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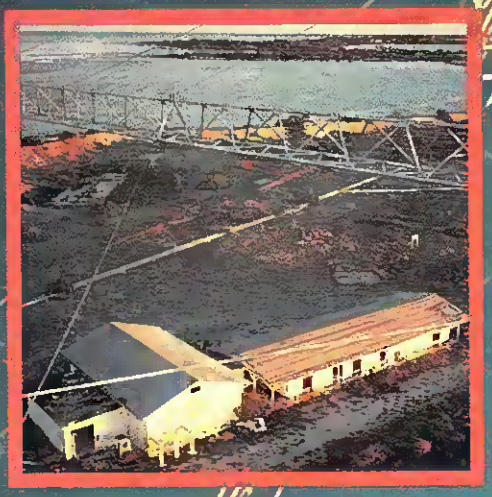
Monitoring Times

A Publication of Grove Enterprises, Inc.

DXing from a Pacific Atoll



Kurdish Voices on the Air

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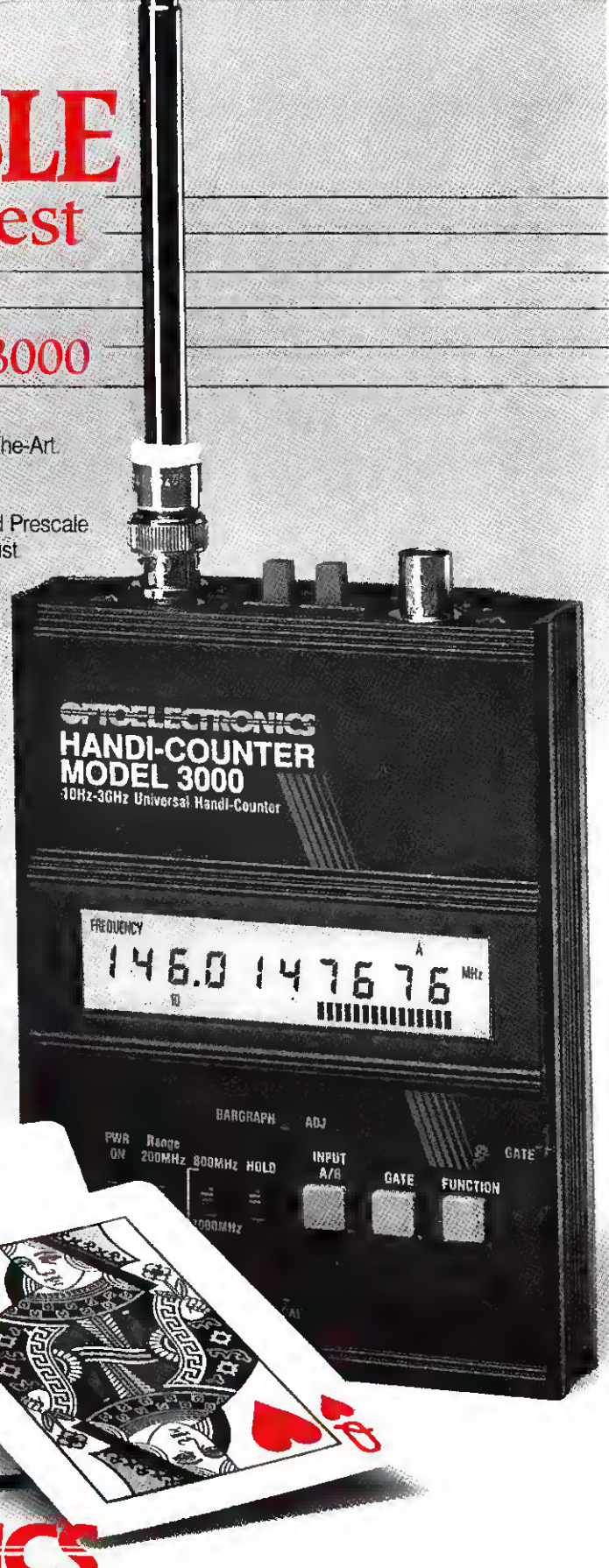

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May 1992

Monitoring Times

The Federal Protective Service

8

by Mark Chandler

Quiet and unobtrusive, this little-known security service is often the first line of defense for Federal agencies and government buildings. The Federal Protective Service provides double protection for millions of federal employees, including judges, members of Congress and even the Pentagon itself.

Radio Sweden International

12

by Jeff Chanowitz

Radio Sweden International has been on the cutting edge of broadcasting ever since its inception. But, although it is a leader in making use of new technology, it is Radio Sweden's quality programming that keeps listeners tuning in.

Kurdish Voices

17

by Charles Sorrell

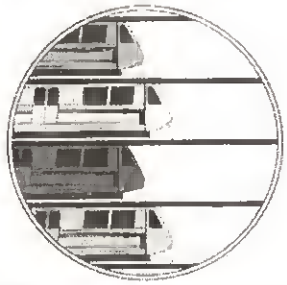
Promised autonomy in 1921, the Kurds still have no country of their own nor even the right to exist peaceably as a people. Their wait has not been entirely passive, however, and following Desert Storm the Kurds have become more visible than ever. The number of Kurdish clandestine broadcasts has increased steadily; a few even make it to these shores.

BART

Doing the BART Scan

20

by Mike Morrow



San Francisco has many attractions for the tourist, and innumerable scanning opportunities as well. But one you may not have considered is its modern transportation system, the Bay Area Rapid Transit. Here's how to make your trip—or your daily commute—a little more lively.

COVER: *A friend climbs one of Kanton's many giant antennas.* ***Inset:*** *Looking down on Kanton. Photos by David Howe.*

A Survey of 9.7-10 MHz

24

by Charles Sorrell

A two-hour scan of this segment of the SW spectrum revealed a fairly typical monitoring session—a few good catches coupled with a lot of frustration.

A Yen for DXing

26

by Deborah Howe

What's your excuse for not pursuing that dream adventure? "Where there's a will there's a way." As proof, we offer Kiyoko's story: With only two years' amateur radio experience, this young Japanese woman traveled alone to eleven Pacific islands for the love of radio.

And More ....

A group of intrepid—some would say, foolhardy—researchers make their living seeking close encounters with tornadoes. Federal File gives us a hair-raising look at the work of the National Severe Storms Laboratory.

In addition to our shortwave bandscan feature, Utility World shows you in a 15 MHz bandscan how to apply the same systematic approach to increase your familiarity with two-way communications.

Magne Tests the new ICF-SW55 portable shortwave receiver—an innovative receiver from Sony with great appeal for the beginning monitor or the traveler.

Projects, reviews, tips and guides are all to be found within the pages of this issue. So open up your *Monitoring Times* and tune in to the world around you!

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LETTERS

"Reasonable" Rationale

It was no surprise to find some feathers ruffled by our rather provocative word play on the cover of the March issue, calling WCSN the "*Monitor*'s Voice of Reason in Maine." Mr. Luther Crumbaugh of Prescott, AZ, says, "I have no argument with the award-winning news quality of the C.S. *Monitor* and the radio stations. However, in addition to the news, WCSN devotes thousands of hours promoting Christian Science beliefs... I don't believe it should be the purpose of *MT* to suggest which doctrine is 'reasonable.'"

Nor do I; perhaps "voice of reason" should have been in quotes as Mr. Crumbaugh suggests. The "reasonableness" of the station was extrapolated from the statement of purpose as given by Public Relations Director Don Feldheim, i.e. "news to satisfy the intellect." "Voice of" was a take-off of the many radio stations which use that phrase to indicate they speak for their country or point of view.

Many readers are probably aware that the Christian Science church is coming under close scrutiny these days. The organization is in some financial trouble, due largely to the ambitious expansion of its TV and radio operations. According to an article in the *Boston Globe* it has apparently borrowed from its pension fund beyond its ability to repay.

April's issue will undoubtedly bring more mail regarding the religious broadcasters, now that we've opened the can of worms. As we point out, some of them are better than others in making responsible use of the airwaves—just like independent and government broadcasters! On the whole, *MT* tries to leave it up to the reader to make those judgments in accordance with his or her own inclination.

By the way, thanks to Mr. Crumbaugh, Michael Schulsinger, and R. Rogers of Vancouver, Canada, for calling attention to our mistake in a photo caption: WCSN's output is, of course, 500 kW, not 500 watts!

Shortwave Short Subjects

• It's encouraging to see that the radio hobby occasionally gets good newspaper coverage, at least in a slow news week. Michael Schulsinger of Springfield, Ohio, was given a large spread in the Sunday edition of the *Springfield News-Sun* in which he made a convincing pitch for shortwave listening.

Michael has helped staff the Radio for Peace International exhibit during the past two *MT* Conventions and says, "If you'd like to follow-up on the 'Many Nations, Many Stations' story [March *MT*], The United Nations Educational, Scientific and Cultural Organization (UNESCO) operates broadcast services similar to, but separate from, United Nations Radio. RFPI also carries their programs, and I have found them to be quite interesting. Their address is UNESCO Radio, 7, Place de Fontenoy, F-75007 Paris, France."

Courtesy Springfield News-Sun

Try Monday, Wednesday, and Thursday 1930-1945 UTC on 7375, 13630, 15030, and 21465 kHz, according to RFPI's March schedule.

Michael adds, "I enjoyed the profile of Teri Schulz... I met Teri briefly about two years back and she's even more interesting in person than the article implies!" Sounds like there's a story behind that exclamation point, Michael!

• Gordon Levine of Anaheim, CA, also enjoyed the "Many Nations" article. He says, "As soon as *MT* arrives, that is my first priority for the next few days. Everything comes to a screeching halt here 'til I at least take a quick scan through it. This time, the March issue arrived on Feb. 27 in the afternoon. I immediately scanned it, noticed the Red Cross article, and realized they would be on the air on Feb 28 at 0310 UTC. This converted to Feb 27 at 1910 PST, that evening, and by the time I realized this, I had only a few minutes to set up and listen. But...whee!...I got them. I heard them on all three frequencies, but 6135 had the most readable signal. Now I hope I get the QSL."

• QSLing is the aspect of the hobby uppermost on the mind of John Dokulil in Grass Valley, CA. Here is John's letter:

"I belong to a number of shortwave clubs and a major topic of discussion these days is 'Stations not verifying valid reception reports.' Many listeners and DXers are getting very

discouraged; why should they spend their time, efforts and money sending in reception reports and getting either nothing, or program schedules and a picture postcard in return?

"Not only is it bad business, because the stations are alienating the very listeners that they depend on, but it is just down-right rude. Many people are leaving the hobby because they feel they are being treated unfairly and are being ignored for their efforts. And without loyal old members, you can't get and keep new members.

"The idea behind QSLing is that in return for giving the station engineers valid information on how well their broadcast is being received at a specific global location, the station will verify their report with a QSL. I'm not talking about sending verification cards for every letter received. I'm talking about letters which contain the following: 1) the correct time, frequency and date of reception; b) programming information to verify that you truly picked them up; c) reception quality, which also include SINPO code numbers; d) comments on their programming; e) a request for their QSL; f) return postage.

"Some stations who do not QSL are using the excuse that it costs too much money to do so. Well, some of these same stations are sending out three or more program schedules, wallet calendars, window stickers, multiple subject pamphlets, surveys, and even pennants (all of which are usually printed in color). I've been in the advertising business for 22 years, and I know exactly how much it costs to print up the above. I can say in all certainty that it costs far less for a black and white QSL card than all that stuff you get crammed in that bulging envelope with the front plastered with stamps due to its weight.

"So what we would like to see in your publication is a list of stations who do not verify reports with a valid QSL (a verification which at least includes the reception date, time and frequency— a picture postcard is not a QSL). This way we can stop wasting our time, effort and money on the stations who do not care about their listeners (*or more accurately, DXers...Ed*), and concentrate on the stations which do. This would greatly help in putting some stability back in a now very shaky hobby."

I took up John's concern with QSL columnist Gayle Van Horn, who said she understood his obvious frustration. "With the increasing cost of postage and IRCs, as well as the work involved, it's not surprising that many DXers have become discouraged and now are listeners only."

Stability in anything connected to shortwave broadcasting, however, is something which never will exist. And that's what Gayle concluded, too, when she tried to research John's request for a list of non-QSLers.

"Several evenings were spent researching the past year of publications ... I found no stations that absolutely will not QSL. As you know, stations have various QSL policies. Stations usually will respond with a card or letter. That might be a full or partial data response, or simply a "thanks for listening" card that appears to be gaining in popularity.

"Even if I had found information on absolute non-verifiers, I do not see how you could compile an accurate list. QSL policies can change from month to month (or less). What one DXer received, another may not. I notice each month in my mail for 'QSL Report' that response rates can range from weeks to years.

"By publishing a list of this type, you run the risk of 'black-balling' a station. Let me expound a few examples for you: In the early 1980's, Radio Botswana was a non-verifier. Absolutely no way would they respond to anyone, even to the most imaginative of methods. It was common knowledge in the hobby.

"Suddenly, Radio Botswana began to verify, and soon it was published that a staff change had occurred. They continue to run hot and cold in QSLing, as do many stations, however, whether because of staff changes, economic cutbacks, or temporary policy changes.

"North Korea's Radio Pyongyang also comes to mind, as do Radio Pakistan and Radio Finland. Each station has changed their QSL response numerous times. Many South American and Indonesian stations can be equally frustrating."

Gayle's advice is to enter the hobby for the enjoyment, and not as an all-consuming obsession. Perhaps if the hobbyist can accept the fickle nature of shortwave, it will provide many hours of satisfying enjoyment nonetheless.

- While on the subject of SW broadcasters, here's a couple of tidbits on the BBC. Steven Goldman of Roselle, IL, says, "If you're wandering around midtown Manhattan, stop by the BBC offices in Rockefeller Center. They're not in the 'British Empire Bldg,' but rather in the 'International Bldg' at 630 Fifth Ave. In the reception room on the 21st floor, you'll find current BBC World Service schedule grids and complimentary copies of *London Calling* magazine."

David Stone of Vienna, VA, sent in a letter to the editor he clipped out of *The Fairfax Journal*. In it, Stephanie Trachtenburg recounts how her husband, a shortwave listener for 20 years, was one of two Americans selected by the BBC to ask a question of the State Secretary of Russia in a live broadcast.

Putting listeners on the air seems to be a growing trend; perhaps you should always include your phone number with your reception report as Jeff Chanowitz advises in his Radio Sweden article. Next time you pick up the phone it could be London calling.

- "Why is shortwave radio such a well-kept secret?" wonders Gary Bertsch of Tucson, AZ. "Don't shortwave radio equipment makers think they could sell more if more people knew about what's available on shortwave? Why is there no advertisement or references to it? I would like to know the proportion of people in the rest of the world who know about it."

Good questions, Gary. Those of you who live outside the U.S. can better answer the last one; is the rest of the world any better informed about shortwave broadcasting than U.S. citizens?

Having just learned that international programming is available through C-Span, Gary tried to get his cable company interested; only one person even knew what he was talking about. His friends can't understand how he tunes in Radio Moscow—"Don't you have to know Russian?!"

Ignorance about radio isn't confined to the shortwave bands, though. At a time when all broadcasting is faltering and looking for direction, clubs and individuals, manufacturers and publications like ourselves need to do all they can to raise public awareness of the benefits of responsible radio—and the dangers of its neglect.

Are You an Eavesdropper?

Speaking of responsible radio, the views on both sides of the privacy issue continue hot and heavy. Here are some excerpts:

- From *The Bloomington Voice*, sent in by PJK: "Lanter [a student whose cordless phone conversation was overheard] could hardly believe that a magazine called *Monitoring Times* actually caters to an audience of eavesdroppers. 'Are you serious!' he exclaimed.

"Yes, it is true," continues the article. "*Monitoring Times* is owned by Grove Enterprises, a North Carolina-based company that sells scanners, *paraphernalia* and information on how to pick up cordless and cellular phones."

[Italics mine! Guess according to the author, you're no better than a drug addict, and Grove's the pusher!—Ed)

- *USA Today*, sent in by Dan McAvoy of Hilton Head Is, SC, quoted race car driver Darrell Waltrip as saying "[Scanners] are an invasion of our privacy. People listening is no different than having a wiretap on a phone." Dan responds, "The real issue of concern with this article is that it further promulgates the specious argument that owning and using a scanner is akin to breaking in to Watergate!"

- Referring to the loss of amateur radio frequencies as well as restrictive monitoring laws, Richard Ashley of Salt Lake City, UT, says, "It's about time the amateurs and radio hobbyists unite or it won't be long before we won't have a hobby."

- Dan Hull of Flint, MI: "Only when one's livelihood is at stake and the government sets forth regulation on a particular industry to the point of its destruction will you find common interest in its opposition. Must we always wait 'til their boot heel is on our throat?"

Continued on page 111

IT'S BACK!

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Friday, October 2

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Saturday, October 3

8:00 to 9:00 AM
REGISTRATION

9:00 to 12:30 PM
EXHIBITS OPEN AND
MORNING SEMINARS

12:30 to 3:00 PM
EXHIBITS OPEN AND
LUNCH BREAK

3:00 PM
EXHIBITS CLOSE

3:00 to 5:15 PM
AFTERNOON SEMINARS

7:00 to 9:00 PM
BANQUET

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New Uses for an Old Jammer

Numerous radio stations are taking advantage of the lack of jamming in the former Soviet Union to broadcast their programs to this once off-limits land. These missing jamming transmitters didn't escape the attention of officials at Adventist World Radio who have launched AWR-Russia using one of these former jammer transmitters.

AWR director Walter Scragg says that the 100 kilowatt Siberian transmitter that they'll be using is but a tiny portion of what is now thought to be the largest broadcasting facility in the world. Located in the city of Novosibirsk, the facility covers over 2,000 acres and contains more than 120 curtain antennas and nearly 30 transmitters.

The total cost of AWR-Russia is surprisingly small. Including the air time contract, shipping, added staff for AWR-Europe and AWR-Russia, the annual price tag for AWR-Russia will be just $175,000.

You Pay —They listen

The Justice Department is circulating a proposal in Congress that would force telephone companies to install state-of-the-art technology to accommodate official wiretaps. The bill was drafted by the Bush administration because the widespread use of digital transmission, fiber optic and other technologies, "make it increasingly difficult for government agencies to...intercept communications in order to enforce the laws and protect the national security."

According to a copy of the draft legislation obtained by the Associated Press, you will be paying for the hi-tech hi-jinx every month. The legislation also gives the FCC permission to allow telephone companies to pass the cost of the federally mandated wiretap equipment on to you in your phone bill.

Real Radio

It could be the thing to really crack the amateur radio hobby wide open. The W5YI Group, Inc., publisher of the highly regarded *W5YI Report* on amateur radio and emerging communications technologies, says it will begin production of a weekly nationally syndicated television series.

According to *W5YI*, the program will be high-quality, fast-paced, entertaining, educational, informal and 30 minutes long. Technical topics will be avoided and the show will instead focus on "stories of general human interest, drama and humor [that will] de-mystify our hobby."

The target audience is ages 10 through 90. Production of the program has not yet begun and the originators of the concept are seeking people with experience in law, TV production, technicians, in addition to production facilities, researchers, writers, volunteers, fund raisers and individual contributors.

To obtain more information about Radio Friends, write the W5YI Group at 2000 E. Randol Mill Road, Suite 608-A, Arlington, Texas 76011 or call 817-461-6443. Unlike many of the hobby programs on radio, the W5YI venture promises not to be a cleverly disguised "info-tisement." As a non-profit organization, it has absolutely no links to any commercial organization.

Cellular School

Could you benefit from increased knowledge about cellular antennas? Then you may want to enroll in The Antenna Company's "Antenna Academy." According to a company flyer, "Antenna Academy employs 'hands-on' training techniques in a group session to help explain the many facets of cellular antennas and their overall importance..."

The Antenna Academy is conducted the Antenna Company's Broadview, Illinois headquarters. For more information call 1-800-458-2820.

Erotic Scenes and Purple Hair

Things are still shaking in the former communist world and the results are impacting on the media in unpredictable ways. In Uzbekistan, someone replaced the video from the movie "Malenkaya Vera" ("Little Vera") with a test card. The program, which was beamed from Channel 1 in Moscow, included three erotic scenes. The duty officer for the Uzbek radio and TV company took the step because the film "was not in keeping with the Uzbek people's ideas of morality."

Not likely to be the object of censorship—or much listening—is a new radio channel. Mayak Panorama now plans to broadcast a daily roundup of traffic accidents on the roads of Moscow, Moscow oblast and also a number of regions in Russia. The show is billed as being for "lovers of the motor car."

Broadcasters in Hungary are under fire from villagers in the town of Szuecsi. According to reports on Kossuth Radio, villagers' hair is turning "phosphorous purple." Experts have ruled out the possibility of radioactivity but say that the radio signals from a nearby relay station "may initiate chemical reactions in the human body...which has made people's hair to go blue in Szuecsi."

News About Burt and Loni

According to a column in the Toronto *Sun*, Burt Reynolds and Loni Anderson spend their nights huddling in front of a shortwave set, listening to relays of the Canadian Fred Napoli show on CFRX. "The reason I'm writing," Burt reportedly wrote in a fan letter to Napoli, "is that Loni and myself were sitting around the other evening, listening to your weekend program as best we could... and then the incredible, you mentioned us!" Burt even fashioned a sort of reception report, allegedly telling Napoli that reception was "dicey."

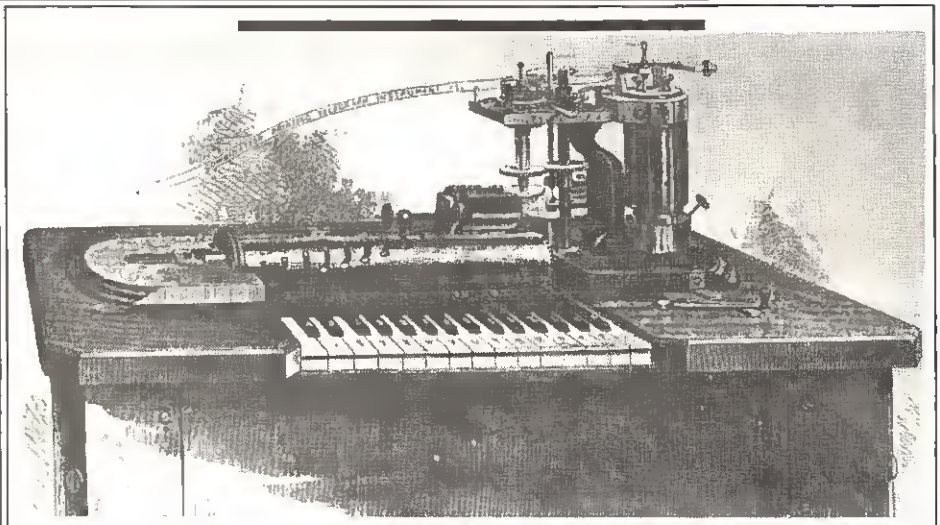
BBS for Commercial Station

According to *Radio World*, San Francisco radio station KALW-FM has implemented a bulletin board service of its own. Users have access to updated program information, can access staff, program producers and other listeners, and have the opportunity to provide feedback and ideas on the station's programming.

Station Chief Engineer Dave Evans started the BBS to "turn a one-way station into a sort of two-way communication." The article did not provide the phone number for the bulletin board.

Last Telegraph Message: STOP

The year was 1887. AT&T introduced their private-line telegraph service. Hailed as a technological breakthrough, the first customer was a brokerage business that used the service to communicate between its New York and Philadelphia offices. AT&T's telegraph service peaked in 1970, transmitting data at the then-incredible rate of 150 bits per



second. (1,200 BPS is considered the lowest acceptable speed for desktop computer users today.)

Displaced by computer-to-computer communications, facsimile and the digitalization of AT&T's own network, the service is slated to close this year after 100-plus years. According to AT&T, the last users of the telegraph were federal agencies, state governments and utility, broadcast and transportation companies.

Does anyone have the correct time?

When subscriber Fred Latus of Whitesboro, New York, came in at 5 a.m. to "open up" station WKTV-TV as he had for the past twelve years, he felt something was amiss with the clock—an ESE NBS Master Clock receiver, locked to WWV's time signal. Not having time to check it, however, it wasn't until a second engineer arrived and asked why the digital clock was one-hour fast, that it hit him.

"That's it!" he realized. "That's what I 'felt' earlier. The digitals were one-hour fast. Having had problems with our receiver and antenna the past few months, we thought it could be our problem. By 8 a.m. I had reset the system twice and it still was in error."

"About 9:15 a.m. I finally got an engineer at WWV, just coming on duty at 7 a.m. Mountain Standard Time." Cautioning WKTV not to start taking apart their equipment just yet, the WWV engineer was alert to the fact that, to the day, it was a month prior to daylight savings time. Keeping Fred on the phone while he checked the computer, he came back to report that, sure enough, a "3" had been entered instead of a "4" for the month starting Daylight Savings Time.

The error corrected, and all clocks reading correctly, Fred called WWV to thank the engineer for his help. "In the course of the conversation," says Fred, 'I asked how many calls he had received. He said, 'Five or six, maybe.' He was surprised he had so few calls since the military and other institutions, not to mention the media, depend on WWV. The United States had been on Daylight Savings Time for about nine and a half hours a month early and only half a dozen people caught it. What a catch!"

It's oddly comforting to know that even the venerable National Bureau of Standards is fallible when it comes to changing the hour...especially following our goof-up in the April issue in which we subtracted rather than added an hour for Daylight Savings Time. Human error persists.

Tuning in the Olympics

During a recent conversation with Luz Rodriguez, Radio Nacional De Espana's Washington correspondent in Washington, DC, Jeff Chanowitz confirmed that Radio Espana's shortwave service would provide special broadcasts from the World Exposition in Seville and the Olympic Games in Barcelona.

English broadcasts to North America will take place at 2, 3, and 7 hours UTC on 9530 kHz. The broadcasts will be from the World Exposition in Seville from April 20th to October 12th. The Olympic broadcasts will also take place from July 25th to August 9th. English broadcasts to Europe will take place at 2300 UTC on 9875 kHz. The broadcasts can also be received on INTELSAT VA F11.

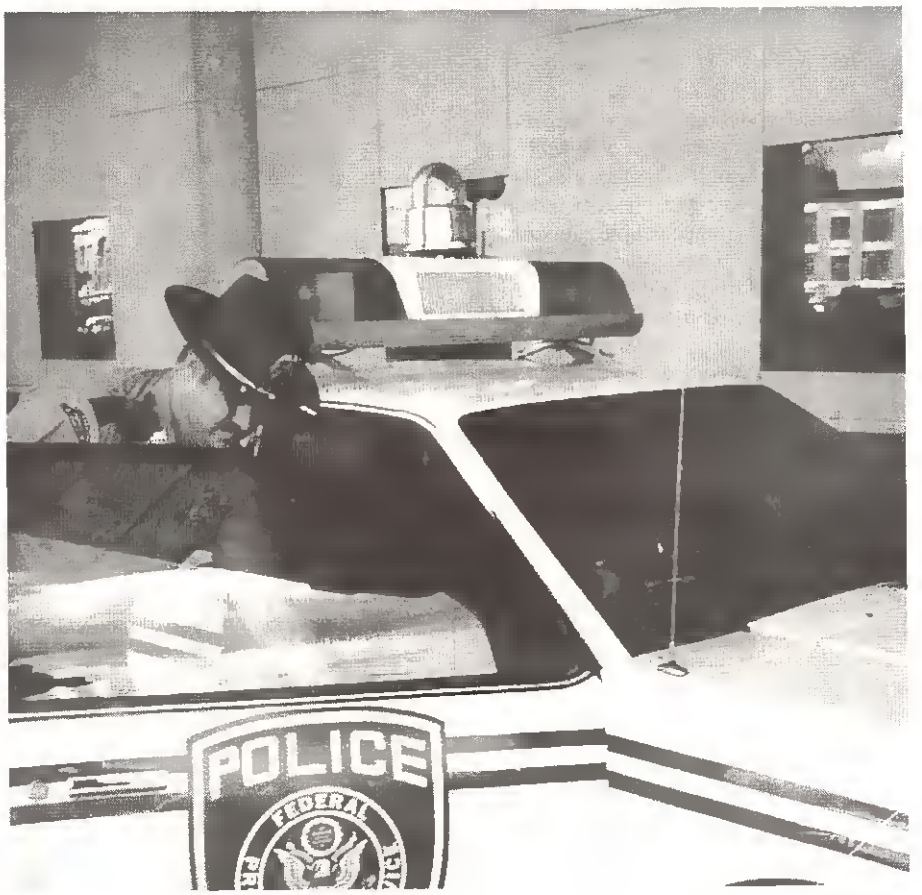
Additional broadcasts are available in Spanish to North America. For more information, write to: Radio Espana, Apartado 156202, 28080 Madrid, Spain.

Thanks and credit to: Associated Press, BBC Monitoring Service, Jeff Chanowitz, *Communications Week,* Fred Latus, Tom McGlaughlin, Mango, Florida; *Radio World,* Mark Reeser, Pickering, Ontario; C. Eric Staehling, Ukiah, California; Toronto *Sun, W5YI Report.*

The Federal Protective Service

By Mark Chandler

For a great number of Federal agencies, the FPS stands as the first line of defense against intrusion.



The government was fighting a war on two fronts, one in Vietnam, the other at home. The times were still tumultuous in the ghetto, on the streets and on the college campuses. Government buildings, storage depots, Federal offices and courtrooms had become targets for all manner of civil disobedience. This included peace marches, demonstrations, sit-ins, vandalism and bombings. The decade of the 60's was ending. The year was 1970 and Richard M. Nixon was in the White House.

In an attempt to upgrade security at all Federal installations, government and other properties, the Nixon White House sent a bill to Congress which would establish a highly trained, uniformed, Federal police force. This marked the beginning of the Federal Protective Service (FPS).

Today, the FPS consists of some 3,200 well trained law enforcement officers nationwide. It is the responsibility of these officers to develop and implement security programs for thousands of Federal properties, thus providing security for millions of Federal employees, Congressmen, Senators, Federal Judges and the general public. These programs include the Physical Security Survey, which is used to determine the security requirements of each facility. This initial survey provides the basis for selection of electronic security, surveillance and communication systems.

The FPS provides the first line of defense against intrusion, theft, demonstrations and terrorism for a variety of resident agencies. This includes intelligence collecting agencies such as the DEA, IRS, ATF and FBI. In addition to protecting your local Courthouse, Federal Building and storage depot, the Officers of FPS protect the Pentagon, CIA and NSA Headquarters in Washington.

Having a well trained Federal Police Force in place has been considered a necessity since 1970. Since that time the FPS has, on many occasions, shown its worth. For example, in 1987 an armed 30-year-old stormed an entrance to the Pentagon just below Secretary of Defense Casper Weinburger's office. The assailant, screaming slogans and armed with a 38, ran toward the entrance which was guarded by an FPS officer. The officer killed the assailant when two of the three shots fired found their mark.

The FPS communications section is manned by experienced officers of at least a Corporal's rank. These men operate a VHF radio network, a nationwide computer network, computer security alarms and dedicated alarms from each agency housed in the Federal facility. Since each of these agencies has highly sensitive information and materials it must protect, each has its own security personnel and systems, as well. The armed Federal agents and double layer of electronic security installed by the FPS provide the redundancy needed for air-tight Federal security. Even the electronic and computer systems have two layers of tamper-proof alarm protection using state of the art techniques.

The FPS radio network operates on frequencies in the Federal radio band between 413 and 417 MHz. As with most public service stations, the FPS system uses narrow band FM for voice communications. The radio consoles in any such system are little more than audio and switching units for remotely located transmitters and re-

Frequency List

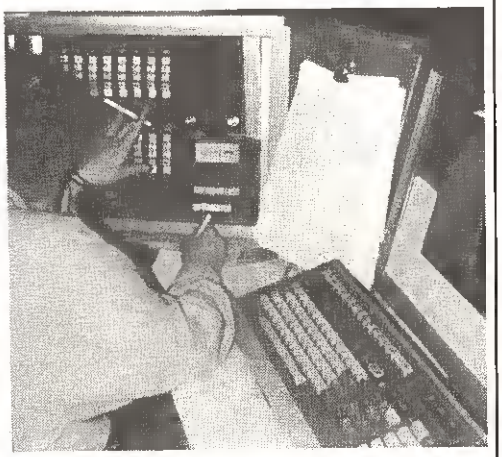
Region 1	415.20/417.20 MHz
Region 2	40.35/166.35/415.20/417.20 MHz
Region 3	163.075/163.175/168.575/419.175 MHz
Region 4	415.20/417.20/419.175 MHz
Region 5	413.875/415.20/417.650 MHz
Region 6	415.20/417.20 MHz
Region 7	163.125/164.175/164.700/415.20/417.20 419.175 MHz
Region 8	166.225/417.20/419.175 MHz
Region 9	168.8/415.20/419.175 MHz
Region 10	163.025/417.20/419.175 MHz

ceivers. The actual transmitter is usually located on the top floor of the highest building in the area, just below the antenna. The network utilizes a series of remotely located receivers and repeaters to eliminate radio "dead spots." This provides the officers, whether on foot or mobile patrols, with dependable communications. Officers in mobile units have a choice of five different channels, though they usually stay on one frequency in any given area.

A radio station operated by the Federal Government, though given a callsign from the standard FCC pool for government stations, is not under the jurisdiction of the FCC. The National Technical Information Administration (NTIA) is responsible for issuing specific callsigns, frequency allocation and assuring compliance with Federal regulations.

The radio equipment is a small part of the equipment used by the FPS communication officers. You may not have noticed, but any time you are in a Federal Building you are under the all-seeing eye of the FPS. Each entrance is monitored electronically and visually. A communications console will incorporate up to 25 CCTV screens. Some cameras are locked onto sensitive areas and others are continuously scanning. Most entrances have at least two sensors monitoring it at all times. Both computer and dedicated alarms have tamper-proof protection.

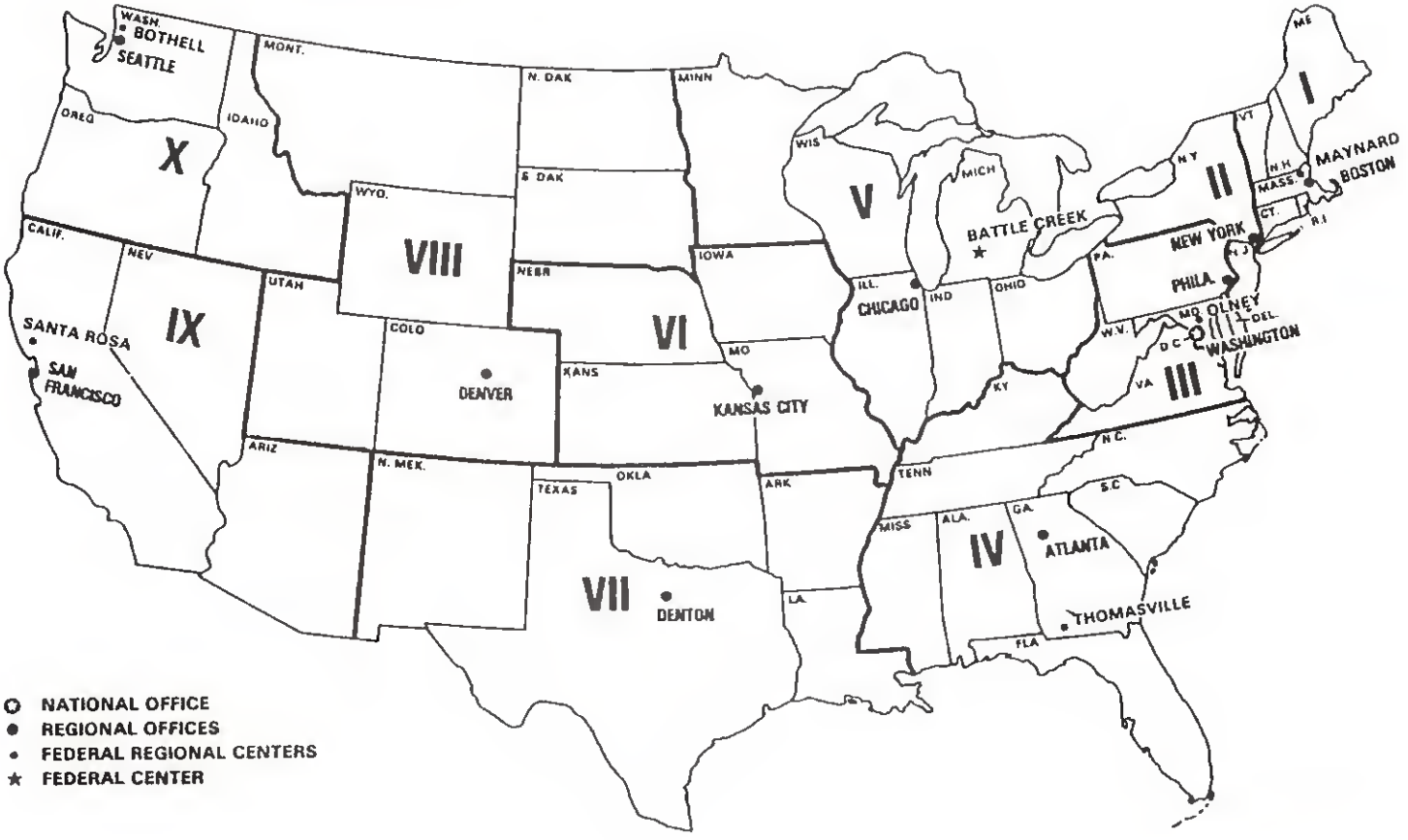
Some of the most sophisticated equipment used by the FPS to convey security and video information from remote sites uses microwave transmissions. The responsibility for the design, installation and operation of such systems falls



Communications consoles may include numerous elctronic and visual monitors, and a network of computer and alarm systems.

FEDERAL EMERGENCY MANAGEMENT AGENCY

REGIONAL BOUNDARIES WITHIN THE CONTERMINOUS UNITED STATES



on the Physical Security Specialist. These men are usually experienced officers that have undergone extensive training in this specialized area.

Most Federal agencies divide the country up geographically into a dozen or so administrative regions. The FPS is no different; it has ten. Each region has a Regional Communications Center (RCC). Note the accompanying U.S. map. Each city with a star designation is an RCC. The regions are then divided into districts. Each district has a District Communication Center. All officers in each district are dispatched from this center. These dispatchers use the traditional 10 codes used by other Law Enforcement agencies.

All Federal law enforcement officers, whether DEA, ATF, IRS or FPS, receive eight weeks of intensive training at one of the Federal Law Enforcement Training Centers. This program includes training in law, fire arms, psychology, terrorism, explosives and hostage training, among others.

With the usual threats against the government and political leaders and with the increased threats from terrorism, perhaps you will take some consolation next time you enter a Federal Building in knowing a well trained Federal police force is watching. If you're lucky, maybe you'll hear them, too.

MT

All Federal law enforcement officers receive training in such subjects as psychology, law, terrorism, explosives and being taken hostage.

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12 Band, 200 Channel, Handheld, Search, Limit, Hold, Priority, Lockout

Frequency range: 29-54, 118-174, 406-512, 806-956 MHz.

Excludes 823.9875-849.0125 and 868.9875-894.0125 MHz.

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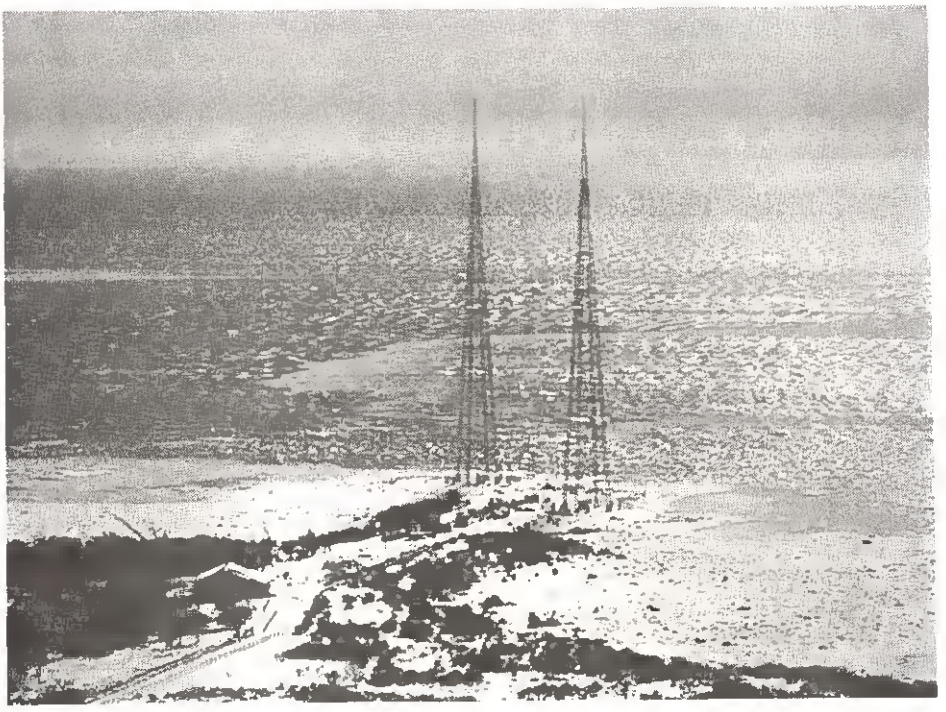

A Small Broadcaster on the Cutting Edge

By Jeff Chanowitz

The new medium wave station at Solvesborg has increased coverage to Europe.

If innovative, controversial, critical, accurate, and sometimes humorous programming is not what you receive from your favorite shortwave station, then tune your dial to Radio Sweden International. It is a small external service, which has quietly become one of the top innovators in the world of shortwave broadcasting, bringing listeners the latest in Nordic news on a daily basis.

Broadcasting from the Swedish capital, Radio Sweden's studios are located in a tall, white building in central Stockholm along with other divisions of the Riksradio, which is Sweden's national radio company. With a budget of only 8-million U.S. dollars, Radio Sweden's 70-staff members work hard producing over 19,000 hours of programming each year for shortwave listeners worldwide.

In a somewhat ironic twist, the idea for the Swedish service originated in the United States. While a member of the Swedish parliament was visiting America, he happened to come into contact with a radio engineer who pointed out the attributes of shortwave. Impressed with the idea, the parliamentarian went back to Sweden and introduced a bill authorizing the formation of a new external service.

In 1938, after test transmissions conducted by the Stockholm Institute of Technology, a short program was broadcast for Swedes abroad from a 12-kW transmitter in Motala, in Central Sweden. With the outbreak of the Second World War, Radio Sweden started transmissions in German, English and French. The service differed from many at the time, producing programming and news, which Swedish law mandated should be diverse, objective and impartial.

From the 1950's to the present, Radio Sweden has continued to expand while retaining its objectivity. Also, during the last forty years, parliamentary commissions have studied Radio Sweden many times to ensure the service's effectiveness. This has lead to unique innovations. During the 1960's, transcription programs were added as a resource for poor radio stations of the Third World. Other studies have resulted in a new commitment to Baltic languages. One recent commission recommended cutting Radio Sweden's DX/tele-communications program from a weekly to a biweekly schedule.

At present, broadcasting is in eight foreign languages including German, French, Spanish, Russian, Estonian, Latvian, Lithuanian, and English. Radio Sweden is the largest external service in Scandinavia.

Two-Fold Programming

As part of its original mandate, Radio Sweden has both a primary and secondary mission. As External Services Director Hans Wachholz explained, "Our main task is to inform Swedes abroad about all major events in Sweden. Additionally, we also try to inform foreign peoples about Sweden and the Nordic region."

Wachholz also clarified the difference between the respective missions of the Swedish and English services. "The Swedish service covers national news. However, the English service is more regional in scope because our listeners are more interested in the news about all the Nordic region," (Sweden, Finland, Norway, Denmark, Iceland, and Greenland).

Competing with the common stereotypes of beautiful blonde women, blinding snow, and superstar tennis players, Radio Sweden has a lot of work ahead of it informing listeners about life in a country with a population of 9-million and one of the highest standards of living in the world. Since 1972, Bill Schiller, an American expatriate, has worked hard as a radio producer and announcer to transform stereotypes into accurate images of Sweden. His views about broadcasting are similar to many at the Swedish service stating, "Our job is to provide a critical view of Sweden and not to be afraid of breaking barriers."

"Sexuality in the Nordic Zone" is a program that's an example of Radio Sweden's innovative philosophy. Started by Schiller in response to the many requests for pornography by listeners (mostly Japanese) who confuse Sweden's non-Victorian, open sexual values with a culture that promotes pornography, the program presents information on a wide array of issues ranging from the gay rights movement to the HIV virus to information on contraception and sexual values in Sweden. Since its inception, the program has received mostly positive feedback from its listeners. In Kenya, the program, which is distributed to local radio stations through Radio

Sweden's transcription service, has received a great amount of praise for the information it delivers on AIDS and sexually transmitted diseases, which is hard to obtain in poor African countries.

"We try not to be afraid of being controversial," Schiller said of the external services coverage of Sweden. The fact that Radio Sweden has been the only Scandinavian external service to produce stories on the growing problem of racism against the new immigrant populations in Finland, Sweden, Norway, and Denmark is one example of this philosophy.

Schiller recalled covering a story that involved discrimination against Gypsies. At a theme park outside Stockholm, Schiller interviewed the father of a child that was prohibited from going on the ferris wheel because he was a Gypsy. In a country that has been critical of discrimination against blacks in the U.S. and South Africa, the story was very controversial and did not present Sweden in a very favorable light, but Radio Sweden aired it anyway. Schiller's opinion of this reporting style is that "Sweden gains by having us present a critical view."

When possible, Radio Sweden tries to cover many of the important issues such as Third World poverty, human rights (the service pioneered monthly reports from the human rights group Amnesty International), and the destruction of the world's environment. However, Schiller also tries to avoid some of the pitfalls of covering hard news issues. "I try to not just produce political stories dominated by interviews with experts," he says. But one of the obstacles with which Schiller has to contend in obtaining man-on-the-street opinions for Radio Sweden's programs, is the quite reserved nature of Swedes. Getting the average Swede to comment on issues in English is quite a challenge. Even in politics this is true to a degree; Schiller commented, "If a politician raises his voice in public, it is quite a story in Sweden."

Although Schiller is strongly committed to hard news, he stated, "I don't think we laugh enough at Radio Sweden." Schiller recalled a story he produced on snuff boxes for his "Sexuality in the Nordic Zone" program. During the 16th and 17th century, many snuff boxes also contained pornographic pictures. Schiller recalled talking to the curator of the National Museum of Art in Stockholm that displayed the boxes. The story became increasingly humorous as the embarrassed curator tried to describe the graphic art.

During the 70's, Radio Sweden aired an extremely popular show called the "Saturday Program," which presented political satire on a weekly basis. Even the PR department of Radio Sweden likes a spoof occasionally. The cover of a recent program schedule featured a bear playing tennis. The word for bear in Swedish is Bjorn, also the first name of tennis star Bjorn Borg.

As one of the innovators in shortwave, it's not surprising that "Sweden Calling DXers" is the oldest running DX magazine in shortwave broadcasting. Dating back to February of 1948, the program was started by Arne Skoog and featured the latest frequencies and times. Today, George Wood, another American expatriate working at Radio Sweden, is the producer. The program is advertised as a bi-weekly telecommunications magazine that provides information about shortwave frequencies, but it concentrates mainly on satellite and computer news. "Sweden Calling DXers" also operates a computer bulletin board and has published valuable information guides that listeners can obtain. The two guides offered are "The Beginners Guide to DXing" and "The Dxers Guide to Computing."

Members of Radio Sweden's English department in action during a broadcast to Europe.

A member of Radio Sweden's Russian section, which was instrumental in relaying news to listeners in the Soviet Union during the crisis of the failed coup in August of 1991.

Broadcast Schedule

Europe/Africa/Middle East

UTC		Freq (kHz)
1500		15270
2030-2130	S	6065
2030-2130	S	9655
2030-2130	S	1179
2230		6065
2230		1179

Asia/Australia

UTC		Freq (kHz)
1230	S	17740
1230	S	15170
2030-2130		17730
0100		11730
0100		9685

North America

UTC	Freq (kHz)
1500	21500
1500	17870
0200	11705
0200	9695

Sarah Roxstrom getting the latest information on a late breaking story before she goes on the air at Radio Sweden's studios.

Additional programs include "Dialog," which is a collection of interviews and reports on the Third World produced by Schiller. Radio Sweden answers some of the 40,000 letters sent in by listeners on the bi-weekly program "In Touch with Stockholm," which is hosted by Alan Prix and Al Simon.

In addition to answering mail, Radio Sweden is very "listener friendly" and sends out a number of different QSLs, which are actually converted postcards. As proof of their openness toward listeners, most QSLs are sent promptly with the turnaround time from the U.S. to Sweden and back taking as little as eight days!

When sending QSL information, listeners should keep in mind that Radio Sweden wants constructive critiques of its programming. (Try to avoid just saying "your programming is great and please give me a QSL.") As an added incentive to write informative letters, on "In Touch with Stockholm" the best written letter is named the "Pick of the Post" and is awarded a station T-shirt featuring Radio Sweden's famous moose mascot Gustafson.

Also, don't forget to include your telephone number in your letters. If you write to ask an interesting question or have a different view on a subject than presented by Radio Sweden, the station might call you and ask your opinions about different subjects on the air. In the past, topics ranging from Swedish history to the controversial appearance of the not-so-Swedish "Swedish bikini team" in U.S. beer commercials have been covered on the program. To receive a QSL, listeners should remember to include the date, time, location, frequency, and reception quality.

Weekly or bi-weekly programs include "Swedish Spectrum," which is a Nordic arts and culture magazine; "Business Scan," which provides information for the financially minded; "Sports Scan," featuring interviews and scores; "Science and Ecology," an environmental magazine; "Slice of Life," a program that gives listeners a different perspective on the day-to-day aspects of life in Sweden; "Nordic Newsweek Roundup," which provides listeners with a review of the major events of the week; and "Thought for Food," which informs listeners about foods associated with Swedish holidays like Mid-Summer and St. Lucia.

On a daily basis, Radio Sweden presents "Sixty Degrees North," which includes news, interviews, and on-the-spot reports from Sweden and other Nordic countries.

Also, since last year, Radio Sweden has expanded its medium and shortwave English language programming to Europe by a half-hour. The new programming gives listeners a sampling of different types of Nordic music. Plans are underway at Radio Sweden to provide additional programming to shortwave listeners to North America; however, no date has been set to begin the broadcasts.

The Nordic Region

For those who see the Nordic region as lacking interesting stories or news of importance, the reality is quite the opposite in this under-reported region of the world. "A lot of changes are taking place in Sweden," stated Schiller. Once the model of a successful welfare state, Swedish voters have elected a center-right wing government that is restructuring many welfare programs. The creation of a single European economic market in 1992 and the ending of the Cold War has also put pressure on neutral countries to join the European Community. Additionally, immigration from the Third World along with the emergence of the environmental movement has shattered the political consensus that has characterized Swedish government.

Throughout these changes, Radio Sweden has continued its commitment to bring listeners comprehensive coverage along with the thoughts and feelings of the average Swede. It is the objective of Radio Sweden's programming, stated

THE JAPAN RADIO CO.

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The mail department helps answer the 40,000 letters sent to Radio Sweden's offices in downtown Stockholm.

Schiller, "to try to bring listeners a slice of life from Sweden."

For listeners located on the West Coast of the United States, a region where Radio Sweden's signal quality has been erratic, there is good news. The three 500-kW shortwave transmitters, which are located in Horby and Karlborg on the southeastern tip of Sweden, are scheduled to be upgraded in the next two years. The new transmitters should increase Radio Sweden's signal quality. In the medium wave spectrum, a new transmitter has just been installed at Solvesborg which has already increased Radio Sweden's coverage of Europe.

Radio Scandinavia

In response to the financial constraints and technological advances that have become part of international broadcasting in the 1990's, Radio Sweden has responded with innovative and creative proposals. Currently, Sweden, Finland, Norway, and Denmark provide separate external services on shortwave. Acknowledging the limitations for funding separate external services, Radio Sweden and Radio Denmark have proposed the development of the first multinational external service called "Radio Scandinavia." The new service would be incorporated under the Nordic Council, a quasigovernmental body which provides cultural, economic, and political cooperation between the Nordic countries.

The new service would broadcast on shortwave in English and German to North America and Europe. Radio Scandinavia would not eliminate national external services at first, but provide a cost effective method for Nordic countries to produce and transmit programs. Wachholz commented on the need for the external service stating, "Smaller Scandinavian countries are having difficulties relaying their signals. If we want to hold our position, we have to combine our technical facilities and transmitters."

He added, "We (the Nordic countries) are going through a great period of change ... the Danes, Swedes, and Norwegians are negotiating, through the EFTA agreements, with the European Community .... it will be an advantage if the Nordic countries would cooperate." Because of their location in Northern Europe, which is perceived as remote, Wachholz sees an even greater need for Radio Scandinavia. "Europeans know very little about the Nordic countries. There is a need for a more active Nordic identity and information. I think Radio Scandinavia will help provide this."

In the early part of 1991, the Nordic Council proposed the allocation of more than $300,000 U.S. dollars for a two-year trial of Radio Scandinavia. But, with the downturn in the economies due to the world recession, funding for the service remains in question. So far, Sweden, Denmark, and Radio Norway have responded positively to the new proposal. However, Finland has expressed reservations about the "Radio Scandinavia" project, questioning "the cost effectiveness of the proposal" and suggesting that "joint Nordic funding" might be used for other purposes. Due to the fact that the proposal is very new, its future is uncertain at the present time. Yet, with tighter budgets and with increasing competition from other broadcast services looming, it's likely that in one form or another Radio Scandinavia will play a future role for shortwave broadcasting in the Nordic Region.

The Changing World of Shortwave

The changing face of international broadcasting in the 1990's has also caused Radio Sweden to rethink the way it distributes its programming. As of March 1 of this year, Radio Sweden has launched a communications satellite service which provides digital quality programs for dish owners and for listeners with cable connections. The new satellite service provides Europeans with a full hour of Radio Sweden's English broadcasts on the Astra 1B and Telex Direct broadcast satellites. In addition to its satellite service, Radio Sweden continues to provide telephone hook-ups for local stations and a transcription service, which enables 150 local radio stations in the United States, Canada, and Australia to air Radio Sweden's programming on a weekly basis.

While Radio Sweden is using new technologies to reach listeners, its commitment to shortwave continues. Hans Wachholz commented, "With the installation of our new transmitters, we will broadcast on shortwave at least for the next 20 years." The importance of Radio Sweden's commitment is exemplified in its broadcasts to the Baltic countries—which provided them with vital information during their struggle for independence from the former Soviet Union—and to the United States, providing Americans with their only daily coverage of comprehensive Nordic news.

While technology is important, it's Radio Sweden's programming that separates it from other stations. At a time when mediocre broadcasters proliferate throughout the shortwave spectrum, it's good news that shortwave listeners can enjoy cutting edge programming from Radio Sweden, a small but dynamic broadcaster keeping listeners in touch with the top of Europe.

A broadcast schedule with Sweden's transmission times can be requested by writing to the following address: Radio Sweden, Box 105, S-105 Stockholm, Sweden. Listeners can also buy T-shirts, obtain QSL'S, or request Radio Sweden stickers by writing to the same address.

MT

Kevin Billinghurst re-reads a script. The professionalism of Radio Sweden's staff helps to keep the service in the forefront of shortwave broadcasting.

Kurdish Voices

By Charles Sorrell

Photo by I.C. Vanley, courtesy of The Kurdish Library

Kurdish children in a mountain village

They number some 20 million. Their history spans the course of a millennium. They are a nation living on their own traditional lands but a nation without a country of their own. No such thing exists, even though it was promised seventy years ago. Of course, the Kurds are not the only nation without a country in this day and age, but the fallout from last year's war against Iraq put them into our newspapers and made us more aware, at least for awhile.

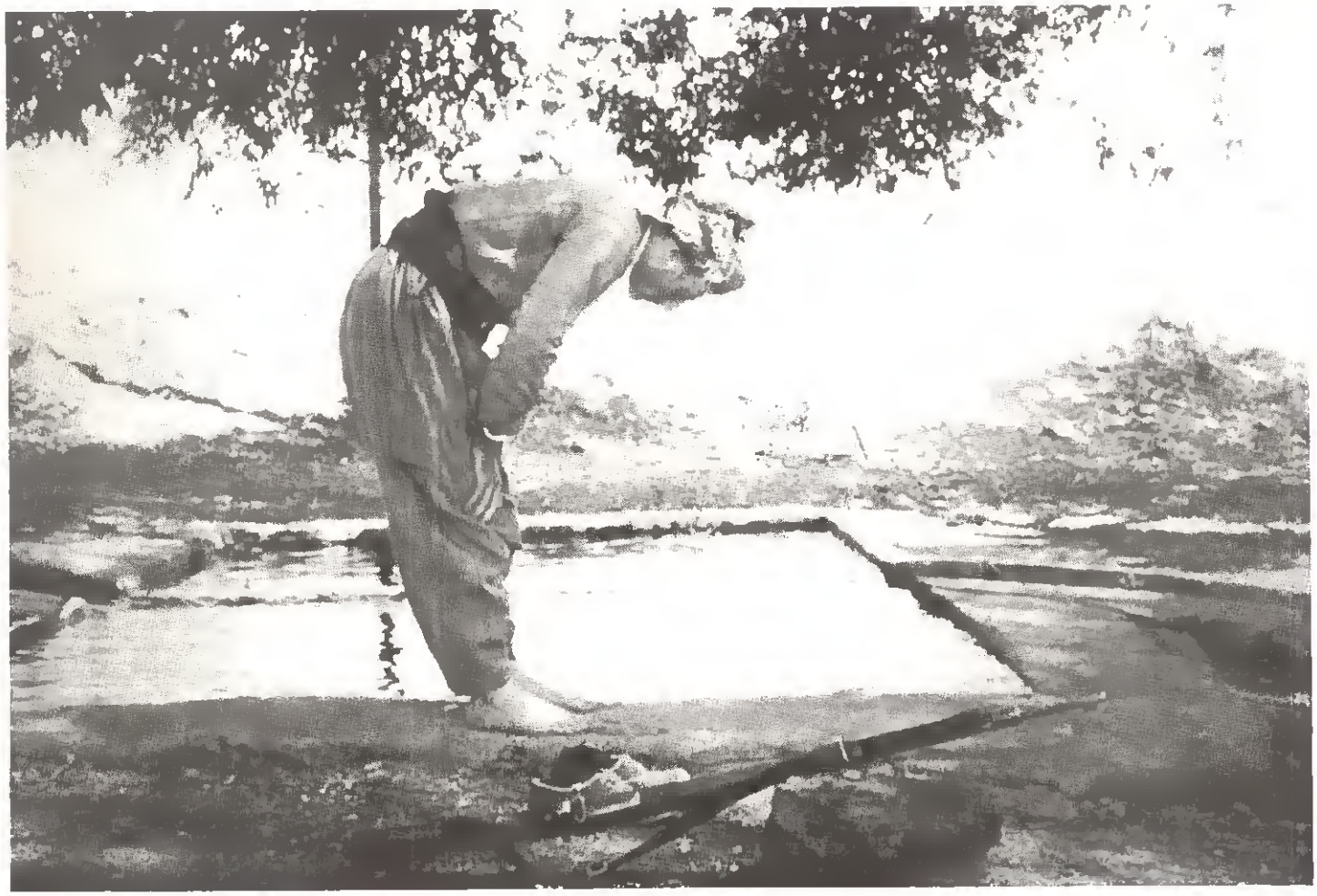
The Kurds are the fourth largest ethnic group living in the near-east—after Arabs, Turks and Persians. Their traditional homeland, unofficially known as "Kurdistan," spans an area from northeast Syria, through part of eastern Turkey, northwest Iraq and northeast Iran and also includes a part of the Armenian Republic.

In 1921, The Treaty of Severes created Iraq, Syria and Kuwait out of parts of the old Ottoman Empire. The Kurds were promised what was called a "scheme of local autonomy" which recognized their right to form an independent Kurdish state in what later became eastern Turkey. But the treaty was ignored and the Kurds have been trying to gain at least limited autonomy from the governments under which they live ever since.

Iraqi Kurds have been campaigning toward this end for seventy years, through their various political parties, guerrilla organizations and umbrella groups such as the Iraqi Kurdistan Front. Most have given up on the idea of a completely independent nation and are prepared to settle for autonomy in their local affairs—such things as free cultural and linguistic expression, local authority in police and civil matters and more income from the sale of oil taken from traditional Kurdish areas.

An agreement granting considerable autonomy to the Iraqi Kurds was signed with Baghdad in 1970 and then ignored by Saddam Hussein who, a year later, even tried to have one of the Kurdish leaders with whom he had negotiated assassinated.

Financed and supplied by Iran, Iraqi Kurds fought the Iraqi army in the Persian Gulf (Iran-Iraq) War, which led to Hussein's razing perhaps thousands of villages and employing chemical weapons against the Kurds. US intelligence agencies listened in on Iraqi radio communications during several of the attacks.



A Kurd begins his prayers.

Photo by I.C. Vanley, courtesy of The Kurdish Library

The Kurds' guerrilla war against Hussein received financial support from Iran's Khomeini. In fact, it's almost a given that governments in the area suppress their own Kurdish populations while supporting the autonomy aims of the Kurds in neighboring nations. Iraq supports Kurdish groups in Iran and Turkey; Syria, with a relatively small Kurdish population of its own, supports Kurdish efforts in Iraq, Iran and Turkey.

A Kurdish rebellion against Hussein after his Desert Storm defeat, encouraged by the US, was unsuccessful—at least in removing Saddam. At the moment the Kurds have control over some of their territory, but Baghdad has embargoed the area and this particular chapter of Kurdish history hasn't ended.

In contrast to Iraq, Iran has largely suppressed its Kurdish population. The main Kurdish political party, the Kurdish Democratic Party of Iran and others of varying political views are not conducting much, if anything, in the way of a campaign against the Tehran government.

Turkey has long refused even to acknowledge that it has a Kurdish population (estimated at about eight million); instead, it calls them "mountain Turks." Turkish policy is to assimilate the Kurds into Turkish life and culture and, until recently, Kurdish songs and the language were banned in public.

Turkey does not want an independent Kurdistan carved out of Iraq and sitting on its border. Indeed, in 1983, with Baghdad's approval, the Turkish army crossed the border to hunt down Kurdish guerrillas operating out of sanctuaries inside Iraq. This guerrilla war conducted by the (Turkish) Kurdish Worker's Party (PKK) and backed by Syria and Iraq has so far taken about 2500 lives. The PKK is believed to number only around 400 fighters and to be operating out of sanctuaries in both Iraq and Syria. Only a small minority of Turkish Kurds are seeking complete independence, however. Most would gladly settle for more Kurdish autonomy within Turkey.

On The Radio

(All times UTC, freqs kHz)

There isn't much. The Kurds, in whatever country they may be living, get almost no attention from the big international broadcasters. The schedules of the BBC, the Voice of America, Radio Moscow, the Voice of Germany and Radio Beijing list no broadcasts in Kurdish.

Even more surprising, the Kurds are not served even by the larger Middle East stations. Radio Cairo, Radio Damascus and the others ignore this audience. Not surprisingly, given the government's aversion to publicly acknowledging the Kurds, the Voice of Turkey also has no Kurdish programming.

It seems that only Baghdad and Tehran pay any attention. Iran's Kurdish language broadcasts are only on medium wave, running for six hours per day on three channels—639, 846 and 1197 kHz (the first two are 400 kW transmitters, 1197 just 20 kW).

The slow return of Baghdad Radio to shortwave brought a Kurdish service to the air last fall—announced as "the Kurdish Radio of the Republic of Iraq." It was being monitored by US listeners signing on at 0230 UTC on 6540, sometimes 6560. The Kurdish language ID is "Radiyuy Kurdi Jumhuriyati Iraqs la Bagha." The sound of a clucking chicken is used as an interval signal prior to the opening announcements.

Clandestine Kurds

With so little Kurdish programming on shortwave, the main Kurdish voices on the high frequencies turn out to be clandestines.

The Voice of Iraqi Kurdistan speaks for the Kurdish Democratic Party (or Democratic Party of Kurdistan) headed by Massoud Barzani who

is said to control the largest and best trained Kurdish guerrilla force. The KDP's resistance effort goes back to 1965 when it fought the government of Abdel Qassem. The station went on the air that same year and broadcast until the 1970 cease-fire agreement, then resumed again in 1974 when the guerrilla war against the government also began again.

The station has been heard using 5831, 6295, 1615, and and 5135 (varying to 5155) between 1600 and 1730 UTC and repeated at 0430-0500. Programs begin with the Kurdish National Anthem, followed by Koran recitations. The last fifteen minutes are aired in Arabic. Frequencies can be extremely variable.

The Voice of the People of Kurdistan speaks for the Patriotic Union of Kurdistan, one of the two largest Kurdish parties in Iraq (the KDP is the other). The group is headed by Jalal Talabini and receives support from Iran and Syria. This station has been logged by North American DXers in recent months.

The broadcasts are scheduled on 3930 (which varies to as low as 3800 and as high as 4040 but mostly stays within the range of 3930 to 3960) and 7075 (varying to 7100) at 0400 to 0530 (some schedules say 0600). Other air times are 1600 to 1800 (some schedules say 1500-1730) and 1830 to 1930. The times may vary somewhat and may vary considerably on Fridays. The station has also been reported to use 7340 and 15060 on occasion. It is supposed to be using 10 kilowatts on at least one of its frequencies. The Kurdish ID is "Aira Dangi Gelli Kurdistan." Some Arabic programming is also aired. In recent months this station has been logged in North America on 7075, coming on the air at about 0357 and beginning its program at 0400.

A new broadcaster surfaced this spring, calling itself the Voice of the Kurdish Revolution (Kurdish: "Aira Dangi Kurdistani Shurasha," or Arabic: "Idha'at Sawt Kurdistan al-Thawrah"). The sponsoring group is the People's Democratic Party of Kurdistan. The BBC Monitoring Service reports that it has been monitored in Kurdish and Arabic at 0500-0700, in Kurdish at 1400-1520, and in Arabic from 1520-1545. The frequency used is 6716.

To balance the scales there are two Iranian Kurdish clandestine stations:

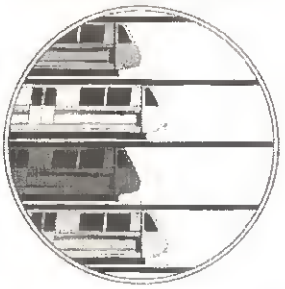
The Voice of Iranian Kurdistan is the station of the Iranian Kurdish Democratic Party, which is supported by the Iraqi PUK, the Mujahedin and a small segment of the Fadayin. It's believed to be located within Kurdish areas of Iran and first came on the air in the early 1970's. Its most recent schedule has broadcasts on 3875 at 0430-0530, 0900-1030 and 1530-1730. And on 4065v at 0230-0330, 0800-0830 and 1630-1800. The 4065/0230 combination has been in North America on a few occasions in recent months. The Kurdish ID is "Aira Dangi Kurdistani Irana" and carries the occasional ID in Farsi. It has also used 4550 in the last year or so.

The backers of the Voice of the Struggle of Iranian Kurdistan aren't known. The Kurdish ID is "Aira Dangi Khabati Kurdistani Irana" and the schedule runs from 1600 to 1700 on 7000, 0930-1035 and 1430-1530 on 7435.

Several things apply to all five stations. Frequencies and times are variable, sometimes highly so. Reception is very difficult and may be limited just to certain times of the year. Further, there are no known addresses nor are there reports of any QSLs having been received. Practicing Sherlocks who want to wage a QSL hunt might look first to Germany which has a significant Kurdish population (estimated at between 300 and 400 thousand) which makes it a place where various Kurdish political groups are likely to have offices.

MT

BART



Doing the BART Scan

Story and photos by Mike Morrow

The next time you come to the San Francisco Bay Area, exchange that "flower in your hair," for a set of headphones connected to a scanner. The Bay Area's airwaves are very active, with some of the most interesting frequencies used by the Bay Area Rapid Transit system, or as the locals say, BART.

Listening to BART communications may be most enjoyable as you ride. You can sit right behind the operator and hear as well as see how this light rail system operates. But, like most other communication systems, BART has its own set of abbreviations and codes. So, to get the fullest enjoyment, read on. Then when you visit, bring your scanner and tune in.

The System Layout

There are over seventy miles of rail divided into four logical track lines and five sets of stations. Only about one third of the trackway is underground, so riders can get a good view of the California countryside while relaxing in comfort.

The four train lines are designated with letters of the alphabet. The "A" line runs south to Fremont while the "R" line goes north to Richmond. The "C" line goes east to Concord and the "M" line extends to Daly City, the westernmost point served. All lines begin at the Oakland Wye (so named because three tracks meet, forming a "Y") near the headquarters building at the Lake Merritt station. Stations are prefixed with the line letter and are numbered sequentially by 10s along the tracks, starting at the Oakland Wye. The numbering scheme is used in some of the communications, but station names are used more often. It's possible that the Embarcadero station, which is 16, was an afterthought; its number is the only one which does not follow the pattern.

Another oddity about the BART track layout is that there are three "K" stations and some K track switches, but no K trackway. I could find no one who knew why this was done. It confuses even some train operators who, at times, claim there is a K track even though the maps show clearly there is not.

The trains each have a "run number," used in all communications between BART Central and train operators. There are four sets of numbers for in-service trains and one set of numbers for out-of-service trains. A number from the higher range of each series is usually used for a train which is not defective and is carrying passengers but is on the last run before being taken out of service at the end of the line. For instance, the 371 will be changed to the 771 and removed from service each night around 7 pm because of the decrease in passenger load.

The 900 trains are out-of-service trains. They will run through stations without stopping and have no passengers. When there is an event at the Oakland Coliseum, extra trains will be run to that station empty with a 900 series number. The train will be placed in service at the platform and have its number changed to reflect the actual destination.

There are at least two sets of rails, one for each direction, throughout the system. The "1" track is normally the track leading away from the Wye, and the "2" track is the one leading toward the Wye. It is possible for the trains to "reverse run" if necessary. This is a *great* time-saver when there is some problem requiring unusual or emergency train operation.

In fact, every car is capable of being manually driven and of controlling the entire train. It would certainly be an extreme circumstance which would require a train to be controlled from other than the normal lead car, but it is comforting to know that the capability is there.

All trains, track switches and signal lights are normally operated by one of the computers at BART Central in Oakland. Only on rare occasions will a train develop some problem which requires the operator to control the train or the track switches manually. When the operator is running the train, it is limited to a maximum of 25 miles per hour. When the computer is driving the train, it can go as fast as 84 mph. As with any railroad, if one train gets delayed, all trains behind it are delayed, too, so great emphasis is placed on keeping trains moving on schedule under computer control.

Monitoring BART Communications

When operators need to communicate with BART Central, they use portable, hand-held radios or the built-in train radio. You can hear BART operator communications on 160.41 MHz. This channel is duplex and uses a repeater, so both sides of the conversation may be heard. The portables transmit on a frequency unusually close to the receive frequency causing some scanners to lose sensitivity if the operator on your train is using the more powerful train radio. In this case, you cannot hear what the operator is saying and you should tune to the portable transmit frequency of 161.505 MHz. (Remember to go back to 160.41 when the operator is through talking.) The more common duplex spacing is 3 to 5 MHz which reduces the possibility of proximity desensitization.

The outdoor antennas for this service are directional and point along the trackway so it can be difficult to hear these transmissions if you are far away from the track. They'll be almost impossible to hear in the areas where the track is underground unless you are at one of the underground stations or on an underground train.

Operators must call Central if automatic train operation (ATO) is lost and the train stops for more than one minute. There are many reasons this can happen. The two most frequent are: a missing Central-control computer-generated door close signal for which a train is waiting at a station; and loss of train-to-computer communication while the train is running, causing it to stop for safety reasons. Both of these are easily fixed, and usually the train is moving again within one to two minutes.

A train will slow down if the computer decides it is following another too closely. The trailing train will be slowed by the Sequential Occupancy Relay System or "SORS." The com-

puter can also completely stop the trailing train if necessary.

Occasionally, one car in a train will decide to act up by not following the commands of the leading car which issues orders to all of the others. One car may decide not to apply propulsion when required, not to apply the brakes or will even do the opposite action. You will hear these conditions referred to as an Item 19 or Item 20. In this case, the operator will frequently have to stop the train, if it is not already stopped, leave the cab and manually turn off the failing part(s) of the car with the problem. The system has a *very* good safety record, and usually errs on the side of safety.

The most devastating problems a train can experience are caused by the on-board computers. There are three of these, two of which are constantly controlling and monitoring the train. These computers also monitor each other and, if they disagree, will cause the train to stop. The operator can usually change which two of the computers are active and restore proper operation, but if not, all passengers have to wait for the next train. This computer error is called a SET.

Whenever the operators have a technical problem or question, they communicate with TANGO-1, the lead technician at Central, on 160.86 MHz. This, unfortunately, is a simplex channel, so only the BART Central side of the conversation can be heard unless you are on or near the problem train.

