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Details Inside

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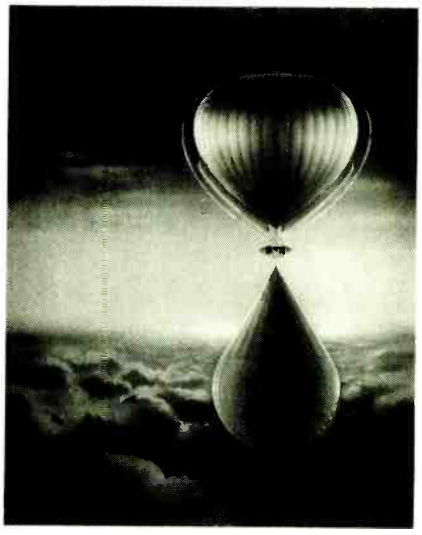


Around the World in 20 Days 8

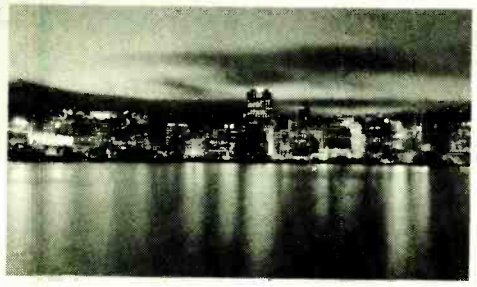
By Donovan and Stone

Earthwinds — It's an appropriate name for a balloon designed to travel the tradewinds at 35,000 feet, with the goal of circumnavigating the globe. Not since the flight of the *Voyager* has there been an expedition that sc captures the imagination. Like the *Voyager*, this flight can also be tracked by radio monitors.

Programs for Radio Enthusiasts 14

By Ron Tamburello

In spite of the best efforts of magazines like *MT* to stay current, shortwave stations can change their schedules and frequencies without notice from one day to the next. One way to stay abreast of these unexpected variations and enter a logging at the same time, is to tune in to shortwave programs specifically geared to the radio hobbyist.



WELLINGTON New Zealand

Radio New Zealand International 18

By Edward Pyatt

RNZI is a station with a mission. Although it does not ignore its European roots, New Zealand has chosen to identify itself with the other islands of the South Pacific, and dedicates its broadcasts to explaining and preserving their common Polynesian heritage.

COVER: This striking picture of ***Earthwinds'*** top balloon was taken the night of the last launch attempt in February at the Loral Corporation's airdock in Akron, Ohio. Capturing the mystery and drama of this historic attempt was award-winning photographer Father James F. Flood. ©1992.

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Radio Recovery 22

By Jim Pogue

After the population was cut off from food, shelter and basic utilities by Hurricane Andrew, it was probably fitting that it was a Psychological Operations group that set up Radio Recovery. They were ministering to a city in shock, and what they offered filled a basic human need -- communication.

Memories of the MT Convention 24

By Rachel Baughn

The 1992 MT Convention in Atlanta was terrific fun! Each of us will remember his own highlights, but here are a few of mine. You are also invited in this article to help influence the direction of future conventions.

Radio ALA 27

By Igor Sannikov

This look at one of Russia's new independent broadcasters is informative, but leaves just enough questions unanswered to be intriguing.

And More ...

Belief in direct broadcast satellites, five-foot dishes and a system with no moving parts went out with the tooth fairy, right? Well, yes and no. "Satellite TV" will set the record straight about who's dreamin' and who's schemin'.

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Federal frequency lovers will find a real bonanza this month in "The Federal File." You'll find FBI and Secret Service and much, much more in this month's issue of *Monitoring Times*.

DEPARTMENTS

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LETTERS

Counting Our Blessings

1992 is shaping up to be a significant year for *Monitoring Times* and Grove Enterprises. We have a lot for which to be thankful. Meeting many of you at *MT's* third annual convention prompts me to offer a special word of appreciation to you, our enthusiastic and ever inquisitive radio buffs. Your unending curiosity about the world and your fascination with the equipment that brings it to your ear is the motivation behind all we do. Our blessings now number in the tens of thousands!

Pondering the Radio Pirates

Strolling down the corridor at the *MT* Convention, a companion observed how individualistic radio hobbyists are. "Probably the only thing we agree on is the love of the hobby," he said. This next topic proves the point.

A debate on unlicensed broadcasting has been brewing in the club bulletins and hobby magazines, spurred in part by the increased activity by the FCC in the U.S., and the Radiocommunications Agency in England. Here are a few of the expressed points of view, beginning with a letter by Michael Martin of Marietta, Georgia, to *Monitoring Times*.

Michael says, "I believe *MT* is one of the most authoritative communications magazines published. I do, however, have one complaint—the "Outer Limits" column. This column is dedicated to those who operate their radio equipment without a license and cause interference to other stations. Why do you condone the illegal operations of these people?

"If I was to tune up a radio on 2 meters or 70 cm just so I could broadcast music, I would have everyone and their brother condemning me. Tell me, what is the difference between broadcasting on 7410 kHz and 146.55 MHz without a license? Let's stop promoting these people!"

Shortly after receiving Michael's letter, I read the following comments in the Arlington *10-10 News* which were directed to an organization for amateur radio clubs in the Washington area.

"We were amused to read the Foundation for Amateur Radio's assessment of the pirate/freebander 'threat' in the July issue of *Autocall*. We spent hours last winter listening to the 'pirates' on the 41 meter international broadcast band, on or about 7415 kHz. It's our judgment that they don't pose a threat to anyone... For one thing, you need a state-of-the-art triple conversion receiver and a good tuned antenna just to hear them.

"OK, so pirate broadcasting is illegal. Rather than get hysterical about it, FAR could actually DO something. For example, both *Popular Communications* and *Monitoring Times* have a monthly 'pirate' column. FAR could suggest that both publications refrain from publishing any information about pirates and freebanders. FAR could also ask the owner of the local ham radio outlet to stop selling pirate radio directories. If pirate radio stations stopped getting positive feedback, via radio amateurs, many of them would cease operating."

Britain's *Shortwave Magazine*, which recently suspended its "free radio" column (entitled "Off the Record") after a warning from the RA, had several lively responses in the September issue. Here are two arguments which may be of interest to *MT* readers: Regarding the legality of reporting on illegal activities, Trevor Brook of Cranleigh says, "Reporting factual information about events which occur is in no way unlawful. 'Publicising' something which somebody is planning might be different."

Ken Lancaster and Morris Walker of Barnsley and Halesowen (their locations, I believe, not a legal firm!) said, "The theory behind this would appear to go along the lines that the publication of the date, time and frequency of an unlicensed radio station being heard on the air in some mysterious way helps to promote unlicensed broadcasting. If this same simple logic is applied to other fields—why is it not said that the reporting of criminal activities on our daily newspapers leads to an increase in crime?"

An opinion that might surprise you comes from Andrew Yoder, an editor for *ACE* who is currently contesting the FCC's charge that he is responsible for pirate Radio USA. First of all, Andrew states, "I believe pirate radio stations *should* be fined when they get caught; not some ungodly amount—pirate radio is so harmless it hardly compares to running a stop sign."

Here's the way Andrew thinks it ought to be: "I would like to see some cooperation between the FCC and the 'pirate radio establishment.' For example, when Zodiac Radio was on every night in 1990, the FCC could have contacted the maildrop and said 'Look, Zodiac is just too active. Tell him to cut his broadcasts back to maybe three times per month and we'll leave him alone.'

"Or, if pirates *really* are running across public service and emergency frequencies, the FCC should be sending warnings to the ACE and to the maildrops.

"For example, if a new military station started operating on 9415 kHz, they should say 'We don't approve of pirate radio, but any stations that are interfering with [name of service] will be busted. They should try [clear

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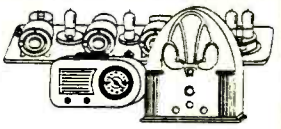

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LETTERS

frequency] instead to minimize the interference.'

"These measures would reduce interference, save wasted tax dollars on enforcement, make the FCC's job a lot easier to contain, and still allow a few more stations to go on the air (while still being kept in line by the FCC)."

Andrew maintains this approach would not result in any more anarchy than already exists, with Voice of the Night ("who deserves to lose his radio") still on the air, jamming everything he can hear.

Where does *Monitoring Times* stand on all this? While we do not encourage unlicensed broadcasting, our main "reason for being" is to serve our readers—the listeners, not the broadcasters. "Outer Limits" addresses one of the most fascinating of DX challenges—logging those stations that, because of their very nature, generally operate on low power with no regular broadcast schedule.

R-E-S-P-E-C-T

If pressed for an opinion on illegal broadcasting, I would most likely judge a broadcaster more by its attitude and consideration for others with whom it shares the spectrum than on strict legality. We've already mentioned in September the interference with shuttle rebroadcasts by "licensed" amateurs. Here's another example of that from reader Gary Rowland of Bryant, Arkansas:

"The rebroadcast of the Space Shuttle by WA3NAN should be a shining beacon for amateur radio, not a slap in the face.

"I was asked by a local school teacher to present a shortwave demonstration. I taped some international shortwave broadcasts and shuttle rebroadcasts just in case. I got shot out of the saddle, though, by a few inconsiderate ham operators that interrupted the broadcasts.

"How many students might have been inspired to become hams? The only thing separating amateur radio from other services is not a license, but style, that used to include RESPECT for each other as well as the law.

"Due to numerous instances ... well, never mind. I'll just listen."

Taking License

"Long over due," is what Paul Mundt of Lombard, Illinois, said of the reminder in the September issue that you must be a business to obtain an FCC license for a business band radio. He says, "The same should also be said about the sale and use of amateur transceivers.

"Just because Radio Shack (or whoever) sells transceivers to the public, does not give people the authority to use them! Such a notice

should be printed with every advertisement or review of such products. Publish this reminder more often!"

"What about these walkie talkies?" asks R.A. Moreno about a sports catalog item touting a *Sport Com 2-mile radio*. The radio is listed at operating at 460 MHz; at this frequency the operator is required to apply for an FCC license, but the operator is not required to be a licensed business. Another radio on the same page—the Maxon 49-SX—only carries 1/4 mile, and can be assumed by its name to operate in the citizen's band which does not require a license.

Tired of talking about free speech and legalities and all that controversy? So am I; so we'll wait until next month to address the free speech issue as it applies to National Vanguard Radio being aired on WRNO and other broadcast stations.

Is it Hauser or is it Memorex?

Two writers reacting to comments contained in Glenn Hauser's Shortwave Broadcasting column need to redirect their outrage. Apparently the authors are unfamiliar with Hauser's long-established format of printing commentary verbatim from printed or audio sources with the source following in parenthesis. Comments which originate with Hauser come either at the end of a paragraph with no attribution, or are followed by a (gh).

That said, the first letter is from Edouard Provencher of Biddeford, Maine. The comments that so irked Edouard were made by Larry Nebron on the Shortwave Echo, saying that Tom Meyer's Happy Station show never changed in 20 years and had become boring. He expressed the hope that new host Pete Myers would modernize the show.

Says Edouard, "I am offended by his remarks that after 20 years Tom Meyer's Happy Station Show is getting boring! The Happy Station Show is an institution. If the format was to change, it would be just like any other variety show heard on shortwave.

"I have been a loyal fan for 23 years now and I intend to remain so under Pete Myers' direction, but, if he should ever remove the personal touches, I'm gone. Don't mess around with a good thing; Remember what happened to New Coke?"

The second letter comes from Alfredo Cotroneo, President of Nexus-International Broadcasting Association, who writes, "In the June issue of *MT*, your column "Shortwave Broadcasting" contained a warning to readers not to write to IRRS-Shortwave because of what one contributor [Frank Orcutt, NY] termed an 'unsolicited' letter of a religious nature he presumably received after writing to us or to the program producer in question."

Cotroneo clarifies that IRRS-Shortwave has no religious or political affiliation, and is a non-profit organization "dedicated to making international broadcasting facilities available to those who cannot afford the cost of other similar services." Reception reports and letters which are sent to IRRS-Shortwave are forwarded to the appropriate programmer, and that policy is stated on the air.

"Since shortwave transmission began in 1988, we have not become aware of any other complaint of this kind. We at Nexus-IBA regard this incident as having been grossly sensationalized by the editor. And we are saddened that an attempt at dialogue is perceived as an annoyance. Furthermore, we protest at the clear implication that our station and programming should be viewed in suspicion or even avoided."

Calling All Canadians

Subscriber Jeffrey Johnston of Mississauga, Ontario, is concerned about the lack of Canadian content in *MT*. "It's often hard for us Northerners to keep abreast of what our government is plotting (in our case the Dept. of Communications) or trying to determine if any of the FCC regulations are valid in Canada.

"A perfect example is the monitoring of cellular telephones. In the U.S. it's illegal, but in Canada it's not."

Brian Keegan of Canscan, publisher of the *Canadian Scanner Handbook*, sent a clipping from the Nova Scotia *Sunday Daily News* which sums up the Canadian state of affairs very well. So far, the Radio Communications Act states that it is not illegal to eavesdrop or to record radio and cellular phone calls because the frequencies are considered public property. (How enlightened!) However, as in the U.S., it is illegal to share the information.

Henry Klain of the Dept. of Communications was quoted as saying that rather than licensing scanners, which has become impractical, it is simpler for the user of any radio frequency

Continued on page 97

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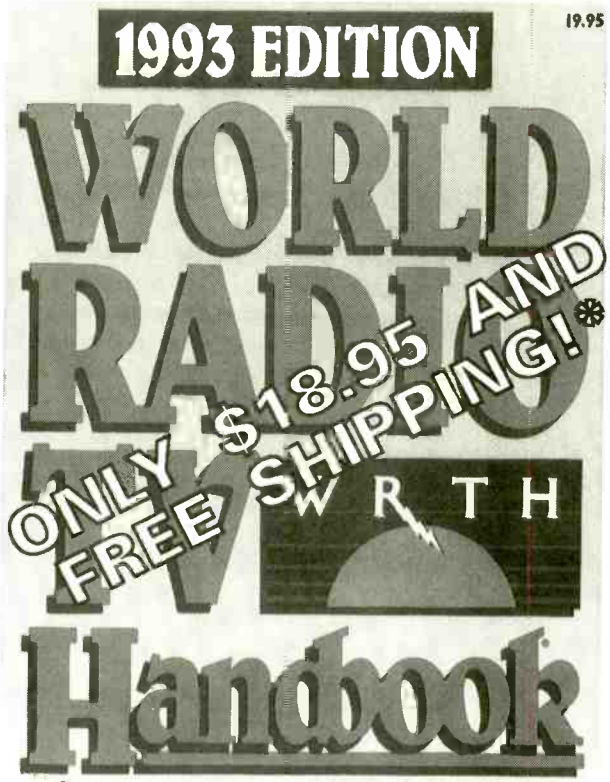

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Flash!

Anti-Scanner Law Passed in Last-Minute Ploy

In the closing hours of the 102nd Congress, when it became clear that the FCC Funding Bill would die for lack of action, the U.S. House of Representatives introduced, and the U.S. Senate accepted, House Bill HR6191 and Senate Bill S1579, known as the 900 Bill because of its primary concern with 900-exchange toll abuse.

While the previously-proposed FCC Funding Bill with its anti-cellular amendment died without action, Senator Larry Pressler (R-SD) introduced a provision similar to the old anti-scanner amendment; it was passed as part of the BIll and amends Section 302 of the 1934 Communications Act (47 U.S.C. 302).

Within 180 days after the Bill is signed into law, the FCC would deny certification to any scanning receiver that (1) receives cellular frequencies; (2) can be readily altered to receive cellular frequencies; or (3) is equipped to descramble digital cellular calls into analog (clear speech).

Similar to the ill-proposed Electronic Communications Privacy Act (ECPA '86), the new law will have no effect on those who wish to tune in illegally on cellular telephones, but will give the cellular industry what they were after: the illusion of privacy so that they can continue to misinform their customers that cellular telephone calls are private.

Iraq Invades Kuwait

Iraq has invaded Kuwait again. This time the weapon is something only slightly more insidious than cluster bombs or poison gas. This time the Iraqis are using... TV.

According to the BBC Monitoring Service, a new Iraqi TV station has been launched that covers all of Kuwait. And boy, are the Kuwaiti people happy.

Kuwaiti deportees have told the Iraqi News Agency in Basrah that most Kuwaiti families have been "delighted" by the programs, "especially news of leader Saddam Husayn's [sic] activities." Also reportedly rating high among Kuwaitis were news bulletins on Hussein and political programs about Hussein. "Iraqi television," boasted the reporter, "[has been] received with admiration and interest by the sons of the Kuwait region."

We Want Our Iraqi TV!

It's entirely possible that the people of Afghanistan might actually welcome Iraqi TV. They don't have any of their own right now. During a recent rocket attack on the capital, Kabul TV's mast took four hits, bringing it down. Thirty people were killed.

Station officials said that the people could be without the tube for 10 months.

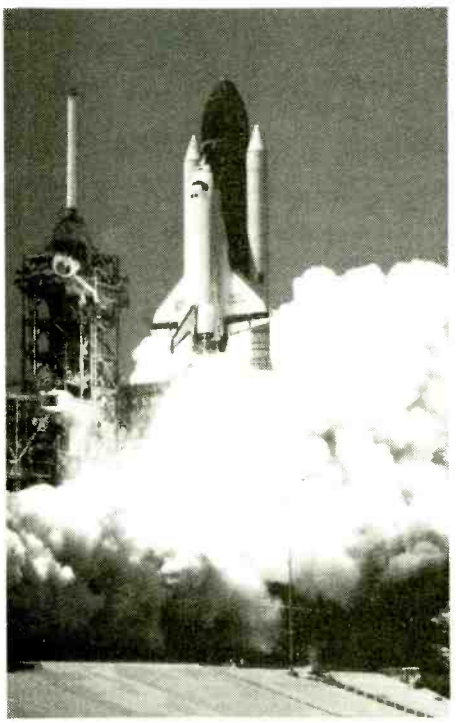
Another Tower Story

In Fort Lauderdale, Florida, citizens are up in arms over a new 350 foot radio communications tower. The tower, say residents, which replaces an old 180 foot tower, will mar the view of the city's emerging downtown sky-

for a Camel cigarette. Down in Hyattsville, Maryland, they're playing a game called, "would you die for your scanner?"

According to newspaper reports, when a local man took advantage of the local police department's "ride along" program, he happened to mention to the officer that he enjoyed listening to police communications on his scanner. According to a police spokesman, Officer Lawrence Latham asked the man if he would give up his scanner if there was a "gun to his head." Latham then reportedly placed the barrel of his 9mm pistol to the man's temple.

There's no record of how the scanner listener responded; however, Officer Latham received a three day suspension.



Intercepting Mobile Phones for Profit in England

Britain's Press Complaints Commission received over 51 written complaints over the publication last month of semi-naked pictures of the Duchess of York frolicking with her financial advisor. Interestingly, the Press Complaints Commission received no complaints when the *The Sun* made available an amorous and very intimate phone call between England's Princess Diana and a male friend.

The mobile phone call was intercepted and taped by a retired banker named Cyril Reenan, who was paid US$12,000 for his work. The *Sun*, who offered the tape on a "900"-type number, reportedly has made $700,000 from the venture and plans to syndicate it to other countries in the near future.

There are federal laws against the taping of any phone calls in the United States and laws forbidding the monitoring of cellular phone calls.

FM Radio Con Jailed

You may remember the story. It was July of 1989 and Thomas Root was flying his Cessna from Washington to North Carolina when he radioed for help. Shadowed by military jets, the single engine plane flew on automatic pilot down the coast as Root drifted in and out of consciousness. The plane finally ditched in the ocean when it ran out of gas near the Bahamas.

When rescued, police found that Root had suffered an unexplained bullet wound. It was later discovered that Root was under investigation for bilking thousands of investors who bought FM radio partnerships sold by Sonrise Management.

Last month the story came to a close when Root was sentenced to 15 years in prison and fined $5,000. According to Associated Press reports, the company had raked in $16.3 million on the scam before it was stopped.

Space Shuttle in the Hands of Amateurs

For a brief 20-25 minutes last September, the Space Shuttle was in the hands of amateurs; Amateur Radio operators, that is. A "glitch" in the White Sands computers plunged the Shuttle into a communication blackout in which mission controllers could hear pilot Jay Apt, but could not respond to him.

Amateur Radio came to the rescue. A tiny two-meter ham radio installed in the shuttle

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COMMUNICATIONS

as part of the Shuttle Amateur Radio Experiment (SAREX) is used by astronauts to talk with school children and licensed hams. Shuttle crew members Jay Apt (N5QWL) and Mamoru Mohri (7L2NJY) were the operators on this mission.

At the time of the outage, the shuttle was coming over the horizon toward a scheduled rendezvous with Queensland University of Technology in Brisbane, Australia, where ham operator Andy Joyce (VK4KIV) was standing by for the scheduled contact. Mission control in Houston asked ham operators in the nearby SAREX control room to relay a messsge to Apt via Australia that communication soon would be restored.

"Even though SAREX is primarily an education program, we've always recognized that Amateur Radio could be a backup link in a NASA space shuttle mission," says Roy Neal (K6DUE), Chairman of the SAREX working group. "Thankfully, this was only a routine problem. Even so, the performance of hams operating SAREX lived up to our expectations."

However, McFadin said the students in Australia were so startled by the unexpected turn of events, that they were unable to remember the questions they had prepared to ask as the shuttle passed overhead.

SAREX is an education program developed jointly by the American Radio Relay League (ARRL), the Radio Amateur Satellite Corporation (AMSAT) and the National Aeronautics and Space Administration (NASA).

Cellular Phone Monitor Helps Nab Thief

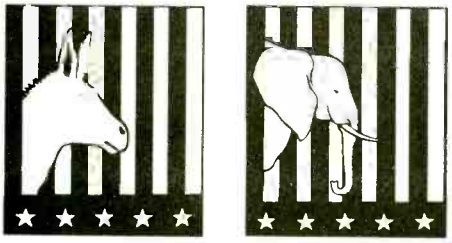
Larry Miller (not the author) said he was "just goofing around" (the author never "goofs around") with his scanner when he overheard a man bragging to a friend about stealing a pickup truck from the stolen vehicle's cellular phone.

So what's a law abiding, scanner listener to do? Miller picked up his phone and, according to the *San Diego Union*, called the Concord, California, police dispatcher, providing them with details as the conversation continued. Five hours later, after a car and foot chase, police arrested the thief.

Miller said that he heard the man say that he hadn't planned to steal the truck but that he couldn't resist when he saw the keys in the ignition.

Politics on Television

"Many people think that today's presidential candidates' appearances on the 'Arsenio Hall Show,' 'Larry King Live,' and MTV are



novel," says Prof. Clark Caywood, Ph.D., of Northwestern University. Prof. Caywood is curator of a new exhibition at the Museum of broadcast Communications in Chicago entitled "Politics on Television: Changing Channels in America."

The exhbition, which extends from October 5 to November 25th, contains memorable examples that this type of political marketing is not new. "In the 1960s, Richard Nixon, in an attempt to appeal to a large audience, appeared on Rowan and Martin's 'Laugh-In,'" reminds Prof. Caywood. For more information on the exhibit's impressive line-up of guests and special programs, call 312-629-6000.

"This is not a test..."

One chilling reminder of the Cold War, the Emergency Broadcasting System, may soon be going the way of the Berlin Wall. According to Paul Farhi, writing in the *Washington Post*, "the tone" has been a fixture on the nation's airwaves for over 40 years. The Federal Communications Commission requires stations to test the system weekly, which means airing the high-pitched tone along with the immortal words, "This is a test... This is only a test..."

A legacy of the Truman Administration, the Emergency Broadcast System (originally known as CONELRAD), was never used for its intended purpose—for the president to warn Americans about an impending nuclear attack. Instead, since the 1970s, state and regional authorities have used the system to alert radio and TV stations about hazardous weather conditions, and local emergencies such as toxic spills or nuclear plant accidents. The system was used in April during the Los Angeles riots.

Now the FCC is hoping to replace the old system with something more reliable and that would not require the audience-frightening tones. But not everyone is happy about the potential change, most notably broadcasters who say that replacing the old equipment may cost as much as $3,000 each.

The new system will have tones that are imperceptible to human ears.

"Communications" is written and edited by Larry Miller from materials supplied by readers.

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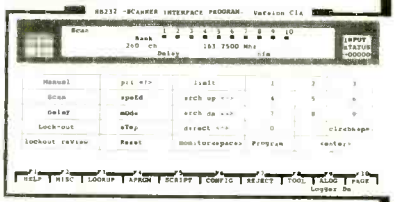

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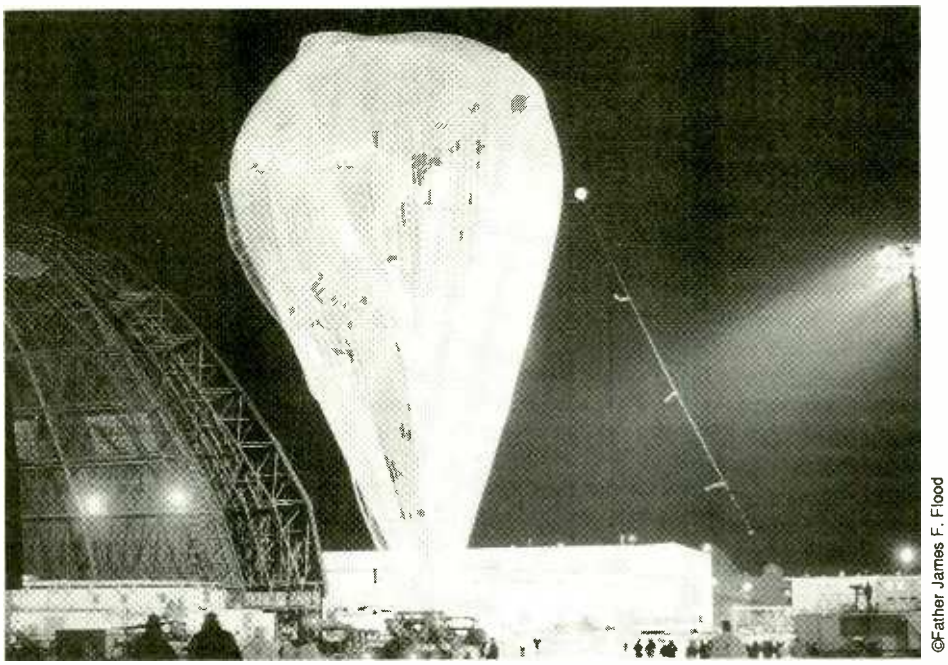


©Father James F. Flood

Earthwinds Makes a Second Attempt

By Mike Donovan, KA0JAW and Mike Stone, WB0QCD

Excitement is building as preparations get underway for the "first ever" around-the-world balloon flight. This will be the innovative *Earthwinds'* Hilton second attempt to achieve what is being called one of the greatest aviation challenges ever undertaken. Last year's launch attempt from the Loral Defense System hangar in Akron, Ohio, had to be abandoned when the necessary windless conditions failed to materialize during the four-month launch window.

Earthwinds is gambling on better odds from the new launch site, Stead Airfield near Reno, Nevada. The launch window (when the jet-stream flow at 35,000 feet is most favorable) is open from November 1992 to February of 1993 with December being the most likely.

Two members of last year's flight crew, Larry Newman KB7JGM and former Soviet cosmonaut Vladimir Dzhanibekov, are anxious to lift off from Earth once again. Due to time constraints, third member Richard Branson of the United Kingdom will not be participating during this year's attempt. His company, Virgin Atlantic Airways, is, however, a sponsor of the second flight attempt. Don Moses of the United States (Hawaii), who was ready to fly with the crew last year, is now a definite permanent member on this year's team.

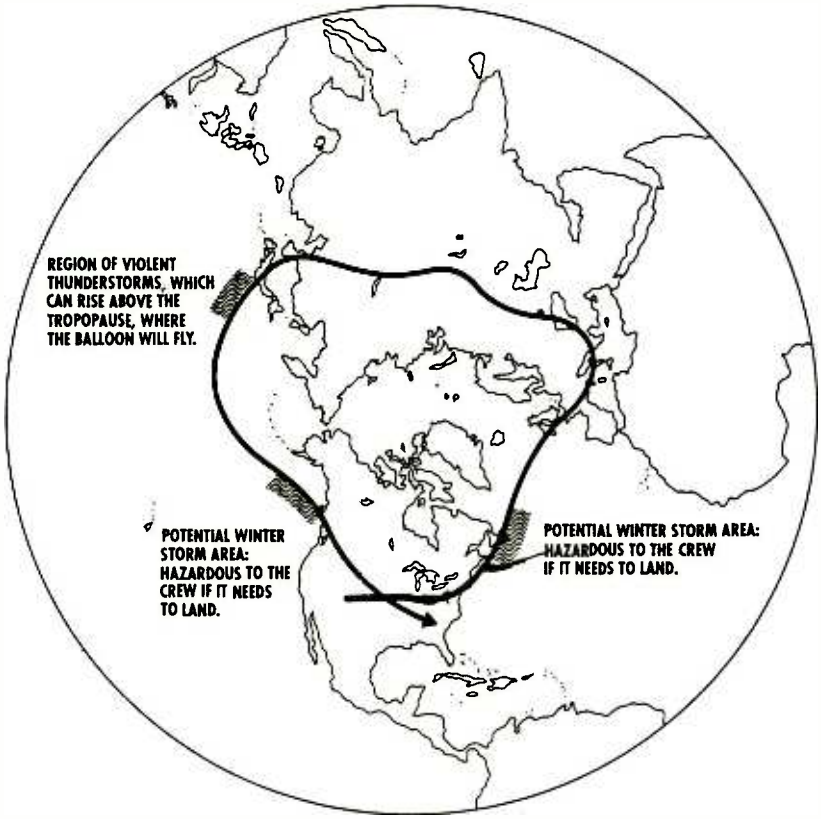
The flight of *Earthwinds* provides an unparalleled opportunity for atmospheric research. Cooperating with the NASA and NOAA, aeronauts Newman, Dzhanibekov and Moses will conduct research on wind shear, stratospheric ozone testing and other experiments.

Earthwinds Hilton crew (l-r) Vladimir Dzanhibekov, Larry Newman and Don Moses eated inside the gondola.

Staying the Course

The anticipated plotted course covers over 20,000 miles, and begins by crossing a good portion of the American midwest and moving eastward, providing earth trackers across the U.S. with an excellent opportunity to follow *Earthwinds'* progress. It then will cross the Atlantic Ocean, parts of the United Kingdom, Western Europe (trying to avoid the mid-east), Russia, Japan, the Pacific Ocean and return home again passing through the upper western United States (Oregon), and on through Iowa.

www.americanradiohistory.com



Hamline University

If luck holds out, *Earthwinds* hopes for a final landing in Akron, Ohio, to reward all those thousands of supporters who cheered the three-man crew onward last year. The entire expedition is calculated to take 12 to 21 days!

Designed for Stability

In a unique design by Tim Lachenmeier of Raven Industries, *Earthwinds* consists of an upper helium-filled balloon and a lower, "up-side-down" air-filled balloon. As in Akron, the upper balloon will be inflated weeks before the launch date but will not be joined with the lower balloon outside the airdock until the actual day of the launch. The weather conditions required to assemble the massive balloons and launch them successfully must be eight hours of virtually no wind (5 mph or less).

This ballooning "first" uses a sealed balloon filled with air suspended below the gondola for ballast. This "anchor" balloon is a 100 foot round pressurized ball with 500,000 cubic feet of air and is constructed of Allied Signal Fibers' "Spectra."

The lower balloon becomes heavier in relation to the outside air as the balloon system rises; it becomes lighter as the gondola descends. During the day, when the sun heats the helium balloon causing it to rise, the lower balloon will act as an anchor providing for a much more controlled flight. During the cooler evening hours, when the helium balloon would tend to descend, the lower balloon, now lighter, will keep the gondola in its optimum altitude range.

If necessary, a valve may be opened to release air pressure and lighten the ballast, or a powerful electric fan may be used to repressurize the lower balloon. When it's time to land, the anchor balloon will be deflated.

The upper balloon is 180 feet tall by 100 feet in diameter at launch, 140 feet by 140 feet at floating altitude. The capacity of the upper balloon is more than one million cubic feet of helium. Construction is of clear plastic astrofilm, reinforced with fiberglass load tape.

A pressurized gondola/capsule, 24-ft-long by 10-ft in diameter is suspended between the two balloons. The capsule was designed by Burt Rutan, President of Scaled Composites, Inc. and is constructed of scaled composites, fiberglass and other high performance fibers bonded with epoxy resins. It weighs 2,000 pounds and will have a gasoline generator onboard to supply electrical power for communications, life support systems, pressurization and onboard experiments.

Interior temperatures should remain at 65-70 degrees Fahrenheit while outside temperatures will drop to minus 60-70 degrees. Floating above the earth at around 35,000 feet, the craft will be at the mercy of the upper polar jet-streams around the world!

Communications

NASA will supply a satellite communications system for the flight. The ARGOS satellite will transmit the exact location of the balloon to

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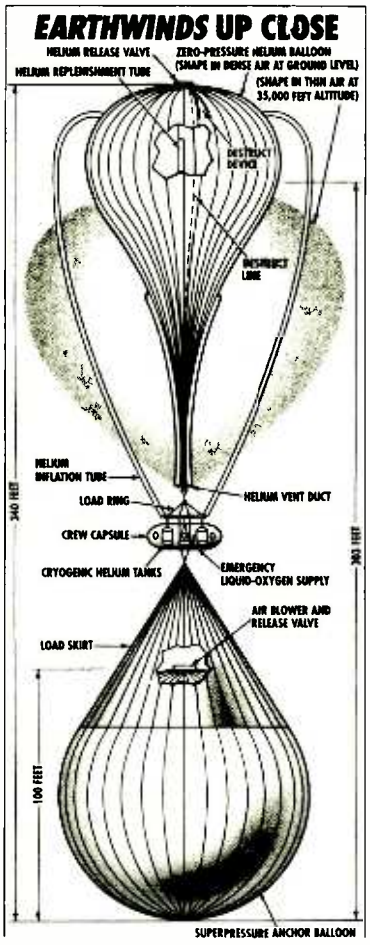
Flight Test Frequencies (USB)
(Used in 1987 by the Voyager and likely to be used by *Earthwinds*; from Grove *Shortwave Directory*)

2851	8822
3004	10045
3443	11288
5451	11306
5469	13312
5571	17964
6550	21931

Updates: W1AW or AMSAT nets. See text.



Hamline University

Earthwinds' flight control center in Reno on a daily basis. The crew will have two Global Positioning System receivers on board to indicate their location to the precision of a few feet.

They hope to be in constant communication back to headquarters through the INMARSAT satellite telephone system on loan to the crew by NASA. This direct link will provide weather information, live and still-frame video images and voice communications.

There will be a backup HF ham radio system on board, and an automatic computerized voice beacon identifier for this flight as well. The amateur radio communications system (a Rockwell/Collins HF-9000 transceiver) has the capability to cover some 5,000 to 6,000 miles in range.

Newman has remained a Novice class amateur radio operator and so is limited to 10 meter voice communications. When asked about the potential of her husband upgrading his license, Lynn Newman said, "Larry just doesn't have the time to study for an upgrade in his Amateur Radio license right now. He holds two full-time jobs and of course tries to do all his other flying interests as well. He just is too busy!"

She added that other VHF or UHF amateur radio equipment including ham FSTV gear would not be on this flight because of "weight problems." A chase plane will make periodic passes of the balloon during its flight, providing a communication link as well as video images.

Hams and shortwave listeners will, however, be able to hear *Earthwinds'* automated voice beacon broadcasts on 28.300 MHz. This will consist of a *"This is Earthwinds"* voice identification, along with computerized latitude, longitude, altitude and speed updates at 25 minutes past the hour and 5 minutes to the hour daily.

The digital data computation system was built by Rockwell International out of Cedar Rapids, Iowa. The interfaced Voice Identifier that you will hear during this flight was procured and built by Bill Brown WB8ELK.

The *Earthwinds'* flight crew will have a direct radio link into Rockwell/Collins in Cedar Rapids during the flight. The specific frequency or frequencies to be used is "guarded" information (uh oh, another monitoring challenge!).

Earthwinds in the News

To keep in touch with flight updates, it is recommended you listen to any regular HF AMSAT nets or W1AW broadcasts. Three AMSAT HF nets are aired weekly on Sunday evenings: N4QQ at 2300 UTC on 18.155 MHz, WB0HHU at 1900 UTC on 14.282 MHz and W8GQW at 1900 UTC on 21.280 MHz. W1AW broadcasts daily from Maxim Memorial Station in Newington, CT, on the following frequencies: **VOICE** (on the hour): 1890, 3990, 7290, 14,290, 21,390, 28,590, 50,090 and 147,555 kHz. **RTTY** (15 minutes past the hour): 3625, 7095, 14,095, 21,095, 28,095 and 147,555 kHz. **CW** (on the half-hour): 1818, 3580, 7080, 14,070, 21,080, 28,080, 50,080 and 147,555 kHz. The ESPN Sports Network will carry some coverage of the flight as well.

Earthwinds is part of Canon's "Expedition Earth" series airing on ESPN. Independent film producer John Wilcox will be assembling film flight footage and interviews for a later showing. ESPN has three cameras outside the gondola, two cameras placed inside and two cameras in the chase plane vehicle to film the flight and documentary.

Hilton Hotels, who have purchased the Reno Hilton & Casino in Reno, Nevada, recently kicked off the promotional campaign for the 1992/1993 *Earthwinds* flight. The flight is being financially sponsored largely by Reno Hilton Hotels (headquartered in Beverly Hills, CA) and the national press-release center for *Earthwinds'* flight information is being conducted at the Reno Hilton by Ms. Erin Porter.

There are other sponsors as well, such as Canon, Allied Signals, American West Airlines and McDonnell-Douglas Space Systems. The project is also receiving support from The National Aeronautics and Space Administration (NASA) and The National Oceanic & Atmospheric Administration (NOAA) and The Soviet Cosmonaut Training Center.

Such backing has been indispensable to the success of the project. For example, it was decided that the helium-filled balloon from last year's attempt could not be safely re-inflated; it was destroyed and "cut up into pieces" and sold as souvenirs to Akron, Ohio, area residents and other supporters. It has now been replaced with a new one that cost another $200,000!

Stay tuned to the above-mentioned radio and TV sources for additional flight details and in-flight reporting!

AUTHORS NOTE:

Mike Donovan KA0JAW is the current Editor/Publisher of *The SPEC-COM Journal* (P.O. Box 1002 in Dubuque, Iowa 52004-1002), a ham radio publication devoted to specialized communication modes. Mike Stone WB0QCD recently retired from that same position, and is now editor and co-Publisher of *Amateur TV Today!*, a new monthly amateur radio television newsletter (P.O. Box 1677, Weatherford, Texas 76086).

The authors thank Hamline University Center for Global Environmental Education in St. Paul, MN; ESPN's Sport Network; Loral Defense Systems in Akron, OH; Erin Porter of Reno Hilton Hotels; Bob Rau N8IYD of High Technology in Ypsilanti, MI; and other flight officials or supporters for the information contained in this article.

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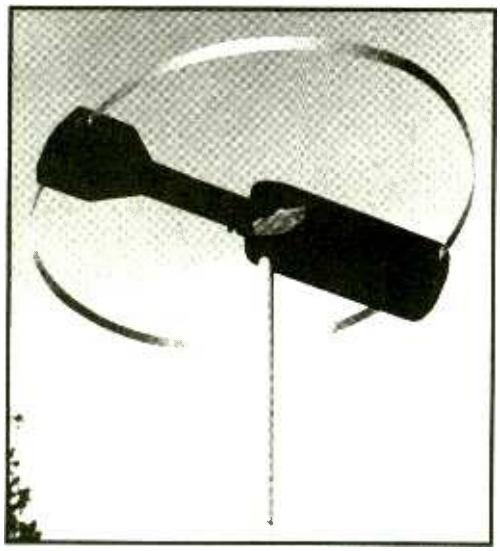

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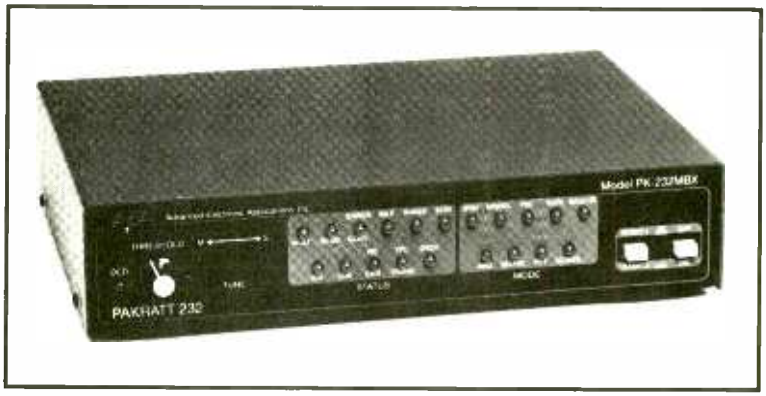

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Spotlight on the Crew

Larry Newman, 43, the project leader, is an accomplished balloonist and pilot for American West Airlines. He holds all the world records for distances and duration in ballooning. He is the only man alive to have traversed both the Atlantic and Pacific Oceans in a helium balloon.

In 1978, he joined the first team of Ben Abruzzo and Maxie Andersone to cross the Atlantic in *Double Eagle II*. He then went on to set a new distance record of 5,209 miles crossing the Pacific Ocean in 1981 with Ben Abruzzo.

Larry has an extensive flying background. He was awarded the Congressional Gold medal for Aviation Achievement. Born in Los Angeles and raised in Fresno, California, he flew solo in an airplane for the first time at age 12. By 17, he had attained all of his pilot's ratings and started teaching flying lessons at age 18.

Newman developed the Ultralight Aircraft in 1979 and started marketing the plane under the company name American Aircraft. He lives with his wife, Lynn, in Scottsdale, Arizona.

Mike Stone was fortunate to catch *Earthwinds* Captain, Pilot and Chief Navigator Larry Newman KB7JGM, at home in Scottsdale, AZ, for one brief phone conversation in August. Here are some excerpts of that conversation with the flight record holder.

STONE: "Will you attempt any ham radio contacts during the flight and if so, on what bands?"

NEWMAN: "No, we are not planning any amateur radio activity whatsoever. We will be so busy taking care of other things to fly the craft and we already have five separate communication systems to handle. Another would be just too much. We WILL carry a Collins HF-9000 transceiver onboard for "backup" communications as we did last year. That is what the data converter and voice identifier will be running on - on 28.300 MHz."

STONE: "A report a couple of years ago mentioned that the Earthwinds might possibly have ATV equipment onboard. Is there a chance of that?"

NEWMAN: "No, there will not be any of that type of gear onboard either. We do have cameras however, filming in to video tape recorders."

STONE: "Are there any other frequencies that hams or shortwave listeners can tune into to listen to Earthwinds' flight progress?"

Barron Hilton, chairman of Hilton Hotels Corporation (standing), (from left) cosmonaut Vladimir Dzhanibekov, captain Larry Newman and Don Moses.

NEWMAN: "None that I can tell you about. There are other radio frequencies that we will be using, but we have been advised to keep them confidential from the general public." Tell your readers to listen on 28.303 MHz (Novice band) for us. WE WANT THEM TO MONITOR THAT FREQUENCY! It is important to us to have these kinds of confirmations come in to us after the flight for world record recording purposes."

STONE: "Where should these listeners send their QSL's to help you on this?"

NEWMAN: "Please send verifications of hearing us (the automatic voice beacon) to: N.A.A. at 1815 North Fort Myer Drive in Arlington, VA 22009. Give what information you heard such as LAT/LON and ALTITUDE height information. Note the day, time and your exact location in this mailing. (Mark EARTHWINDS on the outside of your envelope)."

ESPN

Last year's home: Akron, Ohio, Loral Defense Systems Airdock.

Vladimir Dzhanibekov, 50, is a major general in the Soviet Air Force and is chief of cosmonaut training in the former Soviet Union. He is a veteran of five space flights--more than any other Soviet cosmonaut. Dzhanibekov spent 145 days in space and has made two space walks. He flew with Larry Newman in 1990 on the *Earthwinds* pretest flights.

Dzhanibekov lives near Moscow with wife Lila and two daughters. He has been awarded Orders of Lenin, the Order of the Red Star and various other medals of honor.

Don Moses flew as a crew member on the successful 1990 test flight and was involved in much of the construction of the balloon capsule because of his expertise in fiberglass construction. Moses is owner and operater of three charter boat companies in Hawaii and has designed and built boats for all three. He has had a commercial pilot's license since 1964.

Among the ground crew are flight operations Manager, Don Engen, a former head of the FAA and Leonard Snellman, who was meteorologist for the *Voyager* flight around the world in 1986.

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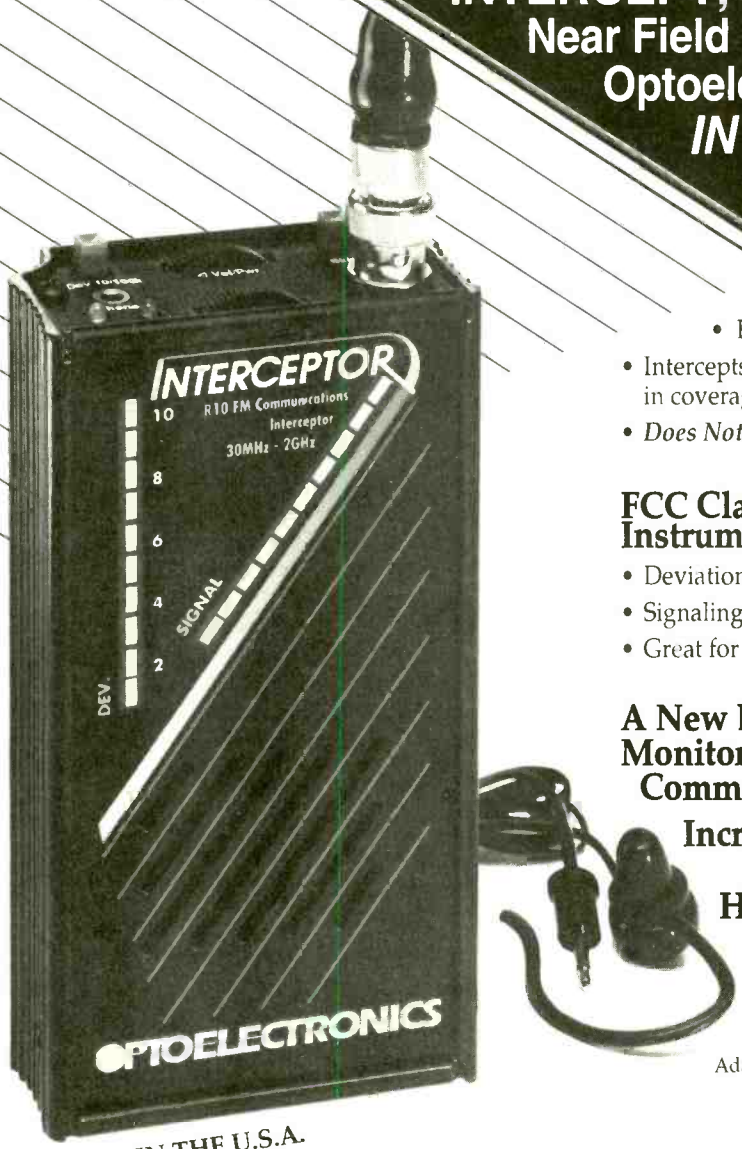

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Programs for Radio Enthusiasts

By Ron Tamburello

Learning about the "goings on" in shortwave listening can be as involved a project as one has time to give it. You can read the many publications available (yes, even *Monitoring Times*) and still be in the dark. That's because the activities of many broadcasters are known to change so rapidly that right about the time you think you know when and where to listen, you are greeted with naught but static.

Why not enjoy some DXing and keep abreast of changes in the world of shortwave listening at the same time? There are numerous programs offered by large and small broadcasters alike that focus on the world of communications, and provide a wealth of information for all levels of shortwave listeners. While in the process of brushing up your knowledge, you may even add a few new countries to your log!

Programs for communications and radio buffs can cover a wide scope of material. In fact, the programs currently aired range from simple tips for beginning listeners to sophisticated news in the world of telecommunications. You can pick and choose according to your particular interests, or shoot for them all to see what they have to offer. You will be surprised to find out how much you have been missing!

If there is a conflict in the program schedules, keep in mind that many stations rebroadcast their programs several times at different hours and on different frequencies. If you miss one, it may be possible to catch one of the repeat transmissions.

When reading the broadcast schedules please also note that all times are given in Universal Coordinated Time (UTC). For listeners on the West Coast of North America for example, Monday at 0100 UTC would actually be the previous Sunday evening at 1700 PST (5pm), and on the East Coast 2000 EST (8pm), and so on.

DX Party Line
HCJB — Ecuador

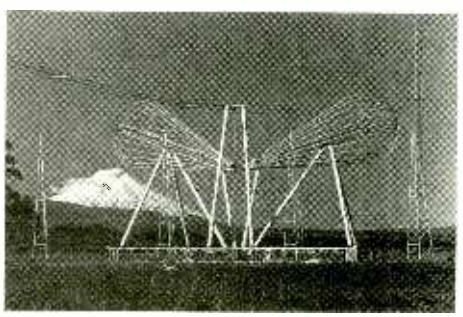
HCJB, also known as "The Voice of the Andes," is well-known as a religious broadcasting station. For those of you that might otherwise not regularly listen to this station, don't turn that dial! The program format also includes much that is not strictly missionary in nature. One such program is the *DX Party Line* hosted by Rich McVicar. As announced on the air, this is a

Rich McVicar, host of DX Partyline, represented HCJB at the MT Convention.

"program for the beginning and long time listening shortwave DXer."

Airing for approximately fifty minutes each Saturday afternoon/evening (in North America), the program provides a broad spectrum of information oriented to the SWL enthusiast. Among the regular features are a discussion on recent loggings with pertinent information on the stations, responses from listener's letters offering insight on various technical subjects, and other miscellaneous information and special features of interest to the SWL.

With the exception of several interludes not related to the subject of radio, the program provides much that is informative and useful to the shortwave DXer.



HCJB's "eggbeater antennas."

World of Radio
(Various stations)

World of Radio is a very informative and detail packed half-hour program produced and hosted by *MT* columnist Glenn Hauser. The program has multiple airings on several stations at different times of the week. If you have tape recording equipment available, it can be put to good use here as far more information is provided than can possibly be written down by hand.

Glenn Hauser reports from various worldwide DX clubs and other organizations on current SWL schedules and loggings, current events in the international broadcasting community and other items of particular interest to shortwave listeners. Actual recordings of the broadcasters are often featured, as well as recent solar activity reports to assist the listener in predicting the quality of reception of upcoming broadcasts.

Listen for the program on **Radio for Peace International** (Costa Rica), **WWCR** Worldwide Christian Radio (Tennessee, USA) and **WRNO** Worldwide (Louisiana, USA). Keep in mind that it is not unusual for the program to be delayed or occasionally preempted by other programming on all stations.

Media Network
Radio Netherlands International

Media Network is a long running and widely respected program from Radio Netherlands International hosted by Jonathan Marks and is aired in half-hour segments in several weekly time slots. The program usually begins approximately twenty minutes into the broadcast. First aired in 1981, the program demonstrates a lot of polish and always contains useful information for all levels of listeners.

Oriented to the shortwave listener, *Media Network* is RNI's "weekly communications review" that focuses on current events in the world of international broadcasting using. On occasion it uses a call-in interview format, as well as other input from experienced SWLs and professionals around the world. Among the topics covered by the program are profiles of international broadcasters and the "receiver test laboratory" that reviews shortwave receivers and propagation reports by Mark Bird.

www.americanradiohistory.com

Swiss Radio International's Bob Thomann (left) and Bob Zanotti (right).

Swiss Shortwave Merry-Go-Round
Swiss Radio International

A very congenial "Bob and Bob" host the weekly *Swiss Shortwave Merry-Go-Round,* a ten minute program aired during the final portion of Swiss Radio International's half-hour English broadcasts. The program, dating back to 1951, responds to questions from listeners on a host of subjects of interest to the SWL, reports on current events in the world of radio listening and also includes a brief propagation report. Since they are both amateur radio operators, both Bob Thomann and Bob Zanotti are able to provide technical information that is quite useful, even for the advanced listener.

DX'ers Unlimited
Radio Havana Cuba

DX'ers Unlimited is hosted by Arnie Coro and airs for approximately fifteen minutes twice weekly with content oriented to SWLs as well as amateur radio operators. As frequently announced, the program covers many topics including medium and shortwave broadcasts, amateur radio, FM and television DXing, and experimental telecommunications.

An unusual feature is "QSL on the Air," verifications announced to listeners who telephoned the host direct with reception reports. Although calls from listeners in the U.S. have been recognized, all should be cautious of any restrictions that may apply. Also note that telephone calls to Cuba must be routed through an international operator, as direct calls to Cuba are not permitted from the U.S.

Communications World
Voice of America — USA

Gene Rich hosts *Communications World,* Voice of America's "weekly digest of what is happening in the world of telecommunications." The twenty minute program emphasizes the people, politics and other current events within the worldwide community of telecommunications, and includes interviews with prominent figures within the industry.

The program airs approximately ten minutes into the broadcast (after the news). Check the listing in the "Shortwave Guide" to locate additional frequencies for your location.

Media Roundup
Radio Japan

Another informative broadcast comes to us from Radio Japan. The program *Media Roundup* delivers approximately twenty-five minutes of news and views for the SWL enthusiast each week, with extensive logging reports both from Asia and North America, as well as segments on current events within the international broadcast community, letters from listeners and an update on past and future propagation. Like other programs of this type, a tape recorder is handy to enable a review of the many details too numerous to note by hand.

Signals
WWCR Worldwide — USA

Something a little more unique is the fast paced news and current events program *Signals,* privately produced by Crescent Moon Radio Productions in New York. The hour-long program is aired weekly over the facilities of WWCR in Nashville, Tennessee, and hosted by Christopher King and Kristin Kaye.

Although the program format is somewhat outside the bounds of mainstream international broadcasting, you may find it a delightful diversion in listening at no expense to program content. A "weekly magazine of communications and technology," *Signals* will bring a bevy of topics to your radio room including items of historical interest, current events in the communications world, clandestine broadcasting notes, satellite and related telecommunications news, and other... well, interesting topics. Don't miss this one if you like the unusual.

After your station log has entries for all of these programs, you may wish to try your luck on a few more. The accompanying program schedule lists the many international broadcasters that air programs for radio enthusiasts. Keep in mind that political reorganization, the unfortunate financial crunch in the case of some stations and the ordinary course of programming changes in others may have shortened or eliminated some of these programs altogether. Enjoy, and good DXing.

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Schedule of Programs for Radio Enthusiasts
All times are UTC; all frequencies kHz.

Time **Station/Program/Frequencies**

Sundays
*0010v BRT Brussels: Radio World 9930,13655
*0015 Spanish National Radio: DX Spot 9530
*0018 SRI: Shortwave Merry-Go-Round rr 6135,9650,9885,12035,17730
*0039 HCJB: DX Party Line 9745,15155,21455
*0114 Radio Czechoslovakia: DX Special 5930,7345,9580
0110 VOA: Communications World 9775,11580,15205 et.al.
*0120m Deutsche Welle: World DX Meeting 9700,11865,13610,15505 et.al.
*0115 Spanish National Radio: DX Spot 9530
*0135v Radio Havana Cuba: DX'ers Unlimited 11950
*0200 RFPI: World of Radio rr 7375,13630,15030
0215 AWR Guam/KSDA: DX Asiawaves 13720
*0218 SRI: Shortwave Merry-Go-Round 6135,9650,9885,12035
0239 HCJB: DX Party Line rr 9745,15155,21455
*0240 Radio Remania Int'l: DX Mailbag 11940 et.al.
*0243u Voice of Free China: Radio Corner 5950,9680 et.al.
*0250v Radio Budapest: DX World rr 6110,9835,11910
*0300 WRNO: World of Radio 7355
*0312b Voice of Turkey: DX Corner 9445
*0320m Deutsche Welle: World DX Meeting rr 6145,9700,13610 et.al.
0330 TWR Bonaire: Bonaire Wavelengths 9535,11930
*0330 Radio Japan: Media Roundup 15230,17810
*0335 WWCR: Signals 7435
*0335v Radio Havana Cuba: DX'ers Unlimited rr 11950,13710
*0405 WWCR: World of Radio 7435
*0410v Radio Czechoslovakia: DX Special rr 7345,9810,11990,13715,15355
*0418 SRI: Shortwave Merry-Go-Round rr 6135,9885,12035,13635 et.al.
0509 HCJB: DX Party Line rr 11925,21455
*0520m Deutsche Welle: World DX Meeting rr 5960,6130,9670,11705 et.al-
*0515 Spanish National Radio: DX SPot 9530
*0635v Radio Korea: Shortwave Feedback 7275,11810,15170
0650 AWR Europe/Italy: AWR DX Program 7205
*0735v Radio Havana Cuba: DX'ers Unlimited rr 9655
0950 AWR Europe/Italy: AWR DX Program rr 7205
*1000 RFPI: World of Radio rr 7375,15080
*1135v Radio Korea: Shortwave Feedback rr 9650
1230 Radio Austria-Int'l: Shortwave Panorama 6155,11730,13730,15450 et.al-
1250v Radio Korea: Shortwave Feedback rr 9750
1330 Radio Austria Int'l: Shortwave Panorama rr 11780,15450,17730
1435v Radio Korea: Shortwave Feedback 9570
1439 FEBC Manila: DX Dial 11995
1530 Radio Austria Int'l: Shortwave Panorama rr 11780
1530 Radio Japan: Media Roundup rr 11865,15355
1630 Radio Austria Int'l: Shortwave Panorama rr 11780 et.al.
1635v Radio Korea: Shortwave Feedback rr 5975,9870
1815 AWR Guam/KSDA: DX Asiawaves 13720
2010 Kol Israel: DX Corner 15640 et.al.
*2130 WRNO: World of Radio 15420
2130 Radio Japan: Media Roundup rr 11735,15430,17810,17890
*2200 WWCR: World of Radio i-rr 15690
*2300 RFPI: World of Radio rr 13630,15030,21465
2330 Radio Austria Int'l: Shortwave Panorama rr 9870,13730 et.al.
*2330 Radio Japan: Media Roundup rr 15195,17810

Mondays
* 0000 WWCR: World of Radio 7435
*0100 WWCR: Crossband 7435
*0105v Radio Korea: Shortwave Feedback rr 15575
0110m Radio Tashkent: DX Program 5930,5995,7190,7265
0145 FEBC Manila: DX Dial 15450
0330 Radio Austria Int'l: Shortwave Panorama 9870,13730
*0343u Voice of Free China: Radio Corner rr 5950,9680,15345 et.al.5/31
0430b Radio New Zealand Int'l: Mailbox 17770
*0630 Radio Austria Int'l: Shortwave Panorama rr 6015 et.al.
0640v BRT Brussels: Radio World 5910,11695
*0700 RFPI: World of Radio rr 7375,13630,15030
1128 Radio Sofia: Radio Sofia Calling 11630
1230 Radio Austria Int'l: Shortwave Panorama rr 6155,15540,13730 et.all.
*1310v BRT Brussels: Radio World 17555,21810
*1330 WWCR: World of Radio 15690
1400b Voice of the Mediterranean: DX Program 11925
*1420v Kol Israel: DX Corner 11587,11605 et.al.
1435b All India Radio: DX'ers Corner 9665,11760,15120
1758 Radio Sofia: Radio Sofia Calling rr 11720,15330,17780,17825 et.al.
1825b All India Radio: DX'ers Corner rr 9950,11620,11935,15080 et.al.
2125 All India Radio: DX'ers Corner rr 9950,li620,15265 et.al.
*2213 Radio Sofia: Radio Sofia Calling rr 11660,11720,15330
*2250v Kol Israel: DX Corner rr 11585,11605,15100 et.al-
*2325b Radio Vilnius: Feature for DX'ers 9710,13645,15580 et-al.

Tuesdays
0035b All India Radio: DX'ers Corner rr 9910,11745,15145,17830 et.al.
0600b Voice of the Mediterran.-Zan: DX Program 9765
*0730 WWCR: World of Radio 7435
0930 Radio Australia: Communicator 9660
*1050 WWCR: Signals rr 7435
1130 Radio Australia: Communicator 9580 et.al.
1245b Radio Sweden: MediaScan rr 17740,21570
1510 Polish Radio Warsaw: DX Program 7285,9525,11840
1530 Radio Australia: Communicator 9580,11800 et.al-
1535u FEBA Seychelles: World of Shortwave 9810,15330
*1615b Radio Sweden: MediaScan rr 17870,21500,15270
1730 Radio Australia: Communicator 9580,11910 et.al.
1900 RFPI: World of Radio 13630,15030,21465
1930 Radio Australia: Communicator 11910 et.al.
2235v Radio Havana Cuba: DX'ers Unlimited rr 9620,11750

Wednesdays
*0035v Radio Havana Cuba: DX'ers Unlimited 11950,13660
0115b Radio Sweden: MediaScan rr 9685,11730
*0215b Radio Sweden: MediaScan rr 9695,11705
*0235v Radio Havana Cuba: DX'ers Unlimited rr 11950,13710
*0250v Radio Budapest: DX World rr 6110,9835,11910
*0300 RFPI: World of Radio rr 7375,13630,15030
0415b Radio Sweden: MediaScan rr 9885,12035,13635
*0415 BBC: Waveguide 5975,12095 et.al.
*0435v Radio Havana Cuba: DX'ers Unlimited rr 9655,l1950
*0635v Radio Havana Cuba: DX'ers Unlimited rr 9655
*1100 RFPI: World of Radio rr 7375,15030
1210 Polish Radio Warsaw: DX Program rr 6135,7145,9525,11815
1930 RAE Buenos Aires: DX Program 15345

Thursdays
*0014 Radio Czechoslovakia: DX Special 7345,9580,11990
*0100 HCJB Ecuador: Ham Radio Today 9745,15155,21455
*0130 BBC: Waveguide rr 5975,7325,9590,12095 et.al.
0152 Radio Netherlands: Media Network 9860,11655,13700
0230 RAE Buenos Aires: DX Program 11710
*0300 HCJB Ecuador: Ham Radio Today rr 9745,i5l55,21455
*0314 Radio Czechoslovakia: DX Special rr 7345,9810,11990
*0414 Radio Czechoslovakia: DX Special rr 7345,11990 et.al.
*0530 HCJB Ecuador: Ham Radio Today rr 11925,21455
0752 Radio Netherlands: Media Network rr 9630,11895
0952 Radio Netherlands: Media Network rr 9630,11895
1352 Radio Netherlands: Media Network rr 17580,17605,21655
1540 FEBC Manila: DX Dial 11995
1552 Radio Netherlands: Media Network rr 9890,15150,17580 et.al.
1752 Radio Netherlands: Media Network rr 6020,9605,21515,21-590
1952 Radio Netherlands: Media Network rr 6020,9605,17605,21590

Fridays
*0052 Radio Netherlands: Media Network rr 6020,6165,11835 et.al.
0252 Radio Netherlands: Media Network rr 9860,11655,13700
*0352 Radio Netherlands: Media Network rr 6165,9590
1128 Radio Sofia: Radio Sofia Calling 11630
1322 FEBC Manila: DX Spot 11995
1510m Radio Portugal Int'l: DX Program 21515
*2000 RFPI: World of Radio rr 13630,15030,21465
2013 Radio Sofia: Radio Sofia Calling rr 11765,17780,17825
2010m Radio Portugal Int'l: DX Program 15250
*2215 WWCR: World of Radio 15690

Saturdays
*0028 Radio Sofia: Radio Sofia Calling rr 11660,11720,15330
0120 FEBC Manila: DX Report 15450
*0240m Radio Portugal Int'l: DX Program 9570,9705 et.al.
*0250v Radio Budapest: DX World 6110,9835,11910
0328 Radio Sofia: Radio Sofia Calling rr 9850,11720,15160
*0400 RFPI: World of Radio rr 7375,13630,15030
0618 SRI: Swiss SW Merry-Go-Round rr 9535,15430,17565,21770 et.al.
0640v BRT Brussels: Radio World rr 5910,11695
0918 SRI: Swiss SW Merry-Go-Round rr 9535,13685,17670,21770 et.al.
0905 BBC: Waveguide 9740,12095,15070,17640 et.al.
1118 SRI: Swiss SW Merry-Go-Round rr 13635,15505,17670,21770 et.al.
1130 TWR Bonaire: Bonaire Wavelengths rr 11815,15345
*1200 RFPI: World of Radio rr 7375,13630,15030
1210 VOA: Communications World rr 9760,11715,15155 et.al.
*1310v BRT Brussels: Radio World 17555,21810
1318 SRI:Swiss SWMerry-Go-Round 7480, 11690, 13635, 15505, 17670, 21770
1340m Radio Tashkent: DX Program rr 9540,15470, et.al.
1510 Radio Remania Int'l: DX Mailbag 11775,15335,17720
1518 SRI: Swiss SW Merry-Go-Round rr 13635,15505,17670,21820
1615 AWR Guam/KSDA: DX Asiawaves rr 11980
1710 VOA: Communications World 11920,15395,15445 et.al.
1718 SRI: Swiss SW Merry-Go-Round rr 13635,15430,17635 et.al.
1800 RFPI: World of Radio rr 13630,15030,21465
2018 SRI: Swiss SW Merry-Go-Round rr 9885,13635,15505
2110 VOA: Communications World 15410,17735,17800,21485 et.al.
2135v Radio Havana Cuba: DX'ers Unlimited 17705
2218 SRI: Swiss SW Merry-Go-Round rr 9810,9885,12035,15570
2235v Radio Havana Cuba: DX'ers Unlimited rr 9620,11750
2300 WRNO: World of Radio 7355
2330 AWR Guam/KSDA: DX Asiawaves rr 15610
*2312b Voice of Turkey: DX Corner 9445
2350 Radio Nacional (Colombia): Colombia DX 11822.5,17865 (poss. Spanish)

Due to the recent daylight-to-standard time change in many countries, some broadcasts may be alred one hour later than listed in this schedule.

Legend/Abbreviations:

b biweekly program (Radio Sweden progs aired Wed after 1st/3rd Tue)
i program appears inconsistently at this hour
m monthly program (Deutsche Welle progs aired Sun after last Sat)
u undetermined schedule (not weekly)
v program starting time varies slightly
rr rerun
* beamed to North America

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ICOM R7100-C base	$1,199.95
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FBE-C Uniden Eastern Frequency Directory
FBW-C Uniden Western Frequency Directory
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Radio New Zealand International

A Bridge Across the South Pacific

By Edward J. Pyatt

I arrived in the "Land of the Long White Cloud" on a bright, sunlit morning in early July. It was the dead of winter. This was New Zealand, the land of the kiwi and one of two outposts of European culture in the southwest Pacific. To the Maoris, a Polynesian people who were the first to settle in the islands of New Zealand, this is Aotearoa—the "Land of the Long White Cloud."

The Land and People

New Zealand is composed of three main islands: the North Island, the South Island and Stewart Island. The country lies midway between the Equator and the South Pole. Australia, 1200 miles to the northwest across the Tasman Sea, is its nearest neighbor.

The seasons here are the reverse of what they are in the northern hemisphere. Summer is from December to March and winter is from June to September. Situated closer to the South Pole, the South Island is a winter wonderland with abundant snowfall, the Southern Alps mountain range, and a network of glaciers. The North Island is a bit more temperate in climate and features a remarkable belt of geothermal activity where geysers spout high into the air and mud puddles bubble and plop.

I began my visit in Auckland, a bustling city situated around a beautiful bay in the northern part of the North Island. With a population of approximately 850,000, it is the country's largest city. Yachts and pleasure boats, trees and greenery blend with modern skyscrapers and splendid, well-preserved old buildings.

Auckland has the largest number of Polynesian persons of any city in the world. In addition to its indigenous Maori population, Polynesians from all across the Pacific have migrated to New Zealand. This provides the country with an interesting melange of European and Polynesian ambience.

From Auckland to Wellington

The Radio New Zealand International studios are in Wellington at the extreme southern tip of the North Island. In order to see more of the countryside, I boarded the *Silver Fern* express for the ten hour railroad journey from Auckland to Wellington.

As one travels through New Zealand, the names of the towns and cities give evidence of the Polynesian-British heritage of the islands. Towns with names like Tauranga and Wanganui are mingled with Canterbury and New Plymouth—evidence of a turbulent history. British settlers first came to the islands in about 1790. European habits, customs and diseases took their toll of the Maoris and their way of life. As the Maori population dwindled, the British population grew steadily.

In 1840 the Maoris signed the Treaty of Waitangi and ceded sovereignty to the British crown. Following settlers' demands, New Zealand was granted self-government in 1852. In 1947 it became constitutionally independent and a member of the British Commonwealth.

As the *Silver Fern* made its way south from Auckland, the cityscape gave way to the rolling pastures and hills of the countryside. There are many spectacular gorges and mountaintop views. There are sheep everywhere. There are more sheep than people in New Zealand—about 55 million. That's about 20 sheep to every person!

The people on the train reflected the country's broad racial mix. I shared my seat with a New Zealand girl of Chinese descent who spoke in that delightful British-accented English common to New Zealanders. To our right were two Maori school girls on their way back home from a visit to Auckland. The conductor was Polynesian and the stewardess was of European descent—all New Zealanders.

In spite of this, no matter where I travel, it seems that some aspect of American culture always turns up. This time it was a New Zealand teenager excitedly telling her friends about the rock concert she had attended the previous night,

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featuring the American rock'n roll star Bobby Brown. "It was great! The concert was smashing," she raved.

I was somewhat amused that on this train some 12,000 miles from my home was a girl talking in a distinctly different accent about a familiar American pop culture figure. The world seemed somehow smaller.

Lovely Wellington

It was dark when my train arrived in Wellington, the capital city of New Zealand. Boasting a population of 350,000, it is also the country's center of culture: opera, theatre and concert orchestras thrive here.

Wellington sits majestically on the banks of what has to be one of the most gorgeous bays in the world. The city is dotted with steep hills. Graceful buildings jut upward from the hills overlooking the bay. The downtown area and main business district occupy the flat lands closer to the water. A cable car climbs a track up and down the scenic hills.

A stiff breeze seems to blow continually from the bay. I was glad I brought my overcoat even though I felt a little odd when packing it into my suitcase for this July trip. Never have I seen a city that reminds me so much of San Francisco. The parallels are striking—the steep hills, the bay, the wind, the cable cars, the sheer beauty of the place.

One wonders why the world has not paid loud homage to Wellington—and to Auckland, too. The reason, no doubt, is due to the fact that New Zealand is located in such a distant corner of the world.

A Visit to Radio New Zealand International

Thinking of the world, I managed to pull myself away from the enchantment of the city and turn my attention to New Zealand's shortwave radio voice. I telephoned the broadcast house to inform them of my intent to visit. My call was referred to Ian Johnstone, Manager of Radio New Zealand International. He urged me to come by at any time. Most people who visit do not announce their visit prior to arrival; they just show up, Ian informed me, and I was welcome to do likewise.

The Radio New Zealand studios are located in downtown Wellington near the Parliament complex. One of the most unique buildings in that complex houses the offices of the country's Prime Minister and other government ministers. Everyone refers to it as the "beehive," due to its cone shape. In spite of being made of wood, it is really quite modern looking, and contrasts sharply with the adjacent Gothic styled buildings.

One block away is the broadcast house—a modern, slender, multi-storied building with two wings. A secretary from Mr. Johnstone's office led me downstairs to the bright, cheery offices of Radio New Zealand International. Ian Johnstone's warm greeting made it easy to strike a rapport with him. He is used to visitors and knows all about SWLing, so it wasn't long before we proceeded to talk about the services of Radio New Zealand International.

Evolution of Radio New Zealand

New Zealand has been broadcasting on the shortwave band since 1946 when the government took possession of two 7.5 kilowatt transmitters left behind by American military forces at Titahi Bay on the North Island. For years the shortwave service was called Radio New Zealand, while the domestic service on the medium waves was called the New Zealand Broadcasting Service. Both of these services were originally under an umbrella organization labeled Broadcast New Zealand or BNZ. The organization evolved into the Broadcasting Corporation of New Zealand in 1981.

This corporation was poorly funded by the government through the Ministry of Foreign Affairs (now the Ministry of External Relations

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and Trade). In fact, the early 1980s witnessed a serious government debate on whether New Zealand should have an external shortwave service. Many saw no value in it. While the shortwave service was never terminated, it was severely curtailed during the 1980-88 period. Overseas broadcasts consisted primarily of relayed national radio programs.

In the late '80s, however, a series of developments in the Pacific region caused the government to change its mind about an external radio voice for New Zealand. Political disturbances and conflicts in the neighboring countries of New Caledonia, Papua New Guinea and Vanuatu convinced the government that it was in New Zealand's interest to try to play a stabilizing role in the region. A strong shortwave voice would be a useful instrument in helping New Zealand communicate with its Pacific neighbors.

So, in 1988 the government allocated funds to adequately support a shortwave service. This decision by New Zealand to work in close concert with its South Pacific neighbors and to stress New Zealand's identity as a South Pacific nation contrasts sharply with the approach taken by Australia. In Australia there has been a pattern of closely aligning its interests with the west; New Zealand is much more regionally oriented.

Government funds provided $3 million for a new state of the art 100 kilowatt transmitter. In January of 1990 the new transmitter was in place and ready to go on the air. With commencement of services on the new transmitter, the shortwave service changed its name to Radio New Zealand International (RNZI).

Left: Rudi Hill, Senior Producer; Right: Ian Johnstone, Manager, RNZI.

There was also an effort to upgrade the station's image. RNZI now bills itself as broadcasting "from the Pacific to the Pacific." The station makes a real effort to foster a sense of unity and shared concerns with the countries of the South Pacific.

The Mission of RNZI

RNZI signs on with the call of the bellbird. This is followed by the karanga—the Maori cry which beckoned people to the marae (traditional Polynesian religious shrines)—and the sound of the conch shell and Polynesian drums. "These sounds let listeners know they are tuned to the South Pacific, a place where the trade winds blow, palms sway and where exists a green and pleasant land known as New Zealand or Aotearoa," says Johnstone.

RNZI is one of the few international shortwave stations in the world with a formal mission statement. It reads:

> "Radio New Zealand International will be a friendly, trusted voice, talking with listeners in neighboring South Pacific countries and elsewhere about life in our country and region, the things we can offer, and the parts we can play in Pacific and world affairs."

RNZI programming is directed primarily at the nations of the Pacific and Pacific rim. It is also received by DXers and SWLs around the globe. The station broadcasts in several languages including Cook Islands Maori, Niuean, Samoan, Tongan, Tokelauan, Fijian, Hindi, English, I-Kiribati, Bislama (from Vanuatu), Solomon Island Pidgin, Papau New Guinea Pidgin, Hiri Motu (from Papau New Guinea), French and New Zealand Maori. Some of these languages are spoken by staff members at RNZI. Readers and announcers for the other languages are provided by free lance journalists and students.

RNZI often prepares special programs for various island countries in the Pacific and beams these programs to the country in the local language. This has won RNZI much praise from nations in the region. The music request programs are especially popular, as are the sports programs. Many islanders telephone to ask whether an important rugby or soccer game will be broadcast by RNZI. The station is well along the road to achieving its objectives of letting the South Pacific talk to itself, of letting the people of Melanesia share experiences with the people of Polynesia, and sharing an image of New Zealand with the rest of the Pacific.

Programming

There are many Pacific Islanders living in New Zealand. RNZI's vernacular programs serve as a link between them and their families back home. The station's programming also promotes a rediscovery of common heritage among the islands of the Pacific. For example, the station beams Maori, not English, programs into Tahiti. Maori is very similar to the Tahitian language and Tahitians understand and relate to it much easier than to English language broadcasts.

Station programming is not government controlled. The New Zealand media jealously guard their freedom and the shortwave service is no exception. RNZI avoids propaganda. They also do not project a "proper, BBC-type" image, but strive for a more informal, friendly, laid-back attitude. They would prefer listeners to imagine them as trusted friends from a neighboring island, dressed in shorts and open-neck shirts and just back from a swim at the beach.

RNZI's program menu consists of world news, news of the Pacific region, sports bulletins, business, general information, current affairs

The "beehive" houses New Zealand's government offices.

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RNZI Program Schedule
(English and Other Languages)

UTC	Freq kHz	
0659 - 1207	9700	Daily
1208 - 1649	9510	Occasional
1650 - 1849	9675	Sun-Fri
1850 - 2138	15120	Sun-Fri
2139 - 0658	17770	Daily

programs, documentaries and profiles of New Zealand personalities. The station also provides public service announcements and warnings for islanders whenever cyclones and other severe weather conditions occur.

The station has an in-house three person news bureau. It also obtains news reports from PAC News (an association of Pacific area news services), and from stringers. RNZI has a limited library of Pacific music and is constantly trying to locate more of the indigenous music of the islands. The station is hoping for greater involvement in programming from its Pacific neighbors.

Rudi Hill, senior producer of RNZI, credits the new 100 kilowatt transmitter with giving more global coverage. The first bounce of their shortwave signal is to New Zealand's Pacific neighbors. The second bounce gets into Japan, the Asian mainland, Hawaii, and western North America. The rest of the world picks up the broadcasts on subsequent bounces.

The new 100 kW transmitter is located in Rangitaiki in the far North. The transmitter feeds two 4-dipole curtain antennas hung between three masts and directed to the eastern and western Pacific islands. The antennas can be used separately or in combination to serve from French Polynesia to Papua New Guinea. They operate from 9 MHz to 21 MHz with a gain of 16 to 18 dB, giving an effective radiated power of up to 4 megawatts. RNZI hopes to install two additional antennas which will operate from 6 MHz to 12 MHz in a couple of years.

The 100 kW transmitter is a French Thompson CSF unit which employs the latest high efficiency technology, including dynamic adaptive carrier modulation, provision for single sideband operation and remotely controlled automatic tuning and switching. It uses two vapor cooled tubes and solid state amplifiers and rectifiers. The transmitter station is unmanned and is operated from RNZI's master control room in Wellington. See the sidebar for RNZI's schedule.

Reception Reports and QSLs

RNZI has listeners in many countries to which it does not specifically direct broadcasts. Reception reports come in from as far away as Uruguay, Kuwait, the Soviet Commonwealth, France, Switzerland and Germany. Hill asserts that all reports are welcomed by RNZI. They find these reports useful in measuring the area of the globe covered by their signals and for getting some idea of the quality of reception around the world. They also provide the station with feedback on how listeners view the service.

RNZI's colorful QSL cards depict the natural scenic wonders for which New Zealand is noted. In order to be eligible for a QSL card, RNZI requires that reception reports contain the following: frequency, date and time of reception (UTC), reception conditions, and details of the program heard with 15 minutes' minimum logging.

In reporting reception conditions, the station would like to know how strongly and how clearly their signals are being received. The station feels that the SINPO code is a good overall rating system, but would prefer a more descriptive signal report. RNZI suggests that you include the following in your report: Comment on the readability of the signal. For example, how easily could you follow the program? Are spoken items heard clearly? Comment on interference from other stations on the frequency. Comment on the reception in your area of other shortwave stations as a comparison.

A report which provides this information is of interest and value to the station, providing a good overall assessment of transmission quality.

Concerning program details, the report should be as complete as possible. It is better to include too much rather than too little. Details should be specific. Actual announcements, station slogans, schedule announcements, program and record titles, names of announcers, and news content are all items that can be checked against the station log. Reports like "woman speaking; orchestra announcement by man" are difficult to verify and may not be sufficient for a QSL card. The station also requires that three International Reply Coupons or New Zealand mint postage stamps be sent with the reception report if a QSL card is desired.

Departure

New Zealand is a hard place to say goodbye to. For an American, there is much about New Zealand that is very familiar—the language, food, the music and many cultural values. There is also much about it that is different, such as the accent, rugby, tea time, and the stars. Once you've seen the glittering Southern Cross in the sky, a part of you will probably remain in this land of the long white cloud. But, you can always come back by way of Radio New Zealand International.

MT

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Radio Recovery

Voice of Hope to Hurricane Victims

By Jim Pogue

U.S. Army photo by Spc. Rick Emert

Radio Recovery broadcast disaster relief information from 6 am to 10 pm every day.

When Hurricane Andrew screamed across southern Florida late in August, the damage in some areas was so extensive that many victims couldn't even find the lots where their homes once stood. There was no water, no electricity and no food. Families sometimes sat dazed on what had been their front lawns without shelter from the elements. Some people described the experience similar to being a survivor of a nuclear holocaust.

Although assistance for these people was quickly on its way, the word needed to get out to the ethnically diverse population that lived in the Homestead, Florida, area. With only a handful of Miami area radio and TV stations still on the air, local officials asked the U.S. military for assistance. Their response was "Radio Recovery—The Voice of Joint Task Force Andrew."

Radio Recovery went on the air September 1. Stated simply, their mission was "...to provide emergency information for hurricane victims." This information included details on the locations of Life Support Centers (a euphemism for tent cities) and where to get meals, medical assistance and other recover services. No music, no news, no entertainment—just the facts delivered in a clear, straight-forward manner.

Equipment for the station came from an unlikely source—a Psychological Operations unit based at Ft. Bragg, North Carolina. The on-air personnel are attached to the 22nd Military Public Affairs Detachment. It is also based at Ft. Bragg. All the units involved were part of the Army's 18th Airborne Corps.

The station setup shop in a small tent, about 12' x 12'—what the Army calls "General Purpose-small." It was located in the parking lot of what was once a local steak house. According to announcer Sgt. 1st Class Steven Malnar, the son of the steak house owner had an interesting collection of pet animals. After the hurricane, the geese, peacock, turkeys, cats, rabbits and even a pot-bellied pig were kept in cages near the Radio Recovery tent. "Sometimes our station sounded like a barnyard broadcast," Malnar said.

The station's staff slept on cots in the tent and made their broadcasts using a single microphone with the 400 watt military transmitter sitting right in front of them. The station used a horizontal longwire antenna strung between a couple of poles and radiated primarily north and south. All broadcasts took place on 1610 kHz.

U.S. Army photo by Spc. Don Smith

Spc. Michael Parrish, broadcast technician, 4th Psychological Operations Group, Fort Bragg, NC, using a mixing board to fine tune the quality of a Radio Recovery broadcast.

U.S. Army photo by Spc. Rick Emert

Private 2 John Wollaston, 24th Infantry Division, Ft. Stewart, GA, left, and Spc. Samantha Mazzota, 209th Broadcast Public Affairs Detachment, Rome, GA, reading public service announcements for Radio Recovery.

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Although their broadcasts were only intended to cover about a 30 mile diameter around Miami, the staff of Radio Recovery would be very interested in hearing from anyone who may have tuned in their broadcasts. A QSL card—particularly if you supply a prepared card—could probably be obtained from the station. Here is the address to write to:

Officer in Charge
Radio Recovery
c/o 22nd Military Public Affairs Detachment
Ft. Bragg, NC 28307

A problem common to the area was the lack of radios among the hurricane survivors. Military authorities responded by shipping in about 12,000 portable radios and distributing them to people in the devastated areas. These radios were originally destined for use by military forces participating in Operation Desert Storm.

Besides Radio Recovery's own transmitter, programs were simulcast by one of the few Miami stations to survive the hurricane, WINZ-AM. Operating on 940 kHz with 50,000 watts, WINZ was easily heard with Radio Recovery programming throughout the southeastern U.S.

The station's broadcast day ran from 6 am to 10 pm eastern time. Programming was in 30 minute blocks of English, Spanish and Creole. The staff later added programs in a Guatemalan Indian dialect also common to the south-Florida region.

U.S. Army photo by Spc. Rick Emert

Private First Class Michael Stork, radio repairman, 4th Psychological Operations Group, Ft. Bragg, NC, makes adjustments to the sound mixer board at Radio Recovery.

The station continued operations with the 400 watt transmitter until Friday, September 18. That day they put a 1,000 watt transmitter on the air from an Armed Forces Reserve Center at Perrine, Florida. By that time, however, most Miami stations were back on the air. It was becoming evident that, at least from a communications point of view, the worst was over.

At the beginning of the next week, the decision was made to close down Radio Recovery. The station went off the air at noon on September 22 and left the airways to Miami-area broadcasters.

Radio Recovery's life lasted just 22 days. But it represented a first for our nation's Armed Forces. With the end of the Cold War and lessening military threats abroad, perhaps this is a sample of the new type of mission in which our military may be asked to serve.

MT

U.S. Army photo by Spc. Rick Emert

Private 2 John Wollaston, left, and Spc. Samantha Mazzota read public service announcements while Spc. Michael Hooper, 4th Psychological operations Group Fort Bragg, NC, monitors the radio equipment.

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HOMECOMING

Memories of the MT Convention

By Rachel Baughn
Photos by Harry Baughn

Combine an intensive course in radio, a class reunion with old friends, and a vacation in a luxury hotel, and you have a glimpse into the many facets of last month's *Monitoring Times* Convention. But the best part of any radio event is just being in the presence of fellow enthusiasts who speak the same language and share the same fascination with radio.

An *MT* convention is an intense three days. Even slow-tongued southerners had to gear into overdrive just to fit in everything there was to say and all the questions there were to ask. Gab sessions went on late into the night (though conditions in the city were pretty miserable for much actual DXing—except perhaps for the guys with seven antennas on the balcony!).

The convention got off to a profitable start for the 27 exhibitors who filled the exhibit hall. The doors opened shortly after noon on Friday, and by closing at 5:30 several had sold most of the stock they had brought to the show. Many major manufacturers were present, and

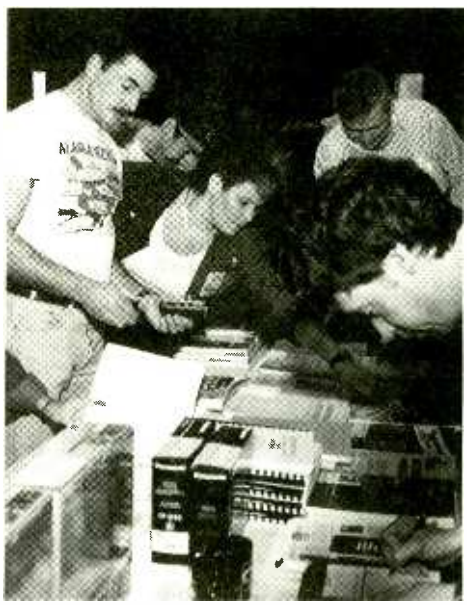
no aspect of the hobby went unrepresented. There were software packages for logging, database management, computer control, and propagation forecasting; there were book publishers and vendors, manufacturers of receivers, accessories, antennas, frequency counters, and digital decoders. Radio hobby clubs and international shortwave broadcasters were also ready to talk to those who thronged into the hall.

Some attenders expressed disappointment that more antenna and receiver companies, in particular, were not present. If there is a specific company you would like to see, why not write and ask them if they will be there next year? It may be all the encouragement they need!

After Friday evening's official welcome by Bob Grove, the seminars began and continued almost non-stop until Sunday noon. Many of the most popular topics were repeated in order to ease the dilemma of which one to attend. Thirteen speakers presented the topics, plus a few others who volunteered to cover additional aspects. The topics covered the gamut from QSLing to pirates to antennas and receivers. Only soldering and circuitry were not specifically scheduled.

In one hour, how do you fully discuss a topic with an audience of varied experience? It was a difficult balancing act for the speakers; some attendees still reported a hunger for more expert level courses, while some bewildered beginners felt the need for a more organized and simple presentation of information.

A halt was called to the proceedings Saturday night while 250 guests enjoyed the *MT* banquet. The featured speaker, Dick Tauber, Director of CNN's satellites and circuits, ably traced the development of CNN's satellite network from its inception to current and future technology. Tauber credited break-down satellite systems ("fly-aways") with contributing to the gradual break-down of global barriers—the new "nomadism." If conditions are right, a camera crew can be dispatched, flown in, and be ready to broadcast in as little as two hours.



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Pictures, left to right: CNN news floor with anchor desk behind glass; view of downtown Atlanta from the Omni; the Universal Radio booth. Above: Let the bug hunt begin!

A large number of attendees had taken the opportunity to go on the 45-minute tour of the CNN studios. Being able to visually picture the anchor desks for the domestic and international networks brought an added dimension to Tauber's account of CNN's increasingly international service. Mark Hanrahan, a third-time attender from Australia who is a TV cameraman there, got the "back-room" tour reserved for fellow journalists. He was pleased to find a couple of his own submissions still in their files—"The trouble is," he said, "now they want me to do some more!"

Perhaps the most significant event at the banquet, was a surprise announcement made by Bob Grove. Bob made it official that Larry Van Horn would be joining the Grove Enterprises staff following his retirement from the Navy. Larry will be moving his family up to Brasstown this summer. Bob indicated that one of Larry's projects will entail compiling a comprehensive database from which to update the Grove *Shortwave Directory*.

After the banquet, of course, came the traditional fox hunt, chasing a bug throughout the CNN concourse! The field had to be chosen carefully, as the Green Bay Packers football team was also housed in the Omni, and security personnel looked askance at the odd array of antennas, scanners and frequency counters.

Did I say odd antennas? The most creative this year were two fellows using coffee cans connected to their scanners with coax. Okay, guys, which worked better—the Maxwell House or the Folgers? By all reports, both were more successful than last year's dowsing rod.

Let's See a Show of Hands

Bob Grove made no secret of the fact that this third year was a critical one for the future direction (or even existence) of this convention as an annual event. Attendance at the 1992 convention was almost a carbon copy of last year's, totalling 400 participants. Although the planners had hoped for more, the overwhelming support and enthusiasm expressed by those who attended has virtually assured

A Convention Wish List

Topics:

What would you like to learn more about if you attended next year? What area confuses you the most? On what subject do you need more information? In what area of expertise would you like to compare notes with others on your level?

Speakers:

Should a speaker be a resource person to be asked questions or an expert who gives a lecture? What is an adequate length of time per topic? Is there a specific person you would like to recomend to give a seminar? Is there a banquet speaker you would like to hear or can recomend?

Focus:

Do you come to convention to talk shop and DX? to learn from the "experts"? to learn about and buy equipment? Do you come to convention for the scanning forums? the utility forums? the international broadcasting forums and personalities?

Location:

Do you like the luxury of a nice hotel and all events/dining/lodging under one roof? Would you prefer a college campus, retreat center, etc., if it meant lower rates? How important are radio-related tours? How important is the availability of activities for non-hobbyists?

When you finish:

Do you think your suggestions are good ones? Then I encourage you to put your name on the bottom of your list when you're done. You are not faceless; you are a valued individual and that's the way you should be treated. Whenever we receive an anonymous opinion, we feel somehow as though we have failed to do that. When you sign your opinions, the trust is mutual.

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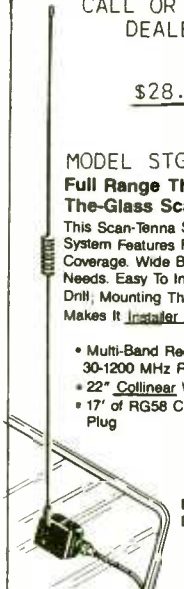

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the continuance of the convention for the foreseeable future.

The fact that 80 percent of the attendees were repeat attenders is an additional indication that we're doing something right, but it also means some rethinking in terms of future programming. Have patience—each year we will do a little fine tuning as we discover what you want, what exhibitors want, and what helps us break even!

If you want to have a hand in helping shape future *MT* conventions, take some time over the next week or two to jot down the direction that would be of the most benefit to you. On page 26 are just a few questions to get you started. Three years doesn't make us experts—we know we have a lot to learn! On the other hand, the team of planners, Beth Leinbach and Beverly Berrong, did an outstanding job of seeing that everything went smoothly. Ladies, from all of us—staff, exhibitors, and registrants—please accept our heartfelt thanks and congratulations. Take a well-deserved rest!

Prizes!

Both *Monitoring Times* and the prize winners are extremely grateful to the following companies for their generous donations. Winning one of these outstanding prizes must have been icing on the cake for the lucky recipients.

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Scanner Computer Control Program
Chilton Pacific
GE Super Radio III

The Grand Prize, an NRD 535D Shortwave Receiver donated by *Japan Radio Company*, was won by Ed Deasy, Jr.

See you next year! MT

1992 Convention Statistics

The Speakers

Skip Arey
Gerry Dexter
Bill Grove
Bob Grove
Bob Evans
John Fulford
Bob Kay
Larry Magne
Fred Osterman
Ken Reitz
Frank Terranella
Larry Van Horn
George Zeller
Thanks also to
Kim Shippey
and Chuck Yarbrough

MT writers in attendance

Jack Albert
Skip Arey
Kevin Carey
John Carson
Jacques d'Avignon
Jim Frimmel
Bob Grove
Bob Kay
Larry Magne
Ken Reitz
Gayle Van Horn
Larry Van Horn
George Zeller

Exhibitors

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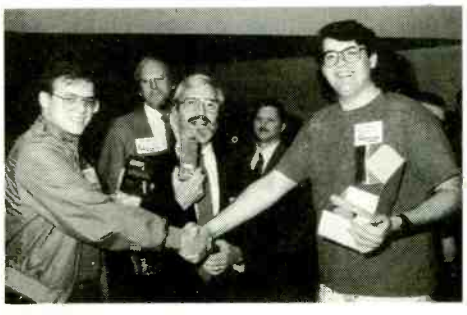
Bearcat Radio Club
Christian Science Monitor
R.L.Drake Company
DX Computing
EWTN
Grove Enterprises
HCJB
Hoka Electronics
J&J Enterprises
Japan Radio Company
Official Scanner Guide
OptoElectronics, Inc.
Passport to World Band Radio
Radio Finland
RCMA
Radio for Peace International
Scan*Star
Shortwave Paradise
Sony Corporation
SPEEDX
Universal Radio, Inc.
Worldcom Technology

International Broadcast Stations and Organizations

BRT, Belgium
Christian Science Monitor, Mass.
European DX Council
EWTN, Alabama
HCJB, Ecuador
Radio Finland
Radio for Peace International, Costa Rica
Radio Korea, South Korea

Above: *Happy Winner, Ken Mason, accepts a Sangean receiver while the Taubers and Judy Grove look on.* ***Below:*** *Bill Grove (right) presents an OptoElectronics Model 2300 frequency counter to Sam Smith, who tracked down Jacques d'Avignon carrying the bug (center).*

Above: *Although the expectant crowd pictured here is almost entirely male, it was a pleasure to have several more female participants this year; let's double it!* ***Below:*** *Rachel Baughn, Editor, Ted Turner, CNN, and Kim Shippey, WCSN, say, "Ya'll come back now, y'hear?" (Sorry, Kim!)*



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Radio ALA

By Igor Sannikov

This shortwave music station went on the air for the first time around October 1, 1991. I was in Helsinki at the time, and a DXing friend asked me what could be behind this name. I could only suppose it was the Russian female name, Alla—perhaps the pop star Alla Pugachyova. If another popular musician, Stas Namin, founded Radio Stas Namin Center, why not a station by Alla? Funny how quickly this idea spread in the international DX circles.

But the truth is, Radio ALA has absolutely nothing to do with Alla Pugachyova. Visiting the station, I learned that ALA means...nothing. Listeners are free to exercise their imagination. Well, if you look at the Russian version: AAA—what can you imagine apart from the perfect symmetry? It is rumored, however, that ALA was originally planned to represent the initials of the station's Editor-in-Chief Alexander Leonidovich Astarkin.

Another mystery about Radio ALA: Who are the people that founded and finance the station? One of the music editors I talked to refused to name them, saying it's a commercial secret. Well, even if there doesn't seem to be any commerce around (the station strictly prohobits advertising), I found out the truth from other sources. Let it remain their secret.

What can, and should, be revealed is the fact that those people are an extremely generous business. Radio ALA broadcasts 24 hours a day; rents time on two mediumwave and five powerful shortwave transmitters located near St. Petersburg and Kaliningrad (and thus the feed lines as well); rents two studios in Radio Moscow headquarters in Pyatnitskaya Street, 25; and is planning to expand its operation and increase the staff (presently around 12 employees), and take up the whole studio block.

A new transmitter—probably an FM—is planned to provide a better reception in Moscow. The station is heard fairly well elsewhere—even in Australia—but not in Moscow.

About two million participants of an opinion poll in St. Petersburg named Radio ALA their No. 1 music station or at least equal to Radio Europa Plus. People often call in inquiring about the account number to support their favorite station.

Such fame is due to the music that Radio ALA broadcasts—the bards', or authors' songs [*ballads or folk music?-ed*]. This genre requires nothing but an acoustic guitar and a close circle of friends as listeners—therefore being free from any censorship. Folk music allowed people to express their "dissident" human thoughts even in the worst years of totalitarianism. Glasnost hasn't done away with these songs at all. They still reach people's hearts. No wonder doctors prescribe Radio ALA programs as sedatives to their patients suffering from the stresses of today's total uncertainty.

Pyatnitskaya, 25 - Radio Moscow headquarters and the home of independent Radio ALA (studio 56-5th floor and studio 308a-3rd floor. 60th in the left wing) and Radio Radonezh (studio 58-5th floor, left wing) Floors are enumerated in the Russian way—i.e., no ground floor.

Not limiting themselves to the abundant recordings of original songs, music editors of Radio ALA actively look for new songs. On the other hand, the authors themselves often contact the station. The best titles are recorded in one of the studios. No mixing is used, so the music sounds very natural.

Another studio is used for transmitting 8-hour blocks of recordings and for reading—live—news bulletins every 15 minutes: 0.00 world news, 0.15 and 0.30 Russian and CIS news, 0.45 miscellaneous and sports. They are bare facts, almost no commentaries, the only criterion being that it should be interesting. The items are supplied by major news agencies (which is also rather costly).

Radio ALA plans to organize an information service of its own. This will mean replying to listeners' mail, which is done only occasionally now. When I visited the station, it didn't have any logo, to say nothing of a QSL card. Everything is at the initial stage, but the folks there are rather optimistic about the future. We hope they are right.

Postscript from the Editor: Igor Sannikov's report was made following a visit to Radio Ala nearly a year ago. He gave the frequencies being used at the time as: 684, 1386 (the two mediumwave transmitters), 5040, 5920, 6015, 7400, 11685, 11965 kHz. Additional frequencies of 1494, 3995, 7315, 7370, 7380, 12030, 15255 kHz have been reported in other publications since then. Also, in *Radio Magazine*, Grigory Grigoriev wrote that a letter from the station said the name ALA meant "Wing" in Latin. The station address is Radio Ala, Box 159, 125047 Moscow, Russia.

Igor Sannikov offers a "complete, constantly updated list" containing information on Russia's independent broadcasters (addresses, schedules, formats, QSL policy, etc.) for $5/5 IRCs. Send to:

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AFGHANISTAN R. Afghanistan domestic service not traced on 7200, but on 4775-variable with reduced schedule, 0130-0430 and 1330-1730 (BBC Monitoring)

ALASKA KNLS replaced *Chariots of Fire* with new unnamed ID tune in several variations by Jeff Brock, Nashville (via John Carson, OK)

ALBANIA R. Tirana contracted and retimed English: 1530 on 9760, 7155; 2200 on 9760, 11825; 0130 and 0230 on 9580, 11840; 9580 conflicts with Yugoslavia (Norm Blakely, Ont.)

ANDAMAN ISLANDS AIR Port Blair, 4760, hard to ID under Yunnan PBS until 1550, but then clear with local ID at 1600 (Mick Ogrizek, *Australian DX News*)

ANGOLA MPLA, the government party, ordered closure of UNITA's Black Cockerel on SW and FM, but has not been able to finish them (RDP Comercial, Lisboa via BBCM) Still heard from 0440 with VORGAN ID on 9700, 7290, maybe using Gabon relay (Ernie Behr, Ont., *World of Radio*) English on 7100 at 2126-2206, very good (Brian Alexander, PA, *W.O.R.*)

ANTARCTICA AFAN, McMurdo says it expects to have 6012 back on by end of November. Manager Michael Ray says new address for QSLs then is: AFAN McMurdo, US Naval Support Force, Antarctica, 651 Lyons St., Port Hueneme, CA 93403-4345 (Andy Sennitt, SW Echo via Kirk Baxter) But careful, see ITALY.

BELGIUM One more step in the division of this country: BRTN has been renamed Radio Vlaanderen Internationaal-RVI, though program still goes by *Brussels Calling;* also a new interval signal. Re-timed English for winter: 1400-1425 (except Sunday 1230-1255) on 21810 to North America, 17550 to Southeast Asia; daily 0030-0055 on 9930 N. Am., 13655 S. America (*W.O.R.*)

BOLIVIA R. Union, Riberalta, new on 4923 at 0118 to 0302 sign-off, as Catholic cultural station but also heard R. San Miguel ID, relay? (Roland Schulze, Germany, *Fine Tuning*) R. San Miguel, 4923.2, reported in mid-September that Radio Perla del Acre, 4600 was off the air following a bomb explosion destroying the antennas (R. Cotroneo, NY, *Play-DX*) Very unusual to have parallels in this country, but R. San Miguel heard on 3310.3 and new 4923.8 at 0000-0140 (Finn Krone, Denmark, DSWCI *SW News*) Schedule is 0930-0300, asks for reports to Casilla 202, Riberalta, Beni (Rolman Medina Mendez, Reyes, Bolivia, *Play-DX*) 4183.21 station is definitely Radio 11 de Octubre, apparently around Cobija, Pando; once relayed R. Fides, La Paz (Klemetz, Sweden, *Play-DX*)

BOSNIA-HERCEGOVINA Sarajevo heard on 7240.6 USB + carrier from tune-in 1330 // MW 612, drifting to 7238.6 by 1800; remained on air unmodulated until 2100, and next day but not since (BBCM)

BULGARIA Contrary to their own announcements, R. Sofia made the usual one-hour-later shift Sept. 27, such as 2245 on 11720, 9700; 0100 on those plus 15330 (John Norfolk, OK) Agreed to go outside 49-m band to resolve conflicts: 1900-2200 on 6210 ex-6160; 1330-2200 on 6220 ex-6135; 1530-2230 on 6230 ex-7175 (Andy Sennitt, *WRTH*, RN *Media Network)*

CAMBODIA (non?) V. of Khmer "temporarily" suspended from Sept. 27 (BBCM) 6325

CANADA West Coast Broadcasting Corp., New Westminster, BC, is to build a 100-kW SW transmitter aimed at western USA, around 100 Mile House, with a discarded VOA-Hawaii transmitter (Doctor Hackett, BC, via Larry Nebron, *W.O.R.*) Needs confirmation.

RCI goes to its usual winter times and frequencies Oct. 25; to Europe at 2200-2300 on 9760, 11945, finally making correct the frequency announcements given all summer on two higher frequencies. On Sundays, this should carry a repeat of *Sunday Morning*, Hour 2. *Centerpoint* has been moved despite its name to Hour 3, 1605 on 17820, 11955, 9625. The 0400-0430 broadcast only via relays: Portugal 6150, Austria 9505, UKOGBANI 9670 (via Bill Westenhaver, PQ)

CHINA C.R.I. (China Radio Int'l) becomes official Jan. 1, but during transition both that name and Radio Beijing will be used (*Messenger* via Stephen Hill, Gigi Lytle, Diane Mauer) R. Beijing started M-F live relay via KPLA, 770, 50 kW, Fair Oaks, CA, ERP 250 kW covering northern 2/3 of state (Jack Gardner, KPLA) Retimed to 5-5:30 pm PT (George Poppin, CA)

COLOMBIA R. Nueva Vida, Tibu, 5567 runs 0930-1130 only. R. Patria Libre, clandestine, varies around 6270 until 1200 (Y. Gaviria, Colombia, *Play-DX*)

COSTA RICA AWR's 9722.5 was missing for weeks, but weaker 11870 could be heard mornings and evenings, lacking *Costa Rica Today* scheduled Sundays 1230 (gh) Received schedule showing 9875 instead for the 1100-1300 period only (Gigi Lytle, TX) Frequently checked, never heard (gh) Believed to be AWR on 4975 ex-5030 at 0020-0300 (R. Puppo and D. Monferini, Italy, *Play-DX*) RFPI got far more calls than one phone line could handle for its Anniversary Fiesta; started issuing new QSL. Tech info from *Mailbags*: can run studio on batteries up to four hours; diesel generator would be contrary to station philosophy; new 4-post bamboo tower is 15 feet wide, and vertical windmill to be installed inside. Prevailing winds should generate enough for studios and a backup transmitter. Power 5 kW on 7385, 2 kW on 7375; making audio improvements. 7375 has 2-element yagi; 7385 sloper; 13630 4-el yagi, 15030 3-el yagi, 21465 6-el when used; plans 3-element cubical quad for 41m, 6-el c.q. on 19m. Few program changes for 4th quarter: *VVRN*, Wed. 2130, Sat. 2230; *World Citizen's Weekly Commentary*, Fri. 2330; *Wisdom of Joseph Campbell*, Thu. 2300, Sat. 1900, plus repeats. Also adding Russian version of *Dialogues from University for Peace*. See also HAITI

CUBA RHC released new schedule a bit at a time; add 2100-2200 on 17705, 2200-2300 and 0400-0500 on 9655. *DXers Unlimited* proudly announced it does not bore listeners with lists of super-rare DX.

DOMINICAN REPUBLIC New is R. Cima Cien [Peak 100], another FM relay from 100.5, on 4962, announced 4960, as early as 2335, as late as 0630 (Brian Alexander, PA; Tim Hendel, FL; Bill Meacham, D.R., *W.O.R.*) It's the FM channel of Radio-TV Dominicana, formerly on SW itself (R. Cotroneo, NY, *Play-DX*) 10 kW; Apartado 804, Sto. Domingo, or fax 809-541-1088 (Klemetz, *ibid.*)

ECUADOR R. Centinela del Sur on new 4763.3 until 0258 (M. Schnitzer, Germany, *Play-DX*) Nominal 4890, but on 4871 quite a bit, lately 4770.7 at 0103 with sports, next day back on 4890 (Rich McVicar, Ecuador, HCJB *DX Partyline*) HCJB on 9745 has new transmitter problem, causing white noise like a jammer from 9725 to 9765, QRMing all stations in that range—will they ever wake up and get their xmtrs fixed? (Ernie Behr, Ont.) *HCJB Today*, UTC Mons. 0200, 0700, 0930 gives inside info: Nov. 2, medical ministry; Nov. 9, how missionaries are supported; Nov. 16, yellow fever and first-term adjustments; Nov. 23, new HQ in Colorado, prison ministries; Nov. 30, Quito Day concerts (HCJB) Inactives as of late Sept.: 3290, 3324.6, 4800, 4820, 4950, 5020, 5030 (expected back in Oct.), 5040, 5965 (Rich McVicar)

ERITREA Voice of the Broad Masses of Eritrea, Asmera, no longer clandestine, 0330-0700, 0900-1100, 1400-1700 on 7380, 7020, 3940 in six area languages. During first half hour, it's Kunama on UTC Sundays, Tuesdays, Thursdays; Afar other days (BBCM) 7380 a little better than 7020, both just about every night from 0327 with distinctive sign-on

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music, fades around 0400 (Jerry Berg, MA, *Fine Tuning*)

ETHIOPIA V. of Ethiopia opens at 0330 except Sundays 0359 with Jack-in-the-Box type IS on 7110.06, 5990, 9705, all weak but 7110 in the clear (Brian Alexander, PA) V. of Tigray Revolution moved from Addis Ababa to Mekele, 0400-0500, 1345-1445 Sunday, 1500-1600 on 7820, 7450, 6770. VOBOM and VEPPDF, Addis, on 8000, 6940 around same times. (BBCM)

FINLAND YLE's morning English changed to: 1225 on 15400, 11735; 1330 and 1430 on 15400, 21550; weekends 1400-1500; daily 0245-0310 on 9560, 11755. The 800 number was still giving outdated schedule more than a week into new season.

GERMANY DW now invites listener input, program guide requests to 1-800-392-3248, which works in all 50 states and most of Canada (John Norfolk, OK) Formerly identical to 0100 and 0500, the middle 0300 broadcast now has different features around 0330 UTC Tuesday-Friday—such as *Insight*, Wed., *Science and Technology*, Fri (*Tune-In* via Diane Mauer, *Review of International Broadcasting*)

GUAM Typhoon damage to KSDA was worse than initially reported: blew down antennas, completely off the air as of mid-September. Two main antennas useless, other two may be usable with reduced power, but no transmitter capable of airing any signal, waiting for parts from France. KTWR back on running 20 instead of 100 kW due to power shortage (NHK *Media Roundup*)

HAITI (non) R. Neg-Marron via RFPI Costa Rica is named for the first organized resistance to French slave-owners, at a congress 15 August 1781; today symbolizes Haitian people's continuing fight to live free from tyranny; conch shell blows a call from the wilderness. Sponsored by and contributions welcomed to: Rocklanders for Democracy in Haiti, P.O. Box 271, Nyack, NY 10960; phone 914-358-4601; fax -4924; Sat. 2000, Sun. 0400, 1200. This is Haiti's only source of uncensored news (RFPI) Oh, yeah? Radio Seize Desanm, via Radio Miami International rescheduled to: Mon.-Fri. 2200-2300 on WHRI 17830 (actually 17835), Mon.-Sat. 2300-2400 on WRNO 7355, Sun. 1100-1300 on WHRI 9850.

HAWAII Surprisingly not blown away by Iniki, WWVH on the west side of Kauai was again heard a couple days later. Correcting Oct. *MT*, p. 97, propagation info from here is at :45 past the hour. LeSea TV stations' Fall Celebration tried to raise a thousand $1000 pledges to buy KWHR transmitter, giving the impression that only with this would 2.7 gigapersons get the gospel, Shanghai main target. Donors get names on transmitter door plaque. So strong it would "bounce local stations off the air," "sound like it's coming from the suburbs," power 12.5 megawatts [ERP], called "New Life Shortwave Radio Station," despite KNLS using same slogan and already reaching China among many others.

INDIA AIR Delhi, 4960, 0024-0100 fade, peak around 0045 in Ontario. Manosij Guha, *DX Grapevine* says original 10 kW broke down, now using spare 50 kW at Kingsway, not 20 kW Khampur; new 50 kW at Delhi is in the works (David Clark, *FT*)

IRAN (non) Iran's Flag of Freedom Radio, 15619.6, 1630 multilingual opening, including English, no parallels found, and not heard lately at 0330 (Brian Alexander, PA)

IRAQ (non) V. of Rebellious Iraq heard at 1830-1910 in Arabic, Kurdish on 8080v (BBCM)

IRELAND No official SW from here, so why not transmit news by phone? RTE has new service to USA updated several times a day from Dublin, at 900-420-2411 (Edward Dunne, *SW Echo* via Kirk Baxter) You failed to point out toll charges for this; beware (*W.O.R.*)

ISRAEL One change to last month's early version of fall schedule: Sun.-Thu. 1400 to Asia on 15650 not 15590—and this was the only frequency audible though the other five are for North America! Perhaps long-path, grazing 60th parallel south of Tasmania (gh, OK) Israel Radio will QSL audio cassette reports only when specified from sight-impaired listeners. Cannot accept check donations to stay on the air, but IRCs are appreciated, 4 per year to get schedules, or send more to help those who cannot afford them (*Calling All Listeners*)

ITALY Antarctica-chasers, beware: Tele-Radio Stereo, 6012.56 heard at 2325 past 2350 with continuous pop music (Hans Johnson, MD, *FT*) Is 4th harmonic of Rome 1503 (*Play-DX*) Two-line remark in our June column provoked two-page protest from Alfredo Cotroneo of NEXUS-IRRS, gist of which is: keep writing to IRRS, and don't take attempts at interhuman dialogue as annoyance. Still testing 0200-0300 on 7125, back on at 0630 (via Nebron, Swartwout)

JAPAN (non) U.S. address of Aum Shinrikyo, via Moscow: Aum Supreme Truth, 8 E 48th St., #2E, New York, NY 10017 (John Bellovich, CIS, via Jason Berri, *SW Echo* via Ken Mason and Kirk Baxter) R. Japan may change again from November, but the England relay at 0500-0600 used 7230, not 7280 (Wolfgang Bueschel, *W.O.R.*)

KAZAKHSTAN offered to relay Israel to Asia (BBCM)

KIRIBATI Rhombic on 14917 fell down, so now using 17440, 500 watts into log-periodic (Paul Ormandy, NZ, *Play-DX*) Same sked, best here 0600-0830, varies from strong to nothing; 0600 BBC news, 0609 local news, 0615 music, 0630 Pacific Island music; RNZI relay at 1800. Would like to expand, but transmitter also used for commercial traffic (Arthur Cushen, RNZI and RN*MN*)

KOREA NORTH Pyongyang replaced 13730 with 13785 at 1300-2100, away from Austria (Bueschel, Germany, *WWH Weltschau*)

LAOS Vientiane on new 5980 at 0030 poorly modulated // 6130 (BBCM)

LEBANON Wings of Hope, 11530 carries Dr. Gene Scott live at 0300-0700 (David J. Pickett, MA) Also at 2100-0100 (RIAS DX report via W. Bueschel) On both 11530 and 6280.2 at 0010-0103 sign-off, again at 0250-0310 (Brian Alexander, PA)

MONACO TWR from Oct. 25 in English on 9480 at 0735-0920 (Sat. 0935, Sun. 0945), but may move to 4lm (via John Carson, OK)

NETHERLANDS Study council declared RN obsolete; faces budget cut and/or government control (RN *Radio-Enlace*)

NEW ZEALAND Despite our trouble in figuring out the schedule, *Around the World with Rudi Hill* failed to appear Tue. Sept. 29 at 0930 on 9700; just domestic relay. *Orient Express*, Mandarin from Access R., Wed. 0900 on RNZI 9700 (gh)

NORWAY R. Norway, English to North America; Saturday and Sunday into UTC Monday: 2300 on 11795, 0000 on 9645, 0100 and 0200 on 9565, 0400 on 9560, 9650 (Bob Thomas, CT, *W.O.R.*) Back on 11 meters, check 25730 at 1300 weekends (Francis Toy via Larry Nebron)

PERU La Nueva Voz de la Selva Central, Onda Nueve, on 4925.76 at 1100-1130 (J.H. Osterholm, CA via Henrik Klemetz, *Play-DX* who believes it is in Tocache)

POLAND With Moscow's Cuban relay gone from 11840, Warsaw audible in English at 1500 (Daniel Sampson, WI, SPEEDX) DX program is on this broadcast Tuesday; also 1930, Wed. 1200, 1700, Sun. 1500, 1930, Mon. 1200, 1700 (DX Ontario) Before DST shift, if any.

PORTUGAL R. Portugal says they may add Portuguese language course, and emphasize current affairs more. Reception reports must be written, no tapes (John Norfolk, OK)

RUSSIA Thanks for mentioning R. 101 in September. It's Moscow's first truly independent radio station, 100 kW ERP on 101.2 FM, 150 kW directional on 1233 MW, 0300-2400. Free-spirited switchers and engineers put it on shortwave unpredictably; rock 'n' roll oldies, polled as Moscow's most popular radio station, heard everywhere, megarubles of ad time sold monthly (Jack Gardner, CA, Dir. of Int'l Sales) New

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stations: Evenk Radio, Tura on 4040 with local program at 2330-0045 (Grigory Grigoriev, Slantzy, *DX Moscow* via *Play-DX*) Vesj Irkutsk, "away from politics," on 6090 at 2230-2330, 0400-0500, 1000-1100 (Fyodor Brazhnikov, Irkutsk, *ibid.*) Radio "N", Yekaterinburg, 6200 at 0400-0900 Tue.-Sat. (Viktor Samoylov, Nefetkamsk, *ibid.*) All before DST changes; one hour later now? (gh) AWR in English at 1600-1630 went to 12030; hope they stay there instead of announced 15125 via Samara (Edwin Southwell, England) BBC will use three Asian sites to reach China, also via Tashkent to India, former jammers (*Newsdesk* via Bill Westenhaver) Radio Netherlands sent delegation to Moscow, also negotiating to hire airtime on Russian transmitters (RN*MN*) Dr. Gene Scott announced he's adding former jammers from Siberia site Nov. 1 (Diane Mauer and Todd Dokey)

SA'UDI ARABIA English from BSKSA is on 9705 only at 1600-2100, with news 1830, 2045, Saudi news 1845 (BBCM)

SENEGAL Dakar on 7170 in lieu of 4890; former daytime-only outlet, from 0658 sign-on to 0830 fade (Craig Seager, *ADXN*) So French here is not New Caledonia

SERBIA R. Yugoslavia changed N. American English to 0100 and 0200 on 9580 (Norfolk, OK) clashes with Czecho, Albania (Westenhaver, PQ)

SHRI LANKA SLBC is getting no response to weekly N. American service, Mondays 2330-2400 on 15425; report to Deputy Dir. Gen., Engineering, New External Broadcast, SLBC, P.O. Box 574, Colombo (Victor Goonetilleke, *ibid.* RN*MN*) For starters, get a clear frequency.

SLOVAKIA New home service relay on 5930 until 1600, then 5920 is Bratislava, not Prague (Bueschel and Southwell, DSWCI *SW News*)

SOMALIA R. Mogadishu sked last month soon revised to: *13*00-1430, 1600-*18*00, no English (BBCM)

SOUTH AFRICA Radio RSA renamed Channel Africa, Oct. 1, like its TV counterpart (BBCM) BBC will use Meyerton relay 15 hours daily (DW via Bueschel, *WWH*)

SPAIN REE welcomes visitors to English section at Madrid studios; budget cuts almost axed English service (Kirk Baxter, Spain, *R.I.B.*)

SWAZILAND TWR English from 0430 on 5055, 5965, 9655, 11740, each for a different duration (BBCM)

SWEDEN R. Sweden used to have 1230 and 1400 broadcasts when North Americans could listen before work; lately it's been 1500, and now shifted to 1600 on 17870, 21500—great planning since the latter again conflicts with WYFR. Still 0200 on 9695, 11705. Try the one-hour broadcast at 2130 on 6065, 9655 to Europe, 11955 to Asia, typo? as 11995 in printed sked, but should be there since BBC already on 11955 to Asia! (via Diane Mauer, John Carson) To Asia 1330 on 15240 can be fair here (gh, OK)

SWITZERLAND SRI is on new 21820 to Asia at 1300 and 1500; evenings: 2200 on 6030, 9810, 9885 and Gabon 12035; 0000 on 6135, 9650, 9885, 12035 and Brazil 17730; 0200 on same minus Brazil; 0400 on 6135, 9860, 9885, 12035 (Swiss PTT)

TANZANIA R. Tanzania moved external service from 9685 to 5050, formerly national. All in English: 0330-0430, 0900-1030, 1030-1530 weekends, 1530-1915 with news at 0400, 1000, 1300, 1600, 1800, 1900; V. of Pan-Africanist Congress M/W/F 0415 and 1830, T/T/Sa 1815-1830; R. Freedom from ANC, T/T/Sa 1830-1900 (BBCM)

THAILAND Two 500 kW SW transmitters at new VOA relay are due on air spring 1993 (DW via Bueschel, *WWH*) Cabinet approved BBC relay in Nakhon Sawan province (R. Thailand via BBCM)

TONGA A3Z is about ready to go back on SW 5030 until 1000, per CE (Chris Rogers, Australia, *DXers Calling* via Arthur Cushen, RN*MN*) Beware of Sarawak on 5030 at 1030-1500 (Guy Atkins, WA, *FT*)

UKOGBANI (non) BBC German DX program QSLs different relays in rotation for full-data reports; currently Lesotho and Hong Kong until Nov. 30 (Bueschel, *WWH*)

UKRAINE R. Voskresenie [Sunday] heard on a Sunday at 1215 on 11735, religious program, Lvov address (Grigory Grigoriev, Slantzy, Russia, BDXC & WDXC) R. Nezaleznost [Independence] at 1600-1800 Wed. & Thu. on 5980, 11825; addr.: Ul. Vatutina 6, Lvov 295005 (A. Goletsky, Ukraine, St. Pete DX Club via HCJB *DX Partyline*) R. Black Sea, pirate from Sebastopol', testing 3320 USB and 6800v, Saturday only from 1800 (Nikolai Rudnev, Russia, *ADXN*) RUI heard at 0100-0200 on 11790, 9685, 9665, 7240, 7195, still claiming to be at 0000 (Tom Sundstrom, NJ, via Nebron)

USA WEWN's first transmitter has arrived; tests to start by late October (Bob German, WEWN, Alabama, RN*MN*) Proposed winter schedule when all four 500 kW transmitters in use: 5825 2200-1000. 7465 0500-1000. 7520 0300-0500. 7540 2000-0800. 9350 0400-0800. 9410 0000-0400. 9870 0800-1600. 9985 0100-0300 & 0800-1000. 11735 1300-1700. 11885 2200-0200. 11970 2000-2200. 13615 1600-2400. 13710 1400-2400. (15 MHz not used). 17760 2200-2400. 17890 0000-0100. 18930 1300-1800. 21670 1300-2000. 21735 1700-2200 (George Jacobs)

WRMI, Radio Miami International, 9955 registered 24 hours, at least 2200-0600 at first, hoped to be on by October with 50 kW, corner reflector toward south; besides exiles and religion will have English and Spanish magazine shows. QSL already designed and may use *Miami Vice* theme (Jeff White, RMI, HCJB *DXPL*)

WRNO filled Cuban exile hole on 7355 with conspiratorial anti-New World Order *Voice of the Last Days Prophet of God* from Oct. 5, weeknights 0000-0200, now one hour later (*W.O.R.*)

WWCR finished third rhombic, 85°, before purchasing third transmitter, and Gene Scott service shifted there for better east/west coverage on 13815 day, 5920 night, than older antennas at 40 and 45°. Vietnam Restoration Party tested Vietnamese service weekends at 1000-1100 on 15690; same group backing detested R. Irina via Moscow (*W.O.R.*) WWCR moving to 13815 surprising, prime frequency for U.S. State Department's very own KRH50 (Chuck Yarbrough, SPEEDX) Notice how many WWCR programs whined about "poor" Nazi nut who shot to death federal marshalls in Idaho, including *Radio Free America, Scriptures for America* and *For the People*. Many also promote some ex-colonel for prexy who makes Pat Buchanan sound moderate (Joel Rubin, CA) Radio Newyork International admitted $6000 debt, $4500 of which owed to WWCR for airtime; resorted to "begathon," but goal not quickly met. If still on, would now be UTC Monday 0200-0600 on 7435 (gh) "Radio Techniques" is new on WWCR, promoting ham radio, Sun. 2300, Tues. 0700.

Aside from any other permanent changes, from Oct. 25, *World of Radio* shifts due to standard time: WWCR, Fri, 2215, on 15690, Sun. 0405 on 7435, Mon. 0000 on 7435; 1330 on 15690, Tue. 0730 on 7435; WRNO, Sat. 2300 on 7355, Sun. 0300 on 7355, 2130 on 15420; RFPI, see last month. Also on *Let's Talk Radio*, Spacenet 3, 87° W, ch. 21, 6.2 MHz wideband audio, Friday 2230, Tuesday 0130 UTC (gh)

VOA Tibetan expanded: 0100-0130 on 6090, 7180, 15320, 17875, 21570; 1500-1530 on 9575, 15255, 15285 (via Nebron) Jamming causes jumps.

UZBEKISTAN R. Tashkent, 1200 & 1330 on 17815, 15470, 9715, 7325 (Eugene, RVI *Radio World*) Uzbek R. Pgm. I 0000-2100 on 5995; Pgm. II almost 24 hours on 4850; 15200 & 15165 daytime, 9840 evening, 9545 evening & night (BBCM)

VATICAN English at 0250 on 7305, 9605, and from Nov. 1 on 6095 (Vatican Radio)

VENEZUELA Missing from *SW Guide*, English from R. Nacional, 9540, expanded from 6 days a week to 7, approx. 1140, 1540, 1840, 2140, 0040, 0340 (Norman Blakely, Ont.) R. Frontera, 4761.08, often until 0258 varying to 0314 sign-off with two anthems (Tambuzzi, Monferini, Puppo, Krone, Schnitzer, *Play-DX*) R. Fantasia, Caracas ID on 4960 at 0253, 0255, 0257 one night only (Paul Routenburg, Ont., *FT*)

VIETNAM Domestic service on new 7287 at 2100-2300 (Wolfgang Bueschel, Germany) ex-6450 until 1600 // 4895, 5924, 10059 (Isao Ugusa, R. Japan *Media Roundup*)

Until the next, 73 de Glenn!

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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.*

0005 UTC on 7315
CROATIA: Croatian Radio. Twelve minutes of English news, with update on the conflicts in former Yugoslavia. (Greg Keskinen, Ashaway, RI) Hrvatska Radio heard on 6210 kHz at 0155. Weak signal for easy-listening vocals. Choir music at 0158. Time tones at 0200 to ID. Brief news to easy-listening music. (Brian Bagwell, St. Louis, MO)

0030 UTC on 15260
ASCENSION ISLANDS: BBC relay. *The Ken Bruce Show*, of music hits of today and yesterday. (Robert Tucker, Savannah, GA) Sports news on 21660 kHz at 1400. (John Carson, Norman, OK)

0100 UTC on 9530
SPAIN: Spanish Nat'l Radio. European sports update, follwed by *500 Years* radio serialization on Columbus' journey to the New World. Spanish service Exterior de Espana heard at 2057 on 12035 kHz. (Tucker, GA) (Sam Wright, Biloxi, MS) (Bob Fraser, Cohasset, MA)

0115 UTC on 15350
LUXEMBOURG: RTL Luxembourg. Powerhouse signal for rock/pop music. DJ's promo for "Luxembourg Music Jam" into Tina Turner's "We Don't Need Another Hero." (Thomas W. Hoffman, Decatur, IL)

0118 UTC on 11950
CUBA: Radio Havana. Cuban music to interval signal and ID. *From Havana* music program from Cuban group La Carichi. Additional monitoring on 13710 kHz with *Spotlight on the Americas*. Report on Rep. Torricelli's anti-Castro work. (Tucker, GA) (Fraser, MA)

0132 UTC on 11755
FINLAND: Radio Finland. Finnish stock exchange and market report. Plans discussed for the construction of a suspension bridge to the North Sea for Finland and Denmark. Blue Angels visit Finland, weather report and *Sports News*. Parallel 15185 fair. (Wright, MS)

0145 UTC on 9875
AUSTRIA: Radio Austria Int'l. Feature on the Austrian Armed Forces. Parallel 13730 fair. Special exibit discussed at the Museum of Applied Arts. Closing comments at 0155 to Spanish service at 0156. (Richard Jackson, Kansas City, MO) (Carson, OK)

0200 UTC on 11705
SWEDEN: Radio Sweden. Frequency/ID schedule. European news headlines. Parallel 9695 kHz fair. Feature on role of Red Cross worldwide. (Jackson, MO)

0206 UTC on 11710
ARGENTINA: RAE. Items of national interest to listener's *Letterbox* show. Interference from Radio Beijing. (Carson, OK)

0210 UTC on 17770
NEW ZEALAND: Radio New Zealand Int'l. National news and sports with weak signal. (Harold W. Bower, Sunbury, PA) *Pacific Islands News from New Zealand* heard on 9700 kHz at 1030-1125 (Fraser, MA) (Tucker, GA) Audible on 17770 kHz past 0350. (Jackson, MO)

0215 UTC on 12035
SWITZERLAND: Swiss Radio Int'l. *Future Watch* discussion on aluminum recycling in Switzerland. (Scott L. Martin, Omaha, NE)

0230 UTC on 15580
ARMENIA: Radio Yerevan. English news on Armenia. Music to world news headlines. Program feature to easy-listening music. Station identification sign-off. Parallel heard on 11675 kHz. (Duane Hadley, St. Petersburg, FL)

0230 UTC on 11910
HUNGARY: Radio Budapest. Listeners' letters, ID and *What You Say* program. (Martin, NE) (Jackson, MO)

0255 UTC on 7200
SUDAN: Radio Omdurman. Arabic. Melody interval signal to Sudanese national anthem. Time-tips, station ID as "Sudaniyah min Omdurman." Continued sign-on text, the current date and frequency schedule for 7200 and 9535 kilohertz. *Holy Koran* recitations to 0315. World newscast to program feature. Arabic vocals and instrumentals. Excellent signal quality with audio hum. Monitored to 0355 for several consecutive evenings. (GVH)

0303 UTC on 7345
CZECHOSLOVAKIA: Radio Prague Int'l. News on Hungary and Czech government relations. Marketing and agriculture news. Medical update on HIV virus in Czechoslovakia. Closing news on Sweden. (Bagwell, MO) Audible on 9810 kHz at 0400. (Tucker, GA) Audible on 11990 kHz at 0020. (Fraser, MA) (Martin, NE)

0310 UTC on 9700
GERMANY: Deutsche Welle. Commentary on Yugoslavia. In-depth discussion and interview on Germany's right-wing gangs and leftist groups disputes. (Michael Phillips, Albany, NY)

0320 UTC on 11930
NETHERLANDS ANTILLES: TWR-Bonaire. Practical advice on child rearing with passages from "Proverbs." Station ID/frequency schedule and *Insight for Living*. Parallel 9535 fair. (Jack R. Davis, Birmingham, AL) Audible on 11815 kHz at 1133. Radio Netherlands relay heard on 21515 kHz at 1813. (Carson, OK) (Fraser, MA)

0330 UTC on 7189.93
YEMEN: Rep. of Yemen Radio. Arabic. Aden heard with text emphasizing Iraq. Political news from the US on the Bush/Clinton ticket. Features and Arabic music. San'a audible at 0330 on 9779.74 with weak Arabic text. (GVH)

0334 UTC on 7375
COSTA RICA: Radio for Peace Int'l. Discussion on viewing animals in the wild and coexisting. (Wright, MS) James Latham's report heard on 7375 kHz at 0430. (Carson, OK) (Bower, PA) Costa Rica's TIFC heard on 5055 kHz at 0339. (Jerry Williams, Tampa, FL) (Carson, OK)

0346 UTC on 9420
GREECE: Voice of Greece. News on Bosnia/Serb conflict. National news on the legislature to closing news at 0350. (Thomas Banks, Dallas, TX)

0350 UTC on 4765
CONGO: RDTV Congolaise. French. Tone signal to melody interval signal. National anthem to "ici Brazzavile station nationale de Congo." "Bonsier" and frequency schedule. French African rap music by lively DJ. (GVH)

0405 UTC on 6940
ETHIOPIA: Clandestine. People for Peace, Democracy & Freedom. Amharic. Male/female announcers' text and motivating music. Weak signal, but worse on parallel 8000 kHz. (Jerry Witham, Keaau, HI)

0435 UTC on 11680
FRENCH GUIANA: Radio Beijing relay. *Current Affairs* report on a young Chinese inventor. *Culture in China* with a profile on a SW China minority group. (Tucker, GA)

0500 UTC on 17543
ISRAEL: Rashuth Hashidur. Presumed Ladino. Station sign-on with male/female announcers. Phone interviews to commercials at 0529. Regional pop and rap music. 0505 sign-on the following day. (Witham, HI)

0505 UTC on 4904.6
CHAD: RD Nat'l Tchadienne. French. Pop African tunes to morning show chat. News briefs, chat and "National" ID. (Phillips, NY)

0509 UTC on 9770
UNITED KINGDOM: Radio Japan relay. Newscast to station ID. *Hello Tokyo* to music program. (Tucker, GA)

1015 UTC on 4785
CHINA: Zhejiang PBS. Chinese. Female announcers text to musical interlude and male voice-over at 1020. Presumed commercial at 1025 to newscast at 1030. (Witham, HI)

1128 UTC on 9655
THAILAND: Radio Thalland. Presumed Vietnamese service. Three gong tones at 1130 into English service. Weak signal for chat and easy-listening tunes. Recheck at 1200 with time tips, station ID and newscast to 1210. Feature on Bangkok industry. Presumed Cambodian service at 1230. (GVH)

1146 on 6120
CANADA: Radio Japan relay. *Travelogue* program with tours of Tokyo. Hawaiian music featured to news briefs. Sign-off at 1156 with interval signal and ID. (Tucker, GA)

1414 UTC on 15150
MADAGASCAR: Radio Netherlands relay. *Newsline* to *Research File* program discussing comparisons of Holland and Canada. (Carson, OK)

1429 UTC on 17795
NORWAY: Radio Denmark relay. Interval signal and station ID. Frequency schedule to Nordic news report. (Carson, OK)

1620 UTC on 9875
GERMANY:(non) Deutsche Welle via Novosibirsk. Program on German composers and their music, with the emphasis on mythological stories set to music. (Witham, HI)

1715 UTC on 6164.5
KENYA: Radio 1-Kenya Broadcasting Co. Educational Service. Program on the different varieties of sugar, how it is handled by the body & its role in cooking. Tribal music bridge to ID and English language lesson. (Witham, HI)

2000 UTC on 12085
SYRIA: Radio Damascus. Time-tips and ID. English international news into Arabic vocals. News topics on Syria. Parallel 15095 kHz past 2125 with fair signal. (Tucker, GA)

2217 UTC on 9885
SAUDI ARABIA: BSKSA. Arabic. Traditional Middle Eastern music. Station ID at 2230 into newscast. (Tucker, GA)

2219 UTC on 13605
UNITED ARAB EMIRATES: (Abu Dhabi) UAE Radio. Part 13 of *Andalusia-Home of Moslem Culture in Europe*. Station ID at 2231 into transmission of Abu Dhabi's FM "Capital Radio." (Tucker, GA)

2247 UTC on 11830
VATICAN STATE: Vatican Radio. Current news on the Vatican and Pope Paul II. *The Rome Report* with an in-depth look into the plight of worldwide refugees. (Jackson, MO) (Davis, AL) (Wright, MS)

2355 UTC on 9022
IRAN: Voice of Islamic Rep. Commentary critical of Europe's response to Bosnian tragedy. Iranian music. (Tucker, GA)

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Utility World

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KWA80, Where Are You?

For several months now, some interested hobbyists have been theorizing about the shutdown at KWL90—the Department of State Radio Station at Manila in the Philippines—and the location of its replacement station, KWA80. KWL90 left the air when Clark AFB was shut down. One of the locations being mentioned for KWA80 is on the island of Guam.

James L. Hubbard in Dededo, Guam, has been watching KWA80 since the demise of KWL90. In the fall of 1991 it appeared that a new KWL90 would take up residence on Guam, but they have not done so. KWA80 is active only on 12210 and 17552 kHz. They secure 17552 kHz at night (or at least James can't hear them and he should be able to) and appear to continue on 12210 kHz only. This is the list of potential KWA80 frequencies from Jim's database:

4048 5443 5822.5 6867 7662 9224 10464 10900 12210 13210 13485 13700 14616 14782 16623 17552 24827

James reports that although KWA80 is readable in Guam on the two previously mentioned frequencies, it is not strong. KWL90 used to blast in on Guam at more than 20 dB. James says he would not be surprised to find the transmitters situated near the US Embassy in Bangkok, Thailand.

Hummm, James, I still wonder what Takashi Kuroda in Tokyo hears on the two frequencies you have mentioned. Takashi-san, are 12210 and 17552 kHz strong enough to be from the U.S. Embassy in Tokyo? How about from antennas at the Air Force base at Yokota? Only time will tell on this one folks, but Yokota looks better every day in my book.

NMF on the air...

One of the more often heard stations on HF, especially this time of year, are Coast Guard communication stations, (COMSTAs, for short). A major facility within the Atlantic Area Communications system is the Coast Guard Communication station in Boston, callsign NMF. The station has many diverse missions in the communication arena.

NMF provides long range ship-to-shore communications for command, control, and coordination of Coast Guard operations within the Arctic, North Atlantic, and Caribbean areas. The primary means of communication are secure/encrypted radioteletype transmissions broadcast on several frequencies simultaneously. NFM also provides air-to-ground communications for the same purposes and into the same areas mentioned above. Similar services are provided to Government vessels of the United States and friendly foreign nations.

Coast Guard Boston broadcasts weather information from the National Weather Service; notices to mariners; locations of fixed fishing gear; and safety, urgent and distress information. Additionally, the station broadcasts a navigational warning service called NAVTEX on 518 kHz by FSK radioteletype. This broadcast is the first implementation by the U.S. of a new international standard. NMF broadcasts are made by means of voice, Morse code, radioteletype and facsimile.

NMF serves as the primary communications station for the International Ice Patrol's area of responsibility. The United States provides this service under international agreement concluded after the sinking of the RMS Titanic in 1912. As a result, the station maintains a continuous watch on the international distress frequency of 500 kHz.

This US Coast Guard COMSTA provides a communications interface between the international maritime community and the United States Government. This interface is provided to enhance the safety of all at sea and to satisfy both national laws and international agreements.

Communications Station Boston has its primary receiving and operations site on 57 acres of land in Marshfield, Massachusetts, about 35 miles south of Boston. The transmitter site covers 542 acres within the Otis Air National Guard Base on Cape Cod. Additionally, the station operates an unmanned microwave site at Manomet, Massachusetts, a remote-controlled receiver site at East Moriches, Long Island, New York. The various sites are interconnected by microwave and landline links.

The COMSTA uses 30 Harris R-2368/URR LF/MF/HF receivers at Marshfield. They are connected to a Hermes aperiodic loop array (MF/HF omnidirectional antenna).

At the Cape Cod transmitter site there are twelve state-of-the-art Collins HF-80 transmitters capable of 10,000 watts and two Nautel NX2500TT/6 MF transmitters. They can be patched to 18 antennas: 10 fixed directional, horizontal log periodics; four omni-directional, horizontal log periodics, one omni-directional vertical inverted cone (HF); two omni-directional horizontal flat-tops (MF), and one omni-directional vertical dipole (MF).

The following are frequencies on which you can catch NMF operating.

Voice Transmission/Broadcast

Upper Side Band (USB)		Voice phone patch (USB):	
Ship	Shore	Ship	Shore
4134		6212	
4426		6513	
6200		8195	
6501		8719	
8240		12278	13125
8764		12323	13170
12242	13089	16396	17278
16432	17314	16471	17353
		22015	22711

While on the topic of the Coast Guard, Table 1 is my latest list of Coast Guard station broadcasts. As always, updates, changes and corrections are always appreciated.

Ships and their Calls

As most of you know, Gayle's utility book, the *International Callsign Directory* is on the street and receiving a good response. Already folks have sent her updates for inclusion in the next edition. One of these folks is Bob Pettengill, who monitored a traffic list being broadcast by WOO using SITOR-B. They were sending a complete list of ships for which they were holding traffic. This is an excellent way to add new ship callsigns to your personal database. Traffic lists are broadcast by most marine stations in a variety of modes, including voice.

There are the ships Bob monitored that do not appear in the callsign book:

Ships Name	Callsign		
Carnivale	C6KD	Crown Monarch	3EGA8
Colville	WAC8339	Crown Princess	ELGH5

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Ecstasy	ELNC5	New Chance	WXU5908
Fantasy	ELKI6	Nordic Prince	LAPJ3
Footloose	WQY2759	Norway	C6CM7
Holiday	C6KM	Ocean Breeze	ELLY4
Horizon	ELNG6	Pacific Joy	WAS9517
Kapitan Khlebnikov	UTSU	Regal Princess	ELGH6
Karakhia	WYR3086	Regent Sun	C6HBE
Lady Margare	WAX3380	Seven Daughters	WAO7522
Majestic	WAO7238	Sky Princess	GYYP
Majesty of the Seas	LAOI4	Song of Norway	LNVP3
Mardi Gras	C6KG	Viking Serenade	C6CP
Neptune Amber	S6CY	Westward	C6CN2

Bob also asked what the serial numbers transmitted during the broadcast represented. It is my understanding, Bob, that each message sent to a ship is assigned a serial number for record-keeping purposes.

National Guard Channels?

Emergencies are notorious for uncovering new frequencies, and Hurricane Andrew was no exception. Here are just a few examples.

John and Mike down in Central Florida were monitoring 5205 USB for FLA ANG activity. Stations there were using tactical IDs and were passing traffic about needed supplies for the hurricane victims in south Florida. One evening while monitoring this channel two stations started to pass a list of frequencies.

Static and bleed-over was severe, but these two monitors managed to get all 21 designators and frequencies that were passed with only two minor contradictions. The designators started with 'Mike' followed by a number. All frequencies begin with a 'K' which they figured (correctly) meant kilohertz kHz. They also gave two code names: "Irongrip" - location unknown, and "Front Door" - MacDill AFB SAC (my reporter's quote, not mine) Command Post. They were in hobbyist heaven to say the least (I know I'm never that lucky). The Mike list they copied all occurred around 2348 UTC in USB as follows:

2445	Mike 1	10905	Mike 11	18508	Mike 23
3384	Mike 3	11535	Mike 12	19995	Mike 25
4815	Mike 4	12105	Mike 14	20151	Mike 27
5745	Mike 6	14365.6	Mike 15	21905 or 22105	Mike 29
6705 or 6905	Mike 7	15595	Mike 17	23092	Mike 31
7469	Mike 8	16600	Mike 19	24075	Mike 33
8160	Mike 10	17500	Mike 21	25360	Mike 35

There are obvious holes in the designators, but there are also some obvious holes in the frequency band plan. Russell out in Texas, who also heard the guys on 5205, says they identified the MIKE freqs as those authorized for use by the National Guard working the Hurricane Andrew disaster. Russell reported that MIKE 10 has been in frequent use as has 5205.

Other Hurricane News

Since Andrew flattened Homestead the Air Force has moved its Rescue Ops Center to Patrick AFB up the coast. The King callsign aircraft are now working Patrick AFB via GHFS stations. No sign yet of the 6715 freq usually used by these rescue planes. Anybody else??

I've been wondering, is KKN39 still on the air? The Miami area is too close to me for skywave props. Hummm, now that I mention it, I wonder which 4-digit number stations are still around?

On another interesting note, I caught Razorback, Coast Guard Cutter Conifer and CAMSPAC San Francisco yacking on 5696. Razorback was playing relay for the two coastie stations. Seems Conifer wanted to talk to San Fran but was having trouble. They asked for an 'FCL' frequency.

San Fran passed that back to them to QSY to 5419.5. This is a known Coast Guard RTTY channel. Tuning in there gets you a bunch of scrambling, on/off type like voice. This wasn't Parkhill type scrambling; in fact, I am not sure what it is. You might want to give it a listen and see what you think. If the scrambling is any indication, they were either keyboard to keyboard or in a voice mode. Now, what is a Coast Guard 'FCL' frequency?

Let's check out what you have been hearing this month. It's hurricane time...

Table 1:

All times are UTC and frequencies are kHz. weather = wx; warnings = warn; B1 indicates the transmitter coverage area of a 518 NAVTEX broadcast.

Callsign	Location	Freq/Mode/tx type	Time
NCF	Miami Beach, FL	2670/USBwx/warn	0350 1550
NIK	Boston, MA	8502/12750/FAX	1600
		8502/12750/CW	0050 1250
		8502/12750/SITOR	0018 1218
NMA	Miami, FL	400/CW	0050 1500
		518/NAVTEX/B1=A	0000 0600 1200 1800
NMA10	Mayport, FL	2670/USB wx/warn	0620 1820
NMA21	St. Petersburg,FL	2670/USB wx/warn	0320 1420
NMB	Charleston, SC	2670/USB wx/warn	0420 1620
NMC	San Francisco,CA	472/CW	0300 0400 0500 1600 1700 1830
		518/NAVTEX/B1=C	0400 1000 1600 2200
		2670/USB wx/warn	0203 1403
		4426/8764/13089/USB	0430 1030 1630 2230
		17314/USB	1630 2230
		8426/SITOR	0000 1800
		4346/CW	0630
		8682/12730/17151.2/CW	0030 1900
		8682/12730/CW	0630
		4346/8682/12730/22527/FAX	0145 0300 0500 1500
NMC6	Monterey, CA	2670/USB	0333 1533
NMC11	Humboldt Bay,CA	2670/USB	0303 1503
NMF	Boston, MA	518/NAVTEX/B1=F	0500 1100 1700 2300
		2670/USB wx/warn	0440 1040 1640 2240
		3242/7530/FAX	
		8491.3/SITOR	0200 1700
NMG	New Orleans, LA	518/NAVTEX/B1=G	0300 0900 1500 2100
		2670/USB wx/warn	1035 1235 1635 1750 2235
NMK	Cape May, NJ	2670/USBwx/warn	1103 2303
NMN	Portsmouth, VA	448/CW	0020 1520
		518/NAVTEX/B1=N	0130 0730 1330 1930
		4426/8764/USB	0400 0530 1000
		6501/8764/13089/USB	1130 1600 2200 2330
		8764/13089/17314/USB	1730
NMN13	Cape Hatteras,NC	2670/USB wx/warn	0133 1303
NMN37	Fort Macon, NC	2670/USB wx/warn	0103 1233
NMN70	Chincoteague,VA	2670/USB wx/warn	0233 1403
NMN80	Hampton Roads,VA	2670/USB wx/warn	0133 1333
NMO	Honolulu, HI	440/CW	0500 2100
		518/NAVTEX/B1=O	0040 0640 1240 1840
		2670/USB wx/warn	0903 2103
		2670/6501/8764/USB	0545 1145
		2670/8764/13089/USB	1745 2345
		8427.5/SITOR	0130 0430 0730 1330 2030
		9050/16964/CW	0100 0400 0700 1300 2000wx/ 0300 0600 1700 2200 warning
NMQ	Long Beach, CA	518/NAVTEX/B1=Q	0445 1045 1645 2245
NMQ8	Channel Is, CA	2670/USB wx/warn	0503 1303 2103
NMR	San Juan, PR	518/NAVTEX/B1=R	0420 1020 1620 2220
		2670/USB wx/warn	0305 1505
NMY41	Shinnecock, NY	2670/USB wx/warn	0020 1220
NMY42	Moriches, NY	2670/USB wx/warn	0010 1210
NMW	Astoria, OR	518/NAVTEX/B1=W	0130 0730 1330 1930
		2670/USB wx/warn	0533 1733
NOE	North Bend, OR	2670/USB wx warn	0603 1803
NOJ	Kodiak, AK	470/CW	0530 2000
		518/NAVTEX/B1=J	0000 0500 1200 1745
		2670/USB wx/warn	0203 1645
		4298/8459/FAX	0500 1000 1900 2200
		6501/USB	0203 1645
NOQ	Mobile, AL	2670/USB wx/warn	1020 1220 1620 2220
NOQ7	Panama City, FL	2670/USB wx/warn	1020 1220 1620 2220
NOY	Galveston, TX	2670/USB wx/warn	1050 1250 1650 2250
NOY3	Port Aransas,TX	2670/USB wx/warn	1040 1240 1640 2240
NOY8	Corpus Christi, TX	2670/USB wx/warn	1040 1240 1640 2240
NOW	Port Angeles,CA	2670/USB wx/warn	0615 1815
NRV	Apra Harbor,Guam	466/CW	0100 0800
		518/NAVTEX/B1=V	0100 0700 1300 1900
		2670/USB wx/warn	0705 2205
		6501/USB	0930 1530
		8150/CW	0000 0200 0300 0500 0700 0800 1000 1200 1300 1700 2200 wx
		8422/SITOR	0500 1500 1900 2315 Wx 0230 0900 warnings
		13089/USB	0330 2130

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Utility World

Utility Loggings

Abbreviations used in this column

AFB	Air Force Base
AFOC	Air Force Operations Center
AM	Amplitude Modulation
ASW	Anti-submarine warfare
CANFORCE	Canadian Forces Station
CP	Command Post
CW	Continuous Wave (Morse Code)
EAM	Emergency Action Message
ETA	Estimated Time of Arrival
FAX	Facsimile
GHFS	Global HF System
HF	High Frequency
LDOC	Long Distance Operational Control
LSB	Lower Side Band
MFA	Ministry of Foreign Affairs
Meteo	Meteorology
M/V	Motor Vessel
NAS	Naval Air Station
Net	Network
Ops	Operations
QRM	Interference
QRN	Noise
RM	Reference Manual
RTTY	Radioteletype
SAM	Special Air Mission
SAR	Search and Rescue
Satcom	Satellite Communications
SELCAL	Selective Calling
SITOR-A/-B	Simplex telex over Radio mode A/B
Unid	Unidentified
USB	Upper Side Band
VOLMET	Aviation Weather

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

2103.5 FDC-French military, Metz, with a CW marker at 2253. (Robin Hood-UK)

2150.0 M/V Finny with SITOR-A mode working GCC-Cullercoats Radio, England on 1615.0 at 2256. (Robin Hood-UK)

3622.5 JMH-Tokyo Meteo, Japan, with FAX 120/576 weather charts at 1025. (Donald Tomkinson-Huntington Beach, CA)

4373.0 6GR working Giant Killer in USB at 0217. Mentioned, "In the playground...Frequency Hoover...6GR checked his RM...Hoover was dirty, check Lincoln, Lincoln was clean." (John Robinson-Antioch, TN)

4416.0 I3A working F0N at 0938 in USB. (J.R. Whitesides-Las Vegas, NV)

4625.0 Foghorn signal heard at 0200. (Al Underwood-Silver Springs, NY)

4642.0 English female 3-2 digit number station in AM at 0013. (John Bolling-Charlotte, NC)

5305.0 Florida National Guard after Hurricane Andrew with Irongrip and Front Door passing a 'Mike' frequency list with designators in USB at 2348. (John Richardson and Mike Comer-Titusville, FL)

5643.0 Northwest 74 calling Honolulu in USB at 1004. (Whiteside-NV)

5696.0 CG1701 working Miami Operations with SAR of a burning vessel in USB at 0039. (Mark S. Janacek-Summit, NJ)

5700.0 Reindeer working Moccasin, Dogpatch also on, coded message then requested to leave net in USB at 0642. (Todd Koch-Bloomington, IL)

5717.0 Habitat-NAS Moffett Field, CA ASW operations. Mostly position reports/aircraft status reports in USB. Sometimes simulcast with 4700.0 (primary). Nothing heard on their listed secondary frequency of 6697.0 probably because it is a Pacific LDOC frequency 24 hours a day. (Tomkinson-CA)

5930.0 Spanish female 4-digit number station in AM at 0220, 0315, 0412. (George Coombs-Henderson, KY)

6320.0 KPH-San Francisco Radio, CA, with KPH CW marker at 1520. (Tomkinson-CA)

6421.5 PBB-Dutch Navy, Den Halder, with 75 baud RTTY test at 2259.(Robin Hood-UK)

6556.0 Kuwaiti 412 calling Calcutta in USB using SELCAL DKEH at 2100. (Robin Hood-UK)

6622.0 Single Letter HF Beacon 'P' in CW at 2103. (Robin Hood-UK)

6683.0 Air Force One working Andrews in USB at 2307 with phone patch to AFOC. (Jeffrey Jones-Tracy, CA)

6750.0 US Navy tracking operation (apparent general aviation/business aircraft on this particular evening) in Caribbean. Fox Tango net control for mostly single letter station call signs, Lobo, Black Eagle 02 all using "alligator" tracks in the playground. Numerous "TOI" tracking reports passed verbally and digitally to "FT".

Around 0230 they apparently moved primary freq to Giant Killer (4373 was active but so was my neighbor's TV oscillator). Constant QRM from a very low rumble of an unknown data station on 6750.1, occasional QRM from the "Water Dripper" and very weak Air Force EAM and heavy local thunderstorm QRN. This net moves around daily; also heard later in the week on 3130 and even later on 6735. (Jeff Haverlah-Humble, TX)

6753.0 CANFORCE VOLMET. St. Johns Military with aviation weather at 0847 in USB. (Charles Kling-Outremont, PQ Canada)

6812.0 SAM 200 to State Department Ops via SAM Control with Margaret Tutwyler talking to Secretary James Baker in USB at 2253. Also SAM 200 to Tacsat checking frequency being used on the 100 west satellite; uplink was 295.650 and downlink was 262.050 MHz. Said the radios were acting up all day and they needed a trunk on a second frequency. Also Spar 64 with a Major Cardinal asking if the chief knew about the status of our nuclear forces in Europe? In USB at 2358 through Andrews AFB. (Robinson-TN)

Air Force Two working Andrews from 11407 and called this frequency "Triple A" primary in USB at 0135. (Jones-CA) *Oh no, I hope this isn't new and someone was being cute. Just what we need some more new designators-Larry.*

6840.0 English female 4-digit number station in AM at 0232. (Bolling-NC)

7425.0 Spanish female 4-digit number station in AM at 0415. (Coombs-KY)

7450.0 Unid station noted here looking for any station to check in, operator said he was working for the Arizona National Guard; also said he was net control in USB at 1030. (Koch-IL)

7831.0 WAR46 comes up on X-904 (9017) calling Energetic. Request Energetic conduct radio check on W-105 (7831). Later Essential up here in USB at 0559. (Haverlah-TX)

7845.0 Spanish female 5-digit number station in AM at 0615. (Coombs-KY)

7887.0 Spanish female 3/2-digit number station in AM at 0242. (Jones-CA)

8135.0 Unid station sending 5 letter CW groups at 0240. (Walt Sepaniac-Bakersfield, CA)

8616.5 URB-Klaipeda Radio, Lithuania, with CW marker at 2200. (Robin Hood-UK)

8688.0 9VG36-Singapore Radio with CW marker at 1844. (Robin Hood-UK)

8876.0 Many stations here with mostly letter-number-letter call signs. One day I copied over 50 different call signs. It's US military and I can copy them 24 hours. Mostly comm checks and scrambling (green mode). Heard 'Overwork' call sign once, in USB. USN? (Tomkinson-CA) *Yep-Larry.*

8967.0 Tribe 44 working Offutt Global with a phone patch to Shocker Control (McConnell AFB, KS) in USB at 0447. (Norm Pihale-Northfield, MN)

8989.0 Air Mobility Command Aircraft #60204 (C-141) calling any ground station for HF radio check in USB at 1912, (Pihale-MN)

9014.0 Zebra 01, 02 and 03 working Raymond 7 in USB at 1758. (Haverlah-TX)

9023.0 Chalice Charlie to Guardian asking if other E-3 was up? Guardian said to try satcom 302.925 uplink and 249.325 downlink, but no joy. Then went to Delta 3 primary and Delta 17 secondary. Anybody know where these frequencies are from? In USB at 1600. (Scott Burke-Sahuarita, AZ)

9091.0 English female 3-2 digit number station in AM at 2111. (Bolling-NC)

9224.0 Spanish female 5 digit number station in AM at 0329. (Whiteside-NV)

9438.0 JMJ-Tokyo Meteo, Japan, with 120/576 FAX weather chart at 1355. (Tomkinson-CA)

9982.5 KVM70-Honolulu Meteo, HI, with 120/576 FAX weather charts at 0220. (Tominson-CA)

10872.0 Single letter HF beacon 'C' heard in CW at 2120. (Robin Hood-UK)

11012.0 Egyptian Embassy, Washington, DC, with SITOR-A request for visa's for Iranian and Israeli individuals, US public relations, Money and housing development in Gaza plus encryption at 2125. (Robinson-TN)

11176.0 Jambo 11 (B-52G) with phone patch to Mudbug Control (Barksdale AFB) thru McClellan Global in USB at 0524. Reach 50331 (Tail #60173) with phone patch to Dover Command Post thru Ascension Global. Doom 85 (B-52) working McClellan with ops normal message in USB at 2057. (Pihale-MN)

11229.0 SAM 049 working Andrews for radio check and phone patch. Switched from USB to LSB at 0533. (Koch-IL)

11233.0 CANFORCE Trenton Military working Smokey 02. Trenton directed Smokey 2 to 11214 for phone patch until Trenton realized Smokey 2 was

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not an AWACS. Trenton put Smokey 02 back on 11233. Smokey 02 enroute from Toronto to Colorado Springs. At 1749 in USB. (Haverlah-TX)

11348.0 Venezuelan Department of Defense to all stations with SITOR-A broadcast announcing the appointments of two officers at 0314. (Robinson-TN)

11387.0 Sydney VOLMET with aviation weather at 1035 in USB. (Kling-PQ)

11423.5 SPW-Warsaw Radio, Poland, with SITOR-B traffic list at 1754. (Robin Hood-UK)

11456.0 KKN50-Warrenton/Remington, VA, with CW marker at 0010. (Sepaniac-CA)

11472.0 English female 3-2 digit number station in AM at 1216. (Whiteside-NV)

11491.0 Spanish female 5-digit number station in AM at 1835. (Coombs-KY)

11494.0 Longhorn (Customs Houston) telling unid aircraft to go to a lower altitude, "he is in the woods". Said they were sending the Blackhawk out. (In USB at 1051. (Koch-IL)

12220.5 English female 3-2 digit number station in AM at 1223. (Whiteside-NV)

12441.0 ELHJ-M/V Radiant Venture with CW traffic at 1723. (Robin Hood-UK)

12613.0 XSQ-Guangzhou Radio, China, with SITOR/CW marker at 1830. (Robin Hood-UK)

12625.5 UXN-Archangelsk Radio, Russia, with SITOR/CW marker at 1849. (Robin Hood-UK)

12995.0 IAR33-Rome Radio, Italy, with CW Italian news broadcast at 2012. (Robin Hood-UK)

13201.0 Reach 50273 (C-141B) working Thule GHFS with phone patch to Dover CP at 1942 in USB. "Hickam, Hickam standing by for traffic (repeated 3 times)" in USB at 0338. (Pihale-MN)

13214.0 Ground Star, Outspoken, Cigar Box, Ironwood with radio checks in LSB at 0435. Scrambling noted and said frecuency's designator is Sierra 312 (S-312). (Whiteside-NV)

13217.0 SAM 202 (VC-20) working Andrews with ETA information in USB at 0041. (Pihale-MN)

13472.0 KKN39-Department of State Radio, Miami, FL, on new frequency with CW marker at 2120 replacing 13387.0. (Chip Veres-Ochopee, FL)

13558.0 English female 3-2 digit number station in AM at 1236. (Whiteside-NV)

13875.0 Foghorn signal heard at 1900. (Underwood-NY)

13940.0 Manual duplex CW using full cut Chinese number code. Groups of four numbers being sent. Many break-ins from other end which was not on this frequency. Running a rough note but not a chirp. Good speed around 28 to 30 wpm. At 1803 in CW. (Geez, I thought I was back in Korea). (Underwood-NY)

14364.0 CANFORCE Trenton military working Rook 20 on 18027. Trenton directed Rook 20 to 14364 for phone patch. Rook 20 requested weather for Seymour. At 1820 Trenton announced they had lost their LL (Landline or telephone) capability and told Rook 20 they would have to try another station in USB. (Haverlah-TX)

14502.0 7USB to 8USB asking for stock part numbers, said 1st sergeant was at chow in USB at 2330. (Robinson-TN) *Typical, the cat is away and the mice will play-Larry*

14955.0 Thule, Greenland, working Reach 50245 at 2055 in USB with phone patch to Hilda and getting weather for Vandenberg AFB. (Haverlah-TX)

15015.0 "Lajes, Lajes standing by for traffic" (repeated 3 times) at 2136 in USB. (Pihale-MN)

15024.0 COL-Aeroflot Havana, Cuba, with CW working RFNV-Moscow, Russia at 2012. (Robin Hood-UK)

15867.0 Hammer (Customs Riverside, CA) working Omaha 10 (Customs aircraft) running a Mexican aircraft tail number, came back with a Piper Cherokee from Los Angeles, then they went into the scrambled mode using USB at 1356. (Koch-IL) Jackpot calling Omaha 59 and 79 in USB at 1416. (Scott-AZ)

15870.0 J2U working C5B in USB at 2005. (Koch-IL)

16639.0 LALZ2-M/V Lavender with CW traffic to NMC-USCG San Francisco at 1934. (Robin Hood-UK)

16836.0 UFL-Vladivostok Radio, Russia, with SITOR/CW marker at 2013. (Robin Hood-UK)

17975.0 Reach 60026 (C-141) with phone patch to March AFB Metro with request for Norton AFB weather in USB at 1725 through McClellan. "Incirlik, Incirlik standing by for traffic" (repeated 3 times) at 2133 in USB. Croughton GHFS calling Raid 33 (KC-135R) in USB at 1457. No contact made. Exxon 64 (KC-135) working Thule with ops normal message in USB at 1507. (Pihale-MN)

18002.0 Magic 12 working McClellan AFB in USB at 2024. (Pihale-MN)

18019.0 Caddo 94 (KC-135Q) working Ascension with phone patch to Furious (Tail#59148) and Howard Metro for landing weather in USB at 2051. (Pihale-MN)

18882.5 MFA Ankara, Turkey, with 144 baud SITOR-B broadcast in Turkish at 0647. (Robin Hood-UK)

22432.5 UAT-Moscow, Russia, with a SITOR/CW marker at 1010. (Robin Hood-UK)

22610.0 OFJ-Helsinki Radio, Finland, with a CW marker at 1444. (Robin Hood-UK)

25544.0 KKN39-Department of State Radio, Miami, FL, with CW marker at 1630. (Tomkinson-CA)

USAF

The intrepid Air Force Reserves send weather reconnaisance flights from Keesler AFB in Biloxi, Mississippi, into the heart of the storm.

Hurricane Hunter Frequencies

NOAA Aircraft to Miami Monitor (KJY74):

3407 5562 6673 8876 10015 13354 17901 21937

AIR-TO-AIR COMMUNICATIONS

123.050 MHz Primary VHF
304.800 MHz Secondary UHF
4701 kHz Back-up HF

USAF Global HF
(commonly heard working hurricane hunters):

Albrook AFB, Panama	3137	6683	8993	11176	15015
	18019				
Ascension Aux AF:	6753	8993	11176	13244	15015
Lajes Field, Azores:	3081	4746	6750	8967	11271
	13244				
Loring AFB, ME:	3074	6738	8964	11179	13214
MacDill AFB, FL:	4746	6750	8993	11246	13244
	18019				
McClellan AFB, CA:	3067	6738	8989	11239	13201
	18002				

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The Scanning Report

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

Black Friday

The day after Thanksgiving begins the traditional holiday shopping season. Retailers use the phrase "Black Friday," to represent the day that begins to push their sales into the "black." On Black Friday, practically every retail outlet in America will be swamped with shoppers. Traffic delays, limited parking and irate consumers will set the stage for hours of non-stop scanning action.

The first and most obvious scanning target is your local shopping mall. Discovering the frequency used by the shopping mall security guards can be a real challenge. If you can't find the frequency in local scanning publications, here are a few hints and ideas that have proven successful.

The frequency range of mobile and hand held transmitters can often be determined by observing one simple rule: The longer the antenna, the lower the frequency. The citizen band radio service, (CB) operates on 26 and 27 megahertz. A full length, mobile CB antenna is approximately one hundred and two inches long. On the opposite end of the radio spectrum are the 800 megahertz frequencies. Mobile and hand held antennas in this range are very small. But as I explained in an earlier column (September '92), the technique is not foolproof. Antennas come in all shapes and sizes and it's often impossible to visually detect the operating frequency.

A more sophisticated approach to finding a frequency is to use a good quality frequency counter. You'll probably need to take the counter inside the mall, sit in a strategic location, and wait for a security guard to press the transmit key. A more direct approach is to simply ask a security guard to key his or her transmitter so that you can "test your instrument."

Traveling with a frequency counter can attract unwanted attention. To the untrained eye, a frequency counter appears to be a radio controlled transmitter—a device that makes security personnel extremely nervous. To disguise your intentions, wear a lightweight headset. It will appear as if you're listening to an FM radio or tape player.

If you prefer to scan at home, shopping mall security frequencies can sometimes be found by searching through the business bands:

33.00 to 46.00	150.80 to 162.00	461.00 to 465.00*
502.00 to 512.00	851.00 to 853.00	902.00 to 928.00

*(Mall security frequencies are often found in this band.)

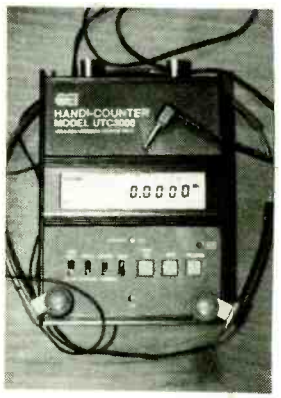
Retail security guards have also been monitored on the itinerant frequencies. The transmit power is usually limited to a few watts, so you'll probably need to be "on site" to monitor the action:

27.49	35.04	40.04	43.04	151.49	151.50	151.625
154.57	154.60	158.40	451.80	462.575	464.50	464.55
464.575	464.675	464.775	464.875	464.925	464.975	

During the Thanksgiving holiday, air travel reaches its peak. Not only will the standard air frequencies be active, but airport security and cargo frequencies will be red hot. If you live near a large airport, tune in the aircraft band for plenty of non-stop action.

Package delivery services are also affected during the holiday shopping season. To handle the increase in packages, the United Parcel Service (UPS) will hire part-time help. Regular UPS employees will work extended shifts and air deliveries will be substantially increased. Again, check the business and itinerant bands to find the appropriate frequencies.

If you want to hunt frequencies without attracting attention, slip on a lightweight pair of headphones. People will think that you're listening to a tape player or radio.



Your local police, ambulance and public transportation frequencies will also provide hours of interesting listening. This is especially true if you live in the snow belt. Inclement weather during the holiday season can introduce a wide variety of problems to holiday shoppers and motorists.

With the arrival of Black Friday, scanner buffs across the nation are reminded that a new season of scanning intrigue is about to unfold. If you want to hear all of the action in your neighborhood, get your Christmas shopping completed early—it will give you more time to scan!

Frequency Exchange

Summer may be long gone, but here's a chance to visit a place where every day feels like a vacation. Pete Warncke lives in ***Vallejo, California***, and he has invited us to monitor the following frequencies:

42.10	California Highway Patrol (CHP)
42.20	CHP
47.60	Solano Ambulance Company
150.935	Emergency Road Tow I-80
152.25	Vallejo Yellow Cab (Base)
153.34	Solano County Sheriff
154.90	Vallejo Police Department
155.40	Sutter Solano Hospital
155.50	Solano County Sheriff
156.65	Mare Island Causeway
157.025	Vallejo harbor Ferries
157.05	Coast Guard Station
157.53	Vallejo Yellow Cab (Mobile)
482.987	Vallejo Fire Department
485.987	Vallejo Fire Department

Since we're in California, let's check in with Todd Dokey. Guess California isn't all fun and games. Todd has provided the repeater frequencies that were active during the recent fires in the ***California foot hills***.

151.160	151.175	151.265	151.355	151.370	153.815
154.235	154.265	154.280	154.295	154.325	155.295

In ***Windsor, Ontario,*** we can visit with Russ Hill. Here are a few of Russell's favorite scanning frequencies:

140.910	Veterans Cab	142.665	Ontario Provincial Police
142.035	Windsor Police	142.875	Windsor Police
142.185	Chatham Police	142.935	Kingsville/Leamington Police
142.215	Windsor Police		
142.335	Amherstburg/Anderson Police	142.965	Wallaceburg Police
		153.770	Windsor Fire
142.365	Ontario Provincial Police	154.145	Windsor Fire

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150.665	Windsor Ambulance	164.925	Brandi's Taxi
149.605	Windsor Ambulance	165.510	Bell Canada
157.125	Coast Guard	165.990	Canadian Auto Assn.
161.650	Coast Guard Broadcast	167.595	Windsor Star (Newspaper)
162.180	Transit		
162.275	Union Gas	169.140	Essex County Road Dept.
163.275	Union Gas		

According to David Williams of ***Alabama***, the ***Norfolk Southern Railroad*** is operating a "Track Refinishing Machine." Dave discovered that the maintenance crew was using the frequency of 151.625. If you have further info on the subject, Dave requests that you contact him by writing to the Frequency Exchange, P.O. Box 98, Brasstown, NC 28902. In the meantime, here are a few additional frequencies for the Alabama area:

48.80	Alabama/Tennessee Natural Gas
48.95	Texas Eastern Gas Pipeline
151.055	Alabama highway dept.
151.925	Pressure Concrete Const. Company
153.65	Town Creek utilities
453.40	Emerg. Management Agency
461.0875	Reynolds Aluminum Company
461.325	Motorola radio repair
462.375	Occidental Chemical (OXYCHEM)
505.750	WHNT-TV, Huntsville
859.9125	Federal Express
859.9875	Motorola Radio Repair

Our next stop is ***Reading, Pennsylvania***. There's definitely a chill in the air, so I hope that you brought along a winter coat.

44.960	Fish & Game Commission
45.50	District Justice
151.220	Hazmat Operations
155.070	Reading Police (F-1)
155.010	Reading Police (F-2)
154.725	Reading Police (car to car)
155.505	State Police Troop "L"
155.220	Ambulance to Hospital
155.325	Skycare Medevac
155.355	Hershey Life Lion Medevac
155.385	Pennstar Medevac
468.100	Paramedic to Hospital

The above frequencies were provided by Rich Kramer. Another ***Pennsylvania*** resident, Jeff McKinzie, has invited us to monitor his favorite ***Pittsburgh*** frequencies:

415.050	Postal Inspectors	453.400	Pittsburgh Police
460.475	Swat Team	860.162	Port Authority

Traveling North, we make our final stop in ***Boston, Massachusetts***. David Morisan lives nearby, and he has provided the following Transportation frequencies:

Bay Transportation Authority (MBTA)

31.14	Bus inspectors	470.6375	Green Line (trolleys)
160.320	Commuter rail (N. of Boston)	470.6625	MBTA Police
		470.6875	Buses
470.4125	Red Line (subway)	472.5875	Buses
470.6125	Orange Line (subway)	472.6875	Buses

Do you have a list of favorite frequencies? If so, send them to the Frequency Exchange. We'll print and share them with thousands of *MT* readers. All requests for anonymity will be granted. Send your frequency lists to the Frequency Exchange, P.O. Box 98, Brasstown, NC 28902.

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Treasure Hunt

This holiday season, why not treat yourself to a brand new, tape saving device? The "ScanRecord" features a small, black case, about four inches long, two inches wide, by two inches deep. The front panel has a dial control for adjusting sensitivity, a red LED indicator, and a toggle switch for controlling the delay time.

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

The relay is 100% percent solid state—there are no annoying "clicks" or distracting noises. Install a 9 volt battery, and the ScanRecord becomes completely portable.

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

The ScanRecord is manufactured by Capri Electronics, 1238 Highway, 160-B, Box 589-MT, Bayfield, Colorado 81122. Retailing for $47.00 dollars, the unit is professionally crafted and reasonably priced. For our November/December Treasure Hunt, Capri has provided ScanRecords for two lucky winners. Here are the clues:

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

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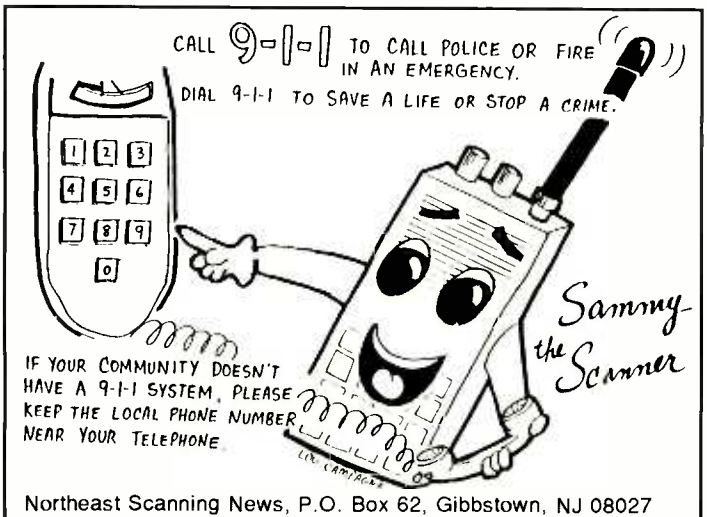
The ScanRecord, by Capri Electronics, is a professional time and tape saver that you can win during the November/December Treasure Hunt.

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

Ice Hockey Scanning

Hockey fans will be delighted to learn that they can use their scanner radios to eavesdrop on their favorite teams. The following list was sent in by James Cromarty.

458.225	Calgary Flames
152.870	CBC Hockey night in Canada
153.290	CBC Hockey night in Canada
216.230	Chicago Black Hawks
467.925	CBC Hockey Night in Canada
458.3625	Edmonton Oilers
467.1370	Edmonton Oilers
464.3375	Hartford Whalers
455.000	Los Angeles Kings
460.000	Los Angeles Kings
154.570	Minnesota North Stars
462.5875	Minnesota North Stars
465.0250	Minnesota North Stars
467.900	New York Islanders
467.875	New York Rangers
458.4120	New York Rangers
49.830	Phila. Flyers
49.875	Phila. Flyers
418.575	Quebec Nordiques
466.3750	St. Louis Blues
466.5375	St. Louis Blues
466.8650	St. Louis Blues
49.875	Vancouver Canucks
457.525	Winnipeg Jets
457.575	Winnipeg Jets
467.7750	Winnipeg Jets
467.8375	Winnipeg Jets
467.850	Winnipeg Jets



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

Scanning America

After video taping the "American Detective" television show, Richard Kramer of Reading, Pennsylvania, reviewed the tape and discovered the surveillance "bug" frequency that was used by the detectives. During the live taping of the show, the TV camera panned across the interior of a police surveillance van. Rich said that he had to replay the tape several times, but he finally identified the frequency of 171.8575.

Other "bug" frequencies can be found by searching through the following ranges: 49.0 to 50.0, 72.0 to 76.0, 88.0 to 108.0, 148.0 to 174.0, and 405.0 to 415.0.

To receive a one page list of bug frequencies (including bumper beeper frequencies), send an SASE with two dollars to the Scanning Report, P.O. Box 98, Brasstown, NC 28902.

Federal Scanning

The Secret Service is using the following code names for Bill Clinton's Presidential ticket:

Bill Clinton is called "Eagle."
Wife Hillary Clinton is called "Evergreen."
All Gore is called "Sawhorse."
Tipper Gore is called "Skylark."

The Secret Service is responsible for Presidential Security and for the security of Presidential candidates. If the candidates visit your town, be sure to punch in the following frequencies:

165.375 Primary Nationwide Repeater
164.100 V.I.P Protection

Presidential Motorcade Security:

162.6875	163.200	163.810	164.400	164.650	164.800
164.8875	165.2100	165.3750	165.7850	166.5125	169.9250
171.2875					

Scanner Land

In Augusta, Georgia, local police chased an auto theft suspect for nearly one hour. The Augusta Police received additional help from three other police departments including the State Police.

But it was local residents listening to their scanner radios who finally led police to where the suspect was hiding. Numerous residents called police to report seeing the individual fleeing behind their homes. (News clipping from *Sun-Journal*)

Mississippi Scanning

A Mississippi scanner buff called her local police department to report that she had monitored a cordless telephone conversation between two kidnappers.

At first, the police were skeptical. But when the scanner listener provided the names of the two individuals, the police quickly changed their attitude—both men were named on a Federal Warrant for Kidnapping! After the arrest, police thanked the scanner buff for her willingness to become involved.

Next Month

...Is your last month to scan in 1992.

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UNIDEN BEARCAT BC205XLT

$239.99 *($8.00 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 BC200XLT	279.99	(7.00)
BEARCAT BC205XLT	239.99	(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	(9.00)
RELM UC202 (2 or more)	129.99	(6.00)

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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
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BP70	16.99	FBE	5.99
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Betty Bearcat	5.99
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, fire, tow trucks, taxis, commercial companies who use this band. Features include CTCSS tones built-in, priority, 25 watts output, channel scanning, back lighted keyboard, message light, time out timer, scan delay, external speaker jack. Size is 2¾"Hx6½"Wx10¾"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.

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SHORT WAVE RECEIVER

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($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)

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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**)

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$249.99 *($8.00 Shipping)*

Receive police, fire, ambulance, cordless phones, marine, trains, weather, ham, stock cars, public service plus much more. Frequency coverage 29-54 MHz, 118-174 MHz, 406-512 MHz, 806-912 MHz (continuous). 40 channels, AC/DC operation, digital programmable, memory backup requires 2 AA batteries (not included), telescopic antenna included, AC power cord included, external speaker jack, external antenna jack. Dimensions: 9¼D 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, aircaft, 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, 406-174 MHz, 406-512 MHz, 806-956 MHz. Dimensions: 7.9"W x 5.8"H x 1.9"D. Earphone jack, BNC antenna jack, DC power cord, mobile mounting bracket, internal memory backup, bank scanning; 10 banks of 10 channels in any combination.

MODEL: FB-911 **ORIGINAL FIRE BOX PHONE**

$54.99 *($5.50 Shipping Each)*

13 memory phone, 3 direct access emergency memories, auto redial, ringer on/off, top light flashes when telephone is ringing, tone/pulse switchable, desk/ wall mount, front door closes for authentic fire box appearance, FCC approved. Size: 16"Hx8½"Wx7"D.

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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

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GLASS MOUNT ANTENNAS FOR TRANSCEIVERS

Includes mounting kit and cable. Low Band, High band and UHF band include PL259 connectors. 800 cellular band antenna includes TNC connector

GM-27	27 MHz Low Band for CB	$39.99 ($4.00)
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ORDERING INFORMATION: Call (518) 436-9606 to place orders or mail orders to Scanner World, USA®, 10 New Scotland Ave., Albany, N.Y. 12208. Orders will be shipped within 24 hours by United Parcel Service if order is accompanied by MasterCard, Visa, cashier's check, money order, COD (COD shipped by United Parcel Service will be cash or money order only). (If a COD package is refused, customer will be billed for shipping and COD charges.) Mail orders with personal or business checks enclosed will be held 4 weeks for bank clearance. Prices, specifications, and terms subject to change without prior notice. If items are out of stock we will backorder and notify you of delivery date. All shipments are F.O.B. Scanner World® warehouse in Albany, N.Y. We are not responsible for typographical errors. All merchandise carries full manufacturer's warranty. Bid proposals and purchase orders accepted from government agencies only. Free full line catalog mailed 4 times per year. Merchandise delivered in New York State add 7% sales tax. No returns accepted after 7 days of merchandise receipt. *Add ($) per item, and $3.50* for all accessories ordered at same time. COD orders will be charged an additional $4.95 per package. Full insurance is included in shipping charges. All orders are shipped by United Parcel Service to street address only. (No P.O. Box). Shipping charges are for continental USA only. All others ask for quote on shipping charge.

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GEnie T.AREY1

Radio Wave Riding

You know something? The change in seasons really gets to me. As the weather starts to turn cold I become an easy victim for real estate brokers selling swamp land in Florida. Fall isn't even over yet and I'm already looking forward to next summer.

Uh, Uncle Skip. If you're done kvetching about the coolness, could you start your column now?

Relax, Chief; as usual, there is method to my madness.

Several folks have written in or contacted me via GEnie to ask about the difference between the various modes and modulations found in radio. AM, FM, CW, SSB are all just a jumble of letters to most beginners. The problem is trying to come up with a nontechnical way to tell folks about the very technical roots of radio.

My solution came out of my pre-winter daydreaming of summers past—a quick mind excursion back to summers spent surfing. Just as I once used my youthful skill at the pool tables to describe propagation, it became clear that surfing was the way to explain all those positions on a receiver's mode switch. So grab your board and baggies, Bunkey, because it is time for...

UNCLE SKIP'S GUIDE TO RADIO WAVES

Back in the CB boom years of the early seventies, some people used to enjoy making horses' patoots of themselves by keying down their microphones without saying anything. This crude form of jamming was known as "Throwing a Carrier." The CARRIER is the signal that serves to carry the information to your receiver. Just like those red hot days of the CB craze, a steady, unbroken carrier is fairly useless all by itself. The carrier signal becomes the radio signal that we all know and listen to only when it is modulated in some way.

MODULATION is the process of somehow manipulating the carrier signal to allow it to convey information. This modulated signal is then DEMODULATED by the circuits in your receiver, allowing you to hear the latest tiddly wink scores on Radio Freedonia's weekly sports program.

Clear as mud, huh? I guess it's time to break out the surfing analogy. Think of the ocean. If you are a life long, landlocked resident of the Midwest, head to your video store and rent *The Endless Summer, Beach Blanket Bingo* or *Surf Nazis Must Die*. You'll get the idea.

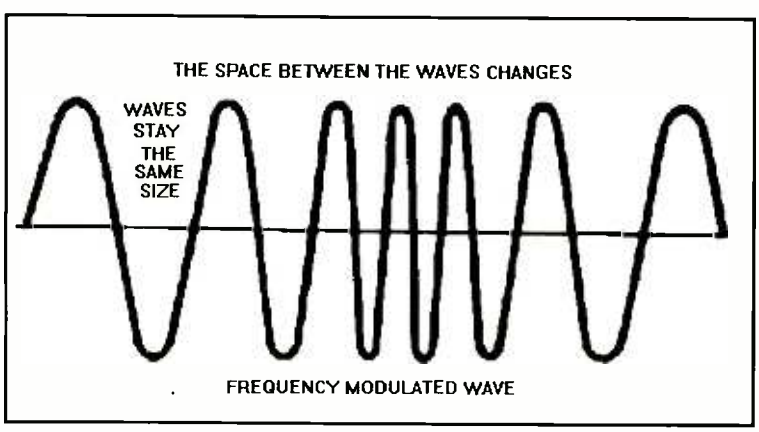
If the surf is down and all that is hitting the beach is a series of small, equal-sized and evenly spaced waves, that would represent an unmodulated carrier.

Okay, now let's all visualize that the surf is up. The waves are breaking on the beach at different heights or speeds. These bigger waves represent modulation of the ocean/carrier. But of course, as any surfer will tell you, not all waves are created equal. These different waves/modulations are going to react differently and, dropping the analogy for a second, will require different receiving equipment (demodulation, if you will) to be heard and understood.

Continuous Waves

To radio folks, continuous wave signals are best known as CW, the one practical use of an unmodulated carrier. CW is the simplest form of transmission. When someone sends a signal using international Morse code, the process of hitting the key to form the dots and dashes turns the carrier signal on and off.

Think of those equal height and speed waves we first talked about. Imagine they start coming in sets of three and sets of five with a lull in between. The duration of the sets and the spaces in between are like dots and dashes.



Since an unmodulated carrier has no "sound" to it, your receiver has to jump through a few hoops to give you something you can copy. Most modern receivers have a CW position on their mode switch. Older receivers will often have a BFO switch. BFO stands for Beat Frequency Oscillator. In either case, the switch serves to turn the "soundless" CW signal into a recognizable series of audio tones.

Learning to copy CW signals can be a lot of fun. Many amateur radio operators still enjoy using this mode. Pick up a code practice tape from one of the advertisers in *MT* and join in the fun. I always feel like I'm Boris Badenov when I copy CW.

Amplitude Modulation

Not too long after Marconi first started tossing signals into the air using the earliest forms of CW transmission, the early pioneers of radio discovered that you could make voice transmissions by modulating the carrier wave. This was done by changing the AMPLITUDE or height of the carrier. Wax up your surfboards and I'll explain.

You're back on the beach. Imagine that the waves keep coming toward the beach spaced exactly 20 feet apart and that they hit the beach every five seconds. The only "change" you can see occurring is that all these otherwise equal waves are different heights. Now back to the radio. This change in AMPLITUDE (a fancy word for height) can be interpreted as a change in voltage at the receiver that can then be translated into an audio signal. Eureka, voices that come out of the air!

But it's not always that simple. Just like at the beach, two waves can come in so close to each other that they crash into one another. When this happens, neither wave is of much use to the surfer. All radio signals have a certain BANDWIDTH (usually expressed in kilohertz). Regulations establish these bandwidths for transmitters to assure that signals can exist on the same band with a minimum of interference.

On the receiving end, many radios have a bandwidth switch that allows the user to vary the amount of signal heard. This serves to block out adjacent signals. So when we think of our waves at the beach we are also interested in how wide the wave is parallel to the shoreline.

Since some folks are probably whipping their Christmas lists into shape, let me drop a few helpful hints. In practical radio terms, when you go shopping for a receiver to listen to shortwave broadcast stations, you will want a rig that has SELECTIVITY rated at 6 kHz. If the receiver you are shopping for has multiple bandwidth positions look for one with 8 kHz and 4 kHz in addition to the 6 kHz position. Many receivers will have additional positions. Very narrow settings such as 250 Hz are for listening to CW and 3 kHz would be used for monitoring SSB

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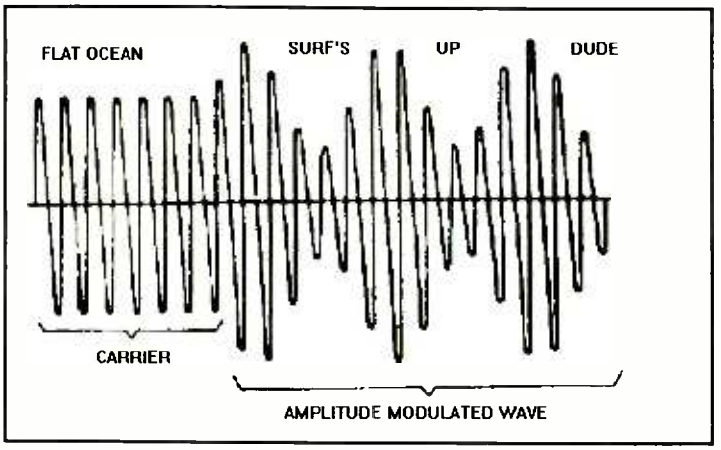

signals (we will get into that in a minute, Bunkey, stay tuned)

Frequency Modulation

If you have spent any time tuning around with an AM radio or have done some listening on the shortwave broadcast bands, you have probably noticed that there is a lot of noise out there. Atmospheric and people-made noise can get in the way of your listening pleasure. Radio pioneer Edwin Armstrong got peeved enough at all this background noise that he set to work to develop a different form of modulation that would give a very clear signal. Thus, FM was born. Armstrong figured that you could keep the amplitude constant and then deviate the frequency back and forth off of the center frequency. Doing this gave a clear, static free signal. The trade off was a reduction in the distance the signal could be practically used.

Back to the beach! Imagine the waves coming toward the beach are all the same height. The difference now is that the waves no longer hit the beach spaced uniformly apart. Now they are hitting the beach faster or slower; the space between each successive wave is changing instead of its height.

Not all radio services are interested in sending a signal all the way around the world. For this reason, most local communication is done these days in the FM mode. Police, fire, business, amateur radio operators and others make wide use of FM in the VHF and UHF frequency ranges. This gave birth to the monitoring hobby of scanning.

Since most modern scanners cover such a wide range of frequencies, the beginner can get really confused about the two primary types of FM signals out there in scanner land. Knowing the difference can be important when setting the controls on your scanner.

NARROWBAND FM (NFM) is used for most voice communications that you hear on your receiver. For most scanner users you need not worry any further. However, if your scanner operates through the 87.500-107.995 MHz range, you will be running across signals that use WIDEBAND FM (WFM). These are mostly the signals of FM broadcast stations and the audio portion of television signals. If your scanner does not automatically adjust itself for these frequencies or offer a switch to allow you to move between NFM and WFM, these signals will sound distorted and garbled.

Modern scanning receivers are all FM—right? Not quite, Compadre. Keep in mind that 118-136 MHz (civilian aircraft), and 225-400 MHz (military aircraft) are AM areas of operation. If you're interested in tracking planes you will want to choose a receiver that gives you the AM mode, at least for these frequencies.

Single Sideband

If you have been tuning across the shortwave frequencies for any length of time, you have no doubt run across some signals that sound like Donald Duck in one of his famous temper tantrums. (Can I help it if Number Two Son is addicted to The Disney Channel?) These are SINGLE SIDEBAND (SSB) signals.

From the earliest days of radio, folks were always trying to do two things: Cram more signals into less space, and get more signal from a given amount of power. SSB does both jobs remarkably. To explain this, we will need to get a bit mystical with our surfing analogy.

Imagine that you are seeing the wave pattern we dreamed up for AM. Remember, waves equally spaced but with varying heights? Now imagine that the waves are generating an equal, mirror image of themselves underneath the waves.

The way you generate SSB is to start with a low powered AM signal (one with waves on the top and underneath). Circuits in the transmitter serve to remove one of the side bands (the lower wave or the upper wave) and the carrier (Remove the ocean. See, I told you this was going to get weird). Now the transmitter amplifies the remaining sideband (the oceanless waves become tidal waves). This produces a signal that is about four times as efficient as a regular AM signal with the same amount of power behind it. It also only occupies half the space of a standard AM signal. Almost like getting something for nothing.

Well, not quite. After all, on the receiving end, all you hear is that duck sound. Unless, of course, your receiver is designed to accept this form of modulation. Remember when we talked about the Beat Frequency Oscillator (BFO) in relation to CW signals? The BFO signal serves to replace the missing sideband, giving you a normal voice instead of duck noises.

Most modern receivers have done away with the BFO in favor of a mode switch that will include CW (as previously discussed) as well as (USB) UPPER SIDEBAND (that's for the waves on top) and (LSB) LOWER SIDEBAND (for the waves beneath the sea that vanished). Both modes are used so if you hear a duck voice and switching to one position does not do the trick, try the second. If you are using a receiver with a BFO you simply adjust the BFO PITCH control to get the same effect.

If neither position works it means you are hearing Donald Duck operating in the AM mode from a station located at Disneyland. If I were you I'd send out for that QSL card. It would be a rare one.

Surf's up!

EXCITING ACCESSORIES!

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With the New innovative
NXL Indoor Active Loop Antenna!
Special Tilt-n-Turn 1-foot shielded-loop antenna will in almost all cases ELIMINATE POWER LINE BUZZ and noise from any other local man-made source, such as computers, TV's, light dimmers, motors. Features high-gain amplifier and 1.3 to 30 MHz tunable preselector to further fight interference, all housed in an attractive metal enclosure. Uses 9-volt battery or optional AC supply ($8.95). Rivals or out-performs any outside or indoor-active antenna available! Only $89.95 + shipping! Specify type of output connector desired.

Put an Active Antenna-Booster inside your radio!
The unique Mini-Booster custom-fits inside your radio, boosting ten-fold the SW signals picked up by your radio's telescoping antenna, making it perform like a 50-foot longwire antenna! Enjoy the ultimate in portability! Will not harm AM, FM reception, very little drain on radio's batteries. Easy, no-solder installation, w/detailed instructions. Realistic DX-440, Sangean ATS-803, ATS-818 versions: $34.95 (specify model). Sony ICF-2010 version: $41.95.

• FM WIRELESS SPEAKER RELAY: Listen to your base scanner or SW receiver on any FM broadcast radio up to 1/10th mile away! Plugs in. Complete kit w/case, antenna, 75% assembled: $38.95.

• ACTION TAPE CONTROLLER: Connects your scanner to your tape recorder, activating it only while your scanner is picking up action! Self-powered: uses no batteries or AC power. Selectable "hang time": $33.95.

• RECORD-OUT JACK UPGRADE kit for the DX-440: $7.95.

• RECORD PATCH CABLE for ATS-803 and above: $8.95.

Send check or M.O. (COD's OK on Mini-Booster). Add $4 shipping per order (Canada $8). Complete catalog sent w/ order, or send 29 cents stamp to get one.

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FBI FREQUENCIES

HF frequencies: 2322, 4040,4518, 5060, 5913, 6594, 7905, 9015, 9195, 9240, 10500, 10915, 11028, 11075, 11210, 11490, 13660, 14460, 14495, 144534, 15955, 16376, 17405, 18173, 18668, 23675

VHF/UHF frequencies: 162.6375, 162.65, 163.6625, 162.675, 163.6875, 162.70, 162.7125, 162.725, 162.7375, 162.75, 162.7625, 162.775, 162.7875, 163.825, 163.8375, 163.85, 163.8625, 163.875, 163.8875, 163.90, 163.9125, 163.925, 163.9375, 163.95, 163.9625, 163.975, 163.975, 163.9875, 164.000, 164.0125, 164.1625, 164.175, 164.1875, 164.20, 164.2125, 164.225, 164.2375, 164.25, 164.2625, 164.275, 164.2875, 164.30, 164.3125, 164.3375, 164.35, 164.3625, 164.375, 164.4125, 164.425, 164.4375, 164.45, 164.4625, 164.475, 164.4875, 164.50, 164.5125, 164.525, 164.5375, 164.4125, 164.425, 164.4375, 164.45, 164.4625, 164.475, 164.4875, 164.50, 164.50, 164.5125, 164.525, 164.5375, 164.55, 167.10, 167.1125, 167.125, 167.1375, 167.15, 167.1625, 167.175, 167.1875, 167.20, 167.2125, 167.225, 167.2375, 167.25, 167.2625, 167.2625, 167.275, 167.2875, 167.30, 167.315, 167.325, 167.3375, 167.35, 167.3625, 167.375, 167.3875, 167.40, 167.4125, 167.425, 167.4375, 167.45, 167.4625, 167.475, 167.4875, 167.50, 167.5125, 167.525, 167,5375, 167.55, 167.5625, 167.575, 167.5875, 167.60, 167.6125, 167.625, 167.6375, 167.65, 167.6625, 167.675, 167.875, 167.70, 167.7125, 167.725, 167.7375, 167.75, 167.7625, 167.775, 167.7875, 168.00, 168.025, 168.05, 168.075, 168.10, 168.125, 168.15, 168.175, 168.20, 168.225, 168.25, 168.275, 168.30, 168.325, 168.35, 168.375, 168.40, 168.425, 168.45, 168.475, 168.50, 168.525, 168.55, 168.575, 168.60, 168.625, 168.65, 168.675, 168.70, 168.725, 168.75, 168.775, 168.80, 168.825, 168.85, 168.875, 168.90, 168.925, 168.975, 169.00, 169.025, 169.05, 169.075, 169.10, 169.125, 169.15, 169.175, 169.20, 169.225, 169.25, 169.275, 169.30, 169.325, 169.35, 169.375, 169.40, 169.55, 169.575, 169.60, 169.625, 169.65, 169.675, 169.70, 169.725, 169.75, 169.775, 169.80, 169.825, 169.85, 169.875, 169.90, 169.925, 169.95, 169.975, 170.00, 170.70, 170.825, 170.90, 171.35, 408.85, 408,875, 408.90, 408.925, 408.95, 409.00, 409.025, 409.05, 409.10, 409.15, 409.175, 409.20, 409.25, 411.025, 411.05, 411.075, 412.35, 412.425, 412.45, 412.475, 412.50, 412.55, 412.575, 412.675, 413.55, 413.975, 414.00, 414.025, 414.05, 414.075, 414.0875, 414.10, 414.125, 414.15, 414.175, 414.20, 414.225, 414.25, 414.275, 414.30, 414.325, 414.35, 414.375, 414.40, 414.425, 414.475, 414.50, 414.525, 414.55, 414.575, 414.75, 415.20, 415.30, 416.125, 417.075, 417.10, 417.15, 417.40, 417.45, 417.50, 417.55, 417.60, 418.05, 418.60, 418.525, 418.55, 418.575, 418.90, 419.075, 419.175, 419.20, 419.225, 419.25, 419.25, 419.275, 419.30, 419.325, 419.35, 419.375, 419.40, 419.425, 419.45, 419.475, 419.50, 419.525, 419.55, 419.575, 419.60, 467.95

Feds on Film

Hollywood has discovered what scanning hobbyists have known for decades. Following the exploits of the FBI, Secret Service, DEA and other federal agencies makes for exciting entertainment. Just pick up your local TV listings and see for yourself. On any given night of the week, one can find at least one reality-based show featuring the adventures of law enforcement agents. *Top Cops, FBI: The Untold Stories, Cops, American Detective* and this season's newest offering, *Secret Service*, are just a few of the television series that the law enforcement buff can sink his or her teeth into.

Not only has TV taken notice of the public's appetite for federal intrigue, but Hollywood has as well. Some of the tinsel town's top-grossing films have featured the feds. For example: *"Point Break," "Silence of the Lambs," "Patriot Games"* and *"Sneakers"* are top box office draws. But as Federal File readers well know, you don't have to stand in long lines at a theatres or flip through the television channels to find first rate federal action. It can be as close as your scanner.

The Federal Bands

You'll find federal communications spread across many bands—shortwave for long distance communications and VHF and UHF for local point-to-point communications. Even if your scanner has limited frequency range, chances are you can find the feds. Let's take a look at what's out there, band by band.

Feds on Shortwave

The FBI still maintains a network on shortwave, although most of their communications are conducted via VHF/UHF networks. However, you can still find some voice (USB) and RTTY traffic on the shortwave bands. Tests of the communications system can be heard on Monday mornings with primary frequencies being 5.058, 7.903 and 14.493 MHz.

Although the DEA doesn't maintain a shortwave communications network, joint DEA/Coast Guard/U.S. Customs operations have been heard on the HF bands. Check out the following frequencies and eavesdrop on the DEA/Coast Guard/U.S. Customs agents shadowing drug smugglers.

All communications are USB voice, sometimes encrypted and always intriguing.

DEA/USCG/ Customs Operations:

4.376	4.500	5.277	5.480	5.571
5.696	6.513	7.527	7.582	7.657
8.769	8.912	8.984	9.802	10.242
10.076	11.076	11.288	11.494	12.220
13.150	13.312	13.907	14.371	14.686
15.867	18.666	23.403	23.675	

Immigration and Naturalization Service (Border Patrol) have their brushes with drug smuggling criminals as well. Although most traffic is now conducted via VHF/UHF repeaters, some INS traffic is still occasionally heard on shortwave.

INS HF CW/SSB shortwave frequencies:

4.617	5.915	9.435	11.650
14.585	14.577 MHz		

Feds on VHF/UHF

The majority of federal action takes place on the VHF and UHF frequency bands. Here you'll find FBI agents on stakeouts, DEA agents coordinating drug busts Custom agents tracking smugglers and many more federal agencies. Unfortunately, you will also come across a lot of digital scrambling as well. However you'll be amazed how much is being said in the clear.

Remember, though, to treat what you hear as privileged information. If you reveal what you hear to the wrong person, you could be endangering someone's life. It is up to you to keep what you hear to yourself and not give more ammunition to those who would like to cast scanner listeners in a bad light.

Here is a small sampling of what you can find on the VHF and UHF bands (all frequencies MHz).

Federal Bureau of Investigation
Nationally reported frequencies.
(see Table One for more comprehensive listings)
167.5625 (nationwide common)
165.5375 (input)
163.8625 (output) FBI SWAT teams

Alcohol Tobacco and Firearms

Nationwide:	165.2875	165.9125	166.2875
166.4625	166.5375	170.4125	173.8875
407.150	409.150		

Drug Enforcement Agency

Nationwide:	415.600	416.050	416.200	417.025
418.175	418.500	418.625	418.675	418.700
418.800	418.825	418.950	418.975	

United States Marshal Service

Nationwide:	162.785	163.200	163.8125
170.750	170.850	170.875	170.925

U.S. Customs Service:

Nationwide:	162.825	165.2375	(paired w166.4375)
163.000	163.225	163.675	164.100
165.335	165.4625	(paired with 166.5875)	
166.100	166.400	166.4375	166.4625
168.630	169.535	171.250	255.600
269.300	281.400	297.200	299.200
353.900	354.200	355.900	381.500

Note: sometimes U.S. Customs and DEA can be heard in joint operations with Civil Air Patrol units. Be sure to check out the CAP frequencies, especially 123.100, 148.125 and 148.150 MHz.

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Immigration and Naturalization Service Border Patrol

Nationwide:	162.825	162.850	162.875	162.900
162.975	163.625	163.650	163.675	163.700
163.725	163.750	163.775	168.975	170.625
170.700	170.725	170.750	170.775	408.200
408.225	408.250	408.275	408.300	408.350
408.375	408.400	413.650	413.625	413.675
413.700	413.725	413.750	413.775	414.625
417.0125	417.125	413.175	418.850	418.950
418.975				

Secret Service/U.S. Treasury Dept.

The Secret Service does more than protect the President and other high ranking officials of the U.S. Government. They are also the federal law enforcement agency responsible for tracking down counterfeiters (be it currency or credit cards), money launderers and bank fraud. The Secret Service is part of the U.S. Treasury Dept. See Table Two for a comprehensive list of Secret Service/U.S. Treasury Dept frequencies.

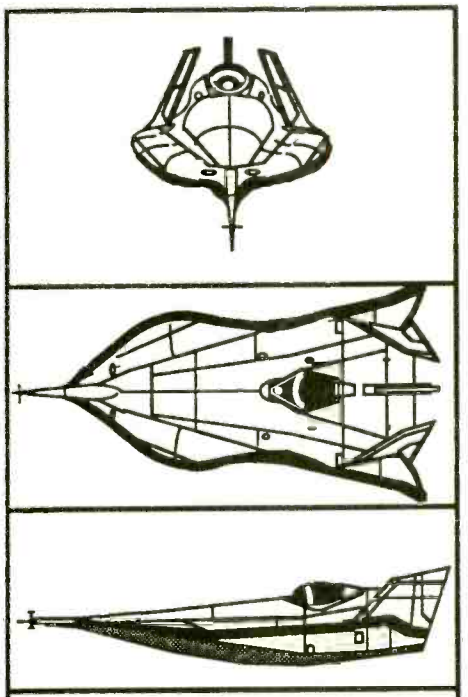
Armed with our frequencies, let's twiddle the dials in search of federal action. Let us know what you find and we'll add your loggings to our Federal File!

Close Encounters of the Stealthy Kind

Several readers sent in clippings describing the near mid-air collision between a United Airlines 747 and a mysterious aircraft over the California desert near George AFB. The pilot and copilot of United 934, flying from Los Angeles to London, said they saw an unusual aircraft coming directly at them and pass under them by an estimated 500-1,000 ft. The incident occurred at about 1:45 pm on August 5. The crew reported that the strange aircraft looked like the forward fuselage of an SR-71, without wings but with a tail of sorts. It is speculated that the aircraft could have been either a stealth aircraft prototype or an unmanned drone that strayed from a nearby military test range.

Last January an object with a similar shape and size was seen being loaded at night into an Air Force/Lockheed C-5 transport at the Lockheed advanced Development Co. "Skunk Works" facility in Burbank, California. The Federal File has recently received a sketch from an anonymous source of an aircraft that was being tested on the hypersonic sled test track at Holloman AFB in New Mexico. It looks very similar to the aircraft that the United pilots encountered (see sketch).

Los Angeles Center said they did not see the target on radar when the 747 crew reported it after the near collision. The FAA subsequently reviewed the radar tapes but found no evidence to support the sighting.



This sketch is based on one from an anonymous source who says this aircraft was seen being tested on the hypersonic test track at Holloman AFB, New Mexico.The aircraft is very similar to an object that almost collided with a United 747 near George AFB.

SECRET SERVICE, U.S.

32.23	Able	WHCA
166.5125	Alpha	Escort & Security
415.675	Black	Uniformed Division
414.850	Brown	Foreign Missions
165.375	Charlie	Nationwide Primary, Command Post
169.925	Delta	WHCA vans
407.850	Echo	Air Force 1 phone patch ground uplink (paired 415.70)
415.700	Foxtrot	Air Force 1 phone patch aircraft downlink (paired 407.85)
165.7625	Golf	Input to 165.375 repeaters
407.750	Gray	
166.2125	Hotel	President/VP Security
407.925	India	Treasury Security Force (Pres./VP Security)
170.000	Juliet	Camp David pager
167.825	Kilo	White House Staff
168.7875	Lima	White House Staff (voice scramblers)
165.2125	Mike	VIP & Former Pres. Security, & Counterfeit Division
167.025	November	White House Staff
414.950	Orange	White House Uniformed Division
164.8875	Oscar	Pres. motorcades, & Executive Family
164.400	Papa	Input to 165.2125 repeaters
166.700	Quebec	White House Staff
415.975	Red	Foreign Missions
166.400	Romeo	Input to 165.7875 repeaters
166.5125	Sierra	Presidential/VP Security
415.650	Silver	Input to 414.850 repeaters
164.650	Tango	Presidential/VP Security
164.100	Victor	Presidential /VP Security
415.875	Violet	Training Division
167.025	Whiskey	Pager
407.675	White	
166.4625	X-Ray	Treasury Dept. common frequency
162.6875	Yankee	Air Force 1 phone patch uplink (paired 171.2875)
414.675	Yellow	White House Communications Agency (WHCA)
171.2875	Zulu	Air Force 1 phone patch downlink (paired 162.6875)

Other Secret Service & related channels reported:
34.07, 162.375, 162.6875, 163.000, 163.3625, 163.400, 163.775, 163.8125, 163.9125, 164.750, 164.800/165.850, 165.0875/166.2125, 165.0875/166.200, 165.2875, 165.3375, 165.5125/166.4875, 165.600/166.6375, 165/675, 165.6875/166.2125, 165.7875, 165.8625, 165.900, 165.9125, 166.375, 166.4875, 166.6375, 168.225, 168.400, 168.450, 168.575, 361.600, 406.425, 407.850, 407.875, 407.925, 407.95, 415.725, 417.750, 419.725

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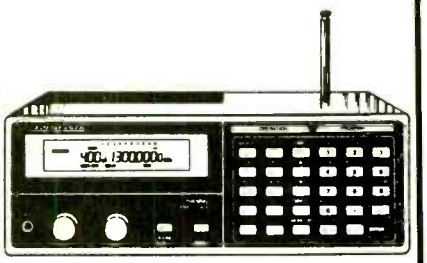

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James R. Hay

The Well-Equipped Ship

Periodically, the question is asked, "What equipment does a ship have to carry?" Since the requirements are changing with the gradual introduction of the Global Maritime Distress and Safety System (GMDSS), this seems like a good time to discuss what equipment ships will be carrying when GMDSS becomes fully implemented.

GMDSS changes the basic idea behind distress communications. Radio was originally used to attempt to summon help directly, the idea is now to communicate with the Rescue Coordination Centre (RCC), who will then direct rescue efforts. It is felt that with current technology this will increase the chances of survival for those aboard distressed ships.

GMDSS uses four categories to determine various requirements for radio equipment. These categories, defined by the waters a vessel will travel in, are shown in Table 1.

Ships travelling within these areas will be required to carry appropriate equipment. Currently, the international Maritime Organization has developed requirements for ships of 300 to 1600 gross registered tons and for those over 1600 grt; however, no standards have yet been set for vessels smaller than 300 tons.

Radio room aboard the M.S. Southward.

Digital Selective Calling

While new to maritime radio, digital selective calling (DSC) has been in use for some time in the aeronautical service. It involves the use of digital tones, much like those used for paging units, to call a particular station or group of stations. This has the practical effect of silencing the radio's speaker until a call intended for a particular station is made. In the implementation foreseen by GMDSS, DSC equipment will be used in conjunction with a direct printing receiver similar to telex.

On MF, the frequency 2187.5 kHz will be used for area A2, and on VHF in area A1 channel 70 will be used. A frequency will also be set aside in each of the four, six, eight, twelve and sixteen MHz bands.

Table 1: GMDSS Communications Regions

- A1 Within range of shore based VHF stations
- A2 Excluding area A1 but within range of shore based MF stations
- A3 Excluding areas A1 and A2 but within coverage of geostationary satellites.
- A4 Remaining sea areas outside A1, A2 and A3 which basically means the high north and south polar regions.

Navtex

Navtex, which has been discussed previously in this column, is a system which is currently operational on 518 kHz. It provides automatic direct printing of navigational and meteorological information. This system would provide safety information to vessels mainly in coastal areas (A1 and A2) with coverage similar to that of current radiotelegraphy.

COSPAS-SARSAT

The Cospas-Sarsat system is operated jointly by Canada, France, the United States and the U.S.S.R. Currently, there are two types of emergency position indicating radio beacon (EPIRB) in use. Those operating on 121.5 and 243 MHz, when activated, will transmit a distress message on the two frequencies. A satellite overhead receiving this signal will simultaneously relay it to an earth station, if one is in range, along with position information. The disadvantage is that if there is no earth station in range of the satellite, the signal is lost.

The newer 406 MHz EPIRBs will also transmit a distress message; however, when a satellite receives this message, it is saved in an on-board memory along with time and position information and is retransmitted when an earth station is definitely in range. This greatly improves the odds for the vessel in distress. The newer 406 MHz beacon is expected to be a requirement for GMDSS in all areas because of the circumpolar orbits of the Cospas-Sarsat satellites.

Inmarsat

Another type of EPIRB is in final stages of development which will operate through Inmarsat satellites. Once activated, a beacon will transmit a distress message giving location (from ship's navigation equipment) and identification of the ship. This message will then be transmitted via the Inmarsat satellite to a coastal earth station and thence to a rescue coordination center (RCC). Trials with this system indicate an average time from transmission to reception by the RCC of under two minutes.

Another Inmarsat service, known as Priority 3, will allow those vessels fitted with satellite communications equipment to send a distress call directly to an RCC. When a special "SOS" button on the vessel's satellite terminal is pressed, a free channel is immediately made available to the station making the call. This allows rapid contact with an RCC.

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If a channel is not available, one is made available even if it means disconnecting another call. This has resulted in an above 99% probability of a channel being available for a distress call, and an equally high probability of its successful completion—a vast improvement over conventional radio. With this system, a response is virtually guaranteed, as opposed to the current uncertainty of anyone hearing a given distress call.

While larger ships are moving towards satellite communications, Standard A equipment which allows voice, telex and data communications carries a price tag of $20,000 or more and communications costs are $12 per minute. Smaller Standard C equipment, allowing only telex and data transmission, costs approximately $5000 and is enabling many smaller vessels to bring this equipment on board.

Ship's Radio Officer Controversy

With any luck, the debate we mentioned some time ago regarding requirements for radio officers may be heading toward settlement. Third World countries have been arguing for compulsory carriage of "electronics officers" whose duties would include the repair and maintenance of all electronic equipment on board, and who would be able to make any necessary repairs while the vessel remains at sea. Developed countries are arguing for the carriage of radio officers whose duties would remain chiefly communications. By carrying appropriate spare parts, radio officers would be able to replace failed circuit boards while at sea, and carry out the maintenance of the communications equipment. Major repairs would be left for shorebased facilities.

This decision is important because the Third World proposal would radically affect the shipping industry, especially in terms of the cost of carrying properly certificated communications officers. Under GMDSS, ships in area A3 will not necessarily be required to carry radiotelegraphy equipment. With the availability of satellite equipment as well as other communications modes, it remains to be seen just what the fate of Morse code will be. Certainly it is not as prevalent as it once was, but the cost of satellite equipment has meant that CW still remains a viable mode. Time alone—and the reliability of satellite communications under real distress conditions—will decide this matter, not tests made when all systems are working properly under good conditions.

Since this is the last maritime column for 1992, I wish you all Happy Holidays, and I'll see you in 1993.

MT

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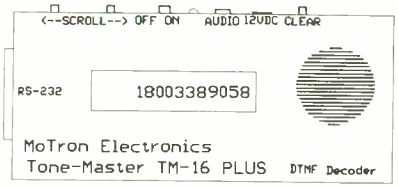

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Equipping Your Shack

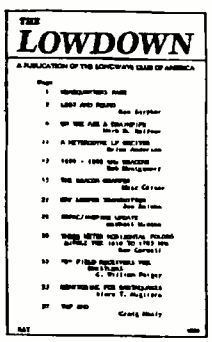
Traditionally, the lower reaches of the radio spectrum were explored by hardy souls who had access to military surplus gear or else the technical know-how to build up equipment of their own. But things have changed a lot since those early days.

Today, more often than not, receiver manufacturers are including some longwave coverage on their latest offerings, and there are also many companies that can supply converters, antennas and a host of other LF accessories.

This month I've compiled a sampling of manufacturers, associations and publishers that cater to the needs of the longwave community. The listings are not meant to be all-inclusive, but rather provide you with some possible resources for getting started on the band or increasing your DXing enjoyment.

Getting the Lowdown

The grand-daddy of all LF hobby publications has to be *The Lowdown* published by the Longwave Club of America (LWCA). Since 1974, the LWCA has been promoting DXing and experimentation on the longwaves with a strong focus on the 1750 meter license-free experimenter band. Loggings, construction articles, technical tips and propagation topics can all be found in the pages of this publication.


THE LOWDOWN

A year's subscription to *The Lowdown*, which includes LWCA membership, is $18 in the United States, $19 in Canada and $26 by airmail delivery overseas. You can write the LWCA at: Dept. MT, 45 Wildflower Road, Levittown, PA 19057.

Elusive Beacons

Finding the location of a newly logged beacon can be a lot of guesswork, with the only clues sometimes being signal strength, directivity and perhaps a revealing ID. The uncertainty can be eliminated, however, if you have the latest edition of Ken Stryker's *Aero/Marine Beacon Guide*. This definitive guide to beacon DXing contains more than 7000 listings of beacons in the Americas, the Caribbean, Pacific and Australasia regions of the world.

A very helpful feature of the guide is the Frequency/ID cross reference located in the front of the book. As long as you know either the frequency or the ID of a beacon, you'll have no trouble finding the main listing for the station. A software version of the guide is planned soon, which will make using the guide even easier for those equipped with a personal computer. The guide is available for $15.00 by writing to: Ken Stryker, Dept. MT, 2856-G West Touhy Avenue, Chicago, IL 60645.

Aviator's sectional maps are an excellent source of information for beacons. The maps show dotted circles around non-directional beacon sites and list the Morse identifier assigned to each station. These maps cover wide geographic areas, and, although they are updated frequently to reflect minor changes, even an older map is useful for beacon chasing.

Sectional maps are reasonably priced and are available at most airport Flight Service Stations. Besides beacon information, there's a myriad of other data to sift through such as the locations of radio towers, small rural airstrips, restricted airspace and flight hazards, such as cable spans.

If Canadian beacon hunting is your aim, you'll want to have a copy of the *Canada Flight Supplement* and also some charts for the regions you're interested in. The price on some of these publications can be quite steep, but they're hard to beat for accuracy and overall usefulness. To request an illustrated catalog and price list, write to: Energy, Mines and Resources Canada, Canada Map Office, 615 Booth Street, Ottawa, Ontario, K1A 0E9.

For the Builder

If you're most comfortable with a soldering iron in hand, you'll find many homebrew LF projects to build in the *Low and Medium Frequency Scrapbook* by Ken Cornell, W21MB. Since the first edition came out in 1972, this book has become a standard reference for LF builders and experimenters everywhere.

It contains practical, hands-on information for transmitting and receiving gear as well as high performance antennas you can build. Best of all, it's written in a nontechnical, hobbyist-to-hobbyist style that you're sure to enjoy. For information on the latest edition, write to the author at: Dept. MT, 225 Baltimore Avenue, Point Pleasant Beach, NJ 08742. Be sure to include an SASE.

If kit building is your interest, an excellent resource is the Pan-Com International catalog, which includes several items pertaining to both longwave and mediumwave. With most of their products, you have the option to purchase either the blank PC board, an assortment of components or a complete package that is ready to build. For a complete catalog, send $1.00 to Pan-Com International, Dept. MT, Box 130-T, Paradise, CA 95967.

TABLE 1:
Selected Equipment Suppliers

LF Engineering Co.
Dept. MT
17 Jeffry Road
East Haven, CT 06513

Grove Enterprises
Dept. MT
P.O. Box 98
140 Dog Branch Road
Brasstown, NC 28902

Northwest Communications Labs
Dept. MT
813 SW Highland, Suite 310C
Redmond, OR 97756

Fair Radio Sales Co.
Dept. MT
1016 E. Eureka St.
P.O. Box 1105
Lima, OH 45802

Palomar Engineers
Dept. MT
Box 462222
Escondido, CA 92046

Conversion Research
Dept. MT
P.O. Box 535
Descanso, CA 91916

Equipment Suppliers

There are many companies who manufacture and sell LF products if you know where to look. Most can provide catalogs with information on receivers, antennas, converters, filters and other LF accessories. Table 1 lists some companies you can contact to obtain a current catalog.

With the beacon DXing season now in full swing, I hope this gives you some ideas for finding that special accessory or publication that will boost your longwave enjoyment. Next month, we'll take a look at a custom designed logsheet you can make to keep track of your best DX catches. 'Til then, I wish you the best in longwave monitoring times!

MT

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Memory: 9 channels
Delay: Yes
Scan: Yes
Search: Yes
Clock: With alarm/sleep functions
Audio output power: 900 milliwatts
S meter: LED light bar
Selectable attenuator: RF gain control
Selectivity: Wide/narrow AM/SSB (6.5 kHz AM)
Image rejection: AM 50 dB; FM 60 dB
Frequency stability: Quartz PLL
Tone control: Separate bass and treble
Dimensions: 11-1/2"W x 6-1/4"H x 2-1/2"D
Weight: 4 lbs.
Warranty: 1 year
Accessories included: AC adaptor, stereo headphones, shoulder strap, SW handbook, external antenna adaptor

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Specifications:

Keypad Frequency Entry: Yes
Tuning Steps: 1 kHz
Display: Illuminated LCD
Dimmer: Yes
Receiving Modes: AM, SSB, wideband FM
Memory: 45 presets
Delay: Yes
Scan: Yes
Search: Yes
Clock: Dual time display with record timer
Audio output power: 800 milliwatts
Recorder Activator: Internal programmable cassette recorder/player
Signal strength indicator: Yes
Selectable attenuator: RF gain control
Selectivity: Wide/narrow switch
Image rejection: Not available
Frequency stability: Not available
Tone control: Yes
Dimensions: 11-1/4"W x 7-3/8"H x 2-3/4"D
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Warranty: 1 year
Accessories included: AC adaptor, SW handbook, external antenna adaptor

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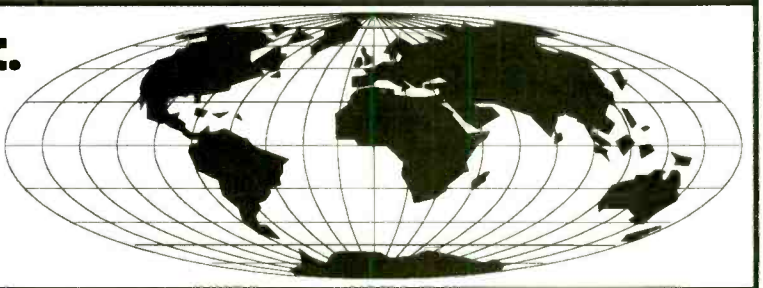

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Karl Zuk

A Tall Tale

Look up in the sky...It's a bird! It's a plane! No, it's a super antenna. It may look like just a big metal stick in the ground, but a modern AM radio station antenna is actually quite complex!

Today's station construction budgets are very lean. Guyed towers are the most cost-effective method; very few new towers are self-supporting. Almost all new AM towers are all-steel lattice works, sitting upon a large ceramic insulator. Non-conductive and weather-resistant tethers are used to hold towers upright replacing traditional guy wires. Their nylon fibers are stronger than steel!

High technology can be found in high places. Look up and you might see a very clever device that can prevent destructive lightning strikes. Many station owners have installed lightning diverters on top of their towers. Two popular designs achieve the same effect. One type resembles a rototiller, with a multitude of steel spikes. A similar design looks like a spray of fine steel wires. Both types greatly increase the surface area topside.

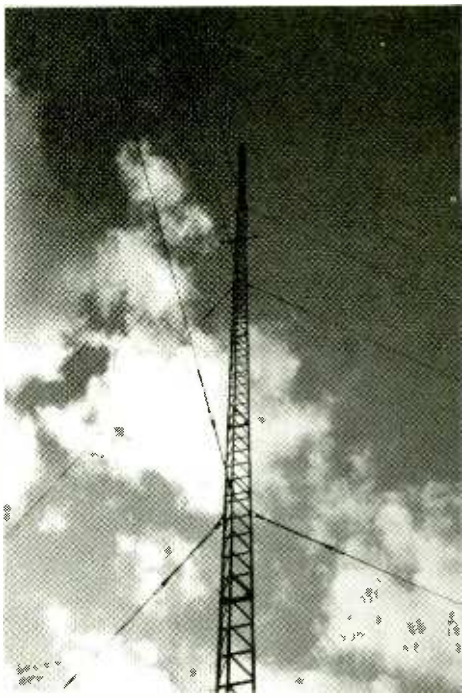
Bolts of lightning are created when static electricity discharges at a single point. These diverters slowly and gradually discharge the enormous amounts of static that cause lightning. Without a place to concentrate, sudden lightning strikes become almost impossible. Since modern, efficient transmitters that rely solely on semiconductors can be damaged easily by sudden static discharges, these tower-topping static diverters have become almost a necessity. Often, stations add sophisticated impulse suppressors to police coaxial feedlines between transmitter and tower for additional surge protection. Impulse suppressors can handle over 50,000 amperes many times faster than traditional devices!

Tower lights have changed, too. The familiar, large incandescent lamps, covered with red glass domes, are slowly being replaced. Piercing blue-white strobe lights now catch the eyes of aviators, and keep electric bills down, too.

There's news down below, as well. AM broadcast antennas consist of two parts: the tower and a ground system. The tower is precisely resonant at the operating frequency of the transmitter. Typically, the height is one-quarter of the frequency's wavelength.

For example, operate on 540 kHz and your tower should be 432 feet tall. At 1600 kHz, you only need 146 feet of steel. Some AM stations opt for slightly taller 5/8 wavelength antennas to increase their coverage. But you'll never see most of the metal used to broadcast AM radio. It's buried underground!

Underneath most towers are 120 thick copper ground wires, buried three degrees apart, fanning out away from the base insulator. Viewed from above, the resulting grid resembles the spokes of a wheel. Theoretically, the wires should measure the same as the height of the tower. A well-constructed ground system is essential if AM radio signals are to be heard over the myriad interference sources in today's households. Computers, televisions, fluorescent lighting fixtures, RF light bulbs, and many other devices bring noise to astronomical levels. Keeping a ground system consistently efficient is a challenge and a necessity.

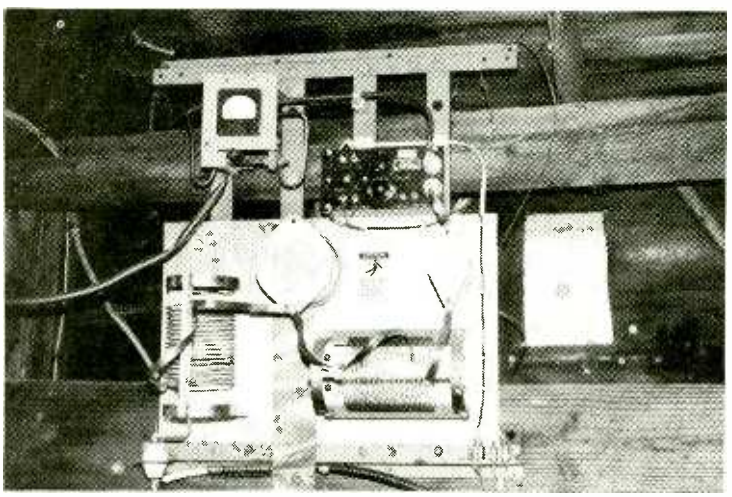


WHVW, Hyde Park, New York, has a 249 foot tower perfectly matched for operation on 950 kHz.

AM antenna systems should be built in very moist terrain for optimum grounding. You'll often find installations in marshlands, near lakes or near the sea. Moisture greatly improves the quality of the system's electrical connection with the ground. Seasonal changes and weather affects this moisture content, creating broad variances in ground conductivity. For example, AM station owners should regularly mow the grass surrounding their towers. During the summer, tall weeds and grass can absorb enormous amounts of precious moisture. Dry soil produces a poor ground, and a poor signal.

Demonstrate the principle for yourself. Pick a weak AM signal on your car radio and drive towards any body of water. Generally, the closer you come to the water, the stronger the signal will get. Seashores are excellent places to log DX. You're witnessing ground wave signals in action! On the other hand, listeners in western states enjoy superior AM ground wave reception compared to the east coast because of a higher concentration of the minerals that improve soil conductivity.

Taking a lesson from nature, the industry has developed new products to enhance ground conductivity around any AM tower. Long ground stakes surrounded and filled with specially formulated minerals are used to create very low soil resistivity. Developed for use in the arctic permafrost and the Saudi Arabian Desert, one of these improved ground rods provides as much conductivity as up to eight conventional rods



Inside the dog house, the hard line coaxial cable enters at the bottom of the panel. A wide copper strap connects the outer shield of the coax to the tuning network above it, and the ground system buried around the base of the tower. Mounted on the panel, two loading coils and a large capacitor fine tune the transmitter to the antenna and ground system. Above, a small ammeter samples the antenna current to insure output power is maintained within legal limits.

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inserted into existing soil. In addition, natural volcanic clay compounds can be plowed in as backfill to retain moisture around the ground mats to produce a super-efficient AM antenna installation. Efficient coupling of an AM transmitter to the ground gives a signal tremendous punch!

The heart of an AM antenna hides in a small shed at the bottom of the tower. This is where everything comes together. The "dog house" shelters the point where the heavy coaxial hard line connects to a tuning network, matching the transmitter to the antenna. You'll notice a large loading coil combined with a high voltage capacitor on the wall. This circuit fine tunes the antenna and ground for efficient power transfer. A broad copper ground strap connects the buried ground radials with the hard line. A throw of the knife switch will measure antenna current with a nearby ammeter.

A "dog house" should be animal-proof. Squirrels, birds, snakes, and other varmints can create explosive results if they come in contact with antenna tuning networks.

Want to create a directional signal for your station? Add more towers and a phasing network cabinet. Feed two towers with equal power, you'll probably create a figure-eight pattern. To change the pattern, change the amount of signal delivered to each tower and the phase relationship between them. Adding towers is like adding director elements to a TV antenna. Well-designed multiple tower arrays can create a customized signal pattern precisely tailored for maximum coverage of a particular market. Clever engineering can now produce stronger and more efficient AM radio signals than ever before!

Bits 'N' Pieces

What if you couldn't turn your radio off? Is this the plot of a missing "Twilight Zone" episode starring an unsuspecting DXer? Ask Ira Paul, an *MT* reader who lives in Oak Park, Michigan, just outside Detroit. Ira and his neighbors suffer from signal overload. Their houses are bathed in RF from a nearby antenna tower shared by four high-powered FM radio stations: WDFX, WJZZ, WLTI and WQRS.

Phantom voices are heard everywhere. Televisions are riddled with herringbone interference, answering machines don't work, phones echo with unwanted music, and computer modems shut down without notice. FM signals transfer their energy into the copper and steel plumbing systems in nearby buildings turning modern electronic conveniences into insistent demons.

Eighteen Oak Park residents have gone to court against the four stations and the tower owner: Gotham Tower, Inc. They seek $180,000 in damages, a cure for the penetrating RF noise, and a survey to determine the effects of the signals on local residents' health. Real estate values have declined rapidly since the tower was built in 1984. Security is difficult where no alarm system can properly function. The solution may prove difficult. Stay tuned!

Signal overload problems are not uncommon. New Jersey's WBSS, 97.3 MHz, in Millville, blocks out TV reception of WCAU-TV, a nearby CBS affiliate from Philadelphia. Their first harmonic lands within channel 10's video signal, and completely obliterates viewing within two miles of their 492 foot tower. Angry neighbors have aired complaints to the City Council and Planning Board, and want to revoke the station's permit to operate from the tower. The area near the WBSS tower in Corbin City is not serviced by cable TV. Only three channels are available over the air and Channel 10 reception is a major priority!

Bridgeport, Connecticut's 50,000 watt WEBE also wrestled with interference problems. Operating on 107.9 MHz, their first harmonic, 215.8 MHz, lands very close to Channel 13's audio carrier frequency: 215.75 MHz. Meticulous engineering and the distribution of hundreds of FM traps cleared reception of local PBS affiliate WNET viewers close to their tower. Sometimes an engineer's work is never done!

Mailbag

Three cheers for Liz Roberts! She put bankrupt WTRI, in Brunswick, Maryland, back on the air on February 3 with a courageous new format: all local music. *MT* reader David Alpert mailed in an Associated Press report with the details. Apparently, Liz has opened the doors of her station to anyone brave enough to enter. She invites all musicians, regardless of style, to visit WTRI to record their best songs. Good quality tapes are accepted, too. Tune in and hear her neighbors play bluegrass, folk, rock, and country; all tastefully blended together. Her format is a winner!

Since the introduction of all-local radio, station revenues have been increasing 20 to 30 percent a month. A $100,000 loan, based on this significant growth, will fund a power upgrade to 10 kilowatts on 1520 kHz in the coming months. WTRI's current 500 watt signal already covers portions of Western Maryland, Virginia, and West Virginia.

"There's so much talent out there that needs to be showcased," says Liz. "Everyone wants to root for local heroes. It is far and away the most fun thing we do around here. If you give us the music, we'll put it on the same day." Listeners decide which recordings are heard most often by making phone requests.

Liz has created a mecca for new artists. Over 400 musicians have contributed to WTRI's music library to date. Large national advertising accounts, like Jaguar and The United Way, have begun to take notice, and the station is now comfortably in the black.

New Station Grants

These cities will have something to talk about soon: Copperopolis CA 105.5; Yermo, CA 105.3; Grand Junction, CO 104.3; Dahlonega, GA 104.3; Austin, IN 92.7; Vinton, IA 107.1; Lexington, KY 104.5; Manistee, MI 107.9; Columbia Falls, MT 95.9; Laughlin, NV 93.5; Carlsbad, NM 106.1; Essex, NY 101.3; Westport, NY 102.5; Greensboro, NC 1470; Southern Pines, NC 102.5; Wilmington, NC 90.5; Byesville, OH 97.7; Lebanon, OH 97.3; Shawnee, OK 95.1; Sabana, PR 1250; Providence, RI 88.1; Hartsville, SC 98.5; El Paso, TX 91.1; Gainesville, TX 107.9; Jasper, TX 107.3; San Augustine, TX 92.5; Summersville, WV 90.5; Adams, WI 106.1; Portage, WI 95.9; and Laramie, WY 104.5. Courtesy of *The M Street Journal.*

For Sale

A major league radio station deal has been signed in New York City. WNEW-AM, has been purchased by Michael Bloomberg L.P., a leading supplier of financial data, for a cool $13.5 million. The home of well-known programs like "The Make-Believe Ballroom" and "The Milkman's Matinee" probably will begin broadcasting financial news to The Big Apple soon. Their nostalgic big band sounds have been hosted for decades by legendary hosts: William B. Williams, Ted Brown, Klavan and Finch, Jonathan Schwartz, and Marc Simone. It's the only station echoing the sounds of New York's Broadway stage and cabaret scene, featuring artists like Bobby Short, Tony Bennett, and Frank Sinatra.

WNEW's sister station, WYNY-FM, has the largest audience of any country music station in America. You can purchase it for only 50 million dollars! Last year, it cleared $5 million in profits.

International Bandscan

The BBC will launch a 24 hour radio news network before January 1994, according to BBC Director General Sir Michael Checkland. Look for the service on the old Radio Four longwave frequency: 198 kHz. Programming will originate from a new 60 million dollar studio complex inside the BBC Television Centre in West London. BBC Radio news coverage will increase from 2,500 to 8,000 hours annually.

"If the BBC is to retain its place as the leading provider of news and information, then it must become involved in continuous news services," according to Sir Michael. The BBC is also considering a non-stop TV news service as a joint effort with satellite-delivered Sky TV News.

So, pass me a cup of tea and a scone; and until next month, REMEMBER TO VOTE! Happy trails! MT

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Small Dishes and Big Plans

Since satellite delivered programming began, everyone has dreamed about a smaller dish and a maintenance-free installation with no moving parts!

Until this year, the standard for C-band reception has been the 10 foot diameter parabolic dish. With the successful launch of Galaxy 5 (125 deg. W.) and its 16 watt output (double the previous C-band standard) the 10 foot hulk could be an endangered species.

Technical Advances

But long before G5 brightened our skies, dish sizes were headed downward anyway. Better receiver design, much lower noise temperature LNBs, and more carefully designed and built dishes were providing excellent results with a smaller reflective surface. Doubling the output power of the satellite was all that was needed to step down to a 5 foot C-band dish.

Kaul-Tronics, Inc. has introduced its KTI Pro-Form XI-5 whose total weight, including the AZ-EL mount and quad feed supports, is 33 pounds and is UPS shippable in one box. This particular dish, and many similar ones yet to come, has been created to introduce newcomers to satellite television through what the industry has termed the "Galaxy package."

Many prospective customers in the early days of home satellite systems were turned off by the size of the receiving antennas. Now, here is a small, black mesh dish which is virtually invisible and yet receives most of the usual cable fare. (G5 is home to The Disney Channel, CNN, TBS, WGN, HBO, ESPN, Family Channel, Discovery Channel, CNEC, The Movie Channel, Cinemax, TNT, USA, BET, Headline News, A&E and Showtime, among others.)

The two drawbacks are that, with the AZ-EL mount, there is no motor to move the dish to other satellites, although Kaul-Tronics has an optional provision to do so. The other drawback is that reception on the weaker, older satellites will not be as good. The advantage is that a smaller dish without any motor drive or attendant wiring is bound to be a cheaper installation, while still bringing in G5.

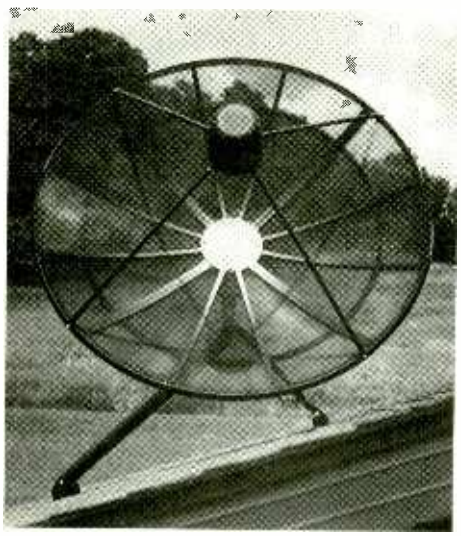
LNBF

Now that we have a small enough C-band dish that we can mount it on the roof (Kaul-Tronics has the optional hardware), let's complete the "no moving parts" C-band system.

California Amplifier, Inc. has announced their new LNBF which is a "C-band dual polarity downconverter with integrated feed." This unit combines the traditional C-band feedhorn with a Low Noise Block downconverter which features either a 25 or 40 degree noise figure. The big advance here is that horizontal and vertical polarity switching is done electronically, thereby eliminating the need for a rotating probe and servo motor to drive it.

The California Amplifier LNBF features 950-1450 block downconversion, 64 dB gain, -20 dB isolation between channels, HEMT technology, pulse controlled switching, adjustable Scalar Ring, lightning suppression, a Power Alert LED and a two year warranty.

The only drawback to the LNBF is that, due to its design, it cannot accept a Ku LNB. Sources at California Amplifier indicate that a similar version for Ku will be introduced in the future, but that a C/Ku LNBF is not on the drawing table.



Kaul-Tronics' KTI XI-5 five foot antenna shown with optional roof mount.

Low Cost System

Serious TVRO enthusiasts may look at this system as a good way to set up a dedicated link to cable fare for the family while they use the old ten footer and another receiver for SCPC and newsfeed monitoring.

Those contemplating getting into TVRO for the first time may find this a fairly inexpensive entry system with an eye to upgrading in the future. And, with the addition of the lowest priced Drake IRD (Integrated Receiver Decoder), you'll have a complete satellite TV system which is made in America!

For more information on any of these products call or write the following: Kaul-Tronics, Inc., 1140 Sextonville Road, Richland Center, WI 53581, (608)647-8902, fax (608)647-7394; California Amplifier, Inc., 460 Calle San Pablo, Camarillo, CA 93012, (805)987-9000, FAX (805)987-8359; R.L. Drake, Co., P.O. Box 3006 Miamisburg, OH 45343, (513)866-2421. For discounted prices on any of these or other TVRO related gear, see last month's column for retail catalog dealers.

California Amplifier C-band LNBF dual polarity pulse switched Low Noise Block downconverter Feedhorn features electronic polarity switching.

Promises Deferred

Forget 5 foot C-band dishes! Whatever happened to the high powered Direct Broadcast Satellites (DBS) receivable on little 18 inch dishes? The answer is simple: You've been reading too much *Popular Science* and not enough *Satellite Business News*. The former plays on our desire to live in a hi-tech, sci-fi world of air cars, home robots and flat plate satellite antennas capturing hundreds of channels in HDTV. The latter reports the dreary business of launch pad explosions, bankruptcy proceedings and the shenanigans of back-stabbing, money grubbing captains of commerce.

Here are the facts: The first feeble attempt at DBS took place some 10 years ago when a company called USCI borrowed a Canadian satellite's spot beam, focused it on the Mid-Atlantic region, put together a package of hardware consisting of a one meter dish with a General Instrument receiver, and worked out an agreement to retransmit six "cable" channels.

The numbskulls who worked out this concept failed to take into account these rudimentary facts: First, the average cable system in those days had 36 channel capacity, rendering their own capacity inadequate. Second, C-band transmissions of those same channels and about 60 more were available unscrambled on systems whose prices were dropping by half every six months. And, finally, the transmission technology of the day prohibited expansion of channel capacity. USCI was doomed to be left in the dust of progress.

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C-Band DBS

Still, entrepreneurs would not give up. Since there were already several million C-band installations, why not start up a C-band based DBS service? This was the idea behind TVN (Telstar 303). After failure to get any of the cable programmers to agree to retransmission (they were already serving the C-band TVRO market) TVN became a ten channel Pay-Per-View (PPV) movie service. Despite more than friendly agreements with Telstar owner AT&T, TVN has struggled. According to a report in *Satellite Business News*, TVN's original deal had them paying $700,000 per month for their 11 channels. That figure will shortly go to $2 million per month.

It's not that the TVN folks didn't know what they were doing (though their movie ticket prices were always seen as expensive); it was more that they couldn't foresee the prolonged recession. If the service is to prosper, the market share has to increase within the universe of existing C-band systems and not depend on an ever-widening universe. It remains to be seen just how deep are the pockets of the TVN owners.

More Ku DBS Ballyhoo

In the last two years there has been something of a renewed faith in the promise of DBS. The key to this revival lies in the development of video compression, a technical scheme where a digital video signal is compressed on the uplink and decompressed at the downlink receiver. Compression allows more than one video signal to be present on any single channel.

Here's the premise: To be competitive with cable, a DBS venture must be able to offer more than cable at a cheaper price. With 10:1 video compression, a DBS venture need only lease five or six channels from the satellite owner to have fifty or sixty channels of programming. Adding text, data and special CD quality audio services could be easily done without giving up much valuable space.

The company at the forefront of all the press releases and general ballyhoo was known as SkyPix. For the past two years they touted a system which, they claimed, was just about to launch. The problems began when they appeared to miss all the launch dates. The upshot is that, one by one, key players began dropping out of the project and taking their money with them. SkyPix bankruptcy trial has become a parade of angry satellite industry executives, creditors, employees and other assorted adversaries with enough dirty linen aired to satisfy the hungriest media gossip.

So, after all the talk and millions of research dollars SkyPix has one channel (SBS 6. channel 5 at 99 deg.W.) on which it is said to be testing four compressed channels.

In The Wings

Undeterred by the experience of others, is a short, but well financed, list of would-be DBSers. Among these are Hughes Communications, Inc., National Rural Telecommunications Cooperative (NRTC) and United States Satellite Broadcasting Inc. (USSB).

Unfortunately, all of these players are still deep in the research and development phase with more tentative than firm plans. The earliest launch date for the higher-powered DBS birds is December 1993 with a second satellite to be launched later in July. With usual delays figured in it could be easily two years before anything definite happens on the DBS front.

On The Standstill

Meanwhile, there is one medium power DBS service up and running. Well, more like running in place. It's called PrimeStar and they are actually transmitting on eleven uncompressed channels on GE's K1 (a Ku-band satellite at 85 deg.W) which are encrypted via Scientific-Atlanta's BMAC system.

As they began marketing the service nationwide, they ran afoul of the Justice Department on anti-trust charges. Seems the PrimeStar Partners are composed mostly of Multiple System Operators (MSOS)—also known as "giants of the cable industry." The Justice Department is not sure that it's good business for such companies to enjoy monopolies in the air and on the ground.

A spokesperson for PrimeStar maintains that such legal actions have had no effect on their marketing plans and that "rollout" is going according to its original pace which should see complete nationwide coverage by mid 1993.

But, the legal questions could end up being irrelevant. PrimeStar's lease on K1's channels ends in 1996 at the end of that satellite's lifetime. Before they can switch to a higher powered bird, the competition, USSB et al, may be firmly in place and happily carving up the market for themselves.

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In other PrimeStar news, the teletex service Electra has been added to their service free of charge. The service is accessed through PrimeStar receivers. Express Information services is also available with an additional data receiver/computer interface.

PrimeStar is available only through an established distributor network. While receiver/decoders remain the property of PrimeStar, distributors may lease or sell other components of the receiving system. For that reason, installation prices will vary. Basic subscription fees are roughly $30 a month. To find a distributor in your area call 1-800-966-9615.

Transponder Notes

Galaxy 1-R, one of the new higher powered cable satellites which was to figure into the 12 year future of broadcast satellites, was destroyed shortly after lift-off from Cape Canaveral due to a misfiring Atlas/Centaur rocket motor.

The good news is that Satcom C-4 was successfully launched on August 31. This bird will move to 135 degrees west. Galaxy 6, now at 99 degrees west will be moved to 133 degrees to replace the doomed G1-R. September 10 should have seen the launch of C-3 which will be placed at 131 degrees replacing Satcom F1R. And last month should have seen the launch of Galaxy 7 destined for 91 degrees. CBS is said to have secured 10 C-band and two Ku-band channels on G4 and G7.

MT

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Ike Kerschner, N3IK

Here's Looking at You, Kid!

In the early fifties when I was first licensed, it was fun to speculate about what the hams you had contact with looked like. In fact, meeting someone with whom you had been in QSO (contact), usually got a good laugh when we saw how wrong we were. Often, if a contact was particularly interesting, we would include a photo of the shack and ourself with the QSL. But there was no way we could see each other in real time.

All this changed in 1958 when Copthorne Macdonald, VE1BFL, developed a system of sending photos over the air. This system was called slow scan television or SSTV. At first SSTV was restricted to specific frequencies on the HF ham bands.

Unlike normal Fast Scan Television (FSTV), SSTV does not require a wide bandwidth. In fact, it takes up no more room than a normal SSB signal. In slow scan it is only possible to send still photos, and each photo requires at least eight seconds of transmission time.

Basically, a photo is scanned and converted to audio tones—white is represented by a frequency of 2300 Hz and black by 1500 Hz, with everything in between being various shades of gray. A 1200 Hz synchronizing pulse tells the system when the end of a line is reached and steps the scan down one line.

On the receiving end, the tones are converted back into shades of gray and displayed on a cathode ray tube (CRT). In the early days, two types of CRT's were used. The most popular CRT was called a P7 tube. This particular tube was used in radar; its display persisted for a long period of time and it was possible to view an entire photo (most of the time) before it faded from the face of the tube (it was green and sort of crude, but worked well). A later development was a storage tube which held the photo until the operator told it to erase (expensive and never very popular).

It was possible to photograph the display for future viewing, but a more practical solution to the storage problem was to store the signal on regular audio tape and replay it through the converter to view the photo again.

Unlike normal TV, whose individual picture consists of 525 lines, an SSTV signal contains only 120 lines. Consequently, definition is not as good as a regular TV signal, but adequate.

Several schemes for sending color photos were also developed and are still in regular use.

Computers and Slow Scan

As microprocessors became available to the general public, SSTV hams were quick to incorporate them into their stations to provide better pictures and signals. Every SSTV enthusiast who could afford the new computer technology jumped on the band wagon. Initially, the computerized SSTV systems were black boxes designed only for SSTV use. But as home computers became more available, software was developed to allow the home computer owner to send and receive SSTV with their PC. Today several systems are on the market, and all are head and shoulders above the early SSTV systems.

Software Systems Consulting

I recently obtained a slow scan system from Software Systems Consulting (SSC, 615 El Camino Real, Dept. MT, San Clemente, CA 92672; phone 714-498-5784). This particular unit includes the required hardware to send and receive SSTV at very modest cost ($149 for the full system and $99.95 for the SWL receive only system). Also included is a tape recording to help you get started. The recording contains instructions and a photo to help you set up your computer.

Illustration 2: *Printout of SSTV photo on dot matrix printer.*

All you need is a computer (MS-DOS, IBM compatible) with at least 640K of memory, a VGA or super VGA graphics adapter, one serial port, MS DOS 2.1 or higher and your HF or VHF rig, transceiver or transmitter and receiver capable of receiving SSB. A cassette audio recorder is nice to have to record signals that you wish to keep. Pictures can be stored in the computer but they require a lot of memory.

The SSC system is capable of receiving every SSTV transmission scheme available, from a simple eight second black and white to the complex Scottie and Martin color system.

Since SSTV is sent via SSB, it is only necessary to tune the SSB signal until it sounds normal, and your SSC system will deliver a good quality picture. SSC includes an oscilloscope program to aid you in tuning and set up.

Set up is a breeze; connect the included transmit and receive converters by pushing their DB-25 connectors together and hook to your computer via the RS-232 port (use regular serial connector cable). The receive converter plugs into your headphone jack (use a Y connector so you can hear the signals on headphones) and the transmit module connects directly to your transmitter microphone input (photo one). Follow the simple set-up instructions in the manual, and in fifteen minutes you will be receiving SSTV signals off the air.

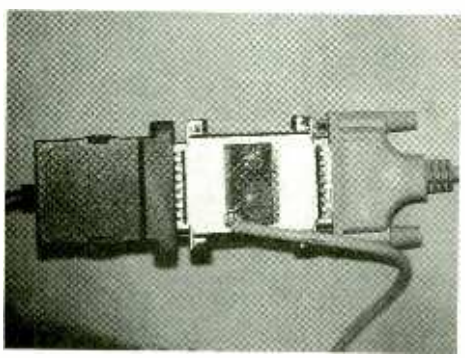

Photo 1: *The black side goes to receiver headphone o/p while the cable from the silver section connects to the microphone input on your rig. DB 25 is RS232 cable (serial port).*

Photo 3: *Nigel, 6Y5HN, Kingston, Jamaica, as received on 14230 MHz.*

Photo 4: *Old Mill, received on 3545 MHz from KC3AR.*

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Rob Leonard's

Ham DX Tips

November is a festive month, what with Veterans Day parades, Thanksgiving dinners and football games. But it is also a month for ham DX. Besides all the special event stations focused around the two aforementioned holidays, there is the annual CQ DX World Wide CW (code) contest the last weekend of the month. And as if that weren't enough, here are a few more DX targets to check while you recover from all that stuffing and cranberry sauce:

ANTIGUA Working for the Deutsche Welle Broadcast operations in Antigua is V29SW (who formerly was at the Rwanda Relay station and operated as 9X5SW) who will be here for the next four years; he has been appearing on 21220 kHz SSB at 2130 UTC daily. Send your QSL requests to: Box 1203, St. John's, Antigua. ***ASCENSION ISLAND*** ZD8Z is on or near 18073 kHz daily at 1830 UTC. His QSL manager is Garth A. Hamilton, P.O. Box 1156, Fonthill, Ontario, L05 1E0 Canada. ***HAITI*** HH2LT (Alix LaForest, P.O. Box 1484, Port au Prince, Haiti; SASE's with Haitian mint stamps or SAE's and IRC's only please) has been on 14080 kHz RTTY at 2300 UTC daily. ***MACAO*** The only resident amateur here, XX9D, is found around 14190 kHz SSB at 1100 UTC daily. QSL to: Antonio A.P.B. Costa, Box 1476, Macao. ***MACEDONIA*** This former Yugoslavian republic can be logged by locating 4N5CEF near 21330 kHz at 1600 UTC daily. The address of this club station, named for a now deceased noted local amateur, is as follows: Radio Club Stevo Patakot, P.O. Box 148, M Tita 16, 97001 Bitole. ***MALDIVES*** 8Q7AA (Kikuchi, P.O. Box 2007, Male, Maldives) has been found on 21250 kHz from 1200 to 1500 UTC daily. ***MARTINIQUE*** Can be logged by finding FM5WD (QSL to his QSL manager, Joe Arcure, W3HNK, P.O. Box 73, Edgemont, PA 19028) on the WARC 12 meter band 18135 kHz at 1600 UTC. ***TOGO*** Now RTTY DXers can add this country to their log books as well, thanks to 5V7DP on 21085 kHz at 1600 UTC. His QSL manager is KA1DE, Hosmer B. Thompson, 15 Crestview St., Keene, NH 03431. ***TURKS AND CAICOS*** Another DX station who uses W3HN as her QSL manager (see Martinique for the address) is VP5JM, Jody, who can be found on 18145 kHz SSB offering this country on this WARC band at 1500 UTC daily. ***USA*** Those in the Rochester, MN, area with scanners capable of receiving the 2 meter amateur band or active amateurs may want to monitor their local repeaters (146.625 and 146.820 MHz). In early September, Jordan's King Hussein, whose callsign is JY1, underwent surgery at the Mayo Clinic there and while recovering operated on the local repeaters as WO/JY1. If you were one of those lucky enough to have heard him, his QSL address is: Alhussein Ibn, Talal, Box 1055, Amman, Jordan. As there is always the possibility that he may have to return for further medical consultations (though we hope that he doesn't need to undergo surgery again), you may wish to monitor for possible future operation. JY1 often makes several trips to New York and the Washington, DC, area during the year. SWLs and amateurs in those areas should monitor their local 2 meter repeaters, as his highness often operates 2 meters when visiting.

If you plan to be in the Omaha, Nebraska, area check the Quarter Century Wireless Association and Leo Meyerson Amateur Radio exhibits at the eastern Heritage Museum at 801 S. 10th Street. These permanent exhibits show the development of amateur radio from its very beginnings to the present. A very worthwhile way to spend an afternoon.

That wraps it up for another month, and don't forget to check between 14225 and 14260 kHz as well as 7225 to 7300 for those special events stations to commemorate the holidays!

73 de Rob.

Transmitting requires another step. The photos you wish to send must first be digitized and converted to a GIF or PCX file. This can be done with a camcorder and a device called a frame grabber or a scanner and digitizer program. A frame grabber will cost from about $100 for a simple black and white model to $200 or more for a color unit; scanners are available from $100 and up from many sources. SSC has a frame grabber (color) available for $199. Additionally, there are many hams around who will digitize some photos for you and put them on disk so you can transmit even if you don't own a digitizer. Also, any photo received on the air can be retransmitted.

The SSC system lets you make a hard copy of the received photos on your printer (illust. 2).

My system was set up and ready to run in under one hour. The first photo received was from Nigel, 6Y5HN, in Kingston, Jamaica (photo 3) on 14230 MHz. An excursion to the 3845 MHz SSTV frequency brought a contact with KC3AR and photo 4.

Slow scan activity normally takes place on the frequencies 3.845, 7.181, 14.230, 14.233, 21.340 and 28.680 MHz. A net on 14.230 Saturday mornings at 1800 UTC is a good place to start. You will find SSTV a lot of fun, and the folks who operate this mode are friendly and anxious to get you going in the right direction.

See 'ya on SSTV. 73 de Ike, N3IK.

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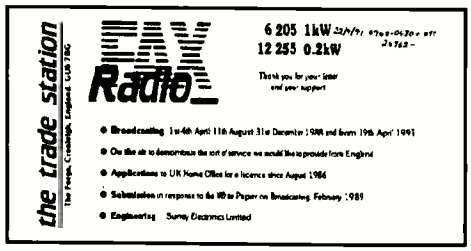
George Zeller

Radiofax Voluntarily (?) Closes Down



During the summer of 1992, **Radiofax** on 6205 kHz was the most widely heard Europirate in North America. But, station manager Trevor Brook has announced that the station has voluntarily left the air, at least temporarily. Radiofax cites pressure from the Irish government as the basis for its decision.

Regular *MT* contributor Martin Lester of England forwards a copy of an official Radiofax press release that explains the current situation. The station expected to close down its shortwave service sometime in September, but the Radiofax signal apparently vanished in late August. Part of this press release reads:

"The Department of Communications in Dublin has told us that Radiofax is causing some embarrassment to the Republic. They now wish unlicensed activity to cease and we believe the long term interests of Radiofax are best served by closing down. We have contemplated ignoring the request, but there is hope that independent shortwave licensing will be considered in the future. Unfortunately, we can think of no other place to go that would allow Radiofax to continue to operate in a professional way."

Station management indicates that Radiofax hopes to apply for an Irish broadcasting license. Listeners who wish to support the station in this process can write to the Minister for Communications, Dublin 2, Ireland. Radiofax has also installed a telephone line for recorded messages of support at 0483 27 28 88. The shortwave broadcasting scene in Ireland has seen similar turmoil over the years. The current cooperative attitude at Radiofax has been subject to change in the past, so we'll keep our eyes on future developments.

Radio Caroline Testing

Our correspondent Martin Lester also reports that there has been quite a bit of activity from **Radio Caroline** lately. This station's famous broadcasts from a ship off the British coast have had an erratic history since the mid-1960's. They recently transmitted a series of tests on 6305 kHz between 1000-0000 UTC on Saturdays and Sundays. DX bulletins such as *Fine Tuning* report that a few North American DXers, including *MT* reporter Hans Johnson of Columbia, Maryland, heard these tests. Lester indicates that the Caroline shows were relays via **Radio Zenith's** transmitter. They may move to 6295 kHz in the future to avoid utility station interference and QRM from the anti-Castro clandestine **La Voz del CID.**

Radio Caroline can also be heard via the Astra and Intersat satellites, occasional relays over Costa Rica's **Radio for Peace International,** or weekend evening programming from **Radio New York International** on **WWCR.** In August the station obtained a special event license for a one watt offshore medium wave transmitter on 1584 kHz, as an historical commemoration of the 25th anniversary of the Marine Offenses Act that curtailed British shipboard pirates.

"Off the Record" Disappears

In September we covered a serious dispute between the United Kingdom's Radio-communications Agency and *Short Wave Magazine.* The RA threatened the publication with criminal charges, including potential sanctions of large fines and imprisonment, if it printed DX loggings of unlicensed pirate and clandestine stations. The popular British magazine is similar in content to *MT.* Its "Off the Record" column, edited by Andy Cadier, formerly covered pirate station activity.

This outrageous situation remains unresolved. Cadier's column, which was similar to the "Outer Limits," did not appear in the August issue of the magazine. They instead printed an announcement that the column "will not be appearing until we can sort out the legal position with the (British Government) DTI. Watch this space." *MT* will keep you informed of developments in this sad case of DX press censorship.

Radio Muhabura's Future Uncertain

Last month we noted BBCMS reports of activity from **Radio Muhabura,** the clandestine voice of the Rwandan Patriotic Front. Ontario DX Association Chairman David Clark of Newmarket, Ontario, is among the North American DXers who have heard this one. Dave bagged them in the 0407-0522 UTC period using 6339.8 kHz variable on several late August evenings, with the best signals noted around sign-on.

If you want to hear Muhabura, now is the time to try! First, seasonal propagation of African signals is improving. Second, on September 7 I was monitoring the 15752.5 kHz 50/400 RTTY press service of MENA in Morocco at 1400. This wire service reported a negotiated settlement agreement through Italian mediation between the Rwandan government and RPF rebels that included a merger of government and RPF military forces. This negotiated truce could have some impact on the clandestine station.

Other Clandestine News

• Scott Edwards of California sends in an article about the **Democratic Voice of Burma** printed in the August issue of *India Currents* magazine. This station supports pro-democracy activist and 1991 Nobel Peace Prize recipient Suu Kyi, who has been under house arrest in Burma for three years. The clandestine is partially financed by the Norwegian Foreign Ministry! *India Currents* reports that the station uses a transmitter on Kvitso Island in northern Norway. BBCMS says that the program is scheduled from 1430-1500 UTC on 17845 kHz, so we have a shot at hearing it.

• First time *MT* reporter Jean-Yves Camus of Israel notes several mediumwave (AM band) clandestines from his shack in the Middle East. Some, like the pro-Hezbollah **Voice of Light** on 1070 kHz, are strongly anti-USA. Others, like the offshore **Artuz Sheva** (Channel Seven) on 711 kHz, broadcast in support of rightist Israeli settlers on the West Bank. **Radio Al Qods** (Radio Jerusalem in an English translation) uses 630 and 702 on medium wave, but it also operates a parallel shortwave transmitter on 5910 kHz. Camus says that this Popular Front for the Liberation of Palestine station is easily heard throughout Israel.

• President Bush's "No Fly Zone" in southern Iraq has refocused our attention on Saddam Hussein once again. The BBCMS says that a new clandestine **News Center of Free Iraq** has been using 11945 kHz in the 2200-0000 period, presumably as a supplement to the USA-financed **Voice of the Iraqi People** on 9570, 9980, 15470, and 17958 kHz. Hans Johnson has logged both of these stations from Maryland recently. ODXA's clandestine expert Robert Ross of London, Ontario, also sends in a logging for the 9980 kHz clandestine, which is obviously well heard in North America.

Numbers

We all were fascinated by Nils Schiffhauer's exclusive article in the September *MT* that confirmed the transmitter sites for several numbers stations in Germany. Ronald Miller of Massillon, OH, home of the Tigers, reminds us that not all numbers stations come from Europe. Every Sat-

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urday he hears a five digit English language female 3-2 format numbers station on 18480 kHz at 2000 UTC. Larry Van Horn has done a fine job of listing many other active numbers frequencies in his *MT* utility column.

Pirate Bust Follow-ups

We have been following the confrontation between various Illinois governmental authorities and Napolean Williams of **Liberation Radio.** This Decatur FM pirate on 107.3 MHz received a Notice of Apparent Liability from the FCC on July 27, 1992. The station was busted for alleged unlicensed broadcasting on September 11, 1991. Williams received a $17,500 fine from the FCC, including $7,500 for failure to permit a station inspection. Interestingly, the FCC inserted a footnote in Williams' Liability Notice stating that "claims of inability to pay should be supported by tax returns or other financial statements for the most recent three years."

The struggle continues between Andrew Yoder and the Federal Communications Commission. The FCC rejected Yoder's response to a Notice of Apparent Liability, in which Andrew had denied responsibility for various **Radio USA** broadcasts. On July 2 the FCC issued a $17,500 Notice of Monetary Forfeiture Order to Yoder. Andy fired back a response on July 29, denying that he is Mr. Blue Sky of this station. Yoder disputes the FCC's evidence and procedures in this case, and an appeal of the sanction is continuing.

The full texts of both the FCC Forfeiture Order and Yoder's written responses to the FCC were printed in the August issue of *ACE*. Sample copies are available for $2 from PO Box 11201, Shawnee Mission, KS 66207.

Pirates We Are Hearing

North American pirate stations remain quite active, and we have another nice collection of catches this month. Stations using the Wellsville address have been dominating the bands of late, but four maildrops are announced by stations reported here: PO Box 452, Wellsville, NY 14895; PO Box 25302, Pittsburgh, PA 15242; PO Box 146, Stoneham, MA 02180; and PO Box 293, Merlin, Ontario N0P IWO.

East Coast Music Radio,- 7415 at 0200. Dr. Lobotomy, who has run **WGNK, WARI,** and **Radio Free New England** during the 1990's, is also heard with Pirate Pete on this new rock station. Addr: Wellsville. (George Zeller, Cleveland, OH)

EBO Radio- 7415 at 0100. Uncle Billy's new station mixes various rock, reggae, classical, and country music selections with commentary from the Boundary Street Country Club in Frogmore, South Carolina. Addr: Wellsville. (Peter Stawicki, Norman, OK, Michael Schmehl, Reading, PA, and many others)

Lobotomy Radio Network- 7413 at 0230. So far this one has not been widely heard, but its male announcer programs a rock format. It obviously may be associated with **WARI's** Dr. Lobotomy. Addr: unknown so far. (Pat Murphy, Chesapeake, VA)

North Coast Jersey Radio- 7412 at 0230. This one initially tested in September, but its format plans were unclear at press time. Addr: Merlin. (Zeller, OH)

Pirate Radio Boston- 7413 at 0245. This rock station was originally relayed via **CSIC,** but it now uses its own transmitter. It verifies rapidly, although only some lucky DXers have received the particular card pictured this month. Addr: Stoneham. (Schmehl, PA)

Radio Free America- 7415 at 0145. A new station late this summer, this one provides a clever parody of Tom Valentine's nightly **WWCR** talk show. it appears that **WARI's** transmitter relayed this broadcast. Addr: Wellsville. (Alan Masyga, Winona, MN and Murphy, VA)

Radio Free Euphoria- 7416 at 01 15. Another new station with a pro-drug philosophy, Euphoria also features 1960's rock and political commentary. Addr: Wellsville. (Robert Ross, ONT, Schmehl, PA, and Murphy, VA)

Radio North Coast International- 7415 at 01 30. It is not clear if this recently reported version of RNCI is a reincarnation of Captain Willy's popular 1980's station. It probably isn't. Addr: none announced. (Masyga, MN)

Voice of the Night- 7415 at 0015. Lad, a lingering nuisance on the bands, still pops up occasionally with his "Rock and Roll Radio" intentional jamming interference. Some have speculated that a multi-pirate Labor Day weekend collage of stations, including **Midnite Radio, WGBR,** and others, came from a VOTN relay. Addr: Pittsburgh. (Radio Animal, NE)

Voice of "Bob"- 7415 at 0115. The Church of the Subgenius in Dallas, Texas, was active on several summer evenings, sometimes via relays by other stations like **EBO Radio.** They've been verifying much faster than they did in the 1980's. Addr: Wellsville. (Scott Krauss, Cleveland, OH)

WEED- 7415 at 0300. A cleverly produced pro-marijuana station that mixes rock with drug humor. Addr: Unfortunately still none. (Murphy, VA)

WKIK- 7415 at 0045. Another new rock station that announces a Jacksonville, Florida, location. Their male announcer falsely claims station sponsorship by *ACE*. Addr: none announced. (Murphy, VA)

WRMR- 1620 at 0300. This rock station says that it's from Monticello, NY. Medium wave pirates will be heard better for the next few months as winter propagation returns. Addr: none, but verifies phoned reports to (914) 434-2587. (Murphy, VA)

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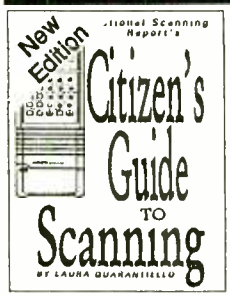

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Jack Albert

On the Weird Side

I like to log anything that sounds weird, such as signals that don't normally produce text on the monitor screen and don't sound like FSK or RTTY. I logged such signals a few years ago when no one was able to copy Piccolo. So whenever you hear something strange, log it! Today's "HF Weirdness" could be tomorrow's hobby!

Jammers

There is a mistaken tendency by hobbyists to shrug off any strange sounds on HF as jammers. I remember, a few years ago, talking to a ham on two meters. He told me that "woodpeckers" (sometimes called OTHR—over the horizon radar) was used to jam the ham bands.

Well, forget all that. I want you to hear the typical "jammer" so that you won't confuse it with other signals. For the past several months, in the evenings, there has been a sweeping signal on 9950 kHz, believed to be Iraq jamming a VOA broadcast. Hopefully it will still be on the air by the time this gets into print.

Whistlers

I and other followers of the weird and wonderful have been copying signals that sound like whistles. I heard it on 6724 kHz and a somewhat different sounding whistler on 8777 and 13,156 kHz. The latter two frequencies are used by the Navy.

Bob Grove believed the signal was a new type of jammer but Tim Tyler from Michigan believes that the whistler on 6724 is simply a defective VOX on a transmitter link.

When I listened, I was able to hear some sort of data superimposed on the signal. It almost sounded like the noise you hear when your computer interferes with your radio. I turned off all the computers in the house just in case—I've been fooled before.

Beacons and Others

A transmission on 13,089 around 0100 UTC had a two tone pulsing signal. I wasn't able to figure that one out. The signal was only there for a few days and I haven't heard it since.

I also found what I believe is frequency hopping on 10,160 and spread spectrum 8972 kHz, but I don't have a spectrum analyzer to verify those guesses.

Congratulations

... to Jamie Cox of Melbourne, FL, for being the first to correctly decipher September's crypto quote. Jamie was awarded a copy of the Klingenfuss *Guide to Radioteletype*.

RTTY Log

We give credit this month to Jason Berri, an editor for *Shortwave Radio Today*, the SPEEDX club publication, for the following excerpts from his superb list. The unabridged version is listed in the MT BBS' Reading RTTY conference, or send email to Jason for more info on SPEEDX or the archive to berri@arecibo.aero.org.

This list should keep you busy through the winter months! NNN

RRTY List

FREQ	UTC	CALL	LOC	S/BR	COMMENT
05117.5	0309	TYE	Benin	425/50	ASECNA RY test tape
06835.0	0354	GFL22	UK	425/50	coded weather
07428.5	2357	????	Argentina	850/50	TELAM Spanish news
07535.0	1730	AXI33	Australia	FAX/120	Wx map of NW Australia
07776.5	0320	OST33	Belgium	SITOR-B	170/100 Dutch news,
07810.0	0633	DFZG	Yugoslavia	425/75	MFA w/TANJUG news
09041.	5 0414	5YE	Kenya	850/100	coded weather
09155.0	0702	SNN299	Poland	300/75	Polish diplo news/tfc
10150.0	2213	SUA246	Egypt	425/75	MENA news
10258.0	2323	NSS	USA	VFT 50	B06 AP and UPI nx items
10536.0	0122	CFH	Canada	850/75	Coded wx
10542.2	0713	CSY	Azores	850/50	coded aero weather
10580.0	1019	HMF46	N. Korea	425/50	KCNA English news
10610.0	2255	SUA251	Egypt	425/75	MENA English news
10893.5	0002	LRB39	Argentina	850/50	TELAM Spanish news
11118.8	2305	AFS	USA	ISB	850/75 weather data
11480.0	2230	????	Argentina	Fac	576/60 press pix
11544.0	0654	RFLI	Martinique	ARQ-E3	96 clr tfc to RFHIB
11638.1	0427	DDK8	Germany	425/50	Hamburg Meteo coded wx
12175.0	2240	HMF42	N. Korea	250/50	KCNA English news
12578.5	2042	UMV	Russia	200/50	Russian ship telexes
12579.0	0340	NMO	Hawaii	SITOR-B	messages
12579.0	0150	NMF	USA	SITOR-B	transmission schedule
12820.0	0518		SAG	Sweden	SITOR-B Swedish nx, ship tfc
13348.6	0100	DGN43H1	Germany	FEC-A	425/96 PIAB news
13397.0	0556	DFZG	Yugoslavia	425/75	TANJUG news
13442.1	0627	YZJ5	Yugoslavia	425/50	English news
13545.3	1350	LBL1	Lebanon	SITOR-A	170/100 UN forces clear
13580.0	0405	HMF36	N. Korea	250/50	KCNA English news
13581.2	2225	HBD46	Cuba	SITOR-A	Swiss Emb. 5L to 2225*
13997.0	0015	STK	Sudan	425/50	RY's
14367.0	1012	BZP54	China	425/75	XINHUA RY's
14498.0	0235	SUC	Egypt	850/50	coded weather
14508.4	2210	D4B	Cape Verde	1050/50	aero weather
14567.5	0518	HMF32	N. Korea	425/50	KCNA English news
14572.9	1658	5AQ70	Libya	425/50	JANA news
14719.0	0015	OST53	Belgium	SITOR-B	traffic list
14721.5	0540	OST53	Belgium	SITOR-B	tfc list, telex
14800.0	1340	3VA71	Tunisia	600/50	TAP French news
14817.5	1311	????	????	SITOR-A	170/100 5L coded groups
14872.0	1530	????	????	50/50	Spanish news
14880.0	0605	JMG4	Japan	850/50	coded weather
14913.7	2209	????	USA	SITOR-A	170/100 Egypt Emb.
14926.7	2130	RFTJ	Senegal	ARQ-E3	400/48 clr tfc to Paris
14928.0	1755	CLN452	Cuba	425/50	PL req. subscriber rpts
14932.0	0951	????	Algeria	850/50	APS Arabic news
15752.7	1650	CNM66X2	Morocco	425/50	MAP French news
15752.7	1215	CNM66X2	Morocco	425/50	MAP English news
16297.5	0605	DFZG	Yugoslavia	425/75	MFA w/TANJUG news
16348.0	1911	CLN530	Cuba	425/50	Prensa Latina Spanish nx
16817.0	224	WCC	USA	SITOR-B	170/100 traffic list
16874.4	2040	CLP45	Angola	500/50	Cuban Emb. 5L/clr tfc
17181.0	1435	UDH	Latvia	170/50	English traffic
17197.4	1323	LOR	Argentina	170/100	5L groups
17454.0	2120	DFZG	Yugoslavia	425/75	MFA clr/encrypt. tfc
17553.2	2013	RFTJF	Cote d'Iv.	ARQ-E3	192 mil tfc w/mni Afr stns
17592.0	1953	HZN49	Saudi Arab.	850/100	aero weather
18055.0	1427	DFZG	Yugoslavia	425/75	MFA w/TANJUG nx items
18272.4	2049	HBD46	Cuba	SITOR-A	5L gps, clr diplo tfc
18498.3	1200	CNM80X11	Morocco	425/50	MAP English news
18527.9	2100	????	????	SITOR-A	French telexes
18630.8	2130	CLP1	Cuba	500/50	diplo tfc for CLP8 Guyana
18648.5	1459	SPW	Poland	SITOR-B	170/100 blind tfc to SQOA1
18810.0	1933	SAM	Sweden	SWED-ARQ	425/100 MFA clear tfc
18874.0	0632	BZR68	China	425/75	RY's, into English nx
19013.5	1525	OST63	Belgium	SITOR-B	170/100 traffic list
19048.7	0213	RFFA	France	ARQ-E3	400/192 clear traffic
19185.0	2034	CLP1	Cuba	500/50	diplo tfc in clr
19313.0	1225	????	????	SITOR-A	clr English traffic
19576.0	1540	ORI59	Belgium	ARQ-M2	350/96 circuit w/Congo
19592.0	1751	IRR35	Italy	425/50	ANSA Italian news
19720.3	1148	RMP	Russia	200/50	Russian telexes
19720.3	1148	RMP	Russia	200/50	Russian ship telexes
19821.5	1456	4UZ	Switz.	SITOR-A	170/100 UN tfc in English
19860.3	1618	MTO	UK	850/75	Letter/number combos
19918.5	1405	???? ?	???	SITOR-A	170/100 mbx system EE
19928.5	1345	OEC	Austria	ARQ-S6	170/96 APA English news
19980.0	1502	9BC33	Iran	425/50	IRNA English news
20022.4	1430	DGU20H3	Germany	FEC-A	425/96 PIAB w/EE/FF/GG nx
20085.0	1030	ISX20	Italy	425/50	ANSA English news
20086.3	0505	RFVA	France	ARQ-E3	850/100 clr mil tfc
20101.7	1405	????	Egypt	SITOR-A	170/100 MFA with traffic
20132.0	1423	DFZG	Yugoslavia	425/75	Diplo tfc/news
20204.0	1350	YZJ	Yugoslavia	425/50	TANJUG English news
20238.3	1949	PWN33	Brasil	850/75	calling PWBL
20320.0	1740	GXQ	UK	ARQ-M2	VFT 96/D3 idling
20321.6	0538	IPG20	Italy	SITOR-A	MFA with 5L groups
20348.5	1411	9RE203	Zaire	ARQ-M2	400/96 Ch.A telex
20348.8	0224	CCS	Chile	900/50	meteo tfc for CCAR
20372.0	1514	IRS23	Italy	425/50	ANSA English news
20385.1	1743	RFFX	France	ARQ-E	400/72 5L groups
20402.3	1939	YWN1	Venezuela	850/75	tfc for CXR Uruguay
20404.6	2004	YWM1	Venezuela	850/75	clr telexes for OBC Lima
20431.0	0515	????	Zaire	ARQ-M2	96 chB continuous EE/FF
20455.3	2113	CLP1	Cuba	425/50	5L and clear text
20469.0	0030	AXM37	Australia	850/50	Canberra coded wx/FAX
20474.0	1944	CXR	Uruguay	850/75	wkg YWM Maracaibo Naval
20519.8	1825	CLP1	Cuba	500/50	MFA 5L & clear tfc
20584.0	1712	????	????	SITOR-A	170/100 clr telex tfc
20590.2	1336	HBD81	????	SITOR-A	170/100 Swiss Emb 5L
20596.0	1715	HBD20	Germany	SITOR-A	Swiss Emb. clr tfc
20609.5	1325	HBD20	Germany	SITOR-A	170/100 clr traffic
20625.0	1305	OMZ	Czecho.	425/100	MFA clear diplo tfc
20731.3	2027	HDN	Ecuador	850/75	working CCS
20734.0	1638	4UZ	Switz.	SITOR-A	170/100 UNO w/telex
20783.8	1915	CLP1	Cuba	500/50	5L gps to CLP22 Vietnam
20807.6	1900	FDY	France	425/50	LE BRICK GEANT QUE
20834.5	2000	CLP7	Congo	425/50	tfc in clear
20893.3	1811	OMZ	Czecho.	1000/50	MFA clr text, 5L code
20932.8	2206	CLP1	Cuba	425/50	diplo tfc, encryption
20933.5	1450	SOV293B	Poland	SITOR-B	170/100 PAP Polish news
20986.7	1541	SAM	Sweden	SWED-ARQ	100 clear traffic
20988.0	1600	SAM	Sweden	SWED-ARQ	425/100 MFA clr traffic
22377.5	1740	KFS	USA	SITOR-B	170/100 traffic list
22386.5	1245	WCC	USA	SITOR-B	170/100 weather broadcast
22551.7	1705	MTO	UK	850/75	letter/number combos
22888.0	1546	DFZG	Yugoslavia	425/75	MFA diplo traffic
23044.0	1506	CLP1	Cuba	425/50	5L code to CLP8 Guinea
23050.0	1855	CLP67	Iraq	500/75	Cuban Emb. tfc to Habana
23056.5	1650	CLP1	Cuba	425/75	tfc for CLP45 Angola
23355.3	1855	CLP18	Tanzania	500/50	Cuban Emb. diplo tfc
23716.7	0355	RFLI	Martinique	ARQ-E3	400/96 idling
23926.3	1950	CLP22	Vietnam	500/50	Cuban Emb. 5L grps/clr
24790.0	1224	ISX24	Italy	425/50	ANSA English news
24871.8	2248	RFLI	Martinique	ARQ-E3	425/96 CONTROLE DE VOIE
25022.0	1550	????			425/75 Polish tfc
25199.7	2038	????			SITOR-A 2-wy informal chat
25531.1	1937	LOL	Argentina	425/75	RY's

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Have It Your Way!

After fifteen years of sending reception reports, I have spent a considerable amount of time and money on my QSL collection!

To the newcomer, this task may appear overwhelming. If your funds or time are restricted, why not consider this idea:

Specialize in one continent, or perhaps your favorite country. Are you interested in pirate stations, religious broadcasters or the exotic sounds from Indonesia? How about Europe or Asia? Why not collect special commemorative QSLs to mark an important occasion or a special event?

Our utility DXers might collect only ship QSLs, and the AM hobbyists often QSL only their favorite state or region.

Your collection can be as unique as you want to make it!

AUSTRALIA

Radio Australia, 11720 kHz. Full data station letter, without veri signer, and Radio Australia/ Wilderness Society card. Received in 34 days for an English report and 2 IRCs. Station address: 699 Highbury Rd., Glen Waverley 3150, Victoria, Australia. (John S. Carson, Norman, OK) (Frank Hillton, Charleston, SC)

AZORES

Santa Maria PTP Station-CSY, 14497.5 kHz. Full data letter, verified by Chief-Aeronautical Fixed Station. Received in 71 days for a utility report of RTTY traffic, and 2 IRCs. Station address: Aeroportos e Navegacao Aerea ana e.p., Servicos de Trafego Aero do Atlantico, Aeroporto Santa Maria, 9580 Vila do Porto, Azores. (Nagl Martin, Austrian DX Club)

CHINA

Voice of the Strait, 6170 kHz, Guizhou PBS 3260 kHz, Voice of Pujiang 3280 kHz. Three full data cards via Radio Beijing English Service. Received for English reception reports while stationed on Okinawa. QSL address: c/o Radio Beijing, P.O. Box 1093, Beijing, China. (Mike Hardester, Jacksonville, NC)

CYPRUS

Cyprus Broadcasting Corp., 9770 kHz, Large full data color scenery card, verified by Director General. Received in 39 days for an English report, 2 IRCs, and a souvenir postcard. Station address: P.O. Box 4824, Nicosia, Cyprus. (GVH)

DENMARK

Lyngby Radio-OXZ 6, 12916.5 kHz. Full data QSL card, signed by Erling Knudsen. Station information booklet included. Received in 10 days for a utility report of CW traffic, and 1 IRC. Station address: Telecom A/S, Lyngby Radio, Bagvaerd Mollevej 3, 2800 Lyngby, Denmark. (Martin, Austria)

ECUADOR

HCJB, 9745/15155 kHz. Two full data cards, without veri signers. Received in 5 months for an English report and three U.S. mint stamps. Station address: Casilla 17-01-00691, Quito, Ecuador. (Carson, OK)

GERMANY

German Naval Station-DHJ 59, 2680.5 kHz. Very nice QSL card, but no station information received, verified by Wege, Kapitanleutnant. Received in 19 days for a German utility report of CW traffic, and 1 IRC. Station address: Marinefermeldetruppe 21, Admiral Armin Zimmermann Kaserne, 2940 Wilhelmshaven, Germany. (Martin, Austria)

GREECE

Helenic Naval Communications Station-SXA24, 6471 kHz. Full data letter signed by CDR. P. Alikiotis, HN-Head of Communications. Received for an English utility report. Station address: Helenic Naval Comm Centre, c/o Hellenic General Naval Staff, Cholargos Athinai, Greece. (Hardester, NC)

LUXEMBOURG

Radio Luxembourg, 15350 kHz. Full data QSL card, without veri signer. Program schedule and station decal included. Received in 20 days for an English report. Station address: CLT-RTL, L-2850 Luxembourg. (Doug Merkel, St. Louis, MO)

NETHERLANDS

Radio Netherlands, 9590 kHz. Full data Solar QSL card, without veri signer. Received in 35 days for an English report. Station address: P.O. Box 222, 1200 JG Hilversum, Netherlands. (Merkel, MO)

PAKISTAN

Pakistan Broadcasting Corp., 11625 kHz. Full data station card verified by Frequency Management. Personal letter received from Syed Abrar Hussain-Senior Broadcast Engineer. Received in 23 days for an English report. Station address: National Broadcasting House, Constitution Avenue, Islamabad, Pakistan. (Gigi Lytle, Lubbock, TX)

PALAU

KHBN-The Voice of Hope-Asia, 9850 kHz. Full data color world map card, verified by Patrick C. Kowalick. Station form letter, program schedule, and souvenir stickers. Received in 13 days for an English report and U.S. mint stamps. Station address: High Adventure Ministries, P.O. Box 7466, Van Nuys, CA 91409. (GVH)

SHIP TRAFFIC

USCGC SPAR-NODV, 8240 kHz. Full data prepared QSL card verified by Stanley Romanowicz-CDT. Received in 10 days for an English utility report and a self-addressed-stamped-envelope. Ship address: Coast Guard Base, 259 High St., Portland, ME 04106-0007. (Ed Rausch, Cedar Grove, NJ)

USCGC ESCANABA-NNAS, 2670 kHz. Full data prepared QSL card, stamped with ship's seal. Verified by Michael Dunn CO. Received in 30 days for an English utility report, and a self-addressed-stamped-envelope. Ship address: 427 Commercial St., Boston, MA 02109-1027. (Rausch, NJ)

FREDRICKSBURG-KNJN, 8291 kHz. Full data prepared QSL card verified by J.C. Burns. Received in 21 days for an English utility report and a self-addressed-stamped-envelope. Ship address: Keystone Shipping Co., 313 Chestnut, Philadelphia, PA 19106. (Rausch, NJ)

M/V KAPITAN SPIVAK-UVRB, 156.65 MHz (Ore-bulk-Oil-Carrier) Full data prepared QSL card, verified by Anatoly Zakharchenko-Radio Officer. Personal letter from Novorossivsk Shipping Company included. Received in 93 days for an English utility report, and one U.S. dollar. Ship address used: Anglo-Soviet Shipping Co., Ltd., 10 Lloyds Ave., London, EC3N 3DA England. Address on envelope: Novorossiysk Shipping Co., 1, UL. Svobody, Novorossiysk, Russia. (Hank Holbrook, Dunkirk, MD) Great QSL! (GVH)

SUN VIKING-LIZA, 12356 kHz (Cruise Ship). Full data prepared QSL card, verified by Radio Officer, stamped with ship's seal. Received in 19 days for an English utility report, and a stamped-self-addressed-envelope. Ship address: c/o Royal Caribbean Cruise Line, 903 South American Way, Miami, FL 33132. (Russ Hill, Oak Oark, MI)

DOCK EXPRESS 20-PDRN, 156.65 MHz (Heavy-Lift Cable Laying Vessel). Full data prepared card verified by Radio Officer, plus postal view cards and a ship pamphlet. Received in 121 days for an English utility report, and one U.S. dollar. Ship address: Dock Express Shipping, B.V., Veerkade 5, Postbus 23109, 3016DE Rotterdam, Holland. (Holbrook, MD)

THAILAND

Bangkok Volmet, 6676 kHz USB. Full data QSL card with illegible veri signer. Three beautiful scenery postcards signed, "Sorry for the long delay." Received in 50 days for a cassette tape, (not returned), and 2 IRCs. Station address: Telecommunications Division, 612 Sukumvit Road, Bangkok 10110, Thailand. (Martin, Austria)

UKRAINE

Radio Kiev, 17690 kHz. Full data Ukranian Art QSL card, without veri signer. Received in 146 days for an English report and one U.S. dollar. Souvenir postcard and program schedule included. Station address: Ulitsa Kreschchatic 26, 252001 Kiev, Ukraine. (Merkel, MO)

QSLing time standard stations can be a challenging specialty.

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

Programs for Shortwave Listeners:

This section, published quarterly, lists programs with news and information about shortwave radio for listeners (RR) denotes reruns of programs broadcast earlier in the week. For brevity, only programs at certain peak listening times are included.

Sundays

0018 Swiss Radio Int'l: Swiss SW Merry-Go-Round
0025 Spanish National Radio: DX Spot
0039 HCJB: DX Party Line
0106 Radio Czechoslovakia: DX Special
0110 Voice of America (am, ca): Communications World
0117 Deutsche Welle: World DX Meeting (monthly)
0125 Spanish National Radio: DX Spot (RR)
0140 Radio Havana Cuba: DX'ers Unlimited
0200 Radio For Peace Int'l: World Of Radio
0200 WRNO: World Of Radio
0215 KSDA, Guam: DX Asiawaves
0218 Swiss Radio Int'l: Swiss SW Merry-Go-Round (RR)
0239 HCJB: DX Party Line (RR)
0240 Radio Romania Int'l: DX Mailbag
0240 Voice of Free China: Radio Corner
0250 Radio Budapest: DX News
0305 WWCR: World Of Radio
0317 Deutsche Welle: World DX Meeting (monthly) (RR)
0330 TWR, Bonaire: Bonaire Wavelengths
0330 Voice of Turkey: DX Corner or Economic Panorama
0340 Radio Havana Cuba: DX'ers Unlimited (RR)
0406 Radio Czechoslovakia: DX Special (RR)
0418 Swiss Radio Int'l: Swiss SW Merry-Go-Round (RR)
0509 HCJB: DX Party Line (RR)
0517 Deutsche Welle: World DX Meeting (monthly) (RR)
0525 Spanish National Radio: DX Spot (RR)
0635 Radio Korea: Shortwave Feedback
1130 Radio Austria Int'l: Austrian Shortwave Panorama
1135 Radio Korea: Shortwave Feedback (RR)
1250 Radio Korea: Shortwave Feedback (RR)
1330 Radio Austria Int'l: Austrian Shortwave Panorama (RR)
1435 Radio Korea: Shortwave Feedback (RR)
1440 FEBC Radio Int'l, Philippines: DX Report
1530 Radio Austria Int'l: Austrian Shortwave Panorama (RR)
1530 Radio Japan: Media Roundup
1635 Radio Korea: Shortwave Feedback (RR)
2300 Radio For Peace Int'l: World Of Radio (RR)
2330 Radio Japan: Media Roundup (RR)

Mondays

0105 Radio Korea: Shortwave Feedback (RR)
0110 Radio Tashkent: DX Program (monthly)
0145 FEBC Radio Int'l, Philippines: DX Dial
0330 Radio Austria Int'l: Austrian Shortwave Panorama (RR)
0340 Voice of Free China: Radio Corner (RR)
0430 Radio New Zealand Int'l: Mailbox (biweekly)
0630 Radio Austria Int'l: Austrian Shortwave Panorama (RR)
0637 BRT, Brussels: Radio World
1307 BRT, Brussels: Radio World (RR)
1320 Kol Israel: DX Corner
1400 Voice of the Mediterranean: DX Program
1435 All India Radio: DX'ers Corner (biweekly)
2320 Radio Vilnius: Feature For DX'ers

Tuesdays

0040 All India Radio: DX'ers Corner (biweekly) (RR)
0600 Voice of the Mediterranean: DX Program (RR)
1130 Radio Australia: Communicator
1343 Radio Sweden: MediaScan (biweekly)
1510 Polish Radio, Warsaw: DX Program
1530 Radio Australia: Communicator (RR)
1613 Radio Sweden: MediaScan (biweekly) (RR)

Wednesdays

0040 Radio Havana Cuba: DX'ers Unlimited (RR)
0113 Radio Sweden: MediaScan (biweekly) (RR)
0213 Radio Sweden: MediaScan (biweekly) (RR)
0240 Radio Havana Cuba: DX'ers Unlimited (RR)
0250 Radio Budapest: DX News (RR)
0300 Radio For Peace Int'l: World Of Radio (RR)
0415 BBC: Waveguide
0440 Radio Havana Cuba: DX'ers Unlimited (RR)
0640 Radio Havana Cuba: DX'ers Unlimited (RR)
1100 Radio For Peace Int'l: World Of Radio (RR)
1210 Polish Radio, Warsaw: DX Program (RR)
1930 RAE Buenos Aires: DX Program

Thursdays

0014 Radio Czechoslovakia: DX Special (RR)
0100 HCJB: Ham Radio Today
0130 BBC: Waveguide (RR)
0150 Radio Netherlands: Media Network
0215 RAE, Buenos Aires: DX Actuality
0300 HCJB: Ham Radio Today (RR)
0314 Radio Czechoslovakia: DX Special (RR)
0530 HCJB: Ham Radio Today (RR)
1350 Radio Netherlands: Media Network (RR)
1540 FEBC Radio Int'l, Philippines: DX Dial (RR)
1550 Radio Netherlands: Media Network (RR)

Fridays

0050 Radio Netherlands: Media Network (RR)
0250 Radio Netherlands: Media Network (RR)
0350 Radio Netherlands: Media Network (RR)
1140 Radio Sofia: Radio Sofia Calling
1350 FEBC Radio Int'l, Philippines: DX Spot
1511 Radio Portugal: DX Program (monthly)
2000 RFPI: World of Radio

Saturdays

0030 Radio Sofia: Radio Sofia Calling (RR)
0120 FEBC Radio Int'l, Philippines: DX Report (RR)
0241 Radio Portugal: DX Program (monthly) (RR)
0250 Radio Budapest: DX World
0340 Radio Sofia: Radio Sofia Calling (RR)
0400 Radio For Peace Int'l: World Of Radio (RR)
0618 Swiss Radio Int'l: Swiss SW Merry-Go-Round (RR)
0635 BRT, Brussels: Radio World (RR)
1118 Swiss Radio Int'l: Swiss SW Merry-Go-Round (RR)
1130 TWR, Bonaire: Bonaire Wavelengths (RR)
1200 Radio For Peace Int'l: World Of Radio (RR)
1210 Voice of America: Communications World (RR)
1305 BRT, Brussels: Radio World (RR)
1318 Swiss Radio Int'l: Swiss SW Merry-Go-Round (RR)
1340 Radio Tashkent: DX Program (monthly) (RR)
1510 Radio Romania Int'l: DX Mailbag (RR)
1518 Swiss Radio Int'l: Swiss SW Merry-Go-Round (RR)
1615 KSDA, Guam: DX Asiawaves (RR)
2110 VOA: Communications World
2330 KSDA, Guam: DX Asiawaves (RR)
2350 Radio Nacional, Bogota: Colombia DX

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English language **shortwave guide**

MT Monitoring Team

P.O. Box 98, Brasstown, NC 28902-0098

Greg Jordan
Frequency Manager
North Carolina
Call 919-661-0095 7-11 pm with updates

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New Mexico

December Deadline: October 30

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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
(7:00 PM EST, 4:00 PM PST)
BBC
CBC, Northern Quebec [S]
Christian Science Monitor
Radio Australia
Radio Beijing
Radio Czechoslovakia
Radio Havana Cuba [T-S]
Radio Luxembourg
Radio Moscow
Radio New Zealand Int'l
Radio Thailand
Radio Vilnius
SBC Radio 1, Singapore
Spanish National Radio
Swiss Radio Int'l
Voice of America
0005
Radio Pyongyang
0010
Radio Beijing*
0030
All India Radio
BRT, Brussels
Christian Science Monitor (SE Asia) [M]
Christian Science Monitor [T-F]
HCJB
Radio Havana Cuba [T-S]
Radio Korea
Radio Netherlands
Voice of America (Americas, East Asia) (Spec English) [T-S]
Voice of America (East Asia) (Special English) [M]
0035
All India Radio (News Service)
0045
Radio Korea (News Service)
0055
WRNO [H, A]

0100 UTC
(8:00 PM EST, 5:00 PM PST)
BBC
CBC, Northern Quebec
Christian Science Monitor
Croatian Radio, Zagreb [M-A]
Deutsche Welle
FEBC Radio Int'l, Philippines
Radio Australia
Radio Belize
Radio Canada Int'l [S-M]
Radio Czechoslovakia
Radio Havana Cuba [T-S]
Radio Japan
Radio Luxembourg
Radio Moscow
Radio New Zealand Int'l
Radio Sofia
Radio Tashkent
Radio Thailand
Radio Ukraine Int'l
Radiotelevisione Italiana
SBC Radio 1, Singapore
Spanish National Radio
Voice of America
Voice of Indonesia
WWCR [T-A]
0115
Radio Havana Cuba* [T-S]
0125
Radio Korea [T-A]
0130
Christian Science Monitor (SE Asia) [M]
Christian Science Monitor [T-F]
Radio Austria Int'l
Radio Havana Cuba [T-S]
Radio Netherlands
Radio New Zealand Int'l [M-F]
Radio Yugoslavia
Voice of Greece [M-A]
0155
Voice of Indonesia
WRNO [W, A]

0200 UTC
(9:00 PM EST, 6:00 PM PST)
BBC
CBC, Northern Quebec [S-M]
Christian Science Monitor
Croatian Radio, Zagreb [S]
Deutsche Welle
Radio Australia
Radio Canada Int'l [T-A]
Radio Havana Cuba [T-S]
Radio Luxembourg
Radio Moscow
Radio New Zealand Int'l [M-A]
Radio Romania Int'l
Radio RSA
Radio Thailand
RAE, Buenos Aires [T-A]
SBC Radio 1, Singapore
Swiss Radio Int'l
Voice of America
Voice of Free China
Voice of Myanmar
WWCR [T-A]
0215
Radio Cairo
Radio Nepal
0230
Christian Science Monitor (Africa, Middle East) [M]
Christian Science Monitor [T-F]
HCJB
Radio Finland [T-A]
Radio Havana Cuba [T-S]
Radio Moscow
Radio Netherlands
Radio Pakistan (Special English)
Radio Portugal [T-A]
Radio Tirana
Radio Yugoslavia
SLBC, Sri Lanka
0245
All India Radio (News Service)

0300 UTC
(10:00 PM EST, 7:00 PM PST)
BBC
CBC, Northern Quebec [T-S]
Christian Science Monitor
Deutsche Welle
Radio Australia
Radio Bahrain
Radio Beijing
Radio Belize
Radio Budapest
Radio Czechoslovakia
Radio Havana Cuba [T-S]
Radio Japan
Radio Luxembourg
Radio Moscow
Radio New Zealand Int'l [M-F]
Radio RSA
Radio Thailand
SBC Radio 1, Singapore
Voice of America
Voice of Free China
WWCR [T-A]
0309
BBC*
0310
Radio Beijing*
0315
Radio Cairo
Radio Havana Cuba* [T-S]
0330
BBC (Africa)*
Christian Science Monitor (Africa, Middle East) [M]
Christian Science Monitor [T-F]
Radio Austria Int'l [T-A]
Radio Bahrain
Radio Havana Cuba [T-S]
Radio Iraq Int'l
Radio Netherlands
Radio Tirana
UAE Radio, Dubai
0340
Voice of Greece [M-A]
0350
Radio Yerevan
0355
Radio Japan [M-F]

0400 UTC
(11:00 PM EST, 8:00 PM PST)
BBC
CBC, Northern Quebec
Christian Science Monitor
Deutsche Welle
Radio Australia
Radio Bahrain
Radio Beijing
Radio Canada Int'l
Radio Czechoslovakia
Radio Havana Cuba [T-S]
Radio Moscow
Radio New Zealand Int'l [T-F]
Radio Romania Int'l
Radio RSA
Radio Sofia
Radio Tanzania
Radio Thailand
SBC Radio 1, Singapore
Swiss Radio Int'l
Voice of America
Voice of Turkey
WRNO [F]
WWCR [T-A]
ZNBC Radio 2, Lusaka
0405
Radio Pyongyang
0410
Radio Beijing*
0425
Radiotelevisione Italiana
0430
BBC (Africa)* [M-A]
Christian Science Monitor (Africa, Asia) [M]
Christian Science Monitor [T-F]
Radio Bahrain
Radio Botswana
Radio Havana Cuba [T-S]
0450
Radio RSA
0455
WYFR (Network) [T-A]

0500 UTC
(12:00 AM EST, 9:00 PM PST)
BBC ("Newshour")
CBC, Northern Quebec [T-S]
Christian Science Monitor
Deutsche Welle
HCJB
Kol Israel
Radio Australia
Radio Bahrain
Radio Japan
Radio Lesotho
Radio Moscow
Radio New Zealand Int'l [W-F]
Radio RSA
Radio Thailand
SBC Radio 1, Singapore
Spanish National Radio
Voice of America
ZNBC Radio, Lusaka
0510
Radio Botswana
0530
Christian Science Monitor (Africa, Asia) [M]
Christian Science Monitor [T-F]
Radio Austria Int'l
Radio Moscow (World Service)
Radio Romania Int'l
Radio Thailand
RTM, Malaysia
UAE Radio, Dubai
Voice of Nigeria
0545
Voice of Nigeria*
0550
Radio For Peace Int'l [T-A]

0600 UTC
(1:00 AM EST, 10:00 PM PST)
BBC
CBC, Northern Quebec
Christian Science Monitor
Deutsche Welle
GBC Radio, Accra*
Radio Australia
Radio Bahrain
Radio Havana Cuba [T-S]
Radio Korea
Radio Moscow
Radio New Zealand Int'l [M-F]
Radio RSA

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newsline

SBC Radio 1, Singapore
Swiss Radio Int'l
Voice of America
WWCR
ZNBC Radio, Lusaka [M-A]
0605
Radio Pyongyang
0609
BBC*
0610
Voice of Malaysia
0615
Radio Canada Int'l [M-F]
0620
Radio Finland [T-A]
0630
BBC (Africa)*
Christian Science Monitor [M-F]
Radio Austria Int'l [T-A]
Radio Havana Cuba [T-S]
Radio Moscow (World Service)
RTV Congolaise, Brazzaville [M-F]
Voice of Nigeria
0645
Radio Romania Int'l
Voice of Nigeria*
0655
Radio Korea [M-F]

0700 UTC
(2:00 AM EST, 11:00 PM PST)
BBC
Christian Science Monitor
GBC Radio, Accra
MBC, Blantyre [M-A]
Radio Australia
Radio Czechoslovakia
Radio Havana Cuba [T-S]
Radio Japan
Radio Moscow
Radio New Zealand Int'l
SBC Radio 1, Singapore
SLBS, Freetown
Voice of Free China
Voice of Myanmar
WWCR [M-A]
0703
Croatian Radio, Zagreb [M-A]
0705
Radio Pyongyang
0715
Radio Havana Cuba* [T-S]
0730
All India Radio (News Service)
BBC (Africa)* [M-A]
BRT, Brussels
Christian Science Monitor [M-F]
HCJB
Radio Austria Int'l
Radio Czechoslovakia
Radio Ghana
Radio Havana Cuba [T-S]
Radio Moscow (World Service)
Radio Netherlands
0745
Radio Finland [T-A]
Radio For Peace Int'l [T-A]
0755
Radio Japan [M-F]

0800 UTC
(3:00 AM EST, 12:00 AM PST)
BBC
Christian Science Monitor
GBC Radio 1, Accra [S]
GBC Radio 2, Accra
MBC, Blantyre [S]
Radio Australia
Radio Bahrain
Radio Korea
Radio Moscow
Radio New Zealand Int'l [M-F]
Radio Pakistