with priority and routine phone patch traffic in USB at 0240. (Pettengill-OK)
17000.0 Vladivostok with Russian newspaper in fax mode at 0030. (Oldbridge-NJ)
17015.7 P-Single Letter CW HF Beacon Kalinigrad, Russia, at 1056. (Boender)
17016.0 S-Single Letter CW HF Beacon Arkhangelsk, Russia, at 1056. (Boender)
17016.0 C-Single Letter CW HF Beacon Moscow, Russia, at 1056. (Boender)
17366.4 5YE3-Nairobi, Kenya, with fax weather chart at 0015. (Oldbridge-NJ)
18221.0 CNM76-MAP Rabat, Morocco, with RTTY news at 1625. (Boender-Neth)
18496.0 CNM80-MAP Rabat, Morocco, with RTTY RY test tape at 1628. (Boender)
18646.6 PCW1-MFA The Hague, Netherlands, calling TVVF, TVMS, TVPK using SITOR-A at 1420. (Boender-Netherlands)
18648.5 SOT265-PAP Warsaw, Poland, with SITOR-B news at 1435. (Boender)
19463.0 STK-SUNA Khartoum, Sudan, with news in French at 1658, RY test tape at 1710 then English news at 1725. (Boender-Netherlands)
19954.7 NASA VFT- phone chat in USB at 2345 in duplex with 20185.7 not always heard. All personal traffic, no technical stuff. (Hulse-OR)
21395.0 WA3NAN-Goddard Space Flight Center, MS, USA, with Space Shuttle audio broadcast in USB at 1600. (Boender-Netherlands)
25870.0 WFLA-Tampa, FL. Listened to an interview with the President. The signal was 30dB over S9 till about 2255, then it disappeared. Using FM mode. (d'Avignon-Ont) *This is a remote broadcast channel, nice catch, Jacques-Larry.*

The next time
you listen to a
numbers station,
try having a
Ruski Beer!
—Todd Dokey



The Scanning Report

Bob Kay

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

Cordless Month

During the month of December, cordless phone activity will begin to soar. The cold, winter wind and early evening darkness will make it more desirable to stay at home and use the telephone. The Christmas shopping season will also help to stimulate cordless activity. Cordless phones are popular gifts and it's almost certain that someone in your neighborhood will receive a cordless phone on Christmas morning.

As most of you know, cordless phones can be monitored between 46.610 and 46.970. Although the specific frequencies are split into two groups (Figure #1), it's only necessary to monitor the base frequencies. The cordless base transmits a "Full Duplex" signal that will allow you to hear both sides of the conversation. If you monitor the "Simplex" signal of the cordless handset, you'll only hear one side of the conversation.

Channel	Cordless	
	Base	Handset
1	46.61	49.67
2	46.63	49.845
3	46.67	49.86
4	46.71	49.77
5	46.73	49.875
6	46.77	49.83
7	46.83	49.89
8	46.87	49.93
9	46.93	49.99
10	46.97	49.97

Figure 1

offers voice scrambling between the base and handset. To scramble the signal, Radio Shack used a technique called "frequency inversion."

To experiment and familiarize yourself with frequency inversion, contact Ramsey Electronics, 2575 Baird Road, Penfield, NY 14526. Ramsey sells a frequency inversion kit, Catalog #SS-7 (\$29.95), that can be used to add voice security to your personal cordless phone. Since the unit is capable of scrambling and descrambling, it can be used to unscramble the signal from any cordless phone that utilizes frequency inversion. You are cautioned however, that the Electronic Communications Privacy Act of 1986, has made it illegal for a third party to decode any type of radio communication.

Readers living within a large city will discover that they can monitor hundreds of cordless conversations with nothing more than a small, indoor telescoping antenna. To monitor cordless phones in rural areas, you'll probably need an outside antenna. My two favorite anten-

More Targets

Cordless phones and baby monitors are not the only low power devices that can be monitored on your scanner radio. Here are a few additional frequencies to explore:

Cordless microphones: Search between: 49.50 MHz, 72-76 MHz, and 174-216 MHz. A few of the more popular frequencies are: 174.500, 176.200, 177.600, 180.400, 182.200, 186.600, 192.600, 202.200, 208.200, and 209.00.

Itinerant Frequencies: 35.04, 43.04, 151.490, 151.625, 158.40, 464.500, 464.550.



Why is December "cordless scanning month"?

nas for cordless monitoring are the Grove Scanner Beam, \$59.95, P.O. Box 98, Brasstown, NC 28902; and the MAX 46-49 MHz long wire dipole, \$49.95, Cellular Security Group, 4 Gerring Road, Gloucester, MA 09130.

Cordless phones can also be monitored with a mobile scanning rig. The best method is to park your car on a neighborhood street or in the parking lot of an apartment complex. Prior to taking your cordless activity on the road, be sure to check your local and state scanning laws. In some areas of the nation, mobile scanning can result in stiff fines and possible imprisonment.

Now that you know how to monitor cordless phones, I urge you to use caution. Cordless scanning will catapult you into the personal and private affairs of your friends and neighbors. If you have difficulty keeping a secret, or if you can't remain impervious to what is monitored, don't pursue cordless monitoring. Many friendships have been jeopardized by information that was gained from listening to cordless phones.

In addition to cordless phones, baby monitors have also entered into the scanning spotlight. These low powered, FM transmitters have the uncanny ability to transmit all the sounds from within an entire home. Baby monitors are especially interesting because folks rarely turn them off. This results in a continuous radio broadcast that can be monitored twenty-four hours a day. Here are the frequencies: 49.830, 49.845, 49.860, 49.875, 49.890.

During the holiday season, Santa will be "making a list and checking it twice." If you listen to the cordless and baby monitor frequencies on Christmas morning, you'll be the first to find out "who was naughty and nice." See you next year!

Treasure Hunt

This is your last chance to win a brand new, state of the art, tape saving device. The "Scan Record," is a small, black case, that can fit into your coat pocket. The front panel features a dial control for adjusting sensitivity, a red LED indicator, and a toggle switch for controlling the delay time.

The addition of a front panel A/B switch eliminates the need to remove the control cable from the recorder. Simply flip the switch, and the tape player can be manually operated.

The relay is 100% percent solid state. There are no distracting "clicks" to keep you awake during late night recordings. With the installation of a 9 volt battery, the Scan Record becomes completely portable.

The Scan Record does not have an internal speaker or volume control. If you want to hear the action while recording, a dual-jack adapter with an ear phone or extension speaker can be used to monitor a recording.

The Scan Record is manufactured by Capri Electronics, 1238 Highway, 160-B, Box 589, Bayfield, Colorado 81122. Retailing for \$47.00 dollars, the Scan Record is one of the best buys in town. For our November/December Treasure Hunt, Capri has provided two Scan Records that you can win. Here are the clues:

1. How much does it cost to have your copy of *MT* delivered with a protective cover?
2. The "Realistic" PRO-2026 is designed primarily for table top scanning. True or False?
3. I've ordered "SPK11" from Grove. What did I buy?
4. Can cellular be restored on the PRO-2026?
5. What is the 800 number for Grove Enterprises?

To win the Scanrecord, send your answers to the Treasure Hunt, P.O. Box 98, Brassstown, NC 28902. You can enter as often as you like, but each entry must be mailed separately. Post cards are encouraged. Sorry—Fax entries cannot be accepted.

Frequency Exchange

According to Rev. Mike Dieckmann, ice hockey fans that live in *St. Louis, Missouri*, can monitor the St. Louis Blues on 466.537 and 466.862. Maintenance for the St. Louis area operates on 464.000. Visiting ice hockey teams have also been monitored on the following:

Detroit Red Wings	464.550
Minnesota North Stars	465.025
St. Louis Blues	466.537/466.862
Philadelphia Flyers	49.83/49.875

Since we're already in Missouri, let's examine a list of *St. Louis* frequencies that were submitted by Neal Smith.

42.060	Missouri State Police	153.950	City airport fire
42.120	"	154.725	County Police F-7
42.220	"	154.830	County Police F-6
42.320	"	154.845	County Police F-3
42.380	"	154.875	County Police F-1
151.100	County Highway Dept.	155.130	County Police F-2
151.295	County Rangers Dept.	155.565	County Police F-5
153.830	City Fire Portable	155.655	County Police F-4
153.860	Webster Groves fire		

Our next invitation was sent by John Bunch. John lives in *Portland, Oregon*, and here are his favorite monitoring targets:

460.050	Police, license & warrant info	460.250	Detectives
460.100	Police, car to car	460.275	Police, tactical
460.125	Police, dispatch	460.325	North Precinct
460.200	Police, East Precinct	460.350	Detectives
460.225	Airport police	460.500	Detectives

As we enter *Dawson Springs, Kentucky*, pull out your scanner radio and check out the following frequencies.

39.280	Caldwell Co. Sheriff	48.30	Dawson Springs utilities
39.500	Dawson Springs fire ground	151.175	Kentucky Game Warden
		154.025	Caldwell Co. ambulance
45.32	Dawson Springs water dept.	154.115	Dawson Springs fire (main emerg.)

GUIDE TO UTILITY STATIONS 1993

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Further publications available are *Air and Meteo Code Manual*, *Guide to Facsimile Stations* and *Radioteletype Code Manual* (12th editions). We have published our international radio books for 23 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 reviews of our books by Bob Grove see *MT* 2/92, 3/92, and 9/92. All manuals are published in the handy 17 x 24 cm format, and of course written in English.

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154.280	Caldwell Co. fire dept.	155.700	Providence Police
154.310	Madisonville fire	155.650	Regional medical ctr.
154.400	Earlington fire dept.	159.210	Hopkins Co. Sheriff
154.665	Kentucky State Police	453.850	State Police
154.785	Hopkinsville Police Dept.	464.100	Dawson Springs, T.C.I. cable vision
154.800	Princeton Police Dept.		
155.160	Medical Center Ambulance Dept.	453.550	Kentucky State Police
		453.300	" State Police
155.625	Madisonville Police	453.550	" State Police

David Zantow, lives near *Janesville, Wisconsin*, and he has invited us to stop by for a cup of coffee. While you're waiting for your turn at the cream and sugar, let's take a peek at Dave's frequency list.

45.080	Rock County Hwy. Dept.	450.550	WISC Channel #3 TV
45.460	Jamesville Public works	450.850	WCLO/WJVL Radio
48.520	Wisconsin Gas co.	455.700	WCLO/WJVL Radio
49.560	Jamesville Sand & Gravel	452.750	Jamesville City Buses
151.280	Riot forces	452.900	WI State Police mobile
152.420	Jamesville Mall	460.075	Beloit Pol. Dept. Ch #1
154.800	Rock Co. Sheriff	460.200	Beloit Pol. Dept. Ch #2
155.580	Jamesville Police	462.175	Crown Cable Co.
155.715	Rock Co. Sheriff Chan. #6	464.550	Bergner's Dept. Store
159.090	Rock Co. Sheriff Dispatch	856.4375	Walworth Co. Sher. Ch #1
159.420	Wisconsin State Police		" #2
161.640	WGEZ Radio	857.4375	" #2
161.760	WBEL Radio	856.8625	Federal Express
450.745	WMBJ Radio		

If you haven't had your coffee, grab a cup to go! Our next stop is **Ridge Spring, South Carolina.**

42.08	Highway patrol	453.300	Salida Co. Sheriff
45.44	Saluda Co. Fire dept.	453.350	Edge Field Co. Sheriff
155.160	Monetta Rescue Squad	453.550	Aiken Co. Sheriff
155.220	Lexinton Co. ambulance	460.200	Lexinton Co. Sheriff

The above frequencies were provided by Robert H. Randall Jr. Thanks Bob, and we hope to hear from you again.

Our last stop will be the home of Bob Frazier. Bob lives in **Cohasset, Massachusetts**, and he spends his leisure time listening to the following frequencies:

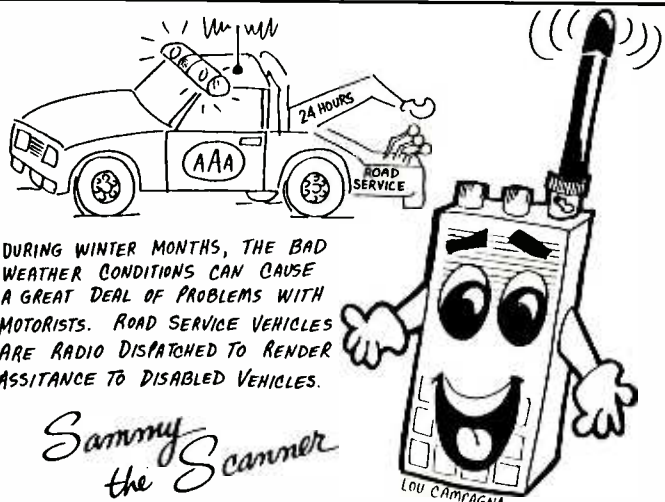
450.550	TV-4	455.1125	WHDH	460.4500	Boston Police
455.6125	TV-5	453.000	Boston Globe	460.225	Boston Police
450.6125	TV-5	470.6875	Blue Line Bus	460.175	Boston Police
455.3875	TV-2	470.6375	Green Line Bus	460.500	Boston Police
450.2500	TV-56	470.6125	Orange Line Bus	460.400	Boston Police
455.6500	WBZ	470.4125	Red Line Bus	483.3125	Boston Fire

Bob's complete list contains approximately 300 frequencies. It contains frequencies for several dozen communities including, Abington, Brockton, Canton, Duxbury, Kingston, Martha's Vineyard and Whitman. Also included in the list are frequencies for the U.S. Navy, Army Engineers, Trains, Civilian Air, State Police and many others. If you want the complete list, it's free. But there is a catch. You'll need to provide a #10 SASE, and your request must be postmarked prior to December 25. It's my way of saying, Merry Christmas! Requests that are post-marked after December 25, should include \$2.00 dollars to cover copying and handling costs.

Santa Scanning

As we all know, the frequencies used by our law enforcement officers are usually reserved for serious conversations. But if you're a resident of Transylvania County, in North Carolina, you can track the path of Santa Claus on your scanner radio.

The special broadcast, made specifically for civilians with scanner radios, is planned for sometime between 7 and 8 pm on Christmas Eve.



DURING WINTER MONTHS, THE BAD WEATHER CONDITIONS CAN CAUSE A GREAT DEAL OF PROBLEMS WITH MOTORISTS. ROAD SERVICE VEHICLES ARE RADIO DISPATCHED TO RENDER ASSISTANCE TO DISABLED VEHICLES.

Sammy the Scanner
LOU CAMPAGNA

Northeast Scanning News, P.O. Box 62, Gibbstown, NJ 08027



The frequency will be 154.860 MHz. According to Chief Deputy Jim Stroup, the residents love it. "We tried it one year, and the folks asked us if we were going to do it again."

Last year, to add to the drama, two deputies used their radios to simulate a chase between patrol cars and the reindeer-driven sleigh. "We do it for the kids," said Sheriff Milton Whitmire. "It lets them know that Santa Clause is here in Transylvania County. And some parents use the broadcast to get their kids to bed earlier." (News clipping from the Asheville Citizen-Times.)

Knock-Knock...

When an armed bandit robbed a Bank in Henderson County, North Carolina, he didn't get very far. When the robber ran out of gas, he knocked on the door of Gertrude Holbert. Unknown to the bank robber, Gertrude had been listening to her police scanner, and she had his full description.

Realizing that she had the bank robber standing on her steps, Gertrude called the authorities and then stalled the bandit until the police arrived. (Asheville Citizen-Times.)

Speeding for a Cause

There's a new law in Florida that will allow counties to add a \$12.50 surcharge to every speeding ticket. The new law will let counties add the charge provided they use the money for a radio system linking at least two agencies, such as the sheriff's department and fire department.

State representatives call it "a voluntary tax" that can be controlled by the driver. So if you don't want to contribute to Florida's new radio systems, don't get caught speeding.

Cancer Gun

Police officers have told Congress that there's a link between radar guns and certain forms of cancer. One Connecticut State Trooper, who rested the radar gun in his lap, blames his testicular cancer on using a radar gun for 15 years.

Civilians vs. Police

The president of the Patrolmen's Union in Lawrence, Massachusetts, is fighting to prevent civilians from becoming police dispatchers. "If you involve civilians in the Police Department, you'll be busting unions."

Chief Councilor, David Clayman said, "I do not believe that civilians would be able to manage the computer system or respond to emergency situations that could arise in the station."

What do you guys think? Should air traffic controllers be certified pilots? Should we require medical emergency dispatchers to be medical doctors? And what about ham radio operators? Heck, they should at least have a four year degree in communications, right? Send your comments to the Scanning Report, P.O. Box 98, Brasstown, NC 28902.

See you in 1993!



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BP70	16.99	FBE	5.99
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Scanner Modification	17.99

RELM RH-256NB HIGH BAND TWO-WAY RADIO



SPECIAL PACKAGE DEAL \$339.99
 (Plus \$9.00 Shipping Each)

16 channel digital readout two-way radio. Covers high band frequency range of 148-162 MHz without retuning. Perfect two-way radio for ambulances, police, fire, tow trucks, taxis, commercial companies who use this band. Features include CTCSS tones built-in, priority, 25 watts output, channel scanning, back lighted keyboard, message light, time out timer, scan delay, external speaker jack. Size is 2 1/4" Hx6 1/2" Wx10 3/4" D.

SPECIAL PACKAGE DEAL includes RH-256NB, mobile microphone, 1/4 wave body mount antenna, mobile mounting bracket and mobile power cord all for the low price of \$339.99

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Our best price ever on a full featured complete package hand-held scanner. Manufactured by Uniden. Features include 11 bands of weather, aircraft, public service, trains, marine, plus more (29-54 MHz, 118-174 MHz, 406-512 MHz), 10 channel banks, 10 priority channels, lighted LCD display, earphone jack, channel lockout, AC/DC operation, scans 15 channels per second, track tuning. Special package deal includes following accessories: AC adapter/charger, rechargeable Ni-Cad battery pack, flexible rubber antenna, carry case.

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 (\$7.00 shipping)

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BEARCAT BC-147XLT 16 CHANNEL BASE SCANNER

\$99.99 (\$7.00 Shipping)

Programmable, digital, AC/DC operation. Frequency coverage 29-54 MHz, 136-174 MHz, 406-512 MHz. Weather button, priority, lockout button, squelch includes AC adapter, telescopic antenna.

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UNIDEN BEARCAT BC 800XLT



DIGITAL BASE SCANNER

\$249.99 (\$8.00 Shipping)

Receive police, fire, ambulance, cordless phones, marine, trains, weather, ham, stock cars, public service plus much more. Frequency coverage 29-54 MHz, 118-174 MHz, 406-512 MHz, 806-912 MHz (continuous). 40 channels, AC/DC operation, digital programmable, memory backup requires 2 AA batteries (not included), telescopic antenna included, AC power cord included, external speaker jack, external antenna jack. Dimensions: 9 1/4" D x 4 1/2" H x 12 1/2" W. Channel lockout, direct channel access, scan delay, priority, digital display, auto weather button, automatic search, track tuning.

UNIDEN BEARCAT BC-950 XLT



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BC-950 XLT covers the following frequencies: 29-54 MHz, 118-174 MHz, 406-512 MHz, 806-954 MHz (excludes cellular). Features compact size of 6-5/16" Wx1-5/8" Hx7-3/8", scan delay, priority, memory backup, channel lockout, bank scanning, key lock, AC/DC power cords, telescopic antenna, mounting bracket supplied, one year factory warranty, search, direct channel access, track tuning, service search including preprogrammed frequencies by pushing a single button for police fire/emergency, aircraft, weather, and marine services plus exclusive optional features never available on any scanner before. First is an RF receive amplifier for boosting weak signals for only \$34.99 plus a CTCSS tone board is available for only \$59.99 to make this the number one scanner available in the USA. Optional cigarette lighter plug #950 MPC \$4.99.

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 ONLY (\$10.00 Shipping Each)

100 channel digital programmable mobile scanner, turbo scan up to 100 channels per second, lockout, priority, built-in automatic 2 second delay, dimmer control, back lighted keyboard, track tuning, direct programming of frequencies from front keyboard plus you can also program MR 8100 from your IBM compatible PC computer with software and cables included with scanner from Scanner World. Frequency coverage: 29-54 MHz, 118-174 MHz, 406-174 MHz, 406-512 MHz, 806-956 MHz. Dimensions: 7.9" W x 5.8" H x 1.9" D. Earphone jack, BNC antenna jack, DC power cord, mobile mounting bracket, internal memory backup, bank scanning; 10 banks of 10 channels in any combination.

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Learning the Way Around

Maybe it has something to do with the fact that I never felt obliged to "grow up"; I still love Christmas mornings! True, I now have to compete with Number One and Number Two Sons for the pile of presents under the tree, but it is still a gas. Since credit cards delay the pain, Christmas morning allows for maximum immediate gratification (translation: TOYS!!!). While I won't be looking for a pony under the tree this year, I do hope that Santa remembers my 16 bit audio board for my computer (I've been very, very good!).

Remember those advertisements in the back of comic books that encouraged you to leave the magazine open to the page showing the BB gun or bike so mom and dad would get the hint? I suppose I could leave this issue of *MT* open to my column in hopes that my Significant Other reads this first paragraph.

Enough already, Uncle Skip! Write Santa like the rest of us!

Okay, Boss. Just covering all the basics.

Actually, this article is written in anticipation of all those beginners out there in monitoring land who expect to find a shiny new receiver under their tree. Be it shortwave or scanner, I hope you get your wish. This rash of new rigs that hit beginners' hands around the holidays always signals a lot of extra mail in Old Uncle Skip's mailbox requesting help in demystifying an increasing number of bells and whistles.

So, applying a little positive thinking to your holiday gift desires, here is...

UNCLE SKIP'S GUIDE TO RECEIVER BUTTONS, KNOBS AND DOODADS

Let's start out with one obvious but often overlooked notion. When you first unwrap your long-awaited gift, before you attempt to twiddle even one knob... **READ THE MANUAL!!!**

You have no idea how much grief and aggravation you can avoid by taking this one simple step. Modern receivers are complex pieces of electronic wizardry. Many function switches have multiple purposes. You can miss half the fun by not boning up on the book that comes in the box. With that bit of scolding out of the way we can move on to other things.

The controls on any shortwave or scanning receiver can be grouped by general function. The controls either serve to manage the signal, the frequency, or the sound. In other words: what comes into the box, what goes on in the box, and what comes out of the box.

Signal Management

As soon as a signal hits the antenna and enters your receiver, it may run across a few common controls. The ANTENNA TRIMMER is a simple control that is adjusted for maximum signal level, either measured by the receiver's SIGNAL STRENGTH METER or by how loud things sound coming out of the speaker or through the headphones. Also, while much monitoring hobby time is spent chasing after weak signals, sometimes a receiver encounters signals that are too strong for its circuitry to properly process. This overloading can be dealt with by switching on the ATTENUATOR. This control reduces the incoming signal by some order of magnitude to allow clear listening of the overloading signal. Instead of, or in addition to the attenuator, many receivers will have an RF GAIN control. This control can be adjusted to maximum for digging out weak signals but can also be throttled back in the presence of more powerful stations.

Receivers capable of monitoring VHF and UHF frequencies are likely to be equipped with a SQUELCH control. This is especially useful on scanning receivers. Usually the squelch is adjusted by turning it down until you hear a hissing sound, then turning the knob back in the other direction slowly until the hissing just stops. This allows the receiver to block out noise that would stop your scanner on one frequency even if there was nothing to listen to. You can also adjust the squelch to a higher level to block out weak or unwanted signals.

One of the most important features of any receiver is its ability to distinguish between two signals that are close together in frequency. This is known as SELECTIVITY. Some receivers have a fixed selectivity built into their circuits. Many general coverage receivers have controls that adjust the signal separation ability for best conditions. Check your receiver out and see if it has any switches marked WIDE and NARROW. If so, you would probably choose to tune around in the WIDE position but then hit the NARROW button to block out adjacent channel interference once you find the station you are looking for. More advanced forms of signal separation will be found via controls named BANDWIDTH or FILTERS. These controls allow you to switch various filters into place for the best listening in the various modes your receiver is capable of tuning (More on modes in a few sentences).



Modern radio equipment can be confusing to the beginner.

Another signal selectivity tool found on some receivers is known as SYNCHRONOUS DETECTION. Receivers with this control inject a synchronized carrier frequency that eliminates distortion due to fading and interference from nearby stations. A control marked SYNC and possibly two lights marked UPPER and LOWER SYNC indicates that your new receiver has this defender of clear signals. Once you switch SYNC on, adjust the tuning dial while watching the lights. While you are doing this you will hear a whistling sound that reminds you of the transporter on the original Star Trek show. That's okay, it's supposed to do this. Adjust the tuning dial until the desired signal is as clear as possible.

There are all manner of signals out there in radio land: AM, FM (WIDE and NARROW BANDWIDTH), SINGLE SIDEBAND (UPPER and LOWER), CW and others. To turn these signals into something you can hear requires various circuitry for each mode. Think of it as having several radios all in one case. Switching between these different signals is done with the MODE switch or switches. Many scanning receivers automatically swap in and out of modes and bandwidths based upon the frequency you are tuning. This is because most signals conform to established standards in the various portions of the VHF and UHF bands. But, notice I said MOST signals. To account for the exceptions, some scanners will also include a MODE switch to allow you to track down those out of the ordinary signals that are so much fun to log and send in to The Scanning Report.

If your general coverage receiver does not have a mode switch, look around for a BFO switch. BFO stands for BEAT FREQUENCY OSCILLATOR. This switch and its adjacent BFO PITCH control will allow you to adjust your receiver to interpret CW and SSB signals. In the presence of a thumping carrier (indicating CW) turn on the BFO and adjust the pitch control for a pleasing tone. If you hear something that

sounds like someone doing a really bad Donald Duck imitation, that is Single Sideband (SSB). Turn on the BFO and adjust the pitch up and down until the voice becomes more human.

Many receivers will have some form of readout to allow you to judge SIGNAL STRENGTH. Your receiver may have a meter, a series of little lights known as LEDs (LIGHT EMITTING DIODES) or perhaps a single light that brightens and fades in relationship to the signal. In any case, these readouts will help you locate and properly tune the signals that you seek in conjunction with the controls we have just discussed.

Frequency Management

If you have any doubt that the world has become a complicated place, just take a look at the front panel of a modern receiver. For years, the only input device for frequency management was the simple tuning dial. Modern receivers go far beyond that, often providing multiple ways to tune in your favorite stations. Lower cost receivers still depend on traditional ANALOG tuning. This is usually accomplished with one control that sweeps a needle across a dial. Since shortwave receivers cover such large blocks of frequencies, this type of tuning will also utilize a BANDSWITCH to allow the tuning needle to be used for multiple bands.

Many receivers utilize DIGITAL tuning. Instead of a needle sweeping across a dial, these receivers have a digital readout that displays the tuned frequency. Putting those numbers up on the screen can be done in many ways—spinning a traditional manual tuning dial, punching numbers on a keypad (similar to the buttons on a phone) or calling up a stored memory.

Manual dial tuning may have multiple speeds to allow for quick coverage of large groups of frequencies. Keypad entry can be used to put a radio right on a desired station. It can also be used to enter frequencies into a receiver's memory for future use.

Memory is one of the greatest innovations in modern receiver design. Scanning receivers depend on memories to move through the many frequencies that make VHF and UHF monitoring so much fun. Memory storage and even scanning features can be found on shortwave receivers as well. Receivers with scanned memory will often have keys that allow you to switch between scanning and manual operation. Some receivers will also give you control over the scanning speed. Many scanners are equipped with PRIORITY features to allow the receiver to return to one or more special interest frequencies while it is scanning a larger group of frequencies. Digitally controlled receivers may also have BANDSWITCH controls to allow you to zero in on particular bands of frequencies.

At this point it is probably obvious that any receiver you are likely to find under your Christmas tree is going to be bristling with

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buttons. This is another chance for me to plug the notion of reading the manual. Many of the buttons and controls used for frequency management will have more than one use. This usually means that the receiver will have one or two additional buttons that shift the use of the other buttons on the rig. Knowledge of your own receiver's idiosyncrasies will get you on the right track. Don't forget to practice the various multiple button functions. This will help you to work quickly when the signals come rolling in.

Sound Management

You don't realize how important sound quality is until you spend many hours listening to hard to find stations. Even when you are tuning strong signals, good audio quality makes listening a pleasure.

The most basic sound management control is the VOLUME or AF GAIN control. This changes the audio level. This is often supported by a TONE control to allow you to adjust the bass and treble of the signal for best listening. Sophisticated receivers may have AF filtering controls that modify the audio signal in the same way that RF filtering treats the incoming radio signal.

A feature found on some scanning receivers is a switch for SOUND SQUELCH. When this is switched on it prevents the scanner from locking on to a signal that is not carrying any audio. The ability to skip over dead carriers

makes scanner monitoring much more enjoyable and efficient.

Otherness

Battery powered receivers usually are equipped with a BATTERY LEVEL meter. This is sort of a gas gauge for your radio. Battery powered rigs will often have a switch that allows you to turn the receiver's dial lights on and off. This is a power management control that can really stretch your battery life.

Since time of day is an important factor in world monitoring, many receivers are equipped with digital clocks. These clocks can also include timers that allow you to turn the receiver on and off automatically. Many modern portables have controls that allow them to be used like good old fashioned clock radios, even including ALARM and SLEEP buttons. Of course, receivers with these time features will have controls that allow setting of the clock and the timers.

This quick trip through receiver controls should give you something to dream about instead of visions of sugarplums. Hey, that reminds me, has anyone ever checked to see if Rudolph's nose emits RF interference? Where did I put my frequency counter?

Merry Christmas, Happy Chanukah, Happy Kwanza, Happy New Year, Happy Boxing Day and Great Winter DXing!

M
T



Answering the Mail

The mail is running about hip deep in the Federal File so we will dedicate this month's column to your letters.

Canadian Stealth Visit

Robert Smith from British Columbia sends us some interesting notes concerning the visit of one of Holloman AFB's F-117As to a recent airshow at CFB, Comox. Robert says that a pilot at the show described the unusual security procedures surrounding the F-117As visit. The pilot said the aircraft had its own guard consisting of six armed marines that accompanied the aircraft at all times. When it came time to move the aircraft, all Canadian personnel were confined to quarters and were not allowed outside until the aircraft was safely back in its own hangar.

If you think that's strange, read on. To fool any Russian satellites that might be passing overhead, security personnel painted the silhouette of an F-117A on the tarmac, tricking any sky spies into thinking more stealth aircraft were at the base than there were! Robert also sent in along the frequencies used at the airshow. Robert says he would like to know if any Federal File readers know the identities of "YEAGER" and "DEERHUNTER" and would also like to correspond with other monitors to exchange British Columbia and Washington frequencies.

CFB COMOX AIRSHOW FREQUENCIES

Frequency MHz	Description
126.200	Tower
123.700, 227.600	Terminal
283.700	Departure
134.100, 342.900	Approach
344.600	Weather
118.600, 282.200	ATIS
378.500	Radar ATC
384.500	Radar ATC
316.500	Base Operations
363.000	442nd SAR squadron "Snake" ops.
278.400	414 Utility squadron "Yogi" ops.
308.600	VP 407 ASW squadron "Demon" ops.
361.900	RCAF Snowbirds demo team

Ground Frequencies:

Ch 1 - 149.150	Tower (fire/crash trucks on runways)
Ch 2 - 149.350	Base Taxi/Commanders pagers
Ch 3 - 149.650	Military police
Ch 4 - 149.800	Squadron services/EOD

Following are NORAD Frequencies used at CFB Comox during five day exercises involving Canadian aircraft and aircraft from NAS Whidbey Island and McChord AFB, Washington.

Frequency	Description
364.200 MHz	AICC
281.600 MHz, 327.900 MHz, 346.200 MHz	primary controller, very active,
9023 kHz, 11.214 kHz and 18.067 kHz	

Whispering Evergreens

East Brunswick, New Jersey, monitor Louis Shirley says that his town played host to a visit from Mrs. Bill Clinton. While monitoring her visit, Louis noted the code name "Evergreen" used in conjunction with Mrs. Clinton. Louis goes on to say all Secret Service communications were very low powered (simplex) and were hard to hear even at his post which was located only a mile away from where Mrs. Clinton was speaking.

Peachy Monitoring In Georgia

William Shaw writes us from Sautee, Georgia, where he has the distinct privilege of monitoring the local military from the middle of a military training area. William's QTH is located on the northern slope of Yonah Mountain (in White County) where fast movers from Shaw AFB and Dobbins AFB buzz his house daily. F-15s usually zoom in from east flying west and at a generally lower altitude than William's 2,000 ft. elevation.

William says he has his own (admittedly low tech) early warning system that gives him advanced notice of the F-15's arrival. His dog Queenie starts barking whenever they are approaching and this gives William enough time to rush outside and see the fighters peeling off to the south over Blood Mountain. Various helicopters have also been seen in the Yonah Mountain area as well as turbo prop and four-engine jet aircraft.

Although it seems that William has a front row seat to the action he says he isn't having any luck finding the frequencies used for communications by the aircraft. He asks if any Federal File readers can shed any light on the subject? William also adds that he is a ham (W2WVA) and if any F-15s want to call him up on 147.555 MHz, he would be more than glad to answer up!

Royal Crown

An anonymous writer from Ohio writes in and says he monitored Air Force One recently

and said during a phone patch someone asked to "bring it up on ROYAL." The writer wants to know just what "ROYAL" is, thinking it might be a new HF or SATCOM frequency.

In actuality, "ROYAL" is neither: ROYAL or ROYAL CROWN is the code word for parties wanting to establish an encrypted (scrambled) phone link. Scrambling is being reported more often especially during the recent heated election campaign. Most Air Force monitors report the frequency pair of 407.850 MHz/415.800 MHz as being the most active.

Home on the Range

Another monitor having a front row seat on all kinds of military action is Richard Ashely. Richard lives near the Utah Test Range (UTR) and describes the coming and goings of military aircraft using the range as "awesome." On many occasions Richard has observed the aerial operations at UTR from a nice vantage point on public land overlooking the range.

The pyrotechnic displays produced by various aircraft on bombing and strafing runs are exciting to watch and Richard also brings along a scanner so he can listen in on the pilots strutting their stuff. Richard sends us these frequency loggings from the UTR and Dugway Proving Ground area.

Frequency	Description
345.950 MHz (nbfm)	Michael AAF/Dugway
349.850 MHz (nbfm)	Michael AAF/Dugway
154.340 MHz	Soft Lake Co. Arson Investigators & Fire Dept.
154.430 MHz	Salt Lake Co. Sheriff/Detectives
154.910 MHz	Salt Lake Co. Sheriff/Detectives

Richard adds that at no time has he ever ventured on to the range or test facility uninvited and suggests that no one ever do so. Richard says that he talked to an Air Force major who was very concerned about your Federal File editor's recent visit to the Melrose Bombing Range in New Mexico. He cautions that anyone caught on a bombing range is trespassing on government property and is also at risk from being bombed or blown up from unexploded ordinance. The major went on to say the military will not hesitate for a minute in apprehending someone trespassing on their ranges for any reason. Any individuals caught on government land will find themselves before a federal judge facing stiff fines!

The Federal File has never advocated trespassing on government property and doesn't advise anyone to run around on a range where bombs are falling or unexploded ordinance is

lying around. Concerning my trip to the Melrose Bombing Range, at no time was I on government land and I viewed the F-111s, coming and going, from a hill located on a public road overlooking the range. Using the topographic maps and aviation maps that I brought with me, I made sure that I didn't go where I wasn't authorized. In the course of my visit, several Air Force vehicles passed me and didn't show any concern over my being parked. One even stopped to ask me if my car was broken down. When I told him I was just watching the planes he grinned and said "Neat, huh?" and drove away.

If you decided that you want to visit a military range, I advise you to contact the controlling agency that oversees the area. On occasion, the ranges have been known to put on open houses and give the public a chance to see various aircraft dropping bombs and attacking targets on the ranges.

Speaking of Melrose

Federal File readers will remember that after the Melrose Bombing Range feature ran we heard from a Melrose Municipal Judge, who sent in some frequencies from the nearby Cannon AFB in Clovis, New Mexico. Judge Helwig graces our pages again with another list of Cannon frequencies. The Judge works for Tucson Mobile and has been working on phone systems used at Cannon.

Cannon AFB, New Mexico

Frequency	Description
138.050	CVI
138.075	OSI Ch. 1.
138.175	OSI Ch. 2.
139.625	Supply
148.100	Maintenance (CRASH)
148.450	Maintenance (430)
148.500	Maintenance (428)
148.575	Maintenance (524)
149.200	Maintenance (munitions)
149.275	Maintenance (munitions)
149.325	Range (Contractors managing bombing range)
149.500	Maintenance (525)
150.325	Taxi
163.375	Security Police CH. 1.
163.4875	Security Police CH. 2.
163.5125	Intel
163.5875	POL
165.0125	Ramp
165.0375	Communications
165.1125	Commander's Net (output from repeater)
173.4375	Hospital
173.5125	Prime Beef
173.5375	EOD
173.5875	Fire Dept/Crash
173.4125	New fire/crash
407.375	Mobility and Comm teams
407.450	Page Bridge

Aurora Update

Robin Hartford from Newburyport, Massachusetts, sent in a clipping from the *Irish Independent*. It seems that a hypersonic aircraft (possibly the top-secret Aurora Project aircraft) has been rattling windows and scaring sheep in remote western Scotland. Federal File readers will recall that the Aurora aircraft had been heard and seen flying near the RAF airbase at Machrihanish, Scotland. Guy Norris of *Flight* magazine says the aircraft is being flown from its base at Groom Lake, Nevada, to an atoll in the Pacific, then on to Scotland to refuel before returning to the U.S. at night. Flying on the edge of space and powered by a "pulsar" engine, the aircraft is being tested on missions that encircle the globe.

Earthquake monitoring seismographs have been triggered across California and strange house-shaking rumbles, along with unique "donuts on a rope" contrails have been recorded in Texas and Colorado. Your Federal File editor even photographed one of these strange contrails over his house in Texas.

Because of the extremely high cost of keeping these black aircraft under wraps and also because of public pressure, it looks as though the US Air Force or the CIA (or whoever operates the craft) will be forced to reveal the Aurora Project (also code named "Senior Citizen") to the world soon.

In a recent essay in *Air and Space* magazine, John Pike, director of the Space Policy Project and Steven Aftergood, director of the *Project on Government Secrecy*, offer the opinion that the high cost of keeping "black" military programs secret is not only sky rocketing but no longer necessary. According to a Defense Department estimate, the bureaucracy of government secrecy has exploded to the point that the cost of protecting classified information in industry reached a stunning \$13.8 billion in 1989 alone! To quote the article:

Secrecy in military aerospace has exceeded all reasonable justifications. No one would dispute that advanced military technologies require some degree of protection. But it is clear that the secrecy surrounding classified aircraft programs have reached the point of absurdity.. More importantly, secrecy tends to obstruct technological development by inhibiting communication of useful information, undermining peer review, increasing costs, generating public mistrust and, all too often, promotes fraud and abuse.

With the Cold War over and the US seemingly the most powerful country in the world, it makes you wonder just who they are hiding these airplanes from. Could it be the American taxpayer?



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Windshear: The Unseen Enemy

Have you ever wondered just what approach controllers are talking about when they advise pilots that "low-level windshear has been reported on the field"? Let's examine this weather phenomena and why it's so dangerous to aircraft landing and taking off during storms.

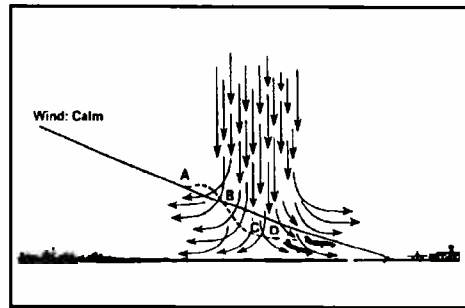
Most meteorologists define windshear as "any sudden change in wind speed, wind direction, or both." Windshears are created by air flowing over rough terrain, by warm air currents rising from sun-heated ground, by the collision of air masses of different temperatures and moisture content, and by thunderstorms. Most have no effect on airborne planes. Some, referred to as turbulence, are felt by passengers as bumpiness. So wind shear is a common occurrence.

The type of windshear that has brought about crashes, especially on takeoffs and landings, needed greater definition. To this end, field experiments were conducted by scientists and the National Center for Atmospheric Research, which established that a wind shear called a "microburst" is responsible for aircraft accidents. Microbursts are produced when a rainshower or thunderstorm creates a current of rapidly downward moving air—a downdraft—that spreads out horizontally in a starburst pattern when it strikes the ground, just as water from a faucet spreads out when it hits a sink.

Metecologists have long been aware that thunderstorms produce downdrafts that spread out horizontally in oval patterns at ground level, causing cool and sometimes violent winds. In 1974, Theodore Fujita, a meteorologist at the University of Chicago, observed that small starburst damage patterns were caused by small-scale, short-lived downdrafts. He named these starburst damage patterns "downbursts."

Following an investigation of the EAL crash at Kennedy in New York City on 24 June 1975, Fujita hypothesized that the crash probably took place when the airplane penetrated a downburst while landing. He later subdivided downbursts into several categories based on the size of their horizontal outflows. Downbursts having outflows with diameters of between 0.25 and 2.5 miles were called microbursts. This is the scale that we now know presents the greatest risk to aircraft.

Windshear endangers planes for the following reason. Once a plane hits a microburst, it encounters an increase in head winds radiating away from the center of the downdraft. This increase in head winds enhances the airflow over the plane's wings, causing the plane to pitch upward and forcing the pilot to compensate by reducing engine power. Then, as the plane passes through the downdraft center, the head wind rapidly decreases and becomes a tail wind, and the airflow over the wings suddenly falls off,



The anatomy of microburst encounter on approach

with a corresponding decrease in lift (see illustration).

Any additional loss of airspeed caused by the pilot reducing engine power and/or the downdraft of air pushing the plane toward the ground contributes further to this hazardous situation. If the aircraft is too close to the ground when this happens, there may not be enough time for the pilot to react and for the engines to regain sufficient power to compensate for the loss in airspeed. This is the likely sequence of events which led to the crash of Clipper (Pan Am) flight 759 during takeoff from New Orleans in 1982, as well as the Delta crash during landing at Dallas-Ft. Worth in 1985, and countless other weather-related aviation accidents through the years.

Microbursts are seasonal. They are associated with thunderstorms and rainshowers and occur—but are not limited to—spring and summer, or whenever such storms take place locally. Because precipitation is important in the production of a downdraft, microbursts are always associated with a precipitation cloud. The rain need never actually reach the ground, however. In the dry climates of the western states, rain may evaporate completely before it reaches ground level, yet still produce a strong microburst.

These above ground-level showers are a particular threat to aircraft because the precipitating cloud looks innocent and the pilot may be caught completely unaware. This is what happened on 31 May 1984 when a United Airlines jet was taking off from Stapleton Airport in Denver. The plane was departing during a seemingly benign shower in which only a few raindrops reached the ground. But just as the plane was lifting off the runway it penetrated a microburst and lost about twenty-five miles per hour of airspeed. The aircraft was only about ten feet off the ground and eleven hundred feet beyond the end of the runway, when the fuselage was punctured in three places by an antenna on the ground. The plane then moved out of the microburst and rapidly gained altitude but had to return to the

airport because the holes in the fuselage made it impossible to pressurize the cabin.

An almost certain disaster was narrowly averted because the pilot used a recently developed microburst flying procedure that involved pitching the plane up while moving at a low speed. However, this procedure does not mean that pilots can now safely fly through microbursts. If the tail wind had been only slightly stronger, a crash would have been unavoidable.

Analysis of data from field experiments indicates that the average microburst lasts only ten to twenty minutes, that the typical wind shear immediately following the downdraft hitting the ground is twenty-seven miles per hour, and that windshear increases to fifty-six miles per hour from five to ten minutes after initial impact and then decreases rapidly. Because of the small size and short lifetime of a microburst, existing wind-measuring systems at airports are frequently unable to detect microburst winds in time to warn aircraft.

Low-Level Wind Shear Alert Systems (LLWSAS) have been installed at over 110 major airports across the country and have proven to be of at least some value. Meanwhile, research is continuing to upgrade and improve their usefulness. For example, during the next several years a procedure is expected to evolve that will provide warnings of wind shears and other hazardous weather conditions to most major airports. This system will be based on new Doppler radars and will be capable of estimating wind speeds and direction every 200 to 300 feet within a fifty-mile radius.

The primary task ahead is to develop improved computer models that will rapidly extract wind shear and weather information from radar and other instrument data and communicate it in a concise, informative manner to pilots and controllers as quickly as possible.

Book Review

While browsing through the local library, I happened across a book that was perfect for us aero monitors who are also fascinated by ATC procedures. *Fundamentals of Air Traffic Control* is a complete guide to all aspects of ATC. Written by Michael Nolan, a former air traffic controller himself, and published by Wadsworth Publishing, Belmont, CA, in 1990, it covers air traffic control from its inception to its future. Profusely illustrated and containing many good photographs of ATC equipment, this book is a winner! I found the chapters on radar and navigation especially worthy of mention as they are easy to understand and comprehensive. Check your library for this one!

Readers Corner

• One of our many contributors this month is Roger West (Wisconsin). He tells us that "At the request of the National Oceanic and Atmospheric Administration, the Federal Communications Commission proposes to add 406.025 to the aircraft emergency frequencies that are already in use (121.500 to 243.000)." This proposal has not been finalized yet, but Roger says that it could be implemented by the end of 1992.

• And now for something special! Long-time contributor Bert Huneault (Canada) recently put me in touch with an organization called Computer Pilots Association of America.

Shortly after I wrote to the club headquarters, I received a large packet in the mail from them. The purpose of this club, formed in 1988, is to "expand and enhance the enjoyment of flight simulation software, especially Flight Simulator by Microsoft." Today, since there are so many other aero simulations available in addition to Flight Sim, the club has expanded its membership to include users of all computer aviation simulations. Air traffic control buffs who use TRACON are also welcome.

The organization has a newsletter, discounts to members for books on flight simulation programs, nav data sheets, access to an on-line bulletin board, tips, techniques, and resources to maximize the capabilities of flight sim programs to mimic the real-world experience of flight, etc. To quote the brochure, they plan to "develop a sort of 'Sporty's' for computer pilots"! (For the uninitiated, Sporty's Pilot Shop is an outlet for just about every possible item related to aviation.)

Doesn't this sound just made to order for us folks who fly by computer? The address of CPAA is Computer Pilots Association of America, P.O. Box 580608, Houston, TX 77258-0608. Annual dues are \$35.00 per year; if you only want the newsletter, the cost is \$25.00. I'm sending my membership app in today—how about you?

Speaking of Flight Simulators, Bert said that he recently acquired a new add-on for the Flight Sim Aircraft and Scenery Designer program. It's called Scenery Enhancement Editor (Mallard Software), and one of the features of this nifty new software is allowing the user to design certain scenery which wasn't possible using the ASD by itself.

As an example, Bert says he can create his own ATIS and COMM (Automatic Terminal Information System and Communication) messages which scroll on the screen. One exciting feature of the program is that it supplies realistic day, dusk, and night coloring effects for various scenery elements. Nifty, eh? You can find Scenery Enhancement Editor at your local Electronics Boutique and other software outlets. Incidentally, Mallard also has come out with some other

enhancements for Flight Sim, but we'll save those for another time. One word of caution, however; these new enhancements all require a computer hard drive in order for them to work properly.

• If you recall in our last installment of 'Plane Talk,' Bill Battles (NH) mentioned that he heard ARINC testing a new system called LINK PLUS and wondered if it might be a satellite relay system for HF voice comms. Bill wrote to NY ARINC asking about LINK PLUS and received a very nice reply briefly explaining what the new system was utilized for. The ARINC Ops Chief told him that LINK PLUS—formally known as Linked Compressor/Expander (Lincompex)—concept operates somewhat like a compressor to enhance a radio signal's signal-to-noise ratio, and reduce interference. The system is still undergoing testing, but when and if it becomes operational with ARINC, its purpose will be to provide significant signal improvement without having to increase actual transmitter power.

Bill also shares some of his HF loggings with us:

8867: Nadi (Fiji) Aeradio working Honolulu asking if they had radio guard for Qantas 11; Nadi needed his position but didn't want to use the teletype.

Qantas 11 wkg Tahiti. New Zealand 9 wkg Honolulu. Sydney working Auckland with relay for "VBS" flight's position.

8942: Singapore 171 wkg Hong Kong with traffic. Bangkok wkg Indonesia 875 w/instructions. (This is one frequency that's not easy to receive in the central and eastern U.S. without a good antenna system—and even then, the transmissions are not always readable. Good catches, Bill)

11052 SAM 28000 (President's plane w/o Pres aboard) wkg Andrews.

• Gordon Levine (California) reports that he's monitored quite a bit of traffic on Honolulu ARINC's new frequencies of 8915 and 5667. So has this writer, as a matter of fact; has anyone else given these frequencies a try? He also mentioned that he received a QSL from Tahiti Aeradio, confirming his reception report of them working UA 842 on 18 July 1992. The station manager sent Gordon a letter, a two-sided full-color map, and a brochure on the station.

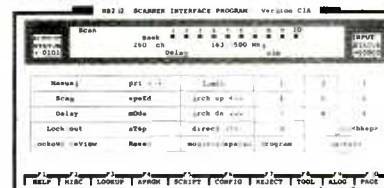
• I overheard the following on my scanner a few weeks ago: What's the difference between a jet engine and an airline pilot? The answer is that a jet engine stops whining at the gate!

That's it for now. Until next time, season's greetings and a happy new year to all.

73 and out.

M

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Logging On

Because so much of the LF hobby involves "collecting" distant beacons, some of which are heard only rarely, it makes sense to maintain an up-to-date reception log. A side benefit to this is that during the summer months when LF activity slows down, it will be quite rewarding to leaf through your log and remember the best catches.

Logs are also a good tool for keeping pace with changes that occur from year to year. Many times new stations are added, old ones are shut down and beacon service ranges are adjusted. By keeping an accurate log, you'll be able to spot many of these changes right away and see how the band compares to the previous year.

Unfortunately, the common "SWL Log" lacks some important categories for the beacon hunter. With a bit of ingenuity, however, you can make your own custom log sheet that will work well for LF work. It doesn't have to be anything fancy. You can make up a ruled sheet and run photocopies of it as needed. For those wishing to go first class, you could keep your log "online" with a computer using one of the popular spreadsheet programs.

What information should your log contain? Just as with shortwave logs, it's important to show the date, time, frequency, call sign, signal strength and location of the station heard. But that's pretty much where the similarity ends. Here are some additional entries to consider for LF:

Serial Number — Many beacon chasers like to assign a sequential number to each log entry. This makes it easy to keep track of your total loggings at a glance and provides a convenient reference point when searching for a specific entry later on.

ID Pitch — The two tones you'll hear from navigation beacons are 1020 Hz and 400 Hz.

Beacon Loggings

Freq	ID	Location	Contributor
251	ZQA	Nassau, Bahamas	P.C.
293	OC	Ocean City, MD	P.C.
296	G	Galveston, TX	B.C.
329	RVN	Rogersville, TN	P.C.
350	NUC	San Clemente, CA	D.T.
356	NCA	Jacksonville, NC	P.C.
356	RD	Reading, PA	M.S.
356	YZD	Downsview, Ont.	P.C.
379	GKQ	Newark, NJ	M.S.
382	LQ	Boston, MA	P.C.
388	NXX	Willow Grove, PA	M.S.
403	PO	Poughkeepsie, NY	P.C.
413	OEG	Yuma, AZ	D.T.

(You can easily learn to tell one from the other by ear.) Traditionally, U.S. beacons use the 1020 Hz tone and Canadian beacons use the 400 Hz tone. There are some exceptions to this rule, however, where just the opposite is true, and these are considered "rare catches"—all the more reason to have it in your log!

Distance — The airline distance in miles (or kilometers) from your station to the beacon site is very useful information for DXing. To determine distance, many beacon chasers have a map posted in their shack with their own location marked by a thumbtack. The thumbtack holds a movable, thin strip of paper that has been marked off in miles (or kilometers) for quick measurement of distances.

Beacon Power — To put a logging into proper perspective, it's helpful to know the transmitting power of the beacon. For instance, hearing a 2000-watt station 500 miles away may be fairly routine, but pulling in a 25-watt beacon at that distance would certainly be a good catch by any standards. More on how to determine the output power shortly.

Comments — Finally, a space should be left to note special information about a logging such as whether or not the transmission included a voice WX message, ID errors noted (yes, errors do still occur—even with electronic keying), local WX conditions at the time of reception, QSL information and so on.


My primary source for determining the output power, exact location, and other details about a beacon is *The Aero/Marine Beacon Guide*. It lists complete data for over 7000 beacons and contains a handy cross reference section that allows you to find an entry as long as you know either the ID or frequency. Copies of the guide are available for \$15.00 (\$20.00 foreign) post-paid from Ken Stryker, 2856-G West Touhy Ave., Dept. MT, Chicago, IL 60645.

Mailbag

• It's that time of year again when the European LF broadcasters are being heard louder than usual on this side of the pond. Wells Perkins, KA2HPU, New Jersey, recently ran across several stations as he prepared for a night of shortwave listening. Wells says, "I'm mainly a SW broadcast listener but I find these longwave powerhouses rather exciting to log."

His tentative loggings using a Sharp FV-610 are: France (Allouis) on 162 kHz, Romania on 153 kHz and Radio Monte Carlo on 216 kHz.


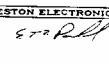

CONFIRMATION REPORT
OF U.S.C.G. RADIOBEACON
GALVESTON, TEXAS



NAME: BOB COMBS
DATE: MAY 1, 1992
TIME: 0517 UTC
FREQ: 296 KHZ

THANK YOU FOR YOUR REPORT

FROM THE TECHS AT GROUP GALVESTON ELECTRONICS

Bob Combs (NM) shares this fine QSL.

Later that evening, Wells also noted an Algerian station with French on 252 kHz, followed by more French on 171 kHz (possibly Radio Mediterranee Internationale).

Reception of LF broadcasters is quite possible any time there is a path of darkness between you and the transmitting station. Your chances are best if you live near the east coast of the U.S. and listen after 0100 local time. Also, reception will generally be best during the colder months when the static level is much lower.

• Longwave newcomer Michael Schmehl of Reading, Pennsylvania, writes to say that he's recently discovered the fun of tuning "down under" and he enclosed a few of his latest loggings which I've identified below. Michael asks, "How do you identify beacons and get the proper addresses to QSL them?" *The Aero/Marine Beacon Guide* mentioned earlier is one way to do this. With the information contained in the guide, you can come up with an address for most beacons and get your catch confirmed.

As with most utility QSL requests, you'll need to send a Prepared Form Card (PFC) and an SASE if you expect a reply. Your PFC can be as simple as an index card with blanks for the appropriate station information and a line for the signature of an Engineer in charge. Again, the *Guide* shows examples of several suitable cards. You may also wish to look over the November '91 issue of *MT* where I dealt with this topic in more detail.

The loggings for this month are courtesy of four *MT* readers: Perry Crabill, VA; Donald Tomkinson, CA; Bob Combs, NM; and Michael Schmehl, PA. The contributors are identified by their initials in the list below. Thanks to all of you for sharing your logs.

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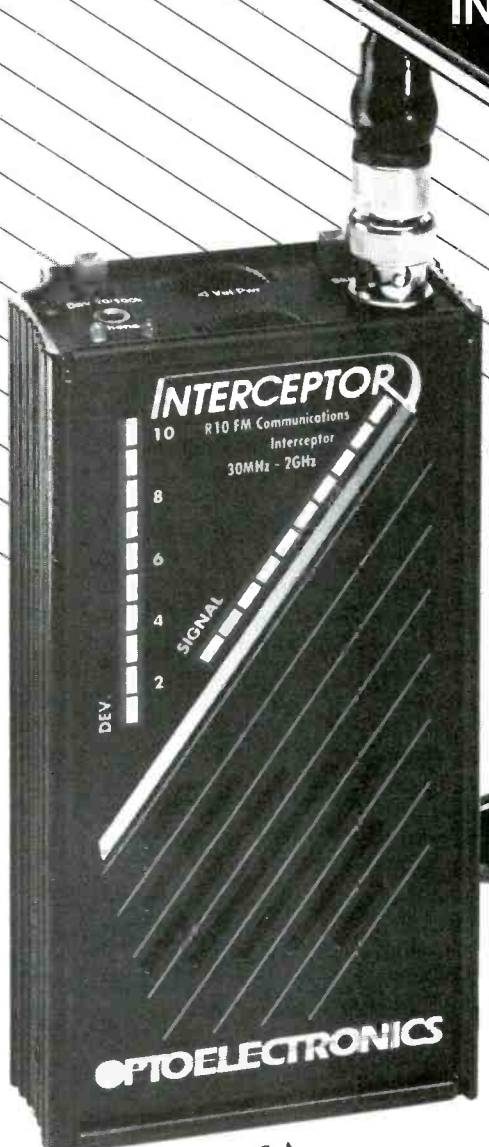
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Listening In Paradise

Wouldn't you just love to escape the cold of winter and head for the Caribbean? If you don't have airplane tickets in your hand, we can take you there! Here's a complete guide to listening pleasure while visiting the islands, and how to hear them thousands of miles away!

During a recent DXpedition to the British Virgin Islands, we were astounded by the multitude of choices on the radio dials. With only water blocking the path to most islands, and excellent ground conductivity courtesy of the Atlantic Ocean, signals could be heard from all of the Caribbean and beyond 24 hours a day. Using a very modest Walkman type radio on the beach in Virgin Gorda, over fifteen stations filled the FM band providing endless musical choices. One station was a real gem, literally.

Based on the island of Montserrat, The Gem Radio Network is quickly becoming the most listened to service in the Caribbean. Gem broadcasts "StarStation," a light rock format originating at Satellite Music Network's studios in Dallas, Texas, along with their sister service: The Satellite News Network. Thousands of American tourists tune in every hour just to hear what is going on back in the States. Four times a day, local Caribbean news is presented from Gem's studios in Montserrat. Gem also simulcasts news from PJ81 in Phillipsburg, St. Maarten, in the Netherlands Antilles.

PJ81's "News One" coverage is extremely comprehensive including reports from almost every island. Adding the British point-of-view, Gem carries The BBC's "Caribbean Report" via shortwave from London. You've never heard so many different accents on one station!

Sailors love to listen to Gem, too. Detailed marine weather forecasts are aired throughout the day. At 8:05 am on Saturday and Sunday mornings, Martin Hacksby presents "Sea Watch," providing news and commentary for seafarers. The most famous of all Caribbean sailors is

being featured every day this year. "The Voyage That Changed the World" is a day by day chronicle of the life of Christopher Columbus during his premiere voyage to the islands 500 years ago. This fascinating show was co-produced with WOSO in San Juan, Puerto Rico.

Listening to music on Gem is a little different than you might expect from a station using an automated format like "StarStation." Gem peppers this pre-packaged American music service with sounds from the islands. At the end of a commercial break, you might hear a local pop tune played in its entirety to add a taste of regional color to their broadcast day. When the song is done, Gem goes right back to the satellite delivered music mid-song by casually cross-fading it in. Music from Britain shows up once a week on "The UK Top 40 Chart Show" hosted by Kevin Lewis.

Gem's energy and diversity are paying off. Currently heard via five transmitters throughout the Caribbean, they plan to launch another three in the near future on the islands of St. Lucia, Trinidad and Barbados. In the meantime, look for The Gem Radio Network on these frequencies: Montserrat 94.4, St. Kitts 93.2, St. Maarten 94.7, Antigua 93.8, and The Virgin Islands on 90.9. You'll understand why they call themselves "The Gem of The Caribbean!" Another powerful station, "Paradise 104" WIYC St. Thomas, also broadcasts SMN's "StarStation" music without added local news and features.

If you're looking for urban contemporary dance music, check out "Double Trouble...Power 93.5 and 105.3." Broadcasting from studios in Charlotte Amalie, St. Thomas, 105.3 FM WVGW's 50,000 watt signal is rebroadcast by St. Croix's WAVI FM using 93.5 MHz. Their fast-paced presentation, with very slick stereo jingles, creates a sound that's "keeping the beat with less repeats." Their main competitor is 106.1 WVIS, also from St. Croix, which prom-



The author hard at work researching this article on the beach in Virgin Gorda.

ised "coming soon: the new, brutal super signal!" "Isle 95" WJKC St. Croix broadcasts a combination of local and American dance music. Their hourly ID mentions every island in the British and American West Indies.

The Caribbean Broadcast System operates three FM stations for The British West Indies from the island of Tortola. American contemporary hit radio fills the air on 94.3 The Heat; and light urban contemporary sounds are found at 103.7 FM Z-Rod. At 91.7 FM, you'll hear American rock oldies on Z-Gold. All sound like stateside automated music services. More oldies can be found on "The all-new 99Q" WVIQ, Cruise Bay, St. John. We heard their weekend "Q-Classic Sand and Surf Spectacular" featuring every song you might remember singing at college parties during the 50s, 60s, and 70s.

St. Thomas' WTBN on 102.1 airs unusual New Age instrumental music they call "The Breeze." It sounds like an updated version of the "beautiful music" formats popular on American radio in the 70s and 80s. Don't miss "Caribbean Music Beat with Eric Blake" on WTBN Saturday afternoons from 4 to 6 pm. Eric records live performances of bands all over the islands producing wonderful sounds to dance to on the beach. Inspirational Christian music and talk shows are found on WGO97.9 FM St. Thomas.

If you want to gain true insight into the lives of the people native to these islands, switch to the AM band! Caribbean culture comes alive on a station like "Zed B-V-I." Serving the British West Indies from the island of Tortola on 780 kHz, ZBVI provides a chronicle of daily life, and entertains all who listen. The voices you hear sound musical, always with a casual and pleasant delivery. Although everyone speaks English, sometimes the accents might persuade you otherwise. Stations like ZBVI bring you the soul of the islands to your ears.

Morning newscasts are filled with the current events and notices of rites of passage. Births, marriages, and deaths are noted with great detail. Each obituary lasts a minute or two, listing every relative who might attend the memorial service

Paul Mundt of Lombard, IL, took this picture of the Radio PJF1 (Voice of Saba) studio in Phillipsburg, St. Maarten.



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and all the friends the person cherished during their lifetime. Slow, solemn music is played in the background, sometimes performed by a steel drum band.

The popular music you'll hear also mirrors local lifestyles. Steel bands, using oil kettle drums hammered into musical instruments, convey the happiness and tranquility that abounds here. Calypso music often carries a topical or political message. On occasion, you'll be treated to some Soca, a combination of American soul music and Calypso. You'll feel as if you are listening to another world, and you are!

Careful listening can bring a taste of the islands to your home. Nearly every island operates a local AM radio station, and some are within your grasp. Many Caribbean AM stations follow the American standard of broadcasting channels spaced 10 kHz apart. Others are allocated to the European standard of 9 kHz apart. Simple math will reveal that these frequencies will not align across the band, creating "split frequencies." Shortwave listeners are used to broadcasts appearing every 5 kHz or so. AM DXers can put the same principles to use when grasping for Caribbean stations. Here are the best places to look:

- 535 kHz Radio Grenada
- 555 kHz ZIZ - St. Kitts
- 825 kHz Radio Paradise - St. Kitts
- 1165kHz Caribbean Radio Lighthouse - Antigua
- 1505kHz Radio Anguilla
- 1555kHz Radio Cayman (Islands)

Beginners should try for the two Caribbean powerhouses, featuring religious programming: Trans World Radio, Bonaire, Netherlands Antilles, on 800 kHz; and The Caribbean Beacon, Anguilla, on 1610 kHz. Listen from dusk to midnight for best results. Drive to the ocean and DX with your car radio. The Caribbean Beacon has been heard on Long Island, New York, in the daytime! Try tuning in tonight, close your eyes, and if you're lucky, you'll hear paradise!

Bits 'N' Pieces

The Big 8 could soon become the little 580. CKLW, the 50,000 watt powerhouse in Windsor, Ontario, has entertained listeners for decades. Serving the metropolitan area of Detroit, Michigan, CKLW is regularly heard in 22 states, and has been received worldwide. Millions of people remember The Big 8 as the home of top 40 rock 'n' roll and outrageous scandal-filled 20/20 newscasts in the 60s and 70s. Now the station delights nostalgia buffs with big band sounds. Pending approval of Canadian authorities, CKLW AM and FM will be bought by the owners of CHUM, Toronto, for \$1.75 million. CKLW would then swap positions with CHUM-owned CKWW on 580 kHz also in Windsor operating with only

500 watts. Listeners to 800 kHz will find news and information on the air, using the call letters CKWW. CKLW's FM music format would not

change. AM radio will never be the same without The Big 8.

WZON in Bangor, Maine, is changing hands again. Broadcasting on 620 kHz with 5000 watts, the station operated for many years with an eclectic rock format guided by owner and mystery novel writer Stephen King. King sold the station in 1990 to Dr. John E. Tozer, a local dentist, who changed the format to talk and news. Now Nancy Boyd of Holliston, Massachusetts, has purchased the station for \$170,000. She has vowed to include more local news and information in WZON's broadcast day, and continue broadcasting syndicated talk show host Rush Limbaugh every afternoon. Stephen King still retains ownership of the property where WZON stands at 861 Broadway in Bangor. Reports that the station is guarded by howling wolves and other demons could not be confirmed!

Mailbag

Keep your mailbag full this month! Send an SASE to American Bandscan to receive a free copy of our TV station maps for E-Skip DXers. Television stations, from 600 to 1800 miles away or more, can be received via E-Skip during the summer and winter months. Our maps are an excellent tool for identifying stations near and far. Every station in America, broadcasting on Channels 2 through 6, is included. Write for your free copy today!

International Bandscan

Residents of New Dehli, India, are eagerly awaiting the start of non-governmental broadcasting. Until now, all radio and television stations have been controlled by the national government. Private producers have pressured All India Radio for access for years, and have finally been granted their wish. Still, India's government holds complete control over the broadcasts. A nine-member council of government-appointed members will issue permits and time-slots, and will specify program quality standards. Each program will be council-approved before reaching the air.

Both the present and the previous governments have promised to remove state control of radio and television stations, but action has been slow. Local critics are cynical about the announcement. They claim the leadership in New Delhi will be reluctant to give up control of electronic media. It has become a powerful propoganda tool useful in reaching the millions of people in India who are illiterate.

Until next month, we say "namaste" and Merry Christmas!



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The Hot List of TVRO Tips

I'd like to think that each month this column contains something you, the reader, can put to use. This holiday issue of *MT* contains even more items to help you in the pursuit of your TVRO hobby. Load your mailbox up with great catalog reading, inexpensive but useful computer programs, informative TVRO books and some neat deals in hardware.

The Catalog Department

The most comprehensive catalog available to consumers comes from Skyvision. Found along with the usual TVRO-related items, are those which are much harder to locate, including roof mounts, Ku-only dishes, stand alone actuator positioners and much more. For your free copy of the Skyvision catalog, write them at 2066-MT College Way, Fergus Falls, MN 56537 or call their order line: 800-543-3025; fax 218-739-4879. Once you become a Skyvision customer, they also feature a separate customer hotline.

A less comprehensive catalog, but very worth having, is from DBS. This 40-page catalog features many complete system packages as well as many of the usual accessory items. Call or write DBS Satellite Television, 2316 Channel Drive, Dept. MT, Ventura, CA 93003. Orders: 800-327-428, M-F, 8 am to 6 pm PT; Saturday, 9 am to 1 pm PT; fax: 805-652-2190.

Two other catalogs are worth mentioning, as well. They are NBO, 5631 Palmer Way, Carlsbad, CA 92008 or call 800-346-6466, and Satman at 6310 N. University, #3798, Peoria, IL 61612 or call 800-247-4391 (Illinois residents call 309-692-4140). Tell them *Monitoring Times* sent you.

Buying TVRO by mail order is without question the cheapest way to get into the hobby. All of the above companies specialize in helping the do-it-yourselfer. Tens of thousands of less technically minded people just like me have installed these systems with very little trouble. But before you buy, a little research is in order, and, if you keep reading, I'll steer you to some interesting titles.

More Catalogs

Another catalog, which is not exclusively TVRO but has a number of other interesting items listed, is ATV Research, Inc. Most equipment listed is for SMATV (Satellite Master Antenna TV) and Cable headends. They sell some very sophisticated over-the-air VHF and UHF TV antennas and amplifiers. Write or call

ATV Research, Inc., 13th & Broadway, Dakota City, NE 68731, 402-987-3771; fax 402-987-3709.

Have an old 70 MHz system which has finally called it quits? Has your out-of-warranty actuator died? Handheld remote not functioning? Here's the place for repairs: PTS Electronics has thousands of exact replacement parts for VCRs, computers (monitors and terminals) as well as TVRO gear. They offer an extensive catalog of parts and services.

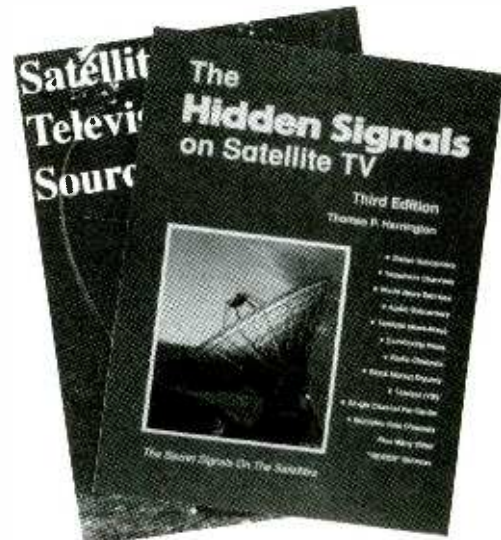
How much will it cost? PTS lists standard repair costs in their catalog. As an example, repair of a 70 MHz downconverter is \$29.95 plus major parts and subassemblies. That's a pretty good deal if the only thing that's keeping your 70 MHz system from running is a busted downconverter. This is especially true considering that finding used replacements is difficult and getting new ones is impossible. Write PTS Electronics at P.O. Box 272, Bloomington, IN 47402 or call them at 812-824-9331; orders 800-844-7871 ext. 219 or fax 812-824-2848.

The Commercial Side

Avcom is a manufacturer of TVRO related gear and is known industry-wide for their spectrum analyzers and similar test equipment. They also make an extensive line of commercial satellite receivers, commercial SCPC receivers and various microwave accessories in all manner of configurations. In addition, Avcom also sells harder to find items such as Low Temperature LNAs (down to 30 degrees), S Band LNBs and feed horns, dielectric plates (for converting linear feeds to circular polarization for INTEL SAT reception) and much more. All Avcom equipment is made in the U.S.A. Write Avcom at 500 South Blvd., Richmond, VA 23236 or call them at 804-794-2500; fax 804-794-8284.

Government Info

The U.S. Department of Commerce Technology Administration National Technical Information Service (NTIS) is a real bureau of the federal government. What do they do? According to their catalog, they deliver "...Government research results, business information and engineering solutions 30,000 times a week, every week." Of interest here is the section in their 50-page catalog on communications. But you'll be amazed at all the other information available. The catalog is free by writing the above space-killing name at Springfield, VA 22161 or call 703-487-4650 and ask for PR-827.



Speaking of government publications, one of my favorites is a marvelous chart put out by yet another bureau. This time it's the National Telecommunications and Information Administration office of Spectrum Management. What they offer is a very large (32" x 50") glossy, full color chart which maps the entire radio spectrum from 9 kHz to 300 GHz. Best of all it's only \$2.75. Order reference stock number 0003-000-00652-2 from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. This chart is of particular interest to satellite experimenters who need to know just where the various satellite frequencies live.

The R.R. Bowker Co. has taken over what used to be known as the *Broadcasting Yearbook* and rearranged it into *Broadcasting and Cable Marketplace*. This massive book will cost you nearly \$200, but there's a good chance your local library has it on its reference shelf. A decent college or university library will also have it. Of interest to us here are the 16 pages in Section D called "Satellites and Other Carriers." Here you'll find addresses, phone numbers and a brief description of all the satellite owners and operators. Satellite resale and common carriers are listed as well as teleport, microwave and MMDS operators.

Also of interest in the *Market Place* is an annotated bibliography of books and periodicals, foreign and domestic, on the subject of broadcasting, cable and electronic media. You're bound to find titles of interest to you here.

The Book Department

I have picked three sources of reading material to enhance your interest in the hobby. For those new to TVRO, I recommend the *Satellite TV Buyer's Guide* which is published by Fortuna Communications. This magazine format, 100-page book is a great introduction to the hobby. They may not have any of the 1992 edition left, but the 1993 issue can't be far away.

It sells for \$4.50 at the newsstands or direct from Fortuna at P.O. Box 308, Fortuna, CA 95540-0308 or call them at 707-725-6951.

The second book is for serious experimenters wanting to learn more about TVRO. It's called *The Hidden Signals on Satellite TV* by Thomas Harrington. This book is of a technical nature and not for those whose interest is in watching the standard cable fare. Rather, it tells you about the many fascinating aspects you've always wondered about regarding satellite transmissions. Here is in-depth coverage of SCPC, data, audio and video reception which is impossible to find anywhere else. This book sells for around \$20 and can be ordered from any of the electronic mail order houses including Grove Enterprises.

And, finally, the *World Satellite Almanac* is the definitive single publication for the student of TVRO. In over 1,000 pages, author Mark Long has an answer for every question you have about TVRO and backs it up with hundreds of great photos and satellite footprint charts.

Huge amounts of information are also given about voice and data transmissions, international TVRO, Intelsat, Eutelsat, Intersputnik, C-band, Ku, DBS, you name it—it's here. This book is the most expensive of those I recommend, but it is clearly worth the price which is around \$100. A good place to look for this title at a discount: try Shop At Home at 800-927-6468. Or you may write the publisher at MLE, Inc., Box 159-MT, Winter Beach, FL 32971.

The Periodicals

Finding unbiased and timely news and information about the TVRO industry is not easy. Most of the trade publications are intended for retailers and industry insiders and don't like to extend subscriptions to the general public. Their pages are often filled with standard press releases from the manufacturers and objective reporting is not considered a priority.

One notable exception is *Satellite Business News* which is edited by Bob Scherman, a veteran reporter on TVRO affairs. This large format, 24-page publication is published weekly which gives it a distinct advantage on the other journals for its timeliness. Emphasis is on the business and legislative news with very little of the technical side. Subscriptions are \$39 per year from Satellite Business News, Inc., 725 River Road, Edgewater, NJ 07020. Canadian and foreign rates available upon request.

The Hardware Department

The best deal in TVRO cable I've seen lately is found at **Amateur Electric Supply**. They're offering 250 foot rolls of multi-purpose satellite TV cable which features 2 RG-6 coax, actuator

and servo motor wires, all on one flat ribbon. Price in their fall catalog for the cable is \$90/roll which works out to a little under 36 cents per foot. Not a bad deal. Call AES at 800-558-0411 for more information.

International Teletext Communications, Inc. (ITC) has a new approach to the reception of teletext. Using decoder circuitry built on a PC card which plugs into your IBM or PC clone, this unit uses your computer to read standard teletext transmissions.

These units read teletext found on the "Electra" service found on TBS Superstation (G5,6), which is also available to all cable subscribers, as well as F4,15 (Shop At Home), and F3,22 special stock feed which allows your PC to track 30,000 issues on the three major stock exchanges: NYSE, AMEX and NASDAQ. The special stock information, delivered on a 15 minute delay, allows you to program buy and sell alarms on up to 60 issues. A tracking feature follows selected stocks by the hour and saves them to an ASCII text file for later review. In addition, you'll receive extensive financial news from such sources as *The New York Times*, *Financial Times*, *Sports Wire* and *Business Wire*. You'll also get the latest money market and exchange rate quotes after 3 pm.

The basic ITC decoder sells for about \$200 with special TVRO decoders selling at about \$150 from Shop At Home. For more information on the ITC teletext decoder call 800-733-8398.

The Software Department

Renaissance Software and Development has a catalog of many programs for the amateur and satellite hobbyist. Among those of interest here are #1093 "Telemetry Decoders" (requires a Packsat TNC); #1840 "Shuttle Tracker" (requires graphics monitor), and #1842,1843 "STS Plus" (2 disks requires graphics, monitor

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and hard drive). The three last programs are for tracking the space shuttle. You may receive their catalog by writing to them at Killen Plaza, Box 640, Killen, AL 35645 or call 800-525-7235; fax 205-757-8664.

Satellite Data Systems, Inc. has a nifty catalog of WEFAX receivers, antennas, dishes, software, amplifiers, feedhorns and much more. Of particular interest is a \$5.00 shareware program called Disk-1 which, among other programs, includes Satfind 2 and Findsat which allow the user to locate any geosynchronous orbit satellite from any given location on the map. Write them at 800 Broadway St., P.O. Box 219, Cleveland, MN, 56071-0219 or call 507-931-4849.

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Some Good Reading for Hams

If you have been following this column for any time, you are aware that I like books! In fact I feel every amateur should have a good book collection. Books are available on nearly every aspect of our wonderful hobby and can answer almost all of our questions. The nice thing about books is that they are always there, and it is easy to look up a given subject simply by checking the index.

I have recently reviewed the following books and feel they would be a good start for a newcomer's book collection. Four of the books are published by the American Radio Relay League (ARRL) and the fifth comes from the Radio Society of Great Britain (RSGB). All are available from the ARRL, 225 Main St., Newington, CT, 06111; 203-666-1541; two of them are also carried by Grove Enterprises.

Novice Notes: The Book

During the late 1980's *QST* Magazine (publication of the ARRL) ran a series of articles intended to help beginners in ham radio understand the basics of getting a license, assembling a station and operating on the air. *Novice Notes* is a collection of those articles.

A wide range of accomplished authors lead the beginner into the ham radio experience. Each article provides adequate information to get the novice started and stimulates the desire to know more.

Articles on purchasing gear and inside antennas are especially interesting to the neophyte. At a price of \$6.00 this is an excellent first book!

ARRL Operating Manual

After getting on the air and gaining some operating experience, it is a sure bet that you will want to expand your horizons. That's where the *ARRL Operating Manual* comes in. It is "the definitive" book on operating.

Chapters on CW, phone, DX and contests spell it out in detail. Almost anything you could want to know is explained in this excellent manual, including information on propagation, sunrise/sunset tables, beam aiming and country prefix information. Want to try something new?: Slow Scan and Fast Scan TV, packet, FM, VHF, RTTY, awards, traffic handling and satellites are also there.

A chapter on shortwave listening is especially interesting as it informs about a portion of the radio hobby that can be very engrossing. In fact, SWLing just might be the stimulus a family member or friend needs to jump into the hobby.

The statement on the book cover doesn't lie: This is truly the most complete book about amateur radio on-the-air operating ever published. The price of this manual is \$18 from ham stores everywhere.

The ARRL Handbook for Radio Amateurs

The ARRL Handbook is an annual publication which covers every technical facet of amateur radio. The usual price for the *ARRL Handbook* is about \$25, and it's worth every penny! Each year new material is added to the *Handbook* to cover the latest advances in the communication field.

In addition to in-depth technical information, superb construction projects of every description add to the value of the *Handbook*. Projects such as receivers, transmitters, amplifiers, antennas, power supplies and test equipment allow everyone to construct an entire amateur station. Project complexity varies from beginner to expert, so there is something there for everyone. Most of the projects have a printed circuit board etching pattern provided in the back of the *Handbook*.

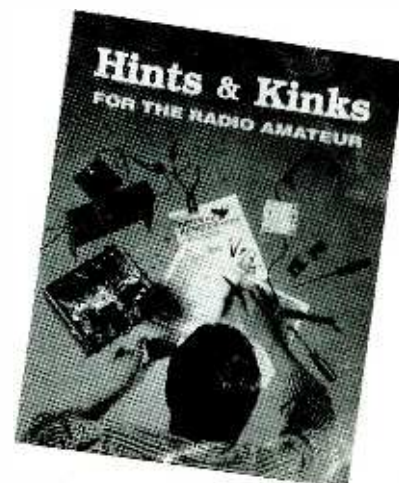
Chapters on workmanship, troubleshooting, antenna construction and erection provide solid information on these important subjects.

The first three chapters provide the reader with a basic understanding of electronics. It is written in a style that will enable the average reader to fully understand the subject. I might add that it is assumed that you have a fundamental understanding of math. This material is exactly what you would receive in a technical school. Succeeding chapters take you into more complex electronics and communication theory, up to about the level of a good communications school or college.

If you do not have a copy of the *ARRL Handbook*, I urge you to get one!

Hints and Kinks for the Radio Amateur

This nifty book provides amateurs with ideas for a wide variety of projects. For example, sections on rig modification tell how to improve your present commercial rig, while other chapters cover batteries and power sources, mobile/portable stations, construction, test gear, antennas and operating ideas. This is a *neat* book; after a quick look through it, you will be rushing off to get the materials for one of its many projects. Price is \$9.



HF Antenna Collection

This collection of antenna projects and ideas is published by the RSGB and is available through the ARRL. Many of the projects describe easy-to-build antennas that work well. For example, the VK2ABQ Mini beam is built of easy-to-find materials, is quite small and provides 3 dB of gain on 10, 15, and 20 meters with a front to back ratio of about 15 dB. It can be built very inexpensively and is quite compact and neighbor friendly.

The price of the *HF Antenna Collection* is \$18. All of the books listed are available from the ARRL. Shipping/handling charges are as follows: \$20.00 or less, \$3; \$20.01 to \$30.00, add \$4; and \$30.01 to \$40.00, add \$5. Most of the books are available from your local ham radio store, too.

With luck Santa might drop off a complete collection for you.

Learning the Code

Learning Morse code has been a frequent topic in this column and one in which many readers have an interest. Over the last several years, advertisements for many new methods of learning the code have appeared in ham magazines. Most of the systems I have tried did not appear to be very effective. However, one system I recently tried seems to have great promise.

The system is called *CW Lite* by PASS Publishing, Box 570, Stony Brook, NY 11790 (phone 516-584-8164). It is intended for the person learning code for the first time. The tape is designed to put the student into a deeply relaxed state. Then the sound of the code is taught, no dits and dahs, just the sound.

A second program from this company is called *CW Mental Block Buster*. This tape is for the person who has been having a difficult time with normal methods of learning. Again the tape

Rob Leonard's

Ham DX Tips

The holiday season is upon us with all its hustle and bustle. Why not take a break and relax by DXing; here are some tips to help you...

AUSTRALIA H.F. Lloyd (VK5BC, Box 743, Berri SA, 5343 Australia) has been on 1832 kHz CW Saturdays at 1030 UTC. **DESECHEO** Starting 28 December 'til 4 January, look for the KP5/N0TG DXpedition operation on all bands 10 to 160 meters, SSB, RTTY and CW by several operators using at least three stations. Send your QSL requests to: Randy Rowe, P.O. Box 891, Desoto, TX 75123. **KENYA** 5Z4TT has been on 28010 kHz CW at 1915 UTC most days. His QSL manager is: SP5BUD, Krzysztof Piotr Kencki, Box 845, 00-950 Warsaw 1, Poland. **MADAGASCAR** Argentine amateur LU2NI says that a friend of his meets with 5R8AB daily on whichever of the following frequencies offers the best propagation—28544, 21290 or 14153 kHz, starting with the 10 meter frequency at 1700 UTC. Prior to that regularly scheduled meeting he appears on 21260 kHz from 1600 to 1700 UTC. His QSL manager is F6FNU, Antoine Badeck, B.P. 14, F-91291 Arpajon Cedex, France. **MINAMI TORISHIMA** JA1ABP is operating 'til 15 January as JA9IPX/JDI on 10 to 160 meters using CW, SSB and Packet (no RTTY). He asks that you QSL this operation to his JA1 callsign via the Bureau (JARL, 1-14-2 Sugamo, Toshima, Tokyo, 170 Japan). **SAUDI ARABIA** HZ1AB (whose QSL manager is K8PYD, Leo W. Fry, 5740 N. Meadows Blvd., Columbus, OH 43229-4165) has been on 14080 RTTY at 2200 UTC. **SENEGAL** 12 meter and CW DXers can log 6W6JX (Jean-Louis Pipien, B.P. 10, Kaolack, Senegal) for a new and rare country as he appears on 24900 kHz at 1230 UTC weekends. **SOUTH ORKNEY ISLANDS** VP8KC can be logged by both RTTY and SSB DXers. RTTY enthusiasts should check 14088 kHz at 2130 UTC daily, while SSB enthusiasts should check 14236 kHz at 0200 UTC most days. He'll probably be leaving here in January, so get him while you can. His QSL manager is Michael Mistofsky, 25 Broomcroft Rd., Newton Mearns, Glasgow G77 5ER, Scotland. **SOUTH AFRICA** If you are a RTTY DXer and have found it difficult to log this country, try for ZS6EZ (D. Cohe, 15 Manning St., Coldyn 0083 Republic of S. Africa) who makes it easy for you on 21081 kHz at 1800 UTC daily. **TURKS AND CAICOS** Judy, VP5JM, has been appearing on 14085 kHz RTTY at 0115 UTC weekends. Her QSL manager is W3HNC, Joe Arcure, P.O. Box 73, Edgemont, PA 19280. **USA** The Vietnam Veteran's net meets the first Sunday of each month on 14317 kHz at 2300 UTC.

Ever hear an amateur AM (amplitude modulation) transmission? Since most voice amateur transmissions are either SB or FM, probably not. But you can by tuning into one of the SPAM (Society to Preserve Amplitude Modulation) nets. The International Net meets daily on 14286 kHz at 0100 UTC. The West Coast SPAM net meets on 7150 kHz Sundays at 2300 UTC and 3870 kHz Thursdays at 0400 UTC. The 5th US call area net meets on 7160 kHz at 1600 UTC Saturdays.

If you are an American SWL and have sent for QSLs from amateurs, you may wish to keep an SASE or two on file with the US SWL Incoming Bureau. This is because some amateurs may send your QSL to you via the bureau system even if you sent a direct request. Send your business size SASE with your name or SWL callsign in the upper left corner of the back to my friend Mike Witowski, WDX9JFT, 4206 Nebel St., Stevens Point, WI 54481. **ZAMBIA** 9J4HN has been thrilling 30 meter DXers with a new country for that band by appearing on or near 10103 kHz CW at 2030 UTC several days each week. You may QSL to JH8BKL, Katsuhide Kawase, 9-1655, Sitinkai, Teshio, Hokkaido 098-33, Japan.

I hope these tips help you enjoy the holidays. Have a safe and happy Hanukkah, Christmas and New Year's Eve. And remember to drive carefully and soberly! 73 de Rob.

puts the student in a relaxed state and allows him to concentrate on the code. There is no code practice on this tape; it simply conditions the student to learn the code.

Both programs hold much promise for the beginner. I have used similar programs to learn other material, and know several people who have benefitted from this type of learning. PASS has a guarantee on their products: use the system faithfully for 30 days, and if you do not notice an improvement, they will refund your money

less a 20% restocking charge. There are several other tapes in the PASS catalog which may be of interest. CW Lite sells for \$15.95 and Mental Block Buster is \$29.95.

If you are struggling to learn the code give it a try!

That's all for this month, gang. Happy Holidays to one and all! 73 de Ike, N3IK

MT

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Having Trouble QSL'ing the VOA?

Many of us have been puzzled during the 1990's by the **Voice of America's** slow responses to letters from its listeners. My friend Mike Fanderys of Parma, OH, has called me several times this year to point out that his multiple reception reports to the VOA have generated noticeably sluggish replies. In contrast to this curious situation, several *MT* readers write in every month with good news about newly received QSLs from North American pirates. The VOA has historically been considered a good verifier, so its recent glacial pace of correspondence has baffled many DXers.

A possible new explanation for this has surfaced from an unlikely source: the United States General Accounting Office. In a July report that critiques several aspects of VOA's management, the GAO found that the number of letters received by the VOA from its listeners declined from 445,000 in 1988 to 350,000 in 1991. The head of VOA's mail analysis unit speculated that this large 21% decline "occurred because VOA ceased responding to most of its mail." The VOA had about 100,000 unanswered letters on hand from its listeners during the summer of 1991. The GAO report says that "a VOA official told us that most letters were discarded without being opened." (!)

Obviously, no shortwave broadcaster has ever verified an unopened reception report. This seems to explain why multiple follow-up reports to the VOA have often been necessary in recent years. In stark contrast, only one of the pirate stations covered in the 'Outer Limits' this month has failed to announce a maildrop contact address. Pirates love to receive mail, and your odds of a verie QSL are good for a correct reception report to a pirate.

However, we need to remember one important factor. When the VOA gets around to opening some of its mail, it requires no return postage for QSLs. Reports sent to pirate maildrops must include three units of first class postage to finance the maildrop forwarding process.

Captain Chaos Busted Again

In June we covered the FCC's bust of Captain Chaos at **Radio Chaos International**. Frank Foskey of Clark, NJ, heard a knock on the door from FCC Field Office personnel on March 20. \$3,000 worth of his equipment was seized, and the volume of Radio Chaos transmissions declined abruptly.

Two more busts have moved Foskey back into the news. *MT* reader Wells Perkins of Scotch Plains, NJ, sends in an article from the Newark *Star Ledger*. The paper reported that Captain

William Duffy of the Union County (NJ) Sheriff's Department said that Foskey was arrested August 31 after eight pounds of marijuana and twelve marijuana plants were discovered within his back yard tomato garden. He was charged with possession with intent to distribute marijuana, possession of marijuana with intent to distribute within a school zone, and possession of drug paraphernalia. Foskey was released after posting a \$35,000 bail bond.

On the radio front, the *Star-Ledger* says that Foskey received an amateur radio license after the original March bust. This new ham ticket was quickly revoked by the FCC when Foskey subsequently "operated on frequencies outside his privileges," according to Sgt. Richard Hedinger of the Clark Police Department. I saw no Radio Chaos International loggings in DX bulletins during the summer, so the nature of Foskey's alleged follow-up pirate activity remains unclear.

Asian Clandestines

Last month we noted that the transmitter for **Radio Voice of Burma's** programs is actually located in Norway. But, most Asian clandestines are actually based in Asia. Our best shot at hearing them comes during local early morning hours. *MT* reader Robert Ross of London, Ontario, calls a typical target to our attention. He logged **Radio Echo of Hope** on 6348 kHz at 1030 UTC with its usual patriotic anthems and denunciations of North Korea. Robert says that South Korea is the probable transmitter site for this one.

BBCMS reports an unexpected development from the **Voice of the Khmer**. The seven year run of this anti-Cambodian clandestine was temporarily suspended on September 27, according to a station announcement. Though it's a tough DX catch, it has sometimes been heard in North America around local sunrise on 6325 kHz. Has anybody noticed its reactivation yet? Khmer does open its mail, and has been a reliable verifier. The best of its three announced addresses has been via KPNLF Office, P. O. Box 22-25, Raminda Post Office, Bangkok, Thailand.

Europirate News

Since **RadioFax** announced a temporary voluntary shutdown in September, **DLR-106** may now be the most widely heard Europirate on this side of the Atlantic. Program Director Paul Davis sends current info on this one direct to *MT*. He says that their shortwave schedule is 0200-

0900 Monday through Saturday, with an extra three hours on UTC Sunday through 1200. Davis points out that both their 106.5 MHz Dublin FM service and their 6220 kHz shortwave transmitter are unlicensed pirates. They have imminent future plans to increase their shortwave power from 120 to 350 watts. **DLR-106** touts local ratings that measure their audience at more than 30,000 people. The station has verified numerous reception reports from shortwave listeners on all continents.

MT reporter Don Bishop of Kansas provides some interesting speculation on the censorship situation that we discussed last month. During a trip to England, he noticed the current 'rave' craze in the UK. Raves are roving festivals that feature rock music and dancing, sort of like the 1960's Woodstock phenomenon in the USA. Rave organizers often broadcast music to festival attendees using pirate transmitters. Don believes that there is a connection between strong opposition to raves by local rural residents and the UK government's recent censorship of Europirate loggings in the British *Short Wave Magazine*. Do our European readers have more insight on this?

Odd Argentina Report

An *MT* reader identified only as 'EAR' sent in an unusual postcard from Argentina. EAR hears **WFLA AM-970** on 25870 kHz, reportedly with a daily FM transmission from Venezuela to Argentina.

I don't think that we have a cryptic situation here. WFLA is a licensed medium wave station in Tampa, Florida. As Larry Van Horn occasionally notes in 'Utility World,' many USA stations operate broadcast links near 26 MHz. This logging certainly comes from remote news crews in Tampa, not Caracas.

Pirates also operate occasionally in this frequency range, but the dominant current usage of 26 MHz frequencies comes from unlicensed out-of-band bootleg CB stations. Fans of the unusual will find this band chock full of odd stuff when 11 meters is open.

Thanks also go to Douglas Cann of Vancouver, BC, who reports a 5 digit Spanish numbers broadcast on 8190 kHz at 0630.


Atlanta MT Convention

I really enjoyed meeting many of you at the October Monitoring Times Convention, including longtime *MT* supporter Gigi Lytle of Lubbock, TX. Gigi said that she has been hearing unidentified pirate broadcasts on 7335 kHz, right on top

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of CHU's time signals. The pirate sometimes mocks Radio Canada. Has anyone else heard this? Gigi also noticed that her name was "misspelled" Greg in the October loggings. I stand corrected! The Atlanta convention featured three different seminars on pirate, clandestine and numbers DXing, so we all had a great time.

The February Winter SWL Festival in Kulpsville, PA, has been adopted by the now-legendary pirate station, the **Voice of Pancho Villa**. Now it looks as though a pirate has attached itself to the MT Convention. Houndog T. Oglethorpe of the **Voice of Shakerag** sent his public relations man to Atlanta. It definitely was not part of the official convention program, but a special MT Convention Shakerag broadcast followed on 7415 kHz.

What We Are Hearing

Another deluge of pirate loggings has descended upon Brasstown. Pirate activity is on the increase again as we enter the heart of this year's DX season. Your own logs are welcome for this column. Why not sent them in for next month? Maildrop contact addresses used by stations listed below include P.O. Box 452, Wellsville, NY 14895; P.O. Box 293, Merlin, Ontario NOP 1W0; P.O. Box 25302, Pittsburgh, PA 15242; and 770 Sycamore Avenue #J-193, Vista, CA 92083. Frequencies kHz; times UTC.

Anarchy One- 7418 at 0300. Apparently a west coast operation, this one is now better heard in eastern North America with anarchist political advocacy and American Indian pow wow music. Addr: Vista. (Skip Harwood, Beale AFB, CA)
East Coast Music Radio 7415 at 0230. Dr. Lobotomy's new station mixes rock and oddball feature stories. Though it claims a high powered transmitter, its signal is often weak. Addr: Wellsville. (Michael Schmehl, Reading PA)
EBO Radio- 7415 at 0030. The EBO gang has been quite active with rock music, requests for photos of female DXers, and relays of other pirates from a Frogmore, SC, country club. They occasionally use CW Morse code mode. Addr: Wellsville. (Glenn Thompson, Menomonie, WI, Lytle, and many others)
Jolly Roger International- 7417 at 0430. One of the best produced rock pirates on the air, with their famous JRI in the Sky FCC helicopter reports. They claim to be in AM stereo, with one channel each on LSB and USB. Addr: None, responds to reports via the ANARC computer BBS at (913) 345-1978. (Harwood)
North Coast Jersey Radio- 7412 at 2245. A new station with rock and easy listening music, sometimes IDing as North Jersey Coast Radio. Like Rush Limbaugh, they are sponsored by Snapple. Addr: Merlin. (Schmehl)
Radio Beaver- 7419 at 0100. Bucky Beaver's recent shows have urged rejection of the proposed new Canadian constitution. Addr: Merlin. (Cathy Zylka, Buffalo, NY)
Radio Free America- Station operator Bill O. Rights sends a free copy of the USA Constitution and the Declaration of Independence as an enclosure with QSL's. Addr: Wellsville. (Scott Krauss, Cleveland, OH, and direct from the station)
Radio Free Euphoria- 7415 at 0100. Captain Ganja features pro-marijuana advocacy, and replies to reports with the QSL pictured this month. Addr: Wellsville. (Direct from the station)
RKNA- 7415 at 2330. Dennis' first pirate log, reported in the October MT, generated a QSL from verie signer Ol' Western Feller. Addr: Wellsville. (Dennis Myhand, Dermott, AR)
Voice of Bob- 7415 at 0115. The Church of the Subgenius in Dallas, Texas, recently signed up the EBO Radio transmitter as a supplement to longtime relay station **Secret Mountain Laboratory**. Addr: Wellsville. (Schmehl)
Voice of the Laughing Idiot- 7416 at 0230. The announcer on this new one laughs

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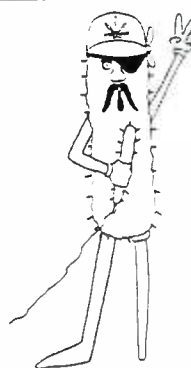
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The pirate microphone at Radio Free Euphoria.



RADIO FREE EUPHORIA

QSL # _____

NAME _____

DATE _____

TIME _____

FREQ _____

hysterically throughout his shows, but he simultaneously talks. You have to hear it to believe it. Addr: None yet. (George Zeller, Cleveland, OH)
Voice of the Night- 7415 at 0230. This station often plays a Ramones rock song containing an ID announcement of Rock and Roll Radio; don't be confused by this. Addr: Pittsburgh. (Paul Hartley, Columbus, OH)
WARI- 7415 at 0200. Dr. Lobotomy's old station appears to have supplanted by East Coast Music Radio, but WARI is still active at times. Addr: Wellsville. (Harwood and Krauss)
WEED- 7415 at 0330. They still mix rock music with drug advocacy, and have sometimes claimed a California location. Addr: Wellsville. (Harwood)
WKIK- 7415 at 0100. An indirect maildrop has been unearthed for this new rock station, supposedly located in Jacksonville, FL. Addr: Wellsville. (Schmehl and Hartley)
WORK- 7415 at 0230. Workingman's labor-management station, with songs and sketches about work, has been heard lately throughout North America. Addr: Wellsville. (Harwood)

MT

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The screenshot shows the Ham Companion software interface. At the top, there are menu options: Locations, Maps, Graph, Info, Quick Reference, Utilities, Exit. Below the menu, there are several data windows. On the left, a window shows location data for Denver, Colorado, United States of America, including coordinates and a list of nearby locations. In the center, a world map is displayed with various options for map features like Country Names, Country & State Borders, Grayline, Great Circle, and Lat/Long Lines. On the right, there is a propagation graph showing signal strength over time. Below the map, there are shipping and handling information, including prices for ground, overnight, and air shipping, and a note about tax.

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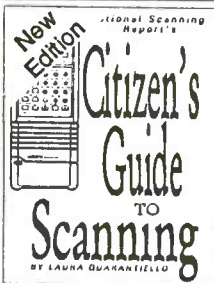
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VFT RTTY

Surprisingly, an old friend has popped up on 6,990 kHz. A 16 channel VFT (sometimes called FDM or buzzsaw) was sending the UPI/AP news wire service on channel 16 using 75 bd and 75 Hz shift. Because it's the last channel in the group, you can copy it using a standard RTTY modem and a narrow audio filter.

The modem should have the capability to tune the 60 Hz shift and the audio filter should have a 120 Hz bandwidth. I used the M8000 with the standard 60 Hz shift filter because it's easier to tune. Using the M7000 or M8000's VFT mode is sometimes a problem because the weaker VFT fails to light up the Mark/Space LEDs.

Other VFTs were found on 10316, 11414, 12144, 13818, 13827, 14386, 15665, 15736 and 16090 kHz. I like to log them even when there is no traffic in the clear. I'll continue to check them occasionally just in case a VFT channel might pop up with readable text.

To tune a VFT using the narrow filter method, I normally set the receiver for USB with the wide (AM) filter switched in. Then I set the tuning for 1 kHz steps. I then rapidly tune the receiver from the MUF (Maximum Usable Frequency) down to about 2,000 kHz. When I find a VFT, with the AM filter still switched in, I usually tune to the center of the aggregate signal. Then I switch to the narrow filters (I normally use a FL-32 500 Hz CW and the FL-44 2.4 kHz in the Icom R71).

With the R71 in RTTY mode I tune the receiver down in frequency until the hash or noise disappear. Then I tune up in frequency until I hear the first channel of the VFT signal. (If you listen carefully you will notice that an FSK signal is present with the hash.) I then tune the PBT (Pass Band Tuning) to obtain a clear FSK signal. If the PBT control can't clear up the FSK, I then switch in my audio filter to further reduce the hash.

If the filters are set up properly, you should be able to tune from the lower end of the VFT and roll through the channels to the upper frequency. As you tune slowly, you should be able to hear the individual channel enter the narrow passband of the I.F. (intermediate frequency) and A.F. (audio frequency) filters. If you have an X/Y oscilloscope connected to your M8000, for example, you can use the normal RTTY tuning techniques to obtain the "Crossed Footballs."

Sometimes the channels are sitting idle and you will hear a single tone. Other times the channel will be sending FSK at a high baud rate with continuous shifting. I can normally tell when the channel is sending clear text; the shift is normally 75 Hz using 75 bd, the FSK is much

slower and the shifting produces a normal RTTY cadence.

Random RTTY?

In September's issue I mentioned an RTTY signal on 8493 kHz using 100/200r. It was sending RY's followed by what appeared to be a pseudo-random pattern.

A college mate and fellow hobbyist Dr. Dave Wilson from Fredericksburg, VA, discovered that after the RY's were sent, the pattern "VMGTCNJBH" was identical to a Bit Error Rate (BERT) generator sending the "63 Pattern." He discovered this after he connected a surplus "BERT Box" to his M8000 and compared the pattern to the received signal. He purchased the BERT Box at a local Hamfest.

We'll keep you posted on his progress, and we welcome your solutions and suggestions.

This wraps up another year. It was a good one for me; I hope it was for you, as well, and I wish you and yours a Merry Christmas and a Happy New Year.

NNN

RTTY Loggings

FREQ	CALL	LOC	SHT/BD	COMMENT
05740.3	RKR78	Russia	850/50	Irkutsk Meteo coded wx
06575.5	????	????	170/96	ARQ-M2 Ch.A clr Spanish tfc
06734.5	????	????	150/96	ARQ-M2 6 hrs idling no ID
06775.0	XTU	Burk. Faso	425/96	ARQ-M2 ASECNA idling
07690.0	TUH	Cote d'Ivoire	425/50	ASECNA w/ RY test tape
07946.7	DHJ51	Germany	425/100	Grengeil meteo coded wx
08828.3	????	????	170/100	SITOR-A Spanish telexes
09330.0	XVN26	Vietnam	425/50	VNA RY//XVN37 10600.0
10134.0	TZH	Mali	425/50	Testing
10215.0	HZN48	Saudi Arab.	850/100	coded weather, RY's
10285.0	RFLI	Martinique	/100	ARQ-E3 Controle de Voie
10443.6	CCS	Chile	850/100	5L code groups
10493.9	RFTJF	Cote d'Ivoire	400/48	ARQ-E3 idling
10639.5	RFQP	Djibouti	400/200	ARQ-M2 idling
10800.3	RFLI	Martinique	850/100	ARQ-E3 5L groups, clr text
10876.0	RFVI	Reunion	/100	ARQ-E3 Controle de Voie
10890.0	GXQ	UK		VFT Foxes
10950.2	RFFA	France	400/200	ARQ-M2 Controle de Voie
11017.4	RPFN	Portugal	900/75	foxes, clg RPTI
11123.5	DGL26L2	Germany	425/96	FEC-A PIAB nx in EE/GG
11138.0	AFS	USA	425/75	Olmstead AFB coded wx
11139.0	PWN	Brazil	75/50	RY's
11431.0	????	USA	SITOR-A	Egypt. Emb.Wash. 5L gps
11453.0	IMB33	Italy	850/50	RY tape
11453.5	IMB31	Italy	850/50	coded weather
11487.9	TUH	Cote d'Iv.	450/50	RY's & "testing" msg
11541.0	7 OC	Yemen	800/50	RY tape
11640.2	DDK8	Germany	425/50	RY's w/DDK2/DDH7/DDK8 ID
12543.3	????	????	850/75	clr/coded Spanish tfc
12901.3	GVA	UK	850/50	letter/number combos
13212.5	LOR	Argentina	170/100	5L code groups
13236.5	ZKX	N. Zealand	850/75	foxes to 0400*
13366.5	5YD	Kenya	250/50	Nairobi Air RY's

13374.0	5YD	Kenya	170/50	RY's
13849.5	RFQP	Djibouti	/100	ARQ-E3 Controle de Voie
14356.0	GFL24	UK	425/50	RY's, coded tfc
14382.1	GXQ	UK	VFT D3	Foxes plus RYI tape
14445.3	MKG	UK	850/50	coded information
14486.5	RFLIRT	France	/96	ARQ-E3 Controle de Voie
14578.0	RFFXL	Lebanon	425/72	ARQ-E3 Controle de Voie
14604.5	MKD	Cyprus	VFT	Foxes
14634.2	MTO	UK	850/75	letter/numbers combos
14786.5	9PL	Zaire	425/50	Test tape
14808.0	GXQ	UK	/50	VFT D1 foxes
14865.3	????	????	192/100	ARQ-M4 idling
14989.0	TNL	Congo	425/96	ARQ-M2 A&B coded weather
15633.0	HMF26	N. Korea	250/50	KCNA with an RY tape
15674.0	DFZG(?)	Yugoslavia	425/75	TANJUG news items
16183.2	????	????	425/50	coded weather
16192.6	CCS	Chile	850/100	5L code groups
16324.7	RFTJ	Senegal	400/48	ARQ-E3 FrMil Cont. de Voie
16448.2	????	????	425/75	5L groups to 1917*
16956.9	UDH	Latvia	SITOR-A	idling
17351.3	CCS	Chile	850/75	RY's
17363.5	5YE	Kenya	850/100	coded weather
18037.2	????	????	170/100	SITOR-A RY's, ment "Haiti"
18173.5	STK	Sudan	425/50	RY test tape
18230.0	GFL25	UK	425/50	coded wx
18264.0	XVN48	Vietnam	425/50	VNA RY's
18376.5	RPFN	Portugal	850/75	FOXES, RY's
18969.5	RFHJ	Tahiti	/96	ARQ-E3 Controle de Voie
19089.2	CLP11	Zambia	450/50	SS nx, MINIREX, crypto
19101.9	RFLI	Martinique	425/192	ARQ-E3 Controle de Voie
19225.7	F0Y	France	425/50	test tape
19386.7	RFQP D	Djibouti	400/200	ARQ-M2 FrMil Cont. de Voie
19498.7	RFHI	New Caled.	425/100	ARQ-E3 clr tfc, 5L groups
19529.0	JMG5	Japan	850/50	coded weather
19718.0	UDK2	Russia	170/50	RY's into CW @1537
20143.8	PTO2	????	170/100	SITOR-B wkg CPEN in clear
20144.0	????	????	170/100	SITOR-B clr tfc in Spanish
20148.2	ACC60	????	SITOR-B	wkg PTO2 w/Spanish tfc
20298.5	????	????	850/75	FOXES (Navy?)
20456.5	C37A	????	300/100	FOXES to 6XM8, tfc
20495.0	CXR	Uruguay	850/75	test tape for PWX
20519.0	CXR	Uruguay	700/75	calling NBA
20532.5	HDN	Ecuador	850/75	foxes, QSO w/CXR
20533.1	????	????	425/50	5L coded groups
20557.1	????	????	850/100	SITOR-A SELCAL EEQK, no QSO
20598.0	HBD66	Canada	Sitor-A	Swiss Emb 5L Code GP
20609.5	HBD20	Germany	170/100	SITOR-Aclr traffic
20645.7	CLP1	Cuba	500/50	5L groups
20742.0	????	????	170/96	ARQ-S5 unid German lang
20756.5	RFLIG	C Guinea	400/96	ARQ-E3 clr tfc to Paris
20756.7	RFLIG	Fr. Guiana	400/96	ARQ-E3 clr tfc to Paris
20796.0	????	????	850/96	ARQ-S4 idling
20831.3	CLP23	Nigeria	500/50	5L coded groups
20834.5	CLP23	Guyana	500/50	5L code groups
20834.5	CLP23	Nigeria	500/50	5L groups & clear traffic
20859.4	????	????	425/144	FEC-A RY's into encrypt.
20908.0	????	????	900/50	RY's, 5L groups
20946.5	LN2A	????	UNK/850	ID in CW
20954.3	9RE	Zaire	400/96	ARQ-M2 idling
21831.5	????	????	170/100	SITOR-A msgs in Spanish
22969.0	HBD32	????	SITOR-A	brief ID, off
25136.3	????	????	850/75	RY's, into encrypted

Loggings by Mark Burkart, Paul Scalzo and Al Quaglieri.

QSL Report

All I want for Christmas is a QSL from Uganda! Yeah, I know, Uncle Skip...that's not how the song goes, but it's what I'm singing this year!

I have had easier times QSLing Indonesians, not to mention flea-watt Peruvians. North Korea was a snap. Falkland Islands? No problem! Galapagos Islands sent me three separate cards!

OK, QSL extraordinaires, this month it's your turn! Help your editor and fellow enthusiasts confirm the elusive catch from Kampala.

Radio Uganda has remained at the top of my Hit List for over four years, and it's time to approach this task with some fresh ideas.

Why not share YOUR ideas, suggestions, tips, and proven methods. What has worked for you? Will Uganda ever reply? Stay tuned, folks. You haven't heard the last of this one.

ANTIGUA

Radio Deutsche Welle relay, 6040 kHz. No data Germany map card, with preprinted veri signer Peter Senger. Received in 80 days for an English report. Station address: 1004 44, W-5000 Cologne 1, Germany. (Nicholas P. Adams, Pt. Murray, NJ)

CANADA

Radio Japan relay, 5960 kHz. Full data scenery QSL card, verified by Kinitoshi Hishikawa. Program schedule and station souvenirs included. Received in 110 days for an English report. Station address: NHK, Tokyo 150-01, Japan. (Adams, NJ)

EGYPT

Middle East News Agency-SUA 30, 10610 kHz. Full data letter, verified by M. Mounir-Head of Engineering Sector. Received in 18 days for RTTY utility report and 1 IRC. Station address: Hoda Sharawi St., Cairo, Egypt. (Nagl Martin, Austrian DX Club)

EL SALVADOR

Radio Venceremos, 6300.04 kHz. Full data yellow logo card, verified by Gustavo Acosta-Director El Salvador Media Project. Station newsletter and brochures included. Received 35 days for a English report, prepared QSL card (not returned) and U.S. mint stamp. Station address: El Salvador Media Project, 335 West 38th St., 5th Floor, New York, NY 10018. Listeners in Europe should send their reports to SRV Press Bureau, Schornhorstr. 6, 500 Koeln 60, Germany. Telephone 49 (0) 221-76-5852. (GVH, LA)

HONG KONG

Hong Kong Volmet, 13282 kHz USB. Full data letter, verified by Chan Hoon-quan, Chief Aeronautical Communications. Received in 16 days for a cassette tape (returned), and 2 IRCs. Station address: Telecommunications Unit, Technical & Planning Division, Civil Aviation Department, Hong Kong Int'l Airport, Hong Kong. (Martin, Austria)

INDONESIA

Sulawesi: Radio Republik Indonesia-Ujung Pandang, 4753.5 kHz. Full data prepared QSL verified by Dr. H. Harmyn Husein. Station schedule booklet included. Received in 35 days for an Indonesian report, prepared QSL card, mint Indo stamps, souvenir postcard, and self-addressed-envelope which was used for station reply. Station address: Jln Riburane 2, Kotak Pas 103, Ujung Pandang, Sulawesi, Selatan, Indonesia. (GVH, LA)

JAPAN

Tokyo Volmet-JMA, 13282 kHz USB. Full data QSL card, verified by Taizo Kakimoto. Received in 22 days for cassette tape (returned) and 2 IRCs. Station address: Aviation Weather Service Centre, New Tokyo Int'l Airport, 133 Komemae Aza Furgome, Narita City Chiba Pref., Japan. (Martin, Austria)

NETHERLANDS

Royal Netherlands Naval Radio Station-PBC 38, 8439 kHz. Full data letter, with illegible signature of Officer-in-Charge. Two stickers of "Koninklijke Marine" enclosed. Received in 11 days for a RTTY utility report and 1 IRC. Station address: Oic Navradsta, Marine Radiostation Noordwijk, Officer-in-Charge, Lange Velderslag, 2210 AB Noordwijkerhout, The Netherlands. (Martin, Austria)

Scheveningen Radio, 4370 kHz USB. Full data QSL card, with illegible veri signer. Received in 11 days for an English utility report and 1 IRC. Station address: Postbus 468, 1970 AL Ijmuiden, The Netherlands. (Martin, Austria)

Radio Netherlands, 6020 kHz. Full data QSL of Solar Eclipse, without veri signer. Received in 33 days for an English report. Station address: P.O. Box 222, 1200 J G Hilversum, Netherlands. (Adams, NJ) (Thomas W. Hoffman, Decatur, IL)

SHIP TRAFFIC

OMI WABASH-WGWC, 16528 kHz (Tanker). Full data prepared QSL card, stamped with ship's seal, and illegible veri signature. Received in 25 days for an English utility report and a stamped-self-addressed-envelope. Ship address: Omi Corp., 90 Park Ave., New York, NY 10016. (Russ Hill, Oak Park, MI)

SEA FOX-KBGK, 156.65 MHz (Container/Cargo). Full data letter, verified by Mark A. Calderazzo-Radio Officer. Souvenirs of ship T-shirt and cap included. Radio Officer who recently served on sister ship Sea Lion, commented he saw my report in the LW publication *Lowdown*. Received in 57 days for an English utility report, and mint stamps. Ship address: American Transport Lines, Inc., P.O. Box 2110, Jacksonville, FL 32203-2110. (Hank Holbrook, Dunkirk, MD)

OVERSEAS JOYCE-WUQL, 156.65 MHz (Car Carrier). Full data letter verifying report. Received in 57 days for an English utility report, and mint stamps. Ship address: Maritime Overseas Corp., 43 West 42nd St., New York, NY 10036. (Holbrook, MD)

BERG MASTER-9VEO, 156.65 MHz (Bulk Carrier). Full data QSL verified by Radio Officer, with photo of vessel. Received in 101 days for an English utility report, and one U.S. dollar. Ship address: Bergesen, D.Y., A/s-Bergehus, Drammensveien 106, Postboks 7600, Skillebekk 0205 Oslo 2, Norway. (Holbrook, MD)

USAV COMMANDO-AAOJ, 156.65 MHz (Army Vessel). Full data prepared QSL card verified. Received in 131 days for an English utility report and mint stamps. Ship address: Office of Transportation, Ft. Eustis, VA 23604-5407. (Holbrook, MD) *Hank has verified 4,705 ships/boats! Way to go, Hank! (GVH)*

SWEDEN

Televærkets Kustradiostation-SAG2, 4262 kHz. Partial data QSL card, verified by Sten-Eric Petersson-QSL Manager. Souvenir stickers, and station brochure included. Received in 109 days for a utility report and one IRC. Station address: Goteborg Radio, 43900 Onsala, Sweden. (Martin, Austria)

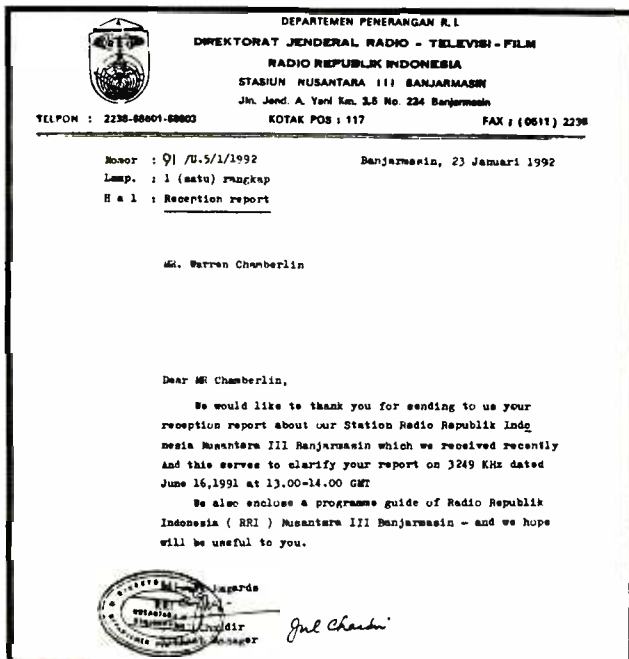
Radio Sweden, 11705 kHz. Full data scenery QSL card, with illegible veri signature. Two souvenir stickers, and program schedule included. Received in 9 days for an English report. Station address: S-105 10 Stockholm, Sweden. (Sam Wright, Biloxi, MS)

UNITED STATES

WJCR, 7490 kHz. Full data white station logo card, and personal letter from Don Powell-President WJCR. Blue station sticker. Received in 15 days for an English report, 1 mint stamp, and a souvenir postcard. Station address: Upton, KY 42784. (Wright, MS)

VENEZUELA

Radio Nacional de Venezuela, 9540 kHz. Full data plain tan station card, with illegible signature. Received in one year for a Spanish report and 4 IRCs. Station address: Apartado 3979, Caracas 1010, Venezuela. (John Carson, Norman, OK)



Warren Chamberlain of Big Bear Lake, CA, received this QSL from the Radio Republik Indonesia after waiting seven months. Warren says, "It's worth waiting for!"

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 "Ken Bruce 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. If it's news you're interested in, check out the complete "Newswire" 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 re-run, 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	H: Thursday
M: Monday	F: Friday
T: Tuesday	A: Saturday
W: Wednesday	

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.

Of course, every station can't be heard all the time. To help you find the right 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	me: Middle East
na: North America	as: Asia
ca: Central America	au: Australia
sa: South America	pa: Pacific
eu: Europe	va: various
af: Africa	do: domestic broadcast
me: Middle East	om: omnidirectional

Consult the propagation charts. To further help you find the right frequency, we've included propagation charts at the back of this section, which take into account conditions affecting the audibility of shortwave broadcasts. Simply pick out the region in which you live and find the chart for the region in which the station you want to hear is located. The chart indicates the optimum frequencies for a given time in UTC.

Hot News and Hot Spots**Roundabout Route**

Only in the wonderful world of shortwave can a radio listener in North America hear an Asian news broadcast produced in Europe and transmitted from Africa! When Radio Netherlands North America service signs off at 0125, try tuning to either 9860 or 11655 for the South Asian service which begins at 0130. This transmission is relayed via the exotic African nation of Madagascar.

Island under Quarantine

Warning: The government of Papua New Guinea does not allow travel to Bougainville, the largest island in its North Solomon Province. But you, the shortwave listener, can still gain access to this world hot spot via the airwaves. The most direct route would be Radio Free Bougainville's new frequency of 3870 between 1000 and 1100 UTC, a difficult but not impossible catch.

Slightly easier to hear is the Solomon Island Broadcasting Corporation on 9545. Here you will find some very interesting newscasts on the Bougainville crisis. Listeners in North America should look for this around 0800.

For a different slant on the news from Bougainville, try Radio Australia's Papua New Guinea service on 6020 starting at 0630 or 9710

starting at 0830, both putting in good signals throughout North America.

Religious Programs on Russian Jammers

The very strange Radio Aum Shinrikyo continues its English language broadcasts to North America with very strong signals thanks to Radio Moscow transmitters located in the Russian Far East. Best time for reception is the 2030 to 2100 outlet using the following frequencies: 15425, 17560, 17605, 17690, and 17720 kHz.

Aum Shinrikyo is a Japanese sponsored sect headed by Master Shoko Asahara. If you would like to receive their QSL card, correct reports will be verified by writing to: Aum Shinrikyo, 381-1 Hitoana, Fujinomiya, Shizuoka, Japan 418-01.

Another religious broadcaster which has announced it is purchasing time on Russian transmitters is Dr. Gene Scott's University Network. Transmissions will be aimed at Russia, Siberia, China, India and Southeast Asia.

Dr. Scott currently owns "The Caribbean Beacon" station on Anguilla (BWI) which broadcasts in the AM broadcast band at 1610 and 970 (690 AM planned for November). He also purchases time on shortwave frequencies 5920, 9785 and 11530 kHz.

RFI Seizes the Day

Radio France is making the best of what it perceives as an opportunity to expand in "an international context dominated by the great Anglo-Saxon media." RFI Director Andre Larquie announced new shortwave transmitters planned for mainland France, in Guyana, in Gabon, Jibuti, and possibly Thailand.

A 6.5% increase in RFI's budget will allow a 30-minute increase in English language broadcasts (totalling 3 hours per day) and the opening of two new editorial desks—Laotian and Cambodian.

A Blessing to the Peacemakers

Radio Canada International's broadcast to Canadian Forces in Yugoslavia has been expanded to allow reception in Cyprus and Somalia as well. By April, the program should expand to one hour. Currently RCI broadcasts to its peacekeeping forces from 2000-2029 UTC on 17875, 17820, 15325, 15140, 13670, 13650 and 11945 kHz from Canada, and on 5995 and 7235 via UK relay transmitters.

Thanks to David Datko, Todd Dokey, and the BBC Monitoring Service for this month's hot news.

MT Monitoring Team

P.O. Box 98, Brasstown, NC 28902-0098

Greg Jordan
Frequency Manager
North Carolina
Call 919-661-0095 7-11 pm
with updates

Dave Datko
California

B.W. Battin
New Mexico

Jacques d'Avignon
Propagation Forecasts
Ontario, Canada

Kannon Shanmugam
Program Manager
Kansas

John Carson
Oklahoma

Jim Frimmel
Texas

**January Deadline:
November 27**

newslines

"Newslines" 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
CBC, Northern Quebec [S]
Christian Science Monitor
Radio Australia
Radio Beijing
Radio Czechoslovakia
Radio Havana Cuba [T-S]
Radio Luxembourg
Radio Moscow
Radio New Zealand Int'l
Radio Thailand
Radio Vilnius
SBC Radio 1, Singapore
Spanish National Radio
Swiss Radio Int'l
Voice of America
0005
Radio Pyongyang
0010
Radio Beijing*
0030
All India Radio
BRT, Brussels
Christian Science Monitor (SE Asia) [M]
Christian Science Monitor [T-F]
HCJB
Radio Havana Cuba [T-S]
Radio Korea
Radio Netherlands
Voice of America (Americas, East Asia) (Spec English) [T-S]
Voice of America (East Asia) (Special English) [M]
0035
All India Radio (News Service)
0045
Radio Korea (News Service)
0055
WRNO [H, A]
- 0100 UTC**
(8:00 PM EST, 5:00 PM PST)
BBC
CBC, Northern Quebec
Christian Science Monitor
Croatian Radio, Zagreb [M-A]
Deutsche Welle
Radio Australia
Radio Canada Int'l [T-A]
Radio Havana Cuba [T-S]
Radio Luxembourg
Radio Moscow
Radio New Zealand Int'l [M-A]
Radio Romania Int'l
Radio RSA
Radio Thailand
RAE, Buenos Aires [T-A]
SBC Radio 1, Singapore
Swiss Radio Int'l
Voice of America
Voice of Free China
Voice of Myanmar
- Radio Havana Cuba [T-S]
Radio Japan
Radio Luxembourg
Radio Moscow
Radio New Zealand Int'l
Radio Sofia
Radio Tashkent
Radio Thailand
Radio Ukraine Int'l
Radiotelevisione Italiana
SBC Radio 1, Singapore
Spanish National Radio
Voice of America
Voice of Indonesia
WWCR [T-A]
0115
Radio Havana Cuba* [T-S]
0125
Radio Korea [T-A]
0130
Christian Science Monitor (SE Asia) [M]
Christian Science Monitor [T-F]
Radio Austria Int'l
Radio Havana Cuba [T-S]
Radio Netherlands
Radio New Zealand Int'l [M-F]
Radio Yugoslavia
Voice of Greece [M-A]
0155
Voice of Indonesia
WRNO [W, A]
- 0200 UTC**
(9:00 PM EST, 6:00 PM PST)
BBC
CBC, Northern Quebec [S-M]
Christian Science Monitor
Croatian Radio, Zagreb [S]
Deutsche Welle
Radio Australia
Radio Canada Int'l [T-A]
Radio Havana Cuba [T-S]
Radio Luxembourg
Radio Moscow
Radio New Zealand Int'l [M-A]
Radio Romania Int'l
Radio RSA
Radio Thailand
RAE, Buenos Aires [T-A]
SBC Radio 1, Singapore
Swiss Radio Int'l
Voice of America
Voice of Free China
Voice of Myanmar
- WWCR [T-A]
0215
Radio Cairo
Radio Nepal
0230
Christian Science Monitor (Africa, Middle East) [M]
Christian Science Monitor [T-F]
HCJB
Radio Finland [T-A]
Radio Havana Cuba [T-S]
Radio Moscow
Radio Netherlands
Radio Pakistan (Special English)
Radio Portugal [T-A]
Radio Tirana
Radio Yugoslavia
SLBC, Sri Lanka
0245
All India Radio (News Service)
- 0300 UTC**
(10:00 PM EST, 7:00 PM PST)
BBC
CBC, Northern Quebec [T-S]
Christian Science Monitor
Deutsche Welle
Radio Australia
Radio Bahrain
Radio Beijing
Radio Canada Int'l
Radio Czechoslovakia
Radio Havana Cuba [T-S]
Radio Moscow
Radio New Zealand Int'l [T-F]
Radio Romania Int'l
Radio RSA
Radio Sofia
Radio Tanzania
Radio Thailand
SBC Radio 1, Singapore
Swiss Radio Int'l
Voice of America
Voice of Turkey
WRNO [F]
WWCR [T-A]
ZNBC Radio 2, Lusaka
0405
Radio Pyongyang
0410
Radio Beijing*
0425
Radiotelevisione Italiana
0430
BBC (Africa)* [M-A]
Christian Science Monitor (Africa, Asia) [M]
Christian Science Monitor [T-F]
Radio Bahrain
Radio Havana Cuba [T-S]
Radio Botswana
Radio Moscow
- Christian Science Monitor [T-F]
Radio Austria Int'l [T-A]
Radio Bahrain
Radio Havana Cuba [T-S]
Radio Iraq Int'l
Radio Netherlands
Radio Tirana
UAE Radio, Dubai
0340
Voice of Greece [M-A]
0350
Radio Yerevan
0355
Radio Japan [M-F]
- 0400 UTC**
(11:00 PM EST, 8:00 PM PST)
BBC
CBC, Northern Quebec
Christian Science Monitor
Deutsche Welle
Radio Australia
Radio Bahrain
Radio Beijing
Radio Canada Int'l
Radio Czechoslovakia
Radio Havana Cuba [T-S]
Radio Moscow
Radio New Zealand Int'l [T-F]
Radio Romania Int'l
Radio RSA
Radio Sofia
Radio Tanzania
Radio Thailand
SBC Radio 1, Singapore
Swiss Radio Int'l
Voice of America
Voice of Turkey
WRNO [F]
WWCR [T-A]
ZNBC Radio 2, Lusaka
0405
Radio Pyongyang
0410
Radio Beijing*
0425
Radiotelevisione Italiana
0430
BBC (Africa)* [M-A]
Christian Science Monitor (Africa, Asia) [M]
Christian Science Monitor [T-F]
Radio Bahrain
Radio Havana Cuba [T-S]
Radio Botswana
Radio Moscow
- 0450**
Radio RSA
0455
WYFR (Network) [T-A]
- 0500 UTC**
(12:00 AM EST, 9:00 PM PST)
BBC ("Newshour")
CBC, Northern Quebec [T-S]
Christian Science Monitor
Deutsche Welle
HCJB
Kol Israel
Radio Australia
Radio Bahrain
Radio Japan
Radio Lesotho
Radio Moscow
Radio New Zealand Int'l [W-F]
Radio RSA
Radio Thailand
SBC Radio 1, Singapore
Spanish National Radio
Voice of America
ZNBC Radio, Lusaka
0510
Radio Botswana
0520
Radio For Peace Int'l [T-A]
0530
Christian Science Monitor (Africa, Asia) [M]
Christian Science Monitor [T-F]
Radio Austria Int'l
Radio Moscow (World Service)
Radio Romania Int'l
Radio Thailand
RTM, Malaysia
UAE Radio, Dubai
Voice of Nigeria
0545
Voice of Nigeria*
- 0600 UTC**
(1:00 AM EST, 10:00 PM PST)
BBC
CBC, Northern Quebec
Christian Science Monitor
Deutsche Welle
GBC Radio, Accra*
Radio Australia
Radio Bahrain
Radio Havana Cuba [T-S]
Radio Korea
Radio Moscow

newsline

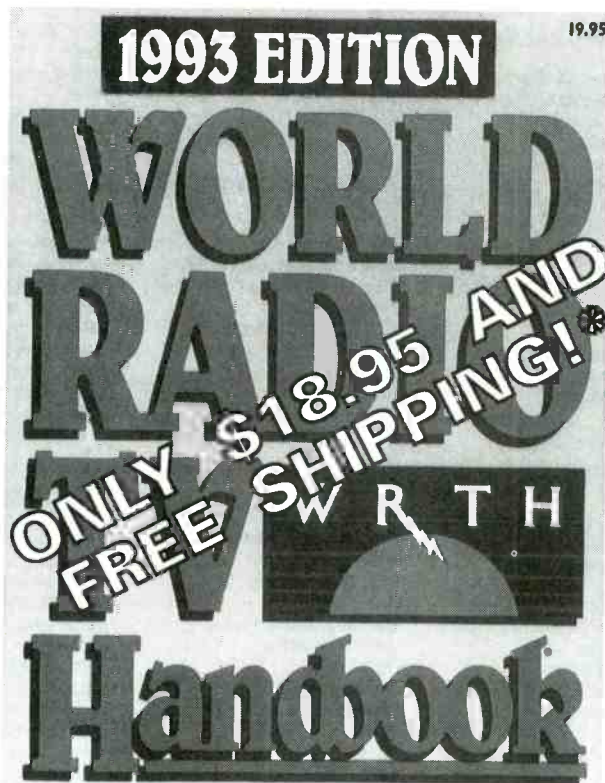
- Radio New Zealand Int'l [M-F]
Radio RSA
SBC Radio 1, Singapore
Swiss Radio Int'l
Voice of America
WWCR
ZNBC Radio, Lusaka [M-A]
0605
Radio Pyongyang
0609
BBC*
0610
Voice of Malaysia
0615
Radio Canada Int'l [M-F]
0620
Radio Finland [T-A]
0630
BBC (Africa)*
Christian Science Monitor [M-F]
Radio Austria Int'l
Radio Havana Cuba [T-S]
Radio Moscow (World Service)
RTV Congolaise, Brazzaville [M-F]
Voice of Nigeria
0645
Radio Romania Int'l
Voice of Nigeria*
0655
Radio Korea [M-F]
- 0700 UTC**
(2:00 AM EST, 11:00 PM PST)
BBC
Christian Science Monitor
GBC Radio, Accra
MBC, Blantyre [M-A]
Radio Australia
Radio Czechoslovakia
Radio Havana Cuba [T-S]
Radio Japan
Radio Moscow
Radio New Zealand Int'l
SBC Radio 1, Singapore
SLBS, Freetown
Voice of Free China
Voice of Myanmar
WWCR [M-A]
0703
Croatian Radio, Zagreb [M-A]
0705
Radio Pyongyang
0715
Radio Havana Cuba* [T-S]
0730
All India Radio (News Service)
BBC (Africa)* [M-A]
BRT, Brussels
Christian Science Monitor [M-F]
HCJB
Radio Czechoslovakia
Radio Ghana
Radio Havana Cuba [T-S]
Radio Moscow (World Service)
Radio Netherlands
0745
Radio Finland [T-A]
0750
Radio For Peace Int'l [T-A]
0755
Radio Japan [M-F]
- 0800 UTC**
(3:00 AM EST, 12:00 AM PST)
BBC
Christian Science Monitor
GBC Radio 1, Accra [S]
GBC Radio 2, Accra
MBC, Blantyre [S]
- Radio Australia
Radio Bahrain
Radio Korea
Radio Moscow
Radio New Zealand Int'l [M-F]
Radio Pakistan
SBC Radio 1, Singapore
SLBS, Freetown
Voice of Indonesia
ZNBC Radio 2, Lusaka [M-A]
0803
Croatian Radio, Zagreb [S]
0805
Radio Pyongyang
0810
Voice of Malaysia
0830
All India Radio (News Service)
Christian Science Monitor [M-F]
Radio Austria Int'l
Radio Moscow (World Service)
Radio Netherlands
0840
Voice of Greece [M-A]
0850
All India Radio (News Service)
(Special English)
0855
Radio Korea [M-F]
Voice of Indonesia
- 0900 UTC**
(4:00 AM EST, 1:00 AM PST)
BBC
Christian Science Monitor
Deutsche Welle
GBC Radio 1, Accra [M-F]
GBC Radio 2, Accra
MBC, Blantyre [M-A]
Radio Australia
Radio Bahrain
Radio Beijing
Radio Finland [T-A]
Radio Japan
Radio Moscow
Radio New Zealand Int'l [S-F]
SBC Radio 1, Singapore
Swiss Radio Int'l
Voice of Nigeria
0903
Croatian Radio, Zagreb [M-A]
0910
Radio Beijing*
0915
Radio Korea (News Service)
0930
All India Radio (News Service)
Christian Science Monitor [M-F]
Deutsche Welle (Africa)* [M-F]
Radio Afghanistan
Radio Finland [T-A]
Radio Moscow
Radio Netherlands
0940
Radio Togo
0950
Radio Pacific Ocean [A]
0955
Radio Japan [M-F]
- 1000 UTC**
(5:00 AM EST, 2:00 AM PST)
All India Radio
BBC
BRT, Brussels [M-A]
Christian Science Monitor
GBC Radio 2, Accra [A]
HCJB
MBC, Blantyre [S]
- Radio Australia
Radio Bahrain
Radio Beijing
Radio Moscow
Radio New Zealand Int'l [S-M, W-H]
Radio RSA
Radio Tanzania
SBC Radio 1, Singapore
Voice of America
ZNBC Radio 2, Lusaka [M-A]
1003
Croatian Radio, Zagreb [S]
1010
Radio Beijing*
1030
Christian Science Monitor [M-F]
MBC, Blantyre [M-F]
Radio Austria Int'l [M-F]
Radio Korea
Radio Moscow
RTM, Malaysia
UAE Radio, Dubai
Voice of Nigeria
1040
Voice of Greece [M-A]
1055
All India Radio
- 1100 UTC**
(6:00 AM EST, 3:00 AM PST)
BBC
Christian Science Monitor
Deutsche Welle
GBC Radio, Accra [A-S]
Kol Israel
MBC, Blantyre [A-S]
Radio Australia
Radio Bahrain
Radio Japan
Radio Korea
Radio Moscow
Radio New Zealand Int'l
Radio Pakistan
Radio RSA
SBC Radio 1, Singapore
Swiss Radio Int'l
TWR, Bonaire [M-F]
Voice of America
ZNBC Radio, Lusaka
1105
Radio Pakistan (Special English)
Radio Pyongyang
1110
Radio Belize [T-A]
Radio Botswana [M-F]
1115
Radio Korea (News Service)
Radio Nepal
1125
Radio Belize [M]
Radio Botswana [A-S]
1130
Christian Science Monitor [M-F]
Deutsche Welle* [M-F]
Radio Czechoslovakia
Radio Lesotho
Radio Moscow
Radio Netherlands
RTM, Malaysia*
1135
All India Radio (News Service)
Radio Thailand
1150
Radio RSA
1155
Radio Japan [M-F]
Radio Korea [M-F]
- 1200 UTC**
(7:00 AM EST, 4:00 AM PST)
BBC
CBC, Northern Quebec [A-S]
Christian Science Monitor
MBC, Blantyre [M-F]
Radio Australia
Radio Bahrain
Radio Beijing
Radio Jordan
Radio Moscow
Radio Nacional do Brasil [M-A]
Radio New Zealand Int'l [S-F]
Radio Sofia
Radio Tashkent
Radio Thailand
RTM, Malaysia
SBC Radio 1, Singapore
SLBC, Sri Lanka
Voice of America
WWCR [M-F]
1210
Radio Beijing*
1215
HCJB [M-F]
Radio Korea
1225
Radio Finland [T-F]
1230
All India Radio (News Service)
BRT, Brussels [S]
Christian Science Monitor [M-F]
Radio Austria Int'l [M-F]
Radio Cairo
Radio France Int'l
Radio Moscow
Radio Netherlands
Radio Yugoslavia
SLBC, Sri Lanka
TWR, Bonaire [A-S]
1235
Voice of Greece
1245
SLBC, Sri Lanka
1257
HCJB [M-F]
1258
Africa Number One, Libreville
- 1300 UTC**
(8:00 AM EST, 5:00 AM PST)
BBC ("Newshour")
CBC, Northern Quebec [A-S]
Christian Science Monitor
GBC Radio, Accra
Polish Radio, Warsaw
Radio Australia
Radio Bahrain
Radio Beijing
Radio Belize
Radio Canada Int'l [M-F]
Radio Moscow
Radio New Zealand Int'l
Radio Romania Int'l
Radio Tanzania [A-S]
SBC Radio 1, Singapore
Swiss Radio Int'l
Voice of America
WWCR [M-F]
1303
Croatian Radio, Zagreb
1305
Radio Pyongyang
1310
Radio Beijing*
Radio Korea [M-F]
1320
Radio For Peace Int'l [T-A]
SLBC, Sri Lanka
- 1325**
HCJB [M-F]
1328
Radio Cairo
1330
All India Radio
Christian Science Monitor [M-F]
FEBC Radio Int'l, Philippines
Radio Austria Int'l [M-F]
Radio Canada Int'l (Asia)
Radio Finland [T-F]
Radio Moscow
Radio Netherlands
Radio Tashkent
RTM, Malaysia
UAE Radio, Dubai
Voice of America (Spec English)
Voice of Turkey
1346
All India Radio [A]
1355
WYFR (Network) [M-F]
- 1400 UTC**
(9:00 AM EST, 6:00 AM PST)
BBC
BRT, Brussels [M-A]
CBC, Northern Quebec
Christian Science Monitor
GBC Radio, Accra
Kol Israel [S-H]
MBC, Blantyre [M-F]
Radio Australia
Radio Bahrain
Radio Beijing
Radio Belize [M-F]
Radio Canada Int'l [S]
Radio Finland [A]
Radio France Int'l
Radio Japan
Radio Jordan
Radio Korea
Radio Moscow
RTM, Malaysia*
SBC Radio 1, Singapore
Voice of America
ZNBC Radio 2, Lusaka [M-F]
1410
Radio Beijing*
1415
Radio Korea (News Service)
Radio Nepal
1425
HCJB [M-F]
1430
All India Radio (News Service)
Christian Science Monitor [M-F]
FEBC Radio Int'l, Philippines
Radio Finland [T-F]
Radio Moscow
Radio Netherlands
Radio Romania Int'l
Radio Tirana
1445
BBC (East Asia) (SpecEng) [M-F]
Voice of Myanmar
1455
All India Radio
Radio Korea [M-F]
- 1500 UTC**
(10:00 AM EST, 7:00 AM PST)
BBC
CBC, Northern Quebec [A-S]
Christian Science Monitor
Deutsche Welle
GBC Radio 2, Accra
National Unity Radio,
Omdurman

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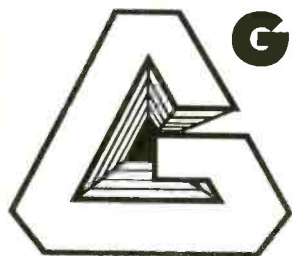
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 Radio Japan
 Radio Moscow
 Radio Portugal [M-F]
 RTM, Malaysia
 SBC Radio 1, Singapore
 SLBC, Sri Lanka
 Swiss Radio Int'l
 Voice of America
 Voice of Ethiopia
 WWCR [M-F]
1505
 Radio Finland [T-A]
 Radio Pyongyang
1510
 Radio Beijing*
1515
 Radio Canada Int'l (Europe)
1530
 All India Radio (News Service)
 Christian Science Monitor [M-F]
 Deutsche Welle* [M-F]
 FEBA, Seychelles
 FEBC Radio Int'l, Philippines
 Radio Austria Int'l
 Radio Moscow
 Radio Netherlands
 Voice of Ethiopia
 Voice of Greece [M-A]
 Voice of Nigeria
1540
 Voice of Nigeria*
1545
 Radio Korea (News Service)
1550
 Radio For Peace Int'l [T-A]

1600 UTC
(11:00 AM EST, 8:00 AM PST)
 BBC
 CBC, Northern Quebec [A-S]
 Christian Science Monitor
 Deutsche Welle
 GBC Radio 2, Accra
 MBC, Blantyre
 Polish Radio, Warsaw
 Radio Australia
 Radio Bahrain
 Radio Beijing
 Radio Canada Int'l [S]
 Radio France Int'l
 Radio Jordan
 Radio Korea
 Radio Lesotho
 Radio Moscow
 Radio Pakistan
 Radio RSA
 Radio Tanzania
 SBC Radio 1, Singapore
 Voice of America
 Yemen Radio
 ZNBC Radio 2, Lusaka [M-A]
1609
 BBC*
1610
 Radio Beijing*
 Radio Botswana [M-F]
1615
 Radio Pakistan (Special English)
1620
 Radio Tallinn [M-F]
1630
 Christian Science Monitor [M-F]
 HCJB [M-F]
 Radio Austria Int'l [M-F]
 Radio Canada Int'l

Radio Moscow
 UAE Radio, Dubai
 Voice of America (Europe)
 (Special English)
1655
 Radio Korea [M-F]

1700 UTC
(12:00 PM EST, 9:00 AM PST)
 BBC
 CBC, Northern Quebec [A]
 Christian Science Monitor
 GBC Radio 2, Accra
 Radio Australia
 Radio Bahrain
 Radio Beijing
 Radio Belize [M-F]
 Radio Canada Int'l
 Radio Japan
 Radio Jordan
 Radio Moscow
 Radio Pakistan
 Radio RSA
 SLBC, Sri Lanka
 Swiss Radio Int'l
 Voice of America
1705
 Radio Pyongyang
1710
 Radio Beijing*
1715
 Radio Korea (News Service)
1725
 Radio Surinam Int'l [M-F]
1730
 All India Radio (News Service)
 Christian Science Monitor [M-F]
 Radio Moscow
 Radio Netherlands
 Radio Romania Int'l
 WYFR (Network) [A]
1735
 WYFR (Network) [M-F]
1740
 BBC (Africa)*
1750
 Radio RSA

1800 UTC
(1:00 PM EST, 10:00 AM PST)
 All India Radio
 BBC
 CBC, Northern Quebec [A]
 Christian Science Monitor
 GBC Radio, Accra
 Kol Israel
 KVOH
 MBC, Blantyre
 Polish Radio, Warsaw
 Radio Afghanistan
 Radio Australia
 Radio Bahrain
 Radio Belize [M-F]
 Radio Canada Int'l
 Radio Czechoslovakia
 Radio Moscow
 Radio Nacional do Brasil [M-A]
 Radio New Zealand Int'l [S-F]
 Radio Tanzania
 Voice of America
 ZNBC Radio, Lusaka
1815
 ZNBC Radio 2, Lusaka*
1825
 WYFR (Network) [A]
1830
 BSKSA, Riyadh
 Christian Science Monitor [M-F]
 Radio Belize
 Radio Kuwait

Radio Mogadishu
 Radio Moscow
 Radio Netherlands
 Radio Sofia
 Voice of America (Spec English)
1840
 Voice of Greece
1845
 BSKSA, Riyadh*
 Radio Cote d' Ivoire
 Radio Guinea, Conakry
1855
 BBC (Africa)* [M-F]

1900 UTC
(2:00 PM EST, 11:00 AM PST)
 All India Radio
 BBC
 BRT, Brussels
 CBC, Northern Quebec [M-H]
 Christian Science Monitor [M-A]
 Deutsche Welle
 GBC Radio 2, Accra*
 HCJB
 KVOH
 Radio Australia
 Radio Beijing
 Radio Canada Int'l [M-F]
 Radio Japan
 Radio Korea
 Radio Moscow
 Radio New Zealand Int'l [S-F]
 Radio Portugal [M-F]
 Radio Romania Int'l
 RAE, Buenos Aires [M-F]
 SLBS, Freetown
 Spanish National Radio
 Voice of America
1910
 Radio Beijing*
 Radio Botswana
1920
 Voice of Greece
1930
 Christian Science Monitor [M-F]
 Deutsche Welle* [M-F]
 Radio Austria Int'l
 Radio Czechoslovakia
 Radio Finland [M-F]
 Radio Ghana
 Radio Moscow
 Radio Netherlands
 Radio Yugoslavia
 Voice of Nigeria
1935
 Radiotelevisione Italiana
1945
 Radio Togo
1955
 BBC (Africa)* [M-F]
 Radio Finland
 Radio Korea [M-F]
 WYFR (Network) [M-A]

2000 UTC
(3:00 PM EST, 12:00 PM PST)
 BBC
 Christian Science Monitor
 GBC Radio, Accra
 Kol Israel
 KVOH
 MBC, Blantyre
 Radio Australia
 Radio Bahrain
 Radio Beijing
 Radio Belize [M-F]
 Radio Canada Int'l
 Radio Havana Cuba [M-A]
 Radio Iraq Int'l
 Radio Luxembourg

Radio Moscow
 Radio New Zealand Int'l [S-F]
 Radio Portugal [M-F]
 SLBS, Freetown
 Swiss Radio Int'l
 Voice of America
 Voice of Indonesia
 Voice of Nigeria
 ZNBC Radio 2, Lusaka
2005
 Radio Pyongyang
2010
 Radio Beijing*
2025
 Radio Havana Cuba* [M-A]
 Radiotelevisione Italiana
2030
 Christian Science Monitor [M-F]
 Polish Radio, Warsaw
 Radio Havana Cuba [M-A]
 Radio Moscow
 Radio Nacional de Angola
2045
 BSKSA, Riyadh
 Radio Korea (News Service)
 Radio Sofia
2055
 Voice of Indonesia

2100 UTC
(4:00 PM EST, 1:00 PM PST)
 All India Radio
 BBC ("Newshour")
 CBC, Northern Quebec [S-F]
 Christian Science Monitor [M-A]
 Deutsche Welle
 GBC Radio 2, Accra*
 KVOH
 MBC, Blantyre
 Radio Australia
 Radio Bahrain
 Radio Beijing
 Radio Belize [M-F]
 Radio Czechoslovakia
 Radio Japan
 Radio Luxembourg
 Radio Moscow
 Radio New Zealand Int'l [S-F]
 Radio Romania Int'l
 SLBS, Freetown
 Spanish National Radio
 Voice of America
 Voice of Turkey
 ZNBC Radio 2, Lusaka
2110
 Radio Beijing*
2120
 Radio For Peace Int'l [M-F]
2125
 WYFR (Network) [M-F]
2130
 Christian Science Monitor [M-F]
 Radio Cairo
 Radio Moscow
 WYFR (Network) [A]
2145
 Radio Korea

2200 UTC
(5:00 PM EST, 2:00 PM PST)
 All India Radio
 BBC
 BRT, Brussels
 CBC, Northern Quebec [S-F]
 Christian Science Monitor
 CIQX, Montreal [M-F]
 GBC Radio 2, Accra
 MBC, Blantyre
 Radio Australia
 Radio Beijing

Radio Budapest
 Radio Canada Int'l
 Radio Czechoslovakia
 Radio Havana Cuba [M-A]
 Radio Luxembourg
 Radio Moscow
 Radio New Zealand Int'l [S-F]
 Radio Tirana
 Radio Ukraine Int'l
 Radio Yugoslavia
 Radiotelevisione Italiana
 SBC Radio 1, Singapore
 SLBS, Freetown
 Swiss Radio Int'l
 Voice of America
 Voice of Free China
2203
 Croatian Radio, Zagreb
2209
 BBC*
2210
 Radio Beijing*
2225
 Radio Havana Cuba* [M-A]
2230
 Christian Science Monitor [M-F]
 Kol Israel
 Radio Finland [M-F]
 Radio Havana Cuba [M-A]
 Radio Moscow
 Radio Vilnius
 Voice of America (Spec English)
 WYFR (Network) [M-F]
2240
 Radio Korea [M-F]
2245
 GBC Radio, Accra
 Radio Sofia
 Radio Yerevan
 Voice of Greece
2255
 WYFR (Network) [M-A]

2300 UTC
(6:00 PM EST, 3:00 PM PST)
 All India Radio
 BBC
 CBC, Northern Quebec [M-F]
 Christian Science Monitor [M-A]
 Radio Australia
 Radio Belize [M-F]
 Radio Canada Int'l
 Radio Japan
 Radio Luxembourg
 Radio Moscow
 Radio New Zealand Int'l
 RTM, Malaysia
 SBC Radio 1, Singapore
 Voice of America
 Voice of Turkey
2305
 Radio Pyongyang
2320
 Radio Thailand
2330
 Christian Science Monitor [M-F]
 Radio Austria Int'l [M-F]
 Radio Moscow
 Radio Nacional, Bogota [A]
 Radio Netherlands
 RTM, Malaysia*
2340
 Radio Yerevan
2345
 SLBC, Sri Lanka [M]
2350
 Radio For Peace Int'l [M-F]
2355
 Radio Japan [M-F]

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- DELTA COMM™ I-7100 CYBERSCAN feature for monitoring systems employing cluster or frequency hopping techniques.
- Individually programmable database volume levels (by channel) while scanning.
- Spectrum log function will sweep a frequency spectrum, generate a histogram and log frequency/activity to screen and/or disk in real time.
- Dual squelch detect electronics integrated with DELTA COMM™ I-7100 software guarantees optimum speed and performance during a frequency search or database scan.
- Programmable signal strength threshold limits with full 8-bit accuracy allow selective monitoring and logging. Only stations having signal strength less than or greater than or within upper/lower user defined signal strength window limits will be monitored and/or logged.
- Continuously updating activity information window displays the last 19 active channels.
- Channel activity status is displayed in real time with activity log function. To determine system loading when first 5 channels are simultaneously busy, "All Trunks Busy" message is logged to disk.
- Receiver characterization with DELTA COMM™ I-7100 birdie log function automatically logs any receiver birdies prior to a frequency search operation. Birdie channels are then locked out during a frequency search operation, thus eliminating false channel logging.
- Custom interface allows selective program control of relay contact. Possible uses include activating an operator alert, switching antennas via coax relay or turning on a tape recorder when user defined frequencies are found to be active.



DELTA COMM™ I-7100 communication manager comes complete with Delta Research custom (CI-V) communication interface, UL listed power supply, manual and receiver interface cable for \$349.00 + \$8.00 (U.S.) or \$25.00 (foreign) S&H. Contact us for additional information on DELTA COMM™ communication managers for ICOM™ R7000, R71A, R72 and IC735. Performance is proportional to video card, type of computer and receiver squelch detection method.

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

Many Radio Amateurs and SWL's are puzzled. Just what are all those strange signals you can hear but not identify on the ShortWave Bands? A few of them such as CW, RTTY, Packet and Amtor you'll know — but what about the many other signals?

Hoka Electronics have the answer! There are some well known CW/RTTY decoders with limited facilities and high prices, complete with expensive PROMS for upgrading etc., but then there is CODE3 from Hoka Electronics! It's up to you to make the choice - but it will be easy once you know more about Code3. Code3 works on any IBM-compatible computer with MS-DOS 2.0 or later and having at least 640k of RAM. The Code3 hardware includes a digital FSK Converter unit with built-in 115V ac power supply and RS232 cable, ready to use. You'll also get the best software ever made to decode all kinds of data transmissions. Code3 is the most sophisticated decoder available and the best news of all is that it only costs **\$495!**

- Morse - Manual/Auto speed follow. On screen WPM indicator
- RTTY/Baudot/Murray/ITA2/CCITT2 plus all bit inversions
- Sitor - CCIR 625/476-4, ARQ, SBRS/CBRS FEC, NAVTEX etc
- AX25 Packet with selective call sign monitoring, 300 Baud
- Facsimile, all RPM/IOC (up to 16 shades at 1024x768 pixels)
- Autospec - Mk's I and II with all known interleaves
- DUP-ARQ Artrac - 125 Baud Simplex ARQ
- Twinplex - 100 Baud F7BC Simplex ARQ
- ASCII - CCITT 5, variable character lengths/parity
- ARQ6-90/98 - 200 Baud Simplex ARQ
- SI-ARQ/ARQ-S - ARQ1000 simplex
- SWED-ARQ/ARQ-SWE - CCIR 518 variant
- ARQ-E/ARQ1000 Duplex
- ARQ-N - ARQ1000 Duplex variant
- ARQ-E3 - CCIR 519 variant
- POL-ARQ - 100 baud Duplex ARQ
- TDM242/ARQ-242 - CCIR 242 with 1/2/4 channels
- TDM342/ARQ-M2/4 - CCIR 342-2 with 1/2/4 channels
- FEC-A - FEC100A/FEC101
- FEC-S - FEC1000 Simplex
- Sports Info. - 300 Baud ASCII F7BC
- Hellsreiber - Synch./Asynch
- Sitor RAW - (Normal Sitor but without synchronisation)
- ARQ6-70
- Baudot F7BBN
- Pactor - coming soon!

All the above modes are preset with the most commonly seen baudrate setting and number of channels which can be easily changed at will whilst decoding. Multi-channel systems display ALL channels on screen *at the same time*. Split screen with one window continually displaying channel control signal status e.g. idle Alphas/Beta/RQ's etc., along with all system parameter settings e.g. Unshift on space, *Shift on Space*, multiple carriage returns inhibit, auto receiver drift compensation, printer on, system sub-mode. Any transmitted error correction information is used to minimise received errors. All modes, by default, react correctly to third shift signals (e.g. Cyrillic) to generate ungarbled text unlike some other decoders which get 'stuck' in figures mode! Facility to show control characters in any mode. Save ALL channels to disk at the same time (*Option 3 only*).

Six Options are currently available extra to the above standard specification as follows: 1) Oscilloscope. Displays frequency against time. Split screen storage/real time. Great for tuning and analysis. \$45. 2) Piccolo Mk 6. British military multi-tone system that we were the first to decode! \$75. 3) Ascii storage. Save to disc any decoded ascii text for later processing. \$50. 4) Coquelet Mk1 & 2 - two French, 13 and 8, tone systems, only on offer from Hoka! \$75. 5) 4 Special ARQ and FEC systems i.e. TORG-10/11, ROU-FEC/RUM-FEC, HC-ARQ (ICRC) and HNG-FEC. \$95. 6) Auto-classify, why not let the PC tell YOU what the keying system is?! Automatic recognition of over 30 systems - only \$75.

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0000 UTC

[7:00 PM EST/4:00 PM PST]

FREQUENCIES

0000-0025	Netherlands	6020na	6165na			11970na	12050va	15290va	15405va
0000-0027	Czechoslovakia	7345na	9580na	11990na		15425va	15485va	15560va	17560va
0000-0030	Australia	13605pa	15170va	15320va	15365pa	17570va	17720na	17860va	17890va
		17630as	17750as	17880as		21490na	21505na	21690va	
0000-0030	Canada, RCI Montreal	5960am	9755am	13670am		0000-0100	Sierra Leone, SLBS	3316do	
0000-0030 a/var	Croatian Radio via WHRI	7315na				0000-0100	Singapore, SBC1	5010do	5052do 11940do
0000-0030	Iran, Islamic Republic	9022am	11790am	15260am		0000-0100	South Korea, Seoul	15575na	
0000-0030	Lithuania, Radio Vilnius	17605na	17690na			0000-0100	Spanish National Radio	9530na	
0000-0030 sm	Norway	9645am				0000-0100	Thailand	4830as	9655as 11905as
0000-0030	Swiss Radio Int'l	6135na	9650na	9885na	12035na	0000-0100	USA, CSMonitor Boston	7395na	9850af 13760na 17555as
		17730na				0000-0100 sa	USA, CSMonitor Boston	17865as	
0000-0030	United Kingdom, BBC London	5965as	5975na	6005af	6175na	0000-0100	USA, KTBN Salt Lake City	7510am	
		6195as	7145as	7325na	9580as	0000-0100	USA, KVOH Los Angeles	17775am	
		9590na	9915na	11750sa	11945as	0000-0100	USA, VOA Washington	6130am	7405am 9455am 9775am
		11955as	12095na	15070na	15260sa			11580am	11695am 15120am 15205am
		15360pa	17830as					17820na	
0000-0045	Bulgaria, Radio Sofia	11660na	11720na	15330na		0000-0100	USA, WINB Red Lion, Penn.	15145eu	
0000-0050	North Korea	11335na	13760na	15115na		0000-0100	USA, WJCR Upton, Kentucky	7465na	7490na
0000-0100	Australia, ABC Brisbane	4920do	9660do			0000-0100	USA, WRNO New Orleans	7355am	
0000-0100	Australia, ABC Perth	9610do				0000-0100	USA, WWCR Nashville	7435na	13815na
0000-0100	Canada, CFCX Montreal	6005do				0000-0100	USA, WYFR Okeechobee, FL	5985am	
0000-0100	Canada, CFRX Toronto	6070do				0030-0055	Belgium, R Vlaanderen	9930na	13655sa
0000-0100	Canada, CFVP Calgary	6030do				0030-0100	Australia	15320va	15365pa 15420pa 17630as
0000-0100	Canada, CHNX Halifax	6130do						17715pa	17750as 17795pa 17880as
0000-0100	Canada, CKZU Vancouver	6160do						21740pa	21775as
0000-0100	China, CRI	9770na	11715na			0030-0100 sm	Canada, RCI Montreal	5960am	9755am
0000-0100	Cook Islands	11760pa				0030-0100	Ecuador, HCJB Quito	9745am	15155am 21455am
0000-0100	Costa Rica, AWR	9725ca	11870ca			0030-0100	Netherlands	6020na	6165na 9860as 11655as
0000-0100	Costa Rica, RFPI	7375na	7385na	13630na	15030na			11835na	13700as
0000-0100	Cuba, RHC Havana	11950am	13660na			0030-0100	Sri Lanka B'casting Corp.	6005as	9720as 15425as
0000-0100	Guam, KSDA Guam	15610as				0030-0100	United Kingdom, BBC London	5965as	5975na 6005sa 6175na
0000-0100	India, All India Radio	9910as	11715as	11745as	15110as			7135as	7325na 9580as 9590na
		15135as	15145as	17830as				9915na	11750sa 11955as 12095na
0000-0100	Luxembourg, RTL	15350va						15260sa	15360pa
0000-0100	Malaysia, RTM Radio 4	7295do				0030-0100	Yugoslavia	11870am	
0000-0100	New Zealand, RNZI	17770pa				0045-0100	South Korea World News	7275as	
0000-0100	Philippines, FEBC Manila	15450as							
0000-0100	Russia, Radio Moscow	11675na	11710va	11780va	11850va				

SELECTED PROGRAMS

Sundays

- 0030 BBC: The Ken Bruce Show. Ken Bruce plays pop music, past and present.
- 0033 BRT, Brussels: Press Review. A review of stories in the Belgian press.
- 0035 BRT, Brussels: Radio World. Frans Vossen presents news for shortwave enthusiasts.
- 0039 HCJB: DX Party Line. Rich McVicar presents news on shortwave radio and communications.
- 0043 BRT, Brussels: Tourism In Flanders. Things to see and do in Belgium.
- 0050 BRT, Brussels: Record Of The Week. Musical excerpts from a selected Belgian record.
- 0053 BRT, Brussels: P Box 26. Listener letters and questions.

Mondays

- 0030 BBC: In Praise Of God. Christian religious services and meditations.
- 0036 BRT, Brussels: P Box 26. See S 0053.
- 0039 HCJB: Saludos Amigos. Ken MacHarg presents his program of international friendship.
- 0049 BRT, Brussels: Musical Roundabout. See S 1249.

Tuesdays

- 0030 BBC: Panel Game. Richard Stilgoe tests contestants' musical knowledge—and forces them to sing—on "Maestro" (1st, 8th).

Note: BRT has changed its name to Radio Vlaanderen; see above, Belgium.

- 0034 BRT, Brussels: Press Review. See S 0033.
- 0037 BRT, Brussels: Belgium Today. A review of current affairs and events.
- 0039 HCJB: Current Affairs. See M 1639.
- 0042 BRT, Brussels: Focus On Europe. Happenings, events, and politics in Europe.
- 0047 BRT, Brussels: Sports. A roundup of events in the sports world.

Wednesdays

- 0030 BBC: Omnibus. Topical features on almost any topic, from Dracula to drugs.
- 0034 BRT, Brussels: Press Review. See S 0033.
- 0037 BRT, Brussels: Belgium Today. See T 0037.
- 0039 HCJB: Current Affairs. See M 1639.
- 0042 BRT, Brussels: Around The Arts. Developments in the arts in Belgium.
- 0047 BRT, Brussels: P Box 26. See S 0053.

Thursdays

- 0030 BBC: Comedy/Drama (except 3rd, 31st: Two Cheers). See W 1530.
- 0034 BRT, Brussels: Press Review. See S 0033.
- 0037 BRT, Brussels: Belgium Today. See T 0037.
- 0039 HCJB: Current Affairs. See M 1639.
- 0042 BRT, Brussels: Living In Belgium. Everyday life in the low countries.

- 0047 BRT, Brussels: Green Society. The environmental concerns of Belgians.

Fridays

- 0030 BBC: Music Feature. Critics pick the best versions of classical compositions in "Best On Record" (through January 1st).
- 0034 BRT, Brussels: Press Review. See S 0033.
- 0037 BRT, Brussels: Belgium Today. See T 0037.
- 0039 HCJB: Current Affairs. See M 1639.
- 0042 BRT, Brussels: Economics. A review of economic developments.
- 0050 BRT, Brussels: North-South. Development in Africa and other Third World regions.

Saturdays

- 0030 BBC: From The Weeklies. A review of the British weekly press.
- 0034 BRT, Brussels: Press Review. See S 0033.
- 0037 BRT, Brussels: Belgium Today. See T 0037.
- 0039 HCJB: Current Affairs. See M 1639.
- 0042 BRT, Brussels: Around The Arts. See W 0042.
- 0045 BBC: Recording Of The Week. See M 0615.
- 0050 BRT, Brussels: P Box 26. See S 0053.

0100 UTC

[8:00 PM EST/5:00 PM PST]

FREQUENCIES

0100-0115	India, All India Radio	9910as	11715as	11745as	15110as
		15135as	15145as	17830as	
0100-0120	Italy, RAI, Rome	9575am	11800am		
0100-0125	Netherlands	6020na	6165na	9860as	11655as
		11835na			
0100-0127	Czechoslovakia	5930na	7345na	9580na	
0100-0130 twhfa	Canada, RCI Montreal	5960am	9755am		
0100-0130	Laos, National Radio of	7116as			
0100-0130 sm	Norway	9565am			
0100-0130	Sweden	9695as	11820as		
0100-0130	Uzbekistan, R. Tashkent	5930as	5995as	7190as	7265as
0100-0150	Germany, Deutsche Welle	6040na	6055na	6085na	6145na
		9515na	9565na	9610na	9700na
		9770na	11865na		
0100-0159 sm	Canada, RCI Montreal	9535am	9755am	11845am	11940am
		13720am			
0100-0200	Australia	13605pa	15240pa	15320va	15365pa
		17630as	17715pa	17750as	17795pa
		17880as	21590as	21740pa	21775as
		4920do	9660do		
0100-0200	Australia, ABC Brisbane				
0100-0200	Australia, ABC Perth				
0100-0200	Canada, CFCX Montreal				
0100-0200	Canada, CFRX Toronto				
0100-0200	Canada, CFPV Calgary				
0100-0200	Canada, CHNX Halifax				
0100-0200	Canada, CKZU Vancouver				
0100-0200	Cook Islands				
0100-0200	Costa Rica, RFPI				
0100-0200	Cuba, RHC Havana				
0100-0200	Ecuador, HCJB Quito				
0100-0200	Indonesia, Voice of				
0100-0200	Japan NHK				
		17835as	17845as		
0100-0200	Luxembourg, RTL				
0100-0200 smtwh	Malaysia, RTM Radio 4				
0100-0200	Namibia BC Corp, Windhoek				
0100-0200	New Zealand, RNZI				
0100-0200	Philippines, FEBC Manila				

0100-0200	Russia, Radio Moscow	11675na	11710va	11970na	13775na
		15290va	15405va	15410va	15425va
		15485va	17560va	17560va	17570va
		17655va	17720na	17860va	17890va
		21490na	21505na	21690va	
0100-0200	Sierra Leone, SLBS				
0100-0200	Singapore, SBC1				
0100-0200	South Korea, Seoul				
0100-0200	Spanish National Radio				
0100-0200	Sri Lanka B'casting Corp.				
0100-0200	Thailand				
0100-0200	Ukraine, Kiev				
		7195eu	7250eu	9640eu	10344eu
		11520eu	12060na	17605na	17690na
0100-0200	United Kingdom, BBC London				
		5965as	5975na	6005sa	6175na
		7135as	7325na	9580as	9590na
		9915na	11750sa	11955as	12095na
		15260sa	15280as	15360pa	17790va
		21715as			
0100-0200	USA, CSMonitor Boston				
0100-0200 sa	USA, CSMonitor Boston				
0100-0200	USA, KTBN Salt Lake City				
0100-0200	USA, KVOH Los Angeles				
0100-0200	USA, VOA Washington				
		5995am	6130am	7405am	9455am
		9775am	11580am	15120am	15205am
		7115as	7205as	9740as	11705as
		15250as	17735as	21550as	
0100-0200	USA, WHRI Noblesville				
0100-0200	USA, WINB Red Lion, Penn.				
0100-0200	USA, WJCR Upton, Kentucky				
0100-0200	USA, WRNO New Orleans				
0100-0200	USA, WWCN Nashville				
0100-0200	USA, WYFR Okeechobee, FL				
0130-0150 mtwhfa	Greece, Voice of				
0130-0155	Finland, YLE				
0130-0200	Austria, ORF Vienna				
0130-0200	Netherlands				
0130-0200	UAE Radio, Dubai				
0130-0200 WAR/var	Yugoslavia				
0145-0200	Vatican Radio				

SELECTED PROGRAMS

Sundays

- 0100 Radio For Peace Int'l: FIRE. Programming produced by women worldwide on women's issues.
- 0101 BBC: Play Of The Week. Hour-long productions from the BBC's crack drama team.
- 0115 Radiotelevisione Italiana: Tunes For Whistling. Italian popular and jazz music.
- 0130 HCJB: Science, Scripture, And Salvation. No details available.
- 0135 Radio Austria Int'l: Report From Austria. A magazine program, covering all aspects of Austrian life and events in the news, and opening with the latest news bulletin.

Mondays

- 0100 Radio For Peace Int'l: FIRE. See S 0100.
- 0101 BBC: Feature/Drama. Topical programming on various subjects.
- 0115 Radiotelevisione Italiana: No Parking. Italian popular music.
- 0130 HCJB: The Sower. Michael Guido presents music and inspiration.
- 0135 Radio Austria Int'l: Report From Austria. See S 0135.
- 0145 BBC: Feature. This month, Steve Race considers one of the 20th century's greatest songwriters in "Jerome Kern Among Friends."
- 0145 HCJB: Youth Time Radio. Interviews and music for college students.

Tuesdays

- 0100 HCJB: Introspect. Ken MacHarg hosts a weekly discussion on issues and ethics.

- 0100 Radio For Peace Int'l: FIRE. See S 0100.
- 0105 BBC: Outlook. See M 1405.
- 0115 Radiotelevisione Italiana: Light Music. Italian popular, jazz, and easy listening music.
- 0130 BBC: Folk In Britain. Ian Anderson is the host, folk music is the fare.
- 0130 HCJB: Focus On The Family. See M 1330.
- 0135 Radio Austria Int'l: Report From Austria. See S 0135.
- 0145 BBC: Health Matters. New medical developments and methods of keeping fit.

Wednesdays

- 0100 HCJB: Happiness Is. Dee Baklenko presents a variety of topics about Ecuador and beyond.
- 0100 Radio For Peace Int'l: FIRE. See S 0100.
- 0105 BBC: Outlook. See M 1405.
- 0115 Radiotelevisione Italiana: Window On The Bay. Selections of Italian music.
- 0130 BBC: Talks. Michael Rosen reads listener selections on "Poems By Post" (2nd, 9th, 16th, 23rd).
- 0130 HCJB: Focus On The Family. See M 1330.
- 0135 Radio Austria Int'l: Report From Austria. See S 0135.
- 0145 BBC: Country Style. David Allan profiles the country music scene on both sides of the pond.

Thursdays

- 0100 HCJB: Ham Radio Today. John Beck presents news about amateur radio.
- 0100 Radio For Peace Int'l: FIRE. See S 0100.
- 0105 BBC: Outlook. See M 1405.

- 0115 Radiotelevisione Italiana: Light Music. See T 0115.
- 0130 BBC: Waveguide. See W 0415.
- 0130 HCJB: Focus On The Family. See M 1330.
- 0135 Radio Austria Int'l: Report From Austria. See S 0135.
- 0140 BBC: Book Choice. See W 0425.
- 0145 BBC: The Farming World. News of all things agricultural.

Fridays

- 0100 HCJB: Happiness Is. See W 0100.
- 0100 Radio For Peace Int'l: FIRE. See S 0100.
- 0105 BBC: Outlook. See M 1405.
- 0115 Radiotelevisione Italiana: Light Music. See T 0115.
- 0130 BBC: Seven Seas. Malcolm Billings presents news about ships and the sea.
- 0130 HCJB: Focus On The Family. See M 1330.
- 0135 Radio Austria Int'l: Report From Austria. See S 0135.
- 0145 BBC: Global Concerns. An update on environmental issues.

Saturdays

- 0100 HCJB: Musica Del Ecuador. Jorge Zambrano presents a unique mix of Ecuadorian music.
- 0100 Radio For Peace Int'l: FIRE. See S 0100.
- 0105 BBC: Outlook. See M 1405.
- 0115 Radiotelevisione Italiana: Contrast In Music. Selections of Italian music.
- 0130 BBC: Short Story (except 5th: Seeing Stars). See S 0430.
- 0130 HCJB: Focus On The Family. See M 1330.
- 0135 Radio Austria Int'l: Report From Austria. See S 0135.
- 0145 BBC: Jazz Now And Then. George Reid presents a weekly mix of new releases, old tracks, and interviews.

0200 UTC

[9:00 PM EST/6:00 PM PST]

FREQUENCIES

0200-0225	Netherlands	9860as	11655as	0200-0300	New Zealand, RNZI	17770pa			
0200-0230 mtwhfa	Kenya, Voice of	4935do		0200-0300	Romania, R.Romania Int'l	5990am	6155am	9510am	9570am
0200-0230 sm	Norway	9565na				11830am	11940am		
0200-0230	Philippines, FEBC Manila	15450as		0200-0300	Russia, Radio Moscow	9470va	9530va	9685va	11710va
0200-0230	Sri Lanka B'casting Corp.	6005as	9720as			11850va	12050va	15290va	15405va
0200-0230	Sweden	9695na	11705na			15410va	15425va	15560va	17560va
0200-0230	Swiss Radio Int'l	6135am	9650am	0200-0300	Switzerland, SDR	17720na	17730va	17850va	17860va
0200-0230	United Kingdom, BBC London	5975na	6005sa			17890va	21490na	21505na	21690va
		7135as	7325na	0200-0300	S. Africa, Channel Africa	9730af			
		9590na	9670me	0200-0300	Sierra Leone, SLBS	3316do			
		11955as	12095va	0200-0300	Singapore, SBC1	5010do	5052do	11940do	
		15360pa	15380as	0200-0300	Taiwan, V. of Free China,	5950na	9680na	765pa	11740ca
0200-0230	USA, VOA Washington	5995am	7405am			11860as	15345as		
		11695am	15120am	0200-0300	Thailand	4830as	9655as	11905as	
0200-0250	Germany, Deutsche Welle	6035as	7285as	0200-0300	USA, CSMonitor Boston	9350af	9455na	13760sa	
		11945as	12055as	0200-0300 sa	USA, CSMonitor Boston	17755as			
0200-0259 twhfa	Canada, RCI Montreal	9535sa	9755sa	0200-0300	USA, KTN Salt Lake City	7510am			
		13720sa		0200-0300	USA, KVOH Los Angeles	17775am			
0200-0300 twhfl	Argentina, RAE Buenos Aires	11710am		0200-0300	USA, VOA Washington	7205as	9740as	11705as	15120am
0200-0300	Australia	15240pa	15320va			15205am	15250as	17735as	17740as
		17715pa	17750pa			21550as			
		21525as	21590as	0200-0300	USA, WHRI Noblesville	7315na			
0200-0300	Australia, ABC Brisbane	4920do	9660do	0200-0300	USA, WINB Red Lion, Penn.	15145eu			
0200-0300	Australia, ABC Perth	6070do	9610do	0200-0300	USA, WJCR Upton, Kentucky		7465na	7490na	
0200-0300	Canada, CFCX Montreal	6005do		0200-0300 vl	USA, WRNO New Orleans	7355am			
0200-0300	Canada, CFRX Toronto	6070do		0200-0300	USA, WWCR Nashville	5920na	7435am		
0200-0300	Canada, CFVP Calgary	6030do		0200-0300	USA, WYFR Okeechobee, FL	5985am	9505am	15440am	
0200-0300	Canada, CHNX Halifax	6130do		0230-0245	Pakistan	9515as	15115as	17640as	21730as
0200-0300	Canada, CKZU Vancouver	6160do		0230-0300	Albania, Radio Tirana	9580na	11825na		
0200-0300	Canada, RCI Montreal	6035eu	6125eu	0230-0300 s	Kenya, Voice of	4935do			
		9650eu		0230-0300	Netherlands	9860as	11655as		
0200-0300	Cook Islands	11760pa		0230-0300	Philippines, Manila	17760pa	17840pa	21580pa	
0200-0300	Costa Rica, RFPI	7375na	7385na	0230-0300 twhfa	Portugal	9570am	9600am	9705am	11840am
0200-0300	Cuba, RHC Havana	11950na	13710na	0230-0300	Sri Lanka B'casting Corp.	9720as	15425as		
0200-0300	Ecuador, HCJB Quito	9745am	15155am	0230-0300	United Kingdom, BBC London	5975na	6005sa	6175na	6195eu
0200-0300	Egypt, Radio Cairo	9475na	9675na			7135me	7325na	9670me	9915na
0200-0300 as	Guam, KSDA Guam	13720as				11750sa	11955me	12095va	15260sa
0200-0300	Hungary, Radio Budapest	6110na	9835na			15280as	15360pa	17790va	21715as
0200-0300	Luxembourg, RTL	15350va		0245-0300	South Korea, Seoul	9640am	11805am	15575am	
0200-0300 smtwh	Malaysia, RTM Radio 4	7295do		0250-0300	Vatican Radio	7305na	9605na	11620na	
0200-0300	Namibia BC Corp, Windhoek	3290af		0255-0300	Bonaire, TWR Bonaire	11930am			

SELECTED PROGRAMS

Sundays

- 0200 Radio For Peace Int'l: World Of Radio. Glenn Hauser's communications program for shortwave radio listeners.
- 0205 HCJB: Hour Of Decision. Billy Graham's radio evangelical program.
- 0230 BBC: Feature. Topical programming on various subjects.
- 0230 Radio For Peace Int'l: RFPI Reports. Human rights, the environment, and other critical issues facing the world.
- 0239 HCJB: DX Party Line. See S 0039.

Mondays

- 0200 HCJB: HCJB Today. News about the ministries of HCJB.
- 0200 Radio For Peace Int'l: Food For The Thoughtful. Current dietary trends and how they affect our health.
- 0230 BBC: Composer Of The Month. Profiles of famous classical-music composers.
- 0230 Radio For Peace Int'l: RFPI Reports. See S 0230.
- 0239 HCJB: Saludos Amigos. See M 0039.
- 0245 Radio For Peace Int'l: United Nations. Current events programming produced by UN Radio.

Tuesdays

- 0200 HCJB: Joni And Friends. Joni Erickson-Tada presents help and advice, especially for the disabled.
- 0200 Radio For Peace Int'l: Peace Forum. Interviews and reports on what constitutes peace.
- 0205 HCJB: Guidelines For Family Living. See M 1115.

- 0215 HCJB: Rendezvous. See M 1100.
- 0230 BBC: Quiz. See M 1215.
- 0230 Radio For Peace Int'l: RFPI Reports. See S 0230.
- 0239 HCJB: Current Affairs. See M 1639.
- 0245 Radio For Peace Int'l: United Nations. See M 0245.

Wednesdays

- 0200 HCJB: Joni And Friends. See T 0200.
- 0200 Radio For Peace Int'l: Amnesty Int'l Reports or The CFRU Series. Human-rights reports, or current-affairs issues from a student-radio viewpoint.
- 0205 HCJB: Guidelines For Family Living. See M 1115.
- 0215 HCJB: Rendezvous. See M 1100.
- 0230 BBC: Development '92. Aid and development issues for developing nations.
- 0230 Radio For Peace Int'l: RFPI Reports. See S 0230.
- 0239 HCJB: Current Affairs. See M 1639.
- 0245 Radio For Peace Int'l: Along The Color Line. Manning Marable looks at issues relevant to the black community.

Thursdays

- 0200 HCJB: Joni And Friends. See T 0200.
- 0200 Radio For Peace Int'l: Second Opinion. A weekly conversation with Erwin Knoll, editor of The Progressive.
- 0205 HCJB: Guidelines For Family Living. See M 1115.
- 0215 HCJB: Rendezvous. See M 1100.
- 0230 BBC: Sports International. Live play-by-play, interviews, features, and discussions from the sports world.

- 0230 Radio For Peace Int'l: RFPI Reports. See S 0230.
- 0239 HCJB: Current Affairs. See M 1639.
- 0245 Radio For Peace Int'l: UNESCO. See M 2330.

Fridays

- 0200 HCJB: Joni And Friends. See T 0200.
- 0200 Radio For Peace Int'l: Living Enrichment Center. See M 0400.
- 0205 HCJB: Guidelines For Family Living. See M 1115.
- 0215 HCJB: Rendezvous. See M 1100.
- 0230 BBC: Drama. See H 1130.
- 0230 Radio For Peace Int'l: RFPI Reports. See S 0230.
- 0239 HCJB: Current Affairs. See M 1639.
- 0245 Radio For Peace Int'l: The Neumaier Report. Life experiences and opportunities from a spiritual perspective.

Saturdays

- 0200 HCJB: Joni And Friends. See T 0200.
- 0200 Radio For Peace Int'l: Common Ground. See W 2300.
- 0205 HCJB: Guidelines For Family Living. See M 1115.
- 0215 HCJB: Rendezvous. See M 1100.
- 0230 BBC: People And Politics. Background to the British political scene.
- 0230 Radio For Peace Int'l: RFPI Reports. See M 0230.
- 0239 HCJB: Current Affairs. See M 1639.

0300 UTC

[10:00 PM EST/7:00 PM PST]

FREQUENCIES

0300-0315	Vatican Radio	7305na	9605na	1162Cna	
0300-0325	Netherlands	9860as	11655as		
0300-0330	Czechoslovakia	5930na	7345na	9540na	
0300-0330	Egypt, Radio Cairo	9475na	9675na		
0300-0330	Japan NHK	5960am	15230va	15325am	17810am
		17825am	21610am		
0300-0330	Philippines, Manila	17760pa	17840pa	21580pa	
0300-0330	United Kingdom, BBC London	3255af	5975na	6005va	6175na
		6180eu	6190af	6195eu	7135me
		7325na	9410eu	9600af	9670me
		9915na	11730af	11760me	11955me
		12095eu	15070af		
		11750sa	15260sa	15280pa	15310as
		21715va			
0300-0330	USA, VOA Washington	5965eu	11905me	15160me	17810eu
		17895me			
0300-0350	Germany, Deutsche Welle	6045na	6055na	6085na	6120na
		9535na	9545na	9640na	9705na
		9770na			
0300-0400	Australia	15240pa	15320va	15365pa	17630as
		17670as	17715pa	17750as	17795pa
		17880as	21525as	21590as	21740pa
		21775as			
0300-0400	Australia, ABC Brisbane	4920do	9660do		
0300-0400	Australia, ABC Perth	9610do			
0300-0400	Bonaire, TWR Bonaire	9535am	11930am		
0300-0400	Bulgaria, Radio Sofia	9850af	11720af	11765af	15160na
0300-0400	Canada, CFCX Montreal	6005do			
0300-0400	Canada, CFRX Toronto	6070do			
0300-0400	Canada, CFVP Calgary	6030do			
0300-0400	Canada, CHNX Halifax	6130do			
0300-0400	Canada, CKZU Vancouver	6160do			
0300-0400	China, CRI	9690na	9770na	11715na	
0300-0400	Cook Islands	11760pa			
0300-0400	Costa Rica, RFPI	7375na	7385na	13630na	15030na
0300-0400	Costa Rica, TIFC	5055ca			
0300-0400	Cuba, RHC Havana	11950am	13710na		
0300-0400	Ecuador, HCJB Quito	9745am	15155am	21455am	
0300-0400	Guatemala, Radio Cultural	3300do			
0300-0400	Honduras, HRPC Luz y Vida	3250ca			
0300-0400	Kenya, Voice of	4935do			
0300-0400	Luxembourg, RTL	15350va			

0300-0400 smtwh	Malaysia, RTM Radio 4	7295do			
0300-0400	New Zealand, RNZI	17770pa			
0300-0400	Russia, Radio Moscow	9470va	9685va	11675va	11710va
		11850va	12030na	12050va	15405va
		15425va	17570va	17605va	17665va
		17730na	17735va	17850na	17860va
		17890va	21490na	21505na	21690va
0300-0400	S. Africa, Channel Africa	3995af	9730af		
0300-0400	Sierra Leone, SLBS	3316do			
0300-0400	Singapore, SBC1	5010do	5052do	11940do	
0300-0400	Sri Lanka B'casting Corp.	9720as	15425as		
0300-0400	Taiwan, V. of Free China,	5950na	9680na	9765as	11745as
		15345na			
0300-0400	Tanzania	5985af	9685af	11765af	
0300-0400	Thailand	4830as	9655as	11905as	
0300-0400	Turkey, Voice of	9445na			
0300-0400	USA, CSMonitor Boston	9350af	9455na	13760sa	
0300-0400 sa	USA, CSMonitor Boston	17555as	17865as		
0300-0400	USA, KTVN Salt Lake City	7510am			
0300-0400	USA, KVOH Los Angeles	9785sa			
0300-0400	USA, VOA Washington	6035af	7265af	7280af	7405af
		9575af	11835af	11940af	15115af
		17715af	21600af		
0300-0400	USA, WHRI Noblesville	7315na			
0300-0400	USA, WJCR Upton, Kentucky		7465na	7490na	
0300-0400 vl, irr	USA, WRNO New Orleans	7395am			
0300-0400	USA, WWCN Nashville	5920na	7435na		
0300-0400	USA, WYFR Okeechobee, FL		5985am	9505am	
0330-0400	Albania, Radio Tirana	9580na	11825na		
0330-0400	Austria, ORF Vienna	9870ca	13730am		
0330-0400	Japan NHK	11870na	17810na		
0330-0400	Netherlands	9590na	11720na		
0330-0400	UAE Radio, Dubai	11945na	13675na	15400na	15435na
0330-0400	United Kingdom, BBC London	3255af	5975na	6005af	6175va
		6180eu	6190af	6195eu	9410eu
		9600af	9915na	11740af	11760me
		11955me	12095eu	15280as	15310as
		15420af	17885af	21715as	
0340-0350 mtwhfa	Greece, Voice of	9395na	9420na	11645na	
0345-0359 varies	Armenia, Radio Yerevan	11675na	11790na	13645am	15580na

SELECTED PROGRAMS

Sundays

- 0300 Radio For Peace Int'l: The Wisdom Of Joseph Campbell. Interviews with the late mythologist Joseph Campbell.
 0315 BBC: Sports Roundup. News from the world of sports.
 0330 BBC: From Our Own Correspondent. Reporters comment on the background to the news.
 0330 HCJB: Musical Mailbag. A musical look at listener letters.
 0330 Radio Austria Int'l: Austrian Coffee Table. A look at the arts, especially music.
 0330 Radio For Peace Int'l: RFPI's Mailbag. James and Debra Latham present listener letters, comments, questions, and advice.
 0350 BBC: Write On... Listener letters, opinions, and questions.

Mondays

- 0300 Radio For Peace Int'l: New Dimensions Radio. Innovative thinkers and ideas on the leading edge of change.
 0315 BBC: Sports Roundup. See S 0315.
 0330 BBC: Anything Goes. See S 1430.
 0330 HCJB: Mountain Meditations. See S 1400.
 0330 Radio Austria Int'l: Austrian Shortwave Panorama. See S 1230.

Tuesdays

- 0300 HCJB: Introspect. See T 0100.

- 0300 Radio For Peace Int'l: Steppin' Out Of Babylon. Sue Supriano speaks with individuals who fight for freedom and justice.
 0315 BBC: Sports Roundup. See S 0315.
 0330 BBC: John Peel. Newly released albums and singles from the contemporary music scene.
 0330 HCJB: Insight For Living. See M 1130.
 0330 Radio For Peace Int'l: Voices Of Our World. Interviews and reports about exotic corners of the world.
 0335 Radio Austria Int'l: Report From Austria. See S 0135.

Wednesdays

- 0300 HCJB: Happiness Is. See W 0100.
 0300 Radio For Peace Int'l: World Of Radio. See S 0200.
 0315 BBC: Sports Roundup. See S 0315.
 0330 BBC: Discovery. An in-depth look at scientific research.
 0330 HCJB: Insight For Living. See M 1130.
 0330 Radio For Peace Int'l: RFPI's Mailbag. See S 0330.
 0335 Radio Austria Int'l: Report From Austria. See S 0135.

Thursdays

- 0300 HCJB: Ham Radio Today. See H 0100.
 0300 Radio For Peace Int'l: Changemakers. See M 0630.
 0315 BBC: Sports Roundup. See S 0315.
 0330 BBC: Assignment. A weekly examination of topical issues, from Batman to bandits.

- 0330 HCJB: Insight For Living. See M 1130.
 0330 Radio For Peace Int'l: New Dimensions Radio. See M 0300.
 0335 Radio Austria Int'l: Report From Austria. See S 0135.

Fridays

- 0300 HCJB: Happiness Is. See W 0100.
 0300 Radio For Peace Int'l: Alternative Radio. See T 0400.
 0315 BBC: Sports Roundup. See S 0315.
 0330 BBC: Focus On Faith. Comment and discussion on major issues in various religions.
 0330 HCJB: Insight For Living. See M 1130.
 0335 Radio Austria Int'l: Report From Austria. See S 0135.

Saturdays

- 0300 HCJB: Musica Del Ecuador. See A 0100.
 0300 Radio For Peace Int'l: New Dimensions Radio. See M 0300.
 0315 BBC: Sports Roundup. See S 0315.
 0330 BBC: The Vintage Chart Show. Paul Burnett with classic Top 20 hits.
 0330 HCJB: Insight For Living. See M 1130.
 0335 Radio Austria Int'l: Report From Austria. See S 0135.

0500 UTC

[12:00 AM EST/9:00 PM PST]

FREQUENCIES

0500-0510	Lesotho, Maseru	4800do			
0500-0510 w	Malawi B'casting Corp.	3381do			
0500-0515	Israel, Kol Israel	11588am			
0500-0515 t	Sri Lanka B'casting Svc	9720am	15425am		
0500-0530	Cameroon CRTV Beau	3970do			
0500-0530	Swaziland, TWR Swaziland	5965af	9655af	11750af	
0500-0530	United Kingdom, BBC London	3255af	3955eu	6005af	6180as
		6190af	6195eu	7120eu	9410eu
		9600af	9640na	11760me	12095va
		15070as	15310as	15400af	15420af
		15590va	17885af	21470af	21715as
		5975na	15280as	15575as	
0500-0530	Vatican Radio	7250eu	11625af	15090af	17730af
0500-0550	Germany, Deutsche Welle	5960na	6045na	6120na	6130na
		9535na	9670na	9690na	
0500-0600	Australia	15240pa	15320pa	15365pa	17630as
		17715pa	17750as	17795pa	17880as
		21525as	21740pa	21775as	
0500-0600	Australia, ABC Brisbane	4920do	9660do		
0500-0600	Australia, ABC Perth	9610do			
0500-0600	Canada, CFCX Montreal	6005do			
0500-0600	Canada, CFRX Toronto	6070do			
0500-0600	Canada, CFVP Calgary	6030do			
0500-0600	Canada, CHNX Halifax	6130do			
0500-0600	Canada, CKZU Vancouver	6160do			
0500-0600	China, CRI	11840am			
0500-0600	Cook Islands	11760pa			
0500-0600	Costa Rica, RFPI	7375na	7385na	13630na	15030na
0500-0600	Cuba, RHC Havana	9550na			
0500-0600	Ecuador, HCJB Quito	11925am	21455am		
0500-0600 sa	Eq. Guinea, R. East Africa	9585af			
0500-0600 varies	Italy, IRRS Milan, Italy	7125eu			
0500-0600	Japan NHK	6085me	7230eu	15230na	17765na
		17810na	17825na	17860as	21610na
0500-0600	Kenya, Voice of	4935do			
0500-0600	Luxembourg, RTL	15350va			
0500-0600	Malaysia, RTM Radio 4	7295do			
0500-0600 mtwhf	Namibia BC Corp, Windhoek	3270af	3290af		
0500-0600	New Zealand, RNZI	17770pa			
0500-0600	Nigeria	3326do	4770do	4990do	7255af
0500-0600	Russia, Radio Moscow	9905na	11885va	11980va	12030na
		12050va	12060va	13645va	13665va
		15405va	15425va	15550va	17560va

0500-0600	S. Africa, Channel Africa	17605va	17890va		
0500-0600	Sierra Leone, SLBS	15220af			
0500-0600	Singapore, SBC1	3316do			
0500-0600	Spanish National Radio	5052do	11940do		
0500-0600	Thailand	9530na			
0500-0600	USA, CSMonitor Boston	4830as	9655as	11905as	
0500-0600		9455na	9840af	9870na	13760na
		17780as			
0500-0600 sa	USA, CSMonitor Boston	17555as			
0500-0600	USA, KTBN Salt Lake City	7510am			
0500-0600	USA, KVOH Los Angeles	9785am			
0500-0600	USA, VOA Washington	5995eu	6035me	6040me	6060eu
		6140me	6873eu	7170me	7200me
		7405me	9575me	9670me	9700eu
		9715me	11815me	11825me	11850me
		15115me	15205me		
0500-0600	USA, WHRI Noblesville	7315na			
0500-0600	USA, WINB Red Lion, Penn.	15145eu			
0500-0600	USA, WJCR Upton, Kentucky		7465na	7490na	
0500-0600 mtwhf	USA, WMLK Bethel, Penna.	9465eu			
0500-0600	USA, WRNO New Orleans	7395am			
0500-0600	USA, WWCR Nashville	5920na	7435na		
0500-0600	USA, WYFR Okeechobee, FL	5985am	9850eu	11580am	11915eu
		13695am	15565am		
0510-0515	Botswana, Gaborone	7255af			
0510-0600 vl	South Africa, Radio Oranje	9630do			
0520-0530	Finland, YLE	6120va	9665va	11755va	15440va
0524-0600 f	Ghana, Radio 2, Accra	3366do			
0525-0600	Ghana, Radio 1, Accra	4915do			
0530-0600	Austria, ORF Vienna	6015na	6155eu	13730eu	15410eu
		21490me			
0530-0600	Cameroon CRTV Yaounde	4850do			
0530-0600	Romania, R. Romania Int'l	15340af	15380af	17720af	17745af
		17790af	21665af		
0530-0600	Swaziland, TWR Swaziland	5965af	11750af		
0530-0600	UAE Radio, Dubai	15435as	17830as	21700as	
0530-0600	United Kingdom, BBC London	3255af	3955eu	5975na	6005af
		6180as	6190af	6195eu	7120eu
		9410eu	9600af	9640na	11760me
		12095va	15070as	15280as	15310as
		15400af	15420af	15575af	21470af
		21715as			
0545-0600	Cameroon CRTV Beau	3970do			

SELECTED PROGRAMS

Sundays

- 0500 Radio For Peace Int'l: World Citizen's Hour. A wide variety of opinions, submitted by the citizens of the world.
- 0509 HCJB: DX Party Line. See S 0039.
- 0535 Radio Austria Int'l: Report From Austria. See S 0135.

Mondays

- 0509 HCJB: Saludos Amigos. See M 0039.
- 0530 Radio For Peace Int'l: World Goodwill Forum. Goodwill organizations and their effects on the world.
- 0535 Radio Austria Int'l: Report From Austria. See S 0135.

Tuesdays

- 0500 Radio For Peace Int'l: United Nations. See M 0245.
- 0509 HCJB: Current Affairs. See M 1639.
- 0515 Radio For Peace Int'l: RFPI Reports. See S 0230.
- 0530 HCJB: Introspect. See T 0100.
- 0530 Radio For Peace Int'l: Peace Forum. See T 0200.
- 0535 Radio Austria Int'l: Report From Austria. See S 0135.

Wednesdays

- 0500 Radio For Peace Int'l: UNESCO. See M 2330.
- 0509 HCJB: Current Affairs. See M 1639.
- 0515 Radio For Peace Int'l: RFPI Reports. See S 0230.

- 0530 HCJB: Happiness Is. See W 0100.
- 0530 Radio For Peace Int'l: WINGS. Current affairs and analysis of women's issues.
- 0535 Radio Austria Int'l: Report From Austria. See S 0135.

Thursdays

- 0500 Radio For Peace Int'l: United Nations. See M 0245.
- 0509 HCJB: Current Affairs. See M 1639.

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- 0515 Radio For Peace Int'l: RFPI Reports. See S 0230.
- 0530 HCJB: Ham Radio Today. See H 0100.
- 0530 Radio For Peace Int'l: Vietnam Veterans Radio Network. See S 0630.
- 0535 Radio Austria Int'l: Report From Austria. See S 0135.

Fridays

- 0500 Radio For Peace Int'l: Dialogue. See T 2330.
- 0509 HCJB: Current Affairs. See M 1639.
- 0515 Radio For Peace Int'l: RFPI Reports. See S 0230.
- 0530 HCJB: Happiness Is. See W 0100.
- 0530 Radio For Peace Int'l: Steppin' Out Of Babylon. See T 0300.
- 0535 Radio Austria Int'l: Report From Austria. See S 0135.

Saturdays

- 0500 Radio For Peace Int'l: United Nations. See M 0245.
- 0509 HCJB: Current Affairs. See M 1639.
- 0515 Radio For Peace Int'l: RFPI Reports. See S 0230.
- 0530 HCJB: Musica Del Ecuador. See A 0100.
- 0530 Radio For Peace Int'l: Outlaw For Peace. Country music's Willie Nelson comes to shortwave.
- 0535 Radio Austria Int'l: Report From Austria. See S 0135.

0600 UTC

[1:00 AM EST/10:00 PM PST]

FREQUENCIES

0600-0610 s	Malawi B'casting Corp.	3381do			
0600-0615	Switzerland, SRI	165eu	3985eu	9535eu	
0600-0625	Cameroon CRTV Yaounde	4850do			
0600-0625	Kenya, Voice of 4935do				
0600-0630	Laos, National Radio of	7116as			
0600-0630 s	Latvia, Radio Riga	5935eu			
0600-0630	Swiss Radio Int'l	15430af	17565af	21770af	
0600-0630	Switzerland, SRI	9860af	13635af	17565af	
0600-0630	United Kingdom, BBC London	3955eu	6180eu	6190af	6195eu
	7230eu	9410eu	9600af	11760me	11940af
	12095eu	15070va	15310as	15400af	15590va
	17790as	17830as	17885af	21470af	5975na
	9640va	15280as	15360pa	15575as	21715as
0600-0630	Vatican Radio	6245eu	7250eu		
0600-0640 last a	Lithuania, RadioCentras	9710eu			
0600-0645 s	Cameroon CRTV Douala	4755do			
0600-0650	Germany, Deutsche Welle	11765af	13610af	13790af	15185af
	15435af	17875af			
0600-0650	North Korea	15180as	15230as		
0600-0658	New Zealand, RNZI	17770pa			
0600-0700	Australia	11720pa	15240pa	15320pa	15365pa
	17630as	17715pa	17750as	17795pa	17880pa
	21590pa	21740pa	21775as		
0600-0700	Canada, CFCX Montreal	6005do			
0600-0700	Canada, CFRX Toronto	6070do			
0600-0700	Canada, CFVP Calgary	6030do			
0600-0700	Canada, CHNX Halifax	6130do			
0600-0700	Canada, CKZU Vancouver	6160do			
0600-0700	Cook Islands	11760pa			
0600-0700	Costa Rica, RFPI	7375na	7385na	13630am	15030na
0600-0700 West NA	Cuba, RHC Havana	9550na			
0600-0700	Czechoslovakia	6055va	7345va	9505va	11990va
0600-0700	Ecuador, HCJB Quito	11925am	21455am		
0600-0700 sa	Eq. Guinea, R. East Africa	9585af			
0600-0700	Ghana, Radio 1, Accra	4915do			
0600-0700 f	Ghana, Radio 2, Accra	3366do			
0600-0700 varies	Italy, IRRS Milan, Italy	7125eu			
0600-0700	Kiribati	17440do			
0600-0700	Lebanon, King of Hope	6280me			
0600-0700	Luxembourg, RTL	15350va			
0600-0700 smtwha	Malaysia, RTM Radio 4	7295do			
0600-0700	Malaysia, Voice of	6175as	9750as	15295as	
0600-0700	Malta, V. of the Medit.	9765eu			
0600-0700 s	New Zealand, ZLXA	3935do			
0600-0700	Nigeria	3326do	4990do	7255af	
0600-0700	Russia, AWR Russia	11855as			

0600-0700	Russia, Radio Moscow	9905na	11880va	11885va	11950va
	12010na	12030na	12035va	12050va	12055va
	15125va	15225va	15405va	15425va	15550va
	17605va	17635va	17890va	21690va	
0600-0700	S. Africa, Channel Africa	15220af			
0600-0700	Sierra Leone, SLBS	3316do			
0600-0700	Singapore, SBC1	5010do	5052do	11940do	
0600-0700 vl	South Africa, Radio Oranje	9630do			
0600-0700	South Korea, Seoul	7275om	11810na	15170na	
0600-0700	Swaziland, TWR Swaziland	5965af	7200af	11750af	
0600-0700 sa	Thailand	4830as	9655as	11905as	
0600-0700	USA, CSMonitor Boston	9455na	9840eu	9870am	17555as
		17780as			
0600-0700	USA, KTBN Salt Lake City	7510na			
0600-0700	USA, KVOH Los Angeles	9785na			
0600-0700	USA, VOA Washington	3980eu	5995eu	6040eu	6060me
	6110eu	6140eu	6873eu	7170me	7325me
	11815me	11825me	11915me	15205me	6035af
	7405af	9530af	9575af	15115af	17715af
0600-0700	USA, WHRI Noblesville	7315eu	9495am		
0600-0700	USA, WJCR Upton, Kentucky		7465na	7490na	
0600-0700 smtwhf	USA, WMLK Bethel, Penna.	9465eu			
0600-0700	USA, WWCN Nashville	5920na	7435na		
0600-0700	USA, WYFR Okeechobee, FL		5985am	7355eu	9680eu
		11725na			
0603-0610 tent	Croatian Radio, Zagreb	13695af	15565am		
0615-0630 s	Cameroon CRTV Bertoua	6210eu	9830eu	13830eu	
0615-0630	South Korea World News	4750do			
0615-0700 mtwhf	Canada, RCI	7550eu	15575me		
		6150eu	7155eu	9740af	9760eu
		11935af			
0625-0700	Kenya, Voice of	4935do			
0630-0635 mtwhf	Congo, RTV Congolaise	7105do	9610do		
0630-0655	Belgium, R Viaanderen	5910au	11695eu		
0630-0700	Austria, ORF Vienna	6015na			
0630-0700 smtwhf	New Zealand, ZLXA	3935do			
0630-0700	United Kingdom, BBC London	5975na	6180eu	6190af	6195eu
	7230eu	9410eu	9600af	9640pa	11760me
	11955as	12095eu	15070va	15310as	15400af
	15590va	17830as	17885af	21470af	7150pa
	15360pa	17790as	21715as		15280as
0630-0700	Vatican Radio	11625af	15090af	17730af	
0635-0700	Monaco, TWR Monaco	9480eu			
0645-0700	Finland, YLE	6120eu	9560af	11755eu	
0645-0700	Ghana B'casting Corp.	6130af			
0645-0700	Romania, R. Romania Int'l	11810pa	11940pa	15335pa	17720pa
		17805pa	21665pa		

SELECTED PROGRAMS

Sundays

- 0600 HCJB: Musical Mailbag. See S 0330.
- 0600 Radio For Peace Int'l: From The Atom To The Universe. The effects of scientific research on everyday life.
- 0615 BBC: Letter From America. Alistair Cooke on the USA.
- 0630 BBC: Jazz For The Asking. Listener requests.
- 0630 HCJB: Radio Reading Room. Readings from new books.
- 0630 Radio For Peace Int'l: Vietnam Veterans Radio Network. An examination of US participation in the Vietnam War.
- 0635 Radio Austria Int'l: Report From Austria. See S 0135.

Mondays

- 0600 HCJB: HCJB Today. See M 0200
- 0615 BBC: Recording Of The Week. New classical releases
- 0630 BBC: Feature. See S 1401.
- 0630 HCJB: Turning Point. David Jeremiah presents preaching.
- 0630 Radio For Peace Int'l: Changemakers. Gini Scott with interviews on topical themes.
- 0635 Radio Austria Int'l: Report From Austria. See S 0135.

Tuesdays

- 0600 HCJB: Glorious Interlude. See M 0400
- 0600 Radio For Peace Int'l: Peace Talks. Brief subjects
- 0615 BBC: The World Today. See M 1645.
- 0615 HCJB: Rendezvous. See M 1100

- 0630 BBC: Rock/Pop Music. Hear the latest in reggae, soul, and rap on "World Ranking" (through February 2nd).
- 0630 HCJB: Classical Favorites. Selections from the classics.
- 0630 Radio For Peace Int'l: New Dimensions Radio. See M 0300.
- 0635 Radio Austria Int'l: Report From Austria. See S 0135.

Wednesdays

- 0600 HCJB: Joni And Friends. See T 0200.
- 0600 Radio For Peace Int'l: A Voice Of The Emerging World or Peace Forum. Conversations with Barbara Marx Hubbard, or interviews and reports on peace
- 0605 HCJB: Guidelines For Family Living. See M 1115.
- 0615 BBC: The World Today. See M 1645
- 0615 HCJB: Rendezvous. See M 1100.
- 0630 BBC: Meridian. Events in the world of the arts
- 0630 HCJB: Sounds Of Joy. Contemporary Christian music.
- 0635 Radio Austria Int'l: Report From Austria. See S 0135

Thursdays

- 0600 HCJB: Joni And Friends. See T 0200.
- 0600 Radio For Peace Int'l: Sound Currents Of The Earth. See M 0430.
- 0605 HCJB: Guidelines For Family Living. See M 1115.
- 0615 BBC: The World Today. See M 1645.
- 0615 HCJB: Rendezvous. See M 1100.
- 0630 BBC: Sports international. See H 0230.

- 0630 HCJB: Unshackled. Dramatic re-enactments of changed lives.
- 0635 Radio Austria Int'l: Report From Austria. See S 0135.

Fridays

- 0600 HCJB: Joni And Friends. See T 0200.
- 0600 Radio For Peace Int'l: Food For The Thoughtful. See M 0200.
- 0605 HCJB: Guidelines For Family Living. See M 1115.
- 0615 BBC: The World Today. See M 1645.
- 0615 HCJB: Rendezvous. See M 1100.
- 0630 BBC: Meridian. See W 0630.
- 0630 HCJB: The Christian's Hour. Christian messages of inspiration.
- 0630 Radio For Peace Int'l: The Practice of Peacemaking. Ian Harris on problems of violence in the world.
- 0635 Radio Austria Int'l: Report From Austria. See S 0135.

Saturdays

- 0600 HCJB: Joni And Friends. See T 0200.
- 0600 Radio For Peace Int'l: Peace Forum. See T 0200.
- 0605 HCJB: Guidelines For Family Living. See M 1115.
- 0615 BBC: The World Today. See M 1645.
- 0615 HCJB: Rendezvous. See M 1100.
- 0630 BBC: Meridian. See W 0630.
- 0630 HCJB: Classical Favorites. See T 0630.
- 0630 Radio For Peace Int'l: Second Opinion. See H 0200.
- 0635 Radio Austria Int'l: Report From Austria. See S 0135.

shortwave guide

0700 UTC **2:00 AM EST/11:00 PM PST]** **0800 UTC** **[3:00 AM EST/12:00 AM PST]**

0700-0710	Cameroon CRTV Bafoussam	4000do			
0700-0710 w	Malawi B'casting Corp.	3381do	5995do		
0700-0715	Romania, R. Romania Int'l	11810au	11940au	15335au	17720au
		17805au	21665au		
0700-0730	Australia	6020pa	15240pa	15320va	15365pa
		17630as	17715pa	17750as	17795pa
		21525as	21740pa	21775as	
0700-0730	United Kingdom, BBC London	5975na	7150pa	9640va	11955as
		15280as	15360pa	21715as	
		6180eu	6190af	6195eu	7230eu
		7325af	9410eu	9760eu	11760me
		11940af	12095eu	15070eu	15310as
		15400af	15420af	15575as	17640va
		17790as	17885af	21470af	21660af
0700-0750	North Korea	15350as	17765as		
0700-0800	Canada, CFCX Montreal	6005do			
0700-0800	Canada, CFRX Toronto	6070do			
0700-0800	Canada, CFVP Calgary	6030do			
0700-0800	Canada, CHNX Halifax	6130do			
0700-0800	Canada, CKZU Vancouver	6160do			
0700-0800	Cook Islands	11760pa			
0700-0800	Costa Rica, RFPI	7375na	7385na	13630na	15030na
0700-0800 West NA	Cuba, RHC Havana	11760na			
0700-0800	Ecuador, HCJB Quito	11730eu	15270eu	21455eu	
0700-0800 sa	Eq. Guinea, R. East Africa	9585af			
0700-0800	Ghana B'casting Corp.	6130af			
0700-0800	Ghana, Radio 1, Accra	4915do			
0700-0800 f	Ghana, Radio 2, Accra	3366do			
0700-0800 varies	Italy, IRRS Milan, Italy	7125eu			
0700-0800	Japan NHK	5970eu	6025eu	15405pa	17765eu
		17810as	17860as	21575as	
0700-0800	Kenya, Voice of	4935do			
0700-0800	Lebanon, King of Hope	6280me			
0700-0800 tent	Liberia, ELBC Monrovia	7275do			
0700-0800	Luxembourg, RTL	15350va			
0700-0800 smtwha	Malaysia, RTM Radio 4	7295do			
0700-0800	Malaysia, Voice of	6175as	9750as	15295as	
0700-0800	Monte Carlo, TWR	9480eu			
0700-0800	New Zealand, RNZI	9700pa			
0700-0800 smtwhf	New Zealand, ZXLA	3935do			
0700-0800	Nigeria	3326do	4990do		
0700-0800	Russia, Radio Moscow	4950va	4975va	5960va	7130va
		7160va	7310va	9855va	9905na
		11705va	11765va	11830va	11975va
		12010va	12055va	13705va	15280va
		15295va	15345va	15350va	15375va
0700-0800	Sierra Leone, SLBS	3316do			
0700-0800	Singapore, SBC1	5010do	5052do	11940do	
0700-0800 vi	South Africa, Radio Oranje	9630do			
0700-0800	Swaziland, TWR Swaziland	7200af	11750af		
0700-0800	Taiwan, V. of Free China,	5950na			
0700-0800 sa	Thailand	4830as	9655as	11905as	
0700-0800	USA, CSMonitor Boston	9445na	9840eu	9870am	17555as
		17780as			
0700-0800	USA, KTBN Salt Lake City	7510na			
0700-0800	USA, KVOH Los Angeles	9785na			
0700-0800	USA, WHRI Noblesville	7315eu			
0700-0800	USA, WJCR Upton, Kentucky		7465na	7490na	
0700-0800 smtwhf	USA, WMLK Bethel, Penna.	9465eu			
0700-0800	USA, WWCR Nashville	5920am	7435am		
0700-0800	USA, WYFR Okeechobee, FL	9850af	11915af	13695eu	15566na
0703-0800 s	Croatian Radio, Zagreb	7240eu	9830eu	21480eu	
0705-0800 a	Cameroon CRTV Douala	4795do			
0730-0745 mtwhf	Icelandic National Radio	9265om			
0730-0745 mtwhfa	Vatican Radio	6245do	7250do	9645na	15210na
0730-0755	Belgium, R Vlaanderen	5910eu	9905va	11695pa	
0730-0800	Australia	6020pa	11880pa	15240pa	15320va
		15365pa	17630as	17715pa	17750as
		21525as	21590as		
0730-0800	Czechoslovakia	17725pa	21705as		
0730-0800	Ecuador, HCJB Quito	9745au	11730eu	11925au	15270eu
		21455va			
0730-0800	Netherlands	9630pa	11895pa		
0730-0800	United Kingdom, BBC London	6180eu	6190af	7325eu	9410eu
		9600af	9760eu	11760me	11860af
		11940af	12095va	15070eu	15105af
		15400af	15420af	15590af	17640va
		17830as	17885af	21470af	21660af
		7150pa	9640va	11955as	15280as
		15310as	15360pa	17790as	21715as

0800-0803 daily	Croatian Radio, Zagreb	6210eu	9830eu	21480eu	
0800-0810	Cameroon CRTV Bafoussam	4000do			
0800-0810 w	Malawi B'casting Corp.	3381do			
0800-0825	Finland, YLE	17800as	21550as		
0800-0825	Malaysia, Voice of	6175as	9750as	15295as	
0800-0825	Netherlands	9630pa	11895pa		
0800-0825	Swaziland, TWR Swaziland	7200af	11750af		
0800-0830	Australia	5995pa	9710pa	15240pa	17630as
		17750as	21590as	25750as	
0800-0830	Ecuador, HCJB Quito	9745au	11730eu	11925au	21455va
0800-0830	United Kingdom, BBC London	6180eu	6190af	7325eu	9410eu
		9600af	9760eu	11760me	11860af
		15310as	15360pa	15400af	15420af
		17830as	17885af	21470af	21660af
		7150pa	9640pa	11950af	11955as
		15280as	17640va	21715as	21715as
	Monte Carlo, TWR	9480eu			
0800-0835	Pakistan	17902eu	21520eu		
0800-0845	North Korea	15180as	15230as		
0800-0850	Australia, ABC Brisbane	9660do			
0800-0900	Australia, ABC Perth	15425va			
0800-0900 a	Cameroon CRTV Douala	4795do			
0800-0900	Canada, CFCX Montreal	6005do			
0800-0900	Canada, CFRX Toronto	6070do			
0800-0900	Canada, CFVP Calgary	6030do			
0800-0900	Canada, CHNX Halifax	6130do			
0800-0900	Canada, CKZU Vancouver	6160do			
0800-0900	Cook Islands	11760pa			
0800-0900	Costa Rica, RFPI	7375na	15030na		
0800-0900 sa	Eq. Guinea, R. East Africa	9585af			
0800-0900	Ghana, Radio 1, Accra	4915do			
0800-0900 f	Ghana, Radio 2, Accra	3366do			
0800-0900 smtwh	Guam, KTWR Guam	15200as			
0800-0900	Indonesia, Voice of	7125as	9675as	11752as	11785as
0800-0900 varies	Italy, IRRS Milan, Italy	7125eu			
0800-0900	Kenya, Voice of	4935do			
0800-0900	Lebanon, King of Hope	6280me			
0800-0900	Luxembourg, RTL	15350va			
0800-0900 smtwha	Malaysia, RTM Radio 4	7295do			
0800-0900	New Zealand, RNZI	9700pa			
0800-0900 smtwhf	New Zealand, ZXLA	3935do			
0800-0900	Nigeria	3326do	4990do		
0800-0900	Nigeria, Voice of	7255af			
0800-0900	Papua New Guinea	4890do			
0800-0900	Russia, Radio Moscow	4740va	4940va	4975va	5960va
		7130va	7160va	7310va	9535va
		11920va	11975va	12010va	12055va
		15345va	15350va	15420va	15435va
0800-0900	Sierra Leone, SLBS	3316do	5980do		
0800-0900	Singapore, SBC1	5010do	5052do	11940do	
0800-0900	Solomon Islands, SIBC	5020do	9545do		
0800-0900 vi	South Africa, Radio Oranje	9630do			
0800-0900	South Korea, Seoul	7550eu	13670eu		
0800-0900	USA, CSMonitor Boston	9445na	9840eu	9870am	17555as
		17780as			
0800-0900	USA, KNLS Anchor Point	7365as			
0800-0900	USA, KTBN Salt Lake City	7510am			
0800-0900	USA, VOA Washington	11735eu	15160eu	15195me	21455me
		21570me			
0800-0900	USA, WHRI Noblesville	7315eu	7355sa		
0800-0900	USA, WJCR Upton, Kentucky	7465na	7490na		
0800-0900 smtwhf	USA, WMLK Bethel, Penna.	9465eu			
0800-0900	USA, WWCR Nashville	5920na	7435am		
0803-0810 tent	Croatian Radio, Zagreb	7240eu	9830eu	21480eu	
0803-0800 s	Croatian Radio, Zagreb	7240eu	9830eu	21480eu	
0830-0845	Vatican Radio	6245eu	7250eu	9645eu	15210eu
0830-0900	Australia	5995pa	9580pa	9710va	15240pa
		17630as	17750as	21590as	25750as
0830-0900	Austria, ORF Vienna	6155eu	13730eu	15450au	21490as
0830-0900	Ecuador, HCJB Quito	9745au	11925au	15270eu	21455au
0830-0900	Finland, YLE	15355as	17800as		
0830-0900	Italy, AWR Italy	7230eu			
0830-0900	Netherlands	9630pa	11895pa		
0830-0900	United Kingdom, BBC London	6180eu	6190eu	7325eu	9410eu
		9660eu	9760eu	11860af	11940af
		15070va	15280as	15360pa	15400af
		17640va	17830as	21660af	21715as
	Monte Carlo, TWR	9480eu			
0835-0850 smtwhf	Swaziland, TWR Swaziland	7200af	11750af		
0835-0850 mtwhf	Swaziland, TWR Swaziland	7200af	11750af		
0850-0900 s	Monte Carlo, TWR	9480eu			

shortwave guide

0900 UTC [4:00 AM EST/1:00 AM PST]

0900-0903 s	Croatian Radio, Zagreb	7240eu	9830eu	21480eu
0900-0905	Ghana, Radio 1, Accra	4915do		
0900-0905 f	Ghana, Radio 2, Accra	3366do		
0900-0910	Malawi B'casting Corp.	5995do		
0900-0915	Guam, KTWG Guam	15200as		
0900-0915	Lebanon, Radio Voice of	6550me		
0900-0915 s	Monte Carlo, TWR	9480eu		
0900-0925	Netherlands	9630pa	11895pa	
0900-0930	Costa Rica, RFPI	7375na	15030na	
0900-0930 asmtwf	Guam, KTWG Guam	15200as		
0900-0930 mtwhf	New Zealand, ZLXA	3935do		
0900-0930	Swiss Radio Int'l	9560as	13685as	17670as 21770as
0900-0930	United Kingdom, BBC London	1170as	5975eu	6045eu 6180u
	6190af	6195as	7325eu	9410eu 9660eu 9740as
	9750eu	9760eu	11760me	11860af 11940af 12095eu
	15070va	15400af	17640va	21660af
	15190sa	15280as	15310as	15360as 15420af 15575me
	15590me	17705eu	17790af	17830as 17885af 21470af
	21660af	21715as		
0900-0950	Germany, Deutsche Welle	6160as	9565af	11915as 15410af
	17780as	17820as	21465as	21600af 21650as 21680as
0900-1000	Australia	5995pa	9580pa	9710va 13605as
		15170as	21725as	
0900-1000	Australia, ABC Brisbane	9660do		
0900-1000 s	Bhutan Broadcasting Svc	6035do		
0900-1000	Canada, CFCX Montreal	6005do		
0900-1000	Canada, CFRX Toronto	6070do		
0900-1000	Canada, CFVP Calgary	6030do		
0900-1000	Canada, CHNX Halifax	6130do		
0900-1000	Canada, CKZU Vancouver	6160do		
0900-1000	China, CRI	8450au	11755au	15440au 17710au
0900-1000	Cook Islands	11760pa		
0900-1000	Ecuador, HCJB Quito	9745au	11925au	21455au
0900-1000 sa	Eq. Guinea, R. East Africa	9585af		
0900-1000	Guam, KTWG Guam	11805pa		
0900-1000 s	Italy, AWR via Portugal!	9670eu		
0900-1000 varies	Italy, IRRS Milan, Italy	7125eu		
0900-1000	Japan NHK	11815eu	11840eu	15270au 17860as
		21610as		
0900-1000	Kenya, Voice of	4935do		
0900-1000	Lebanon, King of Hope	6280me		
0900-1000	Luxembourg, RTL	15350va		
0900-1000	Malaysia, RTM Radio 4	7295do		
0900-1000	New Zealand, RNZI	9700pa		
0900-1000	Nigeria	3326do	4990do	
0900-1000	Nigeria, Voice of	7255af		
0900-1000	Papua New Guinea	4890do		
0900-1000	Philippines, FEBC Manila	9800as	11685as	
0900-1000	Russia, Radio Moscow	4740do	4940do	4975do 6000am
	7130am	7245va	9535va	9780va 9855va 11705va
	11765va	11920va	11975va	12055va 13705va 15175va
	15280va	15295va	15345va	15545na
0900-1000	Sierra Leone, SLBS	3316do		
0900-1000	Singapore, SBC1	5010do	5052do	11940do
0900-1000 vl	South Africa, Radio Oranje	9630do		
0900-1000	Tanzania	5985af	9685af	11765af
0900-1000	USA, CSMonitor Boston	9445am	11705eu	13615pa 15665pa
		17555as		
0900-1000	USA, KTBN Salt Lake City	7510am		
0900-1000	USA, VOA Washington	11735eu	15160eu	15195me 21455me
		21570eu		
0900-1000	USA, WJCR Upton, Kentucky		7465na	7490na
0900-1000 smtwhf	USA, WMLK Bethel, Penna.	9465eu		
0900-1000	USA, WPCR Nashville	5920am	7435am	
0905-1000	Cameroon CRTV Yaounde	4850do		
0905-1000 sa	Ghana, Radio 1, Accra	4915do		
0905-1000 mtwhf	Ghana, Radio 2 School prg	7295do		
0905-1000 sa	Ghana, Radio 2, Accra,	3366do		
0910-0940 smwha	Mongolia, Ulaanbaatar	11850pa	12015pa	
0915-0930 smtwh	Guam, KTWG Guam	15200as		
0915-0930	South Korea World News	9570am	13670eu	
0930-1000	Afghanistan, Kabul	9635as		
0930-1000	Netherlands	9630pa	11895pa	
0930-1000	United Kingdom, BBC London	5975eu	6045eu	6180eu 6190af
	6195as	9410eu	9660eu	9740as 9750eu 9760eu
	11750as	11760me	11940af	12095eu 15070va 15310as
	15400af	15420af	15575me	15590me 15190sa 17640va
	17705eu			

0940-0950	Greece, Voice of	17525eu		
0950-0953 a	Russia, Vladivostok	4050do	4485do	5015do 5905do
	6035do	6175pa	7175pa	7210pa 7260pa 7270pa
	7345pa	9530pa	9600pa	9635pa 9825pa 9905pa
	11815pa	15535pa	15595pa	17620pa
0950-0953 a	Russia, Vladivostok	17695pa	17825pa	17850pa

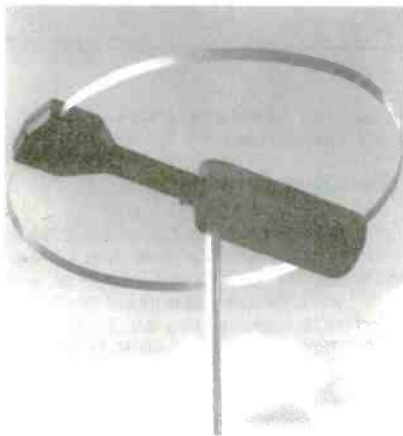
1000 UTC [5:00 AM EST/2:00 AM PST]

1000-1025 mtwhf	Belgium, R Vlaanderen	5910eu	9905eu	
1000-1025	Netherlands	9630pa	11895pa	
1000-1030 tent	Afghanistan, Kabul	9635as		
1000-1030	Tanzania	5985af	9685af	11765af
1000-1030	United Kingdom, BBC London	5975eu	6045eu	6180eu 6190af
	6195as	9410eu	9660eu	9740as 9750eu 9760eu
	11750as	11760me	11940af	12095eu 15070va 15190sa
	15310as	15400af	15420af	15575me 17640eu 17705eu
	17790af	17885af	21470af	21660af 21715as
1000-1030	Vietnam, Voice of	9840as	9840as	15010as
1000-1100	Australia	5995pa	9580pa	21725as
1000-1100	Cameroon CRTV Yaounde	4850do		
1000-1100	Canada, CFCX Montreal	6005do		
1000-1100	Canada, CFRX Toronto	6070do		
1000-1100	Canada, CFVP Calgary	6030do		
1000-1100	Canada, CHNX Halifax	6130do		
1000-1100	Canada, CKZU Vancouver	6160do		
1000-1100	China, CRI	8450au	11755au	15440au 17710au
1000-1100	Cook Islands	11760pa		
1000-1100	Costa Rica, AWR	9725ca		
1000-1100	Costa Rica, RFPI	7375na	13630na	15030na
1000-1100	Ecuador, HCJB Quito	9745au	11925au	21455au
1000-1100 sa	Eq. Guinea, R. East Africa	9585af		
1000-1100 sa	Ghana, Radio 1, Accra	4915do		
1000-1100 mtwhf	Ghana, Radio 2 School Prg	7295do		
1000-1100 sa	Ghana, Radio 2, Accra	3366do		
1000-1100	India, All India Radio	15050as	17387as	17895as 21735as
1000-1100 varies	Italy, IRRS Milan, Italy	7125eu		
1000-1100	Kenya, Voice of	4935do		
1000-1100	Luxembourg, RTL	15350va		
1000-1100	Malaysia, RTM Kuching	7160do		
1000-1100 mtwh	Malaysia, RTM Radio 4	7295do		
1000-1100	New Zealand, RNZI	9700pa		
1000-1100	Nigeria	4990do	7285do	
1000-1100	Nigeria, Voice of	7255af		
1000-1100	Philippines, FEBC Manila	9800as	11665as	
1000-1100	Russia, Radio Moscow	9455na	9495na	11840na 15485na
1000-1100	S. Africa, Channel Africa	11900af		
1000-1100	Sierra Leone, SLBS	3316do		
1000-1100	Singapore, SBC1	5010do	5052do	11940do
1000-1100 vl	South Africa, Radio Oranje	9630do		
1000-1100	USA, CSMonitor Boston	9455am	9495na	13625as 17555as
1000-1100 sa	USA, CSMonitor Boston	15665me		
1000-1100	USA, VOA Washington	5985as	11720au	15425au
1000-1100	USA, WHRI Noblesville	9850sa		
1000-1100	USA, WJCR Upton, Kentucky		7465na	7490na
1000-1100	USA, WPCR Nashville	5920am	15690na	
1000-1100	USA, WYFR Okeechobee, FL	5950am		
1030-1040 mtwhf	Malawi B'casting Corp.	5995do		
1030-1100	Austria, ORF Vienna	6155eu	13730as	15450as 21490pa
1030-1100	Czechoslovakia	6055va	7345va	9505va 11990va
1030-1100	Iran, Islamic Republic	9525as	11715af	11790as 11910as
		11930me		
1030-1100	South Korea, Seoul	11715na		
1030-1100	Sri Lanka B'casting Corp.	11835as	15120as	17850as
1030-1100 sa	Tanzania	5985af	9685af	11765af
1030-1100	UAE Radio, Dubai	13675eu	15320eu	15435as 21605as
1030-1100	United Kingdom, BBC London	5975eu	6045eu	6180eu 6190af
	6195as	9410eu	9660eu	9740as 9750eu 9760eu
	11750as	11760me	11940af	12095eu 15070va 15190sa
	15310as	15400af	15420af	15575me 17640va 17705eu
	17790af	17885af	21470af	21660af
1040-1050	Greece, Voice of	15650as	17525as	
1055-1100	Bonaire, TWR Bonaire	11815am	15345am	

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1100 UTC

[6:00 AM EST/3:00 AM PST]

FREQUENCIES

1100-1110 mtwhf	Ghana, Radio 2 School Prg	7295do					1100-1200	Malaysia, RTM Radio 4	7295do						
1100-1110 sa	Malawi B'casting Corp.	5995do					1100-1200	New Zealand, RNZI	9700as						
1100-1120	Pakistan	17902eu	21520eu				1100-1200	Russia, Radio Moscow	9600na	12055na	15485na	17830na			
1100-1130	Ecuador, HCJB Quito	9745au	11925au	15155au	21455au		1100-1200	S. Africa, Channel Africa	11900af						
1100-1130	Iran, Islamic Republic	9525af	11515af	11790as	11910as		1100-1200	Singapore, SBC1	5010do	5052do	11940do				
		11930me					1100-1200 vl	South Africa, Radio Oranje	9630do						
1100-1130	Israel, Kol Israel	17545eu					1100-1200	South Korea World News	15575af						
1100-1130 irreg	Mozambique	9525af	11818af	11835af			1100-1200	USA, CSMonitor Boston	9455am	9495na	13625as	17555as			
1100-1130	Sri Lanka B'casting Corp.	11835as	15120as	17850as			1100-1200 sa	USA, CSMonitor Boston	15665me						
1100-1130	Swiss Radio Int'l	13635as	15505as	17670as	21770as		1100-1200	USA, KTBN Salt Lake City	7510na						
1100-1130	United Kingdom, BBC London	5965na	6045eu	6180eu	6190af		1100-1200	USA, VOA Washington	5985as	6110au	9760as	11720au			
		6195eu	9410eu	9515na	9660eu				15155au	15425as	21640as				
		9740as	9750eu	9760eu	11750as		1100-1200	USA, WHRI Noblesville	7315na	9850sa	11790sa				
		11760me	11940af	12095eu	15070va		1100-1200	USA, WJCR Upton, Kentucky		7465na	7490na				
		15310as	15400af	15420af	15575me		1100-1200	USA, WWCR Nashville	13815na	15690na					
		15220na	17640va	17705eu	17790af		1100-1200	USA, WYFR Okeechobee, FL	5950am		7355am				
		17885af	21470af	21660af			1115-1130	South Korea World News	7275as	11740as					
1100-1130	Vietnam, Voice of	9840as	12020as	15010as			1115-1145	Nepal, Kathmandu	3230as	5005as	7165as				
1100-1150	Germany, Deutsche Welle	15410af	17765af	17800af	17860af		1120-1130	Vatican Radio	6245do	7250do	9645do	15210do			
		21465af	21600af				1125-1130 sa	Botswana, Gaborone	5955af	7255af					
1100-1150	North Korea	6576na	9977na	11335na			1125-1150 mtwhf	Finland, YLE	15400na						
1100-1200	Australia	6020pa	6080pa	7240pa	9580pa		1130-1140	Lesotho, Masseru	4800do						
		9710va	13605pa	15170as	21725as		1130-1155 s	Belgium, R Vlaanderen	17555va	21810na					
1100-1200	Bonaire, TWR Bonaire	11815am	15345am				1130-1200	Austria, ORF Vienna	6155eu	11780as	13730va	15450as			
1100-1200	Bulgaria, Radio Sofia	11630af					1130-1200	Ecuador, HCJB Quito	11925am	15115am	17890am	21455am			
1100-1200	Canada, CFCX Montreal	6005do					1130-1200	Italy, AWR Italy	7230eu						
1100-1200	Canada, CFRX Toronto	6070do					1130-1200	Netherlands	5955eu						
1100-1200	Canada, CFVP Calgary	6030do					1130-1200	Netherlands	5955eu						
1100-1200	Canada, CHNX Halifax	6130do					1130-1200	South Korea, Seoul	9650na						
1100-1200	Canada, CKZU Vancouver	6160do					1130-1200	Thailand	4830as	9655as	11905as				
1100-1200	Cook Islands	11760pa					1130-1200	United Kingdom, BBC London	5965na	6045eu	6180eu	6190af			
1100-1200	Costa Rica, AWR	9725ca	11870ca						6195eu	9410eu	9515na	9660eu			
1100-1200	Costa Rica, RFPI	7375na	13630na	15030na					9740as	9750eu	9760eu	11750as			
1100-1200	Czechoslovakia	6055va	7345va	9505va	11990va				11760me	11940af	12095eu	15070va			
1100-1200	Ghana, Radio 1, Accra	4915do							15220na	15310as	15420af	15575me			
1100-1200 sa	Ghana, Radio 2, Accra	3366do							17640va	17705eu	17790af	17885af			
1100-1200 varies	Italy, IRRS Milan, Italy	7125eu							21470af						
1100-1200	Japan NHK	6120na	11815sa	11840na			1130-1200	Yugoslavia	17710as	17740am	21605pa				
1100-1200	Luxembourg, RTL	15350va													
1100-1200	Malaysia, RTM Kuching	4950do	7160do												

SELECTED PROGRAMS

Sundays

- 1100 HCJB: Communication. A series of devotional thoughts.
- 1100 Radio For Peace Int'l: The Wisdom Of Joseph Campbell. See S 0300.
- 1115 HCJB: Sounds Of The Times. A review of contemporary issues.
- 1130 BBC: The Ken Bruce Show. See S 0030.
- 1130 HCJB: Morning Song. Music and thoughts to start the day.
- 1130 Radio For Peace Int'l: RFPI's Mailbag. See S 0330.

Mondays

- 1100 HCJB: Rendezvous. Dick Saunders presents Bible study and evangelism.
- 1100 Radio For Peace Int'l: New Dimensions Radio. See M 0300.
- 1115 HCJB: Guidelines For Family Living. Help for the family from Harold Sala.
- 1130 BBC: Composer Of The Month. See M 0230.
- 1130 HCJB: Insight For Living. Charles Swindoll applies the Bible to life today.

Tuesdays

- 1100 HCJB: Rendezvous. See M 1100.
- 1100 Radio For Peace Int'l: Steppin' Out Of Babylon. See T 0300.

- 1115 HCJB: Guidelines For Family Living. See M 1115.
- 1130 BBC: Megamix. Music, sports, fashion, health, travel, news, and opinion for young people.
- 1130 HCJB: Insight For Living. See M 1130.
- 1130 Radio For Peace Int'l: Voices Of Our World. See T 0330.

Wednesdays

- 1100 HCJB: Rendezvous. See M 1100.
- 1100 Radio For Peace Int'l: World Of Radio. See S 0200.
- 1115 HCJB: Guidelines For Family Living. See M 1115.
- 1130 BBC: Meridian. See W 0630.

BBC's
David
Dimbleby



- 1130 HCJB: Insight For Living. See M 1130.
- 1130 Radio For Peace Int'l: RFPI's Mailbag. See S 0330.

Thursdays

- 1100 HCJB: Rendezvous. See M 1100.
- 1100 Radio For Peace Int'l: Changemakers. See M 0630.
- 1115 HCJB: Guidelines For Family Living. See M 1115.
- 1130 BBC: Drama. Hear a rerun of "City Plays," a series of plays with contemporary urban themes (3rd).
- 1130 HCJB: Insight For Living. See M 1130.
- 1130 Radio For Peace Int'l: New Dimensions Radio. See M 0300.

Fridays

- 1100 HCJB: Rendezvous. See M 1100.
- 1100 Radio For Peace Int'l: Alternative Radio. See T 0400.
- 1115 HCJB: Guidelines For Family Living. See M 1115.
- 1130 BBC: Meridian. See W 0630.
- 1130 HCJB: Insight For Living. See M 1130.

Saturdays

- 1100 HCJB: Family Foundations. Interviews and discussions about issues affecting today's family.
- 1100 Radio For Peace Int'l: New Dimensions Radio. See M 0300.
- 1130 BBC: Meridian. See W 0630.
- 1130 HCJB: Sounds Of Joy. See W 0630.

1200UTC

[7:00 AM EST/4:00 AM PST]

FREQUENCIES

1200-1205	New Zealand, RNZI	9700as				1200-1300	Luxembourg, RTL	15350va					
1200-1210 w	Malawi B'casting Corp.	3381do	5995do			1200-1300	Malaysia, RTM Radio 4	7295do					
1200-1215	Cambodia, Voice of	9695as	11938as			1200-1300	Nigeria	4990do	7285do				
1200-1225 sa	Ghana, Radio 2, Accra	3366do				1200-1300	Nigeria, Voice of	7255af					
1200-1225	Netherlands	5955eu				1200-1300	Palau, KHBN	9830va					
1200-1230	Bulgaria, Radio Sofia	11630af				1200-1300	Papua New Guinea	4890do					
1200-1230 smwha	Mongolia, Ulaanbaatar	11850as	12015as			1200-1300	Russia, Radio Moscow	9655na	9755na	11840na	11985na		
1200-1230 as	Norway	17860as	21705as					12050na	12055na	15280na	15485na		
1200-1230	Thailand	4830as	9655as	11905as				17670na	17830na				
1200-1230	United Kingdom, BBC London	6045eu	6180eu	6190af	6195eu	1200-1300	Sierra Leone, SLBS	3316do	5980do				
		9410eu	9515na	9660eu	9740na	1200-1300	Singapore, SBC1	5010do	5052do	11940do			
		9750eu	9760eu	11750as	11760me	1200-1300 sa	South Africa, Radio Oranje	9630do					
		11940af	12095eu	15070eu	15220na	1200-1300	Tanzania	5985af	9684af	11765af			
		15310as	15420af	15575me	17640va	1200-1300	USA, CSMonitor Boston	9425au	9495am	13625as	13760na		
		17705eu	17790af	17840af	17885af	1200-1300 as	USA, CSMonitor Boston	15665eu					
		21470af	21660af			1200-1300	USA, KTBN Salt Lake City	7510am					
1200-1230	USA, VOA Washington	6110as	9760au	11715as	15155au	1200-1300	USA, WHRI Noblesville	7315na	9850sa	11790sa			
		15425as				1200-1300	USA, WJCR Upton, Kentucky		7465na	7490na			
						1200-1300	USA, WWCR Nashville	13815na	15690na				
1200-1230	Uzbekhistan, R. Tashkent	5945as	9540as	15470as	17745as	1200-1300	USA, WYFR Okeechobee, FL	5950am	6015am	11830am	17760am		
1200-1255	Polish Radio Warsaw	6135eu	7145eu	9525eu	11815eu	1203-1210 as	Croatian Radio, Zagreb	7240eu	9830eu	21480eu			
1200-1300	Australia	5995pa	6020pa	6080pa	7240pa	1215-1300	Egypt, Radio Cairo	17595as					
		9580pa	9710pa	21725as		1215-1300	South Korea, Seoul	9750am					
1200-1300	Australia, ABC Brisbane	4920au				1226-1300	Ghana, Radio 2, Accra	7295do					
1200-1300	Australia, ABC Katherine	2485do				1230-1255	Belgium, R. Vlaanderen	17555as	21810na				
1200-1300	Australia, ABC Perth	6140do	9610do			1230-1255 mtwhf	Finland, YLE	15400na	17880na				
1200-1300	Bonaire, TWR Bonaire	11815am	15345am			1230-1300	Austria, ORF	6155eu	13730na	15450va	17730as		
1200-1300	Brazil, Radiobras	15445am				1230-1300	Bangladesh	15200as	15605as	15647as	17750as		
1200-1300 mtwhf	Cameroon CRTV Douala	4795do				1230-1300	France, RFI Paris	9805eu	11670eu	15195eu	15365eu		
1200-1300	Canada, CFCX Montreal	6005do						15425eu	21645na				
1200-1300	Canada, CFRX Toronto	6070do				1230-1300	Netherlands	9855eu					
1200-1300	Canada, CFVP Calgary	6030do				1230-1300	Sri Lanka B'casting Corp.	6075as	9720as				
1200-1300	Canada, CHNX Halifax	6130do				1230-1300	Sweden	15170as	17740as				
1200-1300	Canada, CKZU Vancouver	6160do				1230-1300	United Kingdom, BBC London	6045eu	6180eu	6190af	6195ca		
1200-1300 mtwhf	Canada, RCI Montreal	9635am	11855am	17820am				9410eu	9515na	9660eu	9740na		
1200-1300	China, CRI	8425au	9665na	9715as	11600pa			9750eu	9760eu	11760me	11940af		
		11660as	15450pa					12095eu	12170as	15070eu	15220na		
1200-1300	Cook Islands	11760pa						15310as	15420af	15575me	17640va		
1200-1300	Costa Rica, AWR	9725ca	11870ca					17705eu	17790af	17840af	17885af		
1200-1300	Costa Rica, RFPI	13630na	15030na					21470af	21660af				
1200-1300	Ecuador, HCJB Quito	11925am	15115am	17890am	21455om	1230-1300	USA, VOA Washington	6110as	9760au	11715au	15155as		
1200-1300 sa	Eq. Guinea, R. East Africa	9585af						15425as					
1200-1300	Ghana, Radio 1, Accra	4915do				1230-1300	Vietnam, Voice of	9840as	12020as	15010as			
1200-1300 varies	Italy, IRRS Milan, Italy	7125eu				1235-1245	Greece, Voice of	15635na	15650na	17515na			
1200-1300	Kenya, Voice of	4935do											

SELECTED PROGRAMS

Sundays

- 1200 HCJB: Kids' Corner. Mr. Lizard and friends present a program for children.
- 1201 BBC: Play Of The Week. See S 0101.
- 1230 HCJB: Your Story Hour. Stories about character for children.
- 1230 Radio Austria Int'l: Austrian Shortwave Panorama. Developments in communications and shortwave radio news.
- 1236 BRT, Brussels: P Box 26. See S 0053.
- 1249 BRT, Brussels: Musical Roundabout. Musical filler, including Belgian jazz!

Mondays

- 1200 HCJB: Morning In The Mountains. Music, inspiration, and news to start the day.
- 1200 Radio For Peace Int'l: Living Enrichment Center. See M 0400.
- 1209 BBC: Words Of Faith. Speakers from various faiths discuss scripture and their beliefs.
- 1215 BBC: Quiz. "Screenplay" tests your knowledge of movie lore (7th).
- 1230 Radio For Peace Int'l: Sound Currents Of The Earth. See M 0430.
- 1235 Radio Austria Int'l: Report From Austria. See S 0135.

- 1245 BBC: Sports Roundup. See S 0315.

Tuesdays

- 1200 HCJB: Morning In The Mountains. See M 1200.
- 1200 Radio For Peace Int'l: Alternative Radio. See T 0400.
- 1209 BBC: Words Of Faith. See M 1209.
- 1215 BBC: Multitrack 1. See M 2330.
- 1235 Radio Austria Int'l: Report From Austria. See S 0135.
- 1245 BBC: Sports Roundup. See S 0315.

Wednesdays

- 1200 HCJB: Morning In The Mountains. See M 1200.
- 1200 Radio For Peace Int'l: Seeing Beyond. See W 0400.
- 1209 BBC: Words Of Faith. See M 1209.
- 1215 BBC: New Ideas. See M 1615.
- 1235 BBC: Talks. See M 1635.
- 1235 Radio Austria Int'l: Report From Austria. See S 0135.
- 1245 BBC: Sports Roundup. See S 0315.

Thursdays

- 1200 HCJB: Morning In The Mountains. See M 1200.
- 1209 BBC: Words Of Faith. See M 1209.
- 1215 BBC: Multitrack 2. See W 2330.

- 1230 Radio For Peace Int'l: Voices Of Our World. See T 0330.
- 1235 Radio Austria Int'l: Report From Austria. See S 0135.
- 1245 BBC: Sports Roundup. See S 0315.

Fridays

- 1200 HCJB: Morning In The Mountains. See M 1200.
- 1200 Radio For Peace Int'l: UNESCO. See M 2330.
- 1209 BBC: Words Of Faith. See M 1209.
- 1215 BBC: Feature. Andrew Whitehead travels to South Africa to find out "What's Left Of Communism?" there (4th).
- 1230 Radio For Peace Int'l: WINGS. See W 0530.
- 1235 Radio Austria Int'l: Report From Austria. See S 0135.
- 1245 BBC: Sports Roundup. See S 0315.

Saturdays

- 1200 HCJB: We Kids. A fast-moving program for children.
- 1200 Radio For Peace Int'l: World Of Radio. See S 0200.
- 1209 BBC: Words Of Faith. See M 1209.
- 1215 BBC: Multitrack 3. See F 2330.
- 1230 HCJB: A Visit With Mrs. G. Bible stories for children.
- 1230 Radio Austria Int'l: Austrian Coffee Table. See S 0330.
- 1230 Radio For Peace Int'l: RFPI's Mailbag. See S 0330.
- 1245 BBC: Sports Roundup. See S 0315. 1245 HCJB: Critter County. Christian Wyrzten and her friendly critters present a children's program.

1300 UTC

[8:00 AM EST/5:00 AM PST]

FREQUENCIES

1300-1315	South Korea, Seoul	9750na			
1300-1320	Brazil, Radiobras	15445am			
1300-1325	Kenya, Voice of	4935do			
1300-1325	Netherlands	9855eu			
1300-1330	Afghanistan, Kabul	9635as			
1300-1330	Bonaire, TWR Bonaire	11815am	15345am		
1300-1330 mtwhf	Cameroon CRTV Douala	4795do			
1300-1330	Egypt, Radio Cairo	17595as			
1300-1330 as	Finland, YLE	15400na	17880na		
1300-1330 as	Norway	9590eu	25730af		
1300-1330	Swiss Radio Int'l	6165eu	7480as	9535eu	11690as
		12030eu	13635as	15505as	17670as
		21770as			
1300-1330	United Kingdom, BBC London	5965am	6180eu	6190af	6195ca
		9410eu	9515na	9660eu	9740as
		9750eu	9760eu	11750as	11760me
		11820as	11940af	12095eu	15070va
		15220na	15310as	15420af	15575me
		7180as	15220na	17640va	17705eu
		17790af	17840af	17885af	21470af
		21660af			
1300-1330	USA, VOA Washington	6110as	9760au	11715as	15155au
		15425au			
1300-1350	North Korea	9325eu	9345eu	9640as	13650as
		13650am	15230as	15230am	
1300-1400	Australia	5995pa	7240pa	9580pa	11800pa
		11855as	13755as		
1300-1400	Australia, ABC Alice Sprg	2310do			
1300-1400	Australia, ABC Brisbane	4920do			
1300-1400	Australia, ABC Katherine	2485do			
1300-1400	Australia, ABC Perth	9610do			
1300-1400	Australia, ABC Tennant Cr	2325do			
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 s	Canada, RCI Montreal	11955am	17820am		
1300-1400	China, CRI	9715as	11660va	11855na	
1300-1400	Cook Islands	11760pa			
1300-1400	Costa Rica, RFPI	13630na	15030na		
1300-1400	Ecuador, HCJB Quito	11925am	15115am	17890am	21455am
1300-1400 sa	Eq. Guinea, R. East Africa	9585af			
1300-1400	Ghana, Radio 1, Accra	4915do			
1300-1400	Ghana, Radio 2, Accra	7295do			
1300-1400	Luxembourg, RTL	15350va			
1300-1400	Malaysia, RTM Radio 4	7295do			

1300-1400	Nigeria	4990do	7285do		
1300-1400	Nigeria, Voice of	7255af			
1300-1400	Palau, KHBN	9830va			
1300-1400	Papua New Guinea	4890do			
1300-1400	Philippines, FEBC Manila	11995as			
1300-1400	Romania, R. Romania Int'l	11940eu	15365eu	17720eu	17850eu
1300-1400	Russia, AWR Russia	11855as			
1300-1400	Russia, Radio Moscow	7370va	9640na	9655na	9755na
		9755na	9895na	11655na	11870va
		11985na	11995va	12050na	17830na
1300-1400	Sierra Leone, SLBS	3316do	5980do		
1300-1400	Singapore, SBC1	5010do	5052do	11940do	
1300-1400 vl	South Africa, Radio Orange	9630do			
1300-1400	Sri Lanka B'casting Corp.	6075as	9720as		
1300-1400 sa	Tanzania	5985af	9684af	11765af	
1300-1400	USA, CSMonitor Boston	9425au	9495am	13625as	13760na
1300-1400 as	USA, CSMonitor Boston	15665eu			
1300-1400	USA, KNLS Anchor Point	7355as			
1300-1400	USA, KTBN Salt Lake City	7510am			
1300-1400	USA, WHRI Noblesville	9465na	11790na		
1300-1400	USA, WJCR Upton, Kentucky		7465na	7490na	
1300-1400	USA, WWCR Nashville	13815na	15690na		
1300-1400	USA, WYFR Okeechobee, FL	5950am	6015am	11550as	11830am
		13695na	17750na	17760am	
1315-1330	Lebanon, Radio Voice of	6549.5			
1320-1400	Jordan	9560eu			
1325-1400 mtwhf	Kenya, Voice of	4935do			
1330-1345	South Korea World News	7275as	11740as		
1330-1357	Canada, RCI Montreal	6150as	9535as		
1330-1400	Austria, ORF Vienna	11780as	15450as		
1330-1400	Cameroon CRTV Douala	4795do			
1330-1400	Finland, YLE	15400na	17880na		
1330-1400	India, All India Radio	9665as	11760as	15120as	
1330-1400 a	Indonesia, Radio Republik	3385do	6070do		
1330-1400	Laos, National Radio of	7116as			
1330-1400	Netherlands	13770pa	16710pa		
1330-1400	UAE Radio, Dubai	13675eu	15320eu	15435as	21605as
1330-1400	United Kingdom, BBC London	5975eu	6045eu	6180eu	6190af
		6195ca	7180af	9410eu	9515na
		9660eu	9740as	9750eu	9760eu
		11820as	11940af	12095eu	15070va
		15220na	15310as	15420af	15575me
		7180as	17640va	17705eu	17790af
		17840af	17885af	21470af	21660af
1330-1400	USA, VOA Washington	6110as	9760as	15155au	15425au
1330-1400	Uzbekhistan, R. Tashkent	5945as	9540as	15470as	17745as
1330-1400	Vietnam, Voice of	9840as	12020as	15010as	
1345-1400	Vatican Radio	11640au	15090au	17525au	21515au

SELECTED PROGRAMS

Sundays

- 1300 HCJB: Adventure Club. A weekly adventure program on Christianity for children.
- 1300 Radio For Peace Int'l: World Citizen's Hour. See S 0500.
- 1315 HCJB: The Word Today. A discussion of Biblical themes.
- 1330 HCJB: Telling The Truth. Stuart Briscoe presents a religious program.
- 1330 Radio Austria Int'l: Austrian Shortwave Panorama. See S 1230.

Mondays

- 1300 HCJB: Morning In The Mountains. See M 1200.
- 1330 HCJB: Focus On The Family. A daily look at marriage, parenting, and social trends that affect the family.
- 1330 Radio For Peace Int'l: World Goodwill Forum. See M 0530.
- 1335 Radio Austria Int'l: Report From Austria. See S 0135.

Tuesdays

- 1300 HCJB: Morning In The Mountains. See M 1200.
- 1300 Radio For Peace Int'l: United Nations. See M 0245.
- 1315 Radio For Peace Int'l: RFPI Reports. See S 0230.

- 1330 HCJB: Focus On The Family. See M 1330.
- 1330 Radio For Peace Int'l: Peace Forum. See T 0200.
- 1335 Radio Austria Int'l: Report From Austria. See S 0135.

Wednesdays

- 1300 HCJB: Morning In The Mountains. See M 1200.
- 1300 Radio For Peace Int'l: UNESCO. See M 2330.
- 1315 Radio For Peace Int'l: RFPI Reports. See S 0230.
- 1330 HCJB: Focus On The Family. See M 1330.
- 1330 Radio For Peace Int'l: WINGS. See W 0530.
- 1335 Radio Austria Int'l: Report From Austria. See S 0135.

Thursdays

- 1300 HCJB: Morning In The Mountains. See M 1200.
- 1300 Radio For Peace Int'l: United Nations. See M 0245.
- 1315 Radio For Peace Int'l: RFPI Reports. See S 0230.
- 1330 HCJB: Focus On The Family. See M 1330.
- 1330 Radio For Peace Int'l: Vietnam Veterans Radio Network. See S 0630.
- 1335 Radio Austria Int'l: Report From Austria. See S 0135.

Fridays

- 1300 HCJB: Morning In The Mountains. See M 1200.
- 1300 Radio For Peace Int'l: Dialogue. See T 2330.
- 1315 Radio For Peace Int'l: RFPI Reports. See S 0230.
- 1330 HCJB: Focus On The Family. See M 1330.
- 1330 Radio For Peace Int'l: Steppin' Out Of Babylon. See T 0300.
- 1335 Radio Austria Int'l: Report From Austria. See S 0135.

Saturdays

- 1300 HCJB: Adventures In Odyssey. Lively children's dramas from the "Focus on the Family" team.
- 1300 Radio For Peace Int'l: United Nations. See M 0245.
- 1303 BRT, Brussels: Press Review. See S 0033.
- 1315 Radio For Peace Int'l: RFPI Reports. See S 0230.
- 1330 HCJB: Children's Bible Hour. Songs and stories for children.
- 1330 Radio Austria Int'l: Austrian Coffee Table. See S 0330.
- 1330 Radio For Peace Int'l: Outlaw For Peace. See A 0530.

1400 UTC

[9:00 AM EST/6:00 AM PST]

FREQUENCIES

1400-1410	Malawi B'casting Corp.	3381do			
1400-1415	Vatican Radio	15090au	17525au	21515au	
1400-1425 mtwhfa	Belgium, BRT	17555na	21810na		
1400-1425	Netherlands	13770pa	17610pa		
1400-1430	Cameroon CRTV Douala	4795do			
1400-1430	Ecuador, HCJB Quito	11925am	15115am	17890am	21455am
1400-1430 smtwh	Israel, Kol Israel	11587am	11603na	15640na	15650as
		17575eu	17590eu		
1400-1430	Malaysia, RTM Kuching	4950do			
1400-1430	United Kingdom, BBC London	6190af	6195af	6195as	7180as
		9410eu	9515na	9660eu	9740as
		9750eu	9760eu	11750as	11820as
		11940af	12095eu	15070eu	15220na
		15310as	15575me	17640va	17705eu
		17790af	17840na	17880af	21470af
		21660af			
1400-1500	Australia	5995pa	7240pa	9540pa	9580pa
		9770va	11800pa	11855pa	
1400-1500	Australia, VLW6 Wanneroo,	6140do			
1400-1500	Cameroon CRTV Yaounde	4850do			
1400-1500	Canada, CFCX Montreal	6005do			
1400-1500	Canada, CFRX Toronto	6070do			
1400-1500	Canada, CFVP Calgary	6030do			
1400-1500	Canada, CHNX Halifax	6130do			
1400-1500	Canada, CKZU Vancouver	6160do			
1400-1500 s	Canada, RCI Montreal	11955am	17820am		
1400-1500	China, CRI	11815as	11855na	15165as	
1400-1500	Cook Islands	11760pa			
1400-1500	Costa Rica, RFPI	7375na	13630na	15030am	
1400-1500	Finland, YLE	15400na	21550na		
1400-1500	France, RFI Paris	11910as	17650as	17695as	
1400-1500	Ghana, Radio 1, Accra	4915do			
1400-1500	Ghana, Radio 2, Accra	7295do			
1400-1500	India, All India Radio	9665as	11760as	15120as	
1400-1500 varies	Italy, IRRS Milan, Italy	7125eu			
1400-1500	Japan NHK	11865va			
1400-1500	Jordan	9560eu			
1400-1500 mtwhf	Kenya, Voice of	4935do			
1400-1500	Lebanon, King of Hope	6280me			
1400-1500	Luxembourg, RTL	15350va			
1400-1500	Malaysia, RTM Radio 4	7295do			
1400-1500	Malta, V. of the Medit.	11925eu			
1400-1500	Nigeria	4990do	285do		
1400-1500	Nigeria, Voice of	7255af			
1400-1500	Philippines, FEBC Manila	11995as			
1400-1500	Russia, Radio Moscow	7370va	9505na	9640na	9655na
		9675na	9755na	9755na	9895na
		11655na	11870va	11995na	12015va
		15490va	15580va	17670na	17695va
		17810va	21690na		
1400-1500	Sierra Leone, SLBS	3316do	5980do		
1400-1500	Singapore, SBC1	5010do	5052do	11940do	
1400-1500 vl	South Africa, Radio Oranje	9630do			
1400-1500	South Korea, Seoul	9570as			
1400-1500	Sri Lanka B'casting Corp.	6075as	9720as		
1400-1500 sa	Tanzania	5985af	9684af	11765af	
1400-1500	USA, CSMonitor Boston	9530as	13625as	13760am	15665eu
		17555am			
1400-1500 sa	USA, CSMonitor Boston	13710na			
1400-1500	USA, KTNB Salt Lake City	7510na			
1400-1500	USA, VOA Washington	6110as	9760as	15160au	15425au
1400-1500	USA, WHRI Noblesville	9465na	15105na		
1400-1500	USA, WJCR Upton, Kentucky	7465na	7490na		
1400-1500	USA, WWCR Nashville	15690am	1735na		
1400-1500	USA, WYFR Okeechobee, FL	6015am	11550as	11830am	17760am
1405-1430	Finland, YLE	6120va	6155eu	9730af	11755eu
		11820va	15440me	17880eu	
1415-1425	Nepal, Kathmandu	3230do	5005do	7165do	
1415-1429	Canada, RCI Montreal	11935eu	15305eu	15315eu	15325eu
		17795eu	17820eu	21545eu	
1415-1500	Bhutan Broadcasting Svc	5023do			
1430-1500	Albania, Radio Tirana	7155eu	9760eu		
1430-1500 mtwhfa	Cameroon CRTV Douala	4795do			
1430-1500	Ecuador, HCJB Quito	11925am	17890am	21455am	
1430-1500	Iraq	15240as			
1430-1500	Myanmar, Voice of, Burma	5990do			
1430-1500	Netherlands	9895as	13770as	15150as	17610as
1430-1500	Romania, R.Romania Int'l	11775as	15335as	17720as	
1430-1500	United Kingdom, BBC London	6180eu	6190af	6195as	9410eu
		9515na	9740as	9750eu	9760eu
		11750as	11820as	11940af	12095eu
		15070va	15310as	15575me	17640va
		17705eu	17790af	17840va	17880af
1430-1500	United Kingdom, BBC London	7180as	21470af	21660af	
1430-1500 **NEW**	USA, KJES New Mexico ****	11715as			
1445-1500 smwba	Monrovia, Ulaanbaatar	7260as	13780as		

SELECTED PROGRAMS

Sundays

- 1400 HCJB: Mountain Meditations. From HCJB's president.
1400 Radio For Peace Int'l: From The Atom To The Universe. See S 0600.
1401 BBC: Feature. Topical programming on various subjects.
1430 BBC: Anything Goes. Bob Holness presents a variety of musical requests.
1430 HCJB: Moody Bible Institute Presents.
1430 Radio For Peace Int'l: Vietnam Veterans Radio Network. See S 0630.

Mondays

- 1400 HCJB: Stories Of Great Christians. Dramas on the lives of church leaders, missionaries, and the like.
1404 BRT, Brussels: Press Review. See S 0033.
1405 BBC: Outlook. Conversation, controversy, and color.
1407 BRT, Brussels: Radio World. See S 0035.
1415 HCJB: Our Daily Bread. A daily devotional program.
1417 BRT, Brussels: Tourism In Flanders. See S 0043.
1430 BBC: Off The Shelf. See M 0430.
1430 HCJB: Through The Bible. J. Vernon McGee presents a book-by-book study of the Bible.
1430 Radio For Peace Int'l: Changemakers. See M 0630.
1445 BBC: Talks. See S 0445.

Tuesdays

- 1400 HCJB: Stories Of Great Christians. See M 1400.
1400 Radio For Peace Int'l: Peace Talks. See T 0600.
1404 BRT, Brussels: Press Review. See S 0033.
1405 BBC: Outlook. See M 1405.
1407 BRT, Brussels: Belgium Today. See T 0037.
1412 BRT, Brussels: Focus On Europe. See T 0042.

- 1415 HCJB: Our Daily Bread. See M 1415.
1417 BRT, Brussels: Sports. See T 0047.
1430 BBC: Off The Shelf. See M 0430.
1430 HCJB: Through The Bible. See M 1430.
1430 Radio For Peace Int'l: New Dimensions Radio. M 0300.
1445 BBC: Feature. See M 0145.

Wednesdays

- 1400 HCJB: Stories Of Great Christians. See M 1400.
1400 Radio For Peace Int'l: A Voice Of The Emerging World or Peace Forum. See W 0600.
1404 BRT, Brussels: Press Review. See S 0033.
1405 BBC: Outlook. See M 1405.
1407 BRT, Brussels: Belgium Today. See T 0037.
1412 BRT, Brussels: Around The Arts. See W 0042.
1415 HCJB: Our Daily Bread. See M 1415.
1417 BRT, Brussels: P Box 26. See S 0053.
1430 BBC: Off The Shelf. See M 0430.
1430 HCJB: Through The Bible. See M 1430.
1445 BBC: Good Books. Recommendations of books to read (except 23rd: A Month In The Country, Michael Hayes)

Thursdays

- 1400 HCJB: Stories Of Great Christians. See M 1400.
1400 Radio For Peace Int'l: Sound Currents. See M 0430.
1404 BRT, Brussels: Press Review. See S 0033.
1405 BBC: Outlook. See M 1405.
1407 BRT, Brussels: Belgium Today. See T 0037.
1412 BRT, Brussels: Living In Belgium. See H 0042.
1415 HCJB: Our Daily Bread. See M 1415.
1417 BRT, Brussels: Green Society. See H 0047.

- 1430 BBC: Off The Shelf. See M 0430.
1430 HCJB: Through The Bible. See M 1430.
1445 BBC: Recording Of The Week. See M 0615.

Fridays

- 1400 HCJB: Stories Of Great Christians. See M 1400.
1400 R For Peace Int'l: Food For The Thoughtful. See M 0200.
1404 BRT, Brussels: Press Review. See S 0033.
1405 BBC: Outlook. See M 1405.
1407 BRT, Brussels: Belgium Today. See T 0037.
1412 BRT, Brussels: Economics. See F 0042.
1415 HCJB: Our Daily Bread. See M 1415.
1420 BRT, Brussels: North-South. See F 0050.
1430 BBC: Off The Shelf. See M 0430.
1430 HCJB: Through The Bible. See M 1430.
1430 R For Peace Int'l: The Practice of Peacemaking. F 0630.
1445 BBC: Global Concerns. See F 0145.

Saturdays

- 1400 HCJB: Song Time. John DeBrine mixes music with a religious message.
1400 Radio For Peace Int'l: Peace Forum. See T 0200.
1401 BBC: John Peel. See T 0330.
1405 BRT, Brussels: Radio World. See S 0035.
1413 BRT, Brussels: Tourism In Flanders. See S 0043.
1420 BRT, Brussels: Record Of The Week. See S 0050.
1423 BRT, Brussels: P Box 26. See S 0053.
1430 BBC: Sportsworld. Extensive coverage and results of all the weekend's sports.
1430 HCJB: Let My People Think. See S 1630.
1430 Radio For Peace Int'l: Second Opinion. See H 0200.

1500 UTC

[10:00 AM EST/7:00 AM PST]

FREQUENCIES

1500-1515 smwha	Mongolia, Ulaanbaatar	7260as	13780as		
1500-1525	Netherlands	9895as	13770as	15150as	17610as
1500-1530 mtwhf	Portugal	21515me			
1500-1530	Romania, R. Romania Int'l	11775as	15335as	17720as	
1500-1530	Sweden	15270va	17870na	21500na	
1500-1530	Swiss Radio Int'l	13635af	15505af	17670af	21770af
			21820me		
1500-1530 sa	Tanzania	5985af	9684af	11765af	
1500-1530	United Kingdom, BBC London	3915as	5975eu	6045eu	6180eu
		6190af	6195eu	6195as	9410eu
		9515na	9740na	9750eu	9760eu
		11750as	11940af	12095eu	15070va
		15310as	15400af	15420af	17840na
		15260na	15575me	17640va	17705eu
		17790af	17860af	17880af	21470af
		21490af	21660af		
1500-1550	Germany, Deutsche Welle	9735af	11965af	13610af	17735af
		17765af	21600af		
1500-1550	North Korea	9325eu	9640af	9977af	13785eu
1500-1555	Polish Radio Warsaw	7285eu	9525eu	11840eu	
1500-1555	Seychelles, FEBA	9810as	11685af	15330as	
1500-1600	Australia	5995pa	7240pa	7260pa	9510pa
		9580pa	9770pa	11800pa	11855pa
		13755pa	13755as		
1500-1600	Bangladesh	4880do			
1500-1600	Cameron CRTV Yaounde	4850do			
1500-1600	Canada, CFCX Montreal	6005do			
1500-1600	Canada, CFRX Toronto	6070do			
1500-1600	Canada, CFVP Calgary	6030do			
1500-1600	Canada, CHNX Halifax	6130do			
1500-1600	Canada, CKZU Vancouver	6160do			
1500-1600 s	Canada, RCI Montreal	11955am	17820am		
1500-1600	China, CRI	7405na	11815as	15165as	
1500-1600	Cook Islands	11760pa			
1500-1600	Costa Rica, RFPI	13630na	15030am		
1500-1600	Ecuador, HCJB Quito	11925am	17890am	21455am	
1500-1600	Ethiopia, Voice of	7165af			
1500-1600	Ghana, Radio 1, Accra	4915do			
1500-1600	Ghana, Radio 2, Accra	7295do			
1500-1600	Guam, KTWG Guam	11650as			
1500-1600	Japan NHK	11865am	15355na		

1500-1600	Jordan	9560eu			
1500-1600 mtwhf	Kenya, Voice of	4935do			
1500-1600	Luxembourg, RTL	15350va			
1500-1600	Malaysia, RTM Radio 4	7295do			
1500-1600	Malta, V. of the Medit.	11925eu			
1500-1600	Myanmar, Voice of, Burma	5990do			
1500-1600	Nigeria	4990do	7285do		
1500-1600	Nigeria, Voice of	7255af			
1500-1600	Philippines, FEBC Manila	11995as			
1500-1600	Russia, Radio Moscow	7370va	9655na	9755na	11665na
		11840na	11995na	12015va	12030na
		12050na	13645na	15405na	15485na
		17670na			
1500-1600 twhta	Seychelles, FEBA	9810as	15330as		
1500-1600	Sierra Leone, SLBS	3316do	5980do		
1500-1600	Singapore, SBC1	5010do	5052do	11940do	
1500-1600 vl	South Africa, Radio Oranje	9630do			
1500-1600	Sri Lanka B'casting Corp.	6075as	9720as		
1500-1600	USA, CSMonitor Boston	9530as	13625as	13760pa	15665eu
		17555am			
1500-1600 sa	USA, CSMonitor Boston	13710na			
1500-1600	USA, KTNB Salt Lake City	15590na			
1500-1600	USA, VOA Washington	6110as	7125as	9645as	9760as
		15395as			
		9700eu	9760eu	15205me	
		9465sa	15105na		
1500-1600	USA, WHRI Noblesville	9465sa	7465na	7490na	
1500-1600	USA, WJCR Upton, Kentucky				
1500-1600 vl, irr	USA, WRNO New Orleans	15420na			
1500-1600	USA, WWCN Nashville	1092	13815na	15690am	
1500-1600	USA, WYFR Okaloosa, FL		11705am	11830am	
1530-1540 mtwhfa	Greece, Voice of	15630na	15650na	17525na	
1530-1600	Austria, ORF Vienna	6155eu	11780as	13730eu	21490va
1530-1600	Netherlands	9895as	13770as	15150as	17610as
1530-1600	Sudan Nat'l B'casting Cor	9540do	9550do	11635do	
1530-1600	Switzerland, SRI	15430va			
1530-1600	Tanzania	5985af	9684af	11765af	
1530-1600	United Kingdom, BBC London	6190af	6195eu	6195as	7180as
		9410eu	9740na	9750eu	11750as
		11775na	12095eu	15070va	15260as
		15310as	15400af	17640va	17705eu
		17840na	17880af	21470af	21660af
1545-1600	South Korea World News	7275va			
1545-1600	Vatican Radio	15090au	17865au		

SELECTED PROGRAMS

Sundays

- 1500 HCJB: Urban Alternative. A program for inner-city America.
- 1500 Radio For Peace Int'l: Red Cross Roads or The CFRU Series. The work of the Red Cross, or current-affairs issues from a student-radio viewpoint.
- 1515 BBC: Concert Hall. Classical music from the world's great concert halls.
- 1530 HCJB: Heaven And Home Hour. Christian messages of inspiration.
- 1530 Radio For Peace Int'l: The World In Review. News from the United Nations and worldwide from the week just past.
- 1535 Radio Austria Int'l: Report From Austria. See S 0135.
- 1545 Radio For Peace Int'l: RFPI Reports. See S 0230.

Mondays

- 1500 HCJB: Key Life. Steve Brown presents religious advice.
- 1500 Radio For Peace Int'l: World Of Radio. See S 0200.
- 1515 BBC: Feature/Drama. See M 0101.
- 1515 HCJB: Gateway To Joy. Contemporary women's issues from a Biblical perspective.
- 1530 HCJB: Back To The Bible. A daily Bible study.
- 1530 Radio For Peace Int'l: The World In Review. See S 1530.
- 1535 Radio Austria Int'l: Report From Austria. See S 0135.
- 1545 Radio For Peace Int'l: RFPI Reports. See S 0230.

Tuesdays

- 1500 HCJB: Key Life. See M 1500.
- 1515 BBC: A Jolly Good Show. Dave Lee Travis presents listener rock music requests.
- 1515 HCJB: Gateway To Joy. See M 1515.
- 1530 HCJB: Back To The Bible. See M 1530.
- 1530 Radio For Peace Int'l: UNESCO. See M 2330.
- 1535 Radio Austria Int'l: Report From Austria. See S 0135.
- 1545 Radio For Peace Int'l: RFPI Reports. See S 0230.

Wednesdays

- 1500 HCJB: Key Life. See M 1500.
- 1515 BBC: Talks. See M 0415.
- 1515 HCJB: Gateway To Joy. See M 1515.
- 1530 BBC: Comedy/Drama. This month, Stewart Collins looks at comic songs in "It's A Funny Old World" (except 2nd, 30th: Two Cheers, a humorous look back at the month just past).
- 1530 HCJB: Back To The Bible. See M 1530.
- 1530 Radio For Peace Int'l: Dialogue. See T 2330.
- 1535 Radio Austria Int'l: Report From Austria. See S 0135.
- 1545 Radio For Peace Int'l: RFPI Reports. See S 0230.

Thursdays

- 1500 HCJB: Key Life. See M 1500.
- 1500 Radio For Peace Int'l: Common Ground. See W 2300.
- 1515 BBC: Classics With Kay. See S 2315.
- 1515 HCJB: Gateway To Joy. See M 1515.

- 1530 HCJB: Back To The Bible. See M 1530.
- 1530 Radio For Peace Int'l: Population Update or FAO. See W 2330.
- 1535 Radio Austria Int'l: Report From Austria. See S 0135.

Fridays

- 1500 HCJB: Key Life. See M 1500.
- 1500 Radio For Peace Int'l: The Wisdom Of Joseph Campbell. See S 0300.
- 1515 BBC: Music Review. See H 2315.
- 1515 HCJB: Gateway To Joy. See M 1515.
- 1530 HCJB: Back To The Bible. See M 1530.
- 1530 Radio For Peace Int'l: United Nations. See M 0245.
- 1535 Radio Austria Int'l: Report From Austria. See S 0135.
- 1545 Radio For Peace Int'l: RFPI Reports. See S 0230.

Saturdays

- 1500 HCJB: Unshackled. See H 0630.
- 1500 Radio For Peace Int'l: World Citizens Weekly Commentary. See F 1500.
- 1515 BBC: Sportsworld. See A 1430.
- 1530 HCJB: Radio Reading Room. See S 0630.
- 1530 Radio For Peace Int'l: RFPI Reports. See S 0230.
- 1535 Radio Austria Int'l: Report From Austria. See S 0135.

1600 UTC

[11:00 AM EST/8:00 AM PST]

FREQUENCIES

Table listing radio frequencies for various countries and stations, including Singapore, Lesotho, Malawi, Netherlands, Canada, Norway, Pakistan, United Kingdom, USA, Vietnam, Yemen, Guam, South Africa, Vatican Radio, UAE Radio, Germany, Australia, Canada, China, Cook Islands, Costa Rica, France, Ghana, Kenya, Luxembourg, Nigeria, and others.

SELECTED PROGRAMS

Sundays

1615 BBC: Feature. See S 0230.
1630 HCJB: Let My People Think. A program addressing questions of today's thinker.
1630 Radio Austria Int'l: Austrian Shortwave Panorama. See S 1230.
1645 BBC: Letter From America. See S 0615.

Mondays

1615 BBC: New Ideas. A window on the world of technology, innovations, and new products.
1635 BBC: Talks. Catch up with former newsmakers in "Whatever Happened To...?" (through January 4th).
1635 Radio Austria Int'l: Report From Austria. See S 0135.
1639 HCJB: Current Affairs. News, features, and interviews from HCJB correspondents.
1645 BBC: The World Today. A look at a topical aspect of the international scene.

Tuesdays

1615 BBC: Megamix. See T 1130.
1635 Radio Austria Int'l: Report From Austria. See S 0135.
1639 HCJB: Current Affairs. See M 1639.
1645 BBC: The World Today. See M 1645.

Wednesdays

1615 BBC: Rock/Pop Music. See T 0630.
1635 Radio Austria Int'l: Report From Austria. See S 0135.
1639 HCJB: Current Affairs. See M 1639.
1645 BBC: The World Today. See M 1645.

Thursdays

1615 BBC: Network UK. Issues and events affecting people across the UK.
1635 Radio Austria Int'l: Report From Austria. See S 0135.

1639 HCJB: Current Affairs. See M 1639.
1645 BBC: The World Today. See M 1645.

Fridays

1615 BBC: Science In Action. News about science and technology.
1635 Radio Austria Int'l: Report From Austria. See S 0135.
1639 HCJB: Current Affairs. See M 1639.
1645 BBC: The World Today. See M 1645.

Saturdays

1615 BBC: Sportsworld. See A 1430.
1630 HCJB: Unshackled. See H 0630.
1630 Radio Austria Int'l: Austrian Coffee Table. See S 0330.

1800 UTC continued

1800-1900	USA, WHRI Noblesville	13760na	17835sa		
1800-1900	USA, WINB Red Lion, Penn.	15295eu			
1800-1900	USA, WJCR Upton, Kentucky	7465na	7490na		
1800-1900	USA, WMLK Bethel, Penna.	9465eu			
1800-1900	USA, WWCR Nashville	13815na	15690na		
1800-1900	USA, WYFR Okeechobee, FL	21500va			
1815-1830	Lebanon, Radio Voice of	6550me			
1815-1900	Bangladesh	12030as	15255as		
1830-1900	Afghanistan, Kabul	9635am			
1830-1900	Austria, ORF Vienna	5945eu	6155eu	12010me	13730af
1830-1900 as	Canada, RCI Montreal	13670me	15260me	17820me	
1830-1900	Finland, YLE	6120eu	9730af	11755af	15440eu
1830-1900	Iran, Islamic Republic	9022af	15260eu		
1830-1900	Netherlands	6020af	9605af	21515af	21590af
1830-1900	Sri Lanka B'casting Corp.	9720eu	15120eu		
1830-1900	United Kingdom, BBC London	3255af	3955eu	6005af	6180eu
		6190af	6195eu	7325eu	9410eu
		9600af	11750as	11955va	12095eu
		15070eu	15400af	17880af	21660af
		6100eu	7200eu		
1830-1900 WAR	Yugoslavia	11920af			
1833-1900	Ivory Coast, Abidjan	15630af	17525af		
1840-1850 mtwhfa	Greece, Voice of	6130af			
1845-1900	Ghana B'casting Corp.	4900af	7125af		
1845-1900	Guinea, RTV Conarky	4783do	4835do	5995do	7285do
1845-1900 s	Mali, RTV Mali	3200af			
1845-1900	Swaziland, TWR Swaziland	15120pa			
1850-1900 smtwhf	New Zealand, RNZI				

1900 UTC [2:00 PM EST/11:00 AM PST]

1900-1915	Tanzania	5985af	9684af	11765af	
1900-1920	Brazil, Radiobras	15265eu			
1900-1925	Netherlands	6020af	9605af	21515af	21590af
1900-1930	Iran, Islamic Republic	9022af	15260eu		
1900-1930	Ivory Coast, Abidjan	11920af			
1900-1930	Japan NHK	9640am	11850af	11865va	
1900-1930 s	Lebanon, King of Hope	11530me			
1900-1930 as	Norway	15220va	17730va		
1900-1930	United Kingdom, BBC London	3255af	3955eu	6005af	6180eu
		6190af	6195eu	7160me	7325eu
		9410eu	9600af	9630af	11750pa
		12095eu	15070eu	15400af	17880af
		21660af			
1900-1930	Vietnam, Voice of	9840eu	12020eu	15010eu	
1900-1945	Cameroon CRTV Yaounde	4850do			
1900-1950	Germany, Deutsche Welle	9765af	11765af	11785af	11905af
		13790af	15350af	17810af	
1900-2000	Argentina, RAE Buenos Aires	15345eu			
1900-2000	Australia	5995pa	6060pa	6080pa	7240pa
		7260pa	9580pa	11720pa	11855pa
		11910pa			
1900-2000	Canada, CFCX Montreal	6005do			
1900-2000	Canada, CFRX Toronto	6070do			
1900-2000	Canada, CFVP Calgary	6030do			
1900-2000	Canada, CHNX Halifax	6130do			
1900-2000	Canada, CKZU Vancouver	6160do			
1900-2000	China, CRI	9440af	11515af		
1900-2000	Cook Islands	11760pa			
1900-2000	Costa Rica, RFPI	13630am	15030am		
1900-2000	Ecuador, HCJB Quito	15270eu	17790eu	21455eu	21480eu
1900-2000 sa	Eq. Guinea, R. East Africa	7190af			
1900-2000	Ghana B'casting Corp.	6130af			
1900-2000	Ghana, Radio 1, Accra	4915do			
1900-2000	Ghana, Radio 2, Accra	7295do			
1900-2000	India, All India Radio	7412va	9950va	11620va	11860va
		11935va	15080va		
1900-2000 mtwhf	Kenya, Voice of	4935do			
1900-2000	Kuwait, Radio Kuwait	13620na			
1900-2000	Luxembourg, RTL	15350va			
1900-2000 s	Morocco, Rabat	11920as			
1900-2000 smtwhf	New Zealand, RNZI	15120pa			
1900-2000	Nigeria	3326do	4990do		
1900-2000	Nigeria, Voice of	7255af			
1900-2000	Romania, R. Romania Int'l	7145eu	9690eu	9750eu	11940eu
1900-2000	Russia, Radio Moscow	11900va	11995va	12050va	12055va
		12060va	12070na	13645na	13665va
		15180na	15375na	15405na	15415na
		15425na	15500na	15580na	17565va

1900-2000	Saudi Arabia BC Svc	17605na	17655va	17695na	17795va
1900-2000	Sierra Leone, SLBS	9705eu	9720eu		
1900-2000	Spanish National Radio	3316do			
1900-2000	Sri Lanka B'casting Corp.	6130as	9675af	9685eu	9875eu
1900-2000	Swaziland, TWR Swaziland	9720eu	15120eu		
1900-2000	USA, CSMonitor Boston	3200af	3240af		
1900-2000 sa	USA, CSMonitor Boston	9425pa	17510na	17725eu	21545af
1900-2000	USA, CTBN Salt Lake City	17555am			
1900-2000	USA, KVOH Los Angeles	15590am			
1900-2000	USA, VOA Washington	17775sa			
		6040eu	9525as	9575af	9700eu
		9760eu	11710eu	11870as	11920af
		15180au	15205eu	15410af	15445af
		15495af	15580af	17800af	
1900-2000	USA, WHRI Noblesville	13760na	17835na		
1900-2000	USA, WINB Red Lion, Penn.	15295eu			
1900-2000	USA, WJCR Upton, Kentucky	7465na	7490na		
1900-2000	USA, WMLK Bethel, Penna.	9465eu			
1900-2000	USA, WWCR Nashville	13815na	15690am		
1900-2000	USA, WYFR Okeechobee	15355eu	21615af		
1910-1915	Botswana, Gaborone	3356af			
1920-1930	Cameroon CRTV Beau	3970do			
1930-2000	Czechoslovakia	6055eu	7345eu		
1930-2000 fa	Kazakhstan, R. Alma Ata	3955do	5035do	5260do	5960eu
		5970eu	7115eu	9505eu	9690eu
		11825eu	15215eu	15250eu	15270eu
		15285eu	15315eu	15360eu	15385eu
		17605eu	17730eu	17765eu	21490eu
1930-2000	Netherlands	17805af	21590af		
1930-2000	Polish Radio Warsaw	6095eu	6135eu	7145eu	7270eu
		9525eu			
1930-2000	Saipan, KFBS Saipan	9460af			
1930-2000	United Kingdom, BBC London	3255af	3955eu	6005af	6180eu
		6190af	6195eu	7160me	7325eu
		9410eu	9600af	9630af	11750pa
		12095eu	15070eu	15400af	17880af
		21660af			
1935-1945	Togo, RTV Togolaise	5047af			
1935-1955	Italy, RAI, Rome	7275eu	9710eu	11800eu	
1940-2000 smwha	Mongolia, Ulaanbaatar	11850eu	12015eu		
1945-2000	Bulgaria, Radio Sofia	11765as	17780as	17825as	
1945-2000	South Korea World News	6135as			
1950-2000	Sudan Nat'l B'casting Cor	9540do	9550do	11635do	
1950-2000	Vatican Radio	5885eu	7250eu		

This Radio Beijing QSL was submitted to us by John Flake of Charlotte, NC.




2100 UTC continued

2115-2130 s	Indonesia, R. Republik	6070do			
2115-2130 mtwhf	United Kingdom, BBC Carib.	15140ca	17715ca		
2115-2200	Egypt, Radio Cairo	9900eu			
2130-2145	Cameroon CRTV Beau	3970do			
2130-2155	Finland, YLE	6120af	11755as	15440eu	
2130-2200	Austria, ORF Vienna	5945eu	6155eu	9870af	
2130-2200	Canada, RCI Montreal	11880af	15150af	17820af	
2130-2200	Ecuador, HCJB Quito	15270eu	17790eu	21455eu	21480eu
2130-2200	Kazakhstan, R. Alma Ata	3955do	5035do	5260do	5960eu
		5970eu	7115eu	9505eu	9690eu
		11825eu	15215eu	15250eu	15270eu
		15285eu	15315eu	15360eu	15385eu
		17605eu	17730eu	17765eu	21490eu
2130-2200 smtwhf	Lebanon, King of Hope	6280me			
2130-2200	Lithuania, Radio Vilnius	9530na	17605na	17690na	
2130-2200	New Zealand, RNZI	17770pa			
2130-2200	Sweden, RS	6165eu	9655pa	11955as	
2130-2200	United Kingdom, BBC Falk.I	13660sa			
2130-2200	United Kingdom, BBC London	3255af	3955eu	5975ca	6005af
		6180eu	6195as	7325eu	9410eu
		9590na	11750pa	12095eu	15070na
		15260sa	15340pa	15400af	
2145-2200	Bulgaria, Radio Sofia	11660na	11720am	15330eu	
2145-2200	Cameroon CRTV Yaounde	4850do			

2200-2300	UAE Radio Abu Dhabi	13605na	15305na	17855na	
2200-2300	United Kingdom, BBC London	5975na	6195as	7325am	9410eu
		9570pa	9590na	9915ca	11750sa
		11945as	11955as	12095na	15070na
		15260sa	15340as	15400af	17830as
2200-2300	USA, CSMonitor Boston	9465na	13625as	15405as	15665eu
		17555am			
2200-2300	USA, KTBN Salt Lake City	15590am			
2200-2300	USA, VOA Washington	7120as	9770as	11760as	15185au
		15290au	15305au	17735au	17820au
2200-2300	USA, WHRI Noblesville	13760na	17835sa		
2200-2300	USA, WJCR Upton, Kentucky		7490na		
2200-2300	USA, WRNO New Orleans	15420na			
2200-2300	USA, WWCR Nashville	12160na	13815na	15690na	
2200-2300	USA, WYFR Okeechobee, FL	17610na	17750eu	21525eu	
2230-2300 mtwhf	Congo, RTV Congolaise	4765do			
2230-2300	Israel, Kol Israel	9435eu	1158711	11603eu	11675eu
		15640sa	17575eu		
2230-2300	Sweden	6065eu			
2230-2300	USA, VOA Washington	9530eu	11905me	11960me	17885me
2240-2250 smtwhf	Greece, Voice of	11645au			
2245-2300	Armenia, Radio Yerevan	11920am	12050am	17660am	
2245-2300	USA, WINB Red Lion, Penn.	15145eu			
2245-2300	Vatican Radio	9600au	11830au	15090au	

2200 UTC [5:00 PM EST/2:00 PM PST]

2200-2125	Belgium, R Vlaanderen	5910eu	9905eu		
2200-2210	Cameroon CRTV Bafoussam		4000do		
2200-2210	Syria, Radio Damascus	12085na	15095na		
2200-2215	Cameroon CRTV Yaounde	4850na			
2200-2218	Congo, RTV Congolaise	4765do	5985do		
2200-2225	Italy, RAI, Rome	9710as	11800as	15330as	
2200-2230	Albania, Radio Tirana	9760eu	11825eu		
2200-2230	Canada, RCI Montreal	5960na	9755na	11705as	11905na
		13670na			
2200-2230 2	Russia China, CRI	9740eu			
2200-2230	Czechoslovakia	5930eu	6055eu	7345eu	9605eu
2200-2230 a	Indonesia, Radio Republik	3385do	4805do		
2200-2230	Swiss Radio Int'l	9810sa	9885sa	12035sa	15570sa
2200-2230 s	USA, KGEI San Francisco	15280sa			
2200-2230	USA, VOA Washington	9530eu	11905me	11960me	15225me
		15445me	17885eu		
2200-2245	Egypt, Radio Cairo	9900eu			
2200-2245	USA, WINB Red Lion, Penn.	15185eu	15195eu		
2200-2300	Australia	11720pa	11880pa	13705as	15240pa
		15320pa	15365as	17795pa	
2200-2300	Bulgaria, Radio Sofia	11660am	11720am	15330eu	
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			
2200-2300	Cook Islands	11760pa			
2200-2300	Costa Rica, RFPI	13630ca	15030ca	21465am	
2200-2300	Cuba, RHC	9655na			
2200-2300 sa	Eq. Guinea, R. East Africa	7190af			
2200-2300	Ghana, Radio 1, Accra	4915do			
2200-2300	Ghana, Radio 2, Accra	7295do			
2200-2300	India, All India Radio	7412eu	9910eu	9950eu	11620eu
		11715eu	15265eu		
2200-2300	Luxembourg, RTL	15350va			
2200-2300 smtwha	Malaysia, RTM Radio 4	7295do			
2200-2300	New Zealand, RNZI	17770pa			
2200-2300	Nigeria	3326do	4990do		
2200-2300	Russia, Radio Moscow	11710na	12050na	15355na	15405na
		15410na	15425na	15485na	17570na
		17655va	17720va	17735na	21690na
2200-2300	Sierra Leone, SLBS	3316do			
2200-2300	Singapore, SBC1	5010do	5052do	11940do	
2200-2300	Taiwan, V. of Free China,	17750eu	21720eu		
2200-2300	Turkey, Voice of	9445na			



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2300 UTC

[6:00 PM EST/3:00 PM PST]

FREQUENCIES

2300-0000	Australia	11720pa	11880pa	15240pa	15320pa	2300-0000	USA, VOA Washington	9530me	11905me	11960eu	17885me
		15365as	17795pa			2300-0000	USA, WHRI Noblesville	9495na	13760sa		
2300-0000	Canada, CFCX Montreal	6005do				2300-0000	USA, WINB Red Lion, Penn.	15145eu			
2300-0000	Canada, CFRX Toronto	6070do				2300-0000	USA, WJCR Upton, Kentucky	7465na	7490na		
2300-0000	Canada, CFVP Calgary	6030do				2300-0000	USA, WRNO New Orleans	7355na			
2300-0000	Canada, CHNX Halifax	6130do				2300-0000	USA, WWCR Nashville	12160na	13815na		
2300-0000	Canada, CKZU Vancouver	6160do				2300-2305	Ghana, Radio 1, Accra	4915do			
2300-0000	Cook Islands	11760pa				2300-2305	Ghana, Radio 2, Accra	7295do			
2300-0000	Costa Rica, AWR	9725ca	11870ca			2300-2315	Bulgaria, Radio Sofia	11660am	11720am	15330eu	
2300-0000	Costa Rica, RFPI	13630na	15030na	21465am		2300-2330	Canada, RCI Montreal	11940sa	15235na		
2300-0000	Guam, KSDA Guam	15610as				2300-2330 as	Norway	11795am			
2300-0000	India, All India Radio	9910as	11715as	11745as	15110as	2300-2330	United Kingdom, BBC London	5975na	6175na	6195as	7145as
		15145as	17830as					9410eu	9570pa	9590na	9915sa
2300-0000	Japan NHK	11735eu	11815am	15195as	17810pa			11750sa	11945as	11955as	12095na
		17840va						15070na	15260sa	15340pa	15400af
2300-0000	Luxembourg, RTL	15350va						17830af			
2300-0000 smtwha	Malaysia, RTM Radio 4	7295do				2300-2350	North Korea	11700am	13650am		
2300-0000	New Zealand, RNZI	17770pa				2300-2350	Turkey, Voice of	9445na			
2300-0000	Russia, Radio Moscow	11710na	12050na	15355na	15405na	2300-2400	USA, KVOH Los Angeles	9725am			
		15410na	15425na	15485na	17560na	2315-0000 vl	Iraq, Radio Iraq Int'l	15150na	17740sa		
		17570na	17685na	17720va	17735na	2330-0000 as	Canada, RCI Montreal	11940sa	15235sa		
		17860na	17890na	21690na		2330-0000	Canada, RCI Montreal	9755am	11730am	13670am	
2300-0000	S. Africa, Channel Africa	4810af				2330-0000 a	Colombia, R. Nacional	11822.5	17865am		
2300-0000	Sierra Leone, SLBS	3316do				2330-0000	Iran, Islamic Republic	9022am	11790am	15260am	
2300-0000	Singapore, SBC1	5010do	5052do	11940do		2330-0000 m	Sri Lanka B' Casting Svc	15425am			
2300-0000	Thailand	4830as	9655as	11905as		2330-0000	United Kingdom, BBC London	5975na	6175na	6195as	7145as
2300-0000	UAE Radio Abu Dhabi	13605na	15305na	17855na				7325na	9570pa	9590na	9915sa
2300-0000	USA, CSMonitor Boston	9465na	13625as	15405af	15665eu			11750sa	11945as	11955as	12095na
		17555af						15070na	15260sa	17830as	
2300-0000	USA, KTBN Salt Lake City	15590na				2330-0000	Vietnam, Voice of	9840as	12020as	15010as	
2300-0000	USA, VOA Washington	7120as	9770as	11760au	15185au	2335-2345 smtwhf	Greece, Voice of	7450eu	9425sa	11645sa	
		15290au	15305as	17735as	17820as						

SELECTED PROGRAMS

Sundays

- 2300 Radio For Peace Int'l: World Of Radio. See S 0200.
- 2305 BBC: World Business Review. The previous week's news and upcoming events.
- 2315 BBC: Classics With Kay. No, not Tracey Ullman, but Brian Kay with his choice of classical music.
- 2330 Radio For Peace Int'l: The World In Review. See S 1530.
- 2345 Radio For Peace Int'l: RFPI Reports. See S 0230.

Mondays

- 2300 Radio For Peace Int'l: New Dimensions Radio. See M 0300.
- 2305 BBC: World Business Report. The latest news from the markets worldwide.
- 2315 BBC: Talks. This month, John Turtle examines education issues in "The Learning World".
- 2330 BBC: Multitrack 1. Tim Smith presents the smash singles on the UK pop music charts.
- 2330 Radio For Peace Int'l: UNESCO. A selection of programs presenting the cultural heritage of many nations.
- 2345 Radio For Peace Int'l: RFPI Reports. See S 0230.

Tuesdays

- 2305 BBC: World Business Report. See M 2305.
- 2315 BBC: Concert Hall. See S 1515.
- 2330 Radio For Peace Int'l: Dialogue. News from the University for Peace in Costa Rica.
- 2345 Radio For Peace Int'l: RFPI Reports. See S 0230.

Wednesdays

- 2300 Radio For Peace Int'l: Common Ground. International relations and related political and social issues.
- 2305 BBC: World Business Report. See M 2305.
- 2315 BBC: From Our Own Correspondent. See S 0330.
- 2330 BBC: Multitrack 2. Graham Bannerman presents new pop records, interviews, news, and competitions.
- 2330 Radio For Peace Int'l: Population Update or FAO. Population-related issues or reports on food and agricultural production.

Thursdays

- 2300 Radio For Peace Int'l: The Wisdom Of Joseph Campbell. See S 0300.
- 2305 BBC: World Business Report. See M 2305.
- 2315 BBC: Music Review. News and views from the world of classical music.
- 2330 Radio For Peace Int'l: United Nations. See M 0245.
- 2345 Radio For Peace Int'l: RFPI Reports. See S 0230.

Fridays

- 2300 Radio For Peace Int'l: World Citizens Weekly Commentary. No details available.
- 2305 BBC: World Business Report. See M 2305.
- 2315 BBC: Worldbrief. A roundup of the week's news headlines and developments.
- 2330 BBC: Multitrack 3. The latest on the British pop scene.
- 2330 Radio For Peace Int'l: RFPI Reports. See S 0230.

Saturdays

- 2300 Radio For Peace Int'l: Red Cross Roads or The CFRU Series. See S 1500.
- 2305 BBC: Words Of Faith. See M 1209.
- 2310 BBC: Book Choice. See W 0425.
- 2315 BBC: A Jolly Good Show. See T 1515.
- 2330 Radio For Peace Int'l: The World In Review. See S 1530.
- 2345 Radio For Peace Int'l: RFPI Reports. See S 0230.

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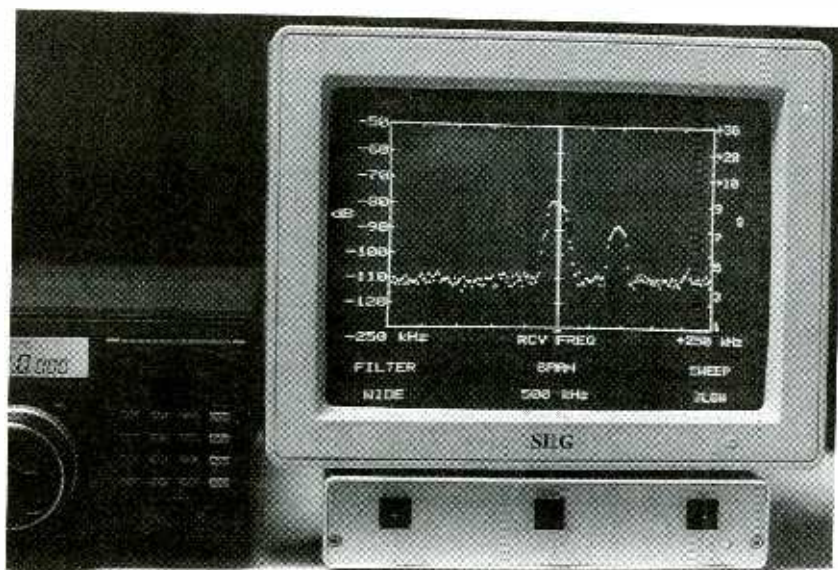
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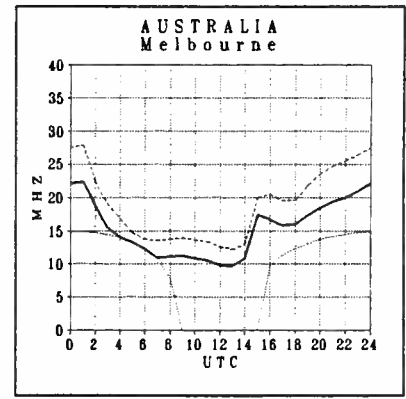
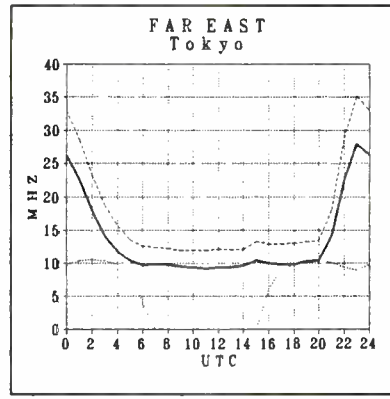
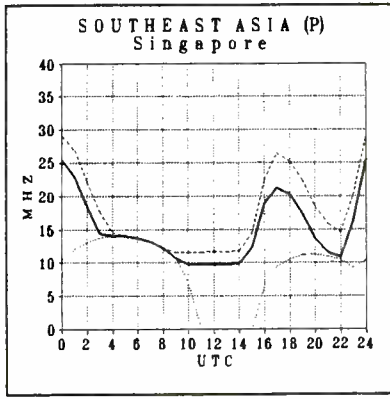
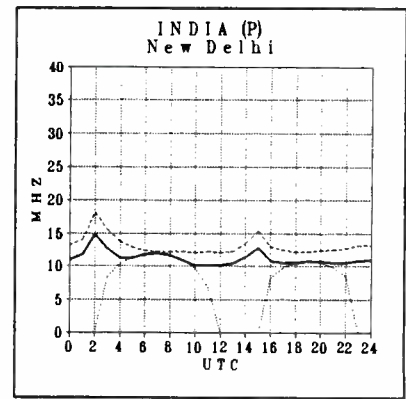
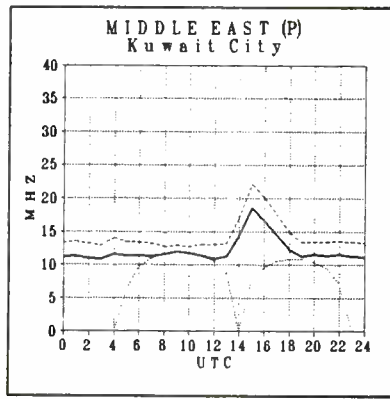
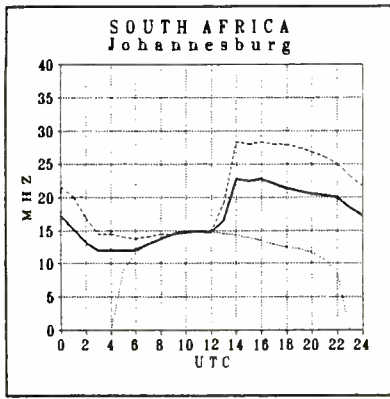
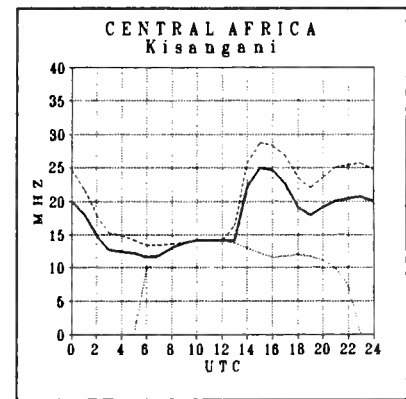
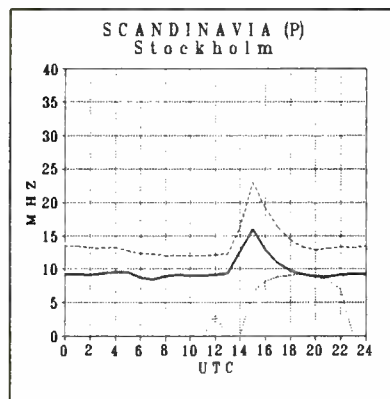
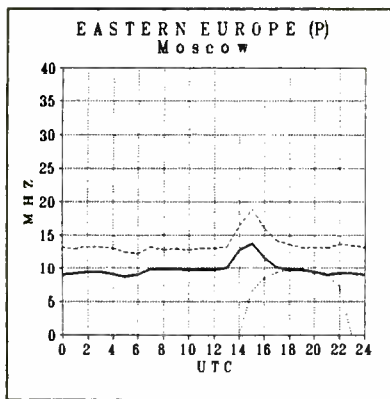
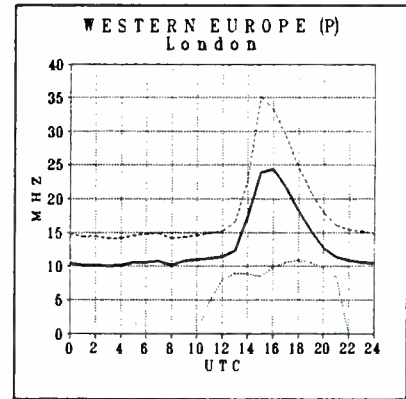
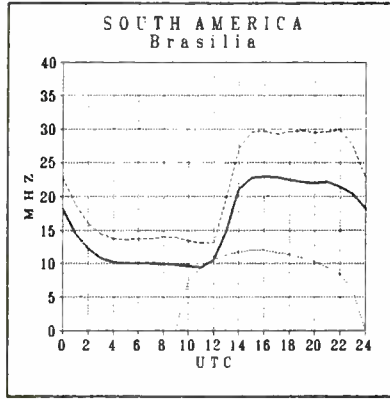
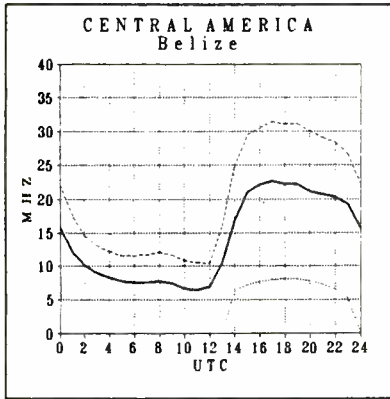
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NOTE: Demand for this spectrum display system, due for release in December, is expected to be heavy. Reserve orders are being taken now.

Propagation Conditions: Western United States

Once you've located the correct charts, look along the horizontal axis of the graph for the time you are listening. The top line of the graph shows the maximum usable frequency (MUF), the heavy middle line is the frequency for best reception, or optimum working frequency (OWF), and finally, the bottom line is the lowest usable frequency (LUF). You will find the best reception along the heavy middle line. Circuits labeled (P) cross the polar auroral zone. Expect poor reception on these circuits during ionospheric disturbances.



what's new?

Larry Miller



A DXing Revolution

Imagine sitting down for a DX session where micro-powered Indonesian shortwave stations come in loud, clear and fade free. Or imagine being able to monitor local Colombian broadcast band stations as if you were sitting in an apartment in Bogota.

It is possible but, as you probably suspected, it won't come cheap. An Australian firm, Philip Collins & Associates, has produced a device, the Radphone 2000DX/T, that allows you to operate a communications receiver by telephone.

Here's how it works: You set up a receiver (it must have an RS-232 computer interface) in the location of your choice, say Jakarta, Indonesia. The receiver is connected to the Radphone 2000DX/T which is connected to a telephone line. Once this is set up, your receiver can be monitored and controlled from any location in the world. All you need is access to a telephone.

What makes the Radphone so impressive is the level of control it provides. First, using the telephone keypad, you can choose the frequency, mode and the tuning steps (from 10 Hz to 100 kHz!). You can raise the audio 3 dB at a time. Once programming is completed, another touch of the keypad will prompt the Radphone to repeat your settings back to you in a synthesized voice. There are

even provisions for 7 digit PIN access codes for over 250 users.

For the DX club with vision or the individual DXer with deep pockets, the Radphone 2000DX/T could revolutionize DXing forever. For more information, contact Philip Collins & Associates, 8A Moore Ave, West Lindfield 2070, Australia or call +61 2 416 8799.



FM DXing

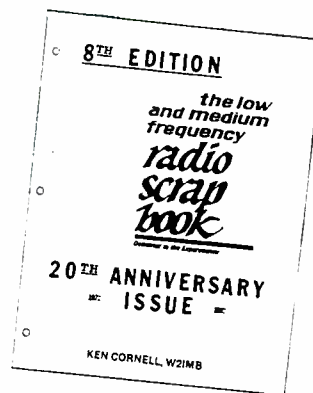
One enjoyable way to experience the DX challenge without investing in any special equipment is to log FM stations. Bruce Elving's *FM Atlas* is considered the consummate guide for FM broadcast radio DXers. All 50 United States, protectorates, Canadian provinces, Mexico and St. Pierre and Miquelon islands are mapped with locations, frequencies and call signs of FM stations.

Separate cross-reference chapters home in on frequencies and cities. If you are wondering where that FM broadcaster is located, you'll find it here!

The new 14th edition of the *FM Atlas* is available for \$10.95 plus \$1.50 shipping from Grove Enterprises or the publisher at FM Atlas, Dept. MT, Adolph, MN 55701-0024.

Friends in Low Places

If you have ever been intrigued by radio's basement

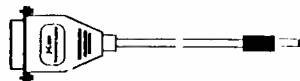


(the region below the 530-1700 kHz mediumwave broadcast band) Ken Cornell tells you how to get there and what to use to listen in *The Low and Medium Wave Scrapbook, 8th Edition*.

Scrap Book is a collection of over 120 circuits as well as charts, tables, drawings and other useful data for optimum low frequency reception.

Antennas, simple receivers and license-free transmitters, RF amplifiers, converters, wave traps, test equipment, selective filters—they're all here, meticulously designed and tested by the master.

The Low and Medium Wave Scrapbook is \$17.50 postpaid from the author, 225-MT Baltimore Avenue, Point Pleasant Beach, NJ 08742.



Shielded Cables

j*Com has introduced a line of receiver/transceiver control computer interface cables designed to interface personal computers with all receivers and transceivers that have the ability to be controlled over a serial TTL link.

Unlike the interfaces supplied by manufacturers, the j*Com interface cable requires no external power supply. As a result, susceptibility of the interface to interference is reduced.

The cables are \$54.95 (plus \$5 shipping and handling) from j*Com, Box 194-MT, Ben Lomond, California 95005 or call 408-335-9120.



Brazilian Stations List

For those DXers who chase Brazilian stations, whether AM, FM or shortwave, the US\$4.00 (!) *Brazilian MW, SW & FM Stations List* by Antonio Ribeiro de Motta & Claudio Rotolo de Moraes, is an indispensable bargain. This year's edition is a 56 page book containing the frequency, call sign, power, name and location, zip code, and schedule of all radio stations operating or planned in Brazil.

To get your copy, send \$4.00 (cash only) to the Suriname DX Club International, Bechaniestraat 58, Paramaribo, Suriname. When writing, you might also ask for a copy of the *Latin American DX Calendar*. It's just a buck and covers the anniversary dates of shortwave stations and holidays in Latin American countries — helpful information when LA DXing.

British Stations List

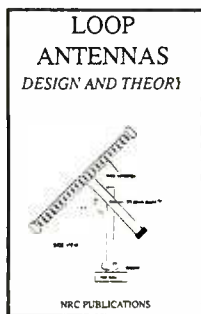
Like an *FM Atlas* for the United Kingdom, the British DX Club's *Radio Stations of the United Kingdom—11th Edition* is now available.

Arranged by frequency, the booklet lists all British AM and FM stations, including BBC and independent, including their location and transmitter power. A reference section gives the full postal address and telephone number of each station as well as background information, special event stations, "unofficial" stations and more.

Radio Stations of the United Kingdom is \$US4.00 (cash only) from 54 Birkhall Road, Catford, London SE6 1TE.

AM Antenna Books

The National Radio Club has recently produced two new antenna books. The first, called *Beverage and Longwire Antennas: Design and Theory*, is an excellent guide to the muscleman of antennas. The book contains a pleasant balance of serious theory with an encouraging dash of practical information to get you up and running with a longwire, which works best in the long and medium (AM) wave bands. The book is available for \$7.95 postpaid.



The second book is called the *Loop Antenna Book*, and it deals with both air core box loops and ferrite rod loops.

Again, both theory and practical data are intermixed for the hobby DXer. *Loop Antennas* retails for \$9.95 postpaid.

Send your check or money order to the National Radio Club, P.O. Box 164, Mannsville, New York 13661-0164. Tell them that *MT* sent you.

Serious CB

Midland International is one of only a handful of firms who seem to remain committed to CB radio. This month the Missouri-based firm has released a versatile compact.

The Model 75-779 is a 40-channel handheld with both a scan and two channel watch mode. In addition to the scan and watch function, the 2-way transceiver also provides instant



access to emergency and road information channels 9 and 19.

Midland, like many manufacturers, has become battery conscious. In the full-power mode, the 75-779 delivers 7 watts input power (4 watts output), but for special close-in situations the power can be switched down to 1 watt. A battery saver circuit, probably an automatic audio shut-off, reduces battery drain by as much as 80% in the receive-only mode.

The Model 75-779 features a large multi-function LCD display which indicates everything from signal strength to output power and battery condition. Also featured is an external power cord with lighter plug for 12-volt use and a flexible rubber antenna.

Sure, the name may be uninspiring, but the radio just might be enough to pique interest in the Citizen's Band. The Model 75-779 is available from your favorite electronics retailer. For more information contact Midland at 1690 North Topping, Department MT, Kansas City, Missouri 64120 or call 1-800-MIDLAND.

Scanner Listeners: Fire Call!

Tom Swisher, author of the hobby's first book devoted exclusively to fire monitoring, successfully combines his enthusiasm and expertise in both firefighting (he is a professional firefighter) and scanning (he is editor of *National Scanning Report's* popular "Fire Report" column).

Fire Call gives you a fire fighter's view of the action — a first hand look at the action on your scanner. No matter how long you've monitored the fire

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By Tom Swisher



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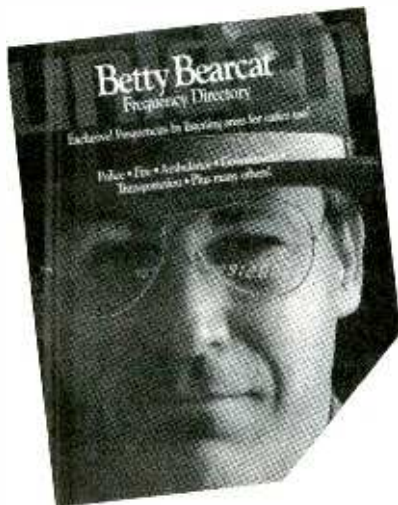
Scanning the Three Rivers

For football fans, Three Rivers is the home of the

Pittsburgh Steelers. To scanner fans, it's the home of some of the hottest scanning action this side of New York City. Rich Newbould's new second edition of *Scanning the Three Rivers—Allegheny County Edition* contains approximately 5,000 frequencies used in Pittsburgh and Allegheny county.

Information is arranged by licensee and includes frequency, service code, callsign and location of the transmitter. The book is exhaustive, covering everything from police, fire and emergency services, to private investigators, the Forbes Health System and, not surprisingly, the steel industry. The 8-1/2 x 11 inch book is a half inch thick!

Scanning the Three Rivers is \$20.00 plus \$5.00 shipping and handling from R.W. Newbould, 3179 Churchview Avenue, Pittsburgh, Pennsylvania 15227. The book is also available on diskette (3.5 or 5.25") in ASCII text form for IBM compatibles for \$12.00 plus \$5.00 shipping and handling.



Southeast Directory

The *Betty Bearcat Scanner Directory* for the southeastern U.S. has been completely revised and is now available. The book, which contains over 670 pages, covers the states of Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina and Puerto Rico.

Listings are arranged by state with city, frequency call sign and license information.

To order, call 1-800-423-1331 or write to Box 291918, Kettering, Ohio 45429. The price is \$14.95 plus 3.00 shipping.

Weatheradio Alert

With the recent natural disasters that have plagued the U.S. mainland, a device which automatically alerts anyone within range of an impending threat is most welcome. The new Weatheradio Alert (catalog #12-240) from Radio Shack® is such a device.

Built into a low profile, high-tech style cabinet, the Alert is a sensitive, crystal-controlled, three channel receiver (162.400, 162.475 and 162.550 MHz) which operates from a standard AC line; an optional nine-volt battery is inserted for backup during power outages, likely in severe weather. Power consumption is a mere 5 watts.

Three bar-type press switches on the top allow (1) monitoring of the weather channel audio, (2) setting the siren alert or (3) testing the alert function (independent of the volume setting).

If you are located near your NOAA weather broadcaster, you don't even need to extend the 22" telescoping whip; a switch allows selection of the line cord as an antenna.

Audio from the little box is quite intelligible through the internal, 2-1/4", top mounted speaker; 260 milliwatts of audio produces plenty of sound—there's no doubt when the siren goes off!

Weatheradio Alert is \$39.95 at Radio Shack® stores nationwide.

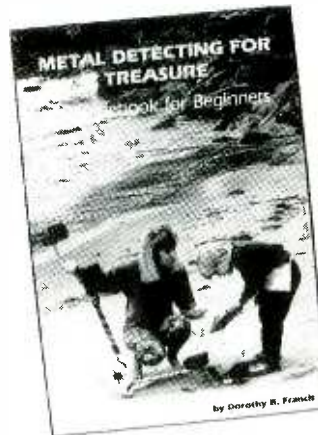


Ham Classic

For 70 years the ARRL *Radio Amateur's Handbook* has been the standard reference for radio communications design and experimentation. While written primarily for hams, the contents are useful for anyone interested in the technical aspects of radio.

Its pages contain authoritative and accurate, yet simply explained, chapters on the amateur radio hobby, basic electronics, radio transmitters and receivers, digital technology, repeaters, antennas and transmission lines, video and data communications, audio and power amplifiers, power supplies, radio direction finding projects and techniques, coping with interference and more!

Liberally illustrated and exhaustively indexed, the 1200 pages of the ARRL *Handbook*, 1993 Edition, remain the best book bargain in the technical marketplace. Published by the ARRL (225 Main St., Newington, CT 06111), the book is also available from Grove Enterprises (PO Box 98, Brasstown, NC 28902) for \$24.95 plus \$5 UPS shipping.



Metal Detecting for Beginners

If you have always had a yearning to go treasure hunting and needed an excuse, a copy of *Metal Detecting for Treasure, A Guidebook for Beginners* by Dorothy B. Francis will push you over the edge.

Although clearly promotional for Fisher equipment (that isn't bad—they make excellent detectors), the book's 52 pages provide excellent tutorial discussions on the rudiments of modern treasure hunting—primarily "coin shooting," the most common sport.

While we all dream about the Spanish doubloons and lost jewelry waiting to be found on a deserted beach, you'll probably search for hours and only find a few cents. But it's worth it, says Bob Grove, an unabashed beachcombing junkie. The book is a great stocking stuffer. To order, send \$8 plus \$2 shipping



from Fisher Research laboratory, 200 Willmott Rd., Dept. MT, Los Banos, CA 93635; phone 209-826-3292.

While you're at it, ask for their free newsletter, *Fisher World Treasure News*—we highly recommend it. Reading something like a tabloid, the current 28-page issue is jam-packed with fascinating treasure trove and archaeological finds. If you're not sure you want to invest in books or equipment just yet, at least ask for the newsletter—it'll convince you.

Heath Nostalgia

With the passing of Heathkit from the radio scene, it is fitting that author Terry Perdue chronicle the history of that famous and revered company. In conversational style, using contributions from over a dozen former associates of the company, the products, services and philosophies of the Michigan manufacturer are documented through the decades.

Many historical photos show various periods of Heath production, and the good years as well as the bad are remembered with kindness.

To put *Heath Nostalgia* on your bookshelf, send \$9.95 plus tax in WA to 4320 196th SW, Suite B-111, Lynnwood, WA 98036.

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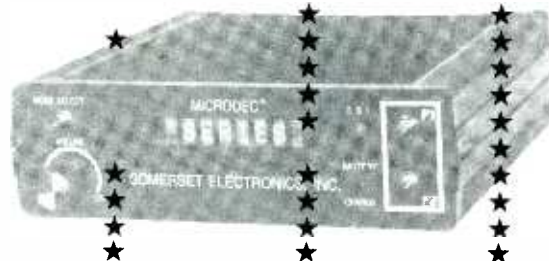
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Review By Bob Grove

SWEDA "Power Antenna"

Keep your hand on your wallet, the carnival pitchmen are working overtime. Snake oil and magic potions have come to the electronic age. Just what does this Chinese-made wonder promise?

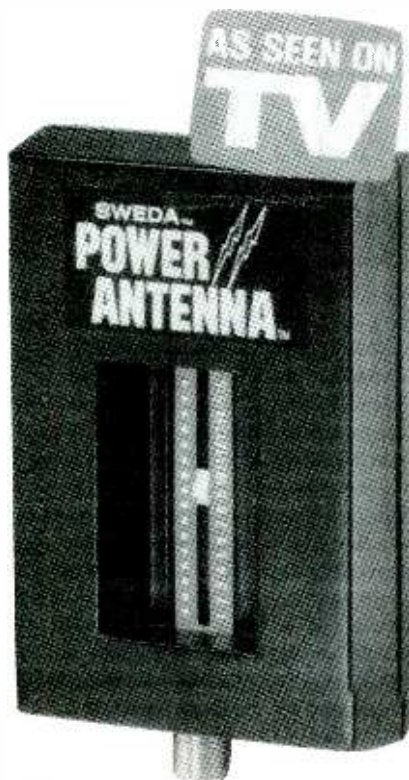
"...thanks to years of micro-electronic research, a new device has been developed that's so advanced it actually makes other antennas a thing of the past."

"Just plug this...Power Antenna into any ordinary AC outlet, connect your TV and get ready for the best reception you've ever had without cable."

"Works just as good for radio reception too!"

Don't cut your coax just yet.

This futile attempt to use your house wiring for a giant antenna has been tried countless times before, with equally poor results, by other hit-and-run mass merchandisers (see *MT* May, 1992, p. 93). If it actually worked, we wouldn't need real antennas.



So what is it?

The Sweda Power Antenna contains a 16-position slide switch connected to a disk capacitor array; this isolates the device from lethal power line voltages and also acts like an attenuator/coupler for any signals which may be present.

We tried our sample first on a scanner. It seemed to pick up signals just about the same unplugged from the wall socket as it did plugged in, but a small, indoor antenna worked much better.

And for TV reception? Our fringe area reception varies between good and poor with an outdoor antenna. When we switched to the Sweda Power Antenna, all signals vanished regardless of the switch setting.

Is there anything good to be said about the Sweda Power Antenna? Yes, it comes with a 30 day money-back warranty; don't throw away your shipping carton, you'll be needing it!

The Power Antenna is \$19.95 plus shipping from One American Way, Roanoke, VA 24016.



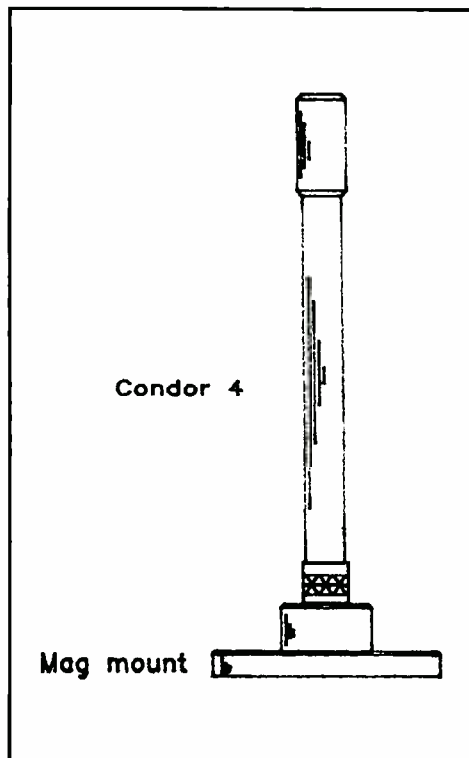
Austin Mobile Antennas

The 1991 Monitoring Times convention offered our first opportunity to see the professional series of antennas manufactured by Austin Antenna company (10 Main St., Gonic, NH 03839; ph. 603-335-6339). Their well known Condor replacement "rubber duckie" for handheld scanners is legend. This year we decided to try their mobile antennas.

All mobile Austin antennas are configured for a standard Motorola (NMO) mount; this isn't the push-in plug found on car radios and older scanners, it is a screw-on whip base intended to attach to a single-hole mount in the vehicle roof, a standard practice established by Motorola many decades ago and used by many (most?) professional communicators.

Center frequencies for the Austin antennas are 40 (adjustable 30-50), 155, 470 and 870 MHz, coinciding with the most active portions of the two-way spectrum.

Since Grove Enterprises stocks a proven, low cost, general purpose, magnetic mount antenna (ANT-4 \$49.95) it was a logical choice to compare with the Austin entries. The *MT* parking lot was selected as the "antenna field" and Sue, our technical liaison, volunteered her station wagon for the cartop comparison.



Condor IV

A portable spectrum analyzer was used to make measurements as we swapped out antennas for each frequency; a Hewlett-Packard 8640B signal generator provided the calibrated radiation source from a distance of about 50 feet.

The Condor IV

The first Austin product was the low-profile Condor 4 (\$45 for the flex whip plus \$22.50 for the magnetic base, cable and connector), a mobile version of the popular Condor series of flex antennas. Due to its small aperture (signal capture size), only 13" in height, we didn't expect much.

While signals were generally readable, their strengths were below those of the ANT-4 by 5 to 25 decibels, depending upon frequency (the higher the better). It is a well made antenna, however, and its urethane housing makes it resilient to impact and its short size make it particularly suitable for large cities where signals are strong and a higher profile antenna would be impractical.

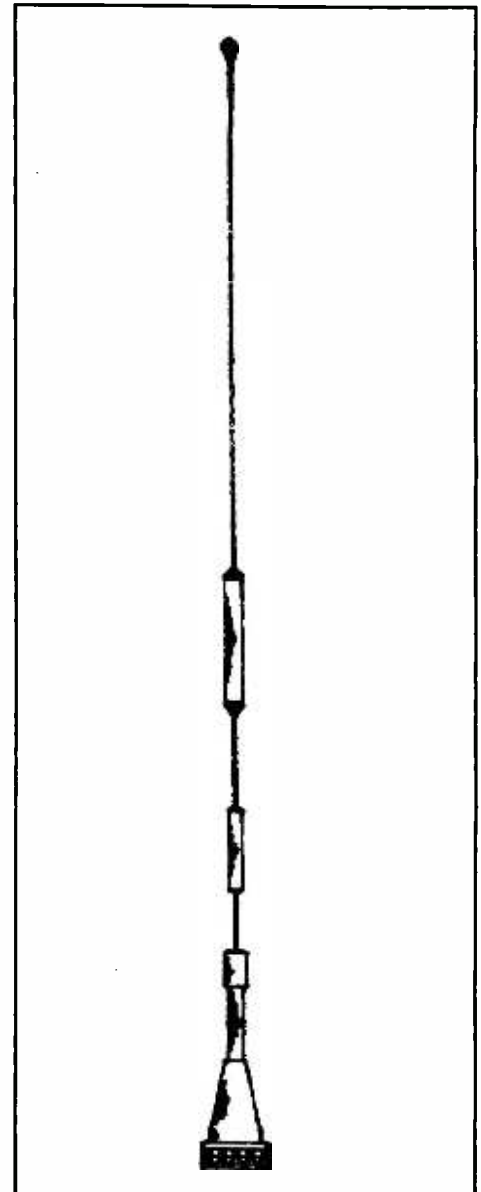
The Spectra: King of the Hill

We finally found a mobile antenna that actually outperforms the Grove ANT-4: the Austin Spectra (\$84.50 for the antenna plus \$22.50 for the magnetic base, cable and connector). Taller than most (about 2-1/2 feet depending upon the adjustable length of the low-band element), the Spectra owes its high performance to a unique, patented array of half-wave dipole elements.

The Spectra claims a dual cavity design for the 450 and 800 MHz bands and offset feed on low and high VHF. It has a VSWR of under 2:1 for transmitting up to 100 watts within 2 MHz of its low-band setting, 12 MHz of high band and 80 MHz wide at 800 MHz.

Additionally, the Spectra utilizes an elevated feedpoint for better matching and lower radiation/reception angle. The manufacturer claims that it is quite popular with state and federal agencies, including the Florida Marine Patrol, DEA and ATF, and major news networks like NBC, ABC and ESPN.

So how much better is the Austin Spectra than the Grove ANT-4? On low band about the same; on air band about 6 dB; on 2 meters the same; on high VHF 2 to 3 dB; on UHF as much as 12 dB; and on 800 MHz about 7 dB. Pretty impressive.

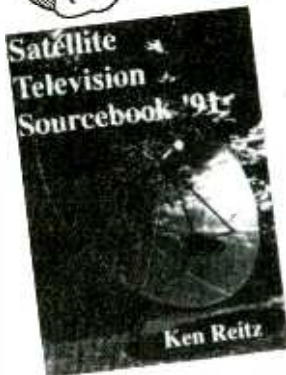
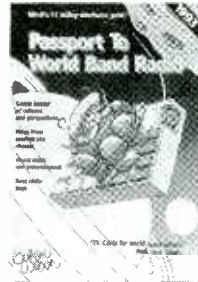
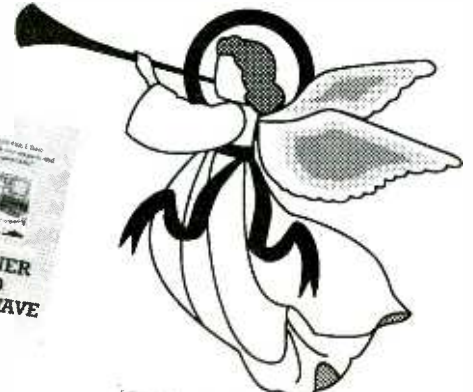


The Spectra

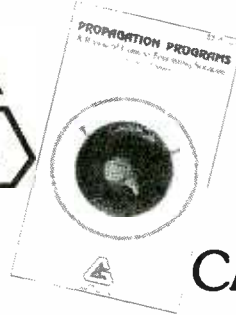
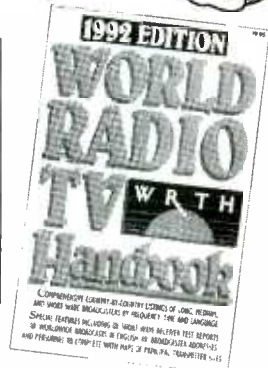
Does this theoretical measurement translate to improved reception? Definitely on the air band and the 450 and 800 MHz region. But there's a price to pay—literally: over \$100 for the Spectra.

We would recommend the Austin Spectra in any application where high reliability and fringe area reception (and transmission) are vital.

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- International's New AC 100 Portable
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The growth in cheap shortwave portables coming out of China is telling us something: This Asian giant is likely to be tomorrow's dominant world band producer. Japan's offerings look increasingly less attractive as time goes by, while production costs in Taiwan, Hong Kong and Malaysia have become downright high. Mighty Korea and Singapore? They've simply ignored world band altogether, although Indonesia has been making some models for Western and Taiwanese firms.

China's Opening Gambit

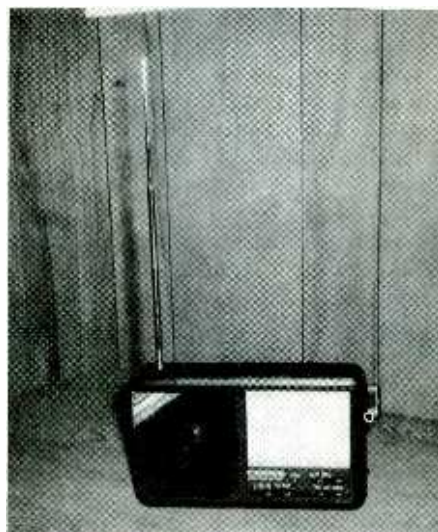
What we're seeing now are China's clumsy first attempts at being a major shortwave player: copycat analog and digital portables that appeal almost entirely on price. So far, Chinese world band portables have been cheap, with mediocre performance and short-life components—exactly what you'd expect during early stages of production and market-share development.

Someday, China is probably going to be producing world-class radios. Even now there are some models worth considering, including this month's International AC 100. Rest your eyes on its picture, as virtually all Chinese radios appear under a variety of brands and models. If you see something that looks just like the '100 and it is advertised as having "ten bands" or "seven shortwave bands," it's almost certainly the same radio under a different label.

Basic Price, Basic Features

The '100, which typically sells for under \$35 postpaid, uses bandspreaded "needle and dial" tuning. With this archaic analog technology, you can hardly tell where the radio is tuned. You have to listen to each station as you go along until you hear the station you want. Whereas with digital tuning, if you punch up the right channel at the right hour, odds are that what you get is what you want.

The '100 covers longwave, useful only if you're traveling to Europe or the Near East, plus the usual FM and AM bands—the latter stopping five channels short of the forthcoming new upper



band limit of 1705 kHz. Shortwave coverage is roughly 5.87-6.3, 7.0-7.5, 9.5-10.0, 11.48-12.02, 15.1-15.6, 17.5-17.95 and 21.45-21.9 MHz. Not bad, but missed altogether are the 120, 90 and 60 meter tropical bands; 75, 22 and 11 meter international broadcasting bands; plus a few important international broadcasting banded segments, such as 9.38-9.49 MHz.

Controls—power, band selectors, volume and tuning knob—are utterly rudimentary. There is, after all, not much to do with this radio but turn it on and tune in the station. There is also one of those silly single-LED tuning indicators, plus ports for earpieces and a 3V DC input. A telescopic antenna, which swivels but does not rotate, plus a carrying strap, round out the '100's dwarfish list of features. There is nothing else, not even a lowly elevating panel.

Ergonomics? Because there are so few controls, there's not much to be ergonomic about. Although most controls are sliders, rather than knobs, everything feels reasonable to the hand—save that the tuning knob feels mushy. This radio won't be winning the Transistor Toughness Award for robustness, but it should hold up to casual usage.

Performance: Okay for Price

Why bother with a radio like this? Price, for one thing. And performance. If you're looking

for an el cheapo to take along on trips, nothing short of the digital DAK MR-101 quite equals the '100.

Performance is no surprise, being essentially identical to that of the Pomtrex we reviewed some time back. However, the '100, obviously made at the same factory as the Pomtrex, has slightly better coverage of the shortwave spectrum, making it a better choice yet. Sensitivity to weak signals is reasonably good, even if selectivity and image rejection are mediocre. Audio quality's not half bad, an important consideration, and the radio is gentle with your battery budget.

Okay Throwaway for Now...

The world band radio market is nudging into the consumer electronics mainstream. Before long, the wild variations in price and performance that we've seen until now are almost certain to dissipate. Fewer, more standardized models will perform more consistently well and differ mainly in features. You won't have to play "slip sliding away" with an analog tuning system, and performance will be surprisingly good, with some models costing little more than the '100.

...or Try DAK MR-101s While Available

In the meantime, for the price of a box of good cigars the analog International AC 100 and digitally tuned DAK MR-101s make decent choices for travel throwaways. The '101s, by the way, are advertised in the current DAK catalog as being obtainable "while they last," apparently meaning they are shortly to be discontinued. However, as of presstime a DAK spokesperson tells us that this model continues to be available at \$43.90 postpaid. In the 1993 *Passport to World Band Radio's* Buyer's Guide, the '101 is rated as actually being a better overall performer than the more costly DAK DMR-3000 that presumably is to replace it.

Me? I'll take the cigars.



A Cool Head in Canada

It is refreshing to hear a public official speaking words of wisdom and common sense,

and that's what Canada's Federal Communications Minister Perrin Beatty seems to be doing a lot of these days. In an article in *The Globe and Mail*, Beatty could have been quoting Bob Grove when he said, "Any one of us who uses a cellular telephone must assume someone else is listening to him—because the likelihood is that somebody is, at some point."

Canada has formed an industry-government task force designed to facilitate "the timely and orderly introduction" of digital radio; digital technology will improve the security of cellular phones as well.

"The darned things look like telephones. If they looked more like radios, we'd be much more sensible in using them," Beatty observed. The Minister is urging communications companies to pay more attention to the social impact of new technologies. "As you develop and market these new services, don't forget the consequences to consumer privacy. It's easier to address privacy earlier than to fix it later."

Amen to that! If the cellular companies had spent \$5 more per phone to provide privacy when they were manufactured, most of the current hoopla regarding listening laws would be moot.

But now that the amendment outlawing manufacture of cellular-capable receivers has been signed into law, what will be the impact on the hobby? Watch for January's "Closing Comments" in which Bob Grove projects the "bottom line" on equipment availability, enforcement, and other possible fall-out from this new regulation.

Selected Shorts

• Bjorn Johansen of Alesund, Norway, enquires if anyone can help him locate a radio magazine with scanner coverage in Japan. We can't; if you know of one, please reply to Bjorn via *MT*.

• Bruce Bernard of V-Tech Engineering, Canada, had a few clarifications to make to Jack Sullivan's article on the new 900 MHz cordless phones (October issue). "(1) Both phones reviewed (V-Tech Tropez 900DX and Panasonic KX-T9000) operate under FCC rules requiring

output of .5mW, not 1W. (2) When Mr. Sullivan found two RF peaks at 50 khz apart in our signal, he was actually seeing the two modulation peaks characteristic of a digitally modulated carrier. We do not use several channels simultaneously. (3) The FCC is not in possession of our scrambling algorithm; it is embedded in a proprietary VTECH integrated circuit and is not released to any other party. (4) The remark about 'spread spectrum' and the NSA is misleading. The main reason it has been slow to develop commercially has been cost. The FCC has offered an incentive by allowing products which use this technique to transmit with more power and thus achieve greater range and more immunity from interference."

• Thomas Blanc expressed surprise that *MT* didn't do a major story on the SETI project—"talk about DXing! Is 410 trillion miles from Earth enough for you?!" Preparations for Project SETI (Search for ExtraTerrestrial Intelligence) have been under development for many years. We did run an article in January 1988 on past and present efforts to pick up signals from space, which included plans for the project begun on Columbus Day 1992. While we agree the project is exciting, it is doubtful anything monumental will be forthcoming for quite some time. When (if?) that happens, we will certainly let our readers know the details.

• Persons with disabilities who are interested in acquiring an amateur radiolicense may receive help in achieving their goal from Courage Handi-Hams. To receive information on this organization, ask for the Handi-Ham brochure from the Courage Center, 3915 Golden Valley Road, Golden Valley, MN 55422; 613-520-0511.

I confess that in this issue I have departed from a long-established policy of sticking to radio and avoiding what might be considered "political" opinions. But in the spirit of this holiday season, I feel strongly that the primary virtue of our hobby of listening to radio communications lies in its ability to bring people closer together, fostering understanding and a sense of connection.

If you feel the same way, why not give a gift subscription to *MT* to your local library, or to someone who can't afford it? Perhaps you have an overseas pen-pal who would share it with their friends? Let's spread the spirit and share our good monitoring times!

Rachel Baughn,
Editor

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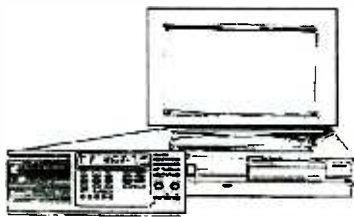
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And tell them you read about it in *Monitoring Times!*



The Grove Frequency Database and How to Link Databases Files to Your Monitoring Software

Learning new skills is enjoyable and useful. But have you noticed that the people who become really proficient in a field seem to have the ability to "stitch" together the separate talents they have learned to give amplified capabilities? We can do that, too. Linking the power of new programs is the goal of this month's column. The new program we will be looking at is Grove's Frequency Database, version 2.0. What can it do? How easy is it to use? And what is this "stitching" and "linking" stuff? Let's get some answers.

The Grove Frequency Database is composed of two parts: Frequency data for a specific state and the database control program. The first step is to take the database program and the data off the floppy disks and on to our hard drive. This is not only a matter of transfer but also conversion, since the program and data files are so large some files would not fit on a high-density disk. So the Boys from Brasstown have compacted the files on the floppies using a special program. Following the included instructions, the uncompacting and copying process is easy and automatic. To copy the program this process takes about four minutes.

A number of questions are asked of the user during the process. The first concerns on what hard disk and in what directory you wish to locate the database. You should be familiar with the concept of "directory," or "sub-directory," since it is basic to the IBM operating system, DOS. The disciplined use of directories can keep your files clearly identified for future use and allows you to keep your sanity. A new directory, **FREQ**, will be automatically created by the program to hold the Grove Frequency Database.

Another question you will be asked is the size of your **FILES** and **BUFFERS**. These are DOS system parameters which tell the computer the maximum number of files and buffers that can be opened simultaneously. I think of it as the number of balls that can be juggled. The higher the number, the more effort/memory the system has to set aside for the task and the less available for running your program. In this case, just go with what the program suggests. In fact, with one exception, I suggest that you answer "yes" to all the questions.

After the "Program" disk is installed, repeat the procedure with the state data you have ordered, for example "CT". Here's the one exception I mentioned. I suggest that a separate subdirectory be created for every state, even if you only have one at the current time. I predict that after you see the usefulness of this program

you will stop buying annual frequency books and start buying state data disks of interest.

Now, you are almost ready to be the local oracle of VHF/UHF frequencies. Just to be sure that all system changes have taken place, re-boot your system by pressing keys **ALT-CTRL-DELETE** together. Running **FREQ** in the directory of the same name will start the program with an indexing of the state data of choice. This will take another few minutes. Then seven choices will appear across the top of the screen: Exit, Query, Add, Utilities, Order and Search. Using the arrow keys will select the command; alternatively, pushing the highlighted letter of the command will do the same. A very nice feature is the **F1**, Help Key, which brings up a very comprehensive window with details of the function of the command and sub-commands. Everything you need to use this program and learn all of its capabilities is available from the **F1** key; no manual flipping here.

Let's get our hands on this puppy! The power of such a database as Grove's is that the information can be called up, or sorted, in many different ways. For example, let's say we are going to visit an in-law in the city of Meriden and we want to moderate the boredom with a portable scanner. Hitting "S" for search brings up a list of five categories. For this example we use the arrow up/down arrow keys and get to the "CITY" category. After typing "Meriden," our target city, and pressing Enter five times, a list of Meriden frequencies appear. The list is arranged in six columns showing: 1) City, 2) State, 3) Frequency, 4) Type of Service, 5) Callsign and 6) Licensee. In this case about 300 frequencies appear for the city of Meriden. These range from gas service companies on 37.620 MHz to the bank data frequency of 23125.000 MHz! This should make your duty visit a bit easier.

The data can be cut in different ways for different uses. Let's say that you are using your scanner in search mode and it stops on frequency 30.96. OK, who are we monitoring? Pressing "S" and then using the arrow keys to get to the "Frequency" category, we can type in the frequency, 30.96 MHz. Well, almost; when entering frequencies we must start with an "M," then leading zeros, then the frequency. For example, 30.96 MHz is typed as "M0003096." Ten locations and licensees are listed as using 30.96. With this information and the content of the communications, you should be able to make a positive ID.

Pretty nifty! But what about trying to get more exact? Can we find the power company

frequencies in the City of Groton? Yes, by two simultaneous searches. To do this complex searching we use the "QUERY" command by highlighting and pressing Enter. Using the "ADD" command which now appears at the top command line, we are presented with a menu of all combinations/conditions of search.

For this example we want to key on two fields, *Service* (power companies) and *City* (Groton). The Service codes used by the program are displayed by pushing **F1** or **F9**. From this window we can see that Power Companies are coded **IW**. So we now choose field 4, corresponding to the Service field. Pressing Enter verifies it as the Service field. Another push asks us what conditions of search we desire. For this example we want only those entries which equal **IW** (Power Companies). Therefore we enter **IW** and then Enter.

Now stay with me; it will be worth it and not as complex as it sounds. We now are asked about a "CONNECTOR"?! This is the condition of search for the two variables, in this case *Service* and *City*. Since we want to find frequencies which satisfy both conditions of *Service* **AND** *City*, the connector is **AND**; choice number 1.

Then we choose our second search field, in this case *City*, number 1. A few presses of the Enter key will bring up the line "Enter Value to compare city = ". For this example the value or name of the city is **GROTON**. A press of the Enter key then asks if we want to "CONNECTOR" another field to these. But pressing Enter we answer no and end the search definition process.

Wow! Sounds complex, but after following through this example it's common sense easy. A press of "X" for execute and the screen shows three possible power company frequencies in Groton. If we were using a printed book of frequencies these types of conditional searches could consume an entire rainy Sunday instead of the two minutes it just took with the Grove Frequency Database; I know from experience!

The variations and combinations are endless and can meet most situations. We have just used the **EQUAL** operator in this example. However, ranges of frequencies can be sorted by using **Greater Than** and **Less Than OPERATORS** in our conditions definition.

After a few tries of your own you'll be using the full power of the Grove Database to identify unknown signals, learn possible frequencies of nearby cities and direct you to new parts of the radio spectrum. There are many more features in the Grove Frequency Database Version 2.0, that we have not discussed, such as printing the screen

lists and the ability of the user to add data to all fields of the database.

Now, if you have followed this column you know that I am a tough person to satisfy; I've always got something I would like to see added or improved. Grove Frequency Database is no exception. I found the program so useful I would recommend it to all serious listeners of the 30 MHz and higher frequencies. But to make it more usable to the novice and first time user I found the six or so pages of instructions too sparse. The main thing that is missing is a number of simple examples that the author works through with the reader. This would remove the, "What the H_ _ do I do now?" feeling, once the program is loaded successfully. Learning via worked examples is a powerful teaching tool.

My second suggestion comes as a result of running the program on the increasingly popular notebook computer with LCD screen. Some of the highlighted installation instruction choices are not visibly different on the screen, which makes control difficult. This is also the case in trying to use the Help screen. Perhaps this could be avoided by printing the choice in a central location as well as highlighting it. The laptop/notebook users are expanding faster than the desktop, and the unique properties of the LCD must be addressed. Even the latest DOS has an LCD driver file included.

Finally, the state data does not include US military frequencies. The addition of this data would truly make this program a monitoring must-have, "standard." Until this data is added the program should be advertised as a Civil Frequency Database.

Armed with the worked examples that we discussed this month, I can recommend Grove Frequency Database to all scanner listeners. To order the program contact Grove at 1-800-438-8155. The program with one state data disk is \$59.95 plus \$2.50 shipping. Additional state data disks are available for \$49.95, plus shipping—a bit pricey relative to the frequency list book we are used to. If Grove can reduce the price of the state disks, I believe, this will obsolete the paper list books. Yearly data updates are available for \$29.95.

"A Stitch in Time Saves Nine"

Now what about "stitching" this database to another acquired skill? Our customized output of the Grove Database can be in the form of screen data, printed pages or disk files. But the whole point of many past columns has been to stress the radio control aspects of the computer. So reading frequency lists to be manually entered into a radio is a return to the Dark Ages before *MT's* "Computers and Radio" column!

The answer lies in a feature we touched on briefly in our reviews of a number of programs such as Scancat, 801Scan or others. These pro-

grams have a "Text Import" feature by which we can convert text files into frequency files, which can then be used by the software to control the receiver. No, really, you can do it with a little practice! The next few lines will prove it.

Use the Query command to produce a customized output of your Grove Database—for example, the list of frequencies of Police in the City of Danbury. Then going to the Utilities command, choose the File command and make a disk file of the customized output. Not tough, so far. Using either DOS commands or a program like PCTOOLS, rename the file you have just made so that the extender (the part of the file name after the period) is called TXT. For example, if the output of the Grove Database is "FREQ," we must rename this "FREQ.TXT". Then copy the file to the directory where Scancat is stored.

Now let's load Scancat, get the main menu on the screen and choose the "Import Utility" command, Key I. On the next screen, pressing "3" will bring up a menu that has a command "Import Ascii TEXT FILE", key I. Pressing "I" displays all files with the TXT extender (remember the renaming exercise?). Typing our Grove file name of FREQ, the screen displays a line of the file and some command details below. Pressing "S," scroll the screen until you get the black bar over a line of station/frequency data, which then appears in the center of the screen as well.

Stay with me. We are almost there, but we need to some rearranging of the file to make it usable by Scancat. Press the "1" key until your data line moves to the left and removes any spaces to the left of the line. Reading from left to right the line will show the city name first. Press "2" until the 2 box expands to the first zero of the frequency, the next column in the file. Press "3" until the 3 box expands to the end of the frequency numbers. Finally press "4" until the rest of the line is enclosed in the 4 box.

Finally, using the alt and the corresponding number key, keep pressing the keys until the proper label is attached to the correct data box. For example, we have enclosed the frequency numbers column with the 3 box. Press the alt and "3" keys until the word "Frequency" appears next to the ALT+3 line. Repeat this procedure for the other boxes: 2,3,4 and 5. Pressing "F" will Fastread the other lines in the file into the categories that you have just defined. Pressing the Enter and the Esc keys walks you through the Save procedure. You now have this complete file in a Scancat radio control and storage file!

Again, it sounds much more complicated than it is. This same "Import" command is a feature on most radio software programs we have reviewed. By combining these powerful programs we have created a SUPER program, with Super powers. The whole really is greater than the sum of its parts!

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Build a Voltmeter/Battery Tester

If you don't have an electronics workshop, chances are that you don't own a VOM (volt-ohm meter). Most SWLs and experimenters have a frequent need to test batteries and determine their state of charge. Also, the need arises frequently to learn whether or not a plug-in wall transformer is delivering the dc voltage required for a given piece of equipment. The project described in this article is simple enough that even a rank beginner can construct it in an evening. Ordinary parts are used in the Figure 1 circuit. They should be easy to acquire if you have surplus electronics parts catalogs.

A Multirange DC Voltmeter

The heart of the Figure 1 circuit is M1, which is a 0-1 mA dc meter. These are available as surplus from such mail-order houses as Fair Radio Sales (1016 Eureka St., Lima, Ohio; ph. 419-223-2196). You may have a friend who has such an instrument in his private goodie trove, and he may be willing to swap it for something you have. A brand new quality 0-1 mA meter can cost as much as \$40. I suggest you avoid buying a new unit. Surplus meters usually sell for less than \$5. The meter can be any physical size or brand. The results will be the same with all 0-1 mA meters, provided they are in proper working order.

S1 is a single-pole, multiposition wafer switch. These may be purchased cheaply as surplus or at a Radio Shack store. Likewise for

S2, the load switch. The only other parts needed are a small store-bought or home-made case to house the voltmeter, a set of test leads and two jacks for the test leads.

Construction Notes

The length of the leads in the dc voltmeter is not critical. But, try to keep them short and direct to ensure a "neatness coefficient" that will make you proud of the product. You may use a metal, plastic or wooden case for the instrument.

If you can't locate resistors of the precise value listed in Figure 1, you may parallel or series resistors of other values to arrive at (or come close to) the specified values. Suppose for illustration that you can't find a 25K-ohm resistor for use at R5. You may use a standard 22K-ohm and a 3.3K-ohm resistor in series to obtain a net value of 25.3K ohms. The inaccuracy of the full-scale reading will be okay for general use. The 50K-ohm resistor at R4 can be obtained by using two 100K resistors in parallel.

All of the resistors in Figure 1 are carbon composition or carbon film units of the 1/4- or 1/2-watt rating. In fact, 1-watt resistors can be

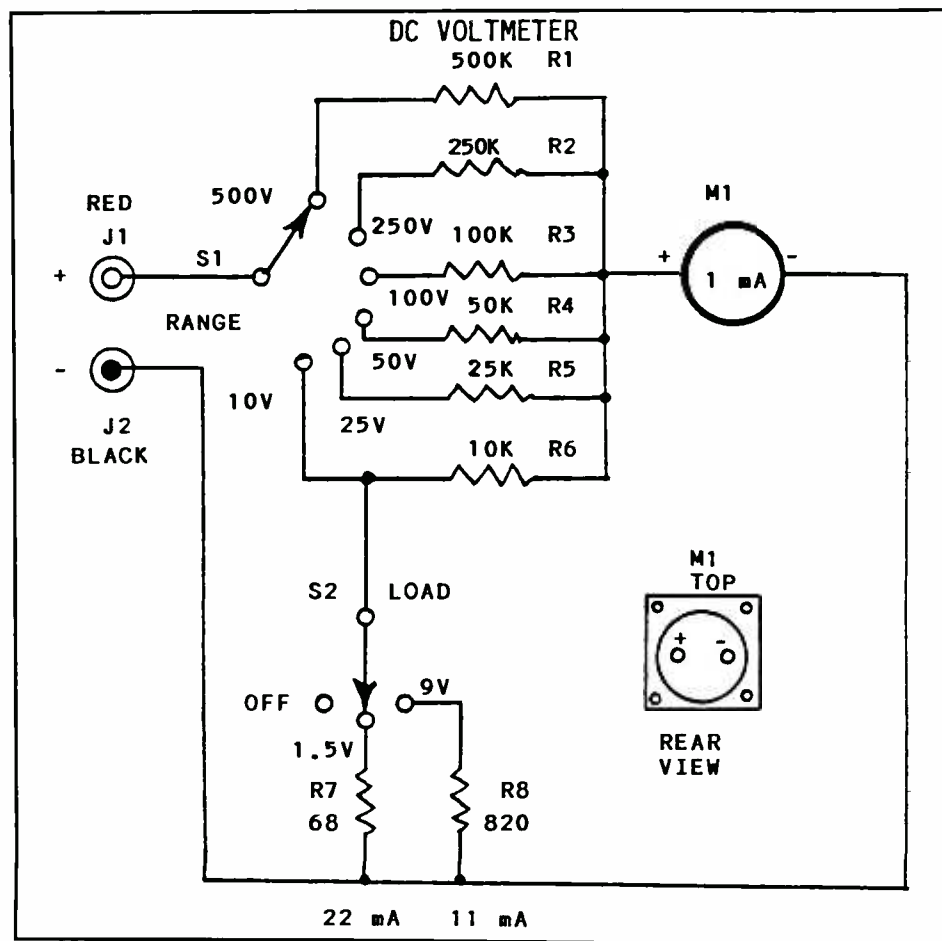
used also, should those be the only ones you have on hand. You can build a highly accurate instrument if you can find some 1% precision resistors. They cost more than 5% or 10% resistors, so be prepared to spend a tad more money if you go that route.

Phenolic or ceramic wafer switches are suitable for use at S1 and S2. Ceramic switches are available as surplus and they are more reliable than phenolic ones with regard to voltage breakdown at the higher voltages. If, for example, you wish to add a switch position and a 1-megohm resistor to read 1000 volts full scale, use a ceramic wafer switch. J1 and J2 should have insulation that can safely accommodate 1000 volts. The test leads should also be suitable for the higher voltage (safety first!).

Since J1 and J2 are floating (above case ground) you may measure positive or negative voltages with the instrument. Simply reverse the leads when measuring a negative voltage.

Most 0-1 mA meters have a face plate that is numbered from 0 to 1. The larger the meter, and hence the meter face, the easier it will be to read the measured voltage accurately. This is especially true for us older folks with tired eyes!

Figure 1: Circuit for the 0-500 volt dc meter. Full-scale meter readings for each range are listed by the S1 switch terminals. Resistors are 1/4- or 1/2-watt carbon composition or carbon film (5% units recommended). J1 and J2 are pin or banana jacks to match plugs on test leads. S1 and S2 (see text) are phenolic or ceramic rotary wafer switches. M1 is a 0-1 mA dc meter (see text).



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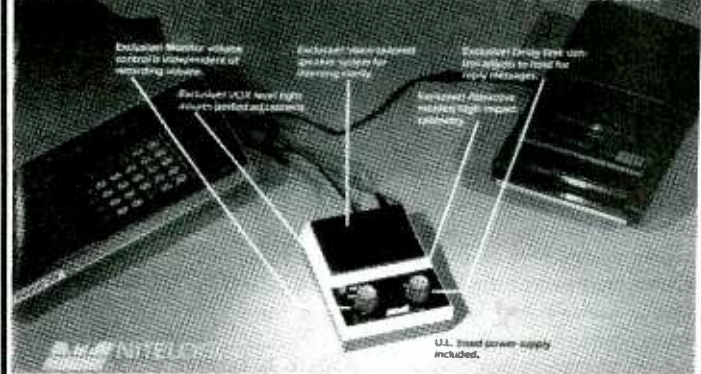
You will notice that the various resistors in Figure 1 are switched in series with the meter, M1. The value of the resistor chosen determines the full-scale reading of the meter. R1, for example, is a 500,000-ohm resistor that allows M1 to read 0-500 volts dc. The low range (10 V full scale) uses a 10,000-ohm series resistor.

S2 is a load switch for checking low-voltage batteries. R7 allows 22 mA of current to flow through it when testing 1.5- 3.6-volt batteries. R8 is for testing 9-volt batteries. It causes a current flow of 11 mA. You may wonder why the load resistors are necessary. It is because a weak battery will often test "good" when it is not delivering dc current. The moment a load is attached, the battery voltage will sag or drop significantly. A new or fully charged battery will deliver its rated voltage when the load is attached. S2 is placed in the "off" position for normal 0-10 volt measurements. This prevents the resistors from draining the battery that is attached to J1 and J2.

Meter Multiplier Factor

It is necessary to multiply the meter scale by factors of 1, 2.5 and 5 in order to know the measured voltages for the various ranges. By way of example, if you're using the 500-volt range, you need to multiply the meterscale numbers by 5 or 500. Thus, a full-scale meter deflection (1) becomes 5 or 500. A half-scale deflection (0.5) becomes 250 volts when multiplied by 500, or 2.5 when multiplied by 5. It is easy to mentally add the missing zeros when using the X5 factor. A factor of 2.5 or 25 is used for the 25-volt range and an X1 or X100 factor is used for the 100-volt range, and so on. A little practice with the foregoing mental gymnastics makes the task a simple one.

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MT

Tools 'n Tips for Experimenters

Merry Christmas, Experimenters! It's that time of the year to make out your Wish List for something you wouldn't dare buy for yourself, but which you might could put to good use if only someone would GIVE it to you. Take me, for instance: I've seen *hot glue guns* around the department and hardware stores for years, but for various reasons, mostly stupid, I never bothered to try or even consider an electronic application for a hot glue gun. Then one day, my daughter, Ali, strolled into the shop when I was particularly busy and asked if I'd like to keep her hot glue gun in the shop tool cabinet.

My first reaction was surprise that she had one, but I didn't want to hurt her feelings, so I said, "Yeah, sure, just lay it over there..." I went on about my business, eyeballing the danged thing with utter disdain, on and off, for a couple of hours. For some reason, I had always considered a hot glue gun beneath my dignity, but this one kept laying there in the way, and finally I plugged it in just to see how it worked. That was a couple of years ago, and since then, it has become one of my favorite "new fangled" tools.

"Hot" Tips for Homebrewers

To my way of thinking, these things ought to be called something else, because the "adhesive" isn't really a glue; it's more of a plastic. At least, the stuff I get from *K-Mart* to feed a hot glue gun is a plastic-like substance (Stanley GS234BK 4" All-Purpose Glue Sticks). And to what magnificent uses can we put this gizmo? One of the most ingenious (I think) is in the making of micro or mini **molded plastic plugs and connectors** for your electronic projects.

Ever notice how connectors & plugs from electronic stores are usually big enough to handle welding cables? And when you stick a little circuit board in your beloved scanner or SW receiver, you really don't want to use plugs and connectors that are larger than the circuit! In handheld radios, there generally isn't much of a choice, what with the restricted space. Yet, hard-wiring of modifications to your equipment is sometimes not suitable, so what do you do? *Roll your own mini or micro plugs and connectors!* For instance, you can use a pair of ordinary IC sockets or an IC socket and a header or even cut-down parts of IC sockets and headers to make any combination of male and female quick-disconnect fittings.

Here's how: let's use a Radio Shack #276-1988, 8-pin wire-wrap IC socket and one of their #276-1995, 8-pin Board Mount IC-sockets. Solder an 8-wire bundle to the male pins of the Board-Mount socket. Solder an 8-wire bundle to

the female pins of the wire wrap socket. Evenly and carefully, snip off all but about 3/16" to 1/4" of the male pins of the wire-wrap socket. Now plug the wire-wrap socket male pins into the Board-Mount female socket; voila, a small, 8-pin quick disconnect plug and socket combo!

When you're sure everything's perfect, fire up the hot-glue gun and liberally inject the molten plastic substance in and around the area where the wire bundle is soldered to each plug/socket. Use care to not get any plastic on the mating pins. Wow! You've just made yourself a long-lasting, rugged, molded plastic connector for your special purpose needs for which there was no commercial substitute!

This concept can be carried a few steps further for very professional results. I prefer Open Frame Machine Pin Collet IC sockets like the A400 to A414 series from DigiKey (ph. 1-800-344-4539). These are more rugged and easier to work with, and besides, they make for *much* better IC sockets anyway. Making molded plastic connectors out of them is a snap using the above method.



Another interesting technique for molded plastic connectors of about any number of pins, from one to a dozen or more is with use of machined "pin-line" sockets with "break apart" feature (DigiKey #A-208). Break off the number of pins needed for each male & female section; solder wires to the female pins of one section and another bundle of wires to the male pins of the other section. Apply hot plastic glue to the soldered pins of each section and you've got yourself a custom, molded micro-connector/plug combo that's hard to beat.

By the way, the molded plastic glue not only insulates each pin from the next, but if liberally applied, also strengthens the connector unit so that it won't break under normal connect/disconnect forces!

Another way to make your own custom plugs & connectors is by similar application of the individual male and female pins from Radio Shack's Crimp Style D-Sub connectors, 276-1427 - 1430. You'll probably discard the DB-9/DB-25 connector shells that come with these catalog numbers, since it's only the pins that are of use to us here. Anyway, make up the needed number of male/female sections and position one set of either male or female wired pins in a desired position or arrangement, and then apply multiple beads & layers of hot glue to the pin shafts and wires and let cool. Then, with the first half of the connector combo now fixed, insert the opposite wired pins into the first half so they are firmly in place.



Then apply layers of hot glue to the pin shafts and wires of the second half and allow to cool. Now disconnect the pair to find a perfectly fitting, custom plug and socket combo! The "looks" of this connector/plug combo might not be great, but sometimes appearances can be unimportant. Again, you can employ this principle for anywhere from one to a dozen or more pins.

Why the focus on these mini and micro connectors? Well, suppose you install an LED or a switch inside the front panel of your scanner or shortwave, and suppose the front panel is like the PRO-2005 or 2006 which isn't very easy to access. Okay, most people will run a pair of wires from that LED or switch out to the modification board or thing to be controlled or displayed and then solder those wires to the device. That's fine and dandy until the day you want to work inside that front panel again and you have to do a lot of disassembly and desoldering first.

Why not have everything of this nature wired first to micro-connectors for ease of future maintenance and new mods? Those two wires from a newly installed LED can be fitted to a micro-plug just as easily as soldered directly to the circuit, and later, you'll be glad! This principle can apply in hundreds of ways around the ol' shack! I know pin-line sockets and hot glue have become vital commodities in mine.

Hot glue can also be used for wire-bundle anchors and "cable ties," holding small circuit boards in place, component anchors, general purpose repairs and many kinds of molded product applications. I like it for experimenter purposes because its adhesion is not necessarily permanent, and can be undone more easily than can epoxy or super glue. A liberal application of hot glue offers good structural strength, medium adhesive strength and some shock absorbent qualities, but is neither brittle like epoxy nor springy like silicone rubber. It sets up in seconds and reaches full strength within minutes or upon cooling to room temperature.

**Warning:
Radio Shack's Switching Diodes
May be the Wrong Type!**

It has just come to my attention, *the hard way*, that Radio Shack's bulk packaged switching diodes may now contain undesirable types in addition to the specified 1N914/1N4148 types! I have just encountered a very high percentage five out of 8) of a variety that does not perform the intended function of isolation diodes! (*Lots of hair-pulling before resolving this one!*)

Troubleshooting steps finally led me to test a batch of recently acquired diodes and many proved to NOT be the specified 1N914/1N4148 type. In fact, they had a part number on them as follows: **SD 150 -1**. Good diodes out of the Radio Shack pack had various numbers that didn't mean anything to me, so there's no sense in repeating them here, but the above part number has a forward voltage drop of 0.35-volts, which is not right for general use. So here's the warning:

If you recently purchased bulk packs of switching diodes from Radio Shack, catalog numbers 276-1122 or 276-1620, you're going to have to either test them before use or at least cull out any with the part number **SD 150 -1**. The most sure method is to test them in advance of use. Testing is easy with use of a multimeter that has a diode test function: the forward voltage drop reading should be equal to or greater than 0.55-volts and less than 0.68 volts. But, what if your multimeter doesn't have a diode test function? It's still easy to test them. Here's how:

Connect a 1000-ohm resistor to the anode (unbanded end) of the suspect diode. Connect the (-) lead of a 1.5-volt battery to the cathode end of the diode (banded end), and connect the (+) lead of the battery to the free end of the 1000-ohm resistor. Now connect the (-) lead of a voltmeter to the connection of the cathode of the diode and the (-) lead of the battery. Connect the (+) lead of the voltmeter to the anode of the diode and read the corresponding voltage drop across the diode. It should read between 0.55 and 0.68 volts. Discard the diode if the reading is more or less than that just specified! If your electronic project is not just about perfect in all respects, test for flaky diodes and replace any with the proper types!

Apologies...

...are due to Shortwave Horizons. Mike Agner corrected me that the Kenwood R-5000 Mods he provided for the November issue were published a few years ago by this mail order company in Canada. Mike also provided their address: 6152152 Range Road #210, Sherwood Park, Alberta, Canada T8G 1A5; ph-403-922-2872.

Merry Christmas & Happy New Year to all!



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An Invisible Rooftop Scanning-Antenna

Now You See It, Now You Don't Checking It Out

This month's featured antenna, the VT-15S Ventenna scanning antenna, is designed to produce essentially no visual impact when mounted on the roof of a building: it looks like a pipe on the roof. For persons wanting an outside scanning antenna, but wishing to avoid having that antenna visually obvious, this antenna is ideal. The visual impact of the antenna is so nonexistent that even the most particular landlord or inspector should not object to its presence. Indeed, it is unlikely that it will ever be noticed by anyone at all.

The reason that the VT-15S is not visually obvious is that it slips over your existing vent pipe and looks just like a vent pipe. It actually becomes an outer cover for your vent pipe! This antenna is built using the same kind of plastic pipe which is used for making roof-top vent-pipes. To mount the VT-15S, you slip the lower end of its 36-inch long body over your existing vent pipe (1 to 1-1/2 inch diameter) and tighten three set screws.

Ventenna is a nondirectional, vertically polarized antenna. Its gain level at its resonant frequency is 2.5 dBi which is near that of a halfwave dipole. This gain level is somewhat higher than that of a groundplane antenna, and is entirely adequate for most monitoring purposes.

The higher and more in the clear you can mount your antenna the better it usually will perform. On the other hand, my monitoring site is unusual in that I live in the country with no houses, industrial buildings, and almost no power or phone wiring nearby to block signals from my antennas. And, as my home is up a bit on a hillside and the house is all wood construction, the signals which I monitor get a good shot at my antennas whether the antennas are on the roof or on the ground floor. So for me, putting Ventenna at roof level didn't improve signal strength significantly.

But in many locations putting the antenna on the roof will get the antenna up and clear of surrounding impediments to radio waves. Potential impediments include

buildings, metal siding, power lines, phone lines, towers, and so forth. In locations where these abound, a significant improvement in signal strength is to be expected when you raise the antenna from ground level to the roof.

For a bench-test I compared the VT-15S's performance to that of a 20 inch vertical whip and also to a stubby duck antenna. As would be expected, Ventenna nicely outperformed the stubby duck across Ventenna's entire operating range of 140-165 MHz, 450-512 MHz and 820-900 MHz.

The results of comparing Ventenna to the whip showed Ventenna performing up to 13 dB better on the upper half of its range and the whip giving up to 10 dB higher output on the lower

half of the range, where the whip was closer to a resonant length. Keep in mind that this bench test was done with both antennas mounted near the test bench. As discussed above, raising Ventenna to the rooftop, where it was designed to be, should give a significant increment in that antenna's performance in the typical installation.

A Bonus!

Although the VT-15S is a monitoring antenna, I checked it for transmitting use with my handheld amateur transceiver. Ventenna nicely outperformed the stubby duck, rubber duckie, and the 19 inch whip at both transmitting and receiving on the two-meter band. I was not able to check the VT-15S on other ham bands. As the VT-15S is not sold as a transmitting antenna, I would only feel comfortable using very low power with this particular model.

In Summary

Obviously Ventenna's main attraction is that it allows you to have an outdoor antenna mounted fairly high without encountering trouble with zoning or landlord restrictions. For most installations the height thus attained should provide a welcome increase in signal strength due to getting the antenna up into the clear where it is not shielded from incoming signals by surrounding objects. Persons living in high-density housing areas, industrialized areas, and low-lying areas should benefit from this approach. And the ability to use the antenna for very low-power transmitting is not to be overlooked by the amateurs among us. All things considered, Ventenna should fill a definite need for many monitoring enthusiasts.

Ventenna VT-15S is available from The Forbes Group, P.O. box 445, Rocklin, CA 95677: Price is \$49.95 plus \$4.00 shipping and handling. There are also other models of Ventenna available: VT-SWL for the shortwave bands at \$129.95 plus \$4.00 S&H, and a UHF-VHF model for amateur radio operation on 144-148, 222-226, and 440-450 MHz at \$49.95 plus \$4.00 S&H. For phone orders call 800-551-5156, for



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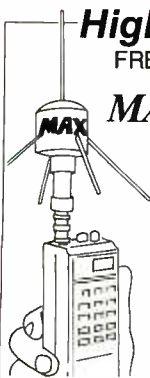
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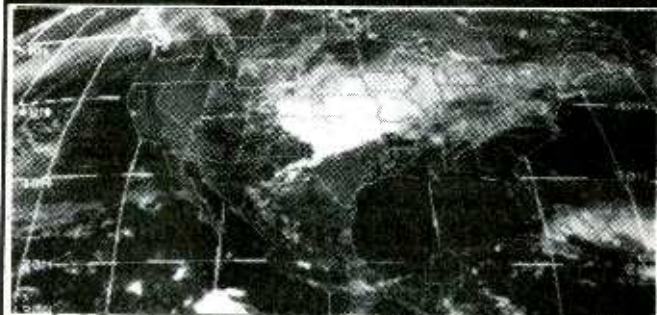
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A New Contest About Antennas

Some time back we ran a contest in this column to see what we could come up with as the world's largest and the world's smallest radio antennas. The results were pretty remarkable. Now we're going to run a new contest to find the world's most unusual antennas. We're seeking antennas that are quite different from those which we ordinarily encounter in the field of radio communications. Differences can be in terms of appearance, type of construction, application (the job the antenna has to do), the unusual place where the antenna is located, or whatever makes the antenna strange or unusual.

I'll consider all entries, decide which are the most unusual, and report them in a future "Antenna Topics" column. Winners will receive a copy of an interesting and useful book on radio communications. So what is the most unusual antenna you have ever seen, read, or heard of? Let us hear from you.

If You Missed the Earlier Contest

If you weren't yet reading *Monitoring Times* when we ran the contest to determine the world's largest and smallest antennas, you may wonder

what the results were. Well, they were pretty amazing, with a number of very large and very small antennas taking prizes. If you are interested in seeing those results in this column again, drop me a line in care of *Monitoring Times* and let me know.

Radio Riddles

Last Month

Last Month we commented that Roy Lewallen, in the manual to his antenna design program "ELNEC," points out that a shortwave dipole in free space is commonly known to have a gain of 2.15 dB over an isotropic reference antenna. Then he also tells us that same antenna, plucked from free space and mounted in your backyard, has a gain of 6.8 dB over the same isotropic reference antenna! In other words, a shortwave dipole gains almost 5 dB just from being yanked out of the sky and hung up in your backyard! So the riddle is: "How can this happen?"

The secret of the strange increase in gain for the backyard dipole is that the dipole is mounted relatively close to the earth in your backyard. The earth is a reflector of radio waves, analogous

to the way a plane reflector works in some beam antennas. Thus the energy heading toward the earth from the antenna is reflected upward in such a way that some of it is combined with the energy leaving the antenna in above-ground directions. The result of this combination is that radiation from the antenna at some above-ground angles is now stronger. Of course in free space there is no ground reflection, and therefore no similar strengthening of radiation at any angle. So, in a sense, when compared to the free space dipole, the backyard dipole is a beam antenna!

This Month

If you have a shortwave beam antenna and you want to receive signals from Ireland, you would point the beam toward Ireland. For signals from Japan you'd point it toward Japan. But did you know that, for each location on earth, there is actually one other point on earth toward which your beam is always pointing, no matter what compass direction you choose to point it? How can this be?

You'll find an answer to this month's riddle, and much more, in your next issue of *Monitoring Times*. Till then, Peace, DX, and 73.

M₇

Q. *Is there an external synchronous selectable sideband unit for the Kenwood R5000 receiver? (Bobby Joe Copeland, Enterprise, AL)*

A. Nope. Synchronous detection must be connected internally to the IF circuitry, and is therefore not available externally for any receiver.

Q. *I would like to complain about the ad for the Grove SW-100 receiver. If it was the very best designed receiver, all the extras would be built in, not added on.*

I'd like to see two speaker systems to receive both sides of conversations on two different frequencies. While other companies are building wider range receivers, you are building a short-range receiver. I would like you to answer in your magazine. (Guy Knight, Fairfield, IL)

A. I think you are confusing "necessities" with "extras." The necessities ARE built in; why pay for extras that only a few people would want? Those are options. There are several wide-frequency-coverage radios presently being sold with inferior performance.

So far as two speaker systems to hear both sides of a conversation, two-frequency simplex only utilizes one frequency at a time; the SW-100 tracks those.

Q. *Years ago no one ever dreamed that we would be able to see "talking pictures" over radio; now we have TV. What is the possibility that in the future we will be able to see shortwave broadcasters via TV? (Clifford Legerton, Summerville, SC)*

A. Not very good. While it is theoretically possible to send moving pictures via shortwave, the bandwidth of such a signal would be so wide that it would interfere with adjoining signals in that crowded part of the spectrum. That is why TV transmissions are on widely-separated frequencies in the VHF/UHF spectrum.

Video signals are being sent on shortwave, but they are slow-scan stills, not moving pictures. It would certainly be possible for the broadcasters to send good quality news photos in the shortwave spectrum.

Wouldn't that be a step forward? Imagine listening to HCJB, the Voice of the Andes, while watching photos of Quechua Indians in full costume, or panoramic views of Mount Cotapaxi? I'd love it. Maybe some forward-looking broadcaster would like to pioneer such a low-cost video system.

Q. *I have a popular brand trap dipole, but I'd like to get better reception. Is there a simple, inexpensive way? (Bobby Joe Copeland, Enterprise, CA)*

A. Trap dipoles emphasize specific bands of frequencies at the expense of others. Usually a plain dipole will work just as well and often better for general purpose shortwave reception.

The best configuration for any trap or simple dipole is to mount it as high as possible, broad-side to the arriving signal.

Q. *I was recently listening to a mall security radio on 483.875 MHz with my BC200XLT handheld, but a PRO2005 didn't hear a thing. What gives? (Frank Morfe, Baltimore, MD)*

A. I suspect that your Bearcat might have been experiencing front-end overload and you may have been hearing an image from 462.175 MHz (21.7 MHz lower), common on the Bearcats. Because it is less sensitive, the PRO2005 is more resistant to such problems in strong signal environments.

While the 483 MHz range is a police band, mall security is actually a business; the 462 MHz (or other) range would be licensable to them.

Q. *What country's callsign prefix is "TG"? (Rob Sabato, Bloomfield, NJ)*

A. Guatemala. A complete list of worldwide callsign prefixes is included in my Shortwave Directory and also in the new *International Callsign Directory* by Gayle Van Horn.

Q. *I have seen a number of ads on becoming a "registered moni-*

tor"; what are these and how does one become one? (Chris Sloane, Portsmouth, NH)

A. Several clubs and even a number of enterprising entrepreneurs make such offers. Other than providing a sense of community among listeners, such registration provides no legitimacy or legal authorization.

Check with the issuing organization or company to see what you receive for your money (Subscription? Certificate? Coffee mug?) or whether you are simply contributing to another get-rich-quick scheme.

Q. *I have a photo-electric cell which operates my porch light. It creates real havoc with my radio reception. What can I do? (Bobby Joe Copeland, Alabama, CA)*

A. Lighting control devices are notorious for their generation of electrical "buzz" noise interference to radio reception. One simple cure is to place a 0.02-0.05 microfarad, 600 volt capacitor across the photocell's wires.

Occasionally the manufacturer will have suggestions of his own from previous complaints and experiences.

Q. *I've come across a government security agency on 415.625 MHz which gives their callsign and transmitting power on the hour on 415.200 and 417.200 MHz. Who is it?*

A. Probably the Federal Protection service of the General Services Administration. The latter two frequencies are used nationwide for federal building security.

Q. *I see an ad from DAK Enterprises, the mail order firm, for a "Shortwave Station Stalker." What is this gizmo? (Robert Merrill, Syosset, NY)*

A. It is an active antenna which consists of an internal preamplifier connected to a telescopic whip. Preamplified antennas are useful under weak signal conditions such as an indoor location or where a very short antenna is required.

The advantage of the DAK unit is that it is frequency-tunable, making it less vulnerable to strong-signal overload.

Playing a Little Catch-Up

In our September column a reader asked if there were any frequencies with UFO activity on them (No, there aren't!). John Tafel of St. Claire Shores, Michigan, reminds me that there is an amateur radio network for discussing the phenomenon. It is sponsored by the Mutual UFO Network (MUFON).

For interested hams and SWLs, their schedule in Eastern time is Thursday, 8 PM, 14264 kHz USB; Saturday, 8 AM, 7237 kHz LSB; Saturday, 9 PM, 3929 kHz LSB; and Sunday, 3 PM, 28470 kHz USB.

A month earlier (August), we noted that monitoring cellular telephones is illegal; that may be true in the United States, but it's perfectly lawful in Canada. Thanks, Jeffrey Johnston of Mississauga, Ontario, for reminding me.

Bob's Tips of the Month

Reducing Touch Lamp Interference

Touch lamps may be convenient to turn on, but they can be ornery when it comes to causing interference to shortwave receivers, or even to being turned on accidentally by nearby CB or ham transmitters.

Jim Slater, N3KZI, of Scranton, PA, suggests a simple fix which he claims drastically reduces both problems. Simply connect a small resistor — Jim suggests about 6K ohms — in series with the wire between the internal module and the lamp frame.



Portable Computer Databanks

Several readers have suggested using pocket electronic address books like the Sharp Wizard for frequency database use, provided the hobbyist can get around the limitations of memory and sorting capability.

Bruce Heatley of Buffalo, NY, uses the \$500 Canon Starwriter 80 to do sorting on a column basis. He can sort only 150 entries at a time in blocks, but has over 550 entries in his Starwriter which features its own built-in, bubble-jet printer.

Perhaps readers are familiar with other comparable systems that offer compact portability, power and low price.

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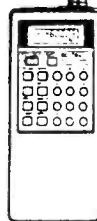
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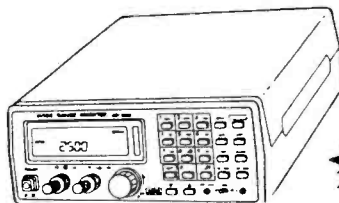
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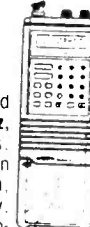
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Club Circuit

Club Profiles

Longwave Club of America (LWCA)

LWCA was organized in 1974 to promote both DXing and experimenting on frequencies below 550 kHz and activity on the 1750 meters (the band set aside for low-power experimental operations).

LWCA publishes *The Lowdown*, a monthly bulletin which contains help with ID's, loggings, letters, technical articles, and more. Transmissions to be picked up on longwave include radio navigational aids (beacons), long distance all-weather emergency news, government broadcasts such as marine and aeronautical services, and time and frequency stations. Europe, the Middle East, Africa and Asia also use this segment for broadcasting.

A special receiver or a converter for your shortwave or ham receiver is required to

pick up the low band. To learn more about the exciting challenge of longwaves, write the Longwave Club of America, 45 Wildflower Road, Levittown, PA 19057. Membership dues are \$18 in the U.S., \$19 in Canada and Mexico, and \$26 for overseas members (U.S. funds).

Pacific Northwest, British Columbia DX Club (PNBCDXC)

This "all band" club with the impossible name was founded in 1982 to keep area DXers informed of local radio activities and provide a forum for exchange of ideas. The club publishes a monthly newsletter which carries loggings, station changes and technical articles.

Only one regular meeting in February is scheduled per year, but others frequently occur around July and October. Dues are \$9 per year in the U.S. and \$10 in Canada. For more informa-

tion on the PNBCDXC and its activities write Phil Bytheway, 9705 Mary NW, Seattle, WA 98117.

Club Listings M - Z

If you belong to a DX club and you haven't seen it listed in *Monitoring Times*, write today and ask for a Club Circuit listing form. Your club will be listed every other month, and will be featured in a club profile at least once, as well as receiving a complimentary *MT* subscription for club use.

Clubs outside the U.S. are welcome as well and are eligible for the complimentary subscription if they will provide the difference in postage. Sorry, we do not list amateur radio clubs, only those focused on the monitoring hobby. Let's keep it growing!

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 311, Wixom, MI 48393. Michigan & surrounding; All bands. *Great Lakes Monitor.*

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.

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.

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, pub-

lic 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) 299-6392 DX-Change information svce. Predominantly Providence 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 City 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.

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: Wayne Heinen, 4131 S. Andes Way, Aurora, CO 80013-3831. Colorado Front Range; All bands. Annual meeting calendar for an SASE.

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.

Susquehanna City Scanner Club: Alan D. Grick, P.O. Box 23, Prospect St., Montrose, PA 18801. PA area; Scanning all bands.

Toledo Area Radio Enthusiasts: Ernie Dellinger, N8PFA, 6629 Sue Lane, Maumee, OH 43537. NW Ohio and SE Michigan; Shortwave, scanning, amateur.

Triangle Area Scanner/SW Listening Group: Curt Phillips, KD4YU, P.O. Box 28587, Raleigh, NC 27611. Central NC.

New Additions:

Houston Area Scanners & Monitoring Club: 909 Michael, Alvin, TX 77511, 713-388-1941.75 mile radius of Houston, TX; scanning & SW.

SPECIAL EVENT CALENDAR

<u>Date</u>	<u>Location</u>	<u>Club/Contact Person</u>
Dec 6	Largo, MD	HolidayFest '92/P.O. Box 1037, College Park, MD 20740; 301-572-2362. Benefits Prince George's County RACES/ARES, Inc. Location: Prince George's Comm College Campus. \$4 donation. Talk-in on 147.180, 146.520.
Dec 19	Santa Claus, IN	Spencer Co ARC/Christmas Radio Station from Santa Claus, IN from 8 am-8 pm Central Standard Time. Frequencies will be 28.400, 7.240, 14.250 voice and 7.125 CW. Reception reports and SASE to: Spencer Co ARC, RR #1, Box 154, Dale, IN 47523.
Jan 10	Milwaukee, WI	21st Annual WARAC Midwinter Swapfest/P.O. Box 1072 Milwaukee, WI 53201. Location: Waukesha Co Expo Center.
Jan 16	Hammond, LA	1993 Hammond Hamfest/Ernest Bush, N5NIB 331 Rock Rd, Hammond, LA 70403; 504-567-1261 days/504-542-0034 nights. Location: SLU University Center from 9:00-4:00. Free admission.
Jan 16	Monterey, CA	Winterfest 1993/Doug, KC3RL, 408-663-6117 Location: Monterey Peninsula College Armory, begins at 8:00 am Talk in on 146.97.
Jan 16	Ft. Myers, FL	Ft. Myers ARC/Earl Spencer, K4FQU 1735 Hanson St., Ft. Myers, FL 33901.
Jan 16	Cameron, MO	Green Hills, MO Valley & Ray-Clay ARCs/Gaylen Pearson, WBW 1210 Midyett Rd., St. Joseph, MO 64506.
Jan 17	Yonkers, NY	Metro 70 cm Network/Otto Supliski, WB2SLQ 53 Hayward St., Yonkers, NY 10704.
Jan 23	Crystal River, FL	Sky High ARC/Ron Wilhite, KK4HS 303 S. Adams St., Beverley Hills, FL 32665.
Jan 31	Villa Park, IL	Hamfest '93/WCRA, P.O. Box QSL, Wheaton, IL 60189 Location: The Odeum Exposition Center, 8:00 am to 3:00 pm.

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
Brasstown, NC 28902-0098

DX RADIO TESTS

The International Radio Club of America (IRCA), is a club devoted to the hobby of hearing distant stations on the standard AM broadcast band. For more information, or a sample issue of *DX Monitor*, write to: The International Radio Club of America (IRCA), 11300 Magnolia #43, Riverside, CA 92505, USA. Please enclose 1 U.S. dollar or 3 IRCs if you are requesting a sample issue.

These tests were arranged by J.D. Stephens for IRCA.

Monday, December 7, 1992: WRIX-1020, Watson Village, Anderson, SC 29624 will conduct a DX test from 2:00-3:00 am EST. The test will include Morse code, voice IDs and an unspecified selection of music. Reception reports may be sent to: Mr. John Woodson, Program Director.

Monday, December 7, 1992: KJR-950, 190 Queen Anne Avenue North, Seattle, WA 98109 will conduct a DX test from 4:00-4:30 am EST. The test will include Morse code, tones and voice IDs. Reception reports may be sent to: Mr. Kelly D. Alford, KA7ZDW, Chief Engineer.

Monday, December 14, 1992: WDEA-1370, P.O. Box 1129, Ellsworth, ME 04605 will conduct a DX test from 2:00-2:30 am EST. The test will include Morse code. Power will be 10.4 kW using an omnidirectional antenna pattern. Reception reports may be sent to: Tracy Tarr.

Monday, December 14, 1992: WABK-1280, P.O. Box 1280, Gardiner, ME 04345 will conduct a DX test from 2:30-3:00 am EST. The test will include Morse code, tones, voice IDs and march music. Reception reports may be sent to: Mr. Brant Curtiss, Program Director.

Monday, December 14, 1992: KNZZ-1100, P.O. Box 969, Grand Junction, CO 81502 will conduct a DX test from 5:00-6:00 am EST. The test will include Morse code, tones and voice IDs. Power will be 10 kW. KNZZ will switch between a directional omnidirectional antenna pattern during the test. Reception reports may be sent to: Mr. Dwight C. Morgan, Chief Engineer.

Monday, December 28, 1992: WKGF-1480, P.O. Box 794, Arcadia, FL 33821 will conduct a DX test from 2:00-2:30 am EST. The test will include Morse code, voice IDs and contemporary christian music. Reception reports may be sent to: Mr. Quick Coddington, K8TRR, Chief Engineer.

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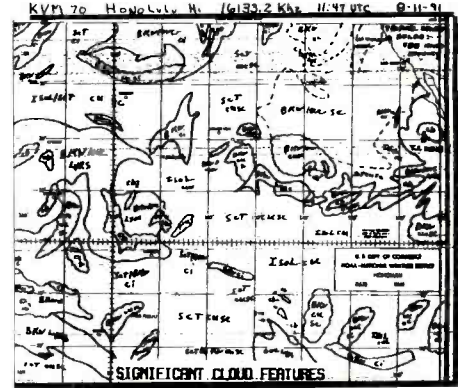
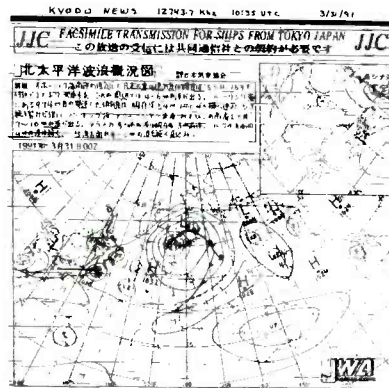
Clifford Nadiger of Copperas Cove, Texas, says he started monitoring back in 1960 with an RME45 receiver, and then somehow raising children and making a living took precedent.

A few years ago, his interest was renewed, and now Clifford has worked his way up to the Kenwood R-5000! Clifford even built a RTTY/

Fax decoder called the "Radfax" decoder, a project which appeared in the November 1990 *Popular Electronics* magazine. This weather map from KVM70, Honolulu (16133.2 kHz), and from Kyodo News, Tokyo (12743.7 kHz), are examples of what the Australian Radfax 2 software will do.

A Yaesu FRG-7, Panasonic RF-2200, and Realistic DX440 round out the rest of his receivers. Pictured is also a RTTY/FAX tuning display also built by Clifford.

If you have a clever set-up or monitoring solution you'd like to brag about, send us a picture and tell us about it. We're all ears!



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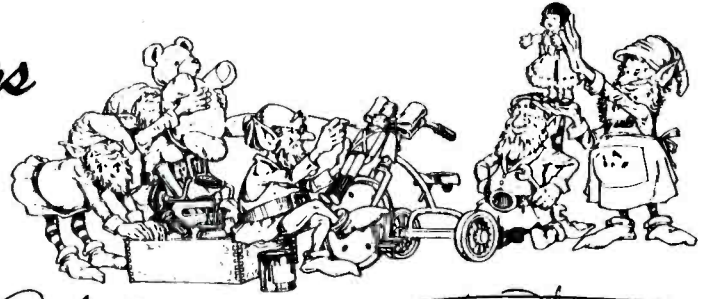
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