To monitor BART en route, always ride in the lead car in the direction of travel. This is the operator's car which relays computer orders to the other cars in the "CONSIST." (No one I've talked to knows the origins of that term.) You can see the operations panel with its controls, lights and two speedometers. The red one is the computer assigned maximum speed (about 80 mph), while the green is the actual train speed, usually less.

Mini-computers for Micro-control

The track has minicomputers placed every few hundred feet. These are named "Muxes" and are located at track shunts. You can see the muxes along the trackway in clusters of two to four white boxes. Hinged sun shields were soon added, when the muxes started causing problems in the heat. These mini-computers communicate speed orders to the trains and relay train position information to Central.

Sometimes, the muxes detect and report a train which is *not* there. This condition is called a False Occupancy, Fixed Object or just FO. These will cause the central computer to order the real trains to stop in order to avoid hitting the nonexistent train in front of it. Sometimes this can be corrected at Central with a "SORS" Reset, but sometimes the train has to be manually operated through the area with the problem and into an area where a mux will send proper speed codes.

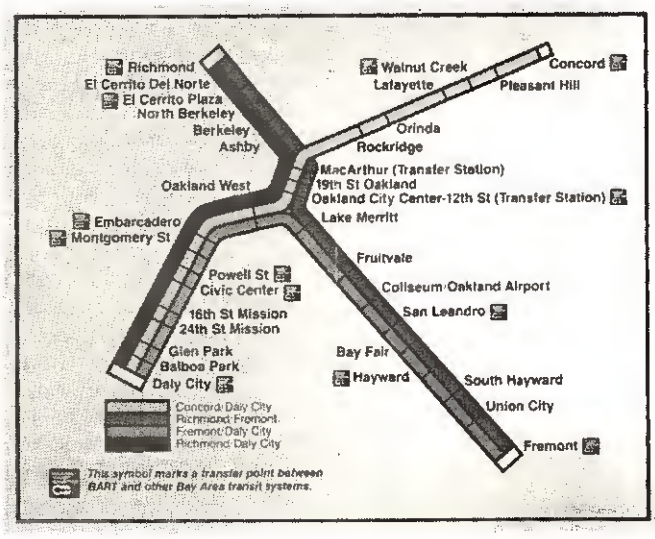
Yard Communications

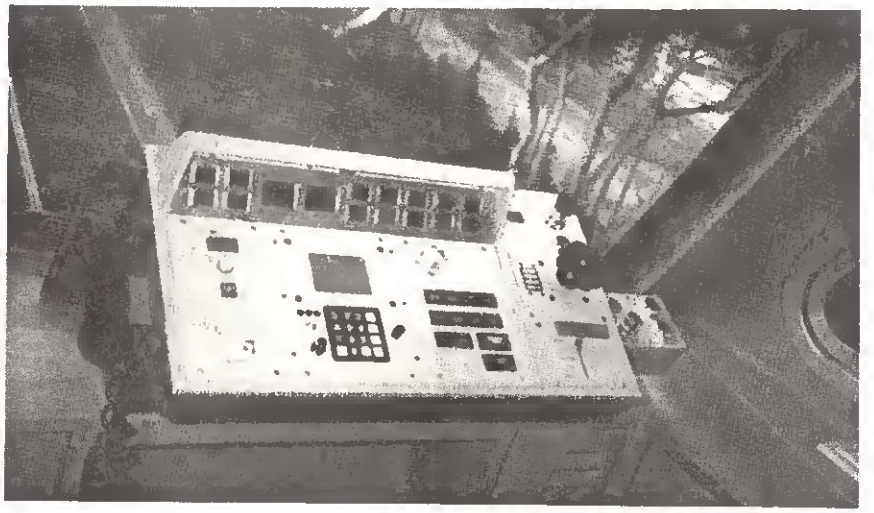
When it is time to take a train out of service and send it to the Yard, the operator "sweeps the train"—a walk through the train to be sure that everyone is off. There are four yards: near Concord, near Hayward, north of Richmond and south of Daly City. The Concord and Hayward yards can be seen in passing. The other two are beyond the end of the "revenue track"—the area where passengers are allowed. Only BART personnel are allowed on non-revenue parts of the track and on non-revenue (out of service) trains.

In the Concord yard, there is a wash rack on the Yard track nearest the revenue track and sometimes a train can be seen going through it as you pass the yard. It takes a lot of water to wash a train, but the water is recycled by the wash rack to conserve the area's limited supply.

If an operator is told to "make your own turn to the yard" then the operator will sweep the train and bring it in to the yard. Trains are brought to the yard to lengthen or shorten them depending on time of day and passenger loads. It costs about $1.50 to run a car a mile, so economic operation dictates that shorter trains be used when possible.

Two frequencies are in use at the yards. These operate with very low power and can only be heard for a limited distance to preclude interference with other yards, because the same frequencies, 160.455 and 453.975





MHz, are in use at all yards. One frequency is for yard operations and the other is a channel for use by personnel not actively moving train cars.

BART Police Force

BART has a large police force. They may be heard on 453.15 MHz. Most of the time they are concerned with passengers who smoke or eat on trains or in the stations (which is forbidden and can bring a stiff fine) or illegally parked cars. But sometimes they must respond to more serious matters. BART is usually quite safe due in large measure to the police who frequently ride the trains in uniform or in plain clothes.

There is one frequency within the system which is usually not very active. Power and Way is the department concerned with keeping the electricity on and the tracks free of problems. Their 43.78 MHz channel becomes more active as midnight approaches and the revenue trains stop running. Then maintenance personnel and vehicles are dispatched along the trackway to perform inspection and repair tasks. The Electrical Shop and Radio Shop at the Lake Merritt station also use this frequency.

The Evolving BART Car

You'll see three kinds of cars currently in service. The original control cars, or "A" cars, have a sloping, aerodynamic shape to them. Unfortunately, this design is a considerable liability as a dead "A" car can only be pushed or pulled from one end.

The original middle cars, the "B" cars with no operator area, are flat to allow coupling on both ends to make up a train of cars with one "A" car on each end. The design of the power (third) rail system requires that a train have a minimum of three cars as there is a gap in the third rail at some spots. A two-car train could be caught in one of those gaps and not be able to move or be pushed (the brakes would be engaged).

The "A" cars are more attractive but the coupling problem caused the next generation of cars to be designed with both ends flat. These new "C" cars may be located anywhere in the CONSIST. When they are in the lead position, they are converted into a controlling car, like the older "A" cars. When located somewhere in the middle, they can be configured as an order-accepting car like the "B" cars. The conversion takes only a few minutes. This dual role led to the identification of these dual-function cars as either "C/A" or "C/B."

A clever design allows one door to serve two functions in these "C" cars. When it is a "C/A" car, the door encloses the operator's compartment which stretches completely across the end of the car. There is no need for a passageway because there is no car beyond the "C/A" car. When it is a "C/B" car, it swings to allow passage between cars and encloses only the right half of the operator section where the controls are.

The "C" cars (built in France by the lowest bidder) have more advanced electronics but have brought more than their share of problems to BART. An example of the "over-intelligence" of the "C" cars is that they will automatically cut out any brakes which are determined to be malfunctioning.

This once happened in the Concord yard when a "C" car was being driven by itself (driving single cars is frequently done when building up a train). This "C" car decided that the brakes were not operating correctly and cut them ALL out, leaving the operator no way to stop the car. Usually, when a car's control system is turned off and the operating key is removed from the power switch, the brakes come on. But this operator was hanging the keys out the window so the yard supervisor could see that he had removed them while the car just kept on going. It eventually crashed into another car with no injuries to the operator.

The Phantom of the K-line

There is another "truth is stranger than fiction" story peculiar to the BART system. This one concerns the Phantom Technician of the K-line—doubly odd since there is no "K" line. On warm days, Concord can reach 100 degrees or more and the trains sitting at the station heat up. When the train starts operating, accelerating to 80 mph and braking back to zero, the control components can heat up even more, leading to propulsion or braking system problems.

Usually, there is no technician on the "C" line to help. TANGO-1 frequently advises that the nearest technician is on the "M" line at Civic Center station. But when the train comes onto the "K-line" (the C line with K numbered stations) the problem sometimes fixes itself before the train gets to the waiting technician on the "M" line. It's chalked up as just another successful main line repair for the "Phantom K-line tech."

Actually, there is a logical reason for this "repair." The stations on the "C" line are a long distance apart and high speeds are used between them. The "K" stations are close together, located in cooler Oakland and slower speeds are used. The overheated system(s) are cooled by the ambient air (sometimes fog), and start performing properly. And the "K line tech" works for free. If they could just find and hire more of them.....

Another testimonial to the safety of the BART systems could be given by the hundreds of thousands of commuters who relied on BART after the Bay Bridge was taken out of service by the 1989 earthquake. There was no damage to the BART train tube (lying along the bottom of the bay which connects San Francisco with Oakland) even though it is located almost directly under the bridge that failed.

In fact, there was no damage reported anywhere in the BART system. For safety reasons, the service was suspended overnight while the system was visually inspected and tested. Trains were back in normal service the next morning carrying a record number of passengers. There would have been major commute problems if BART had been out of service during the same period the bridge was being repaired.

I certainly hope that you will come and enjoy the Bay Area and BART—our smooth, quiet, speedy commuter transport system. If you have the time, make the round trip to Concord; you can ride for several hours for one low fare.

If you want to take a ticket home with you, add a nickel to the fare needed so the machine will not keep it when you exit the system. The tickets have a magnetic stripe which records the amount of money remaining to be used and the station at which you entered. Now, almost every credit card has this type of stripe on it, but 20 years ago it was quite a novelty.

And, by all means, say "Hi" to your train operator. They are generally quite friendly unless attending to a problem. Operators are most accessible at the Concord and Fremont stations. I have made several friends among the operators while riding BART and have learned a lot. My only warning to you is: remember to not breathe those BART fumes. You know how those electric motors pollute the air!

AEA is the...

Shortwave Solution

The IsoLoop 10-30 HF antenna is designed to work in limited space applications — apartments, condos, etc. Don't be deceived by its compact size (43" diameter) — it really works! Features include: Continuous coverage from 10 to 30 MHz; narrow bandwidth to suppress out-of-band signals; comes fully assembled (no mechanical joints); much more.

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A Survey of 9.7 - 10.0 Megahertz

By Charles Sorrell

About a year ago, we did a "band survey" covering the 6.000 to 6.200 MHz range. Several *MT* readers responded to this by making their own surveys of this frequency area—no small effort from the look of their results! Such obvious interest has encouraged another frequency survey, this time with an advance announcement so readers could participate ahead of time.

The 9.7 to 10.0 MHz range was picked at random. The hours—0100-0300—were selected because they figured to be among the busiest times for activity in this region and would thus be most likely to provide the maximum number of loggings. Monitoring at my shack was done during the second week of November, using an R5000 and well supplemented with the reader input I'd received by the 15 November deadline.

It seems conditions were not at their best and brightest during that week as there were many instances noted where stations which should have been providing nice, strong signals were, instead, weak and "fady." It can also be said that if you are out hunting real DX this is one part of the woods you needn't bother with very much. Most of what came through on the headphones was pretty tame stuff—there was very little that was even close to what you'd call juicy DX! At any rate, we whacked away at it and gave it our best shot. Here are the discoveries:

Times are UTC, frequencies MHz.

9.700 Radio Sofia, Bulgaria. Ends English at 0100 and goes into French. Deutsche Welle noted signing on at 0100 with their IS(interval signal) in German, under Sofia. The 1992 *Passport to World Band Radio* (PWBR) then recently published, shows DW here 2200-0250.

9.705 Radio Portugal International at 0100 and later in Portuguese to North America. English runs at 0230 Tuesdays through Saturdays (UTC date). A second station in Portuguese, probably Radio Nacional, Rio de Janeiro, was noted underneath Portugal around 0140.

9.710 Radio Moscow here in Spanish before and after 0100. Generally weak but I can't say if that's due to conditions or is a normal condition.

9.715 WYFR here in Spanish to Central America, and scheduled to 0445 according to *PBWR*. They sit on top of Radio France International to South America via French Guyana.

9.720 A noisy, garbled channel—even though there's little on it. The only station found was Radio Moscow—language undetermined at both 0100 and 0200.

9.725 TIAWR, Adventist World Radio, Costa Rica. Very strong as it ends an English segment at 0105 and moves into Spanish. Announces English for 1100 and 2300 daily.

9.730 Another noisy spot. However, Deutsche Welle was dug out of the hash on a couple of occasions. It is there at least from 0100, in German. The site is listed as Nauen, in the former East Germany.

9.735 Radio Nacional, Paraguay, in Spanish at 0100 and scheduled until 0300. Deutsche Welle also noted, in German, with a sign on just prior to 0200.

9.740 More garble. No signals noted at 0110 check. By 0230 the VOA had faded back, though only to a weak level. *PBWR* lists it as via Kavala, Greece, beamed to the mideast and Asia.

9.745 HCJB in English at 0115. Deutsche Welle also noted, at 0145, though *PBWR* lists nothing for them at this time. DW seems to be everywhere!

9.750 A failure here. An unidentified station was noted several times, always extremely weak, and no ID or other clues could be pulled out.

9.745 Radio Canada International, in English at 0100 plus, relaying CBC domestic programming. This is more or less dished out in half hour blocks and at times which are different practically every day of the week. RCI is in French at 0230 Mondays (UTC)

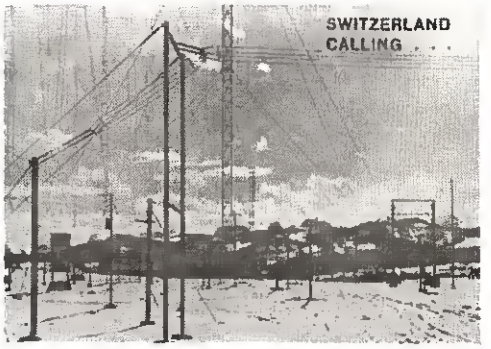
9.760 Radio Tirana, Albania. Strong in presumed Albanian at 0120. Parallel outlet found on 7.300.

9.765 Radio Sweden's interval signal noted at 0130 under an apparent Radio Moscow French language broadcast. Moscow in English noted at 0230.

9.770 Radio Beijing at 0130 in Chinese, transmitted via the 50 kW transmitter in Mali. Also at 0230 and later.

9.775 The Voice of America in English to Latin America via the Greenville transmitter site. Strong, needless to say.

9.780 Nothing noted on this frequency despite daily checks at various times between 0100 and 0300.



Swiss Radio International makes frequent use of 9.885 MHz, often in parallel with 12.035. This card is an "old timer" dating back to the 1950's.

9.785 During some "head start" monitoring (prior to 0100) a numbers station turned up here. I almost never hear these in the broadcast ranges. This was in English, running a 3/2 (three digits-pause-two digits) format at 0047 to 0052, then open carrier and transmitter off at 0054. An 0230 check one evening turned up a very weak station in Russian. Probably a Moscow outlet but it couldn't be positively ID'd.

9.790 Radio Tirana, Albania, with carrier on 0157, IS, open carrier, music and ID at 0200. Radio France International also noted here at 0100, 0159, in French.

9.795 Radio Moscow here in Spanish at 0115. Parallel to 9710 and 9880.

9.800 Radio France International in French at 0100. In Spanish at 0200 and scheduled on this frequency to 0300.

9.805 No signals noted in several checks of this frequency.

9.810 Radio Moscow in Spanish at 0120. Parallel to 9.710, 9.795 and 9.880.

9.815 A very weak carrier noted several times around 0100 but not strong enough to put a "make" on it. One utility station showed in sideband at 0130 one evening.

9.820 Again, a very weak carrier noted on several occasions but just too thin to identify. Hopefully these are cases of poor conditions and not an indication I need a significantly better antenna!

9825 An "unlogging." Simply an observation that the BBC, long a resident on this frequency, is apparently not using it during our North American evenings anymore, though it is listed in *PBWR*.

9.830 No signals noted in several checks.

9.835 Radio Budapest, Hungary, in presumed Hungarian at 0130.

9.840 The Voice of America, in Spanish to Central America via Greenville at 0200. Scheduled 0100-0400.

9.845 No signals noted in several checks.

9.850 Herald Broadcasting/Christian Science Monitor via their WCSN, Maine, at 0140, beamed to Africa. Radio Cairo, Egypt, noted in Arabic at 0245.

9.855 Radio Netherlands, in Spanish at 0245. Uncertain about the site, perhaps Flevoland.

9.860 Another weak, unidentified station at around 0215.

9.865 No signals noted in several checks.

9.870 Radio Austria International in German, 0200 plus. In parallel with 9.875.

9.875 Radio Austria International, in German. Weaker than 9.870.

9.880 Radio Moscow in Spanish just before 0100 and parallel with 9.790, but not so after 0100. Still there, in Spanish at 0200.

9.885 Swiss Radio International, poor, in English at 0210 and in parallel with 12035. This runs in brief on/off segments for much of our evening period.

9.890 Radio Moscow in Russian at 0215. Scheduled in *PBWR* to 0330.

9.895 Radio Netherlands in Dutch at 0215 and scheduled in various languages through our evening period. Radio Moscow also noted in unidentified language, underneath.

9.900 Radio Cairo, Egypt, in Arabic to North America at 0220 tune. Scheduled here until 0330.

9.905 No signals noted in several checks.

9.910 No signals noted in several checks.

9.915 The BBC at 0100 beamed to Central and South America. Scheduled to 0330. Not all that strong.

9.920 No signals noted in several checks.

9.925 No signals noted in several checks.

9.930 No signals noted in several checks.

9.935 (OK, I'll change the wording)—Nothing found on this frequency despite a number of tries.

9.941 La Voz del CID, the clandestine station run by Cuba Independiente y Democractica, broadcasting in Spanish to Cuba. Noted at 0100 plus and scheduled to 0500.

9.945 No signals noted.

9.950 A tentative All India Radio, Aligarh, here around 0100 but quite weak. Off at 0115, which is the listed closing time for this station on this frequency.

9.955 No signals.

9.960 No signals noted.

9.965 Radio Caiman, the anti-Castro clandestine which no one seems to know very much about. In Spanish at 0100 plus, scheduled to 0330.

9.970 No signals noted.

9.975 No signals heard.

9.980 No signals heard.

9.985 No loggings.

9.990 Empty through the 0100-0300 period.

9.995 No signals.

10.000 WWV/WWVH, of course. There was one evening when very poor conditions made it almost impossible to hear either one.

As mentioned, conditions were not the best during the several day monitoring period. Had that not been the case it's likely some of those unidentified stations might have been identified.

Anyway, there you have it. My thanks to Mrs. Leslie Edwards, Fred Harenberg, Bill Perkins, Don Wilder, Carey Macklin and one gentlemen who didn't want to be acknowledged by name.

So. Where to next? Does 7 MHz sound interesting? I'll beglad to get your suggestions!

Editor's Note: No, this band survey wasn't destined to go down in the book of memorable sessions. So why did we publish it, you say? Any such effort has value, if only to show you the inexact nature of shortwave broadcasting. Even experienced monitors can't always come up with record-breaking catches.

But perhaps conditions have improved now. Taking into account possible changes due to daylight savings time, why not see if you can't verify, contradict, or fill in the gaps left by these monitors? And if you'd like to participate in Charles Sorrell's next monitoring effort, send him a note via *MT*, and he'll let you know date, times and frequencies.

MT

Have you ever heard those amateur radio pileups trying to grab a contact from some remote DXer and found yourself wondering about the person on the far end? If it's something that has always intrigued you, read on; the experts aren't the only ones who seek out adventure.

A Yen for DXing

By Deborah K. Howe

Kiyoko rested in her cabin on board the Moana Roi, a 100' freighter that travels among the Kiribati Islands picking up copra, delivering goods, and transporting people from one island to another. She wasn't feeling well and felt lucky to have a private cabin on this leg of her long journey across the Pacific.

Kiyoko has a habit of travelling to remote Pacific Islands, places out of the way and off the beaten track. This trip was taking her to Kanton, a remote atoll located almost three degrees below the equator and nearly eight degrees east of the international date line. It's not the kind of place someone just drops in on. Nobody makes the journey without a reason. Kiyoko (NH6RT) was going to DX.

The news of Kiyoko's visit excited the residents of Kanton. Not only did they look forward to seeing a new face, but the arrival of the interisland freighter is always a big event. The day the ship was due to arrive everyone was on pins and needles, but, as usual, the Moana Roi was late. In this part of the world schedules are as flexible as palm trees. Several times during the day Nga Nga, one of the local boys, climbed piles of bulldozed coral, one of the high points of land on this low-lying atoll, in hopes of spotting the freighter. Ship-to-shore communications are poor, so no one knew exactly why the ship was late or where it was. They only knew that this was par for the course.

Kiyoko in her DX shack in Kanton. Deborah Howe

While the islanders anxiously searched the horizon, Kiyoko was dealing with the queasy feeling rolling around in the pit of her stomach. Usually Kiyoko prefers to sleep on deck, but under these conditions she was happy to have a quiet room to herself. The cabin also provided a protected place to store her gear.

When going in search of long distance or exotic radio contacts—DXing—Kiyoko doesn't travel light, especially when heading for remote destinations such as this. There are no stores on Kanton. The only place to spend money is at the post office, so along with her radio equipment, which she wraps in plastic and packs in cardboard boxes, and clothing, she carried bags of onions and potatoes and boxes of rice and noodles... twelve pieces of luggage in all.

Gradually, the sun lowered itself to the horizon; terns and frigates gave voice to a sharp, inharmonious bray as they returned to their roosts for the night. Answering the demand of the moon, the ocean rushed through the pass crashing against the bow of the Moana Roi as it motored past the "President Taylor," a sunken WW II troop transport lying in 30' of water off the entrance to the lagoon. The ship maneuvered its way up to the dock and Kiyoko had arrived once again at a new island.

The first time I saw Kiyoko she was in her shack, a closet-sized cubicle which is, in reality, the Kanton post office. In the shadows of this breezy little room surrounded by coconut palms and located a football field from the lagoon, she leaned into the microphone sorting out the amateur radio operators grabbing at her across the airwaves. With the mike held loosely in one hand she rapidly repeated call signs and issued signal reports while the other hand instantaneously logged the information. The desk in front of her held her equipment—a Kenwood TS-680S

receiver, a Yaesu FL-2011 linear amplifier, and a Daiwa PS-300 DC power supply. Outside, her Yamaha generator hummed, giving life to the operation.

Every time I walked to the village the generator purred and there she was, DXing. It would be fair to say that Kiyoko has an obsession with amateur radio, an intense love affair. And to top it off, Kanton was Kiyoko's last stop on an eleven country tour and she wanted to make the most of it. If it hadn't been for a cold and sore throat that kept her off the radio for a few days, I may never have had the chance to talk in any length with Kiyoko.

Kiyoko is a tiny Japanese woman, well under five feet. Her hair is long and usually tied behind her head in a ponytail. Her conversation is peppered with laughter, stemming from a sense of humor that held her in good stead while dealing with the adversities of travel.

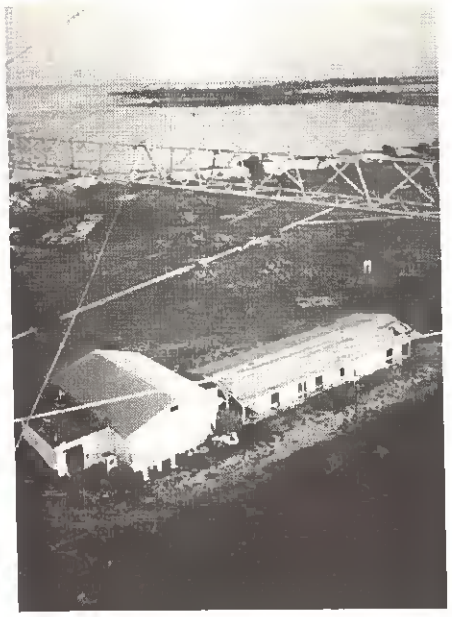
The path Kiyoko followed across the Pacific is an interesting one. She began in American Samoa and from there travelled to Raratonga, Nine, Fiji, Nauru, Vanuatu, Puka Puka, Western Samoa, Tokelau, Tarawa, and Kanton. And lest that sound all too simple, these weren't straight hops. She was in Fiji at least three times travelling from Tarawa to Fiji to Vanuatu and later back to Fiji again. She returned to American Samoa innumerable times in order to connect with flights and boats. Trace it on a map and the path she followed becomes a maze chosen as much by unreliable transportation to distant shores as by choice. Other than a couple of trips made with friends, she travelled on her own.

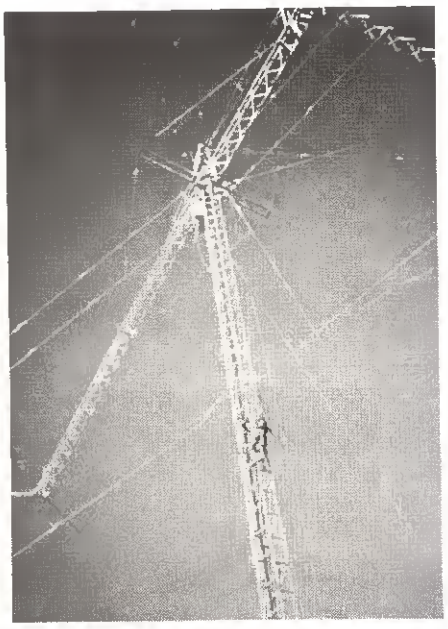
I asked Kiyoko if she found it difficult to travel alone. I was especially curious since many Polynesians maintain strict guidelines for women and innocent actions by visitors from other countries can lead to compromising situations. Kiyoko was aware of the intricacies involved. "When the Polynesian people drink a lot, they lose themselves. But if they are not drinking, they are very polite to women, so I have had no problem. I think some parts are easier for a woman alone. Many people help me, but if I was a man, I think nobody would help."

Kiyoko has interesting stories to tell. She talks about a month spent on Suwarrow, her favorite island, where between DXing she had the opportunity to visit motus (small islands) in the company of scientists who just happened to be there the same time as she. Accessible only by boat, Suwarrow is a national park and bird sanctuary under the control of the Cook Islands. There boobies and terns reproduce on motus forbidden to the rare tourist. She explored nesting areas where hundreds of eggs painted in camouflage by mother nature lay on the ground. Thousands of birds viewed her and her companions as the enemy and, like a scene from Alfred Hitchcock's "The Birds," made low-flying passes in an attempt to drive the intruders away. Kiyoko was in

Deborah Howe

While the generator hums, Kiyoko talks to the world from what is normally the Kanton post office.





David Howe

Giant antennas on abandoned government buildings are mute reminders of WWII and the early days of satellite tracking.

awe. "I'd never seen anything like it before."

As much as she enjoyed what the island had to offer, when I asked Kiyoko why Suwarrow was her favorite place, her reply was, "Because I had a good pileup." Not only was a large congregation of people trying to talk to Kiyoko, but she told me, "When I was in Suwarrow the conditions between there and Europe were very good. I like European stations. When I get a Japanese pileup, it's always the same country...Japan, Japan, Japan. The same with the United States, but in Europe, there are a lot of countries. I like that. Nobody knows what the next country will be."

Her Kanton station received a good deal of pileups, too, but mostly from the U.S. This time the European stations were light. "If they are very weak and a lot of people call, it's a lot of work. I call and call and call, but they can't hear who I call back."

Kanton, too, was a unique place to set up a station. It's a difficult island to reach, thus very few radio operators have transmitted from here. Also, the island has an interesting history and an abundance of relics from the past remain.

In the 1940's, when a flight from the United States to Australia took four days and required three stops, Pan American Airways landed their Flying Clippers on Kanton. The British and the U.S. occupied the island during WW II and in the '60's the U.S. government maintained satellite tracking stations here.

Before Pan Am developed the island in 1939, the only living things on Kanton were birds, hermit crabs, rats, and lizards. By the 1950's there were two hotels, shops for machines, autos, and paint, a commissary with well stocked shelves, a hospital fitted out with equipment for x-rays, lab work, and surgery, and a thriving community of 280 people.

But all of these people have gone. They walked away from the island leaving everything behind. Today forty-two Kiribati people, hired by the government to act as caretakers, live amidst the technological debris abandoned by the U.S. and England. The islanders have moved into the wooden houses built by Pan Am and live in the shadows of giant antennas installed by the U.S. government. A monster radar stands like a monument to the past.

At the time this was written, Kiyoko had made 70,000 contacts in her travels and another 10,000 while she was living in American Samoa. Sending out QSL cards could be a full time job.

The money she saved while working as a lab technician at the Lyndon B. Johnson Memorial Hospital in American Samoa financed her adventurous expedition. Kiyoko estimates she has spent approximately $10,000 in the last nine months. Not a bad price, considering that covered all her living expenses for that period in time.

Her housing is inexpensive. "There are a lot of Japanese working in the islands in the Pacific. So when I go somewhere I can find Japanese and stay with them. The Japanese are very kind." If there are no Asian friends to be found, as on Kanton, Kiyoko stays with locals. And as for the price of travel, "Most of my money has gone for air transportation. Travelling on boats is not so expensive."

That is, except for the trip to Kanton. It's cheap to get there but expensive to get off. Since the interisland freighter calls on Kanton about once every three months, Kiyoko had to pay $1,500 Australian (approximately $1,175 U.S.) for the Moana Roi to divert from its course from Christmas Island to Tarawa to pick her up approximately two weeks after dropping her off. But Kanton was her last stop and she was willing to pay the price. What's most amazing is that she paid so much money for a round trip ticket, yet was assigned to sleep on deck. It was when she was looking for a place to store her equipment that the chief engineer decided to loan her his cabin.

Sleeping on the deck of a freighter is an experience in itself. It would be safe to say that more people pay for a private suite at New York's Waldorf Astoria in a week than for a private cabin on the Moana Roi in a year. Thus the decks are layered with hammocks, mats, food, and people ... wall to wall, rail to rail. There's barely room to walk. But amazingly, when Kiyoko is feeling well she prefers sleeping topside to a private cabin. "It's too hot and stuffy below. On deck there's a lot of wind."

I asked Kiyoko what advice she would give to those interested in making a trip such as hers. "You need a lot of time and patience. My friends tell me I don't make schedules, but no one can in these Pacific Islands. That is a good point to pass along. Transportation cancels. There are always delays."

When I asked what equipment she would recommend, without hesitation she replied, "I think other people know better than me." This was Kiyoko's first DX expedition and only the second year she had her license to operate amateur radio.

I was curious to know if Kiyoko would package her radio gear differently the next time around since plastic wrap and cardboard didn't sound all that secure to me, but Kiyoko was blase. "You just put it in a plastic bag first, and then a box."

Kiyoko speaks of going home. She says she's out of money and plans to go back to work. She wants to work in Tarawa, not Japan, at a hospital financed by the Japanese. But in the next breath she talks of future ramblings ... trips just months away. She hopes to join an expedition to Clipperton aboard a privately chartered yacht. Where she will be in six months is hard to predict.

The last time I saw Kiyoko she was sitting in a long wooden boat atop a mountainous pile of boxes and crates. This time the Moana Roi didn't pull up to the dock. Having arrived past dark she prudently hove to outside the pass and sent a tender in to pick up Kiyoko. This meant Kiyoko would have to climb up the side of the boat on a dark night while the ship rocked from side to side in the swell. Just another part of travelling to remote areas ... one of those moments that makes the trip an adventure instead of a vacation.

It was late, the middle of the night, but everyone from the island was there to see her off. Money cowrie necklaces (gifts from the locals) hung from Kiyoko's neck. She waved goodbye as she was ferried out to sea where the Moana Roi waited to carry her off into the night.

MT

Shortwave Broadcasting

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All frequencies kHz

ALBANIA Radio Tirana announced its new English schedule: 1430 UTC on 9760, 7155; 2200 on 11825, 9760; 0230 and 0330 on 11825, 9580—but 0330 actually heard on 9580, 7170, 6030 (BBC Monitoring) For a while 9580 conflicted with Yugoslavia, both in English at 0230 (Norman Blakely, Ont.) In current financial crunch, they may rent time to other stations, at least on MW 1395 (Radio Netherlands *Media Network*)

AUSTRIA RAI's *SW Panorama* schedule in full: Sundays 1030 on 15450, 21490; 1130 on 6155, 13730, 15450, 17730; 1330 on 15450, 17730; 1530 on 11780; Mondays 0330 on 9870, 13730; 0630 via Canada on 6015. Same for *Coffeetable* 24 hours earlier. *Mailbag* moved to UTC Sunday on other transmissions, such as 0145 on 9875, 13730; 0545 on 6015 (via Diane Mauer, Daryl Rocker)

BANGLADESH Radio Bangladesh, English at 1230-1300 barely audible on 15225v, fairly good but low modulation on 15200v (Sarath Weerakoon, Sri Lanka, WDXC *Contact*)

BELGIUM *Brussels Calling* announced its retimed summer schedule: 0630 on 5910, 11695; 0900 except Sundays on 9905, 13675; 1300 except Sundays 1130 on 17555, 21810; 1800 on 9905, 17550; 2100 on 5910, 9905; 2330 on 9930, 13655—most also on MW 1512 (via John Norfolk, Rocker)

BOLIVIA Radiodifusora Machupo, San Ramon de la Ribera, Provincia Mamore, was back on SW 4625.70, at least for holiday in mid-March; slogan "la mama radio." Frequency is almost same as inactive Radio Emisoras Aguadulce, 4625.60—same transmitter?; Radio 20 de Diciembre, Culpinas, heard on 3745-3747v around 0102-0205 sign-off; Radio Galaxia, 5120.87 at 2355. (Juan Carlos Codina©, Peru, via Dario Monferini, *World of Radio*)

CAMBODIA (non?) Voice of the Great National Union Front, the Khmer Rouge station, moved from 5408 to 5200, at 2330-0200, 0800-1000, 1200-1500 (BBCM)

CANADA RCI gradually resumes more of its own program production with *Innovation Canada*, alternate weeks at 0030 UTC Monday (Don Thornton, NJ, *W.O.R.*) Probably now 2330 Sunday on 5960, 9755. All relays via BBC have moved to Skelton, with Daventry closed. Arabic at 0330-0400 is via three different external sites only: Austria 11925, Portugal 11970, Germany 15390; at 0430-0500, Germany on 15215, 17745, Austria on 15275. (RCI) Sad news: Barbara Frum, the original host of *As It Happens*, succumbed to her 18-year battle with leukemia March 26 (Frank F. Orcutt, NY, *W.O.R.*)

COSTA RICA Radio Exterior de Espania planned to start testing a new relay here in mid-April—three 100 kW, two antennas, satellite downlink; it's expected to cover only a 4 megameter radius, mostly in Spanish, but also English, Quechua, Guarani (Felix Gallardo, REE PR Dept. on RN *Radio Enlace*)

Radio for Peace International carried *Farm Aid* live from Dallas in mid-March, with enhanced audio phone feed, not satellite, including many exclusive celebrity interviews. Cable TV company interfered with the audio feed. A new 30-kW transmitter under construction should start testing this summer with 8-element quad antenna on 120-foot tower. Listenership is estimated to jump from 35,000 to one million per night. New programs for Radio New York International are not arriving weekly. When received, they will be run Saturdays at 2000-2200, otherwise *Peace Forum* and *World Citizen's Hour*.

RFPI schedule has changed again for April-May-June; to optimize timings, all are repeated 8 hours later when reception is usually better. *RFPI Reports*, daily 1830, 2345, weekdays also 2115, with another repeat specified as 0830, 1115, 1345. *Red Cross* (lost somewhere in Switzerland's schedule) Saturdays 2230. New shows are: *A Voice of the Emerging World*, bimonthly with Barbara Marx Hubbard, Tuesdays 2200; and *Seeing Beyond*—people making a difference in planetary change, Tuesdays at 2000. *New Dimensions Radio*, Monday 2230, Wednesday and Friday 1930, Sunday 1900. *Outlaw for Peace*—Willie Nelson and Friends, weekdays 2130. *Sound Currents of the Earth*, Wednesdays 2200, Sundays 2030. FIRE—*Feminist International Radio Endeavour*, daily at 1600 in Spanish, 1700 in English. *World of Radio* (with your columnist), Tuesday and Saturday 1900, Wednesday and Sunday 0300, Friday 2000, Saturday 0400, Sunday 2300, Monday 0700. *RFPI Mailbag* sometimes follows the 1900 and 0300 airings (*RFPI Mailbags*, Newsletters)

CROATIA Studio Zagreb seems 24 hours on 9830, 7240; perhaps 1700-0700 on 6555, 4990, including English news at summer timings of 0603, 0803, 1203, 2103 (BBCM)

CUBA RHC moved to 11970 for English at 0000-0500 to escape an unannounced Kiev frequency 11950, but would like to move back if Kiev will leave. Plans SSB tests on 25800 (Arnie Coro, *DXers Unlimited*) These will be 5 kW USB, weekends in May for 31st anniversary, special QSL; parallel English at 2000 on 17705, 2200 on 9620 (Coro via RN*MN* via Mauer)

RHC has attacked Radio Miami International and other clandestine outlets, threatening to jam them, though would prefer to spend money more productively (BBCM)

CZECHOSLOVAKIA Radio Prague International, *DX Special* to North America: UTC Thursday 0015 on 11990, 9540, 7345; Thursday 0315, Sunday 0110 and 0410 on 9540, 7345, 5930 (John Norfolk, OK) RPI will change frequencies and name May 4 to Radio Czechoslovakia (Jan Valeska, RPI, via Daryl Rocker) Already using new name on Inter Programme (Edwin Southwell, UK)

DOMINICAN REPUBLIC Two SW stations made a comeback in March: Radio Clarin, 9950, very strong 0200 past 0400, but not daily (Ernie Behr, Ont.) Also 0024-0040, ritmos, good strong audio (Bill Flynn, OR, *W.O.R.*); and Radio Santiago International Wave, 9877.6, 0309-0330 with English IDs, frequency as 9875 (Dave Valko, PA, *Fine Tuning)* Thanks to his tip, it was also heard on 9877.66 at 0307-0350, English ID at 0331 inviting reports to Box 282 (Brian Alexander, PA)

ECUADOR Ecos del Oriente was heard on its third harmonic 9810.32, poor but better than second, 6540.21, at 0126 (Juan Carlos Codina©, Peru, via Monferini)

Radio Centinela del Sur may have a defective crystal, jumping around from nominal 4890, heard on 4871-2 at 2000 (Rich McVicar, HCJB *DXPL*) Maybe same unID at 0205 on 4892 (Ken MacHarg, *ibid.*)

Radio Nacional's relay via HCJB is only at 1730-1800 weekdays on 15350; listen before 1730 for the national anthem repeated as an interval signal. HCJB also carries National Congress at times and its own Spanish newscasts may have been mistaken for Radio Nacional (McVicar, *DXPL*) Elections are in May; Ecuadorian stations should have lots of political party ads and coverage (Mark Irwin, *Andex International*)

EGYPT Radio Cairo on 10030.15 in Arabic at 2320-2400, mixing product at 180.06 kHz separation between 9670.03 and 9850.09 (Brian Alexander, PA, *W.O.R.*)

EL SALVADOR Radio Venceremos announced it broadcasts from Perquin in northeastern Morazan Department, on 6750v daily at 0000-0120, 0200-0320, repeated at 1200-1320 except Sunday an hour later; it plans to expand to 0000-0400 and 1200-1500, and move studios

Shortwave Broadcasting

and equipment to San Salvador (BBCM). It was heard on 6300 ex-6750v until 0058, and from 0149 to 0255, not Honduras, Colombia (Brian Alexander, PA; Codina, Peru)

EQUATORIAL GUINEA Radio Africa is daily 1700-2300 on 7190; Radio East Africa, Saturdays and Sundays 0500-1400 on 9585. Soon to upgrade equipment (Pan American Broadcasting via BDXC Communication and DWSCI SW News) Frequencies, times vary.

GABON Africa No. 1 has two minutes of English news daily at 1258 on 17630 (BBCM)

GEORGIA Georgian Radio's External Service in English was logged at 1930 and 2030 on 11900.3, very strong but badly distorted, 10% readable; one day on 11805.3 instead. Also at 0532-0602 on the latter (Ernie Behr, Ont. *W.O.R.*) Earlier, it seemed to alternate English and Russian in 15-minute segments (S. Aoki and Y. Kato, Radio Japan *DX Corner*) Also announces 0200-0300 on 6180; 0500-0600 on 12050, 11705; 1600-1700 on 9825; 1800-2100 on 11900, 7160 (RN*MN*) Everything may be one hour earlier now for DST.

GUATEMALA Representatives of La Voz Popular, the clandestine URNG station, toured the U.S. in March (*NFCB Community Radio News* via Ken Mason) Brochure in English says it started May 22, 1987, and transmits from Tajumulco volcano, heart of a guerrilla front in San Marcos Dept., with 2 kW. Broadcasts are in Spanish and Mam, Tuesday and Friday on 7000 at 2315-2445, UTC Wednesday and Saturday on 3500 at 0200-0300. They are raising funds to buy three 4 kW shortwave transmitters, and 6 FM transmitters costing each $4000. Donations, payable to U.S. Tour V.P., may go to Arco Iris, P.O. Box 835, Seattle, WA 98111 (via Allan J. Mui, NY)

INDONESIA With RRI Surakarta inactive on 2439, a good DX possibility is the large unlicensed station Radio Ron in Tangerang on 2438, announcing 2538, scheduled 2300-1100, 1200-1700 (David Foster, *Oz DX*)

HONG KONG RTHK planned to return to SW until about May 1 with weather for the South China Sea Yacht Race, 2 kW on 3940 (Larry Magne, *NU* via *DX Ontario*) Not heard two years ago, but in 1988 it was around 1100-1130 and 2300-2330 (David M. Clark, *DXO*)

IRAQ Radio Baghdad had 5 minutes of English at 0100 on 15150 (Arthur Cushen, RNZI) Was that Radio Iraq International on 17740 in English at 0050? (Chuck Wakefield, FL) Yes, 17739.92 at 2312-0157 and new 11945, English usually around 0055-0115 (Brian Alexander, PA)

(non) News Centre of Free Iraq (Arabic: *Markaz Akhbar al-Iraq al-Hurr*) seems to be a separate opposition station on 15190 around 2208-2300, splitting away from Voice of the Iraqi People programming which continued on 15600, 9570 (BBCM)

ISRAEL The future of Kol Israel is in grave doubt. They are back on SW, but have no Broadcasting Board, and an emergency loan, not a budget. No one knows what their future will be, but they are certain to be a shadow of their former self (Connie Lawn, VA, free-lancer for Kol Israel) See SW Guide for English now retimed to: 0400, 1000, 1300, 1700, 1900, 2130 (via Norfolk, Mauer, Rocker, Southwell) *Calling All Listeners* and *DX Corner* are Sundays at 1910, Mondays 1310 and 2140. At 1300 best on 17575, 15640; 1900 on 17575; at 2130 main North American frequency 15590 is blocked by KTBN; try 11587, 11603, 15100 or South America's 17575, 15640.

ITALY AWR Forli in English is UTC 0630 (Sat 0600)-0700 on 7205; 0930 (Sat, Sun 0900)-1000 on 7230; alternates are 7125, 7205 (*AWR Current* via Frank Orcutt)

JAPAN Ian McFarland announced that *DX Corner* would change to *Media Roundup* April 11, covering all types of communications media, technology, news of domestic broadcasting. Sounds a lot like *Media Network* to me (Scott Nelson, SD, *W.O.R.*)

KASHMIR (non?) Voice of the Independent Kashmir, comes in best on 6300 at 1630-1730, heavy timesig interference on 5000; occasional English commentary given around 1700 (Sarath Weerakoon and Victor Goonetilleke, Sri Lanka, RN*MN*) Voice of Kashmir Freedom, 1630-1730 on 4080 ex-4085, is unheard on 5000 and 6300 (Yoshinori Kato, Radio Japan *DX Corner*)

KHALISTAN (non) India complained to the US State Dept., which asked WWCR to review the content of Radio Khalistan program; WWCR pulled it off the air at 1215 Monday on 15690, 2230 Sunday on 12160, and got an English translation to evaluate. Khalistan means "pure land" (Adam Lock, Sr., WWCR)

KURDISTAN (non?) Voice of the People of Kurdistan has been confirmed on new 7075 in addition to the 75 meter channel announced at 1603 (BBCM)

LAOS None of the provincial stations have been heard on SW for a long time, but Vientiane is quite good on 6130 at 2130-0230, 0300-0700, 0900-1600; external service is very weak on 7113v at 1130-1400 including English at 1330 (Sarath Weerakoon, Sri Lanka, WDXC *Contact*) English announced for 0600 and 1300 on 7145, but not heard. Luang Prabang is active on 7164 (announced as 7000,) at 2225-0130, 0355-0600, 1025-1400; national news relay at 0000, 0500, 1200 (Hiroshi Fujita, Laos, *Australian DX News*)

LEBANON Voice of Lebanon, 6549.7, was heard at 0013 with music, ad and news in Arabic (Hans Johnson, MD). Wings of Hope, 11530, dropped its morning transmission to sign on at 1400 with a different program from 6280, mostly English and Russian (Ivan Cholakov, Bulgaria) 11530 heard from 2100 with English programs to 2402v sign-off, two hours later than before (Ernie Behr, Ont.). Also quite good here 'til 0000 (Joe Hanlon, PA). 11530 is 25 kW transmitter made at HCJB factory in Indiana (DXPL). IBRA Radio left Malta April 1 for Voice of Hope, 2030-2115 (RIAS DX Report via Wolfgang Bueschel, WWH *Weltschau*) on 6280?

LUXEMBOURG Radio Luxembourg, 15350, is a real powerhouse in English 2100-0200, even when no other Europeans on band; something very strange here, sounds like 100 or 250 kW, stronger than BBC & DW; don't believe *Media Network*'s claim it is still 10 kW (Ernie Behr, Ont.)

MALTA Voice of the Mediterranean started a DX program answering technical questions, fortnightly on Monday 1400 on 11925, Tuesday 0600 on 9765 (Edwin Southwell, WDXC *Contact*)

MYANMAR (non?) unID Burmese-language on 5973 at 1100-1330, 1430-1530; no drift, unseems cland, maybe military; VOM remains

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on 5990 including propaganda, military communiques in English at 1430-1600 (Victor Goonetilleke, Sri Lanka, RN*MN*)

NETHERLANDS First airing of *Media Network* is now UTC Thursdays 0150 to South Asia on 9860, 11655, 13700—the last conflicting with Cuba; new timings for repeats: 0750, 0950, 1350, 1550, 1750, 1950, UTC Friday 0050 (to America and Asia), 0250, 0350 (via Norfolk, Mauer, Rocker). We find daytime reception still good at 1330-1625 on 17605, also 17580, 15150 from 1530; 1730-2025 on 21590. *Happy Station* follows a similar pattern, UTC Sunday at 0135, 0735, 0935, 1335, 1535, 1735, 1935, Monday 0035, 0235, 0335. (gh) The in-between program on Sundays for Asia seems to be called *East of Aden*, such as 1435 (Joe Hanlon, PA). *Radio-Enlace*, the Spanish DX program on Fridays, UTC Saturdays, has a 5-part special in May on clandestines, *La Radio en la Oscuridad.*

NEWFOUNDLAND CKZN, 6160 is in the clear after DW closes at 0950, with *Labrador Morning* program originating in part from CFGB, Goose Bay. Seemed to start at 0900, past 1000 (Howard Box, TN, *W.O.R.*) But if an hour earlier on DST, more will be blocked by DW if still there.

NEW ZEALAND RNZI relays BBC Newsdesk at 1100-1130, possibly weekdays only, on 9700 (Andy Sennitt, *SW Echo* via Kirk Baxter) Beam changed at that time towards Southeast Asia (Adrian Sainsbury, RNZI via Ed Evans, *ibid.*)

NORWAY RNI has dropped the 11 meter band, 25730 for the summer, and perhaps for the cycle. Weekend English no longer in mornings to North America, just 2300 on 11795, 0000 on 15165, 0100 on 9615, 0200 on 11930, 0400 on 9560, 11865 (via Daryl Rocker). In the winter some of these were actually in Norwegian (Bob Thomas, CT)

PALAU KHBN planned to start Easter Sunday with 5 kW on 9830 and 0800-1600, 11980 at 2000-0800, perhaps shorter hours later, and increase to 100 kW within a month (George Jacobs and via George Thurman)

PALESTINE (non) Libyan radio announced Voice of the Popular Revolution in Palestine is broadcast at 2132-2200 and 0332-0400, no frequencies given but heard at 0332 on 15235, 17725 (Hans Johnson, MD). One hour earlier now?

PERU Transmissions heard: Radio Horizontes, Chiclayo, testing on rock-stable 4509.32 at 2345 with Ecuadorian music, ex-4331; Radio Tingo Maria, 4758.93 at 0102 relaying RPP net from Lima, satellite delay from 730 with sports. Radio Alto Huallaga, 5445.01 was heard around 2325 relaying Radio 1160, Lima; later only with own programs. Radio Neylamp, Lambayeque, was heard on 5550.50v at 0144, not parallel to Naylamp Estacion Pucara, around 4086.34-4086.56 (Juan Carlos Codina©, Lima, via Dario Monferini, *Play-DX.*) Naylamp was heard opening at 1024 on 4084.10. Radio Concordia, heard on 6139.46 at 0945 with drama, 1009 ID (Chuck Bolland, FL)

QATAR Doha received on 3rd harmonic 21480.5, distorted at 1707-2130 (Wolfgang Bueschel, Germany, WWH *Weltschau*)

RUSSIA Radio Yunost, 7490 in Russian came in stronger for an English announcement at 0810 (David A. Gasque, SC) Mostly mixing with WJCR, but one day in its absence came in clear with SSB invitation in English to advertisers at 1219, 1415; Far East site (gh, NM)

New Wave Radio Station was logged on 11830 at 0700-0800 with occasional English announcements; 17760 at 1700-1759 with English at 1702, 1743, 1757 (Brian Alexander, PA) And at 0700 on 21635 and many others--21840, 21780, 21565, 17665, 17645, 15405, 15375, 15295, 15110, 11930, 9450, not daily (Craig Seager, *Australian DX News*)

Far East Christian Broadcasting, or FEBC-Russia, is transmitting via former DVR facilities, 0900-1030 on 9560 from Khabarovsk, 4660-USB and 5965 from Komsomolsk, all 20 kW in Russian and Korean; FEBC has plans to replace with high-power MW (Y. Kato and T. Yamashita, Radio Japan *DX Corner*)

SRI LANKA SLBC North American service mentioned last month is not daily, but weekly on UTC Mondays per announcements on 15425 at 2330 (Bill Dvorak, WI; Brian Alexander, PA) News at 2345, long anthem at 2400, but needs clear channel (gh)

SWEDEN Radio Sweden retimed and cut North American broadcasts to 1500-1530 on 17870, 21500; 0200-0230 on 9695, 11705 (via Daryl Rocker, NY)

SWITZERLAND SRI's Brazilian relay on 17730 at 0200 was supposed to move to 0000, but slow to make the change. Try offbeam 21770 for English at 09, 11, 13, 15, 17: in our afternoons, African service at 2000 on 9885, 13635, 15505; South American Service at 2200 on 9810, 9885, 15570 both also via Gabon 12035; Central American Service at 0000 on 6135, 9650, 9885, 12035; same at 0200 for us; 0400 on 6135, 9885, 12035, 13635 (Swiss PTT)

TAJIKISTAN Russia's Radio is relayed in Dushanbe on 4740 at 0000-2000 (BBCM)

TONGA SW 5030, 1 kW, was to be reactivated at 1750-1000 after moving transmitter to MW site undamaged by hurricane; short-staffed, but will QSL (Arthur Cushen, RN*MN* and RNZI)

UKOGBANI (non) BBC relay via Sackville expanded to all morning without a break on 9515, 1100-1745 (*London Calling* and RCI) Too low, summer absorption beyond the East.

UKRAINE Radio Kiev renamed Radio Ukraine March 17 (Nykolai Bilaniuk, *SW Echo* via Baxter) Time shifted to 0000-0100 for English on 11950 (gh)

USA WWCR's schedule was being revised, but at presstime, Dr. Gene Scott was expanding to nonstop 24-hour, 7-day programming on one transmitter, 17535, 12160 and 5920 ex-5935. World of Radio scheduled Friday 2115 on 15690, UTC Sunday 0305 on 7435, Monday 0500 on 7435, 2045 on 15690. Old-time radio to be added, probably late at night. Radio New York International, UTC Monday 0100-0500 on 7435, is selling *Don't Vote Republican* T-shirt for $25 to 14 Prospect Dr., Yonkers, NY 10705.

WJCR 90.1 FM
WJCR World Wide
Where Jesus Christ Reigns

WJCR, "Where Jesus Christ Reigns," was inaugurated March 15 on 7490 day and night from Upton, KY. Transmitter is limited to plus or minus 100 kHz from set frequency, says George Jacobs. Perhaps next one will be designed for 15 MHz band.

Christian Science broadcasting is in trouble, with new church leadership more concerned about the expense; the Monitor Channel cable TV net is to be closed if not sold by June 15. Many editors who resigned in dispute have been barred or restricted from entering the building (*Boston Globe* via Malcolm Kaufman)

Though inactive, KCBI Dallas keeps registering frequencies at considerable expense: 0230-1400 on 9815, 1400-0230 on 15375 for the summer (George Jacobs and Robert D. Weller, FCC)

KJES, Vado, NM, has been acquired by Our Lady's Youth Center in El Paso, TX; construction may be completed at slightly different site (Weller, FCC) Testing no earlier than mid-May (Richard M. Thomas, Our Lady's)

YEMEN Aden on 7190 closing at 2300 with new anthem, neither North nor South (Rich McVicar, HCJB *DXPL*)

YUGOSLAVIA RY retimed to: 1130-1200 on 21605, 17740, 17710; 1830-1900 on 15140, 6100; 2100-2130 on 11735, 6100; 0030-0100 & 0130-0200 on 11870 (John Norfolk, Edwin Southwell)

ZAIRE Badly printed mimeo QSL letter from LVZ, Kisangani, 11455 says sked is 0400-0800 and 1000-1700 except Sundays 0400-1700 (Peter Bunn, *Oz DX*)

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.

0015 UTC on 4835.12
GUATEMALA: Radio Tezulutlan. Spanish. Terrific steel drum music program, with excellent signal. (Havenburg, MD) TGNA Radio Cultural audible, with religious programming on 3300 kHz at 0418 UTC. (John Carson, Norman, OK)

0030 UTC on 4895
BRAZIL: Radio Bare. Portuguese. Rapid speaking soccer commentary. Additional sports game noted on Brazil's Radio Bandeirantes on 9645 kHz at 0208 UTC. (Havenburg, MD)

0040 UTC on 9745
ECUADOR: HCJB. "DX Partyline" show. (Carson, OK) "Dateline 90" with Jan Shober, noted on 15155 kHz at 0100 UTC. (Fraser, MA) Additional monitoring at 0626 UTC on 11925 kHz/ 1953 UTC on 15270 kHz/ 0743 UTC on 9745 kHz. (Carson, OK)

0055 UTC on 9530
SPAIN: Spanish Foreign Radio. Program interviews, station ID/program schedule to newscast. Massive interference from Radio Marti on 9525 kHz. (Robert E. Tucker, Savannah, GA) (Bob Fraser, Cohasset, MA) Audible on this frequency at 0500 UTC. (Nicholas P. Adams, Newark, NJ) (Havenburg, MD)

0100 UTC on 11800
ITALY: RAI. National news heard on parallel 9575 kHz, with comments on special measures debated to fight the Italian Mafia. (Fraser, MA) (Howard L. Swartz, Bristol, CT)

0130 UTC on 9580
YUGOSLAVIA: Radio Yugoslavia. Station sign-on into newscast, and commentary on national strifes. (Carson, OK)

0213 UTC on 9885
SWITZERLAND: Swiss Radio International. News on Swiss banking and money laundering. (Carson, OK) Swiss music heard on 9535 kHz at 1726 UTC. (Havenburg, MD) (Rich Lundberg, Dallas, TX)

0220 UTC on 6020
NETHERLANDS: Radio Netherlands. "Happy Station" program. "Media Network" noted on 13770 kHz at 1454 UTC. "Newsline" closing at 2048 UTC on 13700 kHz. (Carson, OK) "Happy Station" program heard on 13700/9860/ 9895 kHz at 1830 UTC. (Bob Fraser, Cohasset, MA) (Lundberg, TX)

0231 UTC on 9860
UKRAINE: Radio Kiev. National news with clear strong signal. (Havenburg, MD) Russian programming monitored on 4940 kHz from 0635-0650 UTC, with fair signal quality. (David Gasque, Orangeburg, SC) (Swartz, CT) (Lundberg, TX)

0305 UTC on 11930
NETHERLANDS ANTILLES: Trans World Radio. Character spotlight on "Joan of Arc," and program "Bonaire Wave Lengths" audible on parallel 9535 kHz. Radio Netherlands Relay heard on 11895 kHz at 0740 UTC. (Carson, OK) (Sam Wright, Biloxi, MS)

0308 UTC on 9835
HUNGARY: Radio Budapest. Programs "Press Review" and "DX News." Additional monitoring noted at this hour on 11910 kHz. (Carson, OK) (R.J. Thomas, Metairie, LA) (Lundburg, TX)

0326 UTC on 13700
CUBA: Radio Havana. Cuban music program, ID and news summary. Improved signal quality noted on 17705 kHz at 2000 UTC. Programming included Cuban news update and "Dateline Havana" press review. (Tucker, GA) Additional monitoring included; News bulletins on 11930 kHz at 0232 UTC, 11760/11950 kHz at 0425 UTC. (Carson, OK) (Wright, MS) (Thomas, LA)

0403 UTC on 17770
NEW ZEALAND: Radio New Zealand. International news into pop/easy-listening music show. Station IDs and special features. (Carson, OK) News on Tahiti and feature "People From Our Past," heard on 15120 kHz at 2000 UTC. (Tucker, GA)

0410 UTC on 3270
NAMIBIA: Namibian Broadcasting Corp. English international news to pop vocals and African choral hymns. (Ernest Lawrence, Perry, NY) (Thomas, LA) (Rose Carmine, Sidney, OH)

0455 UTC on 11720
BULGARIA: Radio Sofia. Discussion on the problems with collective farming, and unemployment in Bulgaria. Audible on 11765 kHz at 0545 UTC, with Lifestyle business club discussed, pop music, and sign-off at 0602 UTC. (Carson, OK) (Carmine, OH) (Frank Hillton, Charleston, SC)

0510 UTC on 7166.5
GERMANY: Radio Liberty. Romanian. News and commentary script to 0530 UTC. Lengthy discussion to station ID at 0600 UTC. Programming noted on slight frequency shift from 7165 kHz. (Jerry Witham, Keaau, HI) (Havenburg, MD)

0733 UTC on 9480
MONACO: Trans World Radio. Interval signal to station sign-on at 0735 UTC. Program feature "Wake Up," with good signal quality. (Wright, MS) (Carson, OK) (Carmine, OH)

0929 UTC on 3375
PAPUA NEW GUINEA: New Guinea-Radio Western Highlands. Pidgin. Morning DJ with pop tunes. Station ID at 0933 UTC. Poor signal for broadcast. New Guinea's Radio Madang audible on 3260 kHz at 1250-1300 sign-off. Moderate to poor signal for rock music. (Gasque, SC) National Broadcasting Commission in Port Moresby, heard on 4890 kHz at 1245 UTC, with talk to classic and opera music. (Lawrence, NY) (Havenburg, MD)

0930 UTC on 5950
GUYANA: Voice of Guyana. Male DJ with morning show of music, local commercials and public service announcements. (Lawrence, NY)

0931 UTC on 2325
AUSTRALIA: Northern Territory SW Service. VL8T/Tennant Creek. World news from ABC network at tune-in. Relay of "FM 105.7" program. Considerable fade out by 1000 UTC. Fair to poor signal strength. Additional Northern Territory station VL8A/Alice Springs, heard on 2310 kHz at 1003 UTC. Audible the next morning playing classic rock tunes, with fair to good signal quality. (Gasque, SC) ABC Radio network with fair signals of ID, and national news heard on 4920 khz at 1300 UTC. (Scott Billingsley, Camden, AR)

0948 UTC on 3285
BRAZIL: Radio Sentinela da Amazonica. Portuguese. Numerous "Sentinela" IDs and talk from announcer duo. Good signal trounced by Ecuador's La Voz de Napo sign-on at 0948 UTC on 3279.8 kHz. (Gasque, SC) Additional Brazilian, Radio Difusora, heard on 5055 kHz at 1050 UTC. (Havenburg, MD)

1003 UTC on 3289.9
ECUADOR: Radio Centro. Spanish. Two clear station IDs and national newscast with very good signal. (Gasque, SC) Ecuador's Radio Jesus Gran Poder, heard on 5049.86 kHz at 1040 UTC, with religious programming. (Havenburg, MD)

1025 UTC on 2360
GUATEMALA: Radio Maya. Sign-on with choral national anthem by children. Station ID and Spanish music program with excellent signal quality. (Gasque, SC)

1200 UTC on 6140
AUSTRALIA: VLW6-Wanneroo. Station ID at the hour, with strong clear signal. Emergency warning exercises for upcoming dust storm season. (Havenburg, MD)

1259 UTC on 9755
CHINA: CPBS 2. Chinese. Weak signal for male announcer presenting Chinese instrumentals. CPBS 1 heard on 6840 kHz at 2251 UTC with Chinese music. CPBS 1 also monitored on 5320 kHz at 2308 UTC. (Havenburg, MD) Fuijan 1 noted on 4975 kHz at 1330 UTC. (Billingsley, AR)

1300 UTC on 2390
MEXICO: Radio Huayacocotla. Spanish. Poor signal quality, however audible. Variety of Spanish music tunes and a clear "Huayacocotla" ID. (Billingsley, AR)

1330 UTC on 15470
UZBEKISTAN: Radio Tashkent. Sign-on with good signal quality and moderate interference. Station identification, local news and a discussion on India/Pakistani relations. Pop vocals to station sign-off at 1358 UTC. (Billingsley, AR) (Wright, MS)

1505 UTC on 4200
CHINA: Radio Beijing. World news to national business report at 1510 UTC. Chinese music and special station feature covered by excessive interference. Yunnan People's Broadcasting Service audible in Chinese/English on 4760 kHz at 1540 UTC. Language lessons extending to 1600 sign-off. (Witham, HI)

1506 UTC on 11870
NORWAY: Radio Norway International. "Norway This Week" with featured news on stolen art work. Additional monitoring on 11930 kHz at 2310 UTC, with news on Norwegian's international shipping companies. (Fraser, MA) (Lundburg, TX)

1607 UTC on 17620
FRANCE: Radio France International. U.S. and African sports news update. "Report on Asia" featuring reports on Israel/Indian relations, and Burma/ Bangladesh refugee disputes. (Tucker, GA) (Carson, OK) (Adams, NJ) (Wright, MS)

1720 UTC on 7010
ANGOLA: Clandestine-La Voz Resistencia do Galo Negro. Portuguese. Announcer duo with commentary and dialogue. Native African music and mentions of Angola. Strong signal, although too heavily distorted and muffled to be understood or identified. (Witham, HI)

1820 UTC on 9345
ISRAEL: Kol Israel. "Calling All Listeners" discussing tourism in Israel. Parallel programming heard on 7465/11605 kHz. (Fraser, MA) (Havenburg, MD) (Thomas, LA) (Swartz, CT)

2200 UTC on 11965
UNITED ARAB EMIRATES: UAE Radio-Abu Dhabi. Anthem, ID and sign-on routine. Holy Koran recitations to Arabic language lessons. (Adams, NJ) Station IDs and feature on the Palestinians heard on 9605 kHz at 2325 UTC. (Carson, OK)

2300 UTC on 9445
TURKEY: Voice of Turkey. Station ID and national news update. Features "Review of the Turkish Press" and "Review of the Foreign Media." Letterbox show featured listener's letters to environmental program and Turkish music. (Adams, NJ)

Utility World

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

The Systematic Band Scan

Now that the mailman brought you this issue of *MT* and you have your monthly dose of ute serum (the loggings section), it is off to the receiver you go. Excitedly, you twirl the dial with renewed gusto using the logging section as your guide. This is usually where the newness of each issue wears off and a certain amount of frustration sets in.

You tune to all those frequencies listed in the logging section and hear nothing. How do those folks hear all that great stuff? What is the big secret? How did they know who was on what frequency?

Ah, now you are starting to ask the right questions. Most of the better known utility band listeners attack the ute bands very systematically. Notice I said "listeners"—the heck with calling ute folks DXers. Very few of us are really interested in DX per se, much less keep records.

"Now Larry, what is this systematic stuff?" Again, good question.

Think of it this away. You have over 21 MHz of spectrum from 3 to 30 MHz to explore. Propagation and stations over this spectrum vary greatly, from day to day, even hour to hour. You have to approach the bands a little piece at a time to really get familiar with what stations can be heard at any given time; then you can start looking for the unexpected.

Let me give you an example. Most folks don't consider 15.0 to 15.1 MHz real great utility territory. In fact I can hear most of you now, "Hey Larry, isn't that shortwave broadcast territory?"

No, it isn't. Sure, some shortwave stations occupy that spectrum space, but the 15 to 15.1 MHz area is set aside for aeronautical off-route communications, per Mr. Klingenfuss's *Utility Guide* 1992. This is where you will find a high concentration of military aeronautical communications, mostly tactical in nature.

I decided the other afternoon to sit and just tune through this area. It happened to be a Monday and I was off, lucky guy. After tuning into WWV at 18 past to get my propagation forecast (I always start a listening period armed with this information), then grabbing some ice tea from the old frig, I sat down to start listening at 1945 UTC. WWV gave me the following information:

> Solar Flux - 200 A index - 16 Boulder K index - 2
> Forecast for the last 24 hours: Solar activity was low, geomagnetic field was quiet to unsettled. Forecast for the next 24 hours: Solar activity was to be moderate and the geomagnetic field would be quiet to unsettled.

Not bad conditions; I surely have listened to worse. OK, time to fire up the R-5000. First off, I live in "RF city" here in New Orleans. To make matters worse some of the biggest of the offending towers are just outside my radio room window. I now freely admit I was in a daze when we moved into our current house. To add insult to injury, Louisiana Power and Light, who provide the electrons that power my marvelous listening post, is not noted as the cleanest power line system in the country.

The first thing I noticed was the S3 noise level, and I cut in noise blanker number 1 to handle most of it. Then I started at 15 MHz and slowly began working my way up the dial, noting everything I heard. Once at the top (notice I am only listening to a very small section of spectrum) I slowly reverse my search toward the bottom. All along the way I stop to ID (or at least attempt to ID) every signal I find. After four hours and fifteen minutes, Table 1 shows the results (I also threw in some logs from around the 0400 time period).

Well, that pretty much sums it up. All of the transmissions in the table were USB unless otherwise noted. Notice that I used propagation

Table 1: 15.0-15.1 MHz Scan Log

15000.0	WWV-Ft. Collins, CO - Time Signal Station (Of course, that's where I got my propagation report). Also later in the evening WWVH, Hawaii, made an appearance.
15004.0	RID-Irkutsk, Russia - Also a time station but real weak, hummmmm, the sun is moving to my west rapidly. Think Propagation. Station was back in at 0400.
15009.0	VOV-Voice of Vietnam - Weak at first but signals increasing toward the end of the monitoring period, Remember the sun.
15012.0	Unid CW station - Never did catch an ID on this one due to power line noise; only heard it once then gone.
15015.0	As usual routine USAF GCCS comms heard only from Ascension Island and Albrook down Panama way. Did catch Omni 31 and 32 working Albrook and they mentioned heading towards Howard AFB and even checked the weather there for impending arrival. One of the aircraft mentioned 12 passengers. The only aircraft I heard working Ascension was MAC 407JF and he was heading towards Puerto Rico. Both Albrook and Ascension were quite loud.
15016.7	Egyptian Embassy using SITOR-A from Moscow, very weak copy.
15019.3	Unid Spanish stations heard here only once around 2152. Real weak.
15030.5	Radio for Peace-Costa Rica - Heard at moderate levels with religious program
15035.0	Canadian Forces Radio - I heard weather broadcast from Trenton at 30 past the hour and Edmonton at 40 past. No St. John today at 20 past. No other comms noted.
15046.0	Berne, Switzerland, LDOC heard working an unid aircraft, missed the aircraft ID.
15048.0	Unid encrypted voice - I chased this one around for awhile. I know from my resource library that this is a USAF discrete voice channel. MacDill and McClellan have both been reported here. I managed one bit of clear voice as follows: "on Hotel, do you copy." Voice distorted due to overmodulation. No reply heard. Designator must be "Hotel" then.
15057.0	US Navy EAM Broadcast - The weirdest and neatest log during the period. I heard this one real weak around 2141. Weaker in strength at that time compared to the stations on 15084.0 giving EAMs. Station O6J gave the EAM and did it real slow. There was a large break between the first 5 figures given for reference and the rest of the message. There was even a large break between repeats of the two messages. The traffic was the same as that being transmitted on 15084. At the end, the operator said, authentication CI then some figures. Haven't heard that at the end of an EAM before on a Navy channel. My database shows Navy tactical comms from he Atlantic heard here before but I wasn't aware of any EAMs on this frequency. Only comm heard on that frequency in 4 hours.
15060.0	BSKSA-Saudi Arabia - With good levels from 0400 -0600.
15070.0	BBC-World Service - Wonder which transmitter; off at 2100.
15072.5	Unid encrypted RTTY - Heard around 0400, probably Pacific rim based.
15084.0	VOIR-Tehran, Iran - Wonderful program (sic) from the Islamic Rep. toward the end of the monitoring period gone, leaving the US Navy all alone. US Navy comms - At first VOIR won the war of 15084, then as time rolled on and the sun moved west, the Navy won the radio war for this frequency (don't we always). EAM broadcasts were heard here twice each hour and the stations would sometimes broadcast on top of each other. Looking at my other beacons (the broadcast stations present) these stations were all probably from the Pacific rim. Stations S2W and G3Q doing the honors.
15090.0	Vatican Radio - Getting beat up by a RTTY signal up stream.
15092.5	Unid encrypted RTTY - Probably a USAF RTTY channel; disappeared around 2100, leaving Vatican Radio in the clear.
15095.0	Syrian Broadcast Radio Damascus started fairly strong and only got stronger toward my 2400 UTC cutoff and supper.
15096.0	Unid Spanish males - Believe this one is probably Mexican military. Heard them off and on all afternoon even after Syrian Radio sign-on on 15095.0. Sounded like the same traffic IDed earlier in the day on 6693.0 as Mexican military comms.

and existing stations within the spectrum to help ID potential target areas I was hearing. Also any long duration monitoring of a particular channel I was interested in was funneled to my secondary receiver, the R-2000, so I could continue tuning. That let me investigate especially active frequencies (or inactive as in the case of 15048.0) for additional activity and while still continuing my bandscan. Who says a second receiver isn't helpful?

As I said, this was just one monitoring session. Don't assume that the above is all that there is to hear in this range. Having looked here before, I didn't hear activity during this period from the known active channels listed in Table 2.

Whew! Now that's a bunch to keep anybody busy for awhile. I keep these records in a computer database, but it could have been done on paper or on a computer using a word processor just as easily. Keeping good records enables you to make an effective, systematic search of the utility shortwave spectrum.

You get good at this by patience, luck and a systematic approach to your monitoring. Don't try to hear too much at once. You are bound to miss things if you do. Take it slow and easy, and pause to identify a particular frequency once you find something active on it. Even listen to foreign language stuff; you'll be surprised at how much you can pick up without knowing the language. The clues I heard on 15096.0 included the words 'military', Jalisco, Guadalajara, and Veracruz. Pretty much seals that one.

This method of learning the band can be a lot of fun without being intimidating. To help you along, I have prepared some frequency ranges below that have produced a bit more voice traffic than most and should keep you busy for awhile. These have a variety of traffic including a lot of military to get you used to it. All frequencies in kHz.

3025-3155
4700-4850
5450-5480
5680-5730
6685-6765
8965-9040
11175-11275
13200-13260
15010-15100 (Of course, we just did that one this month)
17970-18030
23200-23350

Remember, you check these bands primarily as follows: 10 MHz and below at night; 10 MHz and above during the day. I do want to caution you, though, that even during the day lower frequencies can offer some interesting monitoring. Any activity within 500 miles of your location should be audible, so the above is only a guide for starting out. Expect the unexpected.

Water Dripper Mystery Solved

I have been looking into the water dripper signal mystery hot and heavy since last October when a bunch of us discussed it at the '91 *MT* convention in Knoxville. After many hours of monitoring and research I believe I may have an answer to the question, "What the heck is all this water dripping out of our radio speakers?"

It seems that the US government, especially the US military, has stepped up its use of chirpsounders.

"Chirpsounders!" you say. "What is that?"

Well, basically, a chirpsounder is used to test for the critical frequency—that is, the highest frequency the ionosphere will reflect. By bouncing a radio signal straight up into the ionosphere at or around the critical frequency, the receiving station gets some real time propagation information with which to work. These chirpsounders are cousins of the ionosondes used by the scientific community.

Now I know a bunch of you are going to say that ionosondes have been around quite some time. This is true, but fairly recently, US Navy ships started using these devices widely to help them optimize their shipboard HF communication's reliability. This might account for the water dripper signals.

My analysis indicates that these are not encrypted signals as some have indicated. The signals are too wideband and random to be of an encrypted nature. These signals seem to hug around the military aerobands and are probably checking propagation reliability of common channels used by the military for communications.

I am still researching the exact type of equipment that the Navy has in use and hope to contact the manufacturer soon to confirm my theories.

Ok, now with that bit of business out of the way, it is time to check what you have been hearing this month in the Utility World. 'Til next month: "Laissez Les Bon Temps Rouler"... Let the Good times Roll.

Table 2:
Previously Logged 15-15.1 Activity

15000.0	Several time stations worldwide
15011.0	Canadian Coast Guard frequency
15018.0	USAF Mystic Star channel
15020.0	SANA Press Agency (RTTY)
15021.0	US Navy Atlantic ships tactical
15023.0	4XZ-Israeli Naval Radio, Haifa (CW)
15024.0	Russian Aeroflot Air to Ground (CW)
15027.0	US Navy tactical channel
15031.0	Canforce/RAF/USAF channel
15034.5	French Air Force channel
15035.0	In addition to Canforce mentioned above, SAC and NORAD can sometimes be heard.
15036.0	USAF Mystic Star channel
15036.7	Cairo Embassy channel (SITOR-A)
15038.0	Canforce channel (Halifax)
15039.5	USAF channel (Pacific)
15040.0	RAF Air-to-ground channel
15041.0	SAC (Mike) and Mystic Star channel
15044.0	Royal New Zealand AF channel/USAF Lajes discrete, Unid CW station using IS1A as their call and Kelly 1/Foxtrot also here. Interesting frequency, huh!
15048.0	USAF GCCS discrete and Mystic Star channel
15049.0	US Navy here with EAM broadcast (they are everywhere it seems)
15050.0	RCV26-Soviet Naval Radio (CW) and 4XZ-Haifa Naval Radio (CW) Strange bedfellows, I would say.
15051.0	US Navy Atlantic Tactical channel
15053.0	Royal New Zealand AF
15054.0	US Navy tactical channel
15056/57	US Navy encrypted RTTY channels
15058.0	USAF Mystic Star channel
15061.0	US Navy Pacific ships and aircraft
15063.0	US Navy tactical channel
16064.0	US Navy channel
15066.0	USAF Lajes discrete frequency
15067.0	Royal Australian AF/US Navy tactical channel
15071.0	US Navy tactical channel
15074.0	US Navy Pacific ship tactical channel
15076.0	US Navy Pacific aircraft tactical channel
15079.0	US Navy Link 11 data channel
15081.0	US Coast Guard/US Navy Air-to-Ground channel
15084.0	In addition to the Navy mentioned previous, the Coast Guard has been monitored here and is listed as a Coast Guard Air-to-Ground channel.
15087.0	US Navy and Coast Guard channel
15091.0	USAF TAC air channel and SAC-TAC intercom designated Bravo Xray.
15094.0	USAF SAC channel

Utility World

Utility Loggings

Abbreviations used in this column

AFTN	Aeronautical Fixed Telecommunications Network	ID	Identification
AM	Amplitude Modulation	KCNA	Korean Central News Agency
ANSA	Agenzia Nazionale Stampa Associata	Meteo	Meteorology
ASECNA	Agence pour la Securite de la Navigation Aerienne en Afrique et a Madagascar	M/T	Motor Trawler
CQ	General call for any station	M/V	Motor Vessel
CW	Continuous Wave (Morse Code)	QRA	My station name is
ETA	Estimated Time of Arrival	QRM	Interference
FEMA	Federal Emergency Management Agency	PAP	Polska Agencja Prasowa
GCCS	Global Command and Control System	PTT	Point to Point
HF	High Frequency	RTTY	Radioteletype
ICRC	International Committee of Red Cross	SAM	Special Air Mission
		UN	United Nations
		Unid	Unidentified
		USAF	United States Air Force
		USB	Upper Side Band
		XINHUA	New China News Agency

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

326.0 PKZ-Pensacola, FL (Regional/Pickens) at 0225 with CW ID. QRM from BHP. Weak but steady signal. (Mike Hardester-Jacksonville, NC)

407.0 RZZ-Roanoke Rapids, NC (Halifax County Airport) at 2030 with CW ID. (Hardester-NC)

526.0 CYV-Camp Blanding, FL, noted at 0240 with CW ID at fair levels; moderate ZLS QRM. Not frequently heard here. (Hardester-NC)

2725.0 IDQ-Italian Naval Radio, Rome, with CW messages from Metaero/Milano and navigation warnings at 2100. (Ary Boender-Netherlands)

2800.0 4XZ-Israeli Naval Radio, Haifa, with 'V' CW marker at 2106. (Boender-Neth)

3658.0 Single Letter HF CW beacon 'V' heard at 0009. (Boender-Neth)

4002.0 YRR2-Bucharest Meteo, Romania, with RTTY coded weather at 0058. (Boender-Neth)

4029.0 Spanish female 5-digit number station in AM at 0600 (Thursday).(Tom Mazanec-Maple Heights, OH)

4171.0 EFFG-M/T Campocriptana with SITOR-A messages to Campsa Logistica Madrid at 1942. UUBD-M/V TK Kriwbas with SITOR-A message to Aleksandrowa at 2144. P3QB3-M/V Mayori with SITOR-A message to Kelway Milfordhaven at 1655. (Boender-Neth)

4172.5 P3Y3-M/V Frio Indianic calling XCKM using SITOR-A at 2004. IBNU-M/V Agip Lazio with SITOR-A message to Snam Mares Milano with arrival info at 2336. (Boender-Neth)

4173.0 UULU-M/V Pavlin Vinogradov with SITOR-A message to Sogema Rouen about ETA. FNBU-M/V Port Bara with SITOR-A messages at 2138. VTVQ-M/V Nand Nakul calling Norddeich Radio using SITOR-A at 1845. (Boender-Neth)

4174.0 SQKF-M/V Gdynski Loynier with SITOR-A message to Acomar Casablance at 1757. UUIY-M/V Iosif Dubrovnskiy with SITOR-A message to Leon Freetown with ETA at 2341. Y5OX-M/V Freital sending a SITOR-A message to VTS Humber asking for a pilot and 2 tugs at 1804. (Boender-Neth)

4175.5 D5DH-M/V Atlantic Forest sending a SITOR-A message to Pilot Maas with ETA at R'Dam at 1825. FNEB-M/V Folgoet with message to Transworld Marine Agency Rotterdam using SITOR-A at 1900. (Boender-Neth)

4176.0 KPVQ-M/V Sequoia send 24 notice of arrival to Carbill Geneva using SITOR-A at 2157. (Boender-Neth)

4176.5 SQEV-M/V Rolni with message traffic in SITOR-A to Elbcharter Hamburg at 1850. (Boender-Neth)

4235.0 VAI-Canadian Coast Guard Vancouver, BC with CQ CW marker at 0411. (Leonard Szalony-Fontana, CA)

4640.0 English female 3/2-digit number station heard in AM at 0000 (Thursday) parallel to 5045. Also heard at 0020 on Tuesday UTC. (Mazanec-OH)

4789.0 CSY-Santa Maria Air, Azores with RTTY 50 baud coded weather at 0300. (Mark Burkhart-New Orleans, LA)

5211.0 WGY912 working Violation in USB at 0230. FEMA Foxtrot 11. (Bill Frantz-Thomasville, GA)

5239.0 Spanish female 4-digit number station in AM at 0400 (Friday) and parallel to 6934. (Mazanec-OH)

5419.0 Spanish female 5-digit number station in AM at 0308 (Friday) and also at 0704 on Thursday UTC. (Mazanec-OH)

5541.0 Stockholm Radio, Sweden, working Hawaiian 812 at 2021 in USB. Switched to 8930 then back to 5541 (SSGT Allen D. Marshall-Crete, Greece) *Welcome aboard, Sergeant, hope you report often from the isle of Crete, I have been at that garden spot before-Larry.*

5598.0 New York Aeradio in USB at 2318 instructing TWA 900 to maintain altitude of 31000 feet until reaching 55 west longitude and then climb to 35,000 feet. (Mitch Radella-Mars, PA) *Welcome to the column Mitch, hope you check in often-Larry.*

5610.0 Portishead Radio, UK, with phone patches for Britania "Yankee Lima" and "Kilo Bravo" at 2040 in USB. Also worked on 5670.0 (Marshall-Greece)

5658.0 Karachi, Bombay and Tehran working various aircraft at 1940 in USB. (Marshall-Greece)

5760.0 Spanish female 5-digit number station in AM at 0202 (Friday). (Mazanec-OH)

5930.0 Spanish female 4-digit number station in AM at 0210 (Friday). (Mazanec-OH)

6430.0 Unid sending 5-digit groups in CW at 0415. (Szalony-CA) *Probably CFH-Canadian Forces station in Halifax, NS-Larry.*

6577.0 New York Aeradio in USB at 0210 clearing American 624 to JFK airport. (Radella-PA)

6683.0 Andrews AFB working SAM 681 with phone patch to Assistant Secretary Mullins in USB at 1930. Also heard Air Force One working Andrews at 1325 in USB. (Frantz-GA)

6730.0 Lockheed Test Flight working AC5268 with radio checks in USB at 1720. (Frantz-GA)

6753.0 CJX-St. John's Military in USB at 0145 with Canadian weather information. (Radella-PA)

6785.0 Unid Army Corps of Engineers station discussing generators and emergency power equipment in USB at 2025. (Frantz-GA)

6796.0 Spanish female 5-digit number station in AM at 0500 (Friday). (Mazanec-OH)

6827.0 Spanish female 5-digit number station in AM at 0200 (Thursday). (Mazanec-OH)

6877.0 Land Force working Constable in USB at 1545. (Frantz-GA)

6925.0 KKN50-State Radio, Warrenton, VA, with CW QRA marker at 0354. (Szalony-CA)

6933.0 Spanish female 4-digit number station in AM at 0305. (Bob Ferguson-Phoenixville, PA)

7039.0 Single letter HF CW beacons 'C/D/S' noted here at various times throughout the day, 2230 C/D/S; 2100, 2252, 1330 C/S; 1904, 2235 C. (Craig Saverine-Bluemont, VA) *Very interesting logs Craig especially the 1904 log of the C beacon-Larry.*

7432.0 Spanish female 4-digit number station in AM at 0300 and 0400. (John and Gabrielle Maky-Grass Valley, CA)

7626.0 TZH-ASECNA Bamako, Mali with RY RTTY 50 baud test tape at 0242. (Burkhart-LA)

7655.0 Spanish female 5-digit number station in AM at 2108 (Friday). (Paul Friend-New York, NY) *Yep, Paul it was a number station, welcome to ute world-Larry.*

7846.0 Spanish female 5-digit number station in AM at 0706 (Friday). Also heard at 0400 on Thursday UTC. (Mazanec-OH)

7862.0 Spanish female 4-digit number station in AM at 0536. (Maky-CA)

7887.0 Spanish female 5-digit number station in AM at 0806 (Friday). (Mazanec-OH)

7895.3 Single Letter HF CW beacon 'V' heard at 0357. (Szalony-CA)

7975.0 Spanish female 5-digit number station in AM at 0810 (Tuesday). (Mark Ortega-Taos, New Mexico) *Welcome Mark, the government broadcast these numbers, therefore they don't worry about being caught-Larry.*

8113.0 Spanish female 5-digit number station in AM at 0708 (Friday). (Mazanec-OH)

8187.0 Spanish female 5-digit number station in AM at 0606 (Friday). (Mazanec-OH)

8453.0 VAI-Canadian Coast Guard Vancouver, BC with CW 'CQ' marker at 0317. (Szalony-CA)

8606.0 ZRQ-South African Naval Radio Capetown with CW 'V' marker at 2007. (Eddy Waters-Collinswood, Australia)

8618.0 KPH-San Francisco Radio, CA, with 5-digit characters in CW at 0309. (Szalony-CA)

8620.0 UBN-Zhdanov Radio, Ukraine, in CW with 'V' marker at 2010. (Waters-Australia)

8622.0 PCH41-Scheveningen Radio, Netherlands, with CW 'V' marker at 2014. (Waters-Australia)

8722.0 VIS-Sydney Radio, Australia, with ID then into traffic in USB at 1250. (Lish-FL)

8728.0 EHY-Madrid Radio, Spain, with Spanish phone patch traffic in USB at 0135. KMI-Dixon Radio, CA, with traffic in USB at 0100. (Eugene Lish-Seminole, FL) Working the Zuni at 0158 in USB. (Levine-CA)

8737.0 5BA42-Cyprus Radio with English and Greek voice markers in USB at 0057. (Lish-FL)

8764.0 GKU46-Portishead Radio, UK, with phone patch for vessel in Red Sea at 1834 in USB. (Marshall, Greece)

8791.0 WOM-Miami Radio, FL, working an unid ship in USB at 0052. (Charles Kling-Outremont, Quebec)

8800.0 FFL44-Saint Lys, France, with French voice mirror at 2127 in USB. (Lish-FL)

8803.0 WLO-Mobile Radio, AL, with Spanish phone patch then English ID in USB at 0140. (Lish-FL)

8806.0 WLO-Mobile Radio, FL, with traffic in German then English ID at 2132 in USB. (Lish-FL)

8809.0 GKW41-Portishead Radio, England, with phone patch traffic in USB at 2210. (Lish-FL)

8879.0 Unid aircraft working Beira, Mozambique, in USB at 2057. Dar es Sallam calling Cameroon, Nairobi, in USB at 2035. (Waters-Australia)

8903.0 Springbok 252 calling Kinshasa, Zaire, in USB at 2103. (Waters-Australia)

8960.0 Portishead Radio, UK, with phone patch for Speedbird 103 (located over Turkey enroute to Iran) at 2003 in USB. (Marshall, Greece)

8972.0 Several tactical station heard on US Navy kilo Atlantic Safety of Flight channel in USB at various times. (Fred Dodge-Albany, NY)

8997.1 Single Letter HF CW beacon 'V' heard at 1643. (Szalony-CA)

9014.0 Raymond 7 working Cookie 1/2/3 in USB at 0305. (Frantz-GA)

9090.0 English female 3/2-digit number station in AM at 2100 (Weekdays). (Mazanec-OH)

9100.0 English female 3/2-digit number station in AM at 0654 (Friday). (Ortega-NM)

9320.0 Unid time station heard here from 2345-0000 with time ticks and double ticks on the minute. No ID heard during the period in USB. Also a couple of Spanish males talking over the time signals. Time station sounded long path. (L. Van Horn-LA)

10536.0 CFH-Canadian Forces, Halifax, NS with 75 baud RTTY weather at 0452. (Robert Hall-Capetown, RSA)

10551.3 GFL23-Bracknell Meteo, England, with RTTY 50 baud tape ID for GFL 23/24/25/ 26 at 1044. (Burkhart-LA)

10580.0 HMF46-KCNA,Pyongyang, North Korea, with English 50 baud RTTY news at 0457. (Hall-RSA)

10637.0 KKN50, State Dept, Warrenton, VA, with a CW QRA marker at 2245. (Szalony-CA)

10780.0 Aria Control working Agar 94 in USB at 1435. (Frantz-GA)

10873.7 RFVI-French Forces, Le Port, Reunion, with RTTY 100 baud "Controle de Voie" at 2100. (Hall-RSA)

10893.5 LRB39-TELAM, Buenos Aires, Argentina, with 48 baud Spanish RTTY news at 1958. (Hall-RSA)

10917.7 RFTJF-French Forces, Dakar, Senegal, with an ARQ-E3 transmission at H+13 daily. Listed as ARQ-M2. Heard at 0713. (Hall-RSA) *Robert, RFTJF is listed as Ivory Coast not Dakar which is RFTJ. I have seen RFTJF listed on 10493.7 and I have seen Dakar listed here sending traffic to Ivory Coast-Larry.*

11012.6 ETD-AFTN Addis Ababa sending 50 baud RTTY codes at 1948. (Hall-RSA)

11039.0 DDH9-Hamburg Meteo, Germany, with 50 baud RTTY RY test tape then into aero codes at 1945. (Hall-RSA)

11052.0 SPAR 66 working Andrews with a phone patch in USB to Phantom at 1615. (Frantz-GA)

11056.0 Andrews AFB working SAM 682 in USB at 1355. (Frantz-GA)

11080.0 Chieftan working Icepack in USB at 1440. Talking about war games, gas attacks, target coordinates, etc. (Frantz-GA)

11108.0 Papa November with 5-digit numbers in German in AM at 0600 (Tuesday). This was parallel to 5015. (Mazanec-OH)

11133.0 BZG41-XINHUA Beijing, China, with 50 baud RTTY French news at 1942. (Hall-RSA) *Hummm, normally up until 1900 per Klingenfuss, must have been working late, hi-Larry.*

11229.0 Andrews working SAM 302 in USB at 1954. (Frantz-GA)

11234.7 Heard a bunch of fisherman here in LSB around 0028. They gave their frequencies for the morning communication periods as follows: Monday 3208/Tuesday & Thursday 3211/Wednesday 3210/Friday 3311/ Saturday 3060/Sunday 3214. Also mentioned 2978/9 and 3055. Said that 11234.7 would be their evening frequency for awhile. Lotsa nerve to put out a schedule over the air for all to follow. (L.Van Horn-LA)

11401.0 NNN0NCG and NNN0NCA with phone patch traffic in USB at 1140. (Waters-Australia)

11515.2 TZH-ASECNA, Bamako, Mali, with 48 baud RTTY RY test tape at 0655. (Hall-RSA)

11533.0 Spanish female 4-digit number station in AM at 0200 (Tuesday). (Mazanec-OH)

11607.0 English female 3/2-digit number station in AM at 1900 (Wednesday) repeat of the 1600 broadcast. (Mazanec-OH)

12695.5 KFS-San Francisco Radio, CA, with CW 'CQ' marker at 0248. (Szalony-CA)

12857.0 6WW-French Naval Radio Dakar, Senegal with 'V' CW marker at 0250. (Szalony-CA)

12876.0 VAI-Canadian Coast Guard Vancouver, BC, with weather broadcast at 20 wpm CW at 0300. (Szalony-CA)

12903.0 RBSL-Indian Navy, Bombay, with 50 baud RTTY RY test tape at 1945. (Hall-RSA)

13077.0 KMI-Dixon Radio, CA, working the Jasper 2 in USB at 0309. (Szalony-CA) Working Royal Viking Sun in USB at 1640 (Levine-CA)

13083.0 VIS-Sydney Radio, Australia, with station ID in USB at 1306. (Lish-FL)

13095.0 PCG52-Scheveningen Radio, Netherlands, with Dutch phone patch traffic in USB at 2125. (Lish-FL)

13152.0 FFL61-St. Lys radio, France, with ID in French and traffic for several vessels at 1305 in USB. (Marshall-Greece)

13170.0 SVN5-Athens radio, Greece, with phone patches (in Greek) at 1315 in USB. (Marshall-Greece)

13231.0 VEG-Canadian Forces Lahr Military Radio, Germany, with aero weather at 1321 in USB (Marshall-Greece)

13244.0 USAF GCCS Lajes, Azores, with EAM at 1740 in USB. (Hall-RSA)

13361.0 English female 3/2-digit number station in AM at 1347. (Marshall-Greece)

13950.0 AHF4 (Howard AFB, Panama) with 5KO225 (Bogota, Colombia) with USB phone patch about repair parts arriving on a plane at 1815. (Frantz-GA)

14356.0 GFL24-Bracknell Meteo, England, with 50 baud RTTY coded weather traffic at 1022. (Burkhart-LA)

14367.0 BZP54-Xinhua News agency, Beijing, China, with RTTY 75 baud RY test tape then into English news at 1030. (Burkhart-LA)

14560.0 HVN-PTT Vatican City with ARQ-M2 idling at 0907. (Burkhart-LA)

16300.0 OMZ-Ministry of Foreign Affairs Prague, Czechoslovakia with RTTY 100 baud RY test tape at 0920, off at 0935. (Burkhart-LA)

16974.0 SPE81-Szczecin Radio, Poland, with DE CW marker at 1635. (Hardester-NC)

17245.0 GKT82-Portishead Radio, England, with phone patches for several ships at 1257 in USB. (Marshall-Greece)

17275.0 GKT66-Portishead Radio, England, with English phone patch traffic in USB at 1943. (Lish-FL)

20027.0 FEMA stations WGY909 (San Francisco) working WGY959 (Honolulu) with radio checks and RTTY traffic at 1802. (Frantz-GA)

20204.0 YZJ-Tanjug News Agency, Belgrade, Yugoslovia, with 50 baud RTTY news items in French at 1244. (Burkhart-LA)

20286.5 SOV228-PAP news agency Warsaw, Poland, with SITOR-B news in Polish at 1406. (Burkhart-LA)

20628.0 CLP9-Cuban Embassy in Sana, Yemen, with 5-letter groups and clear spanish traffic using 50 baud RTTY at 1445. (Burkhart-LA)

20734.0 4UZ-UN Radio, Geneva, Switzerland, with SITOR-A telexes and chit chat at 1315. (Burkhart-LA)

20754.4 TTR88-ICRC Chad with SITOR-A traffic at 1440. (Burkhart-LA)

22487.0 WLO-Mobile Radio, AL, with SITOR-B weather broadcast at 1830. (Mike Muth-LaPlata, MD)

22711.0 GKT76-Portishead Radio, England, with phone patches for several ships at 1235 in USB. (Marshall-Greece)

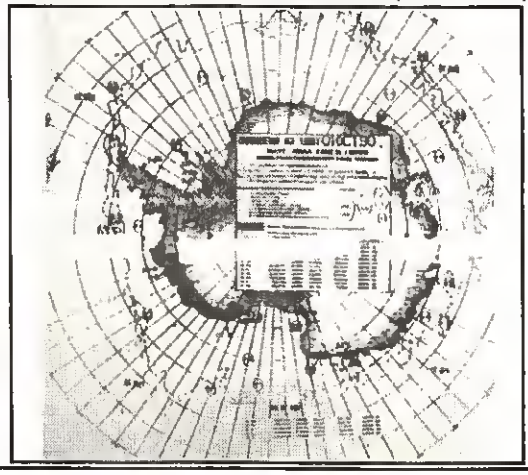
22735.0 KMI-Dixon Radio, CA, with High Seas phone patch traffic in USB at 1623. (Lish-FL)

22744.0 SVN7-Athens Radio, Greece, with phone patch traffic in Greek in USB at 1655. (Lish-FL)

25271.5 ANSA news agency Rome, Italy, with 50 baud RTTY broadcast at 1420. Need call sign for this one. (Burkhart-LA) *ISX25-Larry.*

26105.0 WLO-Mobile Radio, AL, with CW marker at 0030. (Gerald Brookman-Kenai, Alaska) *Welcome aboard Gerald, nice to hear from our far northern neighbor; please report often-Larry.*

26123.0 WLO-Mobile Radio, AL, with DE CW marker at 0100. (Brookman-AK)



Antarctica Northern Ice Limits Chart submitted by Robert Hall of Capetown, South Africa. Station ZR04, Pretoria, South Africa. 18238.0 at 0816 UTC.

The Scanning Report

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Scanner Laws

Scanning in the nineties is more than simply turning on your scanner radio and listening to the action. Scanning is quickly becoming entangled with legal complications. The Electronics Communications Privacy Act of 1986 (ECPA) is a prime example. As we all know, the law prohibits third party monitoring of cellular phones. We also know that the law is ridiculous, but that really isn't the issue. The ECPA is important because it restricts our access to the airways.

Think about that for a moment. For the first time in history, the government has restricted your access to a specific group of frequencies.

The issue becomes laughable when you realize that it's perfectly acceptable to routinely monitor the Secret Service—the agency that protects the President. It's also legal to monitor the frequencies that belong to the Drug Enforcement Agency (DEA). We can't divulge what we hear, but we can legally listen. On the other hand, the ECPA has made it illegal to listen to the cellular bands. You can be prosecuted for simply admitting to monitoring between 870.00 and 890.00 MHz.

Mobile scanning is another segment of the hobby that is controlled by a variety of restrictive laws. There are a number of states that do not allow scanner radios in vehicles. In most instances, a ham radio license is all that's needed to prove that your intentions were not criminal. But a ham license won't protect you in every state. Ham radio buffs with mobile scanning rigs have been prosecuted. At this writing, scanning from a vehicle is banned in Florida, Indiana, Kentucky, Michigan, Minnesota and New York.

What You Can Do

Write a letter to your Congressman or Senator. If you don't know the address, call 202-224-3121 and ask. Your letter should state that you are opposed to any new legislation that would further restrict your right to monitor the airways. Simply pretend that you're writing a letter to a friend. Don't worry about using fancy paper or using a specific format. A note pad and pen will do.

How important is your letter? To a Congressman or Senator, your letter represents approximately 1000 votes—a figure derived from your personal contacts with friends and family. Scanner hobbyists in New Jersey organized a letter writing campaign that proved highly successful. Scanner prohibition in New Jersey was recently struck down and replaced with a less restrictive law.

Sure, I know what you're thinking. Let somebody else do it, you don't have time. And that's exactly where we fail. As scanner hobbyists, we are not accustomed to joining together as a group. Why? Because we usually scan alone, in the privacy of our homes. Scanner buffs are natural loners. But if we intend to preserve the hobby, we must let our political leaders know who we are.

Call to Arms

The Senate will shortly be voting on legislation that could prohibit the manufacture of radio scanners that pick up 800 MHz cellular frequencies. The proposal, already passed by the House, would ban the production of all scanners capable of intercepting cellular calls as well as those that could be readily altered to do so.

If the cellular bands are eliminated, it's only a matter of time before the public service bands are removed from scanner radios as well. Scanner radios will continue to be sold, but gone will be the days of listening to police, fire, ambulance and government agencies. If you're worried about loosing your right to monitor the airways and the investment in your equipment—you had better write a letter.

Scanning clubs can be found in nearly every state. Here are a few examples of how club managers can encourage their members to write a letter: 1) Offer reduced membership rates to letter writers. To qualify for the special rate, members would submit a copy of their letter. 2) Give away a prize. To enter the drawing, members would submit a copy of their letter. 3) Invite your Congressman or Senator to a club meeting. Then explain why the club is opposed to new anti-scanning laws.

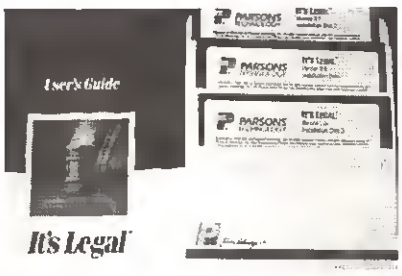
In today's high tech society, it's difficult to keep pace with our rapidly evolving technology. Restrictive scanner laws are testimony to the fact that our legislators in Washington need to be educated. They simply don't understand that restrictive scanning laws cannot guarantee privacy. It's up to you and I to educate our Congressmen and Senators. We can do that by simply writing a letter—a 29 cent letter.

Listener's Lawbook

Published by Grove Enterprises, the *Listener's Lawbook* compiled by Frank Terranella, Esquire, defines the restrictive scanning laws that can be found in the following states: California, Florida, Indiana, Kentucky, Maine, Michigan, Minnesota, Nebraska, New Jersey, New York, North Dakota, Oklahoma, Rhode Island, South Dakota, Vermont and West Virginia. The manual explains the laws of each of the above states and also covers the ECPA and other federal monitoring laws.

If you're planning to travel with a mobile scanning rig, the book could prevent you from being fined and possibly losing your valuable equipment. Listeners staying closer to home will also find the book to be an informative and valuable reference source. To obtain a copy, order BOK 16, $9.95 plus $3 UPS, from Grove Enterprises, P.O. Box 98-MT, Brasstown, NC 28902.

Treasure Hunt



Need a legal document in a hurry? No problem. With the Treasure Hunt prize from Parsons Technology, you can produce 24 binding legal documents in minutes.

In the beginning of this column, I discussed a few of the legal issues that are affecting our hobby. But as we all know, the laws of our land also affect our daily lives. Are you confused by today's complex legal issues? If so, sit back and relax. Parsons Technology has developed a software program that will prepare 24 binding legal documents. "It's Legal 2.0" is written in plain English, with pull down windows.

Here are a few of the documents that you can produce: Bill of Sale, Board of Directors Minutes, Better Business Bureau complaint letter, Request for Credit Report, Letter to Challenge Credit Rating, Employment Confirmation letter, various Powers of Attorney, Living Wills, and many more.

Were you recently refused a line of credit? No problem. "It's Legal 2.0" can crank out a letter to challenge your credit rating in less than 15 minutes. All you do is follow the on-screen prompts and type in a few lines of information. "It's Legal 2.0" is customized for each state, features on-line help, a glossary of terms and program operating instructions. There's also a legal guide which explains the purpose and usage of documents.

Best of all, you can win "It's Legal 2.0." Parsons Technology has provided two complete software packages for our May/June Treasure Hunt. Here are the clues:

1. The ECPA prohibits the monitoring of voice pagers. True or False?
2. The ECPA also prohibits you from descrambling a radio transmission. True or False?
3. What is the scan speed on Radio Shack's PRO-37?
4. A walkie talkie with a "red dot" designator would operate on what itinerant frequency?
5. Is proficiency in Morse Code required to operate Radio Shack's HTX-202? Yes or No.

Parsons Technology is best known for their award winning financial management program, "Money Counts." Bob & Martha Parsons founded the company in 1984 and maintain a high standard of customer service and technical support. A few of their other products are: Personal Tax Edge, Virucide 2.3, Bible Illustrator, Diet Analyst and Typing 101.

The average list price of Parsons products is only $49.00 dollars. There's also a 30 day money back guarantee; purchasers may return a product, no questions asked. To receive their software catalog, write to: Parsons Technology, One Parsons Drive, Hiawatha IA 52233-0100. The phone number is: (319) 395-9626. When you call or write, don't forget to mention *Monitoring Times*.

Frequency Exchange

For our first stop, you'll need a bag lunch. Welcome to the County Park in **St. Louis, Missouri**. Here are the park frequencies: 151.145, 151.235, 151.295, and 151.430. As you relax, here are a few other local frequencies that can be monitored.

42.12	Missouri State Police
42.12	Missouri State Police
42.32	Missouri State Police
42.38	Missouri State Police
150.995	County Highway Dept.
151.040	Highway Department
151.115	County Highway Dept.
151.835	Meramec College Maintenance
153.830	County Welfare
153.980	Emerg. Management Repeater
155.040	Eastern Correctional Center
155.535	Meramec College Campus
155.595	Water Patrol, Boat to Boat
155.670	Eastern Correctional Center
155.895	Water Patrol
155.985	Eastern Correctional Center
159.00	County Highway Dept.
453.200	Convention Center Security
453.400	Wash. University Security

The complete list of St. Louis Frequencies contains eight pages of information and frequencies, including CTCSS tones. If you want the complete, anonymously submitted list, here's the deal. Send a #10 SASE with $3.00 dollars to the Frequency Exchange, P.O. Box 98, Brasstown NC 28902. Be sure to specify that you want the "St. Louis" list.

Our next invitation was sent in by Rick Swierczynski. Rick lives in **Milwaukee, Wisconsin**, and here are his favorite frequencies.

Milwaukee Police

460.025	Tow desk	460.35	Dispatch Dist. 3 & 6
460.075	Dispatch Dist. 1,2,5	460.375	Detectives
460.15	Information	460.40	Internal Affairs
460.20	Special Events	460.50	Vice Squad
460.225	Dispatch Dist. 4 & 7	155.64	Tactical (low band)
460.30	Information	159.15	Youth Bureau

Rick also provided the 17 radio codes used by the Milwaukee Police.

C-1	Cleared by arrest 18/over	C-10	Advised
C-2	Cleared by arrest under 18	C-11	State citation issued
C-3	Not cleared-pending	C-12	City citation issued
C-4	C.I.B. disposition	C-13	Follow-up day book entry
C-5	CIB follow-up	C-14	Order to appear
C-6	No prosecution	C-15	Unable to locate
C-7	Filed emerg. detention	C-18	Assignment complete
C-8	Filed accidents	C-19	False Alarm
C-9	Unfounded		

Joe Petsche lives in **Cleveland, Ohio**, and he has invited everyone to join him on the "Conrail" railroad. According to Joe, Conrail is using new radios that operate on the "AAR" channel system. All movements on the Cleveland Conrail system operate on AAR channels 46, 64 and 50.

To match the AAR channels with their specific frequencies, Joe provided an AAR channel chart. The chart contains all 97 AAR frequency assignments and it's free. Send an SASE to the Frequency Exchange, P.O. Box 98, Brasstown, NC 28902. In the meantime, here's a peek at the information provided by the chart:

Channel Number	Frequency	Channel Number	Frequency
1	159.810	74	161.220
46	160.80	77	161.2650
50	160.860	94	161.5200
64	161.070	97	161.565
70	161.160		

If you don't appreciate visiting with the railroad, let's run over to the **Baltimore Gas & Electric Company**. Ron Brukman lives in

Maryland, and he wanted everyone to know that the utility company has switched to 800 MHz. Here are the new frequencies:

852.8875	853.7625	855.1875	855.3625	855.4125
855.6125	855.6375	856.2875	857.2875	858.2875
859.2875	860.2875			

Ready for a trip to **Queens, New York**? Gary Symbouras lives in the city, and he has provided the following frequencies for our entertainment:

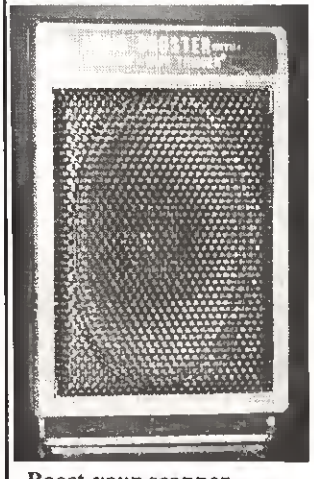
476.4875	107 Precinct
476.5375	100, 101, 102 Precincts
476.8125	110, 114, 115 Precincts
476.9375	109 Precinct
477.0125	111 Precinct
477.0375	104, 108, 112 Precincts
477.1125	103, 105, 113 Precincts

Is a small country town more your speed? No problem. Our final stop will be **Stratford, Connecticut.** Here are a few of the frequencies that John Klaff monitors on a daily basis:

39.46	Fairfield Co. Police Hotline
42.04	Conn. State Police Troop G
120.90	Bridgeport Airport Tower
121.90	Bridgeport Airport ground control
153.77	Bridgeport City Fire
153.83	Bridgeport City Fire channel #2
154.10	Bridgeport City Police
154.31	Statford City Police
154.725	Bridgeport City Police
155.34	Ambulance Net
161.70	WICC Radio
460.325	Stratford Police Dept.
462.60	Bridgeport Airport Security
462.95	Southwest C-Med Dispatch
463.575	Bridgeport Ambulance Service
464.225	Bridgeport Hospital Security

Well, we enjoyed lunch in the park, rode on the rails and visited a few towns. It was a lot of fun. If you want the Frequency Exchange to visit your home town, send a list of frequencies to the Frequency Exchange, P.O. Box 98, Brasstown, NC 28902

Boost Your Audio



Boost your scanner radio's audio with the all new HTS-2 from Naval Electronics.

Hand held scanner radios have one common problem—poor audio. Trying to hear a hand scanner in your car is nearly impossible. To boost the audio, you need the new HTS-2 from Naval Electronics. The HTS-2 is an amplified speaker with a 10dB internal amplifier. Powered from internal nicads, the HTS-2 has a built-in battery charger. The automatic shut-off feature kills power to the amplifier whenever there is no audio output from your scanner radio. When the unit is activated, power drain is measured in micro-amps. The amplifier can also be manually switched off, and the audio input routed directly to the unit's 3.5 inch oval speaker.

The HTS-2 automatically senses the polarity of external power. It can be connected to a positive or negative ground without concern. A remote jack is also provided to trigger a portable cassette player. The HTS-2 measures 2-3/4" x 4-1/2" x 2-1/2 inches, and retails for $29.95. The silver/gray case is compact, attractive and ruggedly constructed.

If you want to add high quality sound to your handheld scanner radio, contact Naval Electronics, 5417 Jet View Circle, Dept. MT, Tampa, Florida 33634. Phone: (813) 885-6091.

CB Club Nabs Suspect

When a California Highway Patrol officer tried to stop a Camaro, the driver began to speed away. The officer pursued the vehicle at speeds in excess of 135 mph. The driver of the Camaro reportedly turned off the highway and then doubled back, losing the law officers.

That's when the Saddelback Communications Team stepped in. A citizen's band (CB) radio club, the team heard the police report over their scanner radios. The club members spotted the Camaro, and called out the location of the suspect on their CB radios. A member of the club then flagged down a passing patrol car.

The law officer listened to the club's CB radio reports and then relayed the information to the pursuing police cars. The wild chase ended a few minutes later when the Camaro flipped on its side and rolled off an embankment. (News clipping from Kraig S. Black, Lake Forest, CA)

Burglars Scared by Answering Machine

When Dave Matthews turned on his police scanner at work, he got an unpleasant surprise. His home was being burglarized. The police had been dispatched to his home address! Unable to get home in time, Dave improvised. He called home and when his answering machine turned on, he yelled: "Drop that right now, and get out of my house!"

Dave then heard another police radio call saying that the burglars were fleeing his house. Police later arrested two teenagers and charged them with the crime. (News clipping from the Denver *Post*.)

Scanner Call Girl

In Gainesville, Georgia, four Sheriff's deputies have been suspended for having sex while on duty. A call girl used a police scanner to locate the deputies in various locations of the city. When the deputies would radio their locations to the dispatcher, the call girl would monitor the frequency. She would then drive to the location and offer her services. The scheme was discovered when the officers got careless and joked about the incidents over police radio. (News clipping from the Atlanta *Journal*.)

Cellular Traffic

The cellular folks in Seattle, Washington, began providing traffic information to about 50,000 customers in the Seattle area. The service is called Traffic Watch, and according to cellular sources, it's "just the beginning" of a new movement to provide information via cellular phones.

The service will be updated by the minute and it will be free. But cellular customers must pay for the air time. Customers can also call in with their own up-to-the-minute traffic reports.

You probably remember that telephone companies were barred from providing information services under a 1984 decision that broke up American Telephone and Telegraph Company. That prohibition was lifted by a U.S. Court of Appeals in October, 1991. Future services that can be provided by telephone companies are unlimited. Several utility companies are considering sending your water and electric readings via the phone lines—it would eliminate the need for meter readers.

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Scanner World, USA

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SCANNER WORLD EXCLUSIVE

UNIDEN BEARCAT BC205XLT

$259.99 *($7.00 shipping)*

Digital programmable 200 channel hand held scanner with raised button keyboard for easy programming of the following frequency ranges: 29-54 MHz, 118-174 MHz, 406-512 MHz, 806-956 MHZ.* Features include: Scan delay, memory backup, key pad lock, sidelit liquid crystal display, channel lockout, 10 twenty channel banks, direct channel access, automatic search, full one year factory warranty, 10 priority channels, Ni-Cad battery pack, AC adapter/charger, flexible rubber antenna, carry case are all included. Size is 2-11/16"Wx1-3/8"Dx7-1/2" high. (Optional extended 2 yr. warranty $29.99, 3 yr. extended warranty $39.99.) (*Excludes Cellular)

#CC-008 Heavy Duty Leather Carry Case **$27.99**

RADIO SCANNERS

BEARCAT BC55XLT	108.99	(7.00)
BEARCAT BC70XLT	144.99	(7.00)
BEARCAT BC100XLT	159.99	(7.00)
BEARCAT BC140	94.99	(7.00)
BEARCAT BC142XL	94.99	(7.00)
BEARCAT BC147XL	99.99	(7.00)
BEARCAT BC172XL	139.99	(7.00)
BEARCAT BC177XL	139.99	(7.00)
BEARCAT BC200XLT	279.99	(7.00)
BEARCAT BC205XLT	259.99	(7.00)
BEARCAT BC210XLT	139.99	(8.00)
BEARCAT BC310A	85.99	(7.00)
BEARCAT BC330A	109.99	(7.00)
BEARCAT BC400XLT	99.99	(7.00)
BEARCAT BC560XLT	109.99	(7.00)
BEARCAT BC760XLT	269.99	(7.00)
BEARCAT BC800XLT	249.99	(8.00)
BEARCAT BC855XLT	186.99	(8.00)
BEARCAT BC950XLT	249.99	(7.00)
COBRA SR901	74.99	(6.00)

MIDLAND CB Radios	*In Stock*
COBRA CB Radios	*In Stock*
UNIDEN CB Radios	*In Stock*
Two-Way Radio Batteries	*In Stock*
Scanner Antennas	*In Stock*
Power Supplies	*In Stock*

RELM RH606B	414.99	(8.00)
RELM UC202 (2 or more)	129.99	(6.00)

SCANNER ACCESSORIES

BCAD70	14.99	BP4	24.99
BCAD100	14.99	BP55	16.99
BCAD140	14.99	MA917	24.99
BCAD 580	16.99	MA518	14.99
BC003	7.99	ESP25	16.99
BC002	59.99	GRE8002	79.99
PS001	12.99	GRE-HH	54.99
UA502A	12.99	GRE9001	89.99
BP205/200	34.99	GRE 3001	62.99
BP70	16.99	FBE	5.99
VC001	12.99	FBW	5.99

BOOKS

Covert Intelligence	8.95
Air Scan Directory	14.99
Betty Beercat	4.00
Top Secret (7th)	15.99
Covert Techniques	9.95
Tomcat's Big CB	13.95
World Radio	18.99
Survival Directory	6.95
Rail Scan	7.95
Police Call	8.69
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 ambulance, police, tire, 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 2¾"Hx6"Wx10¼"D.

SPECIAL PACKAGE DEAL includes RH-256NB, mobile microphone, ¼ wave body mount antenna, mobile mounting bracket and mobile power cord all for the low price of $339.99.

UNIDEN BEARCAT BC-400XLT

$99.99

($7.00 shipping)

Our best selling mobile scanner. 16 channel, AC/DC programmable, digital. AC/DC cords, telescopic antenna, mobile mounting bracket, weather search, priority, 29-54 MHz, 136-174 MHz, 406-512 MHz, external speaker and antenna jack.

BEARCAT BC-100XLT

100 Channel Digital Programmable Hand-Held Scanner

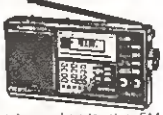
$159.99

($7.00 shipping)

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.

SANGEAN ATS-803A

SHORT WAVE RECEIVER



$168.99

($7.00 shipping)

AM-FM-LW and 12 shortwave bands plus FM stereo. BFO for SSB reception, clock radio. Includes AC adapter, telescopic antenna, stereo headphones, and shoulder strap.

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.

SPECIAL!!

LOWEST PRICE EVER FOR A PROGRAMMABLE SCANNER

Cobra

SR-901

AVAILABLE ONLY FROM SCANNER WORLD

ONLY! **$74.99** Each

(Plus $6.00 Shipping Each)

$69.99 (2 or more)

Features include: 10 programmable channels, one touch memory programming, external speaker jack, 29-54 MHz, 136-174 MHz, 400-512 MHz squelch, lockout, full frequency digital readout, AC or DC operation, retains memory up to 3 days without power, scan button. Includes AC adapter, telescopic antenna, and complete operating instructions. Size: 7¼"W x 2"H x 7¼"D. One year factory warranty. (Optional mobile cigarette lighter cord #901MPC $4.99).

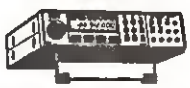
UNIDEN BEARCAT BC 800XLT

$249.99 *($8.00 Shipping)*

Receive Cellular Phone Calls

Plus 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 (includes cellular). 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"D x 4½"H x 12½"W. Channel lockout, direct channel access, scan delay, priority, digital display, auto weather button, automatic search, track tuning.

UNIDEN BEARCAT BC-950 XLT

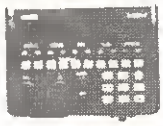


$249.99 *($7.00 shipping)*

Digital Programmable 100 Channel Scanner

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.

UNIDEN MR 8100



SPECIAL SALE PRICE ONLY **$289.99** *($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, 406-512 MHz, 806-956 MHz. Dimensions: 7.9"W x 5.8"H x 1.9". Earphone jack, BNC antenna jack, DC power cord, mobile mounting bracket, internal memory backup, bank scanning, 10 banks of 10 channels in any combination.

★ ALL MERCHANDISE NEW, IN FACTORY SEALED CARTONS

BEARCAT BC210XLT

$139.99

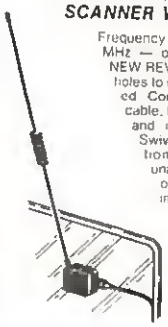
($8.00 shipping each)

Scanning Radio Receiver

Digital programmable, 40 channels, 11 bands including aircraft. AC/DC base, with raised letter keyboard for easy programming of the following frequency ranges: 29-54 MHz, 118-174 MHz, 406-512 MHz. Covering aircraft, police, fire, marine, trains, stock cars, weather, public service, plus much more. Features include: digital display, no crystals required, priority, external speaker or headphone jack, scan delay, auto weather button, channel lockout, search, squelch, memory backup.

GM-1A™ GLASS MOUNT SCANNER ANTENNA

—ONLY AVAILABLE FROM SCANNER WORLD—



Frequency coverage 25-1200 MHz — only 22 inches tall. NEW REVISED DESIGN — no holes to drill — no glue needed. Complete with 17 foot cable, Motorola connector, and mounting hardware. Swivels to vertical position — performance unaffected by moisture on the window. Made in USA.

SPECIAL

$39.99

($4.00 Shipping Each)

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Scanner World, USA® •10 New Scotland Ave., Albany, NY 12208 • 518/436-9606

GEnie T.AREY1

Setting Up a Shack

Well, the April Showers have brought the May flowers. They have also brought my Significant Other's wish list of home improvements under my nose. The rear fence, the trellis for the grapevines, and that Darth Vader of all home modifications, bathroom remodeling!

I sometimes think that I got into the radio monitoring hobby because it gave me all winter to let my thumbs and knuckles heal from the summer building projects. Maybe it's time I taught Number One Son how to use a hammer.

My sympathies, Uncle Skip, but this is a radio magazine, not home improvement anonymous!

Sure Boss, no sweat (except for me most of the summer). Home improvement can actually be fun and if you are a radio monitoring hobbyist, the most fun can be had setting up your radio shack. You are only limited by your imagination, your carpentry skills and, of course, your pocket book. So without further foolishness, I give you...

UNCLE SKIP'S GUIDE TO PLANNING YOUR MONITORING STATION

Most beginners spend their first DX season or two setting up their listening post anywhere they can. Many people just sort of wander around the house with their portables. If you have your scanner running in the family room, no doubt some members of your family have commented (strongly) that you should consider moving its location so it does not interfere with their enjoyment of the latest episode of "Northern Exposure."

You have probably discovered by now that successful listening also involves a certain amount of research and record keeping that is a bit hard to do when your receiver has no permanent home. Much has been written over the years about the kind of desk and chair that makes for good DXing. Instead we are going to take a look at the room itself.

Location

Real estate speculators always say that location is the most valuable thing about a property. However, not all places are ideal locations for enjoying the radio hobby. I also think it is safe to assume that very few folks are willing to pull up stakes and move just for the further enjoyment of monitoring. (If you can afford to do that, drop me a line about my "reasonable" personal consultation fees).

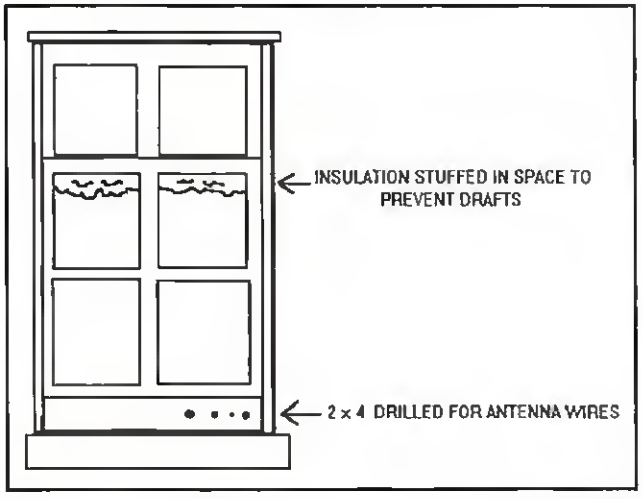
Further, if you live with other people who are not equally dedicated to radio monitoring, you will find certain limits as to where you may locate your equipment. Seeking out your initial shack space requires that you find the best place in the house that gives you privacy, power and access to the outside of the house.

Privacy

Dedicated radio people sometimes drag themselves out of bed in the wee small hours of the morning to hear something that is not there any other time of the day or night. Likewise, listening during "normal" hours can be frustrating if other members of your clan burst in just as that ID of Radio Freedonia you have been seeking for six months comes over the air. What you want is two-way privacy.

Every house I have ever been in seems to have a corner where things that are seldom used get piled up—stuff that is sort of out of sight and out of mind. This might be a good place to begin your hunt for a station location. If your children have yet to discover the joys of owning copious amounts of clothing, there may be a closet that can be turned into an ideal monitoring spot. Basements, if they are not too damp and dreary, are also popular places for a listening post.

A great out-of-the-way place is a corner in a spare or guest room that is not in regular use. Besides, when friends visit you can introduce them to the greatest hobby in the world! Avoid attics and garages unless they are sufficiently climate controlled. If you want to wear two pairs of longjohns while enjoying a hobby, take up ice fishing!



Power

Part of thinking out your shack location is going to be locating direct access to power for your receivers and any other equipment you draw into the fray. Of course these needs will be different for each person. Minimally, you will need to have one grounded outlet to plug in the receiver. If you have more than a few accessories you will want to consider one of the many power strips that are available on the market. These are especially useful because they are usually fused and have a master power switch. Better quality power strips also provide protection against line voltage surges, further protecting your investment. Be careful not to exceed the recommended capacity for either the power strip or the wall outlet. *If you have any questions concerning your household power and its use, consult a licensed electrician!!!*

Especially if you are modifying an area to become a shack, you will want to get with your electrician to discuss installation of sufficient wall outlets to meet your anticipated hobby needs. You might want to discuss putting your shack's power on one or more separate circuit breakers to allow for additional power needs, especially if you plan to enter the world of amateur radio. Transmitting requires significantly more power then receiving. Remember, long extension cords are not only "tacky," you can trip over them and they can be fire hazards.

Lighting

This is sort of a sub-subject of power because very few folks DX by candlelight. You will want to have plenty of light to make reading and writing possible without eyestrain. Depending on which frequencies you frequent, try to stay away from fluorescent lighting. Fluorescents can cause unwanted interference. (Is there such a thing as WANTED interference?) Stick with incandescent lightbulbs for best performance. Try to locate the lighting so that it does not cast shadows when you are reading and writing. Ceiling lights are notorious for this.

Access to the Outside World

One of the first signs that the radio bug has truly bitten the hobbyist is the decision to put up an outside antenna. Planning for first and future antenna installations should be part of your shack design project. Easy access to the outside world for antenna lead-ins is not as tricky as it sounds. Usually the easiest route outside is through a window.

A simple system for running cables in and out of your house can be made by installing a piece of 2x4 lumber under a window (see illustration). Drill holes through the wood to accommodate all the wires. You can also run your ground wire out to an outside ground stake through this 2x4 if you do not have a cold water pipe near your shack setup.

A more permanent solution to outside access can be had by removing one window pane and replacing it with Plexiglass drilled for the wires. If you are more experienced in carpentry you can drill through windowsills and even walls. This usually requires extra long drill bits and a clear understanding of what you are drilling through. Drilling through a waterpipe can ruin your house. Drilling through house wiring can ruin your LIFE.

If you do choose to drill your way out of your house, make sure that you insulate the wire's path through the wall against contact with any metal flashing, insulation or siding. This can be done with common PVC (Poly Vinyl Chloride) piping available at most hardware stores. A more elegant solution can be found at most electronics supply stores. This consists of a plastic tube with fittings on both ends that allow you to feed wires easily through any hole you have drilled.

When planning your outside access, make sure you actually go outside and estimate where the wires are going to be coming out. Check to see that the antenna lead-ins will not need to traverse the path of incoming household power or telephone lines. This is a basic safety precaution to assure that your monitoring never becomes a shocking experience.

The actual choice of antennas you may consider is beyond the scope of this article. However, you may want to peruse any of the popular antenna books available through the various radio booksellers found in the pages of *MT* as part of your shack planning process.

Some Additional Thoughts on the Cold Water Pipe Ground

If your receiver manual or antenna application indicates that you need a separate ground connection, it is often recommended that you hook up to a nearby cold water pipe. Woops, I just recommended that myself, didn't I? I suppose by making such a recommendation I am showing my years.

This method of ground connection only works if you can assure yourself that you have a continuous copper pipe running from your connecting point right out through your house. Many newer homes have PVC pipes throughout as opposed to traditional copper. Also houses of any age may have modern water meters that have plastic connectors that break the copper connection to ground. So don't assume that, when you hook up your ground connection under the bathroom sink, you are really getting out there to a good earth ground. Trace the line first. If your house' water system is "plasticized," you will have to resort to an outside ground stake to get the job done.

Space Utilization

My old Zen Master used to say "It is not the cup that performs the task it is the space within it." The same holds true with most rooms. Now that you have zoned in on your shack location you will want to give some thought to making the space most useful.

After you have picked out the desk and chair that suit your needs, you will want to plan for maximum use of the remaining space for that research and record keeping stuff we talked about earlier. Old Uncle Skip's first law of great shack design is **You Can Never Have Enough Shelves,** closely followed by my second law **You Can Never Have Enough Filing Cabinets.** A couple of shelves right over your receivers will hold all of those important frequency reference materials. A two or four drawer file cabinet is just the ticket for storing articles, log sheets and other record keeping materials.

If you want to make things as efficient as possible there is a neat "human engineering" experiment you can perform before you even drive a single nail. Put a chair in the spot where you plan to sit during your DX sessions. First look straight ahead. Assuming that your receivers are arrayed on your table top (tilted upward to avoid neck strain, of course), that point at eye level is the ideal place to install a shelf for your most needed reference materials.

Now, from the same sitting position, move your dominant hand around the desk top and room space. In the Martial Arts this is known as the dynamic circle. Everything within the immediate reach of your hand can be controlled quickly. This is an important notion in office design as well as in street fights. From your operating position you can now envision the most likely locations for desk, drawers, file cabinets, shelves and switches.

Shelving comes in all shapes and sizes and can be had for very reasonable prices. Shop around a few hardware stores and lumber yards till you find what is right for your location. The only proviso I would recommend is that you make sure the shelving is sturdy and firmly installed. Nothing can ruin a DX session quite like a load of books pouring down on your head.

Go For It

As you can see, planning is essential to setting up a room for the radio monitoring hobby. Take your time. Look at several configurations. If you know someone locally who is involved in the radio hobby I am sure they will be pleased as punch to show off their shack to you. You can get many great ideas this way. And of course HAVE FUN as you establish your personal Radio Inner Sanctum!

MT

Steve Douglass

Tornado Spotters

In April's *Monitoring Times*, P.J. Richardson's feature story *Listening in on the Weather Watchers* sure struck a nerve with your Fed File author. Having been a resident of "Tornado Alley" for over twenty years, I have had my share of close calls with tornados. A spring hasn't gone by that we (my family and I) haven't had to make a trip down into the old storm cellar.

Owning a scanner and listening in as the storm spotters do their job has proved to be a distinct advantage in planning one's course of action during a severe storm. In the Texas Panhandle, we have an elaborate network of storm spotters. Ham radio operators, civil defense and public safety officials all do their part to keep the public informed. These volunteers provide a great service to their communities, putting in long hours and using their own expenses to provide the early warning that might save some lives.

Professional Tornado Chasers

Believe it or not, there are some people who get paid to chase deadly tornados. These people try to get as close as they can, venturing into the jaws of these violent and sometimes deadly storms. During the severe weather months, vans packed with weather sensing equipment, computers, high speed cameras, and state of the art communications gear, can be seen roaming through tornado alley in search of likely storms. They sometimes risk life and limb to get the data they need. They are the meteorologists of the National Severe Storms Laboratory based at Norman, Oklahoma, and you can listen in on their near-suicidal exploits on your scanner.

National Severe Storms Laboratory Mobile Atmospheric Observatory

If these guys are in your area, it is probably not good news. If you happen to hear them on your scanner and if they are in or near your town, be assured the storms that day will be intense. The tornado chasers of the NSSL are only interested in "Super Cells," as they are called—violent storms containing large hail (golf ball sized or bigger) dangerous lightning, high winds, and of course, large killer tornados.

I caught up with the NSSL chasers one day when an intense breakout of severe storms was expected in the local area. I had programmed their frequencies into my scanner and heard them conducting weather experiments, about 30 miles east of where I lived.

The NSSL team, which consists of about 12 members traveling around in four equipment-packed vans, were conducting "dry line" experiments along with the help of an orbiting P-3 Orion, specially outfitted for weather reconnaissance. The P-3 was busy taking instrument readings along the dry line, an invisible boundary separating warm, moist air from a cool, dry air mass. It is the collision of these two air masses that promotes the outbreak of severe storms. It is this process that the NSSL teams are hoping to observe.

High Tech Tornado Gear

The NSSL team, the orbiting Orion, and seven NOAA stations were all connected by computer terminals transmitting data via satellite on 251.500 MHz (nbfm uplink) and 268.700 (nbfm downlink)—UHF military band frequencies. It was the job of the NSSL team to collect and collate data from the P-3 Orion and weather sensing packages, sent aloft via helium balloons, and transmit it to the NOAA stations so they could predict where severe weather was likely to develop. They would pass this information on to the National Weather Service, who would issue the day's appropriate watches and warnings.

According to the NSSL team members, the data collected that day indicated the most likely candidates for severe weather were the counties due north in the Oklahoma Panhandle. They weren't wrong. Later that evening the small Oklahoma Panhandle town of Lavern was flattened by a large twister killing two people. More might have died if the proper watches and warnings had not been issued, thus preparing the communities in the storm's path.

And Toto, Too!

One of the most dangerous tasks the NSSL performs puts them directly in the path of deadly churning tornados. TOTO (Totable Tornado Observatory) is a 400-pound barrel of weather sensing equipment that is designed to be placed in a tornado's way. Named for Dorothy's dog in *The Wizard of Oz* , it is hoped that TOTO will be sucked up into a tornado, enabling scientists to measure the winds and pressures that occur inside a twister's core. So far no tornado has directly hit TOTO, though a small one sideswiped it in 1985.

Table 1: National Weather Watch Frequencies

NOAA Weather Radio:
162.400 162.450 162.475
162.500 162.525 162.550

Aircraft Weather:
122.200 122.650 255.400
239.800 342.500

Ham Storm Spotters:
Search between 145 and 148MHz, 220 and 225 MHz

NOAA HF Links (All USB):
2.776 3.360 5.925 6.977
9.947 14.792

NOAA Hurricane Hunters:
3.407 5.565 6.673 8.876
10.015 13.354 17.901 21.937

NSSL Aircraft Links:
122.900 122.920 122.950 122.925
123.05 123.075

Chase Vans Coordination:
173.100 163.275 409.750

NOAA NSSL Satellite Links:
261.500 (nbfm uplink)
268.700 (nbfm downlink)
Radiosondes: 403 to 404 MHz

Weather sensing equipment is sent aloft by helium balloon. The data collected is sent back to the NSSL vans by radio in the 403-404 MHz band.

It is a wildly dangerous job, positioning TOTO in the path of an oncoming twister. It is a job that requires an intimate knowledge of when and where a tornado is likely to form as well as nerves of steel. NSSL team members all share tales of close encounters with tornados and they have the video tapes to prove it. I have viewed some of this footage and they are not for the faint of heart. The NSSL tornado chasing teams make the exploits of Indiana Jones look pale by comparison.

Listening in on the NSSL

The frequencies used that day by the NSSL team were 122.920 MHz (primary link to the orbiting P-3 Orion) and 122.950 MHz (secondary). Other frequencies included 403.750 MHz and 403.150 MHz (data from weather balloons), 173.100, 163.275 and 409.750 for communications between NSSL vans. For a list of nationwide weather frequencies you can listen in on, see Table One.

Remember, if you happen to catch these NSSL teams on your scanner and in your area, TAKE COVER IMMEDIATELY!

MAILBAG

O.T.H. Down Under

Australian monitor, Jeff Bell, writes us about a Defense Department of Australia "Over The Horizon" radar system that is going in near Jindalee (Western Australia). As many shortwave listeners know, O.T.H. radars operate on the HF bands and wreak havoc with shortwave monitoring. The sounds of an O.T.H. radar can be heard blanketing many frequencies with its distinctive "woodpecker"-like pulses.

According to the information packet that Jeff sent in, the Jindalee O.T.H. radar system will be able to detect sea, surface and air targets at ranges of up to 3000 kilometers. Citing reasons of national defense, the war on drug smuggling, illegal fishing, and illegal immigration, the Australian Department of Defense is beginning construction of the transmitting and receiving stations some time this year. Thanks for the info, Jeff.

Janets Revisited

More letters have been received regarding the mysterious "JANET" flights that have been flying out of McCarran Airport in Las Vegas. It is a continuing story that has fascinated many Federal File readers. David Beck writes us from Birmingham, Alabama, and says that some of the JANETs have been flying into Birmingham Airport. They have been met by armed guards in Bronco type vehicles and small trucks. Two-way communications concerning the JANETs have been heard on 164.375 and 167.925 MHz. These frequencies are listed as those used by the Department of Energy. According to David, he thinks the cargos are weapons or weapons materials.

Due to the amount of mail that the Federal File has received on the JANET controversy the author will devote a complete column on the subject in the near future. If you have any information to send in regarding the JANETS, send it now in care of *MT*. Maybe with your help we can finally lay to rest the JANET mystery.

CIA Means Business

Latest Intelligence author, James Tunnell, sent in a clipping from the San Francisco *Chronicle* stating that the Central Intelligence Agency is turning its eyes, spies, and resources towards big business. The CIA is also recruiting U.S. executives to help monitor key technology developments in Japan and other rival economic powers.

It seems that with the cold war over the CIA is using its investigative powers to aid U.S. businesses in the economic war. According to the *Chronicle* article, CIA agents have approached several San Francisco Bay area companies' chief executives who have inside knowledge of Japanese company efforts, semiconductors, computers, and other high technologies.

Bureau Needs Bucks to Bug Bad Guys

In another newspaper article (The Detroit *News*) sent in by L.J. Demers of Saginaw, Michigan, it seems the Federal Bureau of Investigation is asking Congress for $26.6 million to update its eavesdropping technology. According to FBI spokesmen, cellular phones and other modern devices are challenging the FBI's ability to eavesdrop on suspect's phone conversations.

Mob conversations recorded by microphones placed in the "Bergin Hunt and Fish Club" in Ozone Park, Queens, New York (a favorite hangout of the Gambino crime family members) is the centerpiece of the government's case against reputed mob boss John Gotti, now on trial for the murder of his predecessor, Paul Castellano. The FBI is using the Gotti case as an example of what high-tech listening devices can do for breaking up organized crime. But now the FBI is saying that with the advent of high tech equipment available to the average consumer (and criminal), their job is getting much harder to accomplish.

There are many devices available off-the shelf that can be used by criminals, as well as legitimate business men, to scramble calls and the transmission of computer data. "Many of these devices make it difficult to install microphones for court-ordered eavesdropping," spokesman at the bureau said. John Podesta, a former counsel to the Senate Judiciary's Law and Technology subcommittee, said the FBI and other intelligence agencies are victims of the technological revolution.

Maybe the FBI could use some help from some of *MT's* electronic geniuses!

MT

James R. Hay

Weather and Navigational Warnings Part II

We began looking at the content of maritime weather and navigational warnings and the frequencies on which they can be found in the March issue. This month we continue to profile maritime weather broadcasts by a look at stations in Germany, the U.S. and Australia. (The promised Scheveningen schedule did not arrive.)

Norddeich Radio (DAN), Germany, offers USB broadcasts on 2614 kHz in both English and German at 0133, 0533, 0933, 1333, 1733 and 2133 UTC. These broadcasts will be both weather and navigational warnings. More weather information is broadcast on 2614 kHz in German only at 0710 and 1910 UTC. At 1310 on 13134.9 kHz there is a German broadcast of weather information.

On CW, broadcasts are made from DDH9 on 11039 kHz at 0600, 0630, 0810, 0900, 1030, 1230, 1418, 1448, 1530, 1718, 1748 and 2048 UTC. These weather broadcasts cover various areas. Unfortunately my abilities in the German language prevent me from giving you more detail on this right now.

Radiotelex broadcasts are sent by DDK2 on 4583 kHz, DDH7 on 7646 kHz, DDK8 on 11638 kHz. These SITOR broadcasts are 50 baud with 200 Hz shift, and can be heard at 0000, 0002, 0300, 0302, 0545, 0600, 0602, 0845, 1200, 1202, 1438, 1502, 1705, 1710, 1748, 1800, 1802, 2100, 2110 UTC. The transmissions include both weather and navigational warnings.

Back in the United States, AT&T also broadcasts weather forecasts from its stations. KMI at Inverness, California, transmits the weather at 0000 and 1200 UTC on 4402 and 13083 kHz in USB. From Fort Lauderdale, Florida, WOM broadcasts weather information at 1300 and 1500 UTC on 4363, 8722, 13092, 17242, 22738 kHz. Ocean Gate Radio (WOO) in New Jersey carries its weather transmission at 1200 and 2200 UTC on 4387 and 8749 kHz.

In Australia, the Royal Australian Navy sends weather broadcasts in Morse code. Using either the callsign VHP or VIX, the broadcasts are continuous on 4288, 6428.5, 8478, 12907.5, 18918.8, 22485 and 25461 kHz. These transmissions come from the naval communications station at Canberra.

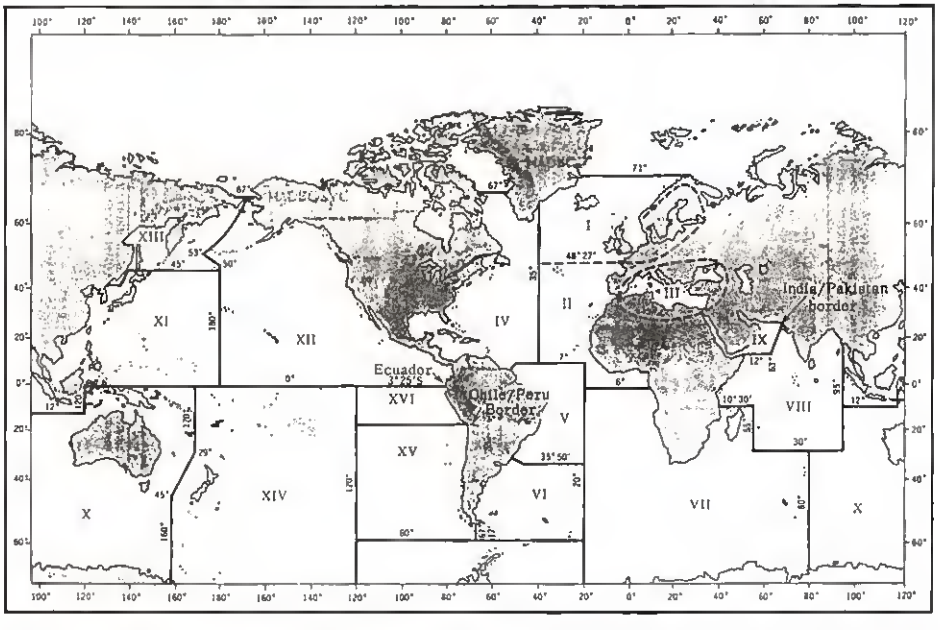
The station at Darwin broadcasts a trial time signal transmission which is continuous but which may be discontinued at any time and is not intended as a substitute for the time signal at Lyndhurst (VNG). This signal can be found on 64495 and 12984 kHz and like the CW broadcast from Canberra uses a ten kilowatt transmitter. The signals consist of four short 1 kHz pulses followed by one long pulse at each minute, two wide pulses at the half hour, and three pulses on the hour.

St. Lys Radio

While I will be dealing with French coastal stations in more detail in a later column, Greg Stienstra sent in some information about St. Lys Radio which should prove useful to many readers. The following frequencies are all upper sideband in kHz.

Channel	Frequency
404	4366
416	4402
419	4411
606	6513
607	6519
830	8806
825	8791
817	8767
828	8800
1228	13159
1229	13169
1231	13167
1222	13140
1628	17323
1633	17338
1604	17251
1619	17296
1605	17264
1622	17305
1813	17791
2226	22771
2204	22705
2235	22798
2231	22766
2215	22736

NAVAREA—RADIO NAVIGATIONAL WARNING SYSTEMS



This map complements the description of the Navarea regions given in the March column. Many stations offer Navarea warnings identifying the region only by number.

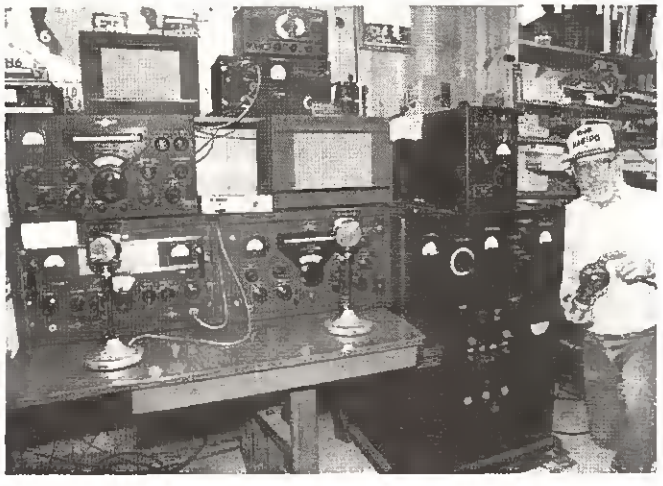
Monitoring the Old Time Amateur Radio Operators

By Art Rideout

Before and after World War II, shortwave listeners enjoyed monitoring the globe hopping amateur radio amplitude modulated (AM) signals. It was not unusual to listen to amateurs who had designed and constructed their station piece by piece, receiver, transmitter, antenna, etc. One could get a good basic knowledge of electronics by just listening to these old timers. But then, in the 1960's, something happened called "single side band" (SSB), and listeners found monitoring amateur signals not quite as enjoyable as it had been. If the SSB signals could be tuned in at all, they often sounded like Donald Duck. And, of one station was successfully tuned in, the other station would sound like quacking.

Then, as if copying amateur signals wasn't difficult enough, something called signal processing was introduced. Processing enhanced the AM signal for communicating purposes, but made the audio signal harsh to listen to, resulting in listener fatigue. Split frequency operation complicated monitoring even further. In this mode of operation, an amateur radio station transmits on one frequency while listening for a reply on a second frequency. The monitoring of amateur radio signals had reached a new post-war low.

Even some amateurs began to lose interest in the hobby. Amateur operators could easily talk around the world without much of a challenge, and equipment became so easy to operate that little skill was required. At the same time, transceivers became so electronically complex that few could repair or maintain their equipment. The operating and technical skills required in earlier years was gone. Amateurs were becoming nothing more than equipment operators and were saying, "Is this all there is?"



Art's equipment from left to right: (top) Collins 75A4 receiver, c.1955; (bottom) Collins 32V3 transmitter, c.1951. On the right is a Collins 75A3 receiver, c.1953 and Hallicrafters BC-610 transmitter, c.1938. Art is holding the final tube of this transmitter. This tube runs at 2500 volts on the plate. West Coast listeners can hear this station most Sundays on 7.160 MHz at 4 pm Pacific Time.

Then something old happened: amplitude modulated signals again were heard on the amateur bands. It happened like this...

Some of the amateurs who had been losing interest in the hobby, but who also remembered "the old days" when it was a pleasure to transmit and listen to broadcast quality AM signals, decided to do something about it. They dusted off their old vintage equipment, plugged in their soldering irons and polished their long dormant technical and operating skills. Once again, amplitude modulated signals graced the airways.

They quickly found other amateurs who shared their enthusiasm and, before long, they established an organization for AM enthusiasts called the "Society for the Preservation of Amplitude Modulation," or SPAM.

To become a member of SPAM, an amateur radio operator is required to contact three SPAM members on AM. SPAM members operate on selected amateur frequencies to minimize interference to stations using SSB or other modes of operation. They have scheduled nets where they

Continued on page 75

From the "What ever happened to" Department, I recently received a copy of a 1988 news release from the Maryland Port Administration which will be of interest for its explanation of the demise of WMH in Baltimore. While this a rather long excerpt, I think you will find it interesting:

The radio station, WMH, has broadcast weather reports and public service news and relayed messages to and from ships in the port area since 1927. In recent years, however, message volume dropped from 17,438 words in 1985 to 8,961 words in 1987. The MPA estimates that it will save at least $100,000 per year by closing the radio station.

"Alternative technology has made WMH obsolete," said David A. Wagner, Executive Director of the Maryland Port Administration. Commercial stations and satellite systems have taken business away from the radio station.

"The radio station does not fit into our long-range objectives," Wagner said.

"The MPA has already found jobs at the State Highway Administration for the radio station's two full-time employees," Wagner added.

The closing of WMH makes over one acre of land available for cargo use at Cambridge Marine Terminal on Maryland's Eastern Shore, the site of the radio station's antennae. In addition, the station's broadcast office at the Dundalk Marine Terminal can now be re-assigned for terminal operations use.

WMH's history began when the City of Baltimore's former Bureau of Harbors operated the station at Recreation Pier at the foot of Broadway. The MPA took over the station in 1950.

WMH, which was reported to be the only marine radio station of its kind operated by a port agency, had a broadcast range of 1,500-2,000 miles.

Substitute marine radio service for ships calling the Port of Baltimore is available at WSC in West Creek, New Jersey, and WCC in Chatham, Massachusetts, as well as other stations in Florida and along the Gulf coast.

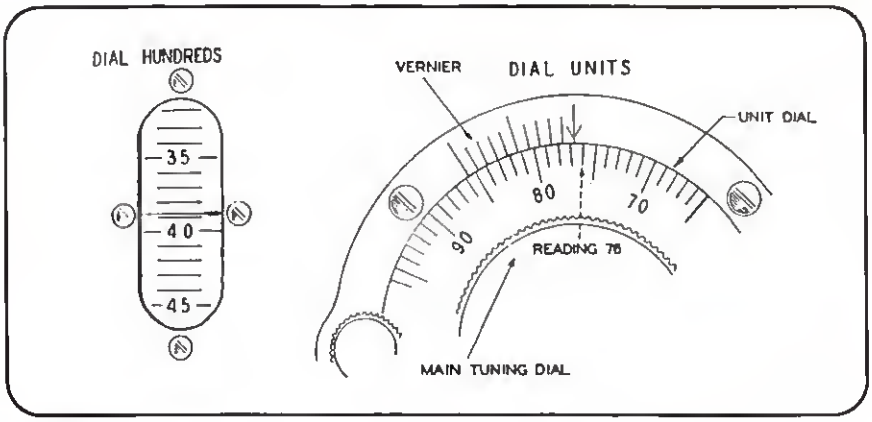
This appears to be the story of the demise of WHH. Since it was run by the Port Authority I doubt that they were as aggressive as the commercial stations in looking for business, and certainly the port authority had its eye on the offices and land that were being used by the station.

Future columns will dig into the history of various other stations for your interest along with presenting their current frequencies.

Until next time, good listening.

MT

Fine Tuning



Sure, the older gear may have had more charm and character than today's high tech wonders, but with rare exceptions tuning accuracy was just a dream beyond reach. Just listen to the old timers—they'll tell you about the days when coming within 10 or 15 kHz meant real precision!

Digital gear of the '90s has changed all that. Now, you just dial up (or key in) your favorite frequency, and you're locked in before the tubes can even light on older rigs.

There's still a chance for confusion, however, especially when it comes to finding the exact carrier frequency of beacons. When the beacon band is hot, sorting one station from another can be difficult due to the 1 kHz channel spacing used there. This month, we'll look at one way to take any uncertainty out of your longwave tuning.

You might wonder why accurate tuning is so important anyway. Well, a quick scan through a list of beacons shows you why. It so happens that the same Morse ID is often assigned to more than one station. Example: the identifier "R" is assigned to six beacons in North America. Although they're far apart geographically, some are very close in frequency. Without precise tuning, you can't be sure which one you're hearing. Needless to say, exact frequencies are also important for QSLing.

Does your digital receiver have a properly calibrated BFO? If so, the solution is simple. Turn the BFO on and carefully tune to the "zero beat" of a beacon—that precise dial setting where no carrier whistle is heard from the speaker. You'll find it by slowly tuning in the direction of decreasing pitch. As you approach the exact frequency, the pitch will change to a low growl and finally disappear completely, leaving only the Morse audio. You will then be set to the exact carrier frequency, or zero beat of the station.

A slight variation is required for receivers whose frequency readout does not change when the BFO knob is turned—such as with many portables. First, tune to a station of known frequency (WWV or a local AM broadcaster will do). Make sure your frequency display shows the exact (published) frequency of the station. Now, turn on the BFO and adjust it for zero beat as described above. This setting should be very close to the middle of the BFO knobs' rotation. This sets the BFO in agreement with the main tuning control.

Without touching the BFO, return to the LF band. Using only the main tuning control, you will now be able to tune to the zero beat of a signal and determine its exact frequency.

Across the Pond

• As if ECPA weren't bad enough, a reader in England wrote in to tell me about the sad state of affairs in the Queen's land. I've withheld his name by request. It seems that in his country, you're not allowed to listen to anything other than broadcast bands except for CB, Amateur, Marine and Air Radio (special permits are required for the last two). He says that getting caught listening to Aero/Marine stuff probably won't get you sent to the Tower of London, but listening to Police, Fire, Military or Government comms could very well "bring down the wrath of the establishment."

Despite the restrictions, our contributor says there are plenty of interested listeners in Europe. With access to only one other LF column (appearing tri-monthly), he looks forward to *Monitoring Times* each month for his longwave news. Now, let's hope the Longwave Police don't screen his mail.

For those interested in Euro-style broadcasting, I've included a few loggings that came along with his letter. In the US, your best bet for hearing these is from local sunset 'til about 1 am. These are the approximate times that there is a path of darkness between Europe and North America.

LF Broadcasters	
Atlantic	252 kHz (Ireland)
BBC	198 kHz (England)
Allouis	162 kHz (France)
Monte Carlo	216 kHz (Monaco)
R. Moscow	279 kHz (Russia)

• Bob Combs, Tome, NM, is a long-time devotee of *Below 500 kHz*. He writes to share an impressive mix of recent catches made with his Japan Radio NRD-525 and 300' longwire antenna. To date, Bob has logged thirty states, seven Canadian provinces, and three countries (not including US and Canada). When he's not filling his log in the basement band, Bob also enjoys SWLing as KCA6RC. Here's his list:

Freq	Call	Location
198	DIW	Dixon, NC
212	BCY	Boise City, OK
212	YGX	Gillam, Manitoba
216	CLB	Wilmington, NC
239	LHX	La Junta, CO
242	XC	Cranbrook, B. Columbia
245	FS	Sioux Falls, SD
341	SG	Santa Fe, NM
400	FN	Fort Collins, CO
517	CQ	Kansas City, NM
521	INE	Missoula, MT
524	UOC	Iowa City, IA

Chuffing Right Along...

A minor nuisance I've noticed with the ATS-803A/DX-440 receiver is the "chuffing" sound you get when spinning through the band. You can eliminate the chuff, and also get speaker sound while scanning, with one simple mod. You might be surprised at what you've been missing. All you need is a Phillips screwdriver and five minutes of your time. Here's how to do it:

1) Remove the batteries from the unit and turn it upside down so the antenna is facing away from you.

2) Remove the six screws and remove the cover (be careful not to break the antenna wire in the upper left-hand corner of the PC board).

3) Okay, so far so good. Now locate the grey 8-pin ribbon cable near the lower edge of the PC board.

4) Carefully remove it from its socket. Bend the second lead from the left back against the cable.

5) Reinstall the cable and make sure the bent lead isn't touching anything.

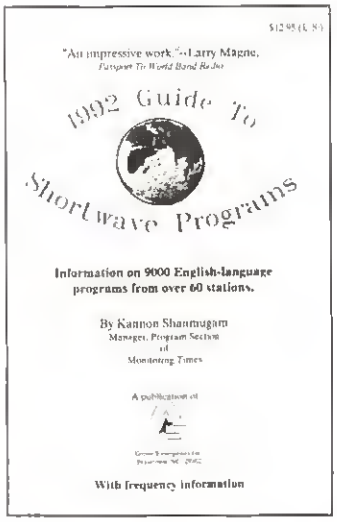
That's all there is to it. I've tried this one on my own '803A and am pleased with the results. Kudos to Chris Johnson and *DX Ontario*, the journal of the Ontario DX Association for this helpful tip.

See you again next month!

GROVE ENTERPRISES, INC.

1-800-438-8155

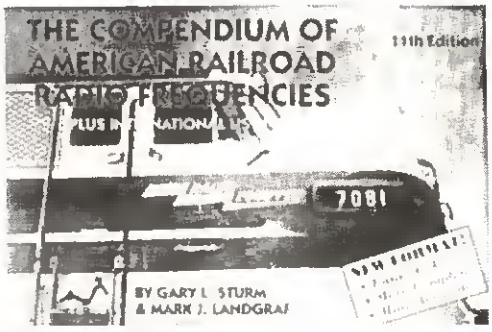
140 Dog Branch Road
Brasstown, NC 28902-0098



The 1992 Guide to Shortwave Programs contains all the up-to-date information you need for your shortwave listening. In its 133 pages lie some 9000 programs from more than 60 worldwide broadcasters.

Twenty-four hour a day programming is extensively cross-referenced by time and day of the week; it includes a comprehensive frequency list to increase your chances of success.

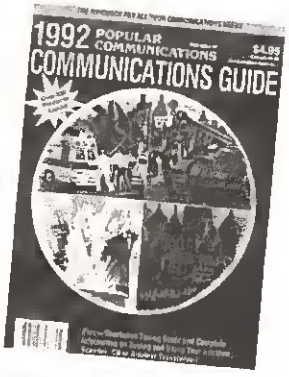
$12.95 (Order BOK 43) plus $3.50 Shipping (UPS)



The Compendium of Railroad Radio Frequencies is the latest and the best! This handy 8-1/2" x 5-1/2" glossy handbook has over 200 pages, complete with introductory chapters on railway communications systems, a glossary of terminology, and thousands of frequency identifications alphabetized by railroad name.

$14.95 (Order BOK48) plus $4 Shipping (UPS)

1992 Popular Communications Communications Guide



The most up-to-date buyer's guide for communications equipment—from communications receivers and scanners, to CB radio and amateur transceivers is here!

Complete with articles by experts in the communications field, including Dexter, Kneitel, Helms, Gysi, Orr, Zeller, Margolis and many more, the 1992 Communications Guide is *the* book you've been waiting for—Here's what's inside:

An introduction to the fascinating world of communications monitoring with: illustrated articles on scanning, utility monitoring, antenna selection and construction, pirate radio, QSLing and much MORE!

AS AN ADDED BONUS, noted ham Fred Maia, W5YI tells just how easy it is to get your HAM LICENSE. In plain English, Maia explains ham radio and how YOU can become a licensed ham. In addition, a product listing with PHOTOS of amateur radio transceivers for use by Technician class licensed hams is included . . .

The Brand NEW 1992 Communications Guide includes the latest communications products on the market WITH detailed specifications and photos to make your buying decision easier. We've included shortwave receivers, scanners (BOTH base and handheld) and accessories to make your monitoring post complete.

IT'S ALL YOURS FOR JUST $4.95 (please add $2.50 shipping and handling; $3.50 foreign).

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Mail to: CQ Communications, Inc., 76 North Broadway, Hicksville, NY 11801
Phone: 516-681-2922/FAX: 516-681-2926

Find a nice place to live—like WCME, Booth Bay, Maine—built in a lighthouse!

Buying Your First Station

So, you want to buy a radio station. It's an adventure you'll never forget. Months may be spent researching the coil-bound presentations sent from owners and brokers. Earn vast quantities of frequent flyer miles as you visit your hottest prospects. Then, after you take possession, your goal will be selling "air."

Absurd? Hardly! The end result can be the most rewarding profession in the world. You're at the controls and on the air! If you are a U.S. citizen, the dream can be yours!

The most essential ingredient will probably present your biggest obstacle: money. In real estate terms, it's a buyer's market. A multitude of stations are ready for sale at bargain prices. Many are off the air and owners are looking for someone to revive them. Bankrupt properties are placed on the auction block regularly. On the down side, a majority of stations are suffering financially, and owners are itching to get out of the business. With over ten thousand stations on the air, and more going on the air daily, advertising dollars are very difficult to get. It's not going to be easy. Start small and spend every dollar as if it were your last.

First, decide where you would like to operate a station. Find a place where you could settle and enjoy life, and then do a thorough study of media in the area. Visit your choice of city and monitor everything you hear on AM and FM. Look at your reference books. Are there any stations missing from the air, and if so, are they for sale? Also search for other businesses that will be competing with you for local advertising dollars. Are there any TV stations operating nearby? How about newspapers, weekly ad flyers, and billboards? Note which businesses are buying ads and try to assess where the local economy stands. You don't want to move into an area where a large manufacturing plant has just closed, or a newspaper has recently folded.

An invaluable source of information are local chambers of commerce. These organizations aid anyone interested in doing business locally, and their services are usually free. They will reveal the demographics of the local population, who is advertising, and what is required to establish a business in the state. Also, write for rate cards of your competitors and see what they are able to charge for their services. If your main rival station is charging $25 for a 60 second spot, don't expect to get $75 when you broadcast.

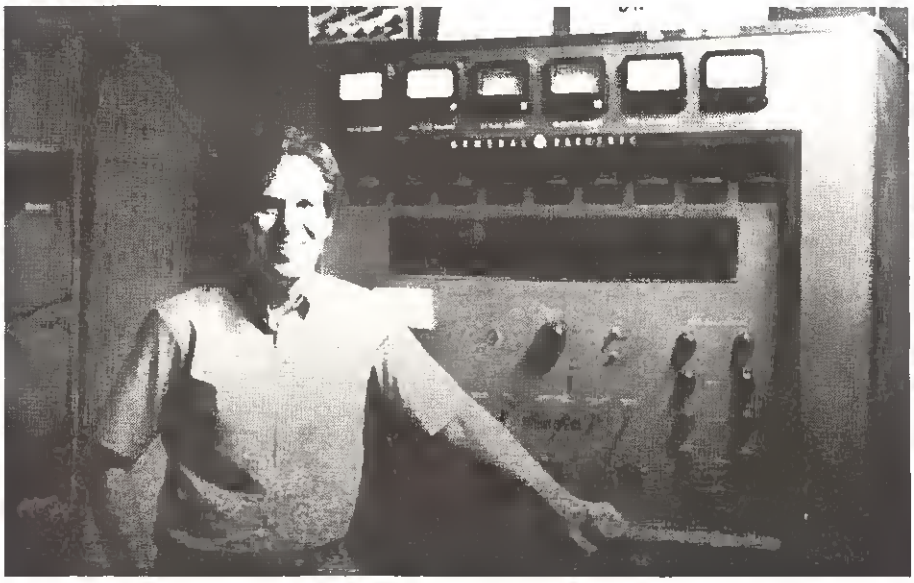
After you assess your surroundings, take a good look at your wallet. Include in your start-up costs at least one year of operating expenses, if not more. Decide how much you can spend, and investigate financing. Small business loans can be obtained through banks and governmental sources. Many current station owners are willing to provide their own financing to aid the sale of their station. Also, consider becoming a partner with other investors. Entire communities have banded together to buy their only local station to save it from going dark. Be creative and be resourceful. Ask questions and seek advice, especially from people working in media in the area you are contemplating. Talk to local residents to get a good "feel" of the community you wish to serve. They are likely to be your best source of information!

Now you have reached a major fork in the road to success. Should you buy an existing station, or start a new one? Putting a new station on the air may become an impossible task due to recent regulatory moves. At this writing, there is a freeze on applications for AM stations. All broadcast frequencies are becoming overloaded and acceptance of new FM station applications may end soon.

To establish a new station, a frequency search is required to determine if there is room on the dial. A variety of conditions must be met. For example, your proposed station must be a minimum distance from other stations using the same frequency. Stations one or two frequencies adjacent to your channel must be protected from your signals, too. Consulting engineers can be invaluable in these searches, but they are expensive.

Once you have decided on the frequency you would like to use, you must propose a frequency allocation amendment to the FCC. The Commission will then ask for comments from the public. If your proposal is approved, the FCC will then announce a specific period when anyone can file for a license to operate on this frequency in the town you have specified. Beware! Competitors may surround you! Sometimes companies will apply for the frequency you have proposed, not to seek the license for the frequency, but to pressure you into buying them out of the race. Your roughest seas might be in these waters.

The Commission studies each license application carefully and decides who the licensee will be. There are no guarantees. Every applicant can be rejected if The Commission does not feel any are fit. Should you succeed, you are granted a construction permit allowing you one year to build your station and put a signal on the air. A final proof of performance of the operation must be filed stating that you are operating in accordance with the specifications of the license, and you are producing a signal that exactly resembles what you proposed in your application. When your proof of performance is accepted, you are issued a license. You've made it! Congratulations!



Author Peter Hunn bought his station for one dollar!

A station that is already on the air is another story. The rule of thumb used to be: a station was worth ten times its gross income for a year. A station billing $250,000 in advertising would have a price tag of 2.5 million dollars. This is no longer the case. Stations are now valued at as little as one year's gross income, although the average is two and a half year's gross income. Miracles do happen! WZZZ, Fulton, New York, a daytime only AM station was purchased for one dollar. The buyer assumed a thirty thousand dollar debt to The Internal Revenue Service as part of the deal. Bankrupt stations are sometimes sold for four figures, even less. Look for stations silent and off the air. Owners are usually eager to sell these properties. Many station owners will provide financing, with little cash down.

Keep in mind that these stations went off the air for a reason. Try to find out why! Invest wisely! You may be able to purchase the station for the price of the real estate alone. This is a wonderful situation, because even if the station is a failure, you can still bank on a valuable piece of commercially zoned property.

Finally, remember to keep your plans as small and simple as possible! This is your first station, not a media empire! AM stations are risky business, with audiences declining rapidly. Your best bet would probably be a Class A FM station—that is, one that serves a small area with a effective radiated power of no more than 3,000 watts.

All the money in the world cannot compensate for knowledge and experience. Spend many years in the broadcasting industry, doing a variety of jobs, before you try to manage a station yourself. Learn how to build studios and repair equipment. Many dollars can be saved with engineering knowhow. Highly recommended is the book *Starting and Operating Your Own FM Radio Station* by Peter Hunn, available through TAB Books of Blue Ridge Summit, PA 17294. Another best buy is the *FM Atlas*, a very comprehensive listing of every North American FM station. It includes maps, listings by frequency and location, operating powers, tower heights, programming formats, and other information. Send $12.00 to FM Atlas, Box 336, Esko, MN 55733-0336. Now is the time to act! Good luck!

MAILBAG

• Community radio has taken a big step forward in Boise, Idaho. Magic 93.1 KZMG FM has donated its sister AM station to Boise State University. The new owners plan to broadcast a combination of news, information and specialty programs, including some in foreign languages. "The station will allow BSU students the opportunity to gain hands on broadcasting experience," said Jim Palluzzi, General Manager of the Boise State University Radio Network.

Be an American BandScan Reporter

See any stories about radio in the local paper? Send them to Monitoring Times, PO Box 98,Brasstown, NC 28902.

The network also operates KBSU FM in Boise, a 3,000 watter on 91.3 MHz. Students will be granted a 13 week trial period for any show they wish to present, and if successful, the show will continue. It will serve as a training ground for future broadcasters for years and years to come. Bruce Wetten, General Manager of Magic 93.1 comments: "It's important that broadcasting creates opportunities for learning. I admire my parent company greatly." So do we. Avid AM DXer Frank Aden, Jr., N7SOK, brings us the good news.

• Attention DXers! If you need a good reference guide to low powered Travelers Information Stations broadcasting on 530, 1610, and 1620 kHz, search no further. The National Travelers Information Radio Exchange (NTIRE) has just completed its first edition of its 1992 *Directory of Stations*. Every licensed station is listed with location, frequency, and other information. Copies of the directory are available for $15.00 by writing to: Information Station Specialists, P.O. Box 51, Zeeland, MI 49464-0051. NTIRE also produces a newsletter concerning TIS stations and offers a complete database of information concerning equipment manufacturers, operations and licensing, and technical advice. Call 616-772-2300 for more information.

New Station Grants

The National Association of Broadcasters has proposed a freeze on new FM station applications citing overcrowding of the FM band. They claim too many FM stations are already on the air, making the possibility of commercial success bleak. New applications for AM radio stations are no longer being accepted for similar reasons. Stay tuned for further developments!

Meanwhile, these cities are getting ready to hear new sounds: Phoenix, AZ 89.5; Copperopolis, CA 105.5; Sun City, CA 92.9, Dalton, GA 104.5; Hilo, HI 95.9; Eagle, ID 107.9; Clearwater, KS 98.7; Morehead, KY 96.3; Otterville, MO 107.7; Sargent, NE 92.1; Manchester, NH 91.7; Atlantic, NC 107.3; Hatteras, NC 94.3; New Philadelphia, OH 91.5; Newport, OR 92.7; Pawley's Island, SC 98.5; Colonial Heights, TN 105.9; and Virginia Beach, VA 102.1. Courtesy of *The M Street Journal*.

For Sale

Now you really want to buy a station, right? Here's some places to start: The owners of a newly established Class A FM station in Bartleville, Oklahoma, are ready to sell. Located north of Tulsa near the Missouri and Kansas borders, this could be a great place to settle and stay a spell. Call 915-674-2606 for more information.

If you enjoy the pleasures of the Southeast, consider an AM-FM combo station with a pending upgrade to high powered Class C3 operation. It sits in a top 100 market and has excellent assets including a wonderful facility. Real estate leases are included in the package. This pair would make excellent starter stations for a new broadcaster. Call 804-977-0961 today!

Looking for major league potential at a great price? How would you like to own a 100,000 watt powerhouse in North Carolina's booming Outer Banks resort area? The construction permit to build this station in Hatteras, North Carolina, is available for a low $60,000. Rick Hayes at 703-972-2690 awaits your call!

International Bandscan

Sydney, Australia's radio ratings leader resembles a wild eyed version of the Muppet "Grover." Down under *MT* reader M.L. Cauthon III sent news about Agro, the puppet: "He has a popular kids show, but he also guest hosts The Tonight Show with more adult humor. To say Agro is a personality is almost an understatement. By the way, Agro is the Australian word for aggravation!" Sydney's *Sunday Telegraph* describes Agro as a "bath mat with ping pong balls for eyes and a wickedly sharp tongue."

However you describe him, Agro has taken Sydney by a storm! He's the latest addition to 2DAY FM's Breakfast Program and continues to boost their ratings through the roof! Agro's best friend is puppeteer Jaime Dunn who created the character for children's television at age 12 and has become one of Australia's most recognizable and popular celebrities. He continues to bring Agro to Channel 7 daily for youngsters to enjoy, but adults love him, too! In the Brisbane City Council elections recently, Agro received nearly ten percent of the vote as a write-in candidate!

2DAY has signed Dunn to a three-year contract to broaden their demographics. Dunn and Agro have proved their great appeal to younger adult women. Until now, the station has appealed mostly to men. If you meet him, remember two things: Never address your conversations to Mr.Dunn, and never mention the word "puppet!"

Credits

Many thanks to *MT* readers Al Weiner, Ron Carruthers, M.L. Cauthon III, Mike Feymer, Bob Valen, F.W. Chesson, Kevin Kline, and Frank Aden Jr. Additional material provided by *Broadcasting Magazine, The M Street Journal*, and *The FM Atlas*. Congratulations to Mary-Chapin Carpenter on winning her first Grammy award! Until next month, happy trails!

MT

TVRO News: Scams, 'Flams, & More

A daisy of a dish

Over the last several months, *MT* readers have sent in an amazing assortment of newspaper clippings, photo copies, and other bits and pieces of information. It has, by now, developed into quite a little stack, and I am obliged to put as much of this out as I can. In other words, it's Spring Cleaning here at the desk!

Periodicals of Interest

Wes Albright of Hunstville, AL, sent a recent issue of a magazine called *Space News*. A weekly in its third year, *Space News* is published by Army Times Publishing Co. This 32 page, tabloid size, newsprint magazine is of interest primarily to those in the acrospace and satellite communications industry. Many of the articles will not be of interest to the TVRO enthusiast. But, for those who are ever-hungry for more detailed information on the subject of space and communications, this will be a valuable source. Sporting a staff of ten writers, *Space News* does not limit its coverage to the U.S. space program but gives the same in-depth treatment to the many emerging programs of other nations. Even the advertising has an international flavor. The Canadian Space Agency was recruiting astronauts in one ad and in another an Italian antenna builder was touting its wares.

Space News picks up where *Aviation Week and Space Technology* leaves off. This is the publication to turn to for up-to-date information on every space oriented project in the works. What's the latest on the Pegasus program? What's the current status on the international space station known as "Freedom?" What about the plan for a July shuttle mission which will tow a science satellite on a twelve mile long tether once in space? It's meaty reading for Earth-bound space cadets who are tired of reading science fiction. *Space News* subscriptions are $75 year. Write *Space News* at 6883 Commercial Drive, Springfield, VA 22159-0500 or call 1-800-368-5718.

I was very pleased to receive the latest copy of *WeatherSat Ink* which bills itself as "The Environmental Satellite Applications Journal." Published quarterly "...on each solstice or equinox..." by editor Tom Glembooki, K04BD, this 32 page 8-1/2" x 11" format magazine is a must for the serious weather satellite enthusiast. If you've read Taggart's *Weather Satellite Handbook* (available for $20 from The American Radio Relay League, 225 Main St. Newington, CT06111) and wondered where to go from there, *WeatherSat Ink* is the answer.

Here is a great way to keep up to date on the state of the art of weather satellite monitoring. This ad-supported publication covers all aspects of the hobby from the early days of monitoring to the latest software available. You'll also find information on computer BBS and other sources for delving deeper into this monitoring hobby. There are well written technical articles on all facets of weather satellite monitoring as well as reviews on the latest books and publications concerning the hobby. *WeatherSat Ink* encourages other environmental satellite enthusiasts to contribute articles to the journal. Subscriptions are $15 yearly. Write to *WeatherSat Ink*, C/0 Bluebird Greenhouses, 4821 Jessie Dr.,Apex, NC 27502.

Thanks to a reader who sent in a front page article in the *Sanford Herald* of Sanford, NC, which detailed the plight of a number of local residents who were stung by a sophisticated TVRO con scheme. Thanks also to Dan Cashin of Philadelphia, PA, for an article from the Philadelphia Inquirer's *Daily Magazine* detailing the status of what's called "cable signal theft." As a sidebar to the article, it also explained that signals are stolen via home satellite dishes.

In fact, the history of cable and satellite TV is a study in theft, corruption, and general human deviousness. The end of the "free ride" may be at hand for TVRO pirates. Since 1986, the General Instrument Corp's VideoCipher Division has fought a running battle with so-called "VCII Pirates" whose continued success at circumventing GI's encryption schemes has made a laughing stock of GI's promises to cable programmers of signal security.

Hoping to regain lost credibility and to stave off the advances of competitors who have come forward with alternative encryption schemes, GI recently introduced VC-RS. In this plan, GI will replace all existing videocipher modules with the new upgrade version it calls Renewable Security. Consumers will periodically receive new authorization information on a plastic card about the size of a credit card. This card will be slipped into the new module and "read." Illegal descramblers without the new information will simply be shut down.

Theoretically, this will put the nearly one million TVRO pirates in the dark and shut off the incentive for the pirate manufacturers to keep up. GI hopes to effect the shut-off by September of this year. One imagines that the VC "hacker underground" will be working overtime to roll out an effective countermeasure to this new security system. It would seem that they might have quite a financial stake to guard as well. Curiously, this will have no effect on the estimated $3 billion loss the cable industry endures each year from signal theft.

New Dish Design

Thanks to editor's spouse Harry Baughn for a clipping from the *Asheville Citizen-Times* detailing how a new design featuring deep serrated edges on a satellite dish helps its performance. According to the article, a professor of electrical engineering at Georgia Tech has discovered that such specifically jagged edges increase performance by decreasing "side lobes." The end result resembles a daisy with large petals.

The professor, Edward Joy, has designed the new dish edge for transmission purposes but, according to the article, it should also be effective for receiving purposes. It is suggested that the serrations be ten times the dish's wavelength.

The Rest Of The News

Here is a potpourri of TVRO related news from various sources and presented in no coherent order. This is how they happened to be stacked on the desk!

• From *Aviation Week & Space Technology*, January 13, '91: An American educator is to ride to the Russian MIR space station to launch a small U.S. educational satellite. According to the article, the satellite will transmit educational data from space. The educator-turned-cosmonaut will be picked this July.

• Here's an update on last month's column about digital music via satellite: Digital Music Express apparently has no plan to service the TVRO market in the near future. The service will continue to be available only to cable subscribers whose operators offer the service. In keeping with corporate thinking in the 90's, International Cablecasting Technologies, Inc., (DMX's parent) has awarded its chairman and founder $6 million in company stock despite a reported loss of $1 million per month. This lucrative deal was reported in *Multichannel News* of February 24, 1992.

• Another article in that same issue of *Multichannel News* details the programming shuffle which will occur this month when Galaxy 6 goes into operation. This move will spark major changes which will likely be with us for the next ten to twelve years. To help you get a new scorecard, here's the lineup for GS (channel assignments at this time unknown):

Disney (E), Trinity Broadcasting, CNN, TBS, EEFN (primary and secondary), Family (E), CNBC, HBO (E), TNT, BET, Headline News, A&E, Mind Extension U., WGN, TNN, Monitor Channel and possibly Showtime's eastern feed.

Eventually, GS will settle in at 125 degrees west (current location of Telstar 303) Galaxy 2 moves to 93.5 degrees west (currently G3). Galaxy 3 will be removed from service. Satcom C-4 will be located at 135 degrees (between present locations of G1 and C1).

All of this is subject to change but gives you an idea of how things may look in the very near future. With GS you can look for a big jump in power output, too, from 9 watts of the current G1 to 16 with the new bird.

• The January 13, '92, issue of *Broadcasting Magazine* has an article about the proposed April launch of SkyPix, an eighty channel pay-per-view direct broadcast satellite (DBS) service which has been trying to get off the ground for over a year. In what can only be described as a made-for-TV movie plot, SkyPix has ridden a rickety roller-coaster of success and failure which only Wall Street roaches could appreciate. The problem becomes apparent in a February 10, '92, article in *Multichannel News* telling of grand jury investigations of some of the partners of SkyPix Joint Venture Ltd.

The service plans to broadcast direct to 3-foot home dishes via EB36's 40 watt transponders. Despite all of their financial, legal and technical woes, their biggest problem may come from competitors such as DirecTV which hopes to deliver its programming via 120 watt transponders to 18 inch dishes in less than two year's time. Stay tuned.

• Speaking of DBS, how about DBS mobile audio? That's the plan of a company called Satellite CD Radio. The idea is to broadcast via very high power satellites direct to consumers' cars. According to a piece in the January 27, '92, issue of *Cablevision Magazine*, the service will offer some 30-60 channels. Expect to pay $200 for the receiver and another $5 per month for the service. The big catch here, however, is that none of this is actually available. Indeed, even the satellite is still on the drawing board.

Such optimism is typical of entrepreneurs in the satellite industry. Another such dreamer is Advanced Communications Corp. which, according to *Broadcasting* (January 13, '92), plans to develop and launch a 200 watt per channel all-digital education satellite. As with all similar groups mentioned earlier, Advanced Communications Corp. doesn't lack for support from interested end users. The problem comes in attracting the kind of legitimate high stakes investors it takes to actually see such a massive project to fruition.

• Robert Evans is the president of International Teletext Communications and formerly operated "Data TV," a Vertical Blanking Interval delivered teletext service. ITC is now in the process of manufacturing and distributing a World System Teletext decoder designed to plug into PC compatible computers and displaying WST teletext, such as that found on G1,18 "Electra," on your computer monitor. This is a medium which has seen a fair bit of activity in the past few years, but has yet to catch on. For more information on ITC's teletext decoder write 1307 S. Mary Ave. Ste. 203, Sunnyvale, CA 94087 or call: (408) 73S-8833 FAX: (408) 738-3166.

Transponder Notes

Main Street Television Network is apparently another Low Power TV network aimed at independent terrestrial broadcasters. Broadcasting a six-hour block of old movies and TV series from 12 noon to 6 PM ET, the service is found on Spacenet 2 channel 7 with 6.80 audio.

The Las Vegas Television Network is offering a compilation of six part-time channels on Galaxy 6 channel 23. Included in the line-up are the British Channel, Barter Channel, The Gaming Channel, Satellite Bingo, The Outlaw Music Channel, and After Dark Around the World. They are asking subscriber fees though it isn't clear what will be encrypted or how.

Caribbean Evening News can be seen on Galaxy 6 Channel 22 at 1645 GMT.

MT

Ike Kerschner, N3IK

Getting On the Air!

How much does it cost? That seems to be the question in every would-be ham's mind. Unfortunately, the general opinion seems to be it is very expensive!

Without doubt, even an inexpensive transceiver costs in the $1000.00 range. Adding the necessary accessories will bring the initial cost of the average new rig to about $1500.00; and of course we all know it can go a lot higher.

Some Food For Thought

If you purchased a factory built rig in the mid-fifties you would have expected to pay from $350.00 up for a decent transmitter and another $400.00 up for a receiver that was worth owning. Add the accessories and you were up in the $1000.00 plus range. Now you had a rig that was capable of operation on CW and AM, but chances are the receiver was ham-band only and had a very nice analog tuning system. On top of all of that the rig required a large desk or rack and two men and a large boy to carry.

The same money today gives you 100 or more watts on all bands 160 through 10 and in some cases 6 meters, SSB, CW, AM (frequently FM) and a receiver that not only covers all the ham bands but the entire SW spectrum, too. Today's rig usually weights in at well under 25 pounds and can be carried and set up anywhere with ease.

This same rig will have memories, two VFO's, stability second to none and a digital tuning system, full break-in keying (in the 50's it was the rare station that had full break-in or QSK). In fact the rig of the 90's has so many features that most of us have trouble remembering everything the rig will do for us. Consequently a large percentage of us use only a fraction of the bells and whistles that are incorporated into our nifty nineties transceiver!

Narrowing it Down

On the average, hams want to be able to rag chew, do a little DXing, and generally have FUN! (Isn't that what it's all about?)

It is possible to do everything most hams want to do with a very modest outlay of money. Those old rigs from the fifties, sixties and seventies are still usable. Sure, they don't have all the nice (useless) features of today's rig, but for a hundred bucks or less it is possible to put a very respectable signal on the air.

Analog tuning systems are quite satisfactory if coupled with a good calibrator (built into most receivers). And most of the transmitters of yesteryear are every bit as good as today's superceivers. Don't get me wrong, I am not knocking modern gear; it is great and I enjoy using it (even if I get befuddled with all the knobs and buttons at times). But the point is that there are loads of good rigs out there to be had at well under $250.00 for a complete high quality set up. And decent under-$100.00 rigs are to be had if you are willing to look around.

Finding It

The first thing that comes to mind is the next hamfest. Yep, it's a good place to find a rig, but be sure you know the seller and if possible have the seller fire it up and show you that it does indeed work as advertised. Take along someone who has experience with older rigs to point out the features that are neat and not so neat on the various rigs. Here are some "do nots" that might help.

Never Buy a Rig...

- That does not include a manual.
- That shows signs of rust or mildew.
- That leaks gooey oily gunk.
- That has burn marks.
- That smells funny.
- That has mud inside.
- That someone's wife used as a planter.
- That has unaccounted holes in it.
- That has strange connectors or accessories attached to it.
- Whose price is more than 30 percent of the new price.
- From someone with a name like Honest Harley.
- From anyone you cannot get a good ID on.

If you know your way around the inside of a radio, by all means ignore the above. If not, then follow the twelve "never buys" and you should come out okay. One of the worst things about buying hamfest gear is that too many hams feel their gear is worth more than it really is. If a rig cost $500.00 in the sixties or seventies, it should be fairly priced at about $175.00, give or take ten bucks. If it is in good condition, that is.

Never fear buying HF (80 to 10 meter) Heath gear if the complete manual is included. Some of my best buys have been unworking Heath Kits; the price is usually low, and it is always possible to take the rig apart bit by bit and rebuild it (if you are so inclined and talented). Plus the fact that Heath is still in business bodes well for obtaining required parts.

Do shy away from the early Heath VHF gear; it did work, but working on them is terrible and they only operated on AM and CW, were unstable as could be and were subject to frequent failures.

Stay away from Knight kits, Eico and Eldico, unless the price is low enough and you are something of a technician. Most of these kits from the fifties and sixties were not well designed and can cause a headache even when they work the way they are supposed to.

Much preferred over the hamfest bargain is the local ham who has a rig sitting in the attic or basement he is not using. Chances are good that this rig was well cared for, and you have a local source should you have problems. In addition most hams are happy to see their gear go to a local newcomer. They might even turn out to become your best friend and/or ELMER.

An Alternative

We mentioned earlier that most hams do not need a lot of fancy accessories on a rig. Something else that can be disregarded is lots of power! No kidding—a five watt transmitter on CW or SSB will provide you with a lot of pleasure.

In general, most hams believe that you either need a great antenna or a lot of power. That is not exactly true. I surely agree a good antenna is a big help with low power, but it is not mandatory. For example, I used to work a station on 160 meters who ran one half watt to a 25 foot antenna. The station was in Illinois about 600 miles airline from my QTH. With an antenna 30 feet long I worked stations all over the US and Canada on 80 meters. And a ground plane (11 feet long) allowed me to work 100 countries on 15 meters in less than one year while running only 3 watts.

What this means to you is that you can easily build a rig from scratch that will allow you to have a ball! Careful shopping for parts will put the rig in your hands for well under $100.00. In fact, under fifty bucks is not unrealistic.

For the most part, these low power rigs are simple to build and the average person can construct a fine unit if he is willing to follow instructions. In conjunction with the low power transmitter it is possible to build a decent direct conversion receiver that will work just fine and provide years of service for very little money.

Where to Find

Plans and instructions are easily found. The very best manuals I can recommend to you are *Solid State Design for the Radio Amateur*, by Wes Haywood, W7ZOI, and *W1FB's Design Notebook* and *W1FB's QRP Notebook* by Doug Demaw, W1FB. All of these books are published by the ARRL and are available at most amateur radio stores or the ARRL (225 Main St., Newington, CT 06111).

Rob Leonard

Ham DX Tips

The ham bands are an interesting place to listen; one can tune in to all sorts of exciting communications. Besides DX, there are many specialty nets--gathering places for amateurs to pass along information and assist each other. Some occasionally handle emergency radio traffic, which you may not hear elsewhere, placing you at the scene of the action. Reader Alfred Fossum passed along information on one such net: **Waterway Radio and Cruising Club Net** has been functioning since 1963. This net meets daily: SSB on 7268 kHz at 1245 to 1345 UTC (in the winter, this changes to 1345 to 1445 UTC) and CW on 7126 kHz from 1130 to 1230 UTC (winter: 1230 to 1330 UTC). The net offers information to hams and assists the Coast Guard in locating vessels missing or in distress in the Gulf, Caribbean, and Bahamas. For more info on this net, tune in to the freqs and times mentioned or write: Waterway Radio and Cruising Club, P.O. Box 5339, Lighthouse Pt., FL 33074.

ALASKA WL7CBM is Tom, (P.O. Box 10, Gambell, AK 99742) stationed with the US military on St. Lawrence Island. Tom has been appearing on 28460 kHz starting at 2200 UTC Sundays. ***BOTSWANA*** Look for A22US, Dave Heil, who is employed with the US embassy here, on the 21335 kHz SSB DX net at 1930 UTC. Dave's QSL manager is WA8JOC, Kenneth S. Scheper, 5875 Cedaridge Dr., Cincinnati, OH 45247. ***BURKINA FASO*** XT2BW has been on 21345 kHz SSB at 2100 UTC daily. Send your QSL reports to his QSL manager: WB2QH, Robert Nadolny, 135 Wetherstone Dr., West Seneca, NY 14224. ***CANADA-YUKON TERRITORIES*** Reader VY1RT has passed along the information that from now 'til 1 September amateurs here will be celebrating the 50th anniversary of the British Columbian-Yukon-Alaskan Highway, and you can hear the Alaskan Highway net on Mondays, Wednesdays, and Fridays at 0500 UTC on 3855 kHz SSB. The Net manager is VY1BE, Bill Warner, 56 Boswell Cr., Whitehorse, Yukon, Y1A 4T3. NL7TB, a friend of VY1RT, VY1BE and myself, advises that he will be operating either /VY1 or /VE8 from here in late June. John says that he will be operating on either 3700, 7140, or 21140 kHz (all CW frequencies) from one of the islands in the Arctic Ocean. At this time, John does not know which island that he will be able to visit. That will depend upon conditions when he arrives in Inuvik (Northwest Ter) just prior to his operation. John advises that those who work or hear him will receive an attractive commemorative QSL if they send a report to John Reisenauer, NL7TB, 1961 Norene St., Anchorage, AK 99508. ***IRAQ*** Now 'til June, YU3PR is working in Iraq and may be a guest operator at YI1BGD (the club station) while there. If he is, he will probably use YU2AJ (Tomo Polak, B Donoany 6/19, 41000 Zagreb, Croatia) as his QSL manager. YI1BGD when active has been logged in or around 28450 to 28495 kHz SB at 1300 UTC. ***NEW CALEDONIA*** Hams here will use the special suffix /50USA to honor the 50th anniversary of US troops landing between March and August of 1942. The residents credit US troops for keeping the islands free of Japanese invading forces. A special callsign station FK8USA has been scheduled to appear on 16 August. ***PITCAIRN ISLAND*** VR6BX (Brian Young, P.O. Box 21, Pitcaim Island, South Pacific) makes quite a regular appearance on the 40 meter DX net (which can be found between 7165 and 7185 kHz; the exact frequency depends upon nearby QRM) starting at 0700 UTC. ***RUSSIAN REP*** UV1AD (Vlad, P.O. Box 3201, Kronstadt, 189610 Russian Republic...and please avoid callsigns on the envelope) is a frequent inhabitant of 21260 kHz at 1200 UTC. ***RWANDA*** 9X5NH is on 21945 kHz daily at 1430 UTC. Send your QSL requests to his manager: Udo Weber, Strenbergstr 54, V-7406 Mossingen 5, Germany.

Well, that is it for this time. Here is wishing you the best of DX. 73 de Rob.

MT **columnists welcome your input and response to their columns. Please address your letter to the author c/o Monitoring Times P.O. Box 98 Brasstown, NC 28902**

If you request a personal response, always enclose a self-addressed, stamped envelope (SASE).

I suggest obtaining all of the above manuals if you are serious about building your own station. I especially like *W1FB's QRP Notebook* and am preparing to build several of the projects described in this book. A nice thing about this particular book is that W1FB takes the novice by the hand and shows by excellent drawing and simple-to-understand text how things should be done, where to purchase materials and how to use the equipment you have just built. In addition printed circuit boards are available for most of the projects at very reasonable prices. Or if you wish, use the included templates for the projects and make your own printed circuit boards.

Required Skills and Tools

If you can read and follow instructions you are well on your way. Buy a good soldering iron (a good iron will cost 10 bucks up). I like the pencil type with a transformer (heat control unit) in the base and a sponge holder (about 35 bucks). Practice soldering 'til you can make nice joints. *The ARRL Handbook* has a section on construction practices in it. In addition W1FB explains the most common techniques of construction in all of his manuals.

You will also need some common electronic tools such as a needle nose plier (4 or 4-1/2 inch), a small diagonal cutter, a set of insulated tuning tools, small slip joint plier, screw driver assortment (smaller sizes to 3/8 inch slotted and 0 to 3 phillips) and some heat sinks. These are the basic tools; as you progress your collection of neat tools will grow. All tools are available at your neighborhood Radio Shack.

A decent MultiMeter is required; again, your local Radio Shack has several available at good prices and they have a book that tells you in excellent detail how to use the meter. I prefer a top of the line JFET analog meter for RF work because it will allow you to accurately peak tuned circuits. A digital meter makes reading various parameters easy (i.e., voltage, current and resistance), but if you can afford only one meter, go for the above mentioned JFET unit.

Let's do it!

I hope your appetite has been whetted thoroughly to go out and build your own station, learn more about electronics and have a lot of fun.

That's all gang, cu next month. 73 Ike, N3IK

MT

outer limits

George Zeller
P.O. Box 98
Brasstown, NC 28902-0098

Hello Readers!

No, that's not a typo in the heading of this column. John Santosuosso, our highly respected expert on pirate and clandestine communications, has manned the "Outer Limits" desk for many years. John's departure from the column leaves very big shoes to fill. I'm George Zeller, and I'm honored to be pencilled into the *MT* lineup.

I've been a shortwave hobbyist since (gulp!) 1963. Like many of you, I am fascinated by the unusual and unpredictable broadcasts that come from unlicensed broadcasting stations. Some of you already know me from my monthly clandestine column in *ACE*, from my book *The Pirate Radio Directory*, or from my activity in several shortwave radio clubs. I met other *MT* readers while attending the first two *Monitoring Times* conventions, and I look forward to meeting many others through this column in the future.

John Santosuosso has done a tremendous and outstanding job with the "Outer Limits," and we are going to miss him very much. I plan to continue John's traditional focus, which he outlined in these pages last month. Unlicensed, strange, and unusual signals are audible every day on the shortwave bands. The "Outer Limits" features the latest news about these outlaw broadcasts.

All of us want to hear from YOU! Feel free to send in your loggings and information about pirates, clandestines, and other unusual broadcasters to the "Outer Limits," c/o MT, Brasstown, North Carolina 28902. Your input will be very welcome indeed.

Busted Clandestine Returns

Despite a knock on the door from the FCC last year, **La Voz de la Federacion Mundial de Ex-Presos a Politico de Cubanos** has resumed its anti-Castro broadcasts. This station's ID, which is a real mouthful, translates as the Voice of the Worldwide Federation of Former Cuban Political Prisoners. Terry Provance of Ohio reports this one at 0145 UTC on Saturday, using the very unusual but slightly variable frequency of 7416 kHz in the middle of the pirate band! I've heard them on three consecutive weekends, so they appear to be maintaining a somewhat regular schedule. In *Fine Tuning*, John Fisher of Ontario reported them on a Tuesday as well.

Late in 1991, the FCC raided this station's transmitter in a suburban neighborhood of Tampa, Florida. Given the bust, its reactivation was unexpected. But other anti-Castro clandestines have done this in the past. Even though it was busted twice during the 1980's by the FCC, **La Voz de Alpha 66** is still heard daily. Look for Alpha 66 programming on 7355 kHz at 0300 over the powerful WRNO relay transmitter in New Orleans, and over WHRI in Indiana on 7355 kHz at 0800 and 9495 kHz at 2300.

Eastern Hemisphere Clandestines

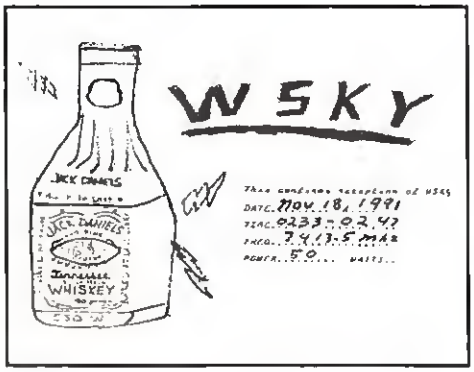
Most North American clandestine DXers tend to concentrate on stations in Latin America, Africa, and the Middle East. But, many clandestines are active in Asia. Some of these can be heard with a little effort from our corner of the world.

Mark Seiden of Florida reports a good example of this. He heard the **Voice of National Salvation** on 4450 kHz at 1200. This one is part of the longstanding radio war between North and South Korea. The recent slight political thaw between these countries has not yet silenced clandestines operating in the region.

The saga of **Radio Free Bougainville** has been fascinating in 1992. You probably have seen little in your local newspaper about the struggle between a rebel movement in the Bougainville Islands and the government of Papua New Guinea. A rebel clandestine has operated on 3890 and 21500 kHz from Arawa under the guidance of Glenn Baxter's (KLMAN) International Amateur Radio Network. I have seen no North American logs of this one, but it would be a super DX catch.

Sam Voron, a Sidney, Australia, amateur radio operator, has been providing technical assistance to this Bougainville Revolutionary Army station. WBI, quoting Radio New Zealand and Radio Australia, has said that Voron "could face charges" if he returns home to Australia. In *Numero Uno*, *MT's* own Larry Magne reports that Voron was captured February 3, and that his transmitting equipment was confiscated.

The IARN has responded that station broadcasts are legal under Bougainville Islands law, and that the broadcasts will continue. Where is Bougainville Island? It is (was?) part of Papua New Guinea, but it is also immediately adjacent to the Solomon Islands.



A WSKY QSL from Chief Engineer, Doug Barley.

Pirate Makes Front Page

Thanks go to Michigan's Joseph Davis, who sent in a copy of the front page of the January 31 edition of the Detroit *News*. The newspaper chronicled a confrontation between FM pirate **Radio Free Detroit** and the FCC. This ten watt station was raided in late January by FCC investigator D. E. Ehret and Detroit police officers. But, since neither Ehret nor the police had a search warrant, station staff refused to let them into the pirate studio.

Moments after the aborted bust, Radio Free Detroit reportedly returned to the air on its regular 106.3 MHz frequency with George Carlin's classic "Seven Dirty Words" sketch. The newspaper urged RFD fans to "stay tuned."

Wayland Loree and Robert W. van Hengel of Michigan, as well as Dave Melonakos of North Carolina, all forwarded copies of a similar article from the Metro page of the January 29 Detroit *Free Press*. Ira Paul of Michigan sent in a more lengthy analysis of the station from the January 29 Detroit *Metro Times*. It's clear that Radio Free Detroit has generated plenty of local media coverage.

The station is located somewhere in Cass Corridor, an inner-city neighborhood just north of downtown Detroit. It defines itself as a rebel alternative station. The station opposes corporate domination of commercial radio broadcasting in the United States, and objects to a 1978 FCC ruling that repealed licensing for 10 watt broadcasting stations.

Has anybody from Michigan heard Radio Free Detroit? Robert van Hengel tried to pick it up from ten miles north of the city, but the transmitter's coverage area apparently is limited to a radius of three or four miles. We'll have more news about this operation in the future.

Pirate Activity Breaking Records

Pirate station activity continues at what certainly is an all-time record pace. In 1989 at least 100 different North American pirates were heard on shortwave. This number skyrocketed to 165 in 1990, and the 1991 figure grew again to 170.

Many dozens of stations have already appeared in 1992, so it looks like another record will be broken this year. There has never been a better time to scan around the pirate bands. We have numerous interesting catches this month.

For instance, "Mac" in his "Atlanta shack" pulled in the very active **WSKY** on 7415 kHz with a 90 minute classic rock show at 0230. The WSKY crew is a very professional operation. They mix lively commentary and mailbags in with the tunes. A report to Post Office Box 452, Wellsville, New York 14895 will probably result in both a QSL and a future mention of your name over the air.

Editor's Note: The procedures detailed in this book are unlawful to perform. The text is intended for educational purposes only. Monitoring Times assumes no responsibility for any liability which may result from the implementation of its contents.

Mac also noted an unusual three-hour Wednesday night show from **CBOR** on 7415 kHz at 0145. The FCC busted a previous version of CBOR in November 1988, so it is unclear if this is a new operation or a reactivation. Phil, D. J. Roscoe, and Ladonna mixed rock with in-studio banter. The "new" CBOR announces an 800 telephone number for reports in lieu of a maildrop.

CBOR is not the only previously busted pirate that has been heard this year. I snagged "Wild Steve" of **XERK** on 7417 kHz at 0215. Busted or not, "Pirate Radio from South of the Border" still uses an address at Post Office Box 25302, Pittsburgh, Pennsylvania 15242.

Another catch from Mac in Atlanta was the **Voice of Anarchy**. I also heard this excellent Afro-Pop music program on 7418 kHz at 0130. Announcer Leonard Longwire, who claims to be from Chicago, has eclectic musical tastes that vary in format on just about every broadcast. He's a good verifier via Post office Box 109, Blue Ridge Summit, Pennsylvania 17214.

Late Night Pirate Fare

More than half of all pirate broadcasts are heard on weekend evenings between about 2300-0500 UTC. But, recent logs from Dave Gasque in South Carolina prove that some pirates really burn the midnight oil.

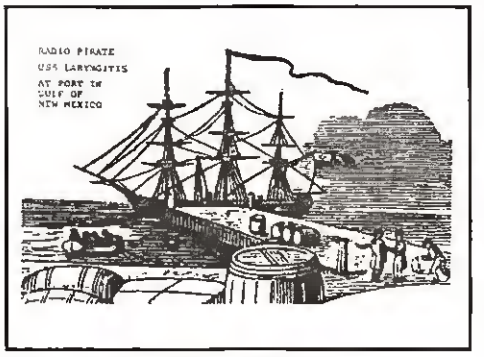
Dave ran across **WSER, "Worldwide Screaming Earth Radio,"** on 7417 kHz at the very late hour of 0800. This new station's male announcer hosted a well produced rock music show, but he unfortunately failed to announce a contact address.

Dave also sent in a tape of another interesting station that he heard on the same frequency about an hour before WSER. This one didn't announce a clear ID. Dave's logs prove that if you're staying up all night waiting for the bands to open up for some rare southeastern Asia DX, it would be a good idea to check out the pirate bands while brewing that extra cup of coffee.

Laryngitis Active Again

As mentioned in the March issue of *MT*, the **Voice of Laryngitis** has returned to active broadcasting status. Many consider Laryngitis to be the most entertaining pirate in history. It certainly beats listening to Radio Tirana! Station Manager Genghis Huxley and his sidekick Stanley Huxley consistently feature some of the funniest material audible on shortwave radio today. They've now been on the air for nine years.

I fortunately heard the second new Laryngitis program of 1992 on 7435 kHz at 2330. Among the humorous bits were a "Radio Marty" parody of Radio Marti and a "World of Radio" parody featuring Hen Schnauzer. The Huxleys are excellent verifiers through the Wellsville, New York, address with a whole collector's series of glossy QSL'S. Note their clever frequency and time selection, which immediately preceded WWCR's nightly 7435 kHz sign-on at 0000!



One in a series of Voice of Laryngitis QSLs.

New Maildrops

The blizzard of new pirates in 1992 has led to a handful of previously little-known contact addresses. My own logbook already contains some examples.

RBCN has announced a maildrop of P.O. Box 17534, Atlanta, Georgia 30316. Maybe they have anticipated the new site of this year's *Monitoring Times* convention. This new station programs a very well produced "Voice of Shakerag" and "Good Time Radio Hour" format. I heard them for an hour on 7415 kHz at 0330 with a fast paced mix of country music and good ole boy humor.

Although it's not genuinely new, the maildrop at P.O. Box 69, Wolf Run, Ohio 43970 is only used by a tiny handful of stations. A recent example was **SW-3,** which I heard on 7416 kHz at 0230. The male host on SW-3 mixes rock and comedy material.

QSL'ing the Pirates

I am often asked if it is really legitimate to send correspondence to pirate radio stations. Actual unlicensed broadcasting is certainly illegal, and is subject to FCC enforcement actions. On the other hand, it is perfectly legal to send reception reports to pirates through the mail. All of the addresses listed this month have been proven valid by actual recent experience.

Reports to pirates should list the exact date, time, and frequency of a broadcast that you hear. A few details of this program are necessary to prove that you heard the transmission. As is true with international broadcasting stations, pirates also appreciate a few comments on the program content.

You should describe the quality of reception, including relative signal strength and interference levels. The station will also want to know the model of receiver and antenna that you are using. All of this information goes in a letter addressed to the pirate c/o its maildrop, which will forward your mail to the station. Three first class mint stamps go inside the envelope with your report to cover postage and maildrop forwarding costs.

A large majority of pirate stations who announce contact addresses are excellent verifiers. This month's illustrations of the results come from WSKY and the Voice of Laryngitis. QSL's like this from pirates are often quite attractive. At the very least, every pirate QSL becomes an instant conversation piece.

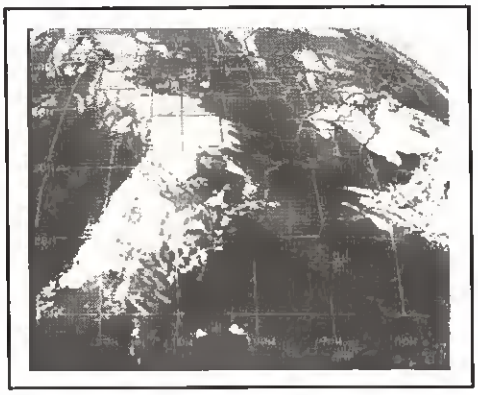
A large volume of reader contributions arrived just as this issue went to press, so if you don't see your material here, look for it next month. I'll see you again in June. MT

Jack Albert

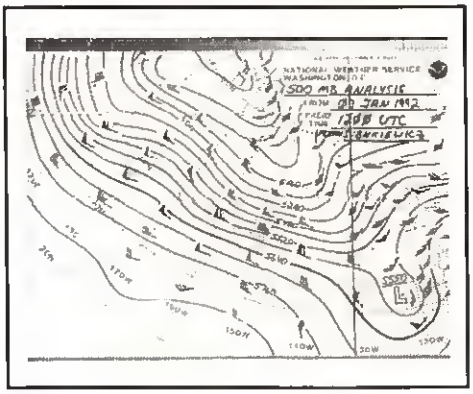
"Relaxin" or "Faxin"?

Since last February's coverage of weather facsimile, I have received several letters along with FAX photos—or shall I say portraits! Some are so good that I have decided to share them with you over the next several months.

This first batch is from E.R. Flynn of San Rafael, California. Using a model 9321 weather chart recorder he was able to obtain photos with the same resolution and clarity as your local weather bureau. The first photo is a satellite's eye view of the earth. You can clearly see the Panamanian coast line in the original photo (the resolution will no doubt be lost in the reprint). The second photo is an isobar chart.



#1



#2

To Snag a Big One

Five bit Baudot RTTY is becoming a rare bird on shortwave. You can find activity on the ham bands but that's no challenge! It's getting more difficult to snag the rare non-amateur transmissions that are in the clear! I was lucky to catch station 5YD sending what appears to be an INTERPOL transmission. According to the Klingenfuss *Guide to Utility Stations*, 5YD is located in Nairobi, Kenya. They were using an odd shift of 300 baud.

I believe the first part of the message indicates that there was a tower installed in an oil drilling platform. The numbers following refer to some distance. The second part EUIGVOR AGN may refer to the air traffic frequency 114.8 MHz and instructs the recipient to use it again. The third part, I believe, indicates that there is a dangerous area, something is activated and again numbers that indicate distance. Other messages were sent but they weren't as interesting; however, they did contain the letters INTERPOL.

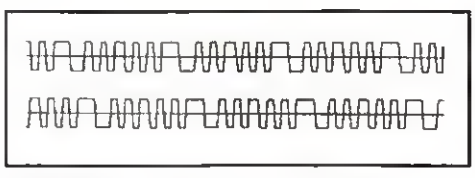
```
FREQ:13,3665 KHZ, NAIROBI AIR, KENYA   CALL: 5YD
MODE: RTTY          SHIFT : 300 HZ     RATE: 50 BAUD
ALSO SENT; RY'S

NNNI
CZC KVA217 PRPRQI
GG HAZZNAXX
031527 LIIAYNYX
(A0838/92 NOTAMN
Q)LIRR/QOBCE/V /M  /E /000/010/3633N01434E001
A)LIRR B)9203140001 C)9209142300EST
E)SW CAPO PASSERO PSN 363321N 143420E OIL DRILLING
PLATFORM INSTALLED, TRELLIS WORK TOWER HGT 76H9249FT
AMSL, MARKED BY DAY AND NGT SGL)
ZZ

NNNNKKYPZCZC KVA218 PRPRWP
GG HAZZNAXX
031509 LFFAYNYX
(A3361/.2 NOTAMN
Q)LFBB/QNVAS/IV/BO /E /000/999/4353N 00052E 060
A) LFBB
B) OWPEOPOEPP
KC) OWPEOPOTPP
EUIGVOR AGN 114.800 MHZ U/S)

NNNNZCZC KVA219 PRPRWP
GG HAZZNAXX
031533 LIIAYNYX
(A839/92 NOTAMN
Q)LIXX/QRDCA/IV/BO /W /000/070/3902N01813E037
A)LIBB LIRR B)9203090700 C)9203132300
D)DAILY 0700/2300
E)DANGEROUS AREA LI-D15 XMARE IONIO/ REF AIP RAC 5-1-3.2
ACTIVATED
F)SFC G)5500FT AMSL)
```

If you want to pick up RTTY traffic these days, you need to become proficient in copying the "expert modes"—AMTOR, FEC, TDM and FDM. But you need to improve your skills in order to identify them. To the novice listener, data modes can sound like "pops," "clicks," "buzzing" or musical instruments. It's difficult to express in words the sounds that you hear! The best you can do is to relate the sound to something that's familiar—for example, the Piccolo, Buzzsaw, Drippy Faucet, Woodpecker or Pingpong.

Most of the time, you won't copy any text but you will be able to identify and log the signal by frequency or mode. The experts use tools like a digital storage oscilloscope to analyze the signal and determine the baudrate.

I often use the Universal M1000 Decoder to display the Datascope on my PC. Before I run the the DECODER program (it's supplied with the M1000), I run a DOS utility called "GRAPHICS.COM". GRAPHICS.COM is supplied with DOS and can be found in your DOS directory. Copy it to the directory that contains the M1000 programs.

You can edit a "batch" file that first runs GRAPHICS.COM and then the DECODER.EXE program. Run the datascope feature by pressing Alt-F1. Your dot matrix printer should print the traces as seen on the monitor. (See below)



M1000 in datascope mode copying 5YD sending Ry's on 13.738

Whatintheworldisit?

When I come come across a whatchamacallit, I like to run it up a flag pole and see who salutes! I copied strange RTTY on 812.35 MHz. It appears to be transmitting FSK using 170 Hz shift but it wasn't standard RTTY. It sent a short burst with a repeating sequence. It could be some sort of beacon or it may actually contain data that tells the other end "here I am!"

Whatever it is, it requires further analysis, because when world hostilities increase, mysterious transmissions like these may become quite active. The "Code Busters" will be taking a close look at the data. Perhaps the transmissions are a simple non-standard coding scheme.

Hamcom Goes Portable!

The first thing I did after I purchased my laptop computer was to load in the Hamcom Software. Using my Sony ICF-2010, I wanted to see if I could set up a portable RTTY monitoring post. With the radio and computer on my kitchen table, I connected the Hamcom interface (a modified version is shown in last month's *MT*) to the serial port on the computer. The other end went to the radio. Using only the radio's whip antenna I first checked to see if I was getting interference from the computer.

After tuning to a frequency, I disconnected and then reconnected the audio lead from the interface. I noticed that noise increased on the 20 and 15 meter bands. I installed a snap-on toroid choke (Radio Shack # 273-104) by wrapping about four turns of the audio lead around the ferrite. I reconnected the audio lead again and the noise was eliminated. I tuned in the 40 meter ham band (the RTTY guys usually hang out at 7080 kHz). After using the tuning mode I copied a QSO between two fellows on the East Coast.

Hamcom performed better on the faster 386 laptop than the 286 in my shack. The spectrum analyzer looked good on the monochrome display and the tuning mode functioned normally. Viewing it on a monochrome display was different, but I encountered no problems in any mode.

NNN

I Asked For It — And Did You Respond!

Remember our Radio Sweden reply rate of 8 days? Hang on folks, new records are coming in! Deutsche Welle has been responding in a week, Radio Beijing and Radio New Zealand in two weeks!

This month's personal best comes from Ed Ahern of Wheaton, Illinois, who received his QSL from Icelandic National Broadcasting Service in five days! How's your personal best?

New addresses are included this month for Radio Australia and Radio Moscow. Radio Austria has announced a new station policy of one QSL confirmation per month.

ALGERIA

Boufarik Radio-7TF, 16932 kHz. CW Station. Full data verified letter, with illegible signature. Received in 43 days for an English Utility report, and 1 IRC. Station address: c/o M. Le Chef de Centre, Station Radiomaritime, Boite Postal 234, 09400 Boufarik (W. de Blida) Algerie. (Nagl Martin, Austrian DX Club)

AUSTRALIA

Radio Australia, 15160/15250/21740 kHz. No data scenery postcard QSL, without veri signer. Current frequency schedule and English service guide included. Received in 22/23/36 days for an English report. Station address: G.P.O. Box 755, Glen Waverly 3150, Victoria, Australia. (Paul Sullivan, Albany, NY) (Stanley Klemanowicz, Torrance, CA)

FRANCE

Radio France International, 11670/17620 kHz. Full data station card, without veri signer. Received in 3 weeks for an English report. Station address: 116, Avenue du President Kennedy, 75016 Paris, France. (Randall Morrison, Tullahoma, TN) (Klemanowicz, CA) (Frank Hillton, Charleston, SC)

GERMANY

Norddeich Radio, 84835 kHz. Full data station letter, verified by "Deiters", and information sheet on the station, and sticker. Received in 17/22 days for an English Utility report, and 2 IRCs. Station address: Kustenfunkstelle Norddeich Radio, Postfach 1190, 2980 Norden 1, Germany. (Martin, Austria) (Klemanowicz, CA)

GHANA

Ghana Broadcasting Corp., 4915 kHz. Partial data station logo card, verified by Director General. Received in 37 days for an English report and one U.S. dollar. Station address: The Propagation Engineer, GBC Monitoring Station, P.O. Box 1633, Accra, Ghana. (Doug Merkel, St. Louis, MO)

IRELAND

Shannon Aeradio-EIP, 5505 kHz USB. Full data QSL brochure with tourism information, verified by E. McGann-Officer-in-Charge. Received in 25 days for an English Utility report and 1 IRC. Station address: Bally Gireen, County Clare, Ireland. (Martin, Austria)

NETHERLANDS

Radio Netherlands, 6125/6165 kHz. Full data QSL cards, without veri signer. Program schedules, and booklet "Writing Useful Reception Reports" included. Received in 25/28 days for an English report. Station address: P.O. Box 222, 1200 J.G. Hilversum, Netherlands. (Sullivan, CA) (E.H. Savage, Palatine, IL)

NORWAY

Radio Norway International, 9645/17760/9650 kHz. No data QSL card, without veri signer. Station schedules and souvenirs included. Received in 28/29 days for an English report, and 3 IRCs. Station address: N-340, Oslo 3, Norway. (Klemanowicz, CA) (Paul Sullivan, Albany, CA) (Mark Humenyk, Weston, Ont., Canada) (Nicholas P. Adams, Newark, NJ)

PAPUA NEW GUINEA

National Broadcasting Commission, 4890 kHz. Full data PNG map card, and personal letter. Received in 300 days for an English report, and 1 IRC. Station address: P.O. Box 1359, Boroko N.C.D. Papua New Guinea. (Chris Hughes, Portland, OR)

RUSSIA

Radio Moscow, 21480/21690/9765/7150/17765 kHz. Full data scenery postcards with no veri signers. Station souvenirs, personal notes, and schedules included. Received in 39/48/66 days for an English report. Station address: Pyatnitskaya Ulitsa 25, Moscow, Russia. (Sullivan, NY) (Adams, NJ)

SENEGAL

Office De Radiodiffusion Du Senegal, 4890 kHz. Full data card and personal letter from Joseph Nesseim. Received in 7 weeks for an English report and one U.S. dollar. Station address: Boite Postal 1765, Dakar, Senegal/ or 58, Boulevard de la Republique. (Ernest Lawrence, Perry, NY)

SHIP TRAFFIC

POLYXEN C.-ELIT, 500 kHz. (Motor Tanker NRT 60937) Full data letter confirmed. Received in 109 days for an English Utility report, and one U.S. dollar. Ship address: Coulouthros, Ltd., Cleveland House, 19 James Square, London, SW1Y 4HR, United Kingdom. (Hank Holbrook, Dunkirk, MD)

IRVING OCEAN-VCTG, 2182/2237 kHz. (Motor Tanker) Full data prepared card confirmed. Received in 21 days for an English Utility report, and mint stamps. Ship address: Kent Line Ltd. 300 Union St., P.O. Box 725, St. John, N.B. E2L 4B4, Canada. (Holbrook, MD)

SEAWIND CROWN-KOFF, 28345 kHz. (Passenger Cruise Liner). Full data ship QSL card verified. Received in 14 days for an English Utility report and mint stamps. Ship address: Seawind Cruise Line, c/o Brentwood Travel Chesterfield, 300 Chesterfield Center, Chesterfield, MO 63017. (Holbrook, MD)

SOUTH KOREA

Radio Korea, 9750 kHz. Two full data Korean scenery cards, without veri signer. Received in 38 days for an English report and 2 IRCs. Station address: 18, Yoido-dong, Youngdungpo-gu, Seoul 150-790, South Korea. (John Carson, Norman, OK)

SPAIN

Radio Exterior de Espana, 9530 kHz. Full data scenery card, without veri signer. Program schedules. Received in 55/65/80 days for an English report. Station address: P.O. Box 156202, 28080 Madrid, Spain. (Michael Mc Ferrin, Smiths Creek, MI) (Adams, NJ)

UNITED STATES

WWV-Nat'l Institute of Standards & Technology, 15000/20000 kHz. Full data QSL card, verified by John B. Milton-Engineer in-Charge. Received in 11/15 days for an English report. Station address: c/o Radio Stations WWV/WWVH, 2000 E. County Rd. 5B, Ft. Collins, CO 80524. (Sullivan, NY) (Martin, Austria) (Leach, NE) (Sam Wright, Biloxi, MS)

KGGF-690 AM kHz. Coffeyville, Kansas. Full data station form letter signed by Al Diller-Chief Engineer. AM Coverage Map included. Received for a Medium-Wave report, mint stamp, and an address label. Station address: 306 West 8th St., P.O. Box 1087, Coffeyville, KS 67337. (Mike Hardester, Jacksonville, NC)

WRNL-910 AM kHz. Richmond, Virginia. No data station letter, signed by Mike Friedman-A.E. AM & FM Coverage Maps included, and station souvenirs. Received for a Medium-Wave report. Station address: 3245 Basie Rd., P.O. Box 9608, Richmond, VA 23228. (Hardester, NC)

Ray LaBrie, Portsmouth, NH, sent in this QSL from Radio Australia depicting a sheep station in the Outback.

English language

shortwave guide

How to Use the Shortwave Guide

1: Convert your time to UTC.

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

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

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

Some selected programs appear on the lower half of the page for prime listening hours. If it's news you're interested in, check out the complete "Newsline" listing, which begins on the next page.

Occasionally program listings will be followed by "See X 0000." This information indicates that the program is a 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
M: Monday
T: Tuesday
W: Wednesday
H: THursday
F: Friday
A: SAturday

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 help you further 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.

From the Frequency Manager

Lots of changes this month, in content and in layout! First, something many of you called and wrote about last month has been corrected—the time headers showing UTC vs. EDT & PDT.

[Editor's Note: Please be advised that "falling back" instead of springing forward was NOT an error made by your Frequency Manager. It's just one of those things that happens when staff is working to meet deadline! As one kind reader put it, perhaps the "gremlins of time" will stop dogging our steps after this; I'm also given to understand that one should not convert Hawaiian Time, as we did in the March issue; they stay on Standard Time year-round, as do some other states, as well. Now back to Greg.]

The Guide is now fully integrated by country name rather than by station. This should be a help in locating a country more quickly. However, be aware that priority is given to the starting and ending times, and stations are alphabetized within those parameters. So for example, when a station comes on at, say, 0030, it's going to show up on the list after all the 0000 listings.

Many of you have noticed that Kuwait is back on the air. There's also a new shortwave station from Kentucky—WJCR. All references to the "Croatian Radio" program carried on WHRI have been deleted, as no one can agree on when it's actually on the air. There are transmissions direct from Croatia that I suggest you check out instead.

Speaking of reports, many have commented on the fact that some stations I list with multiple frequencies, like WHRI and CSMonitor, do not necessarily carry parallel programming or even English programming on some of these frequencies or times. I'm sorry; to try to break them down any more so than I already do would land me on the seventh floor of NC Baptist Hospital, and would put Kannon Shanmugam out of a job, as there'd be no more room for programming details! Each of those frequencies should be on in English at some time during the time period listed, but, as you know, in shortwave listening there are no guarantees. The "Guide" seeks to point you in as accurate a direction as we can, given our time and space constraints.

Remember, the number to call is (919) 661-0095 to report changes or just chat. I am here most weekends but on weekdays you'll probably get my machine if you call before 8pm. Until next month, good listening!

Report frequency changes or additions to 919-661-0095 8-11pm and weekends.

Deadline for the June issue is May 1st.

English language **shortwave guide**

MT Monitoring Team

P.O. Box 98, Brasstown, NC 28902-0098

Greg Jordan
Frequency Manager

Jacques d'Avignon
Propagation Forecasts

Kannon Shanmugam
Program Manager

Dave Datko
California

Jack Hubby
California

John Carson
Oklahoma

B. W. Battin
New Mexico

Tammy Wells
Maine

Jim Frimmel
Texas

newsline

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

0000 UTC
(8:00 PM EDT, 5:00 PM PDT)
BBC
CBC, Northern Quebec
Christian Science Monitor
Croatian Radio, Zagreb [M-A]
Radio Australia
Radio Beijing
Radio Canada Int'l [S-M]
Radio Havana Cuba [T-S]
Radio Kiev
Radio Luxembourg
Radio Moscow
Radio New Zealand Int'l [M-F]
Radio Prague Int'l
Radio Thailand
SBC Radio 1, Singapore
Spanish Foreign Radio
Voice of America
WWCR (Program Two) [T-A]
WWCR [T-A]
0005
Radio Pyongyang
0010
Radio Beijing*
0030
Christian Science Monitor (Asia) [M]
Christian Science Monitor [T-F]
HCJB
Radio Havana Cuba [T-S]
Radio Netherlands [T-S]
Radio Yugoslavia
Voice of America (Americas, East Asia) (Special English) [T-S]
Voice of America (East Asia) (Special English) [M]
0055
WRNO [W, A]

0100 UTC
(9:00 PM EDT, 6:00 PM PDT)
All India Radio
BBC
CBC, Northern Quebec [S-M]
Christian Science Monitor
Croatian Radio, Zagreb [S]
Deutsche Welle
FEBC Radio Int'l, Philippines
Radio Australia
Radio Belize
Radio Budapest
Radio Havana Cuba [T-S]
Radio Japan
Radio Luxembourg
Radio Moscow
Radio Prague Int'l
Radio Tashkent
Radio Thailand
Radiotelevisione Italiana
SBC Radio 1, Singapore
Spanish Foreign Radio
Voice of America
Voice of Indonesia
WWCR [T-A]
0115
Radio Havana Cuba* [T-S]
0130
Christian Science Monitor (Asia) [M]
Christian Science Monitor [T-F]
Radio Austria Int'l
Radio Havana Cuba [T-S]
Radio Yugoslavia
Voice of Greece [M-A]
0145
Radio Korea (News Service)
0155
Voice of Indonesia

0200 UTC
(10:00 PM EDT, 7:00 PM PDT)
BBC
CBC, Northern Quebec [T-S]
Christian Science Monitor
Deutsche Welle
FEBC Radio Int'l, Philippines
Radio Australia
Radio Havana Cuba [T-S]
Radio Moscow
Radio New Zealand Int'l [M-F]
Radio Romania Int'l
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, Europe) [M]
Christian Science Monitor [T-F]
HCJB
Radio Havana Cuba [T-S]
Radio Moscow
Radio Pakistan (Special English)
Radio Portugal [T-A]
Radio Tirana, Albania
SLBC, Sri Lanka
0250
Radio Yerevan

0300 UTC
(11:00 PM EDT, 8:00 PM PDT)
BBC
CBC, Northern Quebec
Christian Science Monitor
Deutsche Welle
Radio Australia
Radio Bahrain
Radio Beijing
Radio Belize
Radio Canada Int'l
Radio Havana Cuba [T-S]
Radio Japan
Radio Moscow
Radio New Zealand Int'l [M-F]
Radio Prague Int'l
Radio Sofia
Radio Thailand
SBC Radio 1, Singapore
TWR, Bonaire
Voice of America
Voice of Free China
Voice of Turkey
WRNO [F]
WWCR [T-A]
0310
Radio Beijing*
0315
Radio Cairo
Radio Havana Cuba* [T-S]
0330
BBC (Africa)*
Christian Science Monitor (Africa, Europe) [M]
Christian Science Monitor [T-F]
Radio Austria Int'l [T-A]
Radio Bahrain
Radio Havana Cuba [T-S]
Radio Netherlands [T-S]
Radio Tirana, Albania
UAE Radio, Dubai
0340
Voice of Greece [M-A]
0350
Radiotelevisione Italiana
0355
Radio Japan [M-F]
WYFR (Network) [T-A]

0400 UTC
(12:00 AM EDT, 9:00 PM PDT)
BBC
CBC, Northern Quebec [T-S]
Christian Science Monitor
Deutsche Welle
Kol Israel
Radio Australia
Radio Bahrain
Radio Beijing
Radio Havana Cuba [T-S]
Radio Moscow
Radio New Zealand Int'l
Radio Prague Int'l
Radio Romania Int'l
Radio RSA
Radio Tanzania
Radio Thailand
SBC Radio 1, Singapore
Swiss Radio Int'l
Voice of America
0405
Radio Pyongyang
0410
Radio Beijing*
0425
Radiotelevisione Italiana
0430
BBC (Africa)* [M-A]
Christian Science Monitor (Africa, Europe, NE Asia) [M]
Christian Science Monitor [T-F]
Radio Bahrain
Radio Botswana
Radio Havana Cuba [T-S]
Radio Moscow (World Service)
0450
Radio RSA

0500 UTC
(1:00 AM EDT, 10:00 PM PDT)
BBC ("Newshour")
CBC, Northern Quebec
Christian Science Monitor
Croatian Radio, Zagreb
Deutsche Welle
HCJB
Radio Australia
Radio Bahrain
Radio Beijing
Radio Havana Cuba [T-S]
Radio Japan
Radio Korea
Radio Lesotho
Radio Moscow
Radio Thailand
SBC Radio 1, Singapore
Spanish Foreign Radio
Voice of America
WWCR
0510
Radio Beijing*
Radio Botswana
0515
Radio Canada Int'l [M-F]
Radio Havana Cuba* [T-S]
Radio Korea (News Service)
0530
Christian Science Monitor (Africa, Europe, NE Asia) [M]
Christian Science Monitor [T-F]
Radio Austria Int'l
Radio Havana Cuba [T-S]
Radio Moscow (World Service)
Radio Romania Int'l
Radio Thailand
RTM, Malaysia
UAE Radio, Dubai
Voice of Nigeria
0550
Radio For Peace Int'l [T-A]

newsline

0600 UTC
(2:00 AM EDT, 11:00 PM PDT)
BBC
Christian Science Monitor
Deutsche Welle
GBC Radio, Accra*
Radio Australia
Radio Bahrain
Radio Havana Cuba [T-S]
Radio Moscow
Radio New Zealand Int'l [M, F-A]
SBC Radio 1, Singapore
Voice of America
WWCR [M-A]
0605
Radio Pyongyang
0609
BBC*
0610
Voice of Malaysia
0630
BBC (Africa)*
BRT, Brussels
Christian Science Monitor [M-F]
Radio Austria Int'l [T-A]
Radio Havana Cuba [T-S]
Radio Moscow (World Service)
RTV Congolaise, Brazzaville [M-F]
Swiss Radio Int'l
Voice of Nigeria
0640
Radio Prague Int'l
0645
Radio Romania Int'l

0700 UTC
(3:00 AM EDT, 12:00 AM PDT)
BBC
Christian Science Monitor
GBC Radio, Accra
MBC, Blantyre, Malawi [M-A]
Radio Australia
Radio Havana Cuba [T-S]
Radio Japan
Radio Korea
Radio Moscow
Radio New Zealand Int'l [M, W-H]
SBC Radio 1, Singapore
SLBS, Freetown, Sierra Leone
Voice of Free China
Voice of Myanmar
0703
Croatian Radio, Zagreb
0705
Radio Pyongyang
0715
Radio Havana Cuba* [T-S]
0730
BBC (Africa)* [M-A]
Christian Science Monitor [M-F]
HCJB
Radio Austria Int'l
Radio Ghana
Radio Havana Cuba [T-S]
Radio Moscow (World Service)
Radio Netherlands [M-A]
Radio Prague Int'l
0745
Radio For Peace Int'l [T-A]
0755
Radio Japan [M-F]

0800 UTC
(4:00 AM EDT, 1:00 AM PDT)
BBC
Christian Science Monitor
GBC Radio 1, Accra [S]
GBC Radio 2, Accra
MBC, Blantyre, Malawi [S]
Radio Australia
Radio Bahrain
Radio Finland [M-F]
Radio Moscow
Radio New Zealand Int'l
Radio Pakistan
SBC Radio 1, Singapore
SLBS, Freetown, Sierra Leone
Voice of Indonesia
0805
Radio Pyongyang
0810
Voice of Malaysia
0815
Radio Korea (News Service)
0830
Christian Science Monitor [M-F]
Radio Austria Int'l
Radio Netherlands [M-A]
Swiss Radio Int'l
0840
Voice of Greece [M-A]
0850
Radio Finland [M-F]
0855
Voice of Indonesia

0900 UTC
(5:00 AM EDT, 2:00 AM PDT)
BBC
BRT, Brussels [M-A]
Christian Science Monitor
Deutsche Welle
GBC Radio 1, Accra [M-F]
GBC Radio 2, Accra
MBC, Blantyre, Malawi M-A]
Radio Australia
Radio Bahrain
Radio Beijing
Radio Japan
Radio Moscow
Radio New Zealand Int'l [M]
SBC Radio 1, Singapore
Voice of Nigeria
0903
Croatian Radio, Zagreb
0910
Radio Beijing*
0930
Christian Science Monitor [M-F]
Deutsche Welle (Africa)* [M-F]
Radio Afghanistan
Radio Korea
Radio Moscow
0950
Radio Tikhiy Okean [S]
0955
Radio Japan [M-F]

1000 UTC
(6:00 AM EDT, 3:00 AM PDT)
All India Radio
BBC
Christian Science Monitor
GBC Radio 2, Accra [A]
HCJB
Kol Israel
MBC, Blantyre, Malawi [S]
Radio Australia
Radio Bahrain
Radio Beijing
Radio Korea
Radio Moscow
Radio New Zealand Int'l [T-W]
Radio RSA
Radio Tanzania
SBC Radio 1, Singapore
Swiss Radio Int'l
Voice of America
1010
Radio Beijing*
1015
Radio Korea (News Service)
1030
Christian Science Monitor [M-F]
MBC, Blantyre, Malawi [M-F]
Radio Austria Int'l [M-F]
Radio Moscow
Radio Netherlands [M-A]
RTM, Malaysia
UAE Radio, Dubai
Voice of Nigeria
1040
Voice of Greece [M-A]
1055
All India Radio

1100 UTC
(7:00 AM EDT, 4:00 AM PDT)
BBC
CBC, Northern Quebec [A-S]
Christian Science Monitor
Deutsche Welle
GBC Radio, Accra [A-S]
MBC, Blantyre, Malawi [A-S]
Radio Australia
Radio Bahrain
Radio Beijing
Radio Japan
Radio Jordan
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
WWCR [M-F]
1105
Radio Pakistan (Special English)
Radio Pyongyang
1110
Radio Beijing*
Radio Belize [T-A]
Radio Botswana [M-F]
1115
Radio Korea
Radio Nepal
1125
Radio Belize [M]
Radio Botswana [A-S]
1130
BRT, Brussels [S]
Christian Science Monitor [M-F]
Deutsche Welle* [M-F]
Radio Austria Int'l [M-F]
Radio Lesotho
Radio Moscow
Radio Netherlands [M-A]
RTM, Malaysia*
1135
Radio Thailand
1150
Radio RSA
1155
Radio Japan [M-F]

1200 UTC
(8:00 AM EDT, 5:00 AM PDT)
BBC
CBC, Northern Quebec [A-S]
Christian Science Monitor
MBC, Blantyre, Malawi [M-F]
Radio Australia
Radio Bahrain
Radio Beijing
Radio Bras, Brasilia [M-A]
Radio Canada Int'l [M-F]
Radio Moscow
Radio Romania Int'l
Radio Tashkent
Radio Thailand
RTM, Malaysia
SBC Radio 1, Singapore
SLBC, Sri Lanka
Swiss Radio Int'l
Voice of America
WWCR [M-F]
1209
BBC* [M-A]
1210
Radio Beijing*
1215
HCJB [M-F]
1230
Christian Science Monitor [M-F]
Radio Cairo
Radio Canada Int'l
Radio France Int'l
Radio Korea (News Service)
Radio Moscow
SLBC, Sri Lanka
TWR, Bonaire
Voice of Turkey
1235
Voice of Greece
1245
SLBC, Sri Lanka
1255
WYFR (Network) [M-F]
1257
HCJB [M-F]

1300 UTC
(9:00 AM EDT, 6:00 AM PDT)
BBC ("Newshour")
BRT, Brussels [M-A]
CBC, Northern Quebec
Christian Science Monitor
GBC Radio, Accra
Kol Israel
Polish Radio, Warsaw
Radio Australia
Radio Bahrain
Radio Beijing
Radio Belize
Radio Canada Int'l [S]
Radio Jordan
Radio Korea
Radio Moscow
Radio Romania Int'l
Radio Tanzania [A-S]
SBC Radio 1, Singapore
Voice of America
1303
Croatian Radio, Zagreb
1305
Radio Pyongyang
1310
Radio Beijing*
1320
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 Moscow
Radio Tashkent
RTM, Malaysia
Swiss Radio Int'l
UAE Radio, Dubai
Voice of America (Special English)
1346
All India Radio [A]
1350
Radio For Peace Int'l [T-A]
1355
Radio Finland [M-F]

1400 UTC
(10:00 AM EDT, 7:00 AM PDT)
BBC
CBC, Northern Quebec [A-S]
Christian Science Monitor
GBC Radio, Accra
MBC, Blantyre, Malawi [M-F]
Radio Australia
Radio Bahrain
Radio Beijing
Radio Belize [M-F]
Radio Canada Int'l
Radio France Int'l
Radio Japan
Radio Moscow
RTM, Malaysia*
SBC Radio 1, Singapore
Voice of America
WWCR [M-F]
1405
Radio Finland
1410
Radio Beijing*
1415
Radio Nepal
1425
HCJB [M-F]
1430
Christian Science Monitor [M-F]
FEBC Radio Int'l, Philippines
Radio Austria Int'l
Radio Moscow
Radio Netherlands [M-A]
1445
BBC (East Asia) (Special English) [M-F]
Radio Korea (News Service)
Voice of Myanmar
1455
All India Radio

1500 UTC
(11:00 AM EDT, 8:00 AM PDT)
BBC
CBC, Northern Quebec [A-S]
Christian Science Monitor
Deutsche Welle
GBC Radio 2, Accra
Radio Australia
Radio Bahrain

newsline

Radio Beijing
Radio Belize [M-A]
Radio Canada Int'l
Radio Japan
Radio Jordan
Radio Korea
Radio Moscow
Radio Portugal [M-F]
Radio Romania Int'l
Radio RSA
RTM, Malaysia
SBC Radio 1, Singapore
SLBC, Sri Lanka
Voice of America
1505
Radio Pyongyang
1510
Radio Beijing*
1520
Radio Tallinn [M-F]
1530
Christian Science Monitor [M-F]
Deutsche Welle* [M-F]
FEBA, Seychelles
FEBC Radio Int'l, Philippines
Radio Austria Int'l [M-F]
Radio Canada Int'l
Radio Moscow
Radio Tirana, Albania
Swiss Radio Int'l
Voice of Greece [M-A]
Voice of Nigeria
1545
Radio For Peace Int'l [T-A]

1600 UTC
(12:00 PM EDT, 9:00 AM PDT)
BBC
CBC, Northern Quebec [A]
Christian Science Monitor
Deutsche Welle
GBC Radio 2, Accra
MBC, Blantyre, Malawi
Polish Radio, Warsaw
Radio Australia
Radio Bahrain
Radio Beijing
Radio Canada Int'l
Radio France Int'l
Radio Jordan
Radio Lesotho
Radio Moscow
Radio Pakistan
Radio RSA
Radio Tanzania
SBC Radio 1, Singapore
Voice of America
Yemen Radio
1609
BBC*
1610
Radio Beijing*
Radio Botswana [M-F]
1615
Radio Korea (News Service)
Radio Pakistan (Special English)
1630
Christian Science Monitor [M-F]
Radio Moscow
Radio Netherlands [M-A]
UAE Radio, Dubai
Voice of America (except Africa) (Special English)
WYFR (Network) [A]
1635
WYFR (Network) [M-F]

1700 UTC
(1:00 PM EDT, 10:00 AM PDT)
BBC
CBC, Northern Quebec [A]
Christian Science Monitor
GBC Radio 2, Accra
Kol Israel
Radio Australia
Radio Bahrain
Radio Beijing
Radio Belize [M-F]
Radio Canada Int'l
Radio Japan
Radio Korea
Radio Moscow
Radio New Zealand Int'l [S-F]
Radio Pakistan
Radio Prague Int'l
Radio RSA
SLBC, Sri Lanka
Voice of America
1705
Radio Pyongyang
1710
Radio Beijing*
1725
Radio Surinam Int'l [M-F]
WYFR (Network) [A]
1730
Christian Science Monitor [M-F]
Radio Moscow
Radio Romania Int'l
Radio Sofia
Swiss Radio Int'l
1740
BBC (Africa)*
1750
Radio RSA

1800 UTC
(2:00 PM EDT, 11:00 AM PDT)
All India Radio
BBC
BRT, Brussels
CBC, Northern Quebec [M-H]
Christian Science Monitor
GBC Radio, Accra
KVOH
MBC, Blantyre, Malawi
Polish Radio, Warsaw
Radio Afghanistan
Radio Australia
Radio Bahrain
Radio Belize [M-F]
Radio Bras, Brasilia [M-A]
Radio Canada Int'l [M-F]
Radio Moscow
Radio New Zealand Int'l [S-F]
Radio Portugal [M-F]
Radio Tanzania
Voice of America
1830
Christian Science Monitor [M-F]
Radio Austria Int'l
Radio Belize
Radio Moscow
Radio Netherlands [M-A]
Radio Prague Int'l
Radio Tirana, Albania
Swiss Radio Int'l
Voice of America (Special English)
1840
Voice of Greece
1845
Radio Cote d' Ivoire, Abidjan
Radio Korea (News Service)
1855
BBC (Africa)* [M-F]
Radio Finland
WYFR (Network) [M-A]

1900 UTC
(3:00 PM EDT, 12:00 PM PDT)
All India Radio
BBC
Christian Science Monitor [M-A]
Deutsche Welle
GBC Radio 2, Accra*
HCJB
Kol Israel
KVOH
Radio Australia
Radio Beijing
Radio Canada Int'l
Radio Havana Cuba [M-A]
Radio Japan
Radio Moscow
Radio New Zealand Int'l [S-F]
Radio Portugal [M-F]
Radio Tanzania
RAE, Buenos Aires [M-F]
SLBS, Freetown, Sierra Leone
Spanish Foreign Radio
Swiss Radio Int'l
Voice of America
1910
Radio Beijing*
Radio Botswana
1920
Voice of Greece
1930
Christian Science Monitor [M-F]
Deutsche Welle* [M-F]
Radio Ghana
Radio Havana Cuba [M-A]
Radio Korea
Radio Moscow
Radio Romania Int'l
Voice of Nigeria
1935
Radiotelevisione Italiana
1945
Radio Korea (News Service)
Radio Sofia
1955
BBC (Africa)* [M-F]

2000 UTC
(4:00 PM EDT, 1:00 PM PDT)
BBC
CBC, Northern Quebec [S-F]
Christian Science Monitor
GBC Radio, Accra
KVOH
MBC, Blantyre, Malawi
Radio Australia
Radio Bahrain
Radio Beijing
Radio Belize [M-F]
Radio Budapest
Radio Havana Cuba [M-A]
Radio Moscow
Radio New Zealand Int'l [S-F]
Radio Prague Int'l
SLBS, Freetown, Sierra Leone
Voice of America
Voice of Indonesia
Voice of Nigeria
Voice of Turkey
WWCR (Program Two) [M-F]
2005
Radio Pyongyang
2010
Radio Beijing*
2025
Radio Havana Cuba* [M-A]
Radiotelevisione Italiana
WYFR (Network) [M-F]
2030
Christian Science Monitor [M-F]
Polish Radio, Warsaw
Radio Canada Int'l
Radio Havana Cuba [M-A]
Radio Moscow
Radio Netherlands [M-A]
WYFR (Network) [A]
2055
Voice of Indonesia

2100 UTC
(5:00 PM EDT, 2:00 PM PDT)
All India Radio
BBC ("Newshour")
BRT, Brussels
CBC, Northern Quebec [S-F]
Christian Science Monitor [M-A]
Deutsche Welle
GBC Radio 2, Accra*
KVOH
MBC, Blantyre, Malawi
Radio Australia
Radio Bahrain
Radio Beijing
Radio Belize [M-F]
Radio Canada Int'l
Radio Japan
Radio Kiev
Radio Moscow
Radio New Zealand Int'l
Radio Prague Int'l
Radio Romania Int'l
Radio Yugoslavia
SLBS, Freetown, Sierra Leone
Spanish Foreign Radio
Swiss Radio Int'l
Voice of America
WWCR (Program Two) [M-F]
2110
Radio Beijing*
2130
Christian Science Monitor [M-F]
Kol Israel
Radio Austria Int'l
Radio Cairo
Radio Moscow
Radio Vilnius
Swiss Radio Int'l
WYFR (Network) [M-F]
2145
Radio Sofia
2150
Radio For Peace Int'l [M-F]
2155
WYFR (Network) [M-A]

2200 UTC
(6:00 PM EDT, 3:00 PM PDT)
All India Radio
BBC
CBC, Northern Quebec [M-F]
Christian Science Monitor
GBC Radio 2, Accra
MBC, Blantyre, Malawi
Radio Australia
Radio Beijing
Radio Canada Int'l
Radio Havana Cuba [M-A]
Radio Moscow
Radio New Zealand Int'l
Radio Tirana, Albania
Radiotelevisione Italiana
SBC Radio 1, Singapore
SLBS, Freetown, Sierra Leone
Voice of America
Voice of Free China
Voice of Turkey
2203
Croatian Radio, Zagreb
2208
Voice of America (Caribbean)* [M-F]
2209
BBC*
2210
Radio Beijing*
2225
Radio Havana Cuba* [M-A]
2230
Christian Science Monitor [M-F]
Radio Havana Cuba [M-A]
Radio Moscow
Radio New Zealand Int'l [A-H]
Voice of America (Special English)
2245
GBC Radio, Accra
Voice of Greece

2300 UTC
(7:00 PM EDT, 4:00 PM PDT)
BBC
CBC, Northern Quebec [A]
Christian Science Monitor [M-A]
Radio Australia
Radio Belize [M-F]
Radio Canada Int'l
Radio Japan
Radio Korea
Radio Luxembourg
Radio Moscow
Radio New Zealand Int'l [S-F]
Radio Vilnius
RTM, Malaysia
SBC Radio 1, Singapore
Voice of America
2305
Radio Pyongyang
2315
All India Radio
2320
Radio Thailand
2330
BRT, Brussels
Christian Science Monitor [M-F]
Radio Moscow
Radio Nacional, Bogota [A]
RTM, Malaysia*
2345
Radio For Peace Int'l [M-F]
Radio Korea (News Service)
2355
Radio Japan [M-F]
WRNO [W, F]

English language

shortwave guide

0000 UTC [8:00 PM EDT/5:00 PM PDT]

FREQUENCIES

0000-0005	Canada, CBC	9625do			
0000-0027	Czechoslovakia	7345na	9540na	11990na	
0000-0030 sm	Norway	15165am			
0000-0030	Swiss Radio Int'l	3985eu	6165eu	9535eu	
0000-0030	United Kingdom,BBC London	5965as	5975na	6005af	6175na
		6195as	7145as	7325na	9580as
		9590na	9915na	11750sa	11945as
		11955as	12095na	15260sa	15360pa
		17830as			
0000-0050	N.Korea, Radio Pyongyang	11335na	13760na	15115na	
0000-0100	Australia	11720as	11880as	15160as	15240as
		15320as	15365as	17750as	17795pa
		17880pa	21740pa		
0000-0100	Australia, ABC Brisbane	4920do	9660do		
0000-0100	Australia, ABC Perth	9610do			
0000-0100	Canada, CFCX Montreal	6005do			
0000-0100	Canada, CFRX Toronto	6070do			
0000-0100	Canada, CFVP Calgary	6030do			
0000-0100	Canada, CHNX Halifax	6130do			
0000-0100	Canada, CKZU Vancouver	6160do			
0000-0100	Canada, RCI Montreal	5960am	9755am		
0000-0100	China, Radio Beijing	9770na	11715na		
0000-0100	Cook Islands	11760pa			
0000-0100	Costa Rica, AWR	9725ca	11870ca		
0000-0100	Costa Rica, RFPI	7375na	21465na		
0000-0100	Cuba, RHC, Havana	11970na			
0000-0100	Guam, KSDA Guam	15610as			
0000-0100	India, All India Radio	9910as	11715as	11745as	15110as
		15135as	15145as	17830as	
0000-0100 tent	Iraq, Radio Baghdad	11945na	17740sa		
0000-0100	Korea, Seoul	15575na			
0000-0100	Luxembourg, RTL	15350va			
0000-0100	Malaysia, RTM Radio 4	7295do			
0000-0100	New Zealand, RNZI	17770pa			
0000-0100	Philippines, FEBC Manila	15450as			
0000-0100	Russia, Radio Moscow	4740do	4975do	6000am	6045am
		7135va	7150va	7160va	7255va
		7275va	7295va	7310am	7390am
		9625va	9665va	9715va	9725va
		9745va	9790va	9855va	9870am
		9905va	11985va	12025va	12045va
		12050va	15295va	15350va	15420va
		15425va	17570va	17610va	17655va
		17700va	17720va	17775va	17825va
		17890va	21480va	21690va	21790va
0000-0100	Sierra Leone, SLBS	3316do			
0000-0100	Singapore, SBC1	5010do	5052do	11940do	
0000-0100	Spanish National Radio	9530na			
0000-0100	Thailand	4830as	9655as	11905as	
0000-0100	Ukraine, Kiev	4825eu	7240eu	7400am	9860am
		10344va	17605am	17690am	
0000-0100	USA, CSMonitor Boston	7395na	9850af	13760na	17555as
0000-0100 sa	USA, CSMonitor Boston	17865as			
0000-0100	USA, KTBN Salt Lake City	15590am			
0000-0100	USA, KVOH Los Angeles	17775am			
0000-0100	USA, VOA Washington	6130ca	9455ca	11580am	11695ca
		15120ca	15205ca		
		7120as	9770as	11760as	15185as
		15290as	17735as	17820as	
0000-0100	USA, WHRI Noblesville	7315am	9495am		
0000-0100	USA, WINB Red Lion, Penn.	15145eu			
0000-0100	USA, WJCR Upton, Kentucky		7490na		
0000-0100	USA, WRNO New Orleans	7355am			
0000-0100	USA, WWCR Nashville	7435na	12160na		
0000-0100	USA, WYFR Okeechobee, FL		5985am		
0005-0100 a	Canada, CBC	9625do			
0030-0100	Ecuador,HCJB Quito	9745am	15155am	21455am	
0030-0100	Iran, Islamic Republic	9022am	9720am	15260am	
0030-0100	Netherlands	6020na	6165na	9860as	11655as
		11835na	13700as		
0030-0100	Sri Lanka B'casting Corp.	6005as	9720as	15425as	
0030-0100	United Kingdom,BBC London	5965as	5975na	6005sa	6175na
		7135as	7325na	9580as	9590na
		9915na	11750sa	11955as	12095na
		15260sa	15360pa		
0030-0100	USA, VOA Washington	5995sa	7405sa	9775sa	11580sa
		15120sa	15205sa		
0030-0100	Yugoslavia, Radio Federal	11870am			
0040-0050 twhfas	Venezuela, Radio Nacional	9540om			
0045-0100	Korea World News	7275as			

SELECTED PROGRAMS

Sundays

0000 KSDA, Guam: Your Story Hour. Dramatized children's stories.
0015 Radio Beijing: Press Clippings. A review of the Chinese press.
0020 Radio Beijing: Travel Talk. An armchair tour of scenic spots in Chinese provinces.
0028 Radio Beijing: Cooking Show. The Beijing Frugal Gourmet.
0030 BBC: The Ken Bruce Show. Ken Bruce plays pop music, past and present.
0030 KSDA, Guam: Voice of Prophecy. H.J. Richards' devotional program.
0035 Radio Beijing: Music from China. Chinese music, from traditional to pop.
0039 HCJB: DX Party Line. Rich McVicar presents news on shortwave radio and communications.

Mondays

0000 KSDA, Guam: Music Scrapbook. See S 2300.
0015 KSDA, Guam: Bible in Living Sound. See S 2315.
0015 Radio Beijing: China Anthology. See S 1115.
0025 Radio Beijing: Music Album. See S 1125.
0030 BBC: In Praise Of God. Christian religious services and meditations.
0030 KSDA, Guam: Greatest Story Ever Told. A Bible reading.
0039 HCJB: Saludos Amigos. Ken MacHarg presents his program of international friendship.
0040 Radio Beijing: Listeners' Letterbox. See S 1140.
0045 KSDA, Guam: Voice of Prophecy. See S 0030.

Tuesdays

0000 KSDA, Guam: Music Scrapbook. See S 2300.
0015 KSDA, Guam: Bible in Living Sound. See S 2315.
0015 Radio Beijing: Current Affairs. See M 1115.
0030 BBC: Panel Game. Who's Britain's top musical brain? Find out on "Ned Sherrin's Counterpoint" (through June 30th).
0030 KSDA, Guam: Greatest Story Ever Told. See M 0030.
0039 HCJB: Current Affairs. See M 1639.
0040 Radio Beijing: Learn to Speak Chinese. See M 1140.
0045 KSDA, Guam: Voice of Prophecy. See S 0030.

Wednesdays

0015 Radio Beijing: Current Affairs. See M 1115.
0030 BBC: Omnibus. Topical features on almost any topic, from Dracula to drugs.
0039 HCJB: Current Affairs. See M 1639.
0040 Radio Beijing: Listeners' Letterbox. See S 1140.

Thursdays

0000 KSDA, Guam: Music Scrapbook. See S 2300.
0015 KSDA, Guam: Bible in Living Sound. See S 2315.
0015 Radio Beijing: Current Affairs. See M 1115.
0030 BBC: Comedy/Drama. See W 1530.
0030 KSDA, Guam: Greatest Story Ever Told. See M 0030.
0039 HCJB: Current Affairs. See M 1639.
0040 Radio Beijing: Learn to Speak Chinese. See M 1140.
0045 KSDA, Guam: Voice of Prophecy. See S 0030.

Fridays

0000 KSDA, Guam: Music Scrapbook. See S 2300.
0015 KSDA, Guam: Bible in Living Sound. See S 2315.
0015 Radio Beijing: Current Affairs. See M 1115.
0030 BBC: Music Feature. Edward Greenfield presents some of the world's "Classic Recordings" (through June 19th).
0030 KSDA, Guam: Greatest Story Ever Told. See M 0030.
0039 HCJB: Current Affairs. See M 1639.
0040 Radio Beijing: Culture in China. See H 1140.
0045 KSDA, Guam: Voice of Prophecy. See S 0030.

Saturdays

0000 KSDA, Guam: Your Story Hour. See S 0000.
0015 Radio Beijing: Current Affairs or The Business Show. See F 1115.
0030 BBC: From The Weeklies. A review of the British weekly press.
0030 KSDA, Guam: Power to Cope. See S 1630.
0039 HCJB: Current Affairs. See M 1639.
0040 Radio Beijing: In the Third World. See F 1140.
0045 BBC: Recording Of The Week. See M 0615.

English language

shortwave guide

0100 UTC [9:00 PM EDT/6:00 PM PDT]

FREQUENCIES

0100-0115	India, All India Radio	9910as	11715as	11745as	15110as
		15135as	15145as	17830as	
0100-0115 tent	Iraq, Radio Baghdad	11945na	17740sa		
0100-0120	Italy, RAI, Rome	9575am	11800am		
0100-0127	Czechoslovakia	5930na	7345na	9540na	
0100-0130 twhfa	Canada, RCI Montreal	5960am	9755am		
0100-0130	Iran, Islamic Republic	9022am	9720am	15260am	
0100-0130	Laos, National Radio of	7116as			
0100-0130 sm	Norway	9615am			
0100-0130	Sweden	9685as	11730as		
0100-0130	Uzbekhistan, R. Tashkent	5930as	5995as	7190as	7265as
0100-0150	Germany,Deutsche Welle	6040na	6055na	6085na	6145na
		9515na	9565na	9610na	9640na
		9770na	11865na		
0100-0200 twhf	Argentina,RAE BuenosAires	11710am			
0100-0200	Australia	11720as	11880as	15160as	15240as
		15320as	15365as	17630as	17750as
		17795as	21525as	21740as	21775as
0100-0200	Australia, ABC Brisbane	4920do	9660do		
0100-0200	Australia, ABC Perth	9610do			
0100-0200 as	Canada, CBC	9625do			
0100-0200	Canada, CFCX Montreal	6005do			
0100-0200	Canada, CFRX Toronto	6070do			
0100-0200	Canada, CFVP Calgary	6030do			
0100-0200	Canada, CHNX Halifax	6130do			
0100-0200	Canada, CKZU Vancouver	6160do			
0100-0200 sm	Canada, RCI Montreal	9535am	11845am	11940am	13720am
0100-0200	Cook Islands	11760pa			
0100-0200	Costa Rica, RFPI	7375na	15030am	21465am	
0100-0200	Cuba, RHC Havana	11970am			
0100-0200	Ecuador,HCJB Quito	9745am	15155am	21455am	
0100-0200	Indonesia, Voice of	7125as	9675as	11752as	11785as
0100-0200	Japan NHK	11840me	15195as	17810as	17835as
		17845as			
0100-0200	Luxembourg, RTL	15350va			
0100-0200 smtwh	Malaysia, RTM Radio 4	7295do			
0100-0200	Namibia BC Corp, Windhoek	3290af			
0100-0200	Netherlands	6020na	6165na	9860as	11655as
		11835na	13700as		
0100-0200	New Zealand, RNZI	17770pa			
0100-0200	Philippines, FEBC Manila	15450as			
0100-0200	Russia, Radio Moscow	4740do	4940do	4975do	6000am
		7115am	7135va	7150va	7160va
		7240va	7255va	7275va	7310am
		7390va	9625va	9665va	9715va
		9725va	9745va	9750am	9765va
		9790va	9905va	11985va	12045va
		12050va	15265va	15295va	15350va
		15420va	15425va	17570na	17590va
		17610va	17655va	17700va	17720va
		17775va	17775va	17825va	17890va
		21480va	21690va	21790va	
0100-0200	Sierra Leone, SLBS	3316do			
0100-0200	Singapore, SBC1	5010do	5052do	11940do	
0100-0200	Spanish National Radio	9530na			
0100-0200	Sri Lanka B'casting Corp.	6005as	9720as	15425as	
0100-0200	Thailand	4830as	9655as	11905as	
0100-0200	United Kingdom,BBC London	5965as	5975na	6005sa	6175na
		7135as	7325na	9580as	9590na
		9915na	11750sa	11955as	12095na
		15260sa	15280as	15360pa	21715as
0100-0200	USA, CSMonitor Boston	7395na	9850af	13760na	17555as
0100-0200 sa	USA, CSMonitor Boston	17865as			
0100-0200	USA, KTBN Salt Lake City	15590na			
0100-0200	USA, VOA Washington	5995am	6130am	7405am	9455am
		9775am	11580am	15120am	15205am
		7205as	9740as	11705as	15250as
		17735as	21550as		
0100-0200	USA, WHRI Noblesville	7315am	9495am		
0100-0200	USA, WINB Red Lion, Penn.	15145na			
0100-0200	USA, WJCR Upton, Kentucky		7490na		
0100-0200	USA, WRNO New Orleans	7355na			
0100-0200	USA, WWCR Nashville	5935na	7435na		
0100-0200	USA, WYFR Okeechobee, FL		6065am	9505am	15440am
0100-0200	Yugoslavia, Radio Federal	11870na			
0130-0150	Finland, YLE	9560na	11755na		
0130-0150 mtwhfa	Greece, Voice of	9395na	9420na	11645na	
0130-0200	Austria, ORF Vienna	9870sa	9875na	13730na	
0130-0200	UAE Radio, Dubai	11795na	13695eu	15320eu	15435eu
0145-0200	Vatican Radio	9650as	11935as		

SELECTED PROGRAMS

Sundays

0101 BBC: Play Of The Week. This month's selections: "The Theory And Practice Of Rings" (3rd); "The Duke In Darkness" (10th); Alan Rickman in "Blood Wedding" (17th, starts at 0030 UTC); Bob Hoskins in Cervantes' "Don Quixote" (24th, 31st).

0130 HCJB: Focus On The Family. A daily look at marriage, parenting, and social trends that affect the family.

0130 Radio Austria Int'l: Report From Austria. A magazine program, covering all aspects of Austrian life and events in the news, and opening with the latest news bulletin.

Mondays

0101 BBC: Feature/Drama. Sarah Ward presents features and interviews for teenagers in "What's News?" (through June 8th).

0130 HCJB: The Sower. Michael Guido presents music and inspiration.

0130 Radio Austria Int'l: Report From Austria. See S 0130.

0145 BBC: Feature. Extraordinary true stories in "Truth To Tell" (4th) are followed by "Turning A Tune: Music-Making In Ireland" (through June 29th).

0145 BBC: Feature/Drama. The private personas behind celebrities like Andrew Lloyd Webber are revealed in "About Face" (through June 8th).

0145 HCJB: Youth Time Radio. Interviews and music for college students.

Tuesdays

0100 HCJB: Dateline '90. Jan Shober looks at issues of the decade.

0105 BBC: Outlook. See M 1405.

0130 BBC: Folk In Britain. Ian Anderson is the host, folk music is the fare.

0130 HCJB: Open Line. Ken MacHarg hosts a phone-in program that covers subjects from Christianity to shortwave—just dial 011+593+2+241+560.

0130 Radio Austria Int'l: Report From Austria. See S 0130.

0145 BBC: Health Matters. New medical developments and methods of keeping fit.

Wednesdays

0100 HCJB: Happiness Is. Interviews, books, travel logs, and more, presented by Dee Baklenko.

0105 BBC: Outlook. See M 1405.

0130 BBC: Talks. Scary books feature in "Fear From The Book" (6th/13th), and leaders like Indira Gandhi and Margaret Thatcher feature as "Women In Power" (through June 24th).

0130 HCJB: Focus On The Family. See M 1330.

0130 Radio Austria Int'l: Report From Austria. See S 0130.

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 the amateur radio hobby.

0105 BBC: Outlook. See M 1405.

0130 BBC: Waveguide. See W 0415.

0130 HCJB: Focus On The Family. See S 0130.

0130 Radio Austria Int'l: Report From Austria. See S 0130.

0140 BBC: Book Choice. See W 0425.

0145 BBC: The Farming World. Agricultural news and technological innovations for farmers.

Fridays

0100 HCJB: Happiness Is. See W 0100.

0105 BBC: Outlook. See M 1405.

0130 BBC: Seven Seas. Malcolm Billings presents news about ships and the sea.

0130 HCJB: Focus On The Family. See S 0130.

0130 Radio Austria Int'l: Report From Austria. See S 0130.

0145 BBC: Global Concerns. An update on environmental issues.

Saturdays

0100 HCJB: Musica Del Ecuador. A mix of Ecuadorian and Latin music, hosted by Jorge Zambrano.

0105 BBC: Outlook. See M 1405.

0130 BBC: Short Story (except 2nd: Seeing Stars). See S 0430.

0130 HCJB: Focus On The Family. See S 0130.

0130 Radio Austria Int'l: Report From Austria. See S 0130.

0145 BBC: Jazz Now And Then. George Reid presents a weekly mix of new releases, old tracks, and interviews.

0200 UTC [10:00 PM EDT/7:00 PM PDT]

FREQUENCIES

0200-0230 mtwhfa	Kenya, Voice of	4935do			
0200-0230 sm	Norway	11930na			
0200-0230	Philippines, FEBC Manila	15450as			
0200-0230	Sri Lanka B'casting Corp.	6005as	9720as	15425as	
0200-0230	Sweden	9695na	11705na		
0200-0230	Swiss Radio Int'l	6135am	9650am	9885am	12035am
		17730am			
0200-0230	United Kingdom,BBC London	5975na	6005sa	6175na	6195eu
		7135as	7325na	9580as	9590na
		9670me	9915na	11750sa	11955as
		12095va	15260sa	15280as	15360pa
		15380as	21715as		
0200-0230	USA, VOA Washington	5995am	7405am	9775am	11580am
		15120am	15205am		
0200-0250	Germany,Deutsche Welle	6035as	7285as	9615as	9690as
		11945as	15560as		
0200-0300	Australia	11720as	11880as	15160as	15240as
		15320as	15365as	17630as	17750as
		17795pa	21525as	21740pa	21775as
0200-0300	Australia, ABC Brisbane	4920do	9660do		
0200-0300	Australia, ABC Perth	6070do	9610do		
0200-0300	Canada, CBC	9625do			
0200-0300	Canada, CFCX Montreal	6005do			
0200-0300	Canada, CFRX Toronto	6070do			
0200-0300	Canada, CFVP Calgary	6030do			
0200-0300	Canada, CHNX Halifax	6130do			
0200-0300	Canada, CKZU Vancouver	6160do			
0200-0300 twhfa	Canada, RCI Montreal	9535sa	9755sa	11845sa	11940sa
		13720sa			
0200-0300	Cook Islands	11760pa			
0200-0300	Costa Rica, RFPI	7375na	15030na	21465na	
0200-0300	Cuba, RHC Havana	11970na	13700na		
0200-0300	Ecuador,HCJB Quito	9745am	15155am	21455am	
0200-0300	Egypt, Radio Cairo	9475na	9675na		
0200-0300 as	Guam, KSDA Guam	13720as			
0200-0300	Hungary, Radio Budapest	6110na	9835na	11910na	
0200-0300	Luxembourg, RTL	15350va			
0200-0300 smtwh	Malaysia, RTM Radio 4	7295do			
0200-0300	Namibia BC Corp, Windhoek	3290af			
0200-0300	Netherlands	6020na	6165na	9860as	11655as
		11835na	13700as		
0200-0300	New Zealand, RNZI	17770pa			
0200-0300	Romania, R.Romania Int'l	5990am	6155am	9510am	9570am
		11830am	11940am		
0200-0300	Russia, Radio Moscow	4740do	4940do	4975do	6045am
		7115am	7135va	7150am	7160va
		7240va	7255va	7275va	7310am
		7350va	9625va	9665va	9715va
		9725va	9750na	9765va	9880va
		9905va	11920va	12010va	12035va
		12045va	12050va	13670va	13745va
		15295va	15350va	15420va	15425va
		15470va	17570na	17610va	17655va
		17665va	17690va	17700va	17720va
		17775va	17825va	17890va	21480va
		21690va	21790va		
0200-0300	Sierra Leone, SLBS	3316do			
0200-0300	Singapore, SBC1	5010do	5052do	11940do	
0200-0300	Taiwan, V. of Free China,	5950na	9680na	9765pa	11740ca
		11860as	15345as		
0200-0300	Thailand	4830as	9655as	11905as	
0200-0300	USA, CSMonitor Boston	9350me	9455na	13760am	17555
0200-0300 sa	USA, CSMonitor Boston	17555as	17865as		
0200-0300	USA, KTBN Salt Lake City	7510am			
0200-0300	USA, KVOH Los Angeles	17775am			
0200-0300	USA, VOA Washington	7205as	9740as	11705as	15250as
		17735as	21550as		
0200-0300	USA, WHRI Noblesville	7315na	9495sa		
0200-0300	USA, WINB Red Lion, Penn.	15145eu			
0200-0300	USA, WJCR Upton, Kentucky		7490na		
0200-0300	USA, WRNO New Orleans	7355am			
0200-0300	USA, WWCR Nashville	5935na	7435am		
0200-0300	USA, WYFR Okeechobee, FL		6065am	9505am	15440am
0230-0245	Pakistan	9515as	15115as	17640as	21730as
0230-0250	Finland, YLE	9560na	11755na		
0230-0300	Albania, Radio Tirana	9580na	11825na		
0230-0300 s	Kenya, Voice of	4935do			
0230-0300	Phillipines, Manila	17760pa	17840pa	21580pa	
0230-0300 twhfa	Portugal	9570am	9600am	9705am	11840am
0230-0300	Sri Lanka B'casting Corp.	9720as	15425as		
0230-0300	United Kingdom,BBC London	5975na	6005sa	6175na	6195eu
		7135me	7325na	9670me	9915na
		11750sa	11955me	12095va	15260sa
		15280as	15360pa	21715as	
0240-0300	Zambia, Radio 2, Lusaka	6165do	7235do		
0245-0300	Korea, Seoul	9640am	11805am	15575am	
0250-0300 varies	Armenia, Yerevan	15180am	17605am	17690am	
0250-3000	Vatican Radio	6095na	7305na	9605na	
0255-0300	Bonaire, TWR Bonaire	11930am			

SELECTED PROGRAMS

Sundays

0200 HCJB: Pause For Good News. Brief religious commentaries.
0200 KSDA, Guam: AWR Magazine. Stories about science, nature, discoveries, and health matters.
0205 HCJB: Hour Of Decision. Billy Graham's radio evangelical program.
0215 KSDA, Guam: DX Asiawaves. News from the world of shortwave radio.
0230 BBC: Feature. This month, hear "Submarine: The Hidden Menace" (3rd, 10th) and then explore environmental issues on "Earthlives" (through June 7th).
0230 KSDA, Guam: Digging Up The Past. Details unavailable at press time.
0239 HCJB: DX Party Line. See S 0039.
0245 KSDA, Guam: Probe. A Bible study program.

Mondays

0200 HCJB: HCJB Today. News about the ministries of HCJB.
0230 BBC: Composer Of The Month. Profiles of famous composers. This month: Joseph Haydn.
0239 HCJB: Saludos Amigos. See M 0039.

Tuesdays

0215 HCJB: Rendezvous. See M 1100.
0230 BBC: Quiz. See M 1215.
0239 HCJB: Current Affairs. See M 1639.

Wednesdays

0200 HCJB: Joni And Friends. See T 0600.
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.
0239 HCJB: Current Affairs. See M 1639.

Thursdays

0200 HCJB: Joni And Friends. See T 0600.
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.
0239 HCJB: Current Affairs. See M 1639.

Fridays

0200 HCJB: Joni And Friends. See T 0600.
0205 HCJB: Guidelines For Family Living. See M 1115.
0215 HCJB: Rendezvous. See M 1100.
0230 BBC: Drama. See H 1130.
0239 HCJB: Current Affairs. See M 1639.

Saturdays

0200 HCJB: Joni And Friends. See T 0200.
0200 KSDA, Guam: Digging Up The Past. See S 0230.
0205 HCJB: Guidelines For Family Living. See M 1115.
0215 HCJB: Rendezvous. See M 1100.
0215 KSDA, Guam: Focus on Living. Life's problems and their solutions.
0230 BBC: People And Politics. The background to the British political scene.
0230 KSDA, Guam: Power to Cope. See S 1630.
0239 HCJB: Current Affairs. See M 1639.

0300 UTC [11:00 PM EDT/8:00 PM PDT]

FREQUENCIES

0300-0305	Canada, CBC	9625do			
0300-0315	Vatican Radio	6095na	7305na	9605na	
0300-0325	Netherlands	6020na	6165na	9860as	11655as
		11835na	13700as		
0300-0330	Czechoslovakia	5930na	7345na	9540na	
0300-0330	Egypt, Radio Cairo	9475na	9675na		
0300-0330	Japan NHK	5960am	15325am	17810am	17825am
		21610am			
0300-0330	Phillipines, Manila	17760pa	17840pa	21580pa	
0300-0330	United Kingdom,BBC London	3255af	5075	5975na	6005af
		6005sa	6175na	6180eu	6190af
		6195eu	7135me	7325na	9410eu
		9600af	9670me	9915na	11730af
		11760me	11955me	12095eu	15070af
			11750sa	15260sa	15310as
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	11720as	11880as	15160as	15240as
		15320pa	15365as	17630as	17750as
		17795pa	21525as	21740pa	21775as
0300-0400	Australia, ABC Brisbane	4920do	9660do		
0300-0400	Australia, ABC Perth	9610do			
0300-0400	Bahrain Broadcasting Svc	6010me			
0300-0400	Bonaire, TWR Bonaire	9535am	11930am		
0300-0400	Bulgaria, Radio Sofia	9595af	11720na	11765af	
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, Radio Beijing	9690na	9770na	11715na	
0300-0400	Cook Islands	11760pa			
0300-0400	Costa Rica, RFPI	7375na	15030na	21465na	
0300-0400	Costa Rica, TIFC	5055ca			
0300-0400	Cuba, RHC Havana	11970am	13700na		
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	4740do	4940do	4975do	6000am
		6045do	7135va	7150am	7160va
		7240va	7270va	7310am	7350va
		9540na	9625va	9715va	9725va
		9750va	9765va	9880va	9895va
		9905va	11765va	11920va	11975va
		12010va	12035va	12050va	13670va
		13745va	15280va	15295va	15350va
		15425va	15470va	15520va	17570na
		17590va	17605va	17610va	17655va
		17675va	17690va	17700va	17720va
		17775va	17825va	17890va	21690va
		21790va			
0300-0400	Sierra Leone, SLBS	3316do			
0300-0400	Singapore, SBC1	5010do	5052do	11940do	
0300-0400	South Africa, Radio RSA	3215af	11900af		
0300-0400	Sri Lanka B'casting Corp.	9720as	15425as		
0300-0400	Taiwan, V. of Free China,	5950na	9680na	15345na	
0300-0400	Tanzania	5985af	9685af	11765af	
0300-0400	Thailand	4830as	9655as	11905as	
0300-0400	Turkey, Voice of	9445na			
0300-0400	USA, CSMonitor Boston	9350me	9455na	13760am	
0300-0400 sa	USA, CSMonitor Boston	17555as	17865as		
0300-0400	USA, KTBN Salt Lake City	7510am			
0300-0400	USA, VOA Washington	5135af	6035af	7265af	7405af
		9575af	11835af	11940	15115af
		17715af	21600af		
0300-0400	USA, WHRI Noblesville	7315na	9495sa		
0300-0400	USA, WJCR Upton, Kentucky		7490na		
0300-0400	USA, WRNO New Orleans	7355am			
0300-0400	USA, WWCR Nashville	5935na	7435na		
0300-0400	USA, WYFR Okeechobee, FL		6065am	9505am	
0305-0400 as	Canada, CBC	9625do			
0330-0400	Albania, Radio Tirana	9580na	11825na		
0330-0400	Austria, ORF Vienna	9870ca	13730am		
0330-0400	Japan NHK	5960na	11870na	17810na	
0330-0400	Netherlands	6165na	9590na		
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	
0340-0350 twhfas	Venezuela, Radio Nacional	9540om			

SELECTED PROGRAMS

Sundays

0309 BBC: Words Of Faith. Speakers from various faiths discuss scripture and their beliefs.
0315 BBC: Sports Roundup. News from the world of sports.
0315 Radio Beijing: Press Clippings. See S 0015.
0320 Radio Beijing: Travel Talk. See S 0020.
0328 Radio Beijing: Cooking Show. See S 0028.
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.
0335 Radio Beijing: Music from China. See S 0035.
0350 BBC: Write On... Listener letters, opinions, and questions.

Mondays

0309 BBC: Words Of Faith. See S 0309.
0315 BBC: Sports Roundup. See S 0315.
0315 Radio Beijing: China Anthology. See S 1115.
0325 Radio Beijing: Music Album. See S 1125.
0330 BBC: Anything Goes. See S 1430.
0330 HCJB: Calvary Hour. A program of preaching and worship.
0330 Radio Austria Int'l: Austrian Shortwave Panorama. See S 1130.
0340 Radio Beijing: Listeners' Letterbox. See S 1140.

Tuesdays

0300 HCJB: Dateline '90. See T 0100.
0309 BBC: Words Of Faith. See S 0309.
0315 BBC: Sports Roundup. See S 0315.
0315 Radio Beijing: Current Affairs. See M 1115.
0330 BBC: John Peel. Newly released albums and singles from the contemporary music scene.
0330 HCJB: Insight For Living. See M 1130.
0330 Radio Austria Int'l: Report From Austria. See S 0130.
0340 Radio Beijing: Learn to Speak Chinese. See M 1140.

Wednesdays

0300 HCJB: Happiness Is. See W 0100.
0309 BBC: Words Of Faith. See S 0309.
0315 BBC: Sports Roundup. See S 0315.
0315 Radio Beijing: Current Affairs. See M 1115.
0330 BBC: Discovery. An in-depth look at scientific research
0330 HCJB: Insight For Living See M 1130.
0330 Radio Austria Int'l: Report From Austria. See S 0130.
0340 Radio Beijing: Listeners' Letterbox. See S 1140.

Thursdays

0300 HCJB: Ham Radio Today. See H 0100.
0309 BBC: Words Of Faith. See S 0309.
0315 BBC: Sports Roundup. See 0315.
0315 Radio Beijing: Current Affairs. See M 1115.
0330 BBC: Assignment. A weekly examination of topical issues, from Batman to the Amazon.
0330 HCJB: Insight For Living. See M 1130.
0330 Radio Austria Int'l: Report From Austria. See S 0130.
0340 Radio Beijing: Learn to Speak Chinese. See M 1140.

Fridays

0300 HCJB: Happiness Is. See W 0100.
0309 BBC: Words Of Faith. See S 0309.
0315 BBC: Sports Roundup. See S 0315.
0315 Radio Beijing: Current Affairs. See M 1115.
0330 BBC: Focus On Faith. Comment and discussion on major issues in various religions.
0330 HCJB: Insight For Living. See M 1130
0330 Radio Austria Int'l: Report From Austria. See S 0130.
0340 Radio Beijing: Culture in China. See H 1140.

Saturdays

0300 HCJB: Musica Del Ecuador. See A 0100.
0309 BBC: Words Of Faith. See S 0309.
0315 BBC: Sports Roundup. See S 0315.
0315 Radio Beijing: Current Affairs or The Business Show. See F 1115.
0330 BBC: The Vintage Chart Show. Paul Burnett with past Top 20 pop music hits. This month: 1978, 1965, 1985, 1970, 1980.
0330 HCJB: Insight For Living. See M 1130.
0330 Radio Austria Int'l: Report From Austria. See S 0130.
0340 Radio Beijing: In the Third World. See F 1140.

0400 UTC [12:00 PM EDT/9:00 PM PDT]

FREQUENCIES

0400-0427	Czechoslovakia	5930na	7345na	9540na	
0400-0430	Bonaire, TWR Bonaire	9535am	11930am		
0400-0430	Canada, RCI Montreal	6150eu	9505eu	9670me	11925me
0400-0430	Cuba, RHC Havana	6180am	11760am	11970na	13700am
0400-0430	Ecuador,HCJB Quito	9745am	15155am	21455am	
0400-0430	Guatemala, Radio Cultural	3300do			
0400-0430 sm	Norway	9560na	11865na		
0400-0430	Romania, R. Romania Int'l	5990am	6155am	9510am	9570am
		11830am	11940am		
0400-0430	Sri Lanka B'casting Corp.	9720as	15425as		
0400-0430	Swiss Radio Int'l	6135am	9885am	12035am	13635me
0400-0430	Tanzania	5985af	9685af	11765af	
0400-0430	Thailand	4830as	9655as	11905as	
0400-0430	United Kingdom,BBC London	3255af	3955eu	5975na	6180eu
		6190af	6195eu	7105af	7230eu
		7325na	9410eu	9600af	9610af
		9915na	11760me	15070va	15280as
		15310as	15420af	15590eu	17885af
		6005af	6175am	11750va	11955me
		12095va	21715as		
0400-0430	USA, VOA Washington	5995eu	6040me	6140me	7170eu
		7200eu	9715eu		
		6035af	7405af	9575af	11780af
		11835af	15115af	17715af	21600af
0400-0450	Germany,Deutsche Welle	6065af	6130af	7150af	7225af
		7275af	9565af	9665af	9765af
		11765af	13770af		
0400-0450	N.Korea, Radio Pyongyang	15180as	15230as	17765as	
0400-0500	Australia	11720as	11880as	15160pa	15170as
		15240as	15320as	15365pa	17795pa
		21525as	21740pa	21775as	
0400-0500	Australia, ABC Brisbane	4920do	9660do		
0400-0500	Australia, ABC Perth	9610do			
0400-0500	Bahrain Broadcasting Svc	6010me			
0400-0500	Bulgaria, Radio Sofia	11720na	11765af	15160na	
0400-0500	Canada, CBC	9625do			
0400-0500	Canada, CFCX Montreal	6005do			
0400-0500	Canada, CFRX Toronto	6070do			
0400-0500	Canada, CFVP Calgary	6030do			
0400-0500	Canada, CHNX Halifax	6130do			
0400-0500	Canada, CKZU Vancouver	6160do			
0400-0500	China, Radio Beijing	11695na			
0400-0500	Cook Islands	11760pa			
0400-0500	Costa Rica, RFPI	7375na	15030na	21465na	
0400-0500	Kenya, Voice of	4935do			
0400-0500	Luxembourg, RTL	15350va			
0400-0500 smtwh	Malaysia, RTM Radio 4	7295do			
0400-0500 mtwhf	Namibia BC Corp, Windhoek	3270af	3290af		
0400-0500	Netherlands	6165na	9590na		
0400-0500	New Zealand, RNZI	17770pa			
0400-0500	Russia, R Moscow WC NAm	7270am	9505am	9895am	9905am
		12010am	12050am	15180am	17605am
		17700am	17720am		
0400-0500	Russia, Radio Moscow	4740do	4975do	6175va	7130va
		7135va	7150am	7160va	7240va
		7310am	7440va	9450va	9535va
		9625va	9750va	9760va	9765va
		9880va	11765va	11975va	12035va
		12055va	13670va	13745va	15295va
		15350va	15375va	15420va	15465va
		15470va	15520va	15520va	15530va
		15545va	17570na	17610va	17635va
		17655va	17675va	17690va	17700va
		17775va	17825va	17890va	21565va
		21680va	21690va	21790va	21845va
0400-0500	Sierra Leone, SLBS	3316do			
0400-0500	Singapore, SBC1	5010do	5052do	11940do	
0400-0500	South Africa, Radio RSA	7270af	9695af	11900af	15230af
0400-0500 vl	South Africa,Radio Oranje	3215do			
0400-0500	USA, CSMonitor Boston	9445am	9840af	13760na	17780as
0400-0500 sa	USA, CSMonitor Boston	17555as			
0400-0500	USA, KTBN Salt Lake City	7510am			
0400-0500	USA, KVOH Los Angeles	9785am			
0400-0500	USA, WHRI Noblesville	7315na	9495sa		
0400-0500	USA, WJCR Upton, Kentucky		7490na		
0400-0500 smtwhf	USA, WMLK Bethel, Penna.	9465eu			
0400-0500 irreg	USA, WRNO New Orleans	7355am			
0400-0500	USA, WWCR Nashville	5935na	7435na		
0400-0500	USA, WYFR Okeechobee, FL		6065am	9505am	
0400-0500	Zambia, Radio 2, Lusaka	6165do	7235do		
0425-0440	Italy, RAI, Rome	5990me	7275me		
0430-0500	Cuba, RHC Havana	6180na	11760na	11950na	
0430-0500	Nigeria	3326do	4770do		
0430-0500	Swaziland, TWR Swaziland	5055af	5965af	9655af	11750af
0430-0500	United Kingdom,BBC London	3255af	3955eu	5975na	6005af
		6180eu	6190af	6195eu	7230eu
		9410eu	9600af	11760me	12095va
		15070va	15280as	15310as	15400af
		15420af	15590eu	21470af	21715as
0430-0500	USA, VOA Washington	5995me	6040me	6140me	7170me
		7200me	7265me	9715me	11815me
		6035af	7405af	9575af	15115af
		17715af	21600af		
0430-0500 s	Zambia,Radio Zambia Int'l	9505af	11880af	17895af	
0445-0500 t	Sri Lanka B'Casting Svc	9720am	15425am		
0455-0600	Nigeria, Voice of	7255af			

SELECTED PROGRAMS

Sundays

0400 HCJB: Sports Spectrum. News from the world of sports.
0415 BBC: Feature. Take an alphabetical odyssey on "An A-Z Of Rock 'N' Pop" (through July 5th).
0415 Radio Beijing: Press Clippings. See S 0015.
0420 Radio Beijing: Travel Talk. See S 0020.
0428 Radio Beijing: Cooking Show. See S 0028.
0430 BBC: Short Story. Half-hour dramatic selections, as written by listeners (except 3rd: Seeing Stars, a monthly look at astronomy).
0430 HCJB: Radio Reading Room. Readings from new Christian books.
0435 Radio Beijing: Music from China. See S 0035.
0445 BBC: Talks. This month, hear men's issues on "Men Facing Change" (3rd/10th/17th/24th), and then dream about "Objects Of Desire," like Rolls-Royces (through June 28th).

Mondays

0400 HCJB: Science, Scripture, And Salvation. A look at science from a Biblical perspective.
0415 BBC: Feature. If "People From The Holy Land" (4th/11th/18th) don't interest you, perhaps people "In Uniform" (through June 29th) will!
0415 HCJB: Get Set. The latest from the world of sports.
0415 Radio Beijing: China Anthology. See S 1115.
0425 Radio Beijing: Music Album. See S 1125.
0430 BBC: Off The Shelf. This month's serialized readings: William Golding's "Lord Of The Flies" (1st-7th); "Paradise Island" (8th); and "A Spanish Novel" to be named later (11th-29th).
0440 Radio Beijing: Listeners' Letterbox. See S 1140.
0445 BBC: Andy Kershaw's World Of Music. Exotic music from the world over.

Tuesdays

0400 HCJB: Psychology For Living. Christian advice on issues of today.
0415 BBC: Health Matters. See T 0145.
0415 HCJB: Chords Of Love. Music and religious instruction.
0415 Radio Beijing: Current Affairs. See M 1115.
0430 BBC: Off The Shelf. See M 0430.
0440 Radio Beijing: Learn to Speak Chinese. See M 1140.
0445 BBC: Talks. See M 2315.

Wednesdays

0400 HCJB: Wonderful Words Of Life. Messages from the Salvation Army.
0415 BBC: Waveguide. Tips on how to hear the BBC better.
0415 HCJB: Answers. Answers to questions on science and the Bible.
0415 Radio Beijing: Current Affairs. See M 1115.
0425 BBC: Book Choice. A short review of a recently released book.
0430 BBC: Off The Shelf. See M 0430.
0440 Radio Beijing: Listeners' Letterbox. See S 1140.
0445 BBC: Country Style. See W 0145.

Thursdays

0400 HCJB: Let My People Think. See S 1630.
0415 BBC: The Farming World. See H 0145.
0415 Radio Beijing: Current Affairs. See M 1115.
0430 BBC: Off The Shelf. See M 0430.
0440 Radio Beijing: Learn to Speak Chinese. See M 1140.
0445 BBC: From Our Own Correspondent. See S 0330.

Fridays

0400 HCJB: Christian Brotherhood Hour. Christian messages of inspiration.
0415 BBC: Feature. See M 0145.
0415 Radio Beijing: Current Affairs. See M 1115.
0430 BBC: Off The Shelf. See M 0430.
0440 Radio Beijing: Culture in China. See H 1140.
0445 BBC: Folk In Britain. See T 0130.

Saturdays

0400 HCJB: Unshackled. The melodrama about lives changed by religion.
0415 BBC: Good Books. See W 1445.
0415 Radio Beijing: Current Affairs or The Business Show. See F 1115.
0430 BBC: Jazz Now And Then. See A 0145.
0440 Radio Beijing: In the Third World. See F 1140.
0445 BBC: Worldbrief. See F 2315.

0500 UTC [1:00 AM EDT/10:00 PM PDT]

FREQUENCIES

0500-0505	Canada, CBC	9625do			
0500-0510	Lesotho, Maseru	4800do			
0500-0510 w	Malawi B'casting Corp.	3381do			
0500-0515	Bulgaria, Radio Sofia	9595af	11720na	11765af	
0500-0515	Israel, Kol Israel	11588am			
0500-0515 t	Sri Lanka B'Casting Svc	9720am	15425am		
0500-0530	Cameroon CRTV Beau	3970do			
0500-0530 varies	Georgian Radio, Tbilisi	11803va			
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	9695af	11625af	15090af	17730af
0500-0550	Germany,Deutsche Welle	5960na	6045na	6120na	6130na
		9535na	9670na	9690na	
0500-0600	Australia	11720as	11880as	15160as	15240as
		15320as	15365as	17750as	17795as
		17880as	21525as	21740as	21775as
0500-0600	Australia, ABC Brisbane	4920do	9660do		
0500-0600	Australia, ABC Perth	9610do			
0500-0600	Bahrain Broadcasting Svc	6010me			
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, Radio Beijing	11840am			
0500-0600	Cook Islands	11760pa			
0500-0600	Costa Rica, RFPI	7375na	15030na	21465na	
0500-0600	Cuba, RHC Havana	11760na			
0500-0600	Ecuador,HCJB Quito	11925am	21455am		
0500-0600 sa	Eq.Guinea, R.East Africa	9585af			
0500-0600	Japan NHK	11870na	15195na	17765na	17810na
		17825na	17890na	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	Netherlands	6165na	9590na		
0500-0600	New Zealand, RNZI	17770pa			
0500-0600	Nigeria	3326do	4770do	4990do	7255af
0500-0600	Russia, R Moscow WC NA	5905am	7270am	9505am	9795am
		9825am	9895am	9905am	12010am
		12050am	15180am	17720am	
0500-0600	Russia, Radio Moscow	4740do	4975do	6175va	7130va
		7135va	7150am	7160va	7240va
		7310am	9530va	9535va	9750va
		9765va	9860na	11765va	11880va
		11975va	12035va	12055va	13670va
		13745va	15260va	15295va	15350va
		15375va	15400va	15420va	15465va
		15470va	15520va	15530va	15545va
		15550va	15595va	17590va	17610va
		17635va	17655va	17665va	17675va
		17690va	17700va	17775va	17825va
		17890va	21660va	21690va	21790va
		21845va			
0500-0600	Sierra Leone, SLBS	3316do			
0500-0600	Singapore, SBC1	5052do	11940do		
0500-0600	Spanish National Radio	9530na			
0500-0600	Thailand	4830as	9655as	11905as	
0500-0600	USA, CSMonitor Boston	9455na	9840af	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	6040me	6060eu	6140me
		6873eu	7170me	7200me	9670me
		9700eu	9715me	11815me	11825me
		15205me			
		6035af	7405af	9575af	15115af
		17715af			
0500-0600	USA, WHRI Noblesville	7315na	9495sa		
0500-0600	USA, WINB Red Lion, Penn.	15145eu			
0500-0600	USA, WJCR Upton, Kentucky		7490na		
0500-0600 mtwhfa	USA, WMLK Bethel, Penna.	9465eu			
0500-0600	USA, WWCR Nashville	5935na	7435na		
0500-0600	USA, WYFR Okeechobee, FL		5985am	9850eu	11915eu
		13695af			
0500-0600	Zambia, Radio 2, Lusaka	6165do	7235do		
0500-0600 s	Zambia,Radio Zambia Int'l	9505af	11880af	17895af	
0510-0515 w,vl	Botswana, Gaborone	5955af	7255af		
0510-0600 vl	South Africa,Radio Oranje	9630do			
0524-0600 f	Ghana, Radio 2, Accra	3366do			
0526-0600	Ghana, Radio 1, Accra	4915do			
0530-0600	Austria, ORF Vienna	6015na	6155eu	13730eu	21490me
0530-0600	Cameroon CRTV Yaounde	4850do			
0530-0600	Romania, R.Romania Int'l	11840af	15380af	17720af	17745af
		17790af	21665af		
0530-0600	Swaziland, TWR Swaziland	5965af	11750af		
0530-0600	UAE Radio, Dubai	15435as	17630as	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
		21470af	21715as		
0545-0600	Cameroon CRTV Beau	3970do			

SELECTED PROGRAMS

Sundays
0509 HCJB: DX Party Line. See S 0039.
0515 Radio Beijing: Press Clippings. See S 0015.
0520 Radio Beijing: Travel Talk. See S 0020.
0528 Radio Beijing: Cooking Show. See S 0028.
0530 Radio Austria Int'l: Report From Austria. See S 0130.
0535 Radio Beijing: Music from China. See S 0035.

Mondays
0509 HCJB: Saludos Amigos. See M 0039.
0515 Radio Beijing: China Anthology. See S 1115.
0525 Radio Beijing: Music Album. See S 1125.
0530 Austria Int'l: Report From Austria. See S 0130.
0540 Radio Beijing: Listeners' Letterbox. See S 1140.

Tuesdays
0509 HCJB: Current Affairs. See M 1639.
0515 Radio Beijing: Current Affairs. See M 1115.
0530 HCJB: Dateline '90. See T 0100.
0530 Radio Austria Int'l: Report From Austria. See S 0130.
0540 Radio Beijing: Learn to Speak Chinese. See M 1140.

Wednesdays
0509 HCJB: Current Affairs. See M 1639.
0515 Radio Beijing: Current Affairs. See M 1115.
0530 HCJB: Happiness Is. See W 0100.
0530 Radio Austria Int'l: Report From Austria. See S 0130.
0540 Radio Beijing: Listeners' Letterbox. See S 1140.

Thursdays
0509 HCJB: Current Affairs. See M 1639.
0515 Radio Beijing: Current Affairs. See M 1115.
0530 HCJB: Ham Radio Today. See H 0100.
0530 Radio Austria Int'l: Report From Austria. See S 0130.
0540 Radio Beijing: Learn to Speak Chinese. See M 1140.

Fridays
0509 HCJB: Current Affairs. See M 1639.
0515 Radio Beijing: Current Affairs. See M 1115.
0530 HCJB: Happiness Is. See W 0100.
0530 Radio Austria Int'l: Report From Austria. See S 0130.
0540 Radio Beijing: Culture in China. See H 1140.

Saturdays
0509 HCJB: Current Affairs. See M 1639.
0515 Radio Beijing: Current Affairs or The Business Show. See F 1115.
0530 HCJB: Musica Del Ecuador. See A 0100.
0530 Radio Austria Int'l: Report From Austria. See S 0130.
0540 Radio Beijing: In the Third World. See F 1140.

0600 UTC [2:00 AM EDT/11:00 PM PDT]

FREQUENCIES

0600-0610 s	Malawi B'casting Corp.	3381do			
0600-0625	Cameroon CRTV Yaounde	4850do			
0600-0625	Kenya, Voice of	4935do			
0600-0625	Netherlands	6165na	9590na		
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	United Kingdom,BBC London	3955eu	6180eu	6190af	6195eu
		7230eu	9410eu	9600af	11760me
		11940af	11955as	12095eu	15070va
		15310as	15400af	15420af	15590va
		17790as	17830as	17885af	21470af
		5975na	7150pa	9640va	15280as
		15360pa	15575as	21715as	
0600-0630	Vatican Radio	6245eu	7250eu		
0600-0630 s	Zambia,Radio Zambia Int'l	9505af	11880af	17895af	
0600-0640 last a	Lithuania, RadioCentras	9710eu			
0600-0645 s	Cameroon CRTV Douala	4795do			
0600-0650	Germany,Deutsche Welle	11765af	13610af	13790af	15185af
		15435af	17875af		
0600-0650	N Korea, Radio Pyongyang	15180as	15230as		
0600-0700	Australia	11720as	11880as	15160as	15240as
		15320as	15365as	17750as	17795as
		17880as	21525as	21740as	21775as
0600-0700	Bahrain Broadcasting Svc	6010me			
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	15030na	21465na	
0600-0700	Cuba, RHC Havana	11760am			
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	Korea, Seoul	7275om	11810na	15170na	
0600-0700	Lebanon, King of Hope	6280me			
0600-0700 tent	Liberia, ELBC Monrovia	7275do			
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	New Zealand, RNZI	17770pa			
0600-0700 s	New Zealand, ZLXA	3935do			
0600-0700	Nigeria	3326do	4990do	7255af	
0600-0700	Russia, AWR Russia	11855as			
0600-0700	Russia, R Moscow WC NAm	5905am	7175am	7260am	7270am
		7345am	9505am	9795am	9825am
		9905am	17720am		
0600-0700	Russia, Radio Moscow	4740do	4975do	6175va	7130va
		7135va	7150am	7160va	7310va	9450va	9530va
		9535va	9750va	9765va	9855va	11730va	11765va
		11880va	11950na	12035va	12055va	13670va	13745va
		15280va	15295va	15350va	15375va	15420va	15455va
		15465va	15470va	15520va	15530va	15545va	15550va
		15560va	15595va	17570va	17590va	17610va	17615va
		17635va	17655va	17665va	17680va	17690va	17700va
		17775va	17825va	17845va	17890va	21680va	21690va
		21785va	21790va	21845va			
0600-0700	Sierra Leone, SLBS	3316do					
0600-0700	Singapore, SBC1	5010do	5052do	11940do			
0600-0700 vl	South Africa,Radio Oranje	9630do					
0600-0700	Swaziland, TWR Swaziland	5965af	7200af	11750af			
0600-0700 sa	Thailand	4830as	9655as	11905as			
0600-0700	USA, CSMonitor Boston	9455na	9840eu	870am	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	11805me	11815me	11825me		
		11915me	15205me				
		6035af	6125af	7405af	9530af		
		9575af	15115af	17715af			
0600-0700	USA, WHRI Noblesville	7315eu	9495sa				
0600-0700	USA, WJCR Upton, Kentucky		7490na				
0600-0700 smtwhf	USA, WMLK Bethel, Penna.	9465eu					
0600-0700	USA, WWCR Nashville	5935na	7435na				
0600-0700	USA, WYFR Okeechobee, FL	5985am	7355eu	9680eu	13695af		
0600-0700	Zambia, Radio 2, Lusaka	6165do	7235do				
0603-0610 tent	Croatian Radio, Zagreb	7240eu	9830eu				
0615-0630 s	Cameroon CRTV Bertoua	4750do					
0615-0630	Korea World News	7550eu	15575me				
0615-0700 mtwhf	Canada, RCI Montreal	6050eu	6150eu	7155eu	9740eu		
		9760me	11905me				
0625-0700	Kenya, Voice of	4935do					
0630-0635 mtwhf	Congo, RTV Congolaise	7105do	9610do				
0630-0645	Finland, YLE	6120eu	9560af	11755eu			
0630-0655	Belgium, BRT Brussels	5910au	11695eu	13675eu			
0630-0700	Austria, ORF Vienna	6015na					
0630-0700 smtwhf	New Zealand, ZLXA	3935do					
0630-0700	Swiss Radio Int'l, Berne	17565va					
0630-0700	United Kingdom,BBC London	5975na	6180eu	6190af	6195eu		
		7230eu	9410eu	9600af	9640pa		
		11760me	11940af	11955as	12095eu		
		15070va	15310as	15400af	15420af		
		15590va	17830as	17865af	21470af		
		7150pa	15280as	15360pa	17790as		
		21715as					
0630-0700	Vatican Radio	11625af	15090af	17730af			
0635-0700	Monaco, TWR Monaco	9480eu					
0645-0700	Ghana B'casting Corp.	6130af					
0645-0700	Romania, R.Romania Int'l	11840au	15335au	15380au	17720au		
		17805au	21665au				

SELECTED PROGRAMS

Sundays

0600 HCJB: Musical Mailbag. See S 0330
0615 BBC: Letter From America. Alistair Cooke presents his unique reflections on the USA.
0630 BBC: Jazz For The Asking. Digby Fairweather plays listener requests.
0630 HCJB: Radio Reading Room. See S 0430.

Mondays

0600 HCJB: HCJB Today. See M 0200.
0615 BBC: Recording Of The Week. A personal choice from the new classical music releases.
0630 BBC: Feature. See S 1401.
0630 HCJB: Turning Point. David Jeremiah presents preaching and religious teaching.

Tuesdays

0600 HCJB: Joni And Friends. Joni Erickson-Tada presents help and advice, especially for the disabled.
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: Rock/Pop Music. Hear highlights from a gathering of "Guitar Legends In Seville" (5th/12th); hear Bob Geldof on "Feed The World" (19th); and hear "McCartney at 50" (through June 23rd). 50? I must be getting old!
0630 HCJB: Classical Favorites. Selections from the world of classical music.

Wednesdays

0600 HCJB: Joni And Friends. See T 0600.
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.

Thursdays

0600 HCJB: Joni And Friends. See T 0600.
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: Music From The Mountains. Ken MacHarg presents music and inspiration.

Fridays

0600 HCJB: Joni And Friends. See T 0600.
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.

Saturdays

0600 HCJB: Joni And Friends. 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.

0700 UTC 3:00 AM EDT/12:00 AM PDT]

0700-0710	Cameroon CRTV Baloussam	4000do			
0700-0710 w	Malawi B'casting Corp.	3381do	5995do		
0700-0715	Romania, R.Romania Int'l	11840au	15335au	15380au	17720au
		17805au	21665au		
0700-0730	Ecuador,HCJB Quito	9585eu	11730eu	21455eu	
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	N.Korea, Radio Pyongyang	15340as	17765as		
0700-0800	Australia	11720as	11860as	15240as	15320as
		21525as	21740as	21775as	
0700-0800	Bahrain Broadcasting Svc	6010me			
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	15030na	21465na	
0700-0800	Cuba, RHC Havana	11760am			
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	Japan NHK 15250me	17765eu	17810as	17860as	21525as
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	Monaco, TWR Monaco	9480eu			
0700-0800	Monte Carlo, TWR	9480na			
0700-0800	New Zealand, RNZI	17770pa			
0700-0800 smtwhf	New Zealand, ZXLA	3935do			
0700-0800	Nigeria	3326do	4990do		
0700-0800	Russia, R Moscow WC NAm	5905am	7175am	7260am	7270am
	7345am	9505am	9635am	9795am	
	9825am	9905am			
0700-0800	Russia, Radio Moscow	4740do	4950do	4975do	5960do
	7130do	7160do	7310am	9855va	11705va
	11765va	11880va	11975va	12010va	12055va
	13705va	15280na	15295va	15345va	15350va
	15375va				
		15465va	15470va	15475na	15500va
	15520va	15530va	15545va	15550va	15560va
	17570va	17590va	17610va	17615va	17635va
	17655na	17655va	17665va	17690va	17700va
	17710va	17720va	17765va	17775va	17790va
	17810va	17825va	17890va	21680va	21690va
	21725va	21785va	21790va	21845va	
0700-0800	Sierra Leone, SLBS	3316do			
0700-0800	Singapore, SBC1	5010do	5052do	11940do	
0700-0800 vl	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	9495sa		
0700-0800	USA, WJCR Upton, Kentucky		7490na		
0700-0800 smtwhf	USA, WMLK Bethel, Penna	9465eu			
0700-0800	USA, WWCR Nashville	5935am	7435am		
0700-0800	USA, WYFR Okeechobee, FL		9850af	11915af	13695eu
0700-0800	Zambia, Radio 2, Lusaka	6165do	7235do		
0705-0800 a	Cameroon CRTV Douala	4795do			
0730-0745 mtwhf	Icelandic National Radio	3295om	6100om	9265om	
0730-0745 mtwhfa	Vatican Radio	6245do	7250do	9645na	15210na
0730-0800	Czechoslovakia	17725pa	21705as		
0730-0800	Ecuador,HCJB Quito	9585eu	9745au	11730eu	11925au
		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		
0740-0800	Monte Carlo, TWR	9480eu			

0800 UTC [4:00 AM EDT/1:00 AM PDT]

0800-0810	Cameroon CRTV Baloussam	4000do			
0800-0810 w	Malawi B'casting Corp.	3381do			
0800-0825	Malaysia, Voice of	6175as	9750as	15295as	
0800-0825	Swaziland, TWR Swaziland	7200af	11750af		
0800-0830	Australia	9580pa	15160as	15240as	17630as
		17750as	21775as		
0800-0830	Bangladesh, V. of Islam	15195as	17815as		
0800-0830	Ecuador,HCJB Quito	9585eu	9745au	11730eu	11925au
		21455va			
0800-0830	United Kingdom,BBC London	6180eu	6190af	7325eu	9410eu
	9600af	9760eu	11760me	11860af	12095eu
	15070eu	15310as	15360pa	15400af	15420af
	15590me	17790as	17830as	17885af	21470af
	21660af				
	7150pa	9640pa	9660eu	11950af	11955as
	15105af	15280as	17640va	21715as	
0800-0835	Monaco, TWR Monaco	9480eu			
0800-0845	Pakistan	17902eu	21520eu		
0800-0850	Finland, YLE	15245as	17800pa		
0800-0850	N.Korea, Radio Pyongyang	15180as	15230as		
0800-0900	Australia, ABC Brisbane	9660do			
0800-0900	Australia, ABC Perth	15425va			
0800-0900	Bahrain Broadcasting Svc	6010me			
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	21465na	
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 asmtwh	Guam, KTWR Guam	15200as			
0800-0900	Indonesia, Voice of	7125as	9675as	11752as	11785as
0800-0900 a	Italy, IRRS Milan, Italy	7125eu			
0800-0900	Kenya, Voice of	4935do			
0800-0900	Korea, Seoul	7550eu	13670eu		
0800-0900	Lebanon, King of Hope	6280me			
0800-0900	Luxembourg, RTL	15350va			
0800-0900 smtwha	Malaysia, RTM Radio 4	7295do			
0800-0900	Monte Carlo, TWR	9480eu			
0800-0900	Netherlands	9630pa	11895pa		
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	4740do	4940do	4975do	5960do
	7130do	7160do	7310am	9535va	11705va
	11765va	11920va	11975va	12010va	12055va
	13705va	15295va	15345va	15350va	15420va
	15435va	15465va	15470va	15475na	15500va
	15530va	15545va	15550va	15580va	15605va
	17570va	17580va	17605va	17610va	17635va
	17655va	17665va	17670va	17675va	17690va
	17700va	17710va	17720va	17765va	17775va
	17790va	17810va	17870va	17880va	21680va
	21690va	21725va	21785va	21790va	21845va
0800-0900	Sierra Leone, SLBS	3316do	5980do		
0800-0900	Singapore, SBC1	5010do	5052do	11940do	
0800-0900 vl	South Africa,Radio Oranje	9630do			
0800-0900	USA, CSMonitor Boston	9445am	11705eu	13615as	15665pa
		17555as			
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		7490na		
0800-0900 smtwhf	USA, WMLK Bethel, Penna.	9465eu			
0800-0900	USA, WWCR Nashville	5935na	7435am		
0800-0900	Zambia, Radio 2, Lusaka	6165do	7235do		
0803-0810 tent	Croatian Radio, Zagreb	7240eu	9830eu		
0825-0855	Finland, YLE	15245as	17800au		
0830-0845	Vatican Radio	6245eu	7250eu	9645eu	15210eu
0830-0900	Austria, ORF Vienna	6155eu	13730eu	15450au	21490as
0830-0900	Ecuador,HCJB Quito	9745au	11925au	21455au	
0830-0900	Italy, AWR Italy 7230eu				
0830-0900	United Kingdom,BBC London	6180eu	6190eu	7325eu	9410eu
	9660eu	9760eu	11860af	11940af	11955as
	12095eu	15070va	15280as	15360pa	15400af
	15420af	15590me	17640va	17830as	21660af
	21715as	17885af			
0835-0850 mtwhf	Monaco, TWR Monaco	9480eu			
0835-0850 mtwhf	Swaziland, TWR Swaziland	7200af	11750af		
0840-0850	Greece, Voice of	15650au	17525au		
0850-0900 s	Monaco, TWR Monaco	9480eu			

0900 UTC [5:00 AM EDT/2:00 AM PDT]

0900-0905	Ghana, Radio 1, Accra	4915do			
0900-0905 f	Ghana, Radio 2, Accra	3366do			
0900-0910	Malawi B'casting Corp.	5995do			
0900-0912 f	Guam, KTWR Guam	15200as			
0900-0915	Lebanon, Radio Voice of	6550me			
0900-0915 s	Monaco, TWR Monaco	9480eu			
0900-0925 mtwhf	Belgium, BRT Brussels	9855eu	13675eu	21815af	
0900-0930	Costa Rica, RFPI	7375na	15030na	21465na	
0900-0930 asmtwf	Guam, KTWR Guam	15200as			
0900-0930 mtwhf	New Zealand, ZLXA	3935do			
0900-0930	Swiss Radio Int'l	3985eu	6165eu	9535eu	
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	9995as	11915as	15410af
		17780as	17820as	21465as	21600af
		21650as	21680as		
0900-1000	Australia	7140as	9580as	13605as	15160as
		15170as	21720as		
0900-1000	Australia, ABC Brisbane	9660pa			
0900-1000	Bahrain Broadcasting Svc	6010me			
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, Radio Beijing	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, KTWR Guam	11805as			
0900-1000 s	Italy, AWR via Portugal	9670eu			
0900-1000 a	Italy, IRRS Milan, Italy	7125eu			
0900-1000	Japan NHK	15270au	17890au	11840as	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	Monte Carlo, TWR	9480eu			
0900-1000	Netherlands	9630pa	11895pa		
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	17675va	17690va	17695va	17710va
	17765va	17775va	17790va	17810va	17870va
	17880va	21680va	21690va	21725va	21785va
	21800va	21845va	15350va	15435va	15455va
	15465va	15465va	15470va	15490va	15500va
	15530va	15540va	15550va	15580va	15595va
	17565va	17570va	17605va	17610va	17635va
	17665va	17670va			
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		7490na		
0900-1000 smtwhf	USA, WMLK Bethel, Penna.	9465eu			
0900-1000	USA, WWCR Nashville	7435am			
0900-1000	Zambia, Radio 2, Lusaka	6165do	7235do		
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	Korea World News	9570am	13670eu		
0930-0940	Togo, RTV Togo	7265do			
0930-1000	Afghanistan, Kabul	9635as			
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					
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	17695pa	17825pa	17850pa	

1000 UTC [6:00 AM EDT/3:00 AM PDT]

1000-1015	Monte Carlo, TWR	9480eu			
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	12020as	15010as	
1000-1100	Australia	9580pa	15160as	21720as	
1000-1100	Bahrain Broadcasting Svc	6010me			
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, Radio Beijing	11755au	15440au	17710au	
1000-1100	Cook Islands	11760pa			
1000-1100	Costa Rica, AWR	9725ca			
1000-1100	Costa Rica, RFPI	7375na	15030na	21465na	
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	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	4740do	4975do	6000am	7130va
	7245va	9705va	9780va	9855va	11700va
	11705va	11765va	11920va	12010va	12055va
	15175va	15280va	15345va	15435va	15455va
	15465va	15475na	15500va	15520va	15550va
	17565va	17570va	17570va	17575va	17600va
	17655va	17665va	17670va	17675va	17690va
	17695va	17700va	17710va	17780va	17790va
	17810va	17870va	17880va	21680va	21725va
	21785va	21800va			
1000-1100	Sierra Leone, SLBS	3316do			
1000-1100	Singapore, SBC1	5010do	5052do	11940do	
1000-1100	South Africa, Radio RSA	15250af			
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	
		6095am	9590am	11915am	
		11735eu	15160af	15195eu	21455eu
		21570eu			
1000-1100	USA, WHRI Noblesville	7315na			
1000-1100	USA, WJCR Upton, Kentucky		7490na		
1000-1100	USA, WWCR Nashville	7435na			
1000-1100	USA, WYFR Okeechobee, FL		5950am		
1000-1100	Zambia, Radio 2, Lusaka	6165do	7235do		
1030-1040 mtwhf	Malawi B'casting Corp.	5995do			
1030-1100	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			
1030-1100	Zambia,Radio Zambia Int'l	9505af	11880af	17895af	
1040-1050	Greece, Voice of	15650as	17525as		
1055-1100	Bonaire, TWR Bonaire	11815am	15345am		

Old Time Radio
Continued from page 47

discuss current building or refurbishing projects and other common interests. At last there was something worth monitoring on the amateur bands.

Where to Monitor

SPAM members operate on the following frequencies. All listings are in MHz.

29.0 to 29.2	24.985	21.400 to 21.450		18.150	14.286
7.160	71.95	7.290	3.870	3.880	3.885

SPAM Nets

14.286	West Coast	Nightly	5 pm PDT
7.160	West Coast	Sundays	4 pm PDT
3.870	West Coast	Wednesdays	9 pm PDT
3.885	East Coast	Thursdays	7:30 pm EDT

29.0 to 29.2 MHz is especially good on weekends during the day, if the band is open. In the winter months, AM signals are often heard in the evening hours on 1.800 to 2.000 MHz.

I recommend that those interested in AM amateur communications subscribe to the monthly publication, *Electric Radio*. All articles in this magazine are related to tube-type vintage equipment, and the pictures are extraordinary. Write to: Electric Radio, 145 S.R. 123, Hesperus, CO 81326.

Good monitoring.

MT

1100 UTC [7:00 AM EDT/4:00 AM PDT]

FREQUENCIES

1100-1110 mtwhf	Ghana, Radio 2 School Prg	7295do			
1100-1110 sa	Malawi B'casting Corp.	5995do			
1100-1120	Pakistan	17902eu	21520eu		
1100-1130	Ecuador,HCJB Quito	9745au	11925au	21455au	
1100-1130	Israel, Kol Israel	11588eu	17545am		
1100-1130 irreg	Mozambique	9525af	11818af	11835af	
1100-1130	Sri Lanka B'casting Corp.	11835as	15120as	17850as	
1100-1130	Swiss Radio Int'l	13635as	15505as	17670as	21770as
1100-1130	United Kingdom,BBC London	5965na	6045eu	6180eu	6190af
		6195eu	9410eu	9515na	9660eu
		9740as	9750eu	9760eu	11750as
		11760me	11940af	12095eu	15070va
		15310as	15400af	15420af	15575me
		15220na	17640va	17705eu	17790af
		17885af	21470af	21660af	
1100-1130	Vietnam, Voice of	9840as	12020as	15010as	
1100-1150	Germany,Deutsche Welle	15410af	17765af	17800af	17860af
		21465af	21600af		
1100-1150	N.Korea, Radio Pyongyang	6576am	9977am	11335am	
1100-1200	Australia	6020pa	6060as	6080as	7140as
		7240as	9580pa	9710as	13605as
		15160as	15170as	21720as	
1100-1200	Bahrain Broadcasting Svc	6010me			
1100-1200	Bonaire, TWR Bonaire	11815am	15345am		
1100-1200	Canada, CFCX Montreal	6005do			
1100-1200	Canada, CFRX Toronto	6070do			
1100-1200	Canada, CFVP Calgary	6030do			
1100-1200	Canada, CHNX Halifax	6130do			
1100-1200	Canada, CKZU Vancouver	6160do			
1100-1200	Cook Islands	11760pa			
1100-1200	Costa Rica, AWR	9725ca	11870ca		
1100-1200	Costa Rica, RFPI	7375na	15030na	21465na	
1100-1200	Ghana, Radio 1, Accra	4915do			
1100-1200 sa	Ghana, Radio 2, Accra	3366do			
1100-1200	Japan NHK	6120na	11815sa	11840na	
1100-1200	Korea World News	15575af			
1100-1200	Luxembourg, RTL	15350va			
1100-1200	Malaysia, RTM Kuching	4950do	7160do		
1100-1200	Malaysia, RTM Radio 4	7295do			
1100-1200	New Zealand, RNZI	9700as			
1100-1200	Russia, Radio Moscow	4940do	6000am	7130va	7245va
		9705va	9780va	9855va	11705va
		11765va	11920va	12055va	15280va
		15345va	15350va	15435va	15465va
		15480va	15490va	15500va	15535va
		15550va	17565va	17570va	17600va
		17605va	17610va	17635va	17655va
		17665va	17675va	17690va	17695va
		17700va	17710va	17780va	17790va
		17810va	17840va	17860va	17870va
		17880va	21680va	21725va	21785va
		21800va			
1100-1200	Singapore, SBC1	5010do	5052do	11940do	
1100-1200	South Africa, Radio RSA	9555af	11860af	11900af	
1100-1200 vl	South Africa,Radio Oranje	9630do			
1100-1200	USA, CSMonitor Boston	9455am	9495na	13625as	17555as
1100-1200 sa	USA, CSMonitor Boston	15665me			
1100-1200	USA, KTBN Salt Lake City	7510na			
1100-1200	USA, VOA Washington	5985as	6110au	9760as	11720au
		15155au	15425as	21640as	
		6095am	9590am	11915am	
1100-1200	USA, WHRI Noblesville	7315na	9465na		
1100-1200	USA, WJCR Upton, Kentucky		7490na		
1100-1200	USA, WWCR Nashville	7435na	15690na		
1100-1200	USA, WYFR Okeechobee, FL		5950am	7355am	
1115-1130	Korea World News	7275as	11740as		
1115-1145	Nepal, Kathmandu	3230as	5005as	7165as	
1120-1130	Vatican Radio	6245do	7250do	9645do	15210do
1125-1130 sa	Botswana, Gaborone	5955af	7255af		
1130-1140	Lesotho, Masseru	4800do			
1130-1155 s	Belgium, BRT Brussels	21810na			
1130-1200	Austria, ORF Vienna	6155eu	11780as	13730va	15450as
1130-1200	Ecuador,HCJB Quito	11925am	15115am	17890am	21455am
1130-1200 mtwhf	Finland, YLE	15400na			
1130-1200	Iran, Islamic Republic	7215va	9525va	9685va	11790va
		11930va			
1130-1200	Italy, AWR Italy	7230eu			
1130-1200	Korea, Seoul	9650na			
1130-1200	Thailand	4830as	9655as	11905as	
1130-1200	United Kingdom,BBC London	5965na	6045eu	6180eu	6190af
		6195eu	9410eu	9515na	9660eu
		9740as	9750eu	9760eu	11750as
		11760me	11940af	12095eu	15070va
		15220na	15310as	15420af	15575me
		17640va	17705eu	17790af	17885af
		21470af			
1130-1200	Yugoslavia, Radio Federal	17710as	17740am	21605pa	
1145-1200	Burundi, RTV	6140af			

SELECTED PROGRAMS

Sundays

1100 HCJB: Communication. A series of devotional thoughts.
1115 HCJB: Sounds Of The Times. A review of contemporary issues.
1115 Radio Beijing: China Anthology. Episodes from China's past, with profiles of historical figures.
1125 Radio Beijing: Music Album. A combination of traditional and Western musical selections.
1130 BBC: The Ken Bruce Show. See S 0030.
1130 HCJB: Morning Song. Music and thoughts to start the day.
1130 Radio Austria Int'l: Austrian Shortwave Panorama. Developments in communications and shortwave radio news.
1140 Radio Beijing: Listeners' Letterbox. Listener letters and information about China.

Mondays

1100 HCJB: Rendezvous. Dick Saunders presents Bible study and evangelism.
1115 HCJB: Guidelines For Family Living. Help for the family from Harold Sala.
1115 Radio Beijing: Current Affairs. An in-depth look at events and happenings in China.
1130 BBC: Composer Of The Month. See M 0230.
1130 HCJB: Insight For Living. Charles Swindoll applies the Bible to life today.
1130 Radio Austria Int'l: Report From Austria. See S 0130.
1140 Radio Beijing: Learn to Speak Chinese. Chinese language lessons for English speakers.

Tuesdays

1100 HCJB: Rendezvous. See M 1100.
1115 HCJB: Guidelines For Family Living. See M 1115.
1115 Radio Beijing: Current Affairs. 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 Austria Int'l: Report From Austria. See S 0130.

Wednesdays

1100 HCJB: Rendezvous. See M 1100.
1115 HCJB: Guidelines For Family Living. See M 1115.
1115 Radio Beijing: Current Affairs. See M 1115.
1130 BBC: Meridian. See W 0630.
1130 HCJB: Insight For Living. See M 1130.
1130 Radio Austria Int'l: Report From Austria. See S 0130.
1140 Radio Beijing: Learn to Speak Chinese. See M 1140.

Thursdays

1100 HCJB: Rendezvous. See M 1100.
1115 HCJB: Guidelines For Family Living. See M 1115.
1115 Radio Beijing: Current Affairs. See M 1115.
1130 BBC: Drama. Hear the final part of "A Little Lower Than The Angels" (7th), followed by the Beeb equivalent of "Unsolved Mysteries" — "Murder Most Foul" (through June 18th).
1130 HCJB: Insight For Living. See M 1130.
1130 Radio Austria Int'l: Report From Austria. See S 0130.
1140 Radio Beijing: Culture in China. The rich cultural heritage of China, as manifested in literature and art.

Fridays

1100 HCJB: Rendezvous. See M 1100.
1115 HCJB: Guidelines For Family Living. See M 1115.
1115 Radio Beijing: Current Affairs or The Business Show. An in-depth look at events and happenings in China, or news on Chinese trade and industry.
1130 BBC: Meridian. See W 0630.
1130 HCJB: Insight For Living. See M 1130.
1130 Radio Austria Int'l: Report From Austria. See S 0130.
1140 Radio Beijing: In the Third World. Reports nd music from developing nations.

Saturdays

1100 HCJB: Family Foundations. Interviews and discussions about issues affecting today's family.
1115 Radio Beijing: Press Clippings. See S 0015.
1120 Radio Beijing: Travel Talk. See S 0020.
1128 Radio Beijing: Cooking Show. See S 0028.
1130 BBC: Meridian. See W 0630.
1130 HCJB: Sounds Of Joy. See W 0630.
1130 Radio Austria Int'l: Austrian Coffee Table. See S 0330.
1135 Radio Beijing: Music from China. See S 0035.

Note: R. Beijing's most recent schedule does not indicate to what hour this programming has been shifted.

1200 UTC [8:00 AM EDT/5:00 AM PDT]

FREQUENCIES

1200-1205	New Zealand, RNZI	9700as			
1200-1210 w	Malawi B'casting Corp.	3381do	5995do		
1200-1215	Cambodia, Voice of	9695as	11938as		
1200-1225 sa	Ghana, Radio 2, Accra	3366do			
1200-1230	Iran, Islamic Republic	7215va	9525va	9685va	11790va
		11930va			
1200-1230 smwha	Mongolia, Ulaanbaatar	11850as	12015as		
1200-1230 as	Norway	17860as	21705as		
1200-1230	Romania, R.Romania Int'l	15340as	15365as	17720as	
1200-1230	Somalia, Radio Mogadishu,	6095af			
1200-1230	Thailand	4830as	9655as	11905as	
1200-1230	United Kingdom,BBC London	6045eu	6180eu	6190af	6195eu
		9410eu	9515na	9660eu	9740na
		9750eu	9760eu	11750as	11760me
		11940af	12095eu	15070eu	15220na
		15310as	15420af	15575me	17640va
		17705eu	17790af	17840af	17885af
		21470af	21660af		
1200-1230	USA, VOA Washington	6110as	9760au	11715as	15155au
		15425as			
1200-1230	Uzbekhistan, R. Tashkent	5945as	9540as	15470as	17745as
1200-1230 s	Zambia,Radio Zambia Int'l	9505af	11880af	17895af	
1200-1300	Australia	6020as	6080as	7240as	9580pa
		9710pa	21720as		
1200-1300	Australia, ABC Brisbane	4920au			
1200-1300	Australia, ABC Katherine	2485do			
1200-1300	Australia, ABC Perth	6140do	9610do		
1200-1300	Bahrain Broadcasting Svc	6010me			
1200-1300	Bonaire, TWR Bonaire	11815am	15345am		
1200-1300 mtwhf	Cameroon CRTV Douala	4795do			
1200-1300	Canada, CFCX Montreal	6005do			
1200-1300	Canada, CFRX Toronto	6070do			
1200-1300	Canada, CFVP Calgary	6030do			
1200-1300	Canada, CHNX Halifax	6130do			
1200-1300	Canada, CKZU Vancouver	6160do			
1200-1300	China, Radio Beijing	9530as	9665na	9715as	11600pa
		11660as	15450pa		
1200-1300	Cook Islands	11760pa			
1200-1300	Costa Rica, AWR	9725ca	11870ca		
1200-1300	Costa Rica, RFPI	15030na	21465na		
1200-1300	Ecuador,HCJB Quito	11925am	15115am	17890am	21455om
1200-1300 sa	Eq.Guinea, R.East Africa	9585af			
1200-1300	Ghana, Radio 1, Accra	4915do			
1200-1300	Kenya, Voice of	4935do			
1200-1300	Luxembourg, RTL	15350va			
1200-1300	Malaysia, RTM Radio 4	7295do			
1200-1300	Nigeria	4990do	7285do		
1200-1300	Nigeria, Voice of	7255af			
1200-1300	Papua New Guinea	4890do			
		4810do	5940eu	5950eu	5960eu
		7130va	7160va	7245va	7260va
		7380va	9560va	9705va	9780va
		9855va	9885va	9895va	11705va
		11765va	12025va	13705va	15280va
		15325va	15345va	15465va	15475va
		15480va	15535va	17570va	17600va
		17605va	17615va	17635va	17655va
		17665va	17690va	17700va	17780va
		17790va	17810va	17840va	17860va
		17870va	21680va	21725va	21785va
		21800va			
1200-1300	Sierra Leone, SLBS	3316do	5980do		
1200-1300	Singapore, SBC1	5010do	5052do	11940do	
1200-1300 vl	South Africa,Radio Oranje	9630do			
1200-1300 sa	Tanzania	5985af	9684af	11765af	
1200-1300	USA, CSMonitor Boston	9425au	9495am	13625as	13760na
1200-1300 as	USA, CSMonitor Boston	15665eu			
1200-1300	USA, KTBN Salt Lake City	7510am			
1200-1300	USA, WHRI Noblesville	7315am	9465am		
1200-1300	USA, WJCR Upton, Kentucky		7490na		
1200-1300	USA, WWCR Nashville	5935am	15690am		
1200-1300	USA, WYFR Okeechobee, FL		5950am	7355am	9705am
		11830am	17760am		
1203-1210 tent	Croatian Radio, Zagreb	7240eu	9830eu		
1215-1230	Cyprus, Radio Bayrak	6150va			
1215-1300	Egypt, Radio Cairo	17595as			
1215-1300	Korea, Seoul	9750am			
1226-1300	Ghana, Radio 2, Accra	7295do			
1230-1250 mtwhf	Finland, YLE	15400na	21550na		
1230-1300	Bangladesh	15200as	15605as	15647as	17750as
1230-1300	France, RFI Paris	9805eu	11670eu	15195eu	15425eu
		21635na	21645na		
1230-1300	Sri Lanka B'casting Corp.	6075as	9720as		
1230-1300	Sweden	15170as	17740as		
1230-1300	Turkey, Voice of	9675as			
1230-1300	United Kingdom,BBC London	6045eu	6180eu	6190af	6195ca
		9410eu	9515na	9660eu	9740na
		9750eu	9760eu	11760me	11940af
		12095eu	12170as	15070eu	15220na
		15310as	15420af	15575me	17640va
		17705eu	17790af	17840af	17885af
		21470af	21660af		
1230-1300	USA, VOA Washington	6110as	9760au	11715au	15155as
		15425as			
1230-1300	Vietnam, Voice of	9840as	12020as	15010as	
1235-1245	Greece, Voice of	15565na	15650na	17515na	
1258-1300	Gabon, Africa Numero Un	9580af	17630af		

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.
1215 Radio Beijing: China Anthology. See S 1115.
1225 Radio Beijing: Music Album. See S 1125.
1230 HCJB: Your Story Hour. Stories about character for children.
1240 Radio Beijing: Listeners' Letterbox. See S 1140.

Mondays

1200 HCJB: Key Life. Steve Brown presents religious advice.
1215 BBC: Quiz. Test your scientific knowledge in "The Litmus Test" (through June 1st).
1215 Radio Beijing: Current Affairs. See M 1115.
1230 HCJB: Insight For Living. See M 1130.
1240 Radio Beijing: Learn to Speak Chinese. See M 1140.
1245 BBC: Sports Roundup. See S 0315.

Tuesdays

1200 HCJB: Key Life. See M 1200.
1215 BBC: Multitrack 1: Top 20. See M 2330.
1215 Radio Beijing: Current Affairs. See M 1115.
1230 HCJB: Insight For Living. See M 1130.
1240 Radio Beijing: Listeners' Letterbox. See S 1140.
1240 Radio Beijing: Listeners' Letterbox. See S 1140.
1245 BBC: Sports Roundup. See S 0315.

Wednesdays

1200 HCJB: Key Life. See M 1200.
1215 BBC: New Ideas. See M 1615.
1215 Radio Beijing: Current Affairs. See M 1115.
1230 HCJB: Insight For Living. See M 1130.
1235 BBC: Talks. See M 1635.
1240 Radio Beijing: Learn to Speak Chinese. See M 1140.
1245 BBC: Sports Roundup. See S 0315.

Thursdays

1200 HCJB: Key Life. See M 1200.
1215 BBC: Multitrack 2. See W 2330.
1215 Radio Beijing: Current Affairs. See M 1115.
1230 HCJB: Insight For Living. See M 1130.
1240 Radio Beijing: Culture in China. See H 1140.
1245 BBC: Sports Roundup. See S 0315.

Fridays

1200 HCJB: Key Life. See M 1200.
1215 BBC: Feature. Spain is the motif this month in "Flamenco" (8th); "The Break-Up Of A Tolerant Society" (15th); "Rioja" (22nd); "The Spanish Temperament" (29th).
1215 Radio Beijing: Current Affairs or The Business Show. See F 1115.
1230 HCJB: Insight For Living. See M 1130.
1240 Radio Beijing: In the Third World. See F 1140.
1245 BBC: Sports Roundup. See S 0315.

Saturdays

1200 HCJB: We Kids. A fast-moving program for children.
1215 BBC: Multitrack 3. See F 2330.
1215 Radio Beijing: Press Clippings. See S 0015.
1220 Radio Beijing: Travel Talk. See S 0020.
1228 Radio Beijing: Cooking Show. See S 0028.
1230 HCJB: A Visit With Mrs. G. Bible stories for children.
1235 Radio Beijing: Music from China. See S 0035.
1245 BBC: Sports Roundup. See S 0315.
1245 HCJB: Critter County. Christian Wyrtzen and her friendly critters present a children's program.

1300 UTC [9:00 AM EDT/6:00 AM PDT]

FREQUENCIES

1300-1305 mtwhfa	Canada, CBC	9625do			
1300-1315	Korea, Seoul	9750na			
1300-1325	Belgium, BRT Brussels	21810na			
1300-1325	Kenya, Voice of	4935do			
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	21550na		
1300-1330 as	Norway	9590eu	15270af		
1300-1330	Swiss Radio Int'l	6165eu	9535eu	12030eu	
1300-1330	United Kingdom,BBC London	5965am	6045eu	6180eu	6190af
		6195ca	9410eu	9515na	9660eu
		9740as	9750eu	9760eu	11750as
		11760me	11820as	11940af	12095eu
		15070va	15310as	15420af	15575me
		7180as	15220na	17640va	17705eu
		17790af	17840af	17885af	21470af
		21660af			
1300-1330	USA, VOA Washington	6110as	9760au	11715as	15155au
		15425au			
1300-1350	N.Korea, Radio Pyongyang	9345eu	9640eu	13650as	15230as
1300-1355	Polish Radio Warsaw	6135eu	7145eu	9525eu	11815eu
1300-1400	Australia	5995as	6080as	7240as	9580pa
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	Bahrain Broadcasting Svc	6010me			
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 mtwhf	Canada, RCI Montreal	9635am	11855am	17820am	
1300-1400	China, Radio Beijing	9715as	11660as		
1300-1400	Cook Islands	11760pa			
1300-1400	Costa Rica, RFPI	15030na	21465na		
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	Papua New Guinea	4890do			
1300-1400	Philippines, FEBC Manila	11685pa			
1300-1400	Philippines, FEBC Manila	11995as			
1300-1400	Romania, R.Romania Int'l	11940eu	15365eu	17720eu	21665eu
1300-1400	Russia, AWR Russia	11855as			
1300-1400	Russia, Radio Moscow	4940do	7130va	7195va	7245va
		7315va	7330va	7370va	7380va
		9560va	9675va	9705va	9725va
		9760va	9855va	9885va	11705va
		11765va	11840am	12035va	13705va
		15330va	15345va	15450va	15465va
		15490va	15550va	17570va	17605va
		17610va	17635va	17665va	17670va
		17690va	17780va	17790va	17810va
		17840va	17860va	17870va	21725va
		21785va			
1300-1400	Sierra Leone, SLBS	3316do	5980do		
1300-1400	Singapore, SBC1	5010do	5052do	11940do	
1300-1400 vl	South Africa,Radio Oranje	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	9660as			
1300-1400	USA, KTBN Salt Lake City	7510			
1300-1400	USA, WHRI Noblesville	9465	11790		
1300-1400	USA, WJCR Upton, Kentucky		7490na		
1300-1400	USA, WWCR Nashville	12160na	15690		
1300-1400	USA, WYFR Okeechobee, FL		5960na	9705am	11550as
		11830am	13695na	17760am	
1305-1400 as	Canada, CBC	9625do			
1315-1330	Lebanon, Radio Voice of	6549.5			
1320-1400	Jordan	9560eu			
1325-1400 mtwhf	Kenya, Voice of	4935do			
1330-1345	Korea World News	7275as	11740as		
1330-1355	Finland, YLE	15400am	21550am		
1330-1357	Canada, RCI Montreal	6095as	6150as	9535as	9700as
1330-1400	Austria, ORF Vienna	11780as	15450as		
1330-1400	Cameroon CRTV Douala	4795do			
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	17580pa	17605pa	21665pa	
1330-1400	UAE Radio, Dubai	13675eu	15320eu	15435as	21605as
1330-1400	United Kingdom,BBC London	5975eu	6045eu	6180eu	6190af
		6195ca	9410eu	9515na	9660eu
		9740as	9750eu	9760eu	11750as
		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	15090au	17525au	21515au	

SELECTED PROGRAMS

Sundays

1300 HCJB: Adventure Club. A weekly adventure program on Christianity for children.
1310 Kol Israel: Israel Sound. The latest pop and rock tunes from Israel.
1315 HCJB: The Word Today. A discussion of Biblical themes.
1315 Radio Beijing: China Anthology. See S 1115.
1320 Kol Israel: Postmark. Recent Israeli stamp releases for philately fans.
1325 Radio Beijing: Music Album. See S 1125.
1330 HCJB: Telling The Truth. Stuart Briscoe presents a religious program.
1330 Radio Austria Int'l: Austrian Shortwave Panorama. See S 1130.
1340 Radio Beijing: Listeners' Letterbox. See S 1140.

Mondays

1300 HCJB: Guidelines For Family Living. See M 1115.
1310 Kol Israel: Calling All Listeners. A mailbag program.
1315 Radio Beijing: Current Affairs. See M 1115.
1320 Kol Israel: DX Corner. Ben Dalfen presents shortwave radio news.
1330 HCJB: Focus On The Family. See S 0130.
1330 Radio Austria Int'l: Report From Austria. See S 0130.
1340 Radio Beijing: Learn to Speak Chinese. See M 1140.

Tuesdays

1300 HCJB: Guidelines For Family Living. See M 1115.
1310 Kol Israel: Israel Mosaic. A weekly magazine program.
1315 Radio Beijing: Current Affairs. See M 1115.
1320 Kol Israel: New From Israel. A review of Israeli developments in science, technology, and medicine.
1330 HCJB: Focus On The Family. See S 0130.
1330 Radio Austria Int'l: Report From Austria. See S 0130.
1340 Radio Beijing: Listeners' Letterbox. See S 1140.

Wednesdays

1300 HCJB: Guidelines For Family Living. See M 1115.
1300 KNLS: Swingin' Years. See M 1300.
1310 Kol Israel: Talking Point. Interviews with guests in the Kol Israel studios.
1315 Radio Beijing: Current Affairs. See M 1115.
1330 HCJB: Focus On The Family. See S 0130.
1330 Radio Austria Int'l: Report From Austria. See S 0130.
1340 Radio Beijing: Learn to Speak Chinese. See M 1140.
1345 KNLS: American Magazine. See M 1345.

Thursdays

1300 HCJB: Guidelines For Family Living. See M 1115.
1300 Kol Israel: Jewish News Review. A look at events affecting Jews around the world.
1310 Kol Israel: This Land. Travel and tourism in Israel.
1315 Radio Beijing: Current Affairs. See M 1115.
1330 HCJB: Focus On The Family. See S 0130.
1330 Radio Austria Int'l: Report From Austria. See S 0130.
1340 Radio Beijing: Culture In China. See H 1140.

Fridays

1300 HCJB: Guidelines For Family Living. See M 1115.
1315 Radio Beijing: Current Affairs or The Business Show. See F 1115.
1330 HCJB: Focus On The Family. See S 0130.
1330 Radio Austria Int'l: Report From Austria. See S 0130.
1340 Radio Beijing: In the Third World. See F 1140.

Saturdays

1300 HCJB: Adventures In Odyssey. Lively childrens' dramas from the "Focus on the Family" team.
1315 Radio Beijing: Press Clippings. See S 0015.
1320 Radio Beijing: Travel Talk. See S 0020.
1328 Radio Beijing: Cooking Show. See S 0028.
1330 HCJB: Children's Bible Hour. Songs and stories for children.
1330 Radio Austria Int'l: Austrian Coffee Table. See S 0330.
1335 Radio Beijing: Music from China. See S 0035.

1400 UTC [10:00 AM EDT/7:00 AM PDT]

FREQUENCIES

1400-1410	Malawi B'casting Corp.	3381do			
1400-1410	Sudan, Radio Juba	9540do	9550do		
1400-1415	Vatican Radio	15090au	17525au	21515au	
1400-1430	Cameroon CRTV Douala	4795do			
1400-1430	Ecuador,HCJB Quito	11925am	15115am	17890am	21455am
1400-1430	Malaysia, RTM Kuching	4950do			
1400-1430	United Kingdom,BBC London	5975eu	6045eu	6180eu	6190af
		6195as	7180as	9410eu	9660eu
		9740as	9750eu	9760eu	11750as
		11820as	11940af	12095eu	15070eu
		15310as	15575me	17640va	17705eu
		17790af	17840	17880af	21470af
		21660af			
1400-1500	Australia	5995as	6080as	7240as	9580pa
		9710as	9770as	9860as	12000as
		13755as			
1400-1500	Australia, VLW6 Wanneroo,	6140do			
1400-1500	Bahrain Broadcasting Svc	6010me			
1400-1500	Cameroon CRTV Yaounde	4850do			
1400-1500 as	Canada, CBC	9625do			
1400-1500	Canada, CFCX ontreal	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			
1400-1500	China, Radio Beijing	7405na	11815as	11855as	15165as
1400-1500	Cook Islands	11760pa			
1400-1500	Costa Rica, RFPI	15030am	21465am		
1400-1500	France, RFI Paris	11910as	17650as	21770as	
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 a	Italy, IRRS Milan, Italy	7125eu			
1400-1500	Japan NHK	9505am	11865va		
1400-1500	Jordan	9560eu			
1400-1500 mtwhf	Kenya Voice of	4935do			
1400-1500	Korea, Seoul	9570as			
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	Netherlands	17580pa	17605pa	21665pa	
1400-1500	Nigeria	4990do	7285do		
1400-1500	Nigeria, Voice of	7255af			
1400-1500	Philippines, FEBC Manila	11995as			
1400-1500	Russia, Radio Moscow	4740do	4810do	4975do	5905eu
		5960eu	6055eu	7135va	7170va
		7195va	7245va	7260va	7315va
		7330va	7345va	7370va	7380va
		7420va	9675va	9705va	9725va
		9735va	9755va	9760va	9795va
		9855va	9895va	11705va	11765va
		11780va	11830va	11840am	12025va
		12035va	13705va	15210na	15345va
		15395va	15420va	15450va	15465va
		15480va	15495va	15520va	15535va
		17605va	17610va	17655va	17665va
		17670va	17690va	17780va	17790va
		17810va	17840va	17860va	17870va
		21615va			
1400-1500	Sierra Leone, SLBS	3316do	5980do		
1400-1500	Singapore, SBC1	5010do	5052do	11940do	
1400-1500 vl	South Africa,Radio Oranje	9630do			
1400-1500	Sri Lanka B'casting Corp.	6075as	9720as		
1400-1500 sa	Tanzania	5985af	9684af	11765af	
1400-1500	USA, CSMonitor Boston	9530as	13625as	15665eu	17555am
1400-1500 sa	USA, CSMonitor Boston	13710na			
1400-1500	USA, KTBN Salt Lake City	7510na			
1400-1500	USA, VOA Washington	6110as	9760as	15160au	15425au
		6110as	7125as	9645as	9760as
		15395as	15205me		
1400-1500	USA, WHRI Noblesville	9465na	15105na		
1400-1500	USA, WJCR Upton, Kentucky		7490na		
1400-1500	USA, WWCR Nashville	12160na	15690am		
1400-1500	USA, WYFR Okeechobee, FL		9705am	11550as	11830am
		17760am			
1405-1430	Finland, YLE	6120eu	9730af	11755eu	15440me
		21550eu			
1415-1425	Nepal, Kathmandu	3230do	5005do	7165do	
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	Israel, Kol Israel	11587am	11605na	15640na	17575eu
		17590eu			
1430-1500	Myanmar, Voice of, Burma	5990do			
1430-1500	United Kingdom,BBC London	5975eu	6045eu	6180eu	6190af
		6195as	9410eu	9740as	9750eu
		9760eu	11750as	11820as	11940af
		12095eu	15070va	15310as	15575me
		17640va	17705eu	17790af	17880af
		7180as	21470af	21660af	
1440-1450 mtwhfa	Venezuela, Radio Nacional	9540om			
1445-1500 smwha	Mongolia, Ulaanbaatar	7260as	13780as		

SELECTED PROGRAMS

Sundays

1400 HCJB: Mountain Meditations. Sunday thoughts from HCJB's president.
1401 BBC: Feature. This month, the conclusion of "The Human Child" (3rd/10th/17th/24th), followed by "The Human Child Phone-Ins" (through June 7th, ends at 1500 UTC).
1415 Radio Beijing: China Anthology. See S 1115.
1425 Radio Beijing: Music Album. See S 1125.
1430 BBC: Anything Goes. Bob Holness presents a variety of music and other recordings.
1430 HCJB: Moody Presents. Christian messages from the Moody Bible Institute.
1430 Radio Austria Int'l: Report From Austria. See S 0130.
1440 Radio Beijing: Listeners' Letterbox. See S 1140.

Mondays

1400 HCJB: Stories Of Great Christians. Dramas on the lives of church leaders, missionaries, and the like.
1405 BBC: Outlook. Conversation, controversy, and color from the UK and the world.
1415 HCJB: Our Daily Bread. A daily devotional program.
1415 Radio Beijing: Current Affairs. See M 1115.
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 Austria Int'l: Report From Austria. See S 0130.
1440 Radio Beijing: Learn to Speak Chinese. See M 1140.
1445 BBC: Talks. See S 0445.

Tuesdays

1400 HCJB: Stories Of Great Christians. See M 1400.
1405 BBC: Outlook. See M 1405.
1415 HCJB: Our Daily Bread. See M 1415.
1415 Radio Beijing: Current Affairs. See M 1115.
1430 BBC: Off The Shelf. See M 0430.
1430 HCJB: Through The Bible. See M 1430.
1430 Radio Austria Int'l: Report From Austria. See S 0130.
1440 Radio Beijing: Listeners' Letterbox. See S 1140.
1445 BBC: Feature. See M 0145.

Wednesdays

1400 HCJB: Stories Of Great Christians. See M 1400.
1405 BBC: Outlook. See M 1405.
1415 HCJB: Our Daily Bread. See M 1415.
1415 Radio Beijing: Current Affairs. See M 1115.
1430 BBC: Off The Shelf. See M 0430.
1430 HCJB: Through The Bible. See M 1430.
1430 Radio Austria Int'l: Report From Austria. See S 0130.
1440 Radio Beijing: Learn to Speak Chinese. See M 1140.
1445 BBC: Good Books. Recommendations of books to read.

Thursdays

1400 HCJB: Stories Of Great Christians. See M 1400.
1405 BBC: Outlook. See M 1405.
1415 HCJB: Our Daily Bread. See M 1415.
1415 Radio Beijing: Current Affairs. See M 1115.
1430 BBC: Off The Shelf. See M 0430.
1430 HCJB: Through The Bible. See M 1430.
1430 Radio Austria Int'l: Report From Austria. See S 0130.
1440 Radio Beijing: Culture in China. See H 1140.
1445 BBC: Recording Of The Week. See M 0545.

Fridays

1400 HCJB: Stories Of Great Christians. See M 1400.
1405 BBC: Outlook. See M 1405.
1415 HCJB: Our Daily Bread. See M 1415.
1415 Radio Beijing: Current Affairs or The Business Show. See F 1115.
1430 BBC: Off The Shelf. See M 0430.
1430 HCJB: Through The Bible. See M 1430.
1430 Radio Austria Int'l: Report From Austria. See S 0130.
1440 Radio Beijing: In the Third World. See F 1140.
1445 BBC: Global Concerns. See F 0145.

Saturdays

1400 HCJB: Song Time. John DeBrine mixes music with a religious message.
1401 BBC: John Peel. See T 0330.
1415 Radio Beijing: Press Clippings. See S 0015.
1420 Radio Beijing: Travel Talk. See S 0020.
1428 Radio Beijing: Cooking Show. See S 0028.
1430 BBC: Sportsworld. The latest soccer, cricket, tennis, golf, and more. This month: English soccer's championship game, the FA Cup from Wembley Stadium (9th).
1430 HCJB: Let My People Think. See S 1630.
1430 Radio Austria Int'l: Report From Austria. See S 0130.
1435 Radio Beijing: Music from China. See S 0035.

1500 UTC [11:00 AM EDT/8:00 AM PDT]

FREQUENCIES

1500-1515 smwha	Mongolia, Ulaanbaatar	7260as	13780as		
1500-1530	Canada, RCI Montreal	9555eu	11915eu	11935eu	13650eu
		15315eu	15325eu	17820eu	21545eu
1500-1530	Finland, YLE	15440na	21550na		
1500-1530 mtwhf	Portugal	21515me			
1500-1530	Romania, R.Romania Int'l	11775as	11940as	15250as	15335as
		17720as	17745as		
1500-1530	Sudan, Nat'l Unity Radio	9535do			
1500-1530	Sweden	15270va	17870na	21500na	
1500-1530	Swiss Radio Int'l	7480as	11690as	13635as	15505as
		17830as	21695as		
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	11775na	11940af	12095eu
		15070va	15310as	15400af	15420af
		7180as	15260na	15575me	17640va
		17705eu	17790af	17840af	17860af
		17880af	21470af	21490af	21660af
1500-1550	Germany,Deutsche Welle	9735af	11965af	13610af	17735af
		17765af	21660af		
1500-1550	N.Korea, Radio Pyongyang	9325va	9640va	9977va	11705va
1500-1555	Seychelles, FEBA	11685af			
1500-1600	Australia	5995as	6060as	6080as	7240as
		9580pa	9860as	12000as	13755as
1500-1600	Bahrain Broadcasting Svc	6010me			
1500-1600	Bangladesh	4880do			
1500-1600	Cameroon CRTV Yaounde	4850do			
1500-1600 as	Canada, CBC	9625do			
1500-1600	Canada, CFCX Montreal	6005do			
1500-1600	Canada, CFRX Toronto	6070do			
1500-1600	Canada, CFVP Calgary	6030do			
1500-1600	Canada, CHNX Halifax	6130do			
1500-1600	Canada, CKZU Vancouver	6160do			
1500-1600 s	Canada, RCI Montreal	11955am			
1500-1600	China, Radio Beijing	7405na	11815as	15165as	
1500-1600	Cook Islands	11760pa			
1500-1600	Costa Rica, RFPI	15030am	21465am		
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, KTWR Guam	11650as			
1500-1600 a	Italy, IRRS Milan, Italy	7125eu			
1500-1600	Japan NHK	9505am			
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	Netherlands	9890pa	15150pa	17580pa	17605pa
		21665pa			
1500-1600	Nigeria	4990do	7285do		
1500-1600	Nigeria, Voice of	7255af			
1500-1600	Philippines, FEBC Manila	11995as			
1500-1600	Russia, Radio Moscow	4740do	4940do	4975do	6055eu
		7135va	7220va	7260va	7290va
		7315va	7345va	7370va	7380va
		7390va	9540na	9575va	9725va
		9755va	9795va	9885va	9895va
		11705va	11725va	11840am	12035va
		13705va	15210na	15395va	15420va
		15450va	15465va	15480va	15485va
		17605va	17610va	17655va	17670va
		17690va	17775va	17780va	17810va
		17870va	21615va	21785va	
1500-1600 twhfa	Seychelles, FEBA	9810as	15330as		
1500-1600	Sierra Leone, SLBS	3316do	5980do		
1500-1600	Singapore, SBC1	5010do	5052do	11940do	
1500-1600	South Africa, Radio RSA	7230af	11880af		
1500-1600 vl	South Africa,Radio Oranje	9630do			
1500-1600	Sri Lanka B'casting Corp.	6075as	9720as		
1500-1600	USA, CSMonitor Boston	9530as	13625as	15665eu	17555am
1500-1600 sa	USA, CSMonitor Boston	13710na			
1500-1600	USA, KTBN Salt Lake City	7510na			
1500-1600	USA, VOA Washington	6110as	7125as	9645as	9760as
		15395as			
1500-1600	USA, VOA Washington	9700eu	15205me		
1500-1600	USA, WHRI Noblesville	15105na	21840sa		
1500-1600	USA, WJCR Upton, Kentucky		7490na		
1500-1600	USA, WWCR Nashville	12160na	15690am		
1500-1600	USA, WYFR Okeechobee, FL		11830am	15215am	17760am
1520-1530 tent id	Zambia,Radio Zambia Int'l	9505af	11880af	17895af	
1522-1535	Taiwan, Voice of	9910as			
1530-1540 mtwhfa	Greece, Voice of	11645eu	15565na	17525na	
1530-1600	Austria, ORF Vienna	6155eu	11780as	13730eu	21490va
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
		17840va	17880af	21470af	21660af
1545-1600	Korea World News	7275va			
1545-1600	Vatican Radio	15090au	17865au		

SELECTED PROGRAMS

Sundays

1500 HCJB: Urban Alternative. A program for inner-city America.
1515 BBC: Concert Hall. Classical music from the world's great concert halls.
1515 Radio Beijing: China Anthology. See S 1115.
1525 Radio Beijing: Music Album. See S 1125.
1530 HCJB: Heaven And Home Hour. Christian messages of inspiration.
1530 Radio Austria Int'l: Austrian Shortwave Panorama. See S 1130.
1540 Radio Beijing: Listeners' Letterbox. See S 1140.

Mondays

1500 HCJB: Key Life. See M 1200.
1515 BBC: Feature/Drama. See M 0101.
1515 HCJB: Gateway To Joy. Contemporary women's issues from a Biblical perspective.
1515 Radio Beijing: Current Affairs. See M 1115.
1530 BBC: Feature/Drama. See M 0115.
1530 HCJB: Back To The Bible. A daily Bible study.
1530 Radio Austria Int'l: Report From Austria. See S 0130.
1540 Radio Beijing: Learn to Speak Chinese. See M 1140.

Tuesdays

1500 HCJB: Key Life. See M 1200.
1515 BBC: A Jolly Good Show. Dave Lee Travis presents listener rock music requests.
1515 HCJB: Gateway To Joy. See M 1515.
1515 Radio Beijing: Current Affairs. See M 1115.
1530 HCJB: Back To The Bible. See M 1530.
1530 Radio Austria Int'l: Report From Austria. See S 0130.
1540 Radio Beijing: Listeners' Letterbox. See S 1140.

Wednesdays

1500 HCJB: Key Life. See M 1200.
1515 BBC: Talks. See M 2315.
1515 HCJB: Gateway To Joy. See M 1515.
1515 Radio Beijing: Current Affairs. See M 1115.
1530 BBC: Comedy/Drama. It's back! Hear two episodes of the comedy classic "Round The Horne" (6th/13th). Also: the play "Sex, Lies, And Audiotape" (20th) and "Two Cheers For May" (27th).
1530 HCJB: Back To The Bible. See M 1530.
1530 Radio Austria Int'l: Report From Austria. See S 0130.
1540 Radio Beijing: Learn to Speak Chinese. See M 1140.

Thursdays

1500 HCJB: Key Life. See M 1200.
1515 BBC: Music With Matthew. See S 2315.
1515 HCJB: Gateway To Joy. See M 1515.
1515 Radio Beijing: Current Affairs. See M 1115.
1530 HCJB: Back To The Bible. See M 1530.
1530 Radio Austria Int'l: Report From Austria. See S 0130.
1540 Radio Beijing: Culture in China. See H 1140.

Fridays

1500 HCJB: Key Life. See M 1200.
1515 BBC: Music Review. See H 2315.
1515 HCJB: Gateway To Joy. See M 1515.
1515 Radio Beijing: Current Affairs or The Business Show. See F 1115.
1530 HCJB: Back To The Bible. See M 1530.
1530 Radio Austria Int'l: Report From Austria. See S 0130.
1540 Radio Beijing: In the Third World. See F 1140.

Saturdays

1500 HCJB: Unshackled. See A 0400.
1515 BBC: Sportsworld. See A 1430.
1515 Radio Beijing: Press Clippings. See S 0015.
1520 Radio Beijing: Travel Talk. See S 0020.
1528 Radio Beijing: Cooking Show. See S 0028.
1530 HCJB: Radio Reading Room. See S 0430.
1530 Radio Austria Int'l: Austrian Coffee Table. See S 0330.
1535 Radio Beijing: Music from China. See S 0035.

1600 UTC [12:00 PM EDT/9:00 AM PDT]

FREQUENCIES

1600-1605	Singapore, SBC1	5010do	5052do	11940do	
1600-1610	Lesotho, Maseru	4800do			
1600-1610	Malawi B'casting Corp.	3381do			
1600-1630 a	Italy, IRRS Milan, Italy	7125eu			
1600-1630	Netherlands	9890pa	15150pa	17580pa	17605pa
		21665pa			
1600-1630 as	Norway	15230af	17720as		
1600-1630	Pakistan	11570me	13665me	15060me	15550af
		17555af	17725me		
1600-1630	United Kingdom,BBC London	1540af	3915as	5975as	6190af
		6195eu	9410eu	9630af	9740me
		9750eu	11750as	11775na	11940af
		12095eu	15070eu	15400af	17640va
		17695eu	17705eu	17860af	17880af
		7180as	15260na	15310as	21470af
		21660af			
1600-1630	USA, VOA Washington	9700eu	15205me		
1600-1630	Vietnam, Voice of	9840eu	12020eu	15010eu	
1600-1630	Yemen	5970as	7190as		
1600-1635	Guam, KTWR Guam	11650as			
1600-1640 vi	South Africa,Radio Oranje	9630do			
1600-1640	Vatican Radio	15090au	17865au		
1600-1645	UAE Radio, Dubai	11795af	13675eu	15320eu	21605eu
1600-1650	Germany,Deutsche Welle	6170as	7225as	9615as	9875as
		11785as	15105as	15415as	15595as
1600-1655	Polish Radio Warsaw	7285eu	9525eu	11840eu	
1600-1700	Australia	5995as	6060as	6080as	9580as
		9860as	11910as	12000as	13605as
		13755as			
1600-1700	Bahrain Broadcasting Svc	6010me			
1600-1700 a	Canada, CBC	9625do			
1600-1700	Canada, CFCX Montreal	6005do			
1600-1700	Canada, CFRX Toronto	6070do			
1600-1700	Canada, CFVP Calgary	6030do			
1600-1700	Canada, CHNX Halifax	6130do			
1600-1700	Canada, CKZU Vancouver	6160do			
1600-1700 s	Canada, RCI Montreal	11955am			
1600-1700	China, Radio Beijing	11575af	15130af	15170af	
1600-1700	Cook Islands	11760pa			
1600-1700	Costa Rica, RFPI	15030na	21465na		
1600-1700	France, RFI Paris	6175eu	11705af	12015af	15530me
		17620af	17795af	17850af	
1600-1700	Ghana, Radio 1, Accra	4915do			
1600-1700	Ghana, Radio 2, Accra	7295do			
1600-1700	Guam, KSDA Guam	11980as			
1600-1700 mtwhf	Kenya, Voice of	4935do			
1600-1700	Korea, Seoul	5975om	9870af		
1600-1700	Luxembourg, RTL	15350va			
1600-1700	Nigeria	4990do			
1600-1700	Nigeria, Voice of	7255af			
1600-1700	Russia, Radio Moscow	6055eu	6175va	7135va	7170va
		7260va	7280va	7330va	7345va
		7370va	7380va	7420va	9575va
		9685va	9720va	9730va	9755va
		9760va	9795va	9830va	9895va
		11730va	11840am	12030va	13670va
		15450va	15485va	17670va	
1600-1700	Saudi Arabia BC Svc	9705eu	9720eu		
1600-1700	Sierra Leone, SLBS	3316do	5980do		
1600-1700	Somali People, Voice of	6320do			
1600-1700	South Africa, Radio RSA	15160af			
1600-1700	Sri Lanka B'casting Corp.	6075as	9720as		
1600-1700	Swaziland, TWR Swaziland	9600af			
1600-1700	Tanzania	5985af	9684af	11765af	
1600-1700	USA, CSMonitor Boston	11580as	13625as	21640af	
1600-1700 sa	USA, CSMonitor Boston	13710na	17555am		
1600-1700	USA, KTBN Salt Lake City	15590am			
1600-1700	USA, VOA Washington	9575af	11920af	15410af	15495af
		15580af	17650af	17800af	21625af
		6110as	7125as	9645as	9760as
		15395as	19261as		
1600-1700	USA, WHRI Noblesville	15105am	17830am	21840am	
1600-1700	USA, WJCR Upton, Kentucky		7490na		
1600-1700	USA, WWCR Nashville	15690am	17525am		
1600-1700	USA, WYFR Okeechobee, FL		11830am	15215am	15355am
		17760am	21525eu	21615af	
1600-1700	Zambia,Radio Zambia Int'l	9505af	11880af	17895af	
1610-1615 mtwhf	Botswana, Gaborone	5955af	7255af		
1620-1658 mtwhf	Morocco, Rabat	17595as			
1630-1657	Canada, RCI Montreal	7150as	9555as		
1630-1700	Ecuador,HCJB Quito	15270me	17790me	21455me	
1630-1700	Egypt, Radio Cairo	15255af			
1630-1700	Rwanda, RTV Rwandiase	3330	6055		
1630-1700	United Kingdom,BBC London	3915as	5975as	6190af	6196eu
		9410eu	9630af	9740me	11750as
		11775na	11940af	12095eu	15070eu
		15260na	15310as	15400af	15420af
		17640va	17695eu	17860af	17880af
		21470af	21660af		
1630-1700	USA, VOA Washington	6180eu	9700eu	9760me	11710me
		15205me	15245me		
1635-1700 s	Guam, KTWR Guam	11650as			
1650-1700 smtwhf	New Zealand, RNZI	9670pa			

SELECTED PROGRAMS

Sundays

1600 KSDA, Guam: AWR Magazine. See S 0200.
1615 BBC: Feature. See S 0230.
1615 KSDA, Guam: Digging Up The Past. See S 0230.
1615 Radio Beijing: China Anthology. See S 1115.
1625 Radio Beijing: Music Album. See S 1125.
1630 HCJB: Let My People Think. A program addressing questions of today's thinker.
1630 KSDA, Guam: Power to Cope. Advice for coping with life's problems.
1640 Radio Beijing: Listeners' Letterbox. See S 1140.
1645 BBC: Letter From America. See S 0615.

Mondays

1600 KSDA, Guam: Music Scrapbook. See S 2300.
1615 BBC: New Ideas. Innovative developments in technology and new products.
1615 KSDA, Guam: Bible in Living Sound. See S 2315.
1615 Radio Beijing: Current Affairs. See M 1115.
1630 KSDA, Guam: Greatest Story Ever Told. See M 0030.
1635 BBC: Talks. This month's question: "Whatever Happened To..." former headline-grabbers (4th/11th/18th/25th).
1639 HCJB: Current Affairs. News, features, and interviews from HCJB correspondents.
1640 Radio Beijing: Learn to Speak Chinese. See M 1140.
1645 BBC: The World Today. A look at a topical aspect of the international scene.
1645 KSDA, Guam: Voice of Prophecy. See S 0030.

Tuesdays

1600 KSDA, Guam: Music Scrapbook. See S 2300.
1615 BBC: Megamix. See T 1130.
1615 KSDA, Guam: Bible in Living Sound. See S 2315.
1615 Radio Beijing: Current Affairs. See M 1115.
1630 KSDA, Guam: Greatest Story Ever Told. See M 0030.
1639 HCJB: Current Affairs. See M 1639
1640 Radio Beijing: Listeners' Letterbox. See S 1140.
1645 BBC: The World Today. See M 1645.
1645 KSDA, Guam: Voice of Prophecy See S 0030.

Wednesdays

1615 BBC: Rock/Pop Music. See T 0630.
1615 Radio Beijing: Current Affairs. See M 1115.
1639 HCJB: Current Affairs. See M 1639.
1640 Radio Beijing: Learn to Speak Chinese. See M 1140.
1645 BBC: The World Today. See M 1645.

Thursdays

1600 KSDA, Guam: Music Scrapbook. See S 2300.
1615 BBC: Network UK. Issues and events affecting people across the UK.
1615 KSDA, Guam: Bible in Living Sound. See S 2315.
1615 Radio Beijing: Current Affairs. See M 1115.
1630 KSDA, Guam: Greatest Story Ever Told. See M 0030.
1639 HCJB: Current Affairs. See M 1639.
1640 Radio Beijing: Culture in China. See H 1140.
1645 BBC: The World Today. See M 1645.
1645 KSDA, Guam: Voice of Prophecy. See S 0030.

Fridays

1600 KSDA, Guam: Music Scrapbook. See S 2300.
1615 BBC: Science In Action. The latest news about scientific innovations.
1615 KSDA, Guam: Bible In Living Sound. See S 2315.
1615 Radio Beijing: Current Affairs or The Business Show. See F 1115.
1630 KSDA, Guam: Greatest Story Ever Told. See M 0030.
1639 HCJB: Current Affairs. See M 1639.
1640 Radio Beijing: In the Third World. See F 1140.
1645 BBC: The World Today. See M 1645.
1645 KSDA, Guam: Voice of Prophecy. See S 0030.

Saturdays

1600 KSDA, Guam: Micronesian Snapshots. The news, music, and culture of Micronesia.
1615 BBC: Sportsworld. See A 1430.
1615 KSDA, Guam: DX Aslawaves. See S 0215.
1615 Radio Beijing: Press Clippings. See S 0015.
1620 Radio Beijing: Travel Talk. See S 0020.
1628 Radio Beijing: Cooking Show. See S 0028.
1630 HCJB: Unshackled. See A 0400.
1630 KSDA, Guam: Digging Up The Past. See S 0230.
1635 Radio Beijing: Music from China. See S 0035.
1645 KSDA, Guam: Probe. See S 0245.

1700 UTC [1:00 PM EDT/10:00 AM PDT]

1700-1705	Ghana, Radio 2, Accra	7295do			
1700-1710	Cameroon CRTV Bafoussam	4000do			
1700-1728	Sierra Leone, SLBS	3316do	5980do		
1700-1730	Canada, RCI Montreal	5995eu	7235eu	13650eu	15325eu
		17820eu	21545eu		
1700-1730 as	Norway	9655eu			
1700-1730	Sri Lanka B'casting Corp.	6075as	9720as		
1700-1730	Swaziland, TWR Swaziland	3200af	9520af		
1700-1730	Swiss Radio Int'l	13685af	15430af	15525af	17830af
		21630af			
1700-1730	United Kingdom,BBC London	3255af	7160me	15260na	21470af
		21660af			
		3915as	5975as	6005af	6180eu
		6190af	6195eu	9410eu	9630af
		9740eu	11750as	11775na	12095eu
		15070eu	15310as	15400af	15420af
		17640va	17695eu	17860af	17880af
1700-1730	USA, VOA Washinton	3980eu	6040me	9575af	9700eu
		9760me	11920af	15205me	15410af
		15445af	15495af	15580af	17650af
		17800af	21625af		
1700-1750	N.Korea, Radio Pyongyang	9325va	9640va	9977va	11705va
1700-1800	Algeria, R. Algiers	17745na			
1700-1800	Australia	5995as	6060as	6080as	9580as
		9860as	11910as	12000as	13605as
		13755as			
1700-1800	Bahrain Broadcasting Svc	6010me			
1700-1800 a	Canada, CBC	9625do			
1700-1800	Canada, CFCX Montreal	6005do			
1700-1800	Canada, CFRX Toronto	6070do			
1700-1800	Canada, CFVP Calgary	6030do			
1700-1800	Canada, CHNX Halifax	6130do			
1700-1800	Canada, CKZU Vancouver	6160do			
1700-1800	China, Radio Beijing	7405af	9570af	11575af	
1700-1800	Cook Islands	11760pa			
1700-1800	Costa Rica, RFPI	15030na	21465na		
1700-1800	Ecuador,HCJB Quito	15270me	17790me	21455me	
1700-1800	Egypt, Radio Cairo	15255af			
1700-1800 sa	Eq.Guinea, R.East Africa	7190af			
1700-1800	Ghana, Radio 1, Accra	4915do			
1700-1800	Guam, KSDA Guam	13720as			
1700-1800	Japan NHK	7140as	9505am	11815na	11865na
		15345me			
1700-1800 mtwhf	Kenya, Voice of	4935do			
1700-1800	Luxembourg, RTL	15350va			
1700-1800 smtwhf	New Zealand, RNZI	9675pa			
1700-1800	Nigeria	3326do	4990do		
1700-1800	Nigeria, Voice of	7255af			
1700-1800	Pakistan	11570eu	15550eu		
1700-1800	Russia, Radio Moscow	7170eu	7260eu	7330eu	7345eu
		7370eu	7420eu	9530va	9540va
		9575va	9685va	9720va	9755va
		9765va	9790va	9795va	9830va
		9860va	9895va	11630va	11840va
		13670va	17810na		
1700-1800	Saudi Arabia BC Svc	9705eu	9720eu		
1700-1800	South Africa, Radio RSA	15160af			
1700-1800	Tanzania	5985af	9684af	11765af	
1700-1800	USA, CSMonitor Boston	11580as	13625as	21640af	
1700-1800 sa	USA, CSMonitor Boston	13710na	17555am		
1700-1800	USA, KTBN Salt Lake City	15590am			
1700-1800	USA, VOA Washinton	6110as	7125as	9645as	15395as
1700-1800	USA, WHRI Noblesville	13760	15105		
1700-1800	USA, WJCR Upton, Kentucky		7490na		
1700-1800 smtwhf	USA, WMLK Bethel, Penna.	9465eu			
1700-1800	USA, WWCR Nashville	15690	17525		
1700-1800	USA, WYFR Okeechobee, FL		21500va		
1700-1800	Zambia,Radio Zambia Int'l	9505af	11880af	17895af	
1706-1800	Ghana, Radio 2, Accra	3366do			
1715-1730	Cameroon CRTV Beau	3970do			
1715-1730	Vatican Radio	6245eu	7250eu		
1715-1745	United Kingdom,BBC London	9560ca	21660ca		
1728-1800	Sierra Leone, SLBS	3316do			
1730-1745 a	Cameroon CRTV Douala	4795do			
1730-1745	Cyprus, Radio Bayrak	6150va			
1730-1800	Bulgaria, Radio Sofia	6035eu	9560eu	9700af	11680eu
		11720af	11735af		
1730-1800 a	Latvia, Radio Riga	5935eu			
1730-1800	Netherlands	6020af	9605af	21515af	21590af
1730-1800	Romania, R.Romania Int'l	11790af	15340af	15365af	17720af
1730-1800	Swaziland, TWR Swaziland	3200af			
1730-1800	United Kingdom,BBC London	3255af	3915as	5975as	6005af
		6180eu	6190af	6195eu	9410eu
		9630af	9740me	11775na	12095eu
		15070eu	15260na	15310as	15400af
		15420af	17640va	17695eu	17860af
		17880af	21660af		
1730-1800	USA, VOA Washington	6040eu	9700eu	9760eu	11920af
		15205eu	15410af	15495af	15580af
		17650af	17800af	19261af	21625af
1730-1800	Vatican Radio	11625af	15090af	17730af	
1740-1800	Cameroon CRTV Yaounde	4850do			
1745-1800 mtwhfa	Cameroon CRTV Douala	4795do			
1745-1800	India, All India Radio	7412as	9950as	11620as	11860as
		11935as	15080as		
1745-1800 tent	Madagascar,RTV Madagascar		3232do	3286do	5005do

1800 UTC [2:00 PM EDT/11:00 AM PDT]

1800-1805 mtwh	Canada, CBC	9625do			
1800-1810	Malawi B'casting Corp.	3381do			
1800-1815	Israel, Kol Israel	11587na	11675eu	15590af	15640va
		17575sa			
1800-1825	Belgium, BRT Brussels	5910eu	9905eu	15515af	
1800-1830 mtwhf	Canada, RCI Montreal	13670af	15260af	17820af	
1800-1830	Congo, RTV Congolaise	3265af	4765af		
1800-1830	Czechoslovakia	5930eu	6055eu	7345eu	9605eu
1800-1830	Egypt, Radio Cairo	15255af			
1800-1830	United Kingdom,BBC London	3255af	3955eu	5975as	6180eu
		6190af	6195eu	7160me	7325af
		9410eu	9600af	9740me	11750as
		12095eu	15070eu	15310as	15400af
		17640eu	17880af	21660af	
1800-1830	Vietnam, Voice of	9840eu	12020eu	15010eu	
1800-1840 w	Cameroon CRTV Bertoua	4750do			
1800-1845 mtwhfa	Cameroon CRTV Douala	4795do			
1800-1845	Swaziland, TWR Swaziland	3200af	9600af		
1800-1850 smtwhf	New Zealand, RNZI	9675pa			
1800-1855	Polish Radio Warsaw	7145eu	9525eu		
1800-1900	Australia	5995as	6060as	6080as	9580as
		9860as	11910as	12000as	13605as
		13755as			
1800-1900	Bahrain Broadcasting Svc	6010me			
1800-1900	Brazil,Radiobras,Brasilia	15265eu			
1800-1900	Bulgaria, Radio Sofia	6035eu	9560eu	9700af	11680eu
		11720af	11735af		
1800-1900	Cameroon CRTV Yaounde	4850do			
1800-1900	Canada, CFCX Montreal	6005do			
1800-1900	Canada, CFRX Toronto	6070do			
1800-1900	Canada, CFVP Calgary	6030do			
1800-1900	Canada, CHNX Halifax	6130do			
1800-1900	Canada, CKZU Vancouver	6160do			
1800-1900 as	Canada, RCI Montreal	13670me	15260me	17820me	
1800-1900	Cook Islands	11760pa			
1800-1900	Costa Rica, RFPI	13630am	15030am	21465am	
1800-1900 sa	Eq.Guinea, R.East Africa	7190af			
1800-1900	Ethiopia, Voice of	9662af			
1800-1900	Ghana, Radio 1, Accra	4915do			
1800-1900	Ghana, Radio 2, Accra	7295do			
1800-1900	Guam, KSDA Guam	13720as			
1800-1900	India, All India Radio	7412as	9950as	11620as	11860as
		11935as	15080as		
1800-1900	Ivory Coast, Abidjan	11920af			
1800-1900 mtwhf	Kenya, Voice of	4935do			
1800-1900	Korea, eoul	15575eu			
1800-1900	Kuwait, Radio Kuwait	13620na			
1800-1900	Luxembourg, RTL	15350va			
1800-1900 irreg	Mozambique	3265af	4855af	9618af	
1800-1900	Netherlands	6020af	9605af	21515af	21590af
1800-1900	Nigeria	3326do	4990do		
1800-1900	Russia, Radio Mscow	7260eu	7330eu	9540eu	9630va

1800 UTC cont'd

		9685va	9725va	9755va	9765va
		9780va	9795va	9855va	9860va
		9875va	9895va	11630va	11685va
		11745va	11840am	12050va	12055va
1800-1900	Saudi Arabia BC Svc	9705eu	9720eu		
1800-1900	Sierra Leone, SLBS	3316do			
1800-1900	Tanzania	5985af	9684af	11765af	
1800-1900	USA, CSMonitor Boston	9425pa	17510na	17725eu	21545af
1800-1900 sa	USA, CSMonitor Boston	17555am			
1800-1900	USA, KTBN Salt Lake City	15590			
1800-1900	USA, VOA Washington	6040eu	9700eu	9760me	15205me
		6040eu	9575af	9700eu	9760me
		11920af	15205me	15410af	15445
		15580af	17650af	17800af	19261as
		21625af			
1800-1900	USA, WHRI Noblesville	13760na	17830sa		
1800-1900	USA, WINB Red Lion, Penn.	15295eu			
1800-1900	USA, WJCR Upton, Kentucky		7490na		
1800-1900	USA, WMLK Bethel, Penna.	9465eu			
1800-1900	USA, WWCR Nashville	15690na	17525na		
1800-1900	USA, WYFR Okeechobee, FL		21500va		
1800-1900	Zambia,Radio Zambia Int'l	9505af	11880af	17895af	
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	Finland, YLE	6120eu	9730af	11755af	
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	12095eu	15070eu
		15400af	17880af	21660af	
1830-1900	Yugoslavia, Radio Federal	6100eu	15140af		
1833-1900	Ivory Coast, Abidjan	11920af			
1840-1850 mtwhfa	Greece, Voice of	11645af	12105af	15650af	
1840-1850 mtwhfa	Venezuela, Radio Nacional	9540om			
1845-1900	Ghana B'casting Corp.	6130af			
1845-1900	Guinea, RTV Conarky	4900af	7125af		
1845-1900 s	Mali, RTV Mali	4783do	4835do	5995do	7285do
1845-1900	Swaziland, TWR Swaziland	3200af			
1850-1900 smtwhf	New Zealand, RNZi	15120pa			

1900 UTC [3:00 PM EDT/12:00 PM PDT]

1900-1915 mtwhfa	Greece, Voice of	7450eu	9395eu		
1900-1915	Tanzania	5985af	9684af	11765af	
1900-1930 mtwhf	Canada, RCI Montreal	13670me	15260me	17820me	
1900-1930	Ivory Coast, Abidjan	11920af			
1900-1930	Japan NHK	9505am	9640am	9645au	11850af
1900-1930 s	Lebanon, King of Hope	11530me			
1900-1930 a,s	Norway	17860va	21705va		
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 BuenosAires	15345eu			
1900-2000	Australia	5995as	6060as	6080pa	7240as
		9580as	9860as	11910as	12000as
		13605as	13755as		
1900-2000	Bahrain Broadcasting Svc	6010me			
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, Radio Beijing	6955af	9440af		
1900-2000	Cook Islands	11760pa			
1900-2000	Costa Rica, RFPI	13630am	15030am	21465am	
1900-2000	Ecuador,HCJB Quito	15270eu	17790eu	21455eu	
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	Netherlands	6020af	9605af	21515af	21590af
1900-2000 smtwhf	New Zealand, RNZi	15120pa			
1900-2000	Nigeria	3326do	4990do		
1900-2000	Nigeria, Voice of	7255af			
1900-2000	Russia, Radio Moscow	7170eu	7330eu	9540va	9685va
		9710va	9720va	9725va	9765va
		9795va	9855va	9860va	9875va
		9895va	11630va	11685va	11840am
		12050va	12055va	12060va	
1900-2000	Saudi Arabia BC Svc	9705eu	9720eu		
1900-2000	Sierra Leone, SLBS	3316do			
1900-2000	Spanish National Radio	6130as	9675eu	9685af	9875eu
1900-2000	Sri Lanka B'casting Corp.	9720eu	15120eu		
1900-2000	Swaziland, TWR Swaziland	3200af	3240af		
1900-2000	USA, CSMonitor Boston	9425pa	17510na	17725eu	21545af
1900-2000 sa	USA, CSMonitor Boston	17555am			
1900-2000	USA, KTBN Salt Lake City	15590am			
1900-2000	USA, KVOH Los Angeles	17775sa			
1900-2000	USA, VOA Washington	6040eu	9525as	9575af	9700eu
		9760eu	11710eu	11870as	11920af
		15180au	15205eu	15410af	15445af
		15495af	15580af	17800af	19261af
1900-2000	USA, WHRI Noblesville	13760	17830		
1900-2000	USA, WINB Red Lion, Penn.	15295eu			
1900-2000	USA, WJCR Upton, Kentucky		7490na		
1900-2000	USA, WMLK Bethel, Penna.	9465eu			
1900-2000	USA, WWCR Nashville	15690am	17525am		
1900-2000	USA, WYFR Okeechobee, F	15355eu	21615af		
1900-2000	Zambia,Radio Zambia Int'l	9505af	11880af	17895af	
1910-1915	Botswana, Gaborone	3356af			
1920-1930	Cameroon CRTV Beau	3970do			
1930-1940 irr	Burkina Faso	4815af	7230af		
1930-2000	Czechoslovakia	6055eu	7345eu		
1930-2000	Iran, Islamic Republic	6030eu	9022eu	15260eu	
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	Romania, R.Romania Int'l	5990eu	6105eu	7145eu	7195eu
		9690eu			
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	9560eu	11680af	11735af	
1945-2000	Korea World News	6135as			
1950-2000	Sudan Nat'l B'casting Cor	9540do	9550do	11635do	

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Pam O'Toole is a regular presenter of BBC's South Asia Survey.

2000 UTC [4:00 PM EDT/1:00 PM PDT]

2000-2005 smtwhf	Canada, CBC	9625do			
2000-2010 tent	Croatian Radio, Zagreb	17272na			
2000-2010 mtwhf	Kenya, Voice of	4935do			
2000-2010 w	Malawi B'casting Corp.	3381do			
2000-2010 smwha	Mongolia, Ulaanbaatar	11850eu	12015eu		
2000-2030	Bulgaria, Radio Sofia	9560eu	11680af	11735af	
2000-2030	Canada, RCI Montreal	5995eu	7235eu	11945eu	13650eu
		15140eu	15325eu	17875eu	
2000-2030	Iran, Islamic Republic	6030eu	9022eu	15260eu	
2000-2030	Israel, Kol Israel	7465am	9435am	11587am	11605am
		11675eu	17575af		
2000-2030	Netherlands	6020af	9605af	21515af	21590af
2000-2030	Nigeria, Voice of	7255af			
2000-2030 mtwhf	Portugal	11740eu			
2000-2030	Romania, R.Romania Int'l	5990eu	6105eu	7145eu	7195eu
		9690eu			
2000-2030	Swiss Radio Int'l	9885eu			
2000-2030	United Kingdom,BBC London	3255af	3955eu	5975eu	6005af
		6180eu	6190af	6195eu	7160me
		7180pa	7325eu	9410eu	9600as
		9630af	11750pa	12095eu	15070eu
		15260sa	15340pa	15400af	17880af
		21660af			
2000-2030	Vatican Radio	11625af	15090af	17730af	
2000-2050	N.Korea, Radio Pyongyang	6576me	9325	9345eu	9640eu
		9977af			
2000-2100	Australia	5995as	6060as	6080as	7240as
		9580pa	9860as	11910as	12000as
		13605as	13755as		
2000-2100	Bahrain Broadcasting Svc	6010me			
2000-2100	Canada, CFCX Montreal	6005do			
2000-2100	Canada, CFRX Toronto	6070do			
2000-2100	Canada, CFVP Calgary	6030do			
2000-2100	Canada, CHNX Halifax	6130do			
2000-2100	Canada, CKZU Vancouver	6160do			
2000-2100	China, Radio Beijing	9440af	9920eu	11500eu	11715af
		15170af			
2000-2100	Cook Islands	11760pa			
2000-2100	Costa Rica, RFPI	13630na	15030na	21465am	
2000-2100	Cuba, RHC Havana	9760eu	17705eu		
2000-2100 sa	Eq.Guinea, R.East Africa	7190af			
2000-2100	Ghana, Radio 1, Accra	4915do			
2000-2100	Ghana, Radio 2, Accra	7295do			
2000-2100	India, All India Radio	11935af	15080af		
2000-2100	Indonesia, Voice of	7125as	9675as	11752as	11785as
2000-2100	Kuwait, Radio Kuwait	13620na			
2000-2100	Lebanon, King of Hope	6280me			
2000-2100	Luxembourg, RTL	15350va			
2000-2100 smtwhf	New Zealand, RNZI	15120pa			
2000-2100	Nigeria	3326do	4990do		
2000-2100	Russia, Radio Moscow	5950eu	5960eu	6175eu	7170va
		7240va	7255va	7330va	7340va
		7390va	9450va	9710va	9720va
		9725va	9765va	9795va	9855va
		9860va	9865va	9895va	11685va
		11840am	12050va	12055va	12060va
		13670va	15425va	21480va	
2000-2100 tes	Saipan, KFBS Saipan	9475af			
2000-2100	Saudi Arabia BC Svc	9705eu	9720eu		
2000-2100 mtwhf	Senegal (multilingual)	7210do			
2000-2100	Sierra Leone, SLBS	3316do			
2000-2100	Swaziland, TWR Swaziland	3200af	3240af		
2000-2100	Turkey, Voice of	9445eu			
2000-2100	USA, CSMonitor Boston	9455as	13625pa	15665eu	17510am
		17555sa			
2000-2100	USA, KTBN Salt Lake City	15590am			
2000-2100	USA, KVOH Los Angeles	17775sa			
2000-2100	USA, VOA Washington	6040eu	9700eu	9760eu	11710eu
		15160eu	15205eu	15410af	15445af
		15494af	15580af	17800af	19261af
		21485af	21625af		
2000-2100	USA, WHRI Noblesville	13760af	17830sa		
2000-2100	USA, WJCR Upton, Kentucky		7490na		
2000-2100	USA, WMLK Bethel, Penna.	9465eu			
2000-2100	USA, WWCR Nashville	15690na	17525na		
2000-2100	USA, WYFR Okeechobee, FL		7355eu	9590	15566eu
		17750af	21525eu		
2000-2100 s	Zambia,Radio Zambia Int'l	9505af	11880af	17895af	
2005-2100 s	Canada, CBC	9625do			
2005-2100	Syria, Radio Damascus	12085na	15095na		
2010-2100 sa	Kenya, Voice of	4935do			
2015-2030	Benin, Voice of the Rev.	4870af	5025af		
2025-2045	Italy, RAI, Rome	7235me	9575me	11800me	
2030-2035	Latvia, 1st Programme	5935do			
2030-2100	Canada, RCI Montreal	6010eu	7230eu	9650eu	11945eu
		13650eu	15140eu	15325as	17820
		17875as			
2030-2100	Egypt, Radio Cairo	15375af			
2030-2100 mh	Estonia, Tallinn	5925eu	9560eu		
2030-2100	IRRS Milan, Italy	7125eu			
2030-2100	Korea, Seoul	6480eu	7550af	15575eu	
2030-2100	Polish Radio Warsaw	6095eu	6135eu	7145eu	7270eu
		9525eu			
2030-2100	Sweden	6065va	9655va	17730as	
2030-2100	United Kingdom,BBC London	3255af	3955eu	5975ca	6005af
		6040	6180eu	6190af	6195eu
		7180pa	7325eu	9410eu	11750pa
		12095eu	15070eu	15260sa	15340pa
		15400af	15495	15580as	17800pa
		21485			
2030-2100	Vietnam, Voice of	9840eu	12020eu	15010eu	
2045-2100	Korea World News	5975as			
2050-2100	Vatican Radio	5885eu	7250eu		

2100 UTC [5:00 PM EDT/2:00 PM PDT]

2100-2105 smtwhf	Canada, CBC	9625do			
2100-2105	Syria, Radio Damascus	12085na	15095na		
2100-2106	Bahrain Broadcasting Svc	6010me			
2100-2110	Malawi B'casting Corp.	3381do			
2100-2110	Vatican Radio	5935eu	7250eu		
2100-2110	Vatican Radio	5885eu	7250eu		
2100-2115	Swaziland, TWR Swaziland	3240af			
2100-2125	Belgium, BRT Brussels	5910eu	9905eu	15515af	
2100-2125	Polish Radio Warsaw	6095eu	6135eu	7145eu	7270eu
		9525eu			
2100-2130	China, Radio Beijing	11715af	15170af		
2100-2130	Czechoslovakia	5930eu	6055eu	7345eu	9605eu
2100-2130	Korea, Seoul	6480eu	7550af	15575eu	
2100-2130	Lebanon, King of Hope	6280me			
2100-2130 smtwhf	New Zealand, RNZI	15120pa			
2100-2130 as	Norway	17735va	21705va		
2100-2130 as	Norway	9590eu			
2100-2130 mtwhf	Portugal	15250af			
2100-2130	Romania, R.Romania Int'l	5990eu	6105eu	7145eu	7195eu
2100-2130	Sweden	6065va	9655va	17730as	
2100-2130	United Kingdom,BBC London	3255af	3955eu	5975ca	6005af
		6180eu	6195as	7325eu	9410eu
		9590na	11750pa	12095eu	15070na
		15260sa	15340pa	15400af	
2100-2145	Yugoslavia, Radio Federal	6100eu	9505eu		
2100-2150	Germany,Deutsche Welle	6185eu	9670eu	9765eu	11785eu
2100-2200	Angola, R. Nacional	3355af	9535af		
2100-2200	Australia	5995as	6060as	6080as	11720as
		11880as	13705as		
2100-2200	Canada, CFCX Montreal	6005do			
2100-2200	Canada, CFRX Toronto	6070do			
2100-2200	Canada, CFVP Calgary	6030do			
2100-2200	Canada, CHNX Halifax	6130do			
2100-2200	Canada, CKZU Vancouver	6160do			
2100-2200	China, Radio Beijing	9920eu	11500eu		
2100-2200	Cook Islands	11760pa			
2100-2200	Costa Rica, RFPI	13630na	15030na	21465am	
2100-2200	Egypt, Radio Cairo	15375af			
2100-2200 sa	Eq.Guinea, R.East Africa	7190af			
2100-2200	Ghana, Radio 1, Accra	4915do			
2100-2200	Ghana, Radio 2, Accra	7295do			
2100-2200	Hungary, Radio Budapest	6110eu	9835eu	11910eu	
2100-2200	India, All India Radio	7412eu	9910eu	9950eu	11620eu
		11715eu	15265eu		

2100 UTC cont'd

2100-2200	IRRS Milan, Italy	7125eu			
2100-2200	Japan NHK	11815me	11840eu	15430eu	17810as
		17890as			
2100-2200	Luxembourg, RTL	15350va			
2100-2200	Nigeria	3326do	4990do		
2100-2200	Russia, Radio Moscow	5950eu	5960eu	6045am	6055eu
		6175eu	7115am	7150am	7170va
		7185va	7240va	7255va	7295va
		7330va	7340va	9520va	9720va
		9725va	9755va	9765va	9790va
		9855va	9860va	9870va	9890va
		12050va	12055va	15130va	15425va
		17605va	17655va	17665va	17690na
		17700va	17720va	21480va	
2100-2200	Sierra Leone, SLBS	3316do			
2100-2200	Spanish National Radio	9875eu			
2100-2200	Sri Lanka B'casting Corp.	15120as			
2100-2200	USA, CSMonitor Boston	9455as	13625pa	15665eu	17510na
		17555sa			
2100-2200	USA, KTBN Salt Lake City	15590			
2100-2200	USA, KVOH Los Angeles	17775sa			
2100-2200	USA, VOA Washington	6040eu	9700eu	9760me	11710me
		11870pa	11960me	15185pa	15205me
		15410af	15495af	15580af	17735pa
		17800af	17895me	19261af	21485af
		21625af			
2100-2200	USA, WHRI Noblesville	13760	17830		
2100-2200	USA, WJCR Upton, Kentucky		7490na		
2100-2200	USA, WMLK Bethel, Penna.	9465eu			
2100-2200	USA, WWCR Nashville	15690	17525am		
2100-2200	USA, WYFR Okeechobee, FL		7355eu	15566eu	17750af
		21525eu			
2100-2200	Zambia,Radio Zambia Int'l	9505af	11880af	17895af	
2103-2110 tent	Croatian Radio, Zagreb	7240eu	9830eu		
2105-2200 s	Canada, CBC	9625do			
2110-2200	Syria, Radio Damascus	12085na	15095na		
2115-2130 s	Indonesia, R. Republik	6070do			
2115-2130 mtwhf	United Kingdom,BBC Carib.	15390ca	17715ca		
2115-2200	Egypt, Radio Cairo	9900eu			
2130-2145	Cameroon CRTV Beau	3970do			
2130-2200	Austria, ORF Vienna	5945eu	6155eu	9870af	
2130-2200	Canada, RCI Montreal	11880af	15150af	17820af	
2130-2200	Ecuador,HCJB Quito	15270eu	17790eu	21455eu	
2130-2200	Finland, YLE	6120af	9730eu	11755as	
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	9675eu	9710eu		
2130-2200	New Zealand, RNZI	17770pa			
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	
2140-2150 mtwhfa	Venezuela, Radio Nacional	9540am			
2145-2200	Bulgaria, Radio Sofia	9595am	9700na	11660eu	11680na
		11720eu	11950na		
2145-2200	Cameroon CRTV Yaounde	4850do			

2200 UTC [6:00 PM EDT/3:00 PM PDT]

2200-2210	Cameroon CRTV Bafoussam		4000do	
2200-2210	Syria, Radio Damascus	12085na	15095na	
2200-2215	Cameroon CRTV Yaounde	4850na		
2200-2215	Zambia,Radio Zambia Int'l	9505af	11880af	17895af
2200-2218	Congo, RTV Congolaise	4765do	5985do	
2200-2225	Italy, RAI, Rome	5990as	9710as	11800as
2200-2230	Albania, Radio Tirana	9760eu	11825eu	
2200-2230	China, Radio Beijing	3985eu		
2200-2230	Czechoslovakia	5930eu	6055eu	7345eu 9605eu
2200-2230 a	Indonesia,Radio Republik	3385do	4805do	
2200-2230	Swiss Radio Int'l, Berne	9885eu		
2200-2230 s	USA, KGEI San Francisco	15280sa	17750	
2200-2230	USA, VOA Washington	9530eu	11905me	11960me 15225me
		15445me	17885eu	
2200-2245	Egypt, Radio Cairo	9900eu		
2200-2245	USA, WINB Red Lion, Penn.	15185	15195	
2200-2300	Australia	11720as	11880as	13705as 15160as
		15320as	15365as	17795pa
2200-2300	Bulgaria, Radio Sofia	9595am	9700am	11660eu 11680na
		11720eu	11950na	
2200-2300 mtwhfa	Canada, CBC	9625do		
2200-2300	Canada, CFCX Montreal	6005do		
2200-2300	Canada, CFRX Toronto	6070do		
2200-2300	Canada, CFVP Calgary	6030do		
2200-2300	Canada, CHNX Halifax	6130do		
2200-2300	Canada, CKZU Vancouver	6160do		
2200-2300	Canada, RCI Montreal	5995eu	6162eu	7180eu 9760eu
		11705eu	11945eu	13650eu 15325eu
2200-2300	China, Radio Beijing	7170eu	9880eu	
2200-2300	Cook Islands	11760pa		
2200-2300	Costa Rica, RFPI	13630ca	15030ca	21465am
2200-2300	Cuba, RHC Havana	7215va	9620va	
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	6045am	7115am	7135va 7150am
		7185va	7240va	7255va 7295va
		7330va	9520va	9530va 9725va
		9765va	9790va	9860va 9870va
		12045va	12050va	12055va 15130va
		15425va	17570na	17655va 17665va
		17700va	17720va	17890va 21480va
		21690va	21790va	
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	7185eu	9445na	11895me
2200-2300	UAE Radio Abu Dhabi	9605na	11965na	13605na
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	15590		
2200-2300	USA, VOA Washington	7120as	9770as	11760as 15185au
		15290au	15305au	17735au 17820au
2200-2300	USA, WHRI Noblesville	13760na	17830sa	
2200-2300	USA, WJCR Upton, Kentucky		7490na	
2200-2300	USA, WRNO New Orleans	15420na		
2200-2300	USA, WWCR Nashville	12160na	15690na	
2200-2300	USA, WYFR Okeechobee, FL		17750eu	21525eu
2230-2300 mtwhf	Congo, RTV Congolaise	4765do		
2230-2300	Israel, Kol Israel	7465am	9435am	11585am 11605am
		11675sa	17575eu	
2230-2300	Sweden	6065eu		
2230-2300	USA, VOA Washington	9530eu	11905me	11960me 17885me
2240-2250 smtwhf	Greece, Voice of	11645au		
2245-2300	USA, WINB Red Lion, Penn.	15145eu		
2245-2300	Vatican Radio	9600au	9845au	11830au

English language

shortwave guide

2300 UTC [7:00 PM EDT/4:00 PM PDT]

FREQUENCIES

2300-0000	Australia	11720as	11880as	15160as	15320as
		15365as	17795as		
2300-0000	Bulgaria, Radio Sofia	9595am	9700am	11660eu	11680na
		11720eu	11950na	17825na	
2300-0000	Canada, CFCX Montreal	6005do			
2300-0000	Canada, CFRX Toronto	6070do			
2300-0000	Canada, CFVP Calgary	6030do			
2300-0000	Canada, CHNX Halifax	6130do			
2300-0000	Canada, CKZU Vancouver	6160do			
2300-0000 as	Canada, RCI Montreal	9535sa	11940sa		
2300-0000	Cook Islands	11760pa			
2300-0000	Costa Rica, AWR	9725ca	11870ca		
2300-0000	Costa Rica, RFPI	13630na	15030na	21465am	
2300-0000	Guam, KSDA Guam	15610as			
2300-0000	India, All India Radio	9910as	11715as	11745as	15110as
		15145as	17830as		
2300-0000	Japan NHK	11735eu	11815am	15195as	15430am
		17810pa			
2300-0000	Luxembourg, RTL	15350va			
2300-0000 smtwha	Malaysia, RTM Radio 4	7295do			
2300-0000	New Zealand, RNZI	17770pa			
2300-0000	Russia, Radio Moscow	6000am	6045am	7110va	7115am
		7135va	7150am	7255va	7295va
		7330va	7390va	9625va	9715va
		9725va	9790va	9810va	9870va
		9905va	12045va	12050va	12055va
		15130va	15350va	15420va	15425va
		17610va	17655va	17665va	17700va
		17720va	17775va	17890va	21480va
		21690va	21790va		
2300-0000	Sierra Leone, SLBS	3316do			
2300-0000	Singapore, SBC1	5010do	5052do	11940do	
2300-0000	South Africa, Radio Orion	4810af			
2300-0000	Thailand	4830as	9655as	11905as	
2300-0000	UAE Radio Abu Dhabi	9605na	11965na	13605na	
2300-0000	Ukraine, Kiev	5960eu	6020eu	7380eu	9785eu
2300-0000	USA, CSMonitor Boston	9465na	13625as	15405af	15665eu
		17555af			
2300-0000	USA, KTBN Salt Lake City	15590na			
2300-0000	USA, VOA Washington	7120as	9770as	11760au	15185au
		15290au	15305as	17735as	17820as
		9530me	11905me	11960eu	17885me
2300-0000	USA, WHRI Noblesville	9495na	13760sa		
2300-0000	USA, WINB Red Lion, Penn.	15145eu			
2300-0000	USA, WJCR Upton, Kentucky		7490na		
2300-0000	USA, WRNO New Orleans	7355na			
2300-0000	USA, WWCR Nashville	12160na	15690		
2300-2305	Ghana, Radio 1, Accra	4915do			
2300-2305	Ghana, Radio 2, Accra	7295do			
2300-2330	Canada, RCI Montreal	9535sa	9755na	11730na	11940sa
2300-2330	Lithuania, Radio Vilnius	7400na	9870am	17605na	17690na
2300-2330 as	Norway	11795am			
2300-2330	United Kingdom,BBC London	5975na	6175na	6195as	7145as
		9410eu	9570pa	9590na	9915sa
		11750sa	11945as	11955as	12095na
		15070na	15260sa	15340pa	15400af
2300-2350	N.Korea, Radio Pyongyang	11700na	13650na		
2300-2350	Turkey, Ankara	9445na			
2315-0000 tent	Iraq, Radio Baghdad	11945na	17740sa		
2330-0000 a	Colombia, R.Nacional	11822.5	17865am		
2330-0000 m	Sri Lanka B'Casting Svc	15425am			
2330-0000	United Kingdom,BBC London	5975na	6175na	6195as	7145as
		7325na	9570pa	9590na	9915sa
		11750sa	11945as	11955as	12095na
		15070na	15260sa	17830as	
2330-0000	Vietnam, Voice of	9840as	12020as	15010as	
2330-2355	Belgium, BRT Brussels	9930na	13710na		
2335-2345 smtwhf	Greece, Voice of	9425sa	11645sa	12105sa	

SELECTED PROGRAMS

Sundays

2300 KSDA, Guam: Music Scrapbook. Details unavailable at press time.
2305 BBC: World Business Review. The previous week's news and upcoming events.
2315 BBC: Music With Matthew. Brian Matthew with classical music selections.
2315 KSDA, Guam: Bible in Living Sound. Dramatized Bible stories.
2330 KSDA, Guam: Voice of Prophecy. See S 0030.

Mondays

2300 KSDA, Guam: Music Scrapbook. See S 2300.
2305 BBC: World Business Report. The latest news from the markets worldwide.
2315 BBC: Talks. John Turtle's "The Learning World" examines education issues (through June 29th).
2315 KSDA, Guam: Bible in Living Sound. See S 2315.
2330 BBC: Multitrack 1: Top 20. Tim Smith presents the smash singles on the UK pop music charts.
2330 KSDA, Guam: Voice of Prophecy. See S 0030.

Tuesdays

2300 KSDA, Guam: Music Scrapbook. See S 2300.
2305 BBC: World Business Report. See M 2305.
2315 BBC: Concert Hall. See S 1515.
2315 KSDA, Guam: Bible in Living Sound. See S 2315.
2330 KSDA, Guam: Voice of Prophecy. See S 0030.

Wednesdays

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 contests.

Thursdays

2300 KSDA, Guam: Music Scrapbook. See S 2300
2305 BBC: World Business Report. See M 2305.
2315 BBC: Music Review. News and views from the world of classical music.
2315 KSDA, Guam: Bible in Living Sound. See S 2315.
2330 KSDA, Guam: Voice of Prophecy. See S 0030.

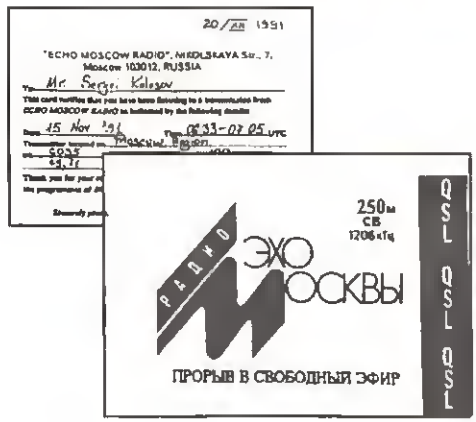
Fridays

2300 KSDA, Guam: Music Scrapbook. See S 2300.
2305 BBC: World Business Report. See M 2305.
2315 BBC: Worldbrief. A roundup of the week's news headlines and developments.
2315 KSDA, Guam: Bible in Living Sound. See S 2315.
2330 BBC: Multitrack 3. News and releases from the British alternative music scene.
2330 KSDA, Guam: Voice of Prophecy. See S 0030.

Saturdays

2300 KSDA, Guam: Micronesia Snapshots. See A 1600.
2305 BBC: Words Of Faith. See S 0309.
2310 BBC: Book Choice. See H 0140.
2315 BBC: A Jolly Good Show. See T 1515.
2315 KSDA, Guam: Focus on Living. See A 0215.
2330 KSDA, Guam: DX Asiawaves. See S 0215.
2345 KSDA, Guam: Probe. See S 0245.

This Radio Moscow QSL was received by Sergei Kolesov of St. Petersburg, Russia



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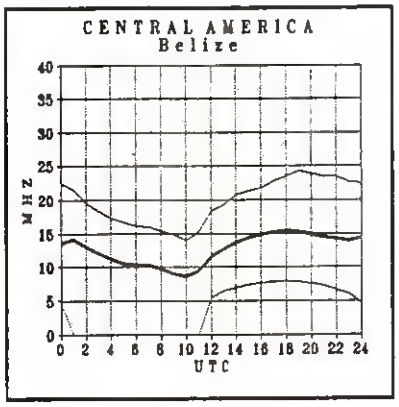
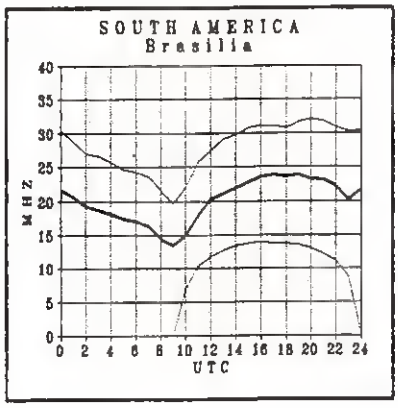
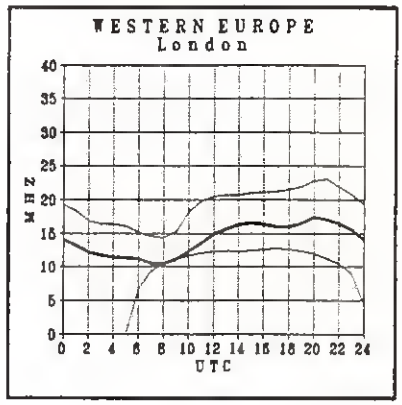
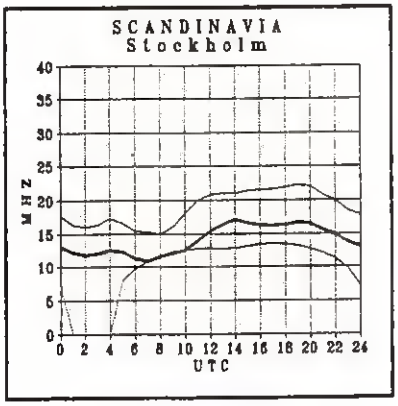
Propagation conditions: Eastern United States

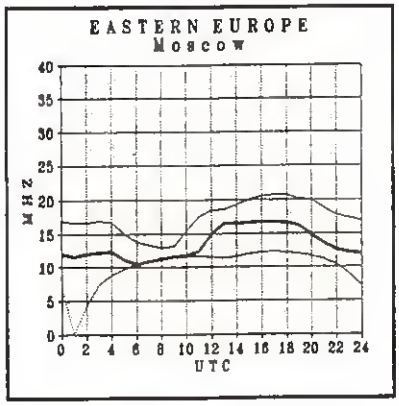
How to use the propagation charts: Propagation charts can be an invaluable aid to the DXer in determining which frequencies are likely to be open at a given time. To use the propagation charts, choose those for your location. Then look for the one most closely describing the geographic location of the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

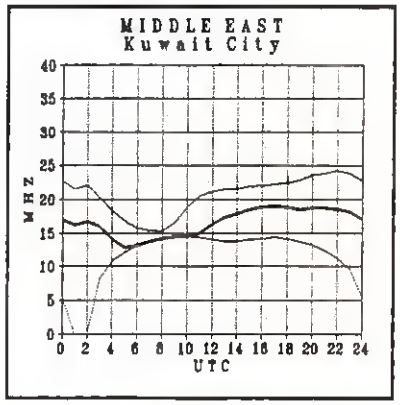


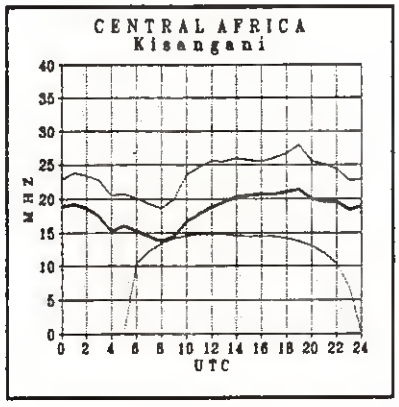


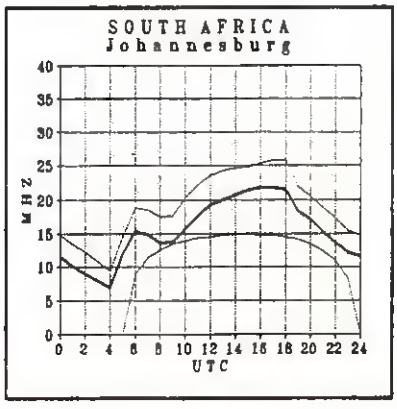


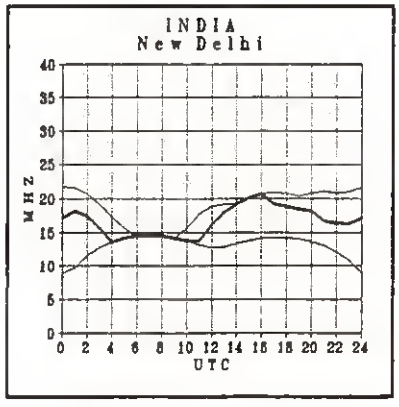


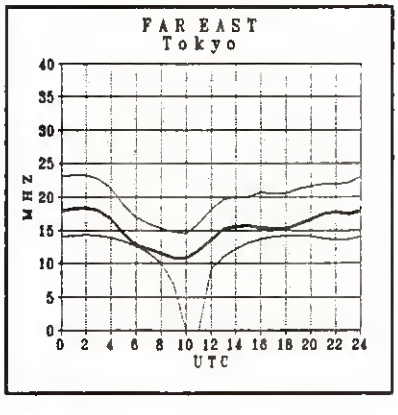


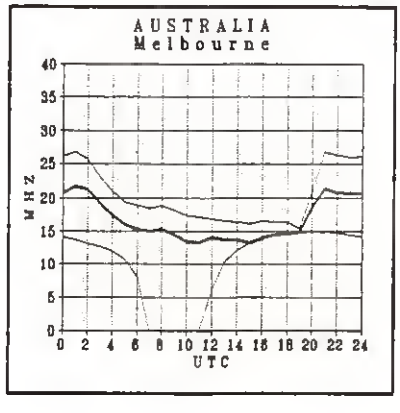


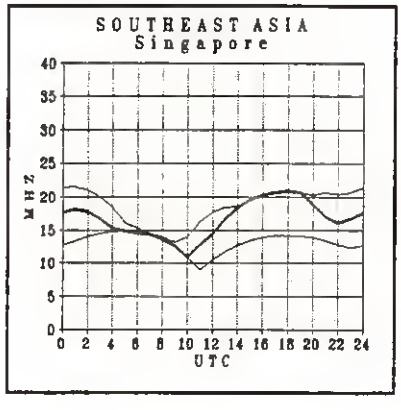






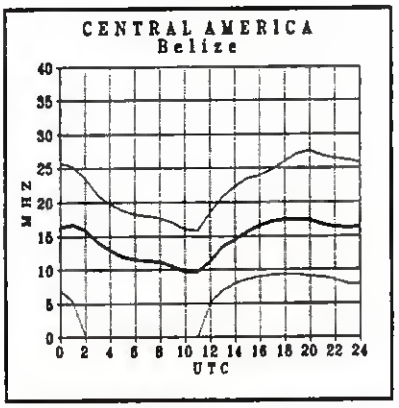


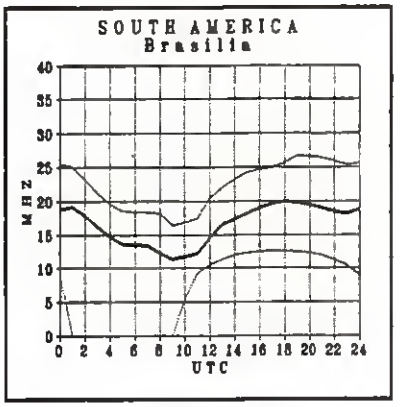


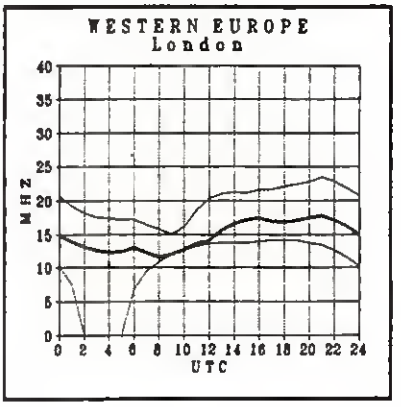


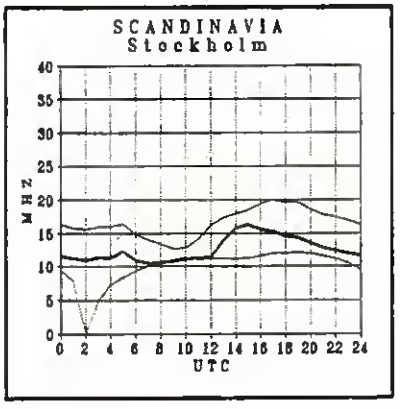
Propagation Conditions: Western United States

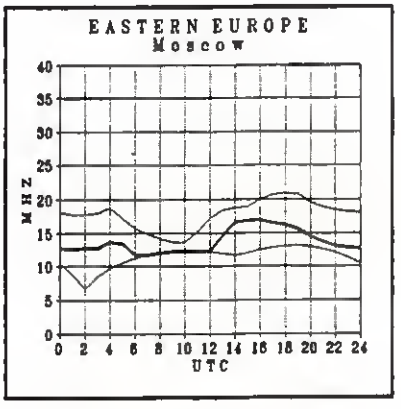
Once you've located the correct charts, look along the horizontal axis of the graph for the time you are listening. The top line of the graph shows the highest, or maximum usable frequency (MUF), the heavy middle line is the frequency for best reception, or optimum working frequency (OWF), and finally, the bottom line is the lowest usable frequency (LUF). The strongest signal will be found along the heavy middle line.

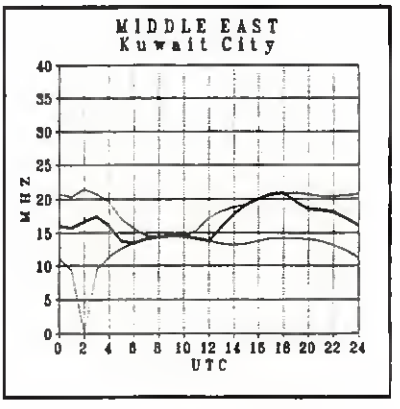


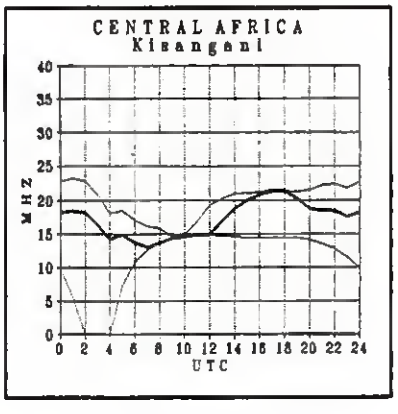


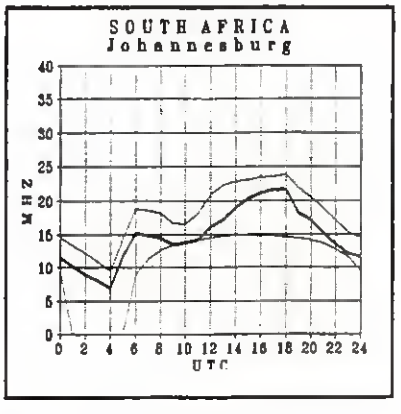


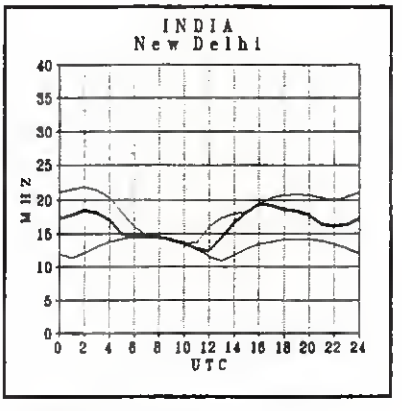


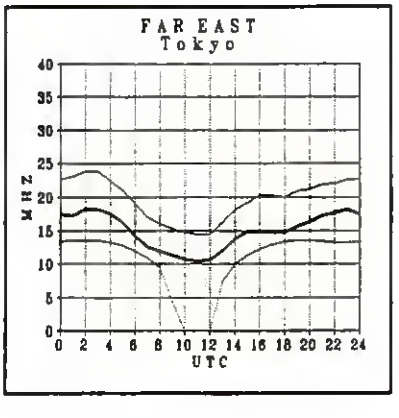


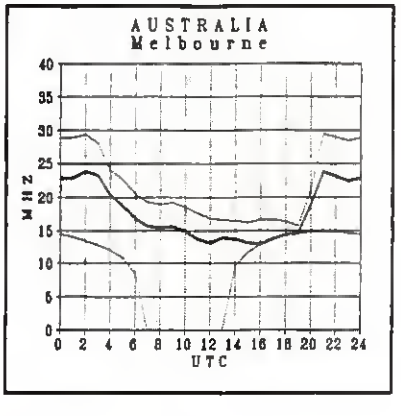


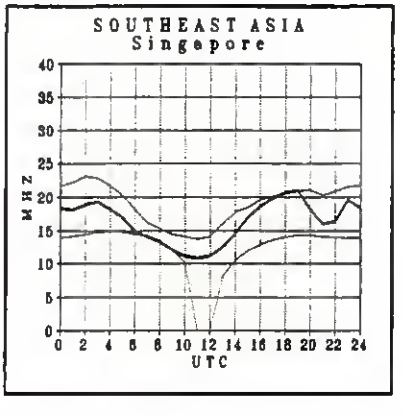












what's new?

Larry Miller

Radio Shack 2-meter Antenna

Radio Shack is now offering a magnetic mount amateur radio antenna that operates in the 2-meter ham band (144-148 MHz). The antenna is "ideally suited" for use with the recently introduced Realistic HTX-202 2-meter VHF-FM handheld transceiver. The antenna features a sleek, black tapered 5/8 wave stainless whip that provides 3 dB of gain. The antenna can handle over 100 watts.

The base contains a two-pole magnet capable of withstanding 85 mph winds. The molded covers are made of black weather-resistant ABS plastic. The antenna comes with 16 feet of low-loss RG-58 coaxial cable and a PL-259 connector. The Radio Shack 2-meter amateur antenna sells for $37.95.

Quick and Easy

MFJ has released a new multi-purpose instrument for tuning mobile and home antennas alike. The MFJ-247 is the perfect answer for "quick and easy" tuning of HF beams, verticals, dipoles, and mobile antennas for lowest SWR at your desired frequency.

The fully self-contained unit shows your antenna's SWR over the entire band and works without a transceiver, SWR bridge or other additional equipment. You simply plug your antenna into the '247's top SO-239 socket, set the unit's readout to the frequency you wish to operate and read the SWR directly on the LCD readout. The '247 also has a separate BNC input connector for use as a high accuracy frequency counter!

The MFJ 247 is available for $189.95 from MFJ Enterprises, Inc., P.O. Box 494, Mississippi State, Mississippi 39762 or call 1-800-323-5869. Tell them that you read about it in *Monitoring Times*.

Stealth Antenna

Imagine, if you will, a UHF/VHF antenna for your car that is only 3.5 inches square and 0.003 inches thick. So unobtrusive is the antenna that it looks like a decal. According to the manufacturer, j•Com, the tiny Stealth Antenna outperforms a quarter wave whip under many circumstances.

Best of all, it can be installed without drilling holes, or risking paint scratches from magnets or suction cups. Once installed, it is inside the vehicle, protected from the elements, never in the way of a car wash or low garage.

The Stealth Antenna is available in models for 146 MHz, 220 MHz, or 440 MHz. The standard model can handle 50 watts of input power and costs $59.95 including shipping. A high-power version capable of handling 110 watts costs $69.95. Sixteen feet of RG-58/U coax is included in the price.

For further information, contact your local dealer or j•Com at Box 194-MT, Ben Lomand, California 95005 or call 408-335-9120.

Synchronous Detection Kit

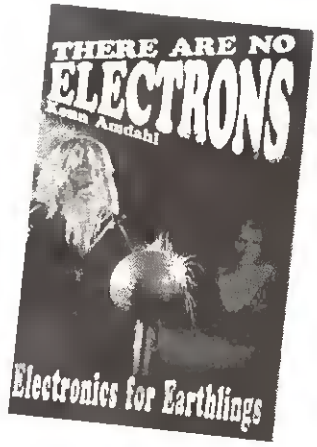
In a press release received at *Monitoring Times*, Steve Johnston of York, Pennsylvania, has announced that he is selling synchronous detection kits. The kits, say Johnston, are designed to be connected to mediumwave, shortwave, and amateur radio receivers.

As a means of demodulating amplitude-modulated signals, synchronous detection is thought to offer reduced distortion and better performance through fading conditions. In the case of Johnston's model, you can choose the sideband to be used for demodulation, allowing the user to avoid adjacent channel interference.

The cost for the kit is $139 or $199 for the assembled unit. For more information, send $3.00 to Steve Johnston, P.O. Box 3420-MT, York, PA 17402-0420.

One Super Book

If we had captioned this item, "New Introduction to Electronics Book," chances are you would have skipped it. Let's face it. Just about all of us have bought at least one introduction to electronics book in our life. I could only get through three pages of mine before falling into a deep sleep. That book, now sitting high on a dusty shelf above my desk, is a constant reminder of a deep, personal failure. I am incapable of learning electronics. On certain cold winter nights, I catch a glance of that book and I begin to doubt my very manhood.



Guitarist Kenn Amdahl had the same problem. He says that he nearly bored himself to death trying to learn electronics. "I read eighteen pounds of beginning electronics books and performed countless boring and unsuccessful experiments," says Amdahl. "The one rule that I learned is the one that says beginning books must be dull..."

Fortunately for us, he persisted and *There Are No Electrons* is the result. "I consider my lack of a Ph.D. in Electrical Engineering to be one of my soundest qualifications for writing. If you are completely ignorant about electronics," says Amdahl, "I am the guy for you."

Indeed, Amdahl is exquisitely successful in teaching basic electronics in ways that will fascinate and amaze but never bore you. And believe me, you have never heard electronics taught in a manner like this. The most accurate review came from "West Coast Review of Books" which said, "Opening this book is like falling down a scientific rabbit hole, an adventure in itself.

Your perspective on electronics is turned upside down, you gain insights in the most bizarre ways; and you'll find that they stay with you for a good long time. The inspired, informative silliness makes the book a pleasure to read. Thank you, Mr. Amdahl, thank you."

Our review reads: "Perhaps the best electronics book ever." If you'd like to learn about basic electronics but haven't been able to pull it off, get *There Are No Electrons*. Just trust us. Get the book.

It's $12.95 from Clearwater Publishing Company, P.O. Box 1153-MT, Arvada, Colorado 80001-1153. Add three bucks for book rate shipping. If you're embarrassed to admit that you don't know electronics, ask and the publisher may ship the book to you in a plain brown wrapper.

Grass Skirts and Great DX

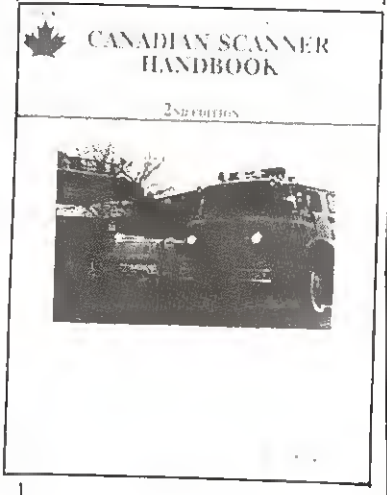
The sounds that you'll hear on one of Conversion Research's WR-3 Natural Receivers are, well, intriguing to say the least. The WR-3 (reviewed Feb '92) picks up VLF earth noises, a chorus of snaps, pops, whistles and chirps.

It turns out that Steve McGreavy, the man who has turned the hobby community on to this weird form of DX, also has more mainstream interests as well — medium wave DXing. During his trips to Hawaii, McGreevy heard, taped and catalogued an entire range of stations heard on the broadcast band in Hawaii.

During the evening, the band is literally cluttered with North Americans stations located on both sides of the continent. After 1500 UTC, however, these stations fade out and the band is wide open toward the west — Asia, Australia, New Zealand, the Pacific Islands and even the Middle East, if conditions are right.

From McGreevy's 50 hours of tape, he's edited down the best DX onto a cassette. Included are stations ranging from 560-KSFO San Francisco and 1520-WHAM in Rochester, New York to 1170-KJNP, North Pole, Alaska; 1590-XEVOZ, Mexico DF, Mexico; 1220-J458 Sao Paulo, Brazil, 724-2AP Apia, Western Samoa; 810-4YA Dunedin, New Zealand, 1440-BSKSA, Dammam, Saudi Arabia.... the list goes on and on.

The tape is $11 postpaid from Conversion Research, P.O. Box 535-MT, Descanso, California 91916 or call 619-445-8167.

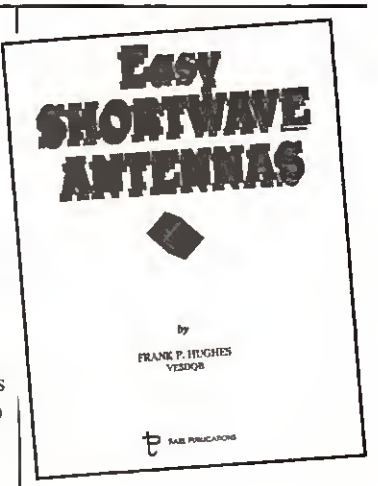


Canadian Scanner Handbook

As regular readers of *Monitoring Times'* What's New" column are aware, we're big fans of Brian Keegan's Canadian frequency directories. The second edition of *The Canadian Scanner Handbook*—definitely not a frequency guide—looks great, too. The covers features a dusky, full-color fire and ambulance scene and bills the book as "a comprehensive guide to communications monitoring in Canada."

Keegan is a scanner expert, no doubt, but the result is that from page one the book hits you like a punch in the stomach—then it's off like a runaway locomotive. The first topic covered in the "introduction" is "Systems," but within two paragraphs he has tackled simplex operations, two-frequency simplex, duplex systems and repeaters. Pages three through eight are dedicated to charts, including microwave assignments. Descriptions are sometimes sparse and the reasoning behind some statements is not given, leaving the reader to take Keegan at his word. Some lists are very limited.

Keegan's *Canadian Scanner Handbook* is an interesting work that undoubtedly provides lots of information — but it may leave your head spinning if you're a novice. Retailing for $25.95 plus $4.00 shipping and handling, it runs 104 pages. To order, write Canscan at P.O. Box 3009, Tecumseh Postal Station, Windsor, Ontario, Canada N8N 2M3. Tell them that you saw it in *MT*.



Easy Shortwave Antennas

Easy Shortwave Antennas is an excellent introduction to the world of "skywires." While the book does have the traditional "What is the Ionosphere"-type

sections, they compose a relatively minor portion of the book. In all, author Frank Hughes presents over 50 antenna designs that range from the traditional to the clever. One such project involves the use of burglar alarm window tape as an indoor antenna.

The designs are presented in an informal, easy-to-read manner that's sure to get you thinking "antennas." With the nice weather, it's a perfect time to layout and test one of these designs.

Easy Shortwave Antennas is available from your favorite radio dealer or from Tiara Publications for $9.95 plus $2.00 shipping and handling at P.O. Box 493-MT, Lake Geneva, Wisconsin 53147.

RTTY Datacard

The RTTY Datacard is an 8.5" x 11" laminated card that features Chuck Yarbrough's "Matrix Tuning Method." On one side of the card, the various modes of RTTY emission are defined and the Yarbrough Matrix (baud x shift) is explained. On the reverse side of the card is the actual tuning table. It lists baud rate and the various RTTY transmission methods falling under narrow, medium and wide shifts for that tuning rate and also summarizes the tuning method. (Please note that this is not a frequency guide.)

The RTTY Datacard is priced at $6.00 plus 50 cents shipping and handling from Tiare Publications, P.O. Box 493, Lake Geneva, Wisconsin 53147.

FM Atlas #14

The new 14th edition of Dr. Bruce Elving's revered *FM Atlas* is now available. The book features 94 pages of maps to help pinpoint some 7,250 FM stations (500 more than shown in the last edition!). Stations are also arranged by location and by frequency, and listings include program formats, stereo and technical data, station identifications and SCSubcarriers. A separate section covers FM translators and boosters.

This year's edition also features editorial matter on Digital Audio Broadcasting, plus articles on "Improving Your FM Reception," "SCS: From Muzak to Pornography" and more.

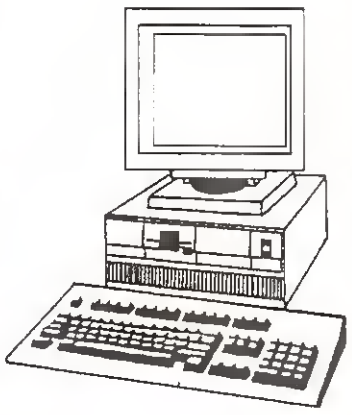
The 192-page *FM Atlas* is available for $10.95 per copy from your favorite radio dealer or from the publisher at Box 336, Dept. MT, Esko, Minnesota 55733-0336.

Scanner Computer Bulletin Board

The Bearcat Radio Club, publisher of *National Scanning Report* magazine, has opened a computer bulletin board. The board, which includes free access to certain levels, is available Monday through Fridays from 5:00 PM Eastern Time to 7:00 AM the following morning. On Saturdays and Sundays, the system is operational 24-hours a day. The system's phone number is 513-298-3663. Non-members are welcome to call.

There will be "round table" discussions with regularly scheduled guests where you can ask questions of some of the field's leading authorities. Members of the Bearcat Radio Club are able to access their copy of the magazine electronically, in advance of actual publication.

Other members can access the entire U.S. and Canadian Betty Bearcat Frequency Database for do-it-yourself custom frequency research — at no charge. The database also includes many unpublished frequencies. You can search for frequencies by city and state combinations or even look up particular services within that city. Other combinations are also possible. For more information, dial up the system or call 1-800-423-1331.



Grove Bulletin Board

Also newly accessible by bulletin board is Grove Enterprises/Monitoring Times. The Grove Bulletin Board is free of charge to all users, and is simple to use. New users have full privileges after filling out a simple questionnaire on their first call.

The system number is 1-704-837-7081; times are non-business hours, 5 pm to 8 am weekdays, 24 hrs. on weekends. Services available through the BBS will no doubt expand as needs become known, but a logical first use is for technical questions or orders for Grove products, "Ask Bob" questions, and letters to Monitoring Times or its columnists.

Grove/MT is also accessible by GEnie: Account #B.GROVE6 and CompuServe: Account #17051,112.

Catalogs of Interest

Three new catalogs have crossed our desk during the past 30 days. The first comes from **Antennas West** at 1500-MT North 150 West, Provo, Utah 84604. It's a handbook-size, 55-page newsprint "magazine" that's packed with product information written in Jim Stevens' easy-to-understand, "down-home" style. While most of the products are antenna oriented (as the company name implies), there is also an interesting section on solar power. The catalog is $1.00.

A company long-known for its devotion to alternative energy supplies is the **Real Goods Trading Company**. The most recent catalog is out and while there is still coverage of alternative energy sources of interest to radio enthusiasts, the focus appears to have shifted more toward mainline consumer goods with a "green" flair to them: "Orange Air Therapy" air freshener, solar showers and tick protection kits. There are still solar power items and it's still worth writing for a copy of the catalog. The address is 966 Mazzoni Street, Ukiah, California 95482. Tell them that *Monitoring Times* sent you.

Finally, we have the 1992 **Ameritron** catalog of linear amplifiers. A division of MFJ, Ameritron offers linear amplifiers from 600 watts to 2,625 dollars. Also included is transmit/receive switches for QSK operation, inrush current protectors, legal limit dummy loads, coax switches and more. To get a copy of the catalog, write Ameritron, 116 Willow Road, Department MT, Starkville, Mississippi 39759.

Window Mount Scanner Antenna

Radio Shack has become quite innovative recently. A new window mount for handheld scanner antennas is a case in point.

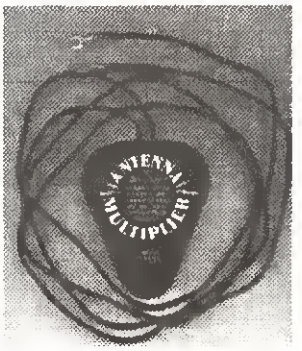
The model #20-022 ($9.95 from Radio Shack outlets) features suction cups on a rigid support which is equipped with a BNC connector to attach the handheld's rubber duckie; from

there, five feet of coaxial cable leads to the scanner's antenna socket.

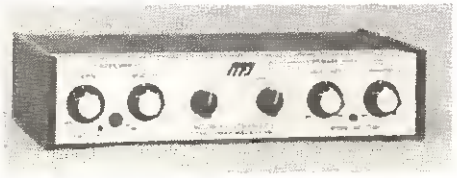
The antenna may be conveniently and temporarily stuck to the inside of the vehicle window or motel window for better reception than the scanner-mounted antenna can provide.

The MFJ-752C Signal Enhancer is available for $94.95 plus $4.50 UPS from Grove Enterprises and other MFJ dealers.

Herbal remedies, magic elixirs, tonics and...



Reviews



MFJ-752C Tunable Filter

The MFJ "Signal Enhancer" is a very effective way to externally clip pulse noise, tune out interfering audio and peak desirable signals, all between the external speaker jack and your earphones or add-on speaker.

Dressed in the traditional MFJ vinyl and ivory enclosure, the 752C has two separate adjustable filters, each consisting of a center frequency selector and a selectivity (bandwidth) control.

Rotary switches allow the additional selection of a pulse noise limiter for SSB and CW, and four choices of filter shapes: peak, notch, lowpass and highpass. The unit may be switched out of circuit so that the external speaker or headphones may be driven directly from the receiver without physically removing the Signal Enhancer.

Rear panel hardware accepts two switch-selected inputs and a choice of headphone or speaker output. A 9-18 volt DC power supply is required.

While the 752C takes getting used to, it really does work—especially considering that we are trying to remove the interference from the audio circuit well beyond where the receiver should have done it!

We found that the MFJ-752C Signal Enhancer provided substantial improvement in reception of voice, music and data, often when those signals were virtually buried in interference.

Haverhills' Antenna Multiplier

"Antenna Multiplier will not just enhance your TV reception, it also vastly improves AM/FM radio reception and brings in new stations on multiband and shortwave receivers...eliminate any outdoor antenna completely." So read the ad in a national magazine.

At only $29.95 plus $3.50 shipping from Haverhills of San Francisco (139 Townsend St., S.F., CA 94107), here was the answer to any DXer's dream: a heart-shaped receiving miracle that sits on a shelf or hangs from a drape and requires no power ("it gets its 'juice' right through your TV set," the ad promised). How could we resist?

Upon opening the package we discovered a 3-1/2" plastic casting sprouting two wires to be attached to a TV; a balun transformer is included for an F connector. "Allow two minutes for the picture to stabilize and gain clarity," advised the instructions (does this thing have to digest the signal first?).

Our first experiment was to connect it to a Kenwood R1000 general coverage receiver. Results weren't too impressive (surprise!), about 40-65 dB (7-10 S units) loss when compared to our random wire antenna. On shortwave, the loss was about 25 dB. Maybe it would work better at VHF and UHF; after all, its main pitch was TV enhancement!

Here again losses were significant, several dB worse than a single vertical element mounted even lower than the "Antenna Multiplier."

At least this nostrum comes with a 30 day unconditional refund, a privilege which we exercised with great haste. But perhaps we should have kept it; early Americana is hard to come by, and this relic claims patent number 579173—issued in 1897!

Bob Grove, WA4PYQ

The Standard AX-700

(The Standard AX-700 has maintained a low profile in the United States. Reader David Zantow, N9EWO, decided to try one out and we present his guest review this month)

Is it a scanner or a spectrum display unit (SDU)? Although the Standard AX-700 has been around for at least two years, it has received little attention in the American marketplace.

Measuring a compact 7"W x 3-1/8"H x 7"D and weighing 4-1/2 pounds, the 700 is wrapped in a metal—not plastic—cabinet with a bottom-mounted speaker, and is powered by an external 12 volt supply (nominally 1 amp current drain at 13.8 volts DC).

The unit is ideally suited for mobile installation, but no such provision is made; instead, a wire tilt bail suggests desktop placement.

Frequency coverage is 50-905 MHz, consistent with offshore designs that don't anticipate the U.S. 30-960 MHz band plan. Modes are more traditional: AM, FM narrow and FM wide.

Spectrum Display

A yellow, graphic, 3" LCD shows frequency as well as spectrum display ("Band Scope"). This latter feature is what makes the 700 truly unique. A one-megahertz swath of radio spectrum can be shown visually, registering strong signal "spikes" up to 500 kHz above and below the center (tuned-in) frequency. Weaker signals were not visible.

While one megahertz of spectrum is quite narrow in the VHF/UHF range where signals are spaced no closer than 15 kHz, it is adequate to watch for a signal whose approximate frequency is known.

The sweep rate is slow; it takes about two seconds for each sweep to register its information on the display. But a unique feature allows the user to dial in the individual "spike" on the screen and monitor that frequency.

A contrast control and two-level brightness adjustment allow the user to set viewing for his light-level requirement.

A Little Tech-Talk

While the 700 is intended to be used as a stand-alone scanner with spectrum display, it can be used also as a companion spectrum display unit ("panadaptor") with receivers equipped with an IF output above 50 MHz like the ICOM R71A (70 MHz). Unfortunately, the R71A does not have enough output on the IF connector to drive the SDU, so a preamplifier is necessary.

When hooked to the ICOM, the AX-700 can provide narrowband FM reception (present between 25 and 30 MHz) on an R71A not equipped with the EX257 FM adaptor.

Technical types (don't do this unless you're skilled!) may tap into the first IF stages of other receivers (with IFs above 50 MHz) like the JRC NRD525 simply by using a decoupling capacitor and a length of coax to the 700. In the case of the 525, no preamp is necessary; the coupling capacitance should be chosen to provide adequate on-screen deflection.

When the 700 is used as a companion SDU with another receiver, the display is reversed: signals to the left of center are higher than those on the right.

Scanning and Searching

100 memory locations, ten search ranges and four scan/search modes with lockout are included. Scan and search speed is extremely slow, requiring 18 seconds to sample all 100 channels—not quite six channels per second.

Tuning the 700

The manual tuning knob can increment in steps of 1, 5, 10, 12.5, 20 and 25 kHz; it may also be used to step through the memory channels or place the cursor anywhere on the SDU prior to calling up that frequency for monitoring.

In lieu of the tuning knob, a pair of up/down keys can automatically slew the frequency when pressed.

An external antenna may be connected to a rear-panel SO-239 (UHF) connector; an attachable whip is included. Some intermod was observed on the unit, but it was reduced by switching in the 20 dB attenuator provided for strong signal environments.

Although stated sensitivity is only 1 microvolt, a side-by-side comparison with a Uniden BC760XLT revealed no difference in weak signal pickup.

A 1/8" front-panel earphone jack disconnects the internal speaker (1.8 watts audio maximum), and a 600 ohm (line out) jack is mounted on the rear apron. A tone control allows the user to adjust the sound to his taste.

A few birdies (spurious signals) may be heard, but these are minimized by the distant placement of an external antenna. The steel cabinet also helps in reducing cabinet radiation as well as vulnerability to external sources of interference.

Front panel layout is rather tight; if earphones are plugged in, the tuning dial is hard to grasp and turn. Volume and tone controls are too close as well, making finger space cramped.

An annoying "popping" sound is heard from the speaker when the receiver is tuned from a low to a high frequency, or when the scan function is operating.

The Bottom Line

The AX-700 is a specialized instrument, better suited to examining small portions of the VHF/UHF spectrum than for scanning it. But competitive spectrum display units—without audio recovery—cost over $1000. In this perspective, the 700 offers unique and affordable features.

The Standard AX-700 is available for $799 plus shipping from Electronic Equipment Bank, 323 Mill St. N.E., Dept. MT, Vienna, VA 22180; ph. 800-368-3270.

MT

The NEW

ICOM IC-R7100

Frequency Range: 25-2000 Mhz
Tuning Steps: 100 Hz; 1/5/10/12.5/20/25/100 kHz; 1 MHz
Receiving Modes: AM, WAM, FM, WFM, NFM, USB, LSB
Memory: 900 Channels
Scan: 5/12 channels/second
Banks: 9
Clock: with 2 event timer
Computer interface: optional
Sensitivity: 0.35 uV NFM
Dimensions: 9-1/2"W x 3-3/4"H x 9-1/2"D
Power Requirements: 13.8VDC, 117/240VAC

The long-awaited follow-on to the successful R7000 has finally been released from ICOM. The new R7100 is smaller in size than the R7000, but boasts many new features.

The R7100 has a continuous frequency range, from 25-2000 MHZ, without the 1000-1025 MHz gap that was in the R7000. It also has 900 memory channels held in 9 banks, a large, bright LCD display, the ability to use 120/240 VAC or 13.8 VDC (for mobile use). The R7100 also comes with a collection of plugs for the accessory jacks as well as spare fuses.

Grove's Price: $1149.95*

Grove Enterprises, Inc

1-800-438-8155

140 Dog Branch Road
Brasstown, NC 28902-0098

* Plus $15.00 Shipping

For more information, see the review in the April, 1992 of MT on page 94!

It doesn't get any better than this!

The Icom R1 Pocket Scanner:

Now Only **$479.95!** *(plus $6 Shipping)*

Grove Enterprises, Inc.

1-800-438-8155

140 Dog Branch Road
Brasstown, NC 28902-0098

Imagine, a shortwave and VHF/UHF scanner with continuous 100 kHz-1300 MHz (no gaps!) frequency coverage that fits in your shirt pocket! You select the mode -- AM, FM wide or narrow -- and install up to 100 of your favorite shortwave and scanner frequencies into memory. An edge-lit LCD shows frequency, memory channel, and other settings as well.

Less than 2" wide, the R1 scans, searches and autoloads, has knob tuning, a signal strength indicator, and even a 24-hour clock timer! This high-sensitivity scanner comes with a flex whip, rechargeable battery, AC wall charger/adaptor and belt clip.

ACCESSORIES:

ANT8	Range extending telescoping whip	$16.95
ACC19	R1 Carrying case (no battery pack)	$19.95
ACC30	BP-90 Replaceable AA battery case	$16.95
ACC33	BP-90 Carrying case	$19.95
ACC32	BP-84 Triple-life battery pack	$75.95
ACC34	BP-84 Carrying case	$19.95
ACC31	CP-12 Cigarette power cord	$18.95
ACC48	BC-72A Desk charger	$99.95

Grove -- we bring you the best...for less.

For more information on the Icom R1, see the November, 1991 issue of Monitoring Times, page 98!

Lawrence Magne
Editor-in-Chief
Passport to World Band Radio

• Test Report on Sony's ICF-SW55 Portable
• Sangean ATS-808—A Second Look
• Sony Re-engineering ICF-SW77's Synthesizer

Good Audio in a Small Package

Yes, Virginia—very good things occasionally arrive in small packages. Sony's new ICF-SW55 portable is a case in point.

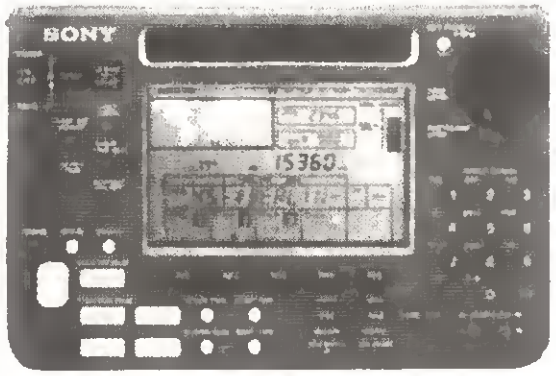
This is another one of Sony's "packaged" receivers. Open the shipping box, and inside you'll find a gray plastic travel case measuring 11-3/4 x 11 x 3-1/2". Inside are the receiver itself, plus the assorted goodies that accompany it: in-the-ear earpieces, an AC power supply, one of Sony's "tape measure" outboard antennas and three helpful publications. All useful items, although true headphones would have been more comfortable than the supplied earpieces.

The travel case is too big to be of much use for day-to-day air jaunts. Placed in a briefcase or small carry-on bag, for example, it would leave little room for anything else. Tucked into a suitcase, it wouldn't be handy for spur-of-the-minute use.

Fortunately, Sony appears to have recognized this. The receiver itself measures only 7-5/8 x 5 x 1-1/2"—a small compact about the size of a trade paperback book. That's a bit large for a sport coat jacket, but the naked 'SW55 tucks neatly into a shoulder bag or what-have-you. To aid in listening on the run, the 'SW55 kit includes a leather-like travel pouch for the receiver, which runs quite happily off four "AA" batteries. Those batteries can't run down in transit, either, provided you remember to switch on the travel power lock.

The face of the 'SW55 is dominated by a large LCD which includes a map of the world with time zones, local and world time clocks, a signal and battery-strength indicator, a tuning-rate indicator and a section of grids which serve a variety of functions. Beneath the LCD are function buttons, along with a variety of other buttons across the face of the receiver, as well as a tuning knob. Alas, the knob has no tuning dimple or spinner—just raised bumps for traction.

A flip-down plastic support props up the receiver when it's laid atop a table. There are two speaker openings—round perforations on the back of the set and a narrow rectangular slot above the operating display. Despite—or because of—the unusual arrangement, the 'SW55 sounds quite good, especially for its size. A rotating/swiveling telescopic antenna pulls out of the side of the radio.



Unusual Operating System Includes Pre-Stored Stations

The 'SW55 has a digital frequency display, accurate to the nearest kHz, and direct digital tuning. If you want to hear, say, the BBC World Service on 6175 kHz, press 6, 1, 7, 5, EXE on the keypad, and there you are. Press the AM/FUNCTION button and the function keys below the LCD are activated to select mode (AM, LSB or USB), wide or narrow bandwidth and other functions. It's simple and efficient.

The most unusual part of the 'SW55's operating scheme is its memory system. Presets are stored within "pages" with up to five frequencies stored on each page. Each of these pages can be assigned a name, so that on page five, for example, you could store the frequencies for up to five local stations that play oldies, then title that page "OLDIES." Every time you access page five, the name "OLDIES" will appear to remind you what has been stored there—a plus over the Sony ICF-2010's system, which requires a scratch pad or human memory to accomplish the same end. To access one of the five stored frequencies, press one of the five function keys below the LCD.

But the surprises don't stop there. When you initially fire up the 'SW55, the first few memory pages are blank. When you get to page six, though, you find the beginning of a series of preset pages, each identified by station or country name, that contain pre-stored frequencies for certain world band stations—Radio Moscow, WHRI, WRNO, BBC World Service, Swiss Radio International, Sweden, Spain and so forth. There are 19 pages of presets. It is easy to page through, trying alternative frequencies, to see which stations are coming in well at a particular time.

For the layman just getting his feet wet with a new receiver, these pre-stored presets are a real plus in giving him a taste of what world band radio has to offer. It greatly reduces the chances of a newcomer's buying his or her first world band radio and saying, "I can't hear anything."

Labeled presets are also helpful for travel. You can use a frequency guide to determine which channels you will want to access during your trip, based on where you're headed. Then you can load up and label a bunch of presets in advance, then leave everything but the radio and tape-measure antenna behind.

On the other hand, labeling pages takes some getting used to. You'll want the operating manual, at least the first few times—another reason to pre-program the presets in advance when traveling.

Unfortunately, this system comes at a real price in convenience. Unlike the '2010, which brings up a station with only one tap of a key, it takes from two to several keystrokes to call up a desired preset station on the 'SW55. The 'SW55's novel and innovative system of presets is, above all, supposed to be a convenience. The bottom line is that the presets on the 'SW55 are, in terms of keystrokes, less convenient to operate than are those of the '2010.

Another novel feature on the 'SW55 is a hard-wired spectrum memory which "knows" that certain frequencies and modes have been assigned to particular services. So, if you punch up 6175 kHz, the 'SW55 will automatically

select the AM mode and the wide bandwidth because that is a frequency within a segment set aside for international broadcasting. However, if you select 14,313 kHz, the 'SW55 will automatically select USB with the narrow bandwidth, as that frequency is within the 20-meter amateur radio segment.

You can, of course, select a different mode and/or bandwidth once a frequency has been selected. These defaults for mode and bandwidth for a particular frequency are annoying, though—especially if you wish to hop from one frequency to another while retaining the same mode and bandwidth, regardless of what the 'SW55 "thinks." Out-of-band transmissions are hardly new or novel.

Otherwise, the 'SW55's operating system is reasonably user friendly—much more approachable and intuitive than that of its sister model, the ICF-SW77, of which we shall speak in a moment.

Generally Worthy Performance...

The 'SW55's wide bandwidth measures 8 kHz, somewhat wide for all but stations "in the clear." The 4 kHz narrow bandwidth sounds a touch "pinched," yet it renders reasonable audio quality, including low distortion, while rejecting adjacent-channel interference. The narrow SSB filter measures 3.2 kHz, which is adequate. All three have good shape factors, and ultimate rejection is excellent.

Front-end selectivity, dynamic range and image rejection are only fair, however, which means that under trying conditions the 'SW55 may suffer from unwanted signals "ghosting" in to bother the station you're trying to hear.

Sensitivity with the built-in telescopic antenna, typical for a synthesizer-tuned portable, is adequate for most parts of the world, although on AM and longwave sensitivity is more pedestrian.

...but Lacks Synchronous Detector

For a radio that costs about the same as an ICF-2010, there is **NO** synchronous detection. This high-tech feature, which reduces adjacent-channel interference and selective fading distortion, is the high point of the '2010. For it to be absent on what may eventually be its successor model is appalling. For this reason alone, the 'SW55 is simply not in the same league as the '2010.

Strength Indicator

The digital signal-strength meter measures 1 dB per bar step. With ten steps, this means that the total range of the meter is a mere 10 dB. The indicator thus reaches maximum on virtually any audible signal, rather than just on strong signals. Major international broadcasters usually define the minimum acceptable signal level to be 54-60 dB.

Bottom Line: Excellent for Travel

Is the Sony ICF-SW55 the portable of your dreams? If you want a DX-caliber receiver that offers fade-resistant circuitry and superior adjacent-channel rejection, yet can be carried in a suitcase, the bulkier ICF-2010 is probably for you. But if you're looking for a high-performance portable with good audio, yet small enough to be your constant companion in a briefcase and with a library of pre-programmed frequencies, the 'SW55 demonstrates convincingly that small is beautiful.

Sangean ATS-808 Retest

It has been a while since we last tested the Sangean ATS-808, also now sold as Radio Shack's Realistic DX-380.

One of the shortcomings of the original unit we tested was that it had inferior spurious-signal ("image") rejection. On the other hand, it was unusually sensitive to reception of weak signals.

The latest unit tested has the odd image poking through, but not as before. Equally, sensitivity is slightly less than it was. Perhaps this is the luck of the draw from the production line. However, it's more likely sensitivity has been throttled back a bit to make the image problem less apparent.

This doesn't change our overall high estimate of this model. However, assuming our unit is representative of current production, it makes the '808 less of a specialty item for those living in Central and Western North America, where signals tend to be relatively weak. On the other hand, it makes this model more appropriate than before for use in Europe, North Africa and the near East, where signals tend to be unusually strong.

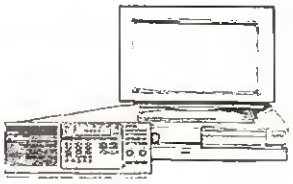
Sony Re-engineering ICF-SW77's Synthesizer

In a recent meeting with Sony's world band executives from Japan and America, Sony indicated that the synthesizer in the ICF-SW77 is being substantially re-engineered to reduce the annoying chugging noise made in the original version, which was withdrawn from the market late last year. The objective is to reduce chugging without relying on muting, which can cause the radio to sound "dead" during bandscanning.

Although no amount of engineering cleanup will make the 'SW77 an easy set to operate, Sony seems determined to remedy the other problems found on the original version. Our tests of an interim prototype suggest that thus far this effort is paying off.

MT

John Catalano



Monitoring From a Solid "Base" and a Contest Freebie

Since the column started, we have been looking at software which, when interfaced to a receiver or scanner, could provide a "Total Monitoring Environment." This means a package which: logs frequencies into a database, automatically reads the database and tunes the radio to the frequency and mode of the entries and displays decoded digital communications such as RTTY.

However, there are many radio related programs or programs which do not cover the "Total" requirements of the serious monitor, but are very useful. One such type of program is the database. Although taking various forms and titles, the database can be considered a computerized log book. Quick searches for specific loggings, or organizing loggings by frequency or station are basic functions of a database. A database can also be used as a holding tank for frequencies reported in *MT* or other sources. This is an excellent way of building a library of searchable frequencies for times when you get the urge to explore.

Although each type of monitoring has different logging needs, utilities, shortwave broadcasts, and VHF/UHF scanning can all benefit from a database. This month we'll look at an assortment of these database-only programs for the PC, XT and AT machines with a minimum of 256K RAM and DOS version 2.0 (unless otherwise noted).

The first program, **SWL's Time and Frequency Tracker,** builds on the power of the LOTUS spreadsheet. Therefore a copy of LOTUS version 2.0 is required. As the name says, its function is to keep track of program or utility listings and sort them by frequency, time and origin. In addition, a graphing routine is included which, for example, can take your data and make a graph of the logged frequencies versus the time you heard them. The graph possibilities are only limited by the combinations of input data.

To begin, two files from the program disk, SWBCAST and SWGRAPH, are copied into the directory where you have LOTUS. After LOTUS is operating, selecting the file SWBCAST will bring up a list of approximately 290 sample entries. The screen is divided into three columns where all of the data is simultaneously displayed and sorted by Origin, Frequency and Time, respectively.

This is a very unique and useful feature which saves lots of time and key-pressing. If, for example, you are listening for Radio Australia, column one will be sorted by the alphabetized listing of the origin, in this case Australia. All the frequencies are listed in column two, line by line, by increaseing frequency. Column three is similarly arranged with increasing time. The side-by-side screen arrangement is, of course, the familiar LOTUS spreadsheet format, tailored to radio monitors.

Entry of your monitoring information is very easy to anyone who is even a casual LOTUS user. A comprehensive help file is brought up with ALT-H and all manual fumbling is eliminated. A notebook feature, which is really a comments field, is also included. This allows the user to input one line of comments per entry. Due to the layout of the LOTUS screen, key presses can result in being "transported" to seemingly strange screen locations. These are macro definition\command areas used by the programer when the program was created and should not be altered. A press of the HOME key will return you to familiar territory.

In summary, this program does provide an easy logging tool at the price of $10 post paid. It is available on 5-1/4 inch disk, 360K format, from TJ Enterprises, P.O. Box 1010, Graham, WA 98338.

Next into the box is **PC Shortwave Monitor,** version 1.0, a program which is aimed at being "the logging organizer." Adequate basic instructions are included on a double-sided piece of paper and a README file is included on the disk which can be read on the screen with a word processor or via the MS-DOS EDLIN command.

Loading the file SWM immediately brings you to a menu with seven log-related selections. Five of these have to do with printing reports or log sheets. These include: Master Log, "By Country" Log, Custom Log and an Alphabetical Country Log. The two file active choices are: Enter new records and Locate/edit/delete records. The lack of any included sample file requires the new user to jump in and try his/her luck without having a guide to view.

However, after fifteen minutes of "playing" with the program, the data entry is quite simple via a "fill in the blanks" screen for each entry. The blanks include: listening start time, frequency, country, day of week, end time and a 50 character comment line. Single character abbreviations are also included for program description, language, target broadcasting area and reception quality. The comment line is too short and automatically goes to the entry of a new record when the 50th character is pressed. The program is of limited use for utility stations since only five-digit frequencies can be entered. The print commands cannot be directed to the monitor, so have lots of paper ready. Before you print a report make sure your printer is on-line or the program will abruptly end, requiring a re-start from the beginning.

The program does not have any screen sort routines, so access to all entries is one at a time by record number, which makes hard copy of a sorted Custom Log a necessity. PC Shortwave Monitor is available at $19.95 plus 2.50 shipping and handling, from S. Gitlin, 86-29 155th Avenue, Howard Beach, NY 11414 on either 5-1/4 or 3-1/2 inch disk.

Now a database program design exclusively for the scanner people: **ProScan,** Version 1.0. from Datafile. The creator of this program had in mind creating a database replica of the 400 or so memories in your scanner. His approach was to use the database to record all the information about the stations that you have programed in those hundreds of scanner channels, not just the frequency.

ProScan is very simple to use with a screen presentation of nine fields of information. The first two fields are for the frequency and the channel number when it is stored in your scanner. The next columns add the details which help a listener to "remember" exactly what is stored on that channel—name, location, class, type and call.

The program has other features such as checking for frequency duplication, but one feature in particular should be noted by other software manufacturers. With all the power of this PC computer at my fingertips, I am constantly frustrated by the small amount of detailed reception information which most programs ALLOW the user to input. This program is different! For each channel a screen note pad containing hundreds of lines is provided to the operator. When new intercepts are heard, old ones no longer have to be erased to make room; The note pad entries are automatically dated.

The program is easy to use and nicely executed. The exception is in backing up a file or starting a new one, which requires careful reading of the manual. Printed reports sorted by any data field are available. The access time to data is very fast and don't forget all that note space for each channel. *Proscan* is available on 5-1/4 or 3-1/2 disks from Datafile Inc., P.O. Box 20111, St. Louis, MO 63123 for $39.95 and requires a minimum of 640K of RAM and a hard drive.

Another for the scanner crowd is **Scanner Buff! Pro** version 3.68. Wow, these version numbers will have to be given in scientific notation if they have any more decimal places. Buff (for short) is a database program which comes with a comprehensive instruction manual and is logical in its set-up and use. Buff is menu driven with screen top prompts and pull down menus. The four main menus are: Search, Code, Print and File.

The file menu is used to create a new database or change the data in an existing one. One of the nice features included in this menu is File Conversion which allows the use of files from other database programs or word processors. The Help file tracks with you so details are given on most sub-menu choices.

The Print menu enables the user to print a list of entries sorted by Agency, Frequency, Callsign or a number of other choices. The Code menu gives you the choice of finding a specific police code, for example 647, or viewing all codes. Since codes are sometimes specific to the local authority, you can modify the code file to the local code dialect.

The Search menu options provide a way of finding data in the file based on frequency, callsign, agency and other fields. Position and radio channel number searches are also possible. The results of all searches are displayed on the screen which saves the lives of many trees. Buff has one of the most comprehensive on-line help files that makes manual fumbling obsolete. The display is 11 columns wide, and therefore does not all fit on the screen at one time. Arrow keys are used to scroll the screen sideways as well as up and down. I found all the sideways scrolling a bit confusing at times. On the positive side, all data is presented in easy to read size.

Although a large screen is provided for comments, I could not get the program to save more than one line of text. I also encountered screen corruption while trying to add more lines and edit the comments and had to re-boot the system. I guess it is one line comment only. With this one personal preference exception, the database program performed well. *Scanner Buff* is available from Vista Software & Communications, 172 No. Lima Avenue, Sierra Madre, CA 91024 for $39.95 for disk and manual, or $25.00 for disk only; postage included.

Pop Quiz

And now a little test to see if you have been listening the past few months and to give you the chance to win a nifty device called the Message Catcher. This turns on any tape recorder with a remote jack when the squelch of a shortwave receiver or scanner is broken by audio. As the Radio Accessories ad says, it's perfect for the days that you have to go to work but there is a space shuttle launch to monitor, or a rare DX station that will not reschedule to coincide with your work day (what nerve).

Message Catcher, recently introduced at $19.95 plus $3.85 s/h, is from Radio Accessories, P.O. Box 168, Melvin Village, NH 03850 and comes complete with cables, plugs and power supply. But here is your chance to get one free. Just put the answers to these five questions on a post card and send it to the Computers and Radio column in care of *MT*. The lucky winner will be drawn from those entries with the correct answers and will be sent a free Message Catcher. The questions please:

1. Whose job has it been to read frequency lists to me over the years?
2. What software/hardware functions are included in a "Total Monitoring Environment"?
3. What parameter of a serial port sets the data "speed limit"?
4. Which software, radio, and computer do you currently use with your radio hobby?
5. Which software do you not currently own, but are considering purchasing?

The answers to the first three can be found in previous "Computers & Radio" columns. Questions four and five must be completed but have no correct answers. They are useful in matching our future articles to your interests.

Well, that's all the space we have for now. Next month we'll continue with the pile of programs on my desk: programs for hams which may be useful to monitors, more radio control programs, and programs for nabbing that rare DX. Again, if you know of a program that you would like reviewed, let me know by dropping a note to me care of *Monitoring Times*. 'Til next month, keep building your solid base of monitoring knowledge.

MT

Doug Demaw, W1FB

SWLing With a Big Loop Antenna

Makeshift or short antennas do not always yield good reception in the high-frequency short-wave bands. The area of one's property is often what dictates the physical size of an antenna, but there are some SWLs who have plenty of antenna space that is not being utilized to enhance reception of DX signals. Larger antennas need not be awesome or expensive. Nor are they necessarily unsightly, just in case you're worrying about what the neighbors will think of your creation.

One of the better low-cost DX antennas is the full-wave loop. It may be erected horizontally or vertically, depending upon the types of supporting structures you have on hand. Certainly, trees are the answer to the problem if your yard has them. You can build low-cost support poles from 2" x 4" lumber, should there be a shortage of tall trees on your property. The big loop is a "super-duper signal scooper" that you will want to investigate.

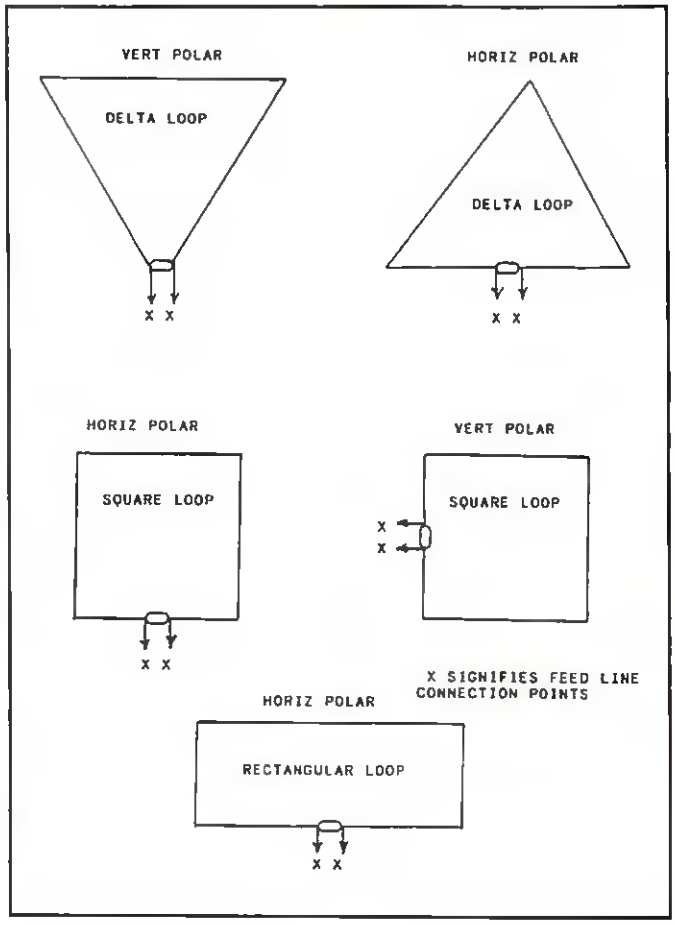


Figure 1: Examples of full-wave loops with vertical and horizontal polarization. The feed line is 300 ohm TV ribbon or 450-ohm ladder line, any length. These loops may be erected vertically or they can be installed horizontally (parallel to ground). Any of the above loops may be fed at their corners rather than as shown. Best performance results when an insulator is used at each corner of the loop.

The Nature of Big Loops

Loops are made from ordinary wire, such as no. 12 or 14 gauge. Smaller loops, such as one for 20 meters and higher, can be fashioned from lighter wire, such as no. 16 or 18 gauge. In any event, the wire must be strong enough to support its weight when there is a long span of it between poles or trees. The wire size has little to do with the antenna performance.

A full-wave loop has a characteristic feed impedance of some 115 ohms when erected in a circular or square shape. The impedance changes somewhat when the loop becomes triangular or rectangular. Maximum loop gain occurs when the loop is circular. Next comes the square format, then the triangular (delta) and finally the rectangular shape. The more rectangular the shape (approaching that of a folded dipole), the lower the effective gain.

Loops work well on all frequencies above the one for which the antenna is cut. Therefore, a loop that is tailored for, say, 3.5 MHz performs nicely up through 50 MHz. The higher the operating frequency with this loop, the greater the antenna gain. It is not unusual for a loop cut for 3.5 MHz to exhibit a gain in excess of 6 dB at 10 meters.

The overall length of the loop wire is determined by 1005/f(MHz). Therefore, if we divide 3.5 MHz into 1005 we find that the total wire length is 287.14 feet or 287 feet and 1-3/4 inches. Bare or enameled copper wire is best for a loop. Wire with thick vinyl insulation makes the legs of the antenna too heavy, and it also has an effect on the antenna performance (changes the velocity factor of loops). A square, 3.5 MHz loop has 71 feet and 6 inches of wire per side, which isn't hard to deal with. A loop that is half this size is suitable for use from 7 MHz upward, and so on. Hence, the size you choose is dependent upon your favorite range of short-wave frequencies.

Vertical or Horizontal Format?

A triangular loop is the easiest one to erect, since only one tall support is needed if you have the apex up and the flat side of the delta parallel to ground. Figure 1 shows various methods of erection and feed. Two supports are necessary if the flat side of the loop is up (preferred), or if you erect a square loop vertically. Generally speaking, the vertically erected loop is a better DX performer, owing to its low angle characteristic.

Horizontal loops work well, too, especially for close-in communications. I use a 1.9 MHz square horizontal loop for all of my amateur radio work. It is 50 feet above ground at each corner. I feed it at one corner with 450-ohm ladder line, then into a 4:1 balun transformer from which 15 feet of RG-8 coax leads to my antenna tuner. On 160 and 80 meters the signal radiates pretty much straight up (high angle), which is ideal for distances up to 1000 miles. The radiation angle becomes lower as the operating frequency is increased. At 20, 15 and 10 meters this big loop is a super DX antenna and outperforms my triband HF Yagi at 60 feet.

I do a lot of BC band DXing and use an end-fed 100-foot wire on my Uniden CR-2021 receiver. AM stations 300 miles away in the daytime, such as WJJD Chicago, are usually about S5 and have a lot of fading (QSB). When I connect my 1.9-MHz loop to the receiver I find that WJJD's signal pegs the S meter and the fading is minimal. Of course, this loop is excellent for all of the frequencies in the HF spectrum.

Feeding the Loop

Loop antennas exhibit different impedances (low) throughout the HF spectrum when cut for some lower frequencies. It is not essential that you match the antenna to the receiver for reception. A matching network is essential, however, if you expect to use the loop as a transmitting antenna. It must then be matched to the 50-ohm port on your transmitter. This can be done with an ordinary transmatch or antenna tuner.

Although I feed my loop with 450-ohm ladder line, you can use ordinary 300-ohm TV ribbon. Any 4:1 balun transformer may then be used between the radio-room end of the ribbon line and your receiver. The balun converts the balanced antenna and feeder to an unbalanced state. This allows you to use RG-58 or other 50-ohm coax between the balun and your receiver. No tuner is required for reception only.

Some Final Thoughts

One of the principal advantages of a loop antenna is that it is an inherently quiet antenna. That is, man-made noise is reduced greatly while using a closed loop. My loop is only 100 feet from a 4800-volt power line. When I used a dipole antenna the QRN from the power line registered S6-S7 most of the time. When I changed to the loop the noise reading dropped to S1, and at times the meter reads zero when signals are not present. Quite a benefit for weak-signal reception!

A loop need not be round, square or triangular to work well. Any convenient shape, distorted or otherwise, may be used as long as you have the correct length of wire. An ugly loop works about as well as a beautiful one!

Loops are not affected significantly by trees since they are a current type of antenna of low overall impedance. This means that the legs of the loop can lie on tree branches for receiving only. I don't recommend this, but many SWLs I know have avoided using insulators at the support points in order to simplify the installation. It should go without saying that the higher above ground the loop is the better it will perform. But don't despair if your loop can be only 15 or 30 feet above ground. It will still provide pleasing performance.

You can attach the feed line in the center of one leg of the loop, or you may elect to feed the antenna at one corner of the square or rectangle. A delta loop may be fed at the center of the flat leg, or at the tip of the triangle. Greater detail for loop antennas is provided in *W1FB's Antenna Notebook* which is available from the ARRL, Inc., 225 Main St., Newington, CT 06111.

MT

Bill Cheek

Adding A Moderate Amount of Memory

We all know "Murphy's Law" says that if anything can possibly go wrong, it will do so at the most inopportune moment. The fine print under "Murphy's General Law" goes into detail: "No matter how much memory you have, the requirements for data and information will expand sufficiently to exceed available memory!"

If your scanner has ten channels, you know exactly what Murphy means. Those with 100-200 channel scanners also know this. Owners of 400 and 1,000 channel scanners might not realize it immediately, but in due time, the inevitable will happen. OUT OF MEMORY!

I have given in my *Scanner Modification Handbooks* and in the monthly "World Scanner Report," a number of memory modifications, ranging from 1,600 channels for the BC-760/950XLT all the way up to 25,600 and more channels for the PRO-2004, PRO-2005 and PRO-2006. Many folks have successfully done these mods to test "Murphy's Law of Memory," but probably an even greater number of hobbyists are intimidated by these extensive memory mods or found no use for so much memory—with the result that they're stuck with the scanner's stock memory allowance.

This month offers a juicy compromise between sheer intimidation and more memory than the ol' brain cells can handle. How about simply DOUBLING your scanner's memory? This won't work on all scanners, naturally, but twice as many memory channels can be liberated for the following scanners: BC-760/950XLT; BC-590/600XLT; Regency R-1600; PRO-2022; PRO-37 and PRO-34. There may be other scanners in which this technique will work. I'm not aware of any more, but here's how you can tell for certain:

Determine the type and location of your scanner's memory chip: if it is a 24-pin, surface mount, (flat pack) 2k x 8-bit static RAM, you're probably in business, but take it one more step to be sure. Look closely at the chip's connections; if pins 14, 15, 16 & 17 are not wired to anything other than empty pads on the printed circuit board, your scanner is capable of double the memory channels. 2k x 8 SRAMs known to be capable include: uPD446G; TC5517CF; LC3517BM and MB8416.

CAVEAT: The PRO-2021 and PRO-32 use the above type of memory chip, but only Pins 15-17 are blank and Pin 14 is used for something weird as in a 5-bit logic; therefore, this mod cannot be applied. There must be FOUR unused pins on the memory chip for this to work properly.

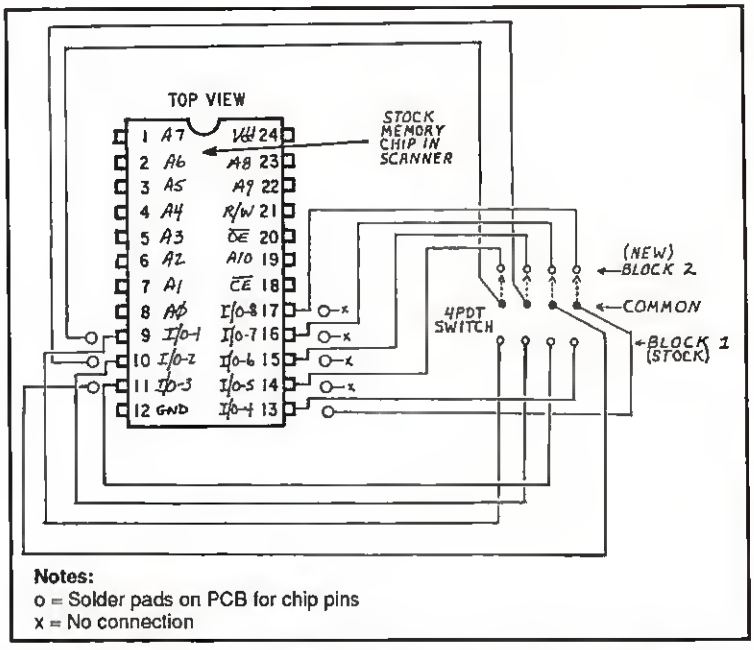


Figure 1: Double Memory Schematic Diagram

The theory behind this modification is simple: the affected scanners have 4-bit operating systems but use 8-bit memory chips. Half the memory chip, four of eight input/output bits, is not used! (Pins 14-17). The active pins will be pins 9, 10, 11 & 13. This modification WILL NOT work for the PRO-2004/5/6 because these are 8-bit scanners which fully utilize all eight input/output (I/O) pins.

If in doubt, determine the status of pins 14-17 before proceeding. If they're connected to circuit traces that wander off through the board, forget it; if connected only to vacant solder pads, then you're in luck. We will fully utilize those unused I/O pins via a switching arrangement with the active I/O pins to provide two blocks of programmable memory, each block the same size as the original for double the total! Refer to Table 1 for the specifics of your scanner:

The details of this modification are not difficult with a little preparation and a bit of experience with things electronic. The hardest part will probably be the mechanics of choosing and installing a suitable switch in cramped quarters. Of course, handheld scanners will offer more space problems than base or mobile rigs where there is usually more room in which to work and install things.

Unless you can find a 4PDT micro-miniature toggle or rotary switch, which are about as rare as hips on a snake, the best bet for switching will be a pair of DPDT micro-mini toggle switches like Radio Shack's 275-626. Super-glue a pair together or install them very close together, since BOTH have to be switched to the same direction at the same time. After installation and verifying that everything's working perfectly, you can devise a way to lock both switch handles together to avoid confusion.

As I said, this part of the job may be the hardest. So figure out all the mechanical aspects before actually starting the work. When you've got it all figured out, install the switch(es) of choice in the scanner.

Next comes the electrical work. Refer to Figure 1 for the schematic diagram of this clever modification. If you are neat and careful to not short anything out, it is possible to retain the contents of the scanner's original memory! Make sure the scanner is turned OFF and/or any battery packs removed. Disassemble things to get to the area where the memory chip resides.

Using a fine tipped, low wattage soldering pencil, carefully desolder Pin 11 while gently prying it upwards with a sewing needle or a hat-pin. When the solder melts, the pin will "pop" up a little. Push it up a bit further, out of the way. Use care here and be gentle, because if a pin breaks from the body of the chip, you'll probably have to get a new one, the installation of which won't be a lot of fun.

When Pin 11 has been desoldered and positioned up and away from its solder pad, do the same thing to Pin 10 and then Pin 9. With those three pins desoldered and lifted up from the solder pads, continue that same process, first with Pin 13, followed in order by Pins 14, 15, 16 & 17, until all eight I/O pins have been desoldered and lifted from the pads.

Solder four very flexible and thin insulated wires to the four common or middle lugs of the switch(es). Solder the other ends of these four

Table 1: Scanner and Chip Type Data

Scanner	Memory Chip Ckt Symbol	Chip Type	Stock # of Channels	Modified # of Channels
BC-760XLT	IC-13	MB8416	100	200
BC-950XLT	IC-13	MB8416	100	200
R-1600	IC-13	MB8416	100	200
PRO-2022	IC-6	Note A	200	400
PRO-37	IC-2	LC3517	200	400
PRO-34	IC-2	TC5517	200	400
BC-590XLT	Note B	Note B	100	200
BC-600XLT	Note B	Note B	100	200

Notes

A. TC5517 or LC3517

B. Uncertain of chip type or ckt symbol, but probably MB8416

wires to the now vacant solder pads where Pins 9, 10, 11 & 13 used to reside. Solder four similar wires to the four lugs along one side of the switch(es). Solder the other ends of these wires to the memory chip's pins 14, 15, 16 & 17. Finally, solder four more similar wires to the four lugs on the other side of the switch(es). Solder the other ends of these wires to Pins 9, 10, 11 & 13, respectively.

Button 'er up; you're done with twice as many channels as before. Obviously, only one block of channels can be used at a time, but it's OK to switch between blocks any time, scanner on or off; scanning or in manual mode. If you manage to apply this technique to scanners not mentioned herein, please let me know of your success.

Inexpensive Timer Recorder Interface for the Sony ICF SW-7600

Stephan Fuchs offers a way for Sony radio owners to do timed voice recordings without resorting to expensive Sony accessories!

This is especially for owners of the Sony ICF SW-7600 who need a very affordable method to time-delay record programs, up to 24 hours in advance! Purchase either a Sony TCM-818, ($24.95 sug. list) or a TCM-858, ($34.95) tape recorder and one standard 1/8" audio cable, such as Sony RK-G69 or Radio Shack #42-2420. This cable connects between the 7600's REC OUT to the recorder's MIC jack.

Then with another Radio Shack cable, #42-2434, and plug, #274-279, wired together WITH REVERSE POLARITY (see Figure 2), insert the 1/8" end into your 7600's REMOTE jack and the other end in the recorder's 3/32" REMOTE jack. Set the recorder to the REC mode and set the 7600's STANDBY (alarm) to the desired time with the SLEEP function activated. (Don't forget to preset the 7600 to the desired frequency, too!) The ICF SW-7600 will trigger the recorder at the desired time to record and shut off at the end of the tape, and the 7600's SLEEP timer will shut off after approximately 65 minutes.

Total cost using the TCM-818 is $31.14 (plus tax). This sure beats the TCM-27's price of $109.95 plus optional AC adapter at $16.95. By the way, both the TCM-818 and 858 are battery operated AND come with an internal AC power supply and detachable AC cord! Now you can go out on Saturday night without giving up your favorite shortwave program!

MT

Sources:

Memory Modification Information
World Scanner Report
P.O. Box 262478, Dept. MT
San Diego, CA 92196-2478

Scanner Modification Handbooks
Vol. 1 and 2 by Bill Cheek
CRB Research Books (Publisher)
P.O. Box 56
Commack, NY 11725

DX Radio Supply (Stocking Reseller)
P.O. Box 360
Wagontown, PA 19376

Grove Enterprises, Inc. (Stocking Reseller)
140 Dog Branch Rd.
Brasstown, NC 28902-0098

Sony Product & Technical Data
Sony USA
1 Sony Drive
Park Ridge, NJ 07656
201-930-1000 or 201-391-6111

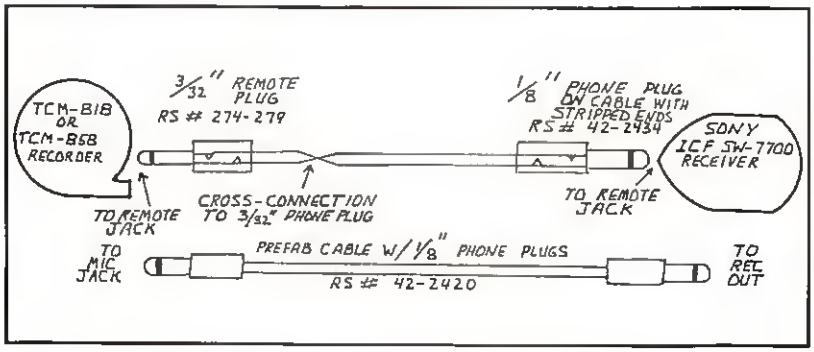


Figure 2: Sony Remote Cable Wiring Diagram

MOVING?

Send notification of your new address as soon as you know it so you won't lose a single issue — or have your 2nd class mail forwarded.

W. Clem Small, KR6A, CET

A Convenient and Space-Saving Wide-Coverage Antenna

A Wire By Any Other Name Is Still an Antenna

Just about any piece of wire will pick up radio waves and serve as an antenna: just hang it up and connect it to your receiver's antenna input. But if you can't hang a wire up, it would be nice to have the use of a wire that's already hung up for you, right? So consider for a moment your house wiring: it is already in-place and has considerable length threaded through your walls and ceilings. In a sense, your house wiring is a random length, randomly oriented antenna just waiting to be used.

Of course, you cannot just connect your receiver's antenna input to the house wiring; this would be extremely dangerous to your own safety as well as possibly damaging to your receiver. But there are safe ways to get the radio signals from the house wiring to your receiver. One of these ways is to use the CPL-104 House Wiring Antenna Coupler, sold by Chilton Pacific Limited.

The CPL-104 Antenna Coupler

The CPL-104 consists of a small plastic case about 1-1/2 x 2 x 3-1/2 inches in size with an AC power cord and an antenna feedline attached. As its name states, the CPL-104 House Wiring Antenna Coupler is not in itself an antenna, but is an "antenna coupler," which uses capacitive coupling to pass the radio signals in your house wiring to its feedline and on to your receiver's antenna input.

The unit draws no AC power, and there are no tuning controls or switches. The CPL-104's feedline is fitted with a male RCA-type phono plug and two feedline adapters are included: an alligator clip for attaching the feedline to whip antennas, and a 3.5 mm mini plug.

Using the CPL-104 is simplicity itself: plug the power cord into an AC-power wall socket and connect the feedline to your receiver's antenna input. If your receiver has no input connector but has a whip antenna, the alligator-clip adaptor is used to clip the feedline directly to the whip antenna. If your receiver has the more common BNC or SO-239 antenna input connectors you will have to purchase an adaptor that adapts the RCA-type male phono plug to fit your antenna connector. Once the CPL-104 is connected to the wall socket and to the receiver's antenna input you are ready to use the coupler for reception.

Testing the CPL-104

I tested the CPL-104 in comparison to an indoor-mounted short wire antenna about 35 ft. long and also against an outdoor long wire antenna about 200 ft. long. In the upper frequencies of the HF band, starting at 30 MHz, the CPL-104 pulled in signals well, often comparing favorably with the long wire, and usually comparing favorably with the short wire. At times the CPL-104 even outperformed both of the other antennas in this section of the band.

As I dropped in frequency to the lower portion of the HF band (around 5 to 6 MHz and below), the CPL-104 continued to produce many listenable signals; however, the other antennas were more productive. Sometimes signal levels were roughly comparable from all three antennas, but often the difference was as much as 20 dB greater on the short wire and 30 dB greater on the long wire as compared to the CPL-104.

What my tests showed me is that, in my installation, the coupler works as advertised: it provides a very convenient way to monitor signals on the shortwave band and produces listenable signals throughout the band. If you are looking for an antenna that will consistently pull in weak signals, it would seem that this unit is not the answer. On the other hand, if have no place to erect an antenna and need a small, convenient, and even portable shortwave antenna, the CPL-104 may well be one of the solutions you should consider.

And You Get a Bonus

The CPL-104 is advertised as a shortwave device, meaning that it covers the HF band. But I decided to check it out on the lower bands anyway, just to see what it could do there. I copied a number of listenable signals on the AM broadcast band and also on down into the MF and LF bands, even as low as 100 kHz. Considering that the coupler is advertised as a shortwave device, and not as intended for MF or LF, it was not surprising that its effectiveness on the lower bands was much less than on shortwave. Nevertheless, it did produce some listenable signals on these lower bands.

The short wire and long wire gave much better results on these frequencies, but that is not a criticism, considering that the CPL-104 makes no claims as to performance below the shortwave bands. I would consider this modest MF and LF performance as a bonus: getting a little something extra for your money.

It is difficult to predict how the CPL-104 will work at any particular installation with different wiring arrangements. For instance, the wiring to my room is not enclosed in metal conduit. In houses in which the electrical wiring

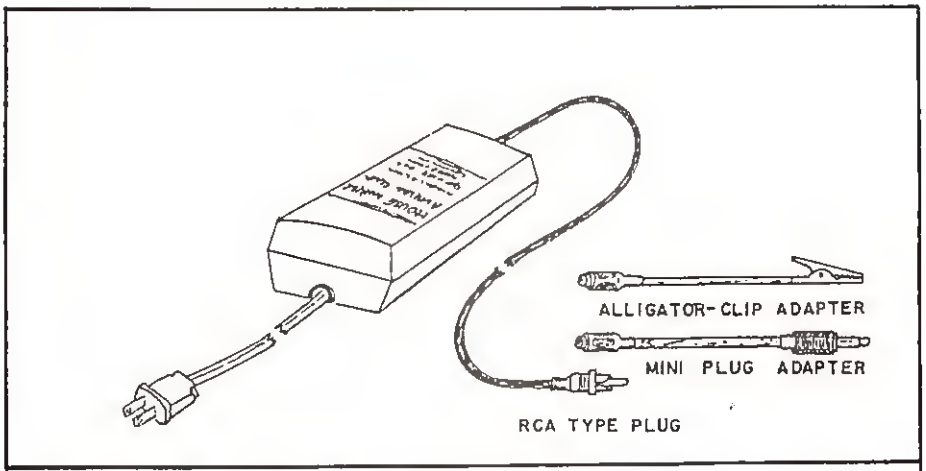


FIG. 1. THE CPL-104 ANTENNA COUPLER UTILIZES YOUR HOUSE WIRING AS AN ANTENNA.

conduit. In houses in which the electrical wiring is shielded inside metal conduit, the reception will likely not be as good as that in non-shielded installations. Another concern is that any electrical noise on your powerline is obviously going to be on the antenna in full force; however, I did not experience any extra received noise from use of the coupler.

For the person who needs a shortwave antenna and yet has no space for one, the CPL-104 is a workable alternative. For more information contact Chilton Pacific Limited, 5632 Van Nuys Blvd. #222, Van Nuys, CA 91401. In a recent catalog the CPL-104 sells for $24.95 + $3.50 S/H.

RADIO RIDDLES

Last Month

Last month I told you of the world's smallest antenna, and then asked, "What was the largest antenna we found in the *Monitoring Times* largest-smallest antenna contest about five years ago?"

Well, in that contest we got so many "largest antenna" responses that we decided there were several "largest" antennas! According to our findings, the world's tallest antenna is a guyed mast antenna at Warzawa Radio in Poland. This giant towers 2,120.75 ft. above the earth, more than .4 mile high!

Title for the antenna covering the most area went to a very old antenna which no longer exists: a flat-topped aerial skywire which, in 1917, towered a mere 600 feet high but covered "hundreds of acres of French countryside."

As to the world's largest dish antenna, we chose the 1000 ft. diameter radiotelescope at Arecibo, Puerto Rico. The Arecibo giant is built in a natural depression and does not move. For the largest dish antenna which can be moved and pointed, we chose the radio telescope dish at the Max Plank Institute in Effelsberg, Germany: a mere 100 meters in diameter.

Some U.S. government antennas with elements reaching up to 56 miles in length were chosen as the world's longest. These antennas are part of project ELF and are designed for the extremely low frequency of 76 Hz (yes, Hz!) to provide worldwide communications with submerged submarines! How about it, can any of you readers come up with skywires larger than these?

This Month

What does the "RG" in coaxial cable designations such as "RG-58" stand for?

We'll have the answer to that, and much more, in your next issue of *Monitoring Times*. 'Til then, Peace, DX, and 73.

MT

ask bob

Bob Grove, WA4PYQ

***Q.** I live in Florida but enjoy listening to WLW Cincinnati on 700 kHz. A Jamaican station on the same frequency often blocks reception. I use a random wire antenna; would a box frame or ferrite loop help? (Chris Hasselkos, Ocala, FL)*

A. Enormously. You should be able to turn the loop in a direction that nulls out the Jamaican. Probably the best-known ferrite loop is made by Palomar Engineering, an *MT* advertiser. Loops are also available from *MT* advertiser EEB and Radio West (850 Ann's Way, Vista, CA 92083).

***Q.** My Kenwood R2000 has a button for FM, but when I press it I don't hear any local FM stations. How come? (Betty Glasson, San Diego, CA)*

A. Your question is heard quite frequently. The "FM" on a shortwave receiver refers to narrowband frequency modulation, a mode used for two-way communications above 25 MHz.

You are understandably confusing this with wideband frequency modulation used by radio and TV broadcasters above 54 MHz. Your local FM broadcast band is 88.1-107.9 MHz, far above the tuning range of your Kenwood.

***Q.** Can decoders for CW, RTTY and ASCII be used with inexpensive portable receivers like the Sangean and Sony rather than the more expensive desktop receivers? (David Christy, Lake Wales, FL)*

A. Yes. Such decoders usually have sharp audio filtering to improve the receiver's own selectivity. The only problem is when the tuning steps of the receiver are so large that the received signal cannot be fine-tuned to match the narrow requirement of the decoder. They are not very forgiving in this respect.

***Q.** I've been listening to the shortwave spectrum and wonder whatever happened to the "spy numbers stations?" They don't seem to be as prevalent as they were two or three years ago. (Rene Valladares, APO)*

A. You're right. With the crumbling of the Berlin wall, East German transmissions ceased and with the disintegration of the Soviet Union, Soviet bloc transmissions have virtually disappeared as well.

It could well be that these mysterious broadcasts, which were sent to agents in other lands, will become as rare as AM utilities and LORAN A.

***Q.** I would like to get the addresses of the engineering labs and manufacturing plants of the under-$1000 consumer shortwave receiver manufacturers (Semon Hachikian, Upper Darby, PA)*

A. R.L. Drake Company of Miamisburg, Ohio, would be the only American company at the moment, although one other American will be announcing a product shortly.

The rest of the manufacturers, all located in the Far East, like ICOM, Kenwood, Philips Magnavox, Yaesu, Japan Radio Company, Panasonic, Sony and Sangean will refer you to dealers such as those who advertise in *MT*.

***Q.** What is the greatest range in miles I can expect on 6 and 2 meters with 1000 watts into a 300 foot antenna using a no-gain antenna surrounded by pine trees and a receiver in a pickup truck, no-gain antenna, with a sensitivity of 1 microvolt, assuming no sunspots or solar flares? (Alan Mark, Pembroke, MA)*

A. Wow! That's a big order, but there are formulas for computing approximate range. Assuming you are using good quality RG8/U coax, are in relatively flat terrain, your truck has no ignition noise, and there is no other interference, figure roughly 25-50 miles for 6 meters and 15-30 miles on 2 meters.

***Q.** What is the difference between the Bearcat BC200XLT and BC205XLT? They look absolutely identical. (Ben South, Parkside, CA)*

A. They are identical. The BC200XLT is marketed in the United States through authorized Uniden dealerships, while the BC205XLT is imported directly from Japan under private contract.

***Q.** What effect does wire size have on receiving antenna performance? (Ken Greenberg, Skokie, IL)*

A. Absolutely none whatsoever. If the wire can support itself without breaking, it is thick enough for receiving. Similarly, antenna wire may be stranded or solid, copper or aluminum, insulated or uninsulated (but not shielded).

For transmitting purposes, however, the wire must be thick enough to withstand transmitter power (current), and low resistance to increase efficiency. These are not considerations at the minuscule power levels of received signals.

***Q.** I have monitored messages from French forces using Z codes like ZFX, ZID, ZOV and ZNR; what do they mean? (P. Loo, Montreal, PQ)*

A. Z codes are to radioteletype what Q codes are to Morse. ZFX means "Channel...is open"; ZID means "Message numbers received are..."; ZOV means "Message designator is correct" and ZNR means "Message may be forwarded without change."

A complete list of Z signals (and other codes as well) may be found in Joerg Klingenfuss' *Utility Guide*, available from *MT* advertisers.

***Q.** Are there any specific broadcast frequencies that can be monitored from the Caribbean Islands? (Bill Perrelli, Hamden, CT)*

A. Virtually every country in the world has some domestic service. One of the more powerful stations in the Caribbean is the Caribbean Beacon on 690 and 1610 kHz from Antigua.

The complete list of stations, shortwave and mediumwave, may be found in the *World Radio TV Handbook*, available from *MT* advertisers.

***Q.** My new gutter mount CB whips claim an SWR of "less than 2:1", yet when I measure them I get 7: or 8:1. I've even cut them down with no apparent improvement. What gives? (Richard Sobon, Binghamton, NY)*

A. Antennas are usually rated under ideal conditions. In the case of a CB whip, this may assume a large metallic surface (the car roof) beneath it, electrically connected to the coax shield.

Are you sure that the gutter mount clip is making electrical contact—through the paint—with your gutter? You can determine this with an ohmmeter or continuity checker which should show a short when connected between the coax shield and your car body metal.

Try lengthening, rather than shortening, the antenna if you have continuity to ground (the car body). You can test this by simply twisting a stiff wire around the top of the whip an extending it several inches upward, cutting off a half inch at a time and making your measurements. If this is the answer, you may have cut it too short and will have to replace it!

Gutter mount whips are traditionally poor performers; try a magnet mount near the center of the roof and be done with it.

Bob's Tip of the Month:

Extra Earphone Audio for the BC100/200XLT

Racing fans using the popular BC200XLT handheld scanner often complain that car-phone audio is too low at the track with all the motor noise. Uniden reduces the volume intentionally to protect your ears from being blasted when inserting the earphone plug.

But you can increase the earphone audio enormously without any modifications whatsoever to the scanner. Wrap two or three turns of thin, bare wire around the BNC connector and around the barrel of the earphone plug as you insert it. Short-circuiting the two connectors bypasses the volume-limiting resistor in the earphone jack and restores full volume.

NOTE: Sustained high-level audio can cause permanent hearing loss!

Questions or tips sent to "Ask Bob", c/o MT, are printed in this column as space permits. If you desire a prompt personal reply, mail your question along with a self-addressed stamped envelope (no telephone calls, please) in care of MT.

A Matter of Opinion

If you're military, be careful who you monitor

Last month's "Ask Bob" contained a caution to be discreet about your radio hobby when outside the U.S. It got one Hospital Corpsman thinking of another worthwhile warning: If you're military, whether stateside OR overseas, "Be careful what you say about the hobby, and be careful what stations you correspond with." Here are some excerpts from his experiences:

Most medical personnel do not have security clearances, unless assigned to a ship or with a Marine unit. But I was investigated by the Naval Investigative Service (NIS) around 1975/76, not simply because of my shortwave hobby, but (heaven forbid) because I had "corresponded" (i.e., sent reception reports) to Communist countries...gasp!

Several years later, I was assigned to work in a Medical Logistics area. One day I was told to report to NIS...Surprise! The agent began, cautiously, inquiring about my hobbies. I asked him point blank how the agent who had interviewed me previously was doing. That investigation was short-lived...as was my assignment in Medical Logistics. My security clearance (Secret) was pulled and I was reassigned to another area.

While on this assignment, I received a letter from someone who had very poor handwriting whose return address was (I think) Mauritius. That wouldn't have meant much, but the writer inquired about my MILITARY duties, etc. I was on the phone to NIS immediately. Counter-Intel interviewed me, took the letter and asked me to inform them if "he" ever wrote again. (He hasn't.)

Fifteen years after my first encounter with NIS, I am assigned to (you guessed it) Medical Intelligence. About a month into my new assignment, the request is back from "Washington" regarding an interim Secret clearance, and "suddenly" it seems my medical condition (bad knees) is a disqualifying factor. (My replacement suffered from a similar condition.)

Right now, courtesy of the Freedom of Information Act, I have a copy of my federal dossier. Although obviously not complete, it's some 1-1/2 to 2 inches thick.

What does this have to do with the letter to "Ask Bob?" What the NIS told me in both instances was that DXing/SWLing is fine. Reporting to DX bulletins is fine. Corresponding is NOT fine!

I've heard other military say they DX/report any type of station and no problems. If in doubt, I would recommend checking with a LEGAL officer. As for me, I've backed away from such "corresponding" until I'm retired.

Editors Note: The use of eavesdropping equipment without consent is illegal unless used by a law enforcement agency with a court order. Monitoring Times assumes no liability regarding the use of this equipment.

Club Circuit

Club Profiles:

Bay Area Scanner Enthusiasts

The B.A.S.E. Club serves more than 300 "radio active" members from the nine counties that make up the greater San Francisco Bay area. The club has monthly meetings and takes regular tours. Last year, tours included US Coast Guard Search and Rescue, USCG Vessel Traffic Services, San Jose Police Radio Comm, San Mateo Co Radio Comm, SF Police Radio Com, SF Fire Dept Radio Comm, CDF Regional Command Comm Ctr, FAA Flight Control Center and U.S. Navy Treasure Is. Museum.

In its second year of publication, the club's newsletter, "The Listening Post," bears the motto, "In God we trust. All others we monitor"! A frequency database and 135 various handouts are also available to encourage members to exchange knowledge and information. Establishing a computer bulletin board has been the club's latest project.

For a sample newsletter and additional club information, send $1 and a business-size SASE to Bay Area Scanner Enthusiasts Club, 4718 Meridian Ave, #265, San Jose, CA 95118.

Toledo Area Radio Enthusiasts

Shortwave, scanner and amateur radio hobbyists in the northwest Ohio/southeast Michigan region are invited to participate in the Toledo Area club. This informal gathering of enthusiasts meets at 7 p.m. on the third Thursday of every month at the Big Boy Restaurant, 6609 Airport Highway, in Holland, Ohio.

The club seeks to promote all facets of the radio listening hobby and takes occasional tours of local facilities. Attendance averages 10-12 at the meetings. For more information on current activities, contact Ernie Dellinger N8PFA, 6629 Sue Lane, Maumee, Ohio 43537 (419-865-4284).

The European DX Council

Not a DX club, but an umbrella organization, the European DX Council seeks to promote cooperation between DX clubs in Europe. Its annual three-day conference is open to radio enthusiasts from all continents. The event is well-attended and includes papers and lectures, social events, and an opportunity to meet many international broadcasting personalities.

The 1992 Conference also celebrates EDCX's 25th anniversary; it is being held in Tampere, Finland, August 21-24. The conference language will be English. For full details write to EDXC 92, The DX Club of Tampere, P.O. Box 212, SF-33101 Tampere, Finland. For more information on EDXC or its member clubs, write to the address in the listing below.

Club Listings A - M

Don't see your local club listed this month or last month, when we covered N-Z? Write or call the Brasstown office to request a form for the Club Circuit.

Club Name: All Ohio Scanner Club
Contact: Dave Marshall
Club Address: 50 Villa Road, Springfield, OH 45503-1036
Region: Ohio and surrounding states
Interests: VHF/UHF and some HF and amateur coverage
Publication: American Scannergram

Club Name: American SW Listener's Club
Contact: Stewart MacKenzie, WDX6AA
Club Address: 16182 Ballad Lane, Huntington Beach, CA 92649
Phone: (714) 846-1685
Region: Western US, Pacific, Asia, & Middle East
Interests: SWBC, utilities, longwave
Publication: SWL

Club Name: Association of Clandestine Enthusiasts (A.C.E.)
Contact: Kirk Baxter
Club Address: P.O. Box 11201, Shawnee Mission, KS 66207
Region: US, Europe and Middle East
Interests: Pirate and clandestine
Publication: The A.C.E.

Club Name: Association of DX Reporters (ADXR)
Contact: Reuben Dagold
Club Address: 7008 Plymouth Rd. Baltimore, MD 21208
Region: International
Interests: Utilities, ham band, QSLing, MW, LW, and SWBC
Publication: DX Reporter

Club Name: Association of Manitoba DX'ers (AMANDX)
Contact: Shawn Axelrod
Club Address: 30 Becontree Bay, Winnipeg, Manitoba, R2N 2X9 Canada
Phone: (204) 253-8644
Region: Manitoba
Interests: LW, MW, SW, and VHF/UHF

Club Name: Bay Area Scanner Enthusiasts
Contact: Herman Frisch
Club Address: 4718 Meridian Ave. #265, San Jose, CA 95118
Region: San Francisco Bay area
Interests: 30+ MHz
Publication: Listening Post

Club Name: Bearcat Radio Club
Contact: Larry Miller
Club Address: Box 360, Wagontown, PA 19376
Phone: 1-800-423-1331
Region: US and Canada
Interests: Scanning only
Publication: National Scanning Report

Club Name: Boston Area DXers
Contact: Paul Graveline
Club Address: 9 Stirling Street, Andover, MA 01810
Phone: (508)470-1971
Region: 50 mile radius Boston
Interests: SWBC

Club Name: Canadian Int'l DX Club
Contact: Sheldon Harvey, President
Club Address: 79 Kipps St., Greenfield Pk., Quebec , Canada J4V 3B1
Phone: (514)462-1459
Region: Canada nationwide/membership open to all
Interests: General coverage
Publication: The Messenger

Club Name: Cincinnati Area Monitoring Exchange (MONIX)
Contact: John Vodenik
Phone: (513) 398-5968
Region: SE Indiana, Kentucky, SW Ohio
Interests: SWBC, utility, military, satellites, scanning, BCB

Club Name: Decalco Mania
Contact: Paul Richards
Club Address: P.O. Box 126, Lincroft, NJ 07738
Region: (206) 356-3927 (Phil)
Interests: Collecting radio related items

Club Name: Drake SPR4 Int'l Club
Contact: Rick Sitz
Club Address: 5210 14th St. W. #1, Bradenton, FL 34207
Region: Worldwide
Interests: Drake SPR4 owners

Club Name: DX Audio Service (NRC)
Contact: NRC Publications Center
Club Address: P.O. Box 164, Mannsville, NY 13661-0164
Region: Worldwide
Interests: AM/FM
Publication: DXAS Cassette 90-min monthly Audio magazine. Sample $3 to above address

Club Name: DX Club of India
Contact: Navin Patel
Club Address: 809, M.G. Road, 1-Dutt Niwas, Mulund, Bombay-400 080, India
Region: India
Interests: SW DXing

Club name: European DX Council
Contact: Michael Murray
Club Address: P.O. Box 4, St. Ives, Huntingdon, Cambs PE17 4FE England
Region: Europe

Club Name: Ft. Wayne Radio Listeners Club
Contact: Robert E. Hilton
Club Address: 5809 Heatherview, Fort Wayne, IN 46818
Phone: (219)489-5821
Region: Ft. Wayne area
Interests: All aspects of radio

Club Name: Int'l Radio Club of America (IRCA)
Contact: Ralph Sanserino
Club Address: 9705 Mary NW, Seattle, WA 98117
Region: Worldwide
Interests: BCB/AM DX
Publication: DX Monitor

Club Name: Longwave Club of America
Contact: Bill Oliver
Club Address: 45 Wildflower Rd. Levittown, PA 19057
Phone: (215)945-0543
Region: Worldwide
Interests: Longwave only
Publication: The Lowdown

Club Name: Metro Radio System
Contact: Julian Olansky
Club Address: P.O. Box 26, Newton Highlands, MA 02161
Phone: (617) 969-3000
Region: New England states
Interests: Public Safety
Publication: M.R.S. Newsletter

Club Name: Michigan Area Radio Enthusiasts
Contact: Bob Walker
Club Address: P.O. Box 311, Wixom, MI 48393
Region: Michigan & surrounding
Interests: All bands
Publication: Great Lakes Monitor

Club Name: Monitor Comm. Group
Contact: Louis Campagna, Ops. Mgr.
Club Address: 8001 Castor Avenue, #143, Philadelphia, PA 19152-2701
Region: 35 mile radius of Philadelphia
Interests: Various types of comms.

New Additions:

Club Name: Pitt Cty SW Listeners Club
Contact: L. Neal Sumrell
Club Address: Rt. 1 Box 276, Sumrell Rd. Ayden, NC 28513-9715
Region: Eastern NC
Interests: Shortwave bands
Publication: The DX Listeners

SPECIAL EVENT CALENDAR

Date	Location	Club/Contact Person
May 1-3	Fresno, CA	San Joaquin Valley ARRL Section Convention/Lee Rhoy, WA6YAB 4817 N. Crystal, Fresno, CA 93705.
May 2	Cedarburg, WI	Cedarburg Swaptest/Ozaukee Radio Club 11448 Laguna Dr., Mequon, WI 53092, (414)242-4995. Location: Circle-B Recreation Center, Hwy 60 and Cty I.
May 2-3	Abilene, TX	ARRL West Texas Convention/Peg Richard, KA4UPA 1442 Lakeside Dr., Abilene, TX 79602
May 2-3	Baton, Rouge, LA	Baton Rouge ARC Hamfest/Herb Ramey, KB5AQ 4079 Florida Blvd, Baton Rouge, LA 70806, (504)346-000 or 654-6087. Location: Baton Rouge Hilton
May 3	Yonkers, NY	Metro 70cm Network/Otto Supliski 53 Hayward St., Yonkers, NY 10704.
May 16	Colorado Sprgs, CO	Pikes Peak ARC/CO Assoc. of DXers* 8 AM to 3 PM.
May 16	Vinton, VA	Roanoke Mayfest/Roanoke Valley Amateur Radio Club P.O. Box 2002, Roanoke, VA 24009 Location: Lancerlot Sports Complex. 9 AM to 4 PM. Admission $6 at the door. Talk-in on 146.985 & 442.50+.
May 16-17	Birmingham, AL	BirmingHamfest '92-ARRL SE Convention P.O. Box 94775, Birmingham, AL 35220, (205) 979-7039 Location: Birmingham-Jefferson Civic Center; $5 admission, talk-in on 146.880 MHz.
May 16-17	Henrietta , NY	Rochester Hamfest-NY ARRL Convention 300 White Spruce Blvd., Rochester, NY 14623 Location: Monroe County Fairgrounds, corner of East Henrietta Rd. and Calkins Rd.
May 17	Queens, NY	Hall of Science ARC Hamfest/Charles Becker, WA2JUJ, (516)694-3955 or Arnie Schiffman, WB2YXB, (718)343-0172. Location: 47-01 111th St., Queens, NY. Opens 9AM, $5 admission, talk-in on 455.175 NB2A repeat.
May 17	Peotone, IL	Kankakee Area Radio Society/Frank DalCanton, KA9PWW 117 Kristina Dr., Bourbonnais, IL 60914.
May 22-23	So Sioux City, NE	Midwest Division ARRL Convention/R.W. Pitner, W0FZO 2931 Pierce St., Sioux City, IA 51104.
May 23-24	Casper, WY	Wyoming ARRL Convention/CO Assoc. of DXers* Wyoming State
May 29-31	Kansas City, MO	PHD ARC/Chuck Miller, WA0KUH P.O. Box 11, Liberty, MO 64068.
June 6	Knoxville, TN	ARRL Tennessee Convention-Hamfest/Angela Crigger, N4RPR 2707 Pine Hill Drive, Knoxville, TN 37932 (615) 694-9075 Location: Tennessee Valley Fairgrounds-Chilhowee Park 3301 E. Magnolia Avenue. Admission $5, talk-in on 147.195+, 224.50- and 146.52 simplex.
June 13	Loveland, CO	Superfest/CO Assoc. of DXers* Location: Lorimer County Fairgrounds, 8 AM to 3 PM.
June 13	Winston-Salem, NC	Winston-Salem Hamfest/Forsythe Amateur Radio Club P.O. Box 11361, Winston-Salem, NC 27116, (919) 785-3900 Location: Benton Convention Center, 9 AM - 5 PM.
June 14	Lancaster, NY	Lancaster Hamfest/Nick, WA2CJJ 5645 Genesee St., Lancaster, NY 14086, (716) 681-6410 Location: Elks Club Hall across from post office. $4 admission. Talk-in on 146.550 or 224.640.
June 14	Muncie, IN	Muncie ARC Hamfest/Michael J. Mullen, N9MHZ P.O. Box 1003, Muncie, IN 47308-1003. Location: Delaware County Fairgrounds, 9 AM - 3 PM, talk-in on 146.73.
June 19-20	Albany, GA	Georgia State Convention/John Crosby, K4XA P.O. Box 1250, Albany, GA 31702.

**SASE to Colorado Association of DXers, P.O. Box 22202, Denver, CO 80222-0202 for information.*

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

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STOCK EXCHANGE

Ads for Stock Exchange must be received 45 days prior to the publication date. All ads must be paid in advance to *Monitoring Times*.

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SURVEILLANCE, COUNTER SURVEILLANCE EQUIPMENT FOR SALE. WRITE SHERWOOD COMMUNICATIONS, BOX 535-G, SOUTHAMPTON, PA 18966 (215) 357-9065.

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FOR SALE OR TRADE: ICOM R71A $675, SONY 2010 $275, REALISTIC PRO-2021 $195, REALISTIC PRO-34 $195. All excellent cond. Stewart Traill (215) 726-1592.

MOTOROLA MX340 Synthesized UHF handheld 438-480 MHz, 48 channel, 5+ watt, PL, dealer programmable. Complete with rapid charger, spk/mic, extra batteries. Looks and performs like new. $450. Call Marty at (908) 735-0777.

LAFAYETTE COLLECTOR seeking CB/HAM gear in excellent-to-mint condition including receivers, stereos, catalogs, etc. Please write with what you have and price. Harry Schools, KA3B, 1606 S. Newkirk St., Philadelphia, PA 19145.

*Not to be confused with Michael DOYEL who is currently serving time for mail-order fraud.

REALISTIC PRO-2004 Scanner, very good condition, $150. George (404) 973-7286.

BEARCAT 200XLT Handheld. All 800 MHz, custom leather case, MetroWest Pro Power II Drop in Charger, long life battery. Excellent condition, $325. BEARCAT 950XLT Base/Mobile 100 channels, all 800 MHz, $185. Bob (708) 526-0973.

BEARCAT 800XLT $200, REALISTIC DX440 $100. Both like new. (903) 463-6756.

KENWOOD R-5000, opt. 4 kHz filter, YK88A1, YK88SN and SP430 speaker, and cover. Mint, $750. (218) 389-6256.

Anyone interested in selling any back issues of Monitoring Times, please contact J.L., P.O. Box 8647, Jacksonville, FL 32239-8647.

Will trade BEARCAT 800XLT and PRO-34 both excellent condition for PRO-2005 or 2006, or sell for $400. Philip (615) 982-8380.

FOR SALE: REGENCY MX-7000 scanner, 25-500 MHz, 800-1200 MHz. Good condition $225. SONY 2010 receiver, good condition, $250. Call Reginald (804) 627-4971.

JRC NRD-525 receiver with NVA-88 external speaker, $790. Prodigy TFXB29A or (303) 673-0932.

FOR SALE: UNIDEN BEARCAT 200XLT, excellent condition, everything included, $199. BEARCAT 760XLT scanner, perfect condition, factory packing, $200. Eric Weister, 659 Lower Rd., PO Box 588, Souderton, PA 18964, (215) 723-6520.

ACE/AOR 2500, 1-1500 MHz, mint, $300, (514) 739-9328.

R-390A/URR, as is $200, Larry Whately, (804) 332-6275.

ICOM R71A, w/box, manual, $665; ICOM R7000, w/box, manual, $825; ICOM RC12 remote control for R7000, $55. Call Rex (804) 796-5304.

Letters

Continued from page 4

• From "One Mad American," Jeff Wilcox, Kent, WA: "I'm sick of the government passing laws that take away the rights of a scanner user. Whatever happened to the saying that you have a right to monitor everything that comes into your home? What gives some money hungry companies (i.e. cellular manufacturers) the right to tell me what to do in my home! ... We, as scanner users, ham operators and others that want to keep our rights from deteriorating... all have to take a stand— write and vote. If we don't, you know what the consequence will be!"

• Arnal Cook, Clarksville, TN, writes: "While we celebrate New Jersey entering the enlightened '90s [in the repeal of its restrictive mobile monitoring law], let's remember next-worse restrictive states. I nominate Kentucky for its total outright ban on anything capable of receiving police frequencies from being in a car!

"I live in Clarksville, TN. My job often takes me 1/4 mile into Kentucky, then onto Federal property where I'm 'safe' again. It's scary to think what might happen someday in the 1/4-mile, 2-minute stretch. Three extra antennas on my car are sure to draw attention someday. I stand to lose a 2-meter mobile, 2-meter handheld, a Bearcat 100XL and an AOR1000!

"I drove from Seattle, WA, to Clarksville, TN, and didn't go through a single state with laws against scanning, or at least an exemption for hams. Until I got to Kentucky! I made sure I stopped and put it all in the trunk."

Let's face it: society is changing and so is technology. But some of the old laws of common decency and politeness are as applicable as ever. The basic premise of the Communications Act of 1934 still works.

So does the Golden Rule. A clipping sent in by Ricardo Molinar—a letter to the editor sent to the *New York Times* by Whitney Quesenbery—said "On a recent train trip, the entire car listened to a businessman call everyone he could think of to try out his new cellular phone. Perhaps if we acknowledge that we are sharing public space, and consider our effect on others, life would be less irritating."

The same is true of air space. But I can't help but wonder: would the individual using that cellular phone with such disregard for others have been outraged if he knew someone else was listening in—on the radio?!

Several good equipment tips and hints have come in from readers that will have to wait until next month. However, there is one more letter I want to address. It was sent to Bob Grove from Louis Burkhardt of Los Alamos, NM, who says, "Why do I no longer open your publication, eagerly seeking the letters listeners send you? It finally dawned on me: we no longer hear from them directly anymore. Instead, someone *[namely, the editor]* tells us what they wrote to you about. A few quotes, but the letters are mixed up like left-over stew and end up as bland as cold oatmeal. This middleman handling of letters takes out all the individuality, spark, and fire of the letter writers."

I regret that the conversational style we've used in the "Letters" column since November 1988 has seemed to you to water them down. Valid arguments can be made for both approaches. However, I think you'll find that the style and treatment of "Letters" will vary from month to month depending on the variety, quantity and quality of letters received. This month brought a real bonanza of quotable letters, so I hope you found this edition more to your liking, Louis.

That leaves me with the answer to last month's quiz: who was the first President to have a radio in the White House? According to the item submitted by Mr. E.H. Walters of Fayette City, PA, it was President Harding, who had a radio installed in the White House in 1922.

Thanks for all the good letters—write to your Congressman and your newspaper and make sure no one takes away *your* good monitoring times!

Rachel Baughn,
Editor

Closing Comments

EMF and Your Health — A Formal Study is at Hand

A few months ago in the pages of *MT* we examined the hazards of non-ionizing electromagnetic radiation (NIEMR), those invisible, yet potent, fields of energy—primarily from AC power lines and AC-operated appliances and equipment—that surround all of us.

We noted that evidence of the perils of power is circumstantial, although compelling, and that there are no documented studies to provide indisputible evidence indicting electromagnetic fields (EMF) as a cause of certain forms of cancer.

Now there is a glimmer of hope that such a survey may be near. Co-chaired by George E. Brown, Jr. (D-CA) of the Committee on Science, Space and Technology, and James H. Scheuer (D-NY) of the Subcommittee on Environment, The National Electromagnetic Fields Research and Public Information Dissemination Act (H.R.3953) has been proposed by the House of Representatives and is now before Congress.

The proposal recommends that Congress authorize a $70 million study to determine just what the hazards of our electrical environment are. The ten year study, led by the Department of Energy and supported by six federal agencies, would continuously provide information to the public on their findings.

Will the utility companies oppose such a study, concerned that a corroborative outcome could spur a rash of lawsuits over their negligence? Not the publicly-held electric cooperatives; their nationwide association vigorously supports H.R.3953.

We agree with them. It is time to resolve once and for all this century-old question which may be taking an insidious toll on Americans. *MT* readers may wish to write their Congressional representatives in support of H.R.3953. A display of public interest and encouragement could insure safe passage of the bill.

Bob Grove
Publisher

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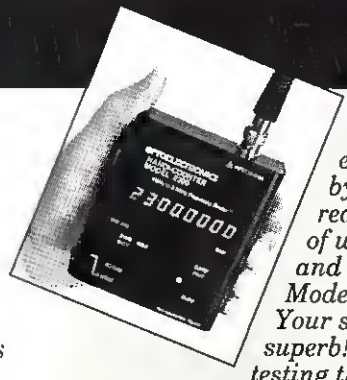
Gordon West



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Ron Bruckman
Radio Monitors Newsletter
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Display	10 Digit LCD w/Function Annunciators	10 Digit LCD w/Function Annunciators	10 Digit LCD	10 Digit LCD	10 Digit LCD	8 Digit LED	8 Digit LED
RF Signal Strength Indicator	16 Segment Adjustable Bargraph	16 Segment Adjustable Bargraph	16 Segment Adjustable Bargraph	•	•	•	•
Hold Switch	Yes	Yes	Yes	Yes	Yes	No	Yes
Price	$579.	$375.	$325.	$259.	$225.	$179.	*$99.

Sensitivity: <1 to <10mV typical. Time Base: ± 1ppm.; ± 2ppm add $100. - LCD Models only. Nicads & AC charger/adapter included except for 2300. *For 2300, available with NiCad installed & AC charger/adapter, complete package $128.
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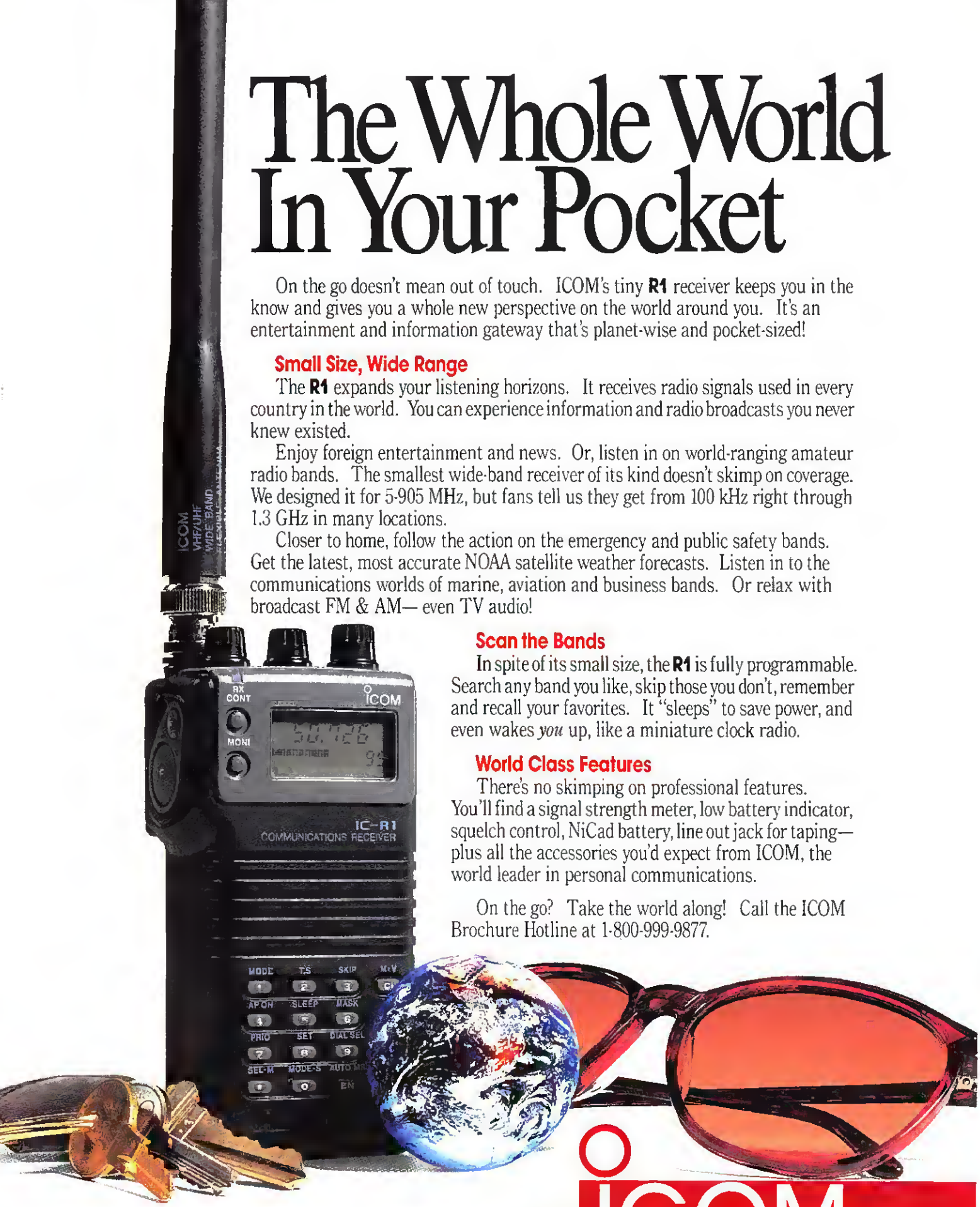

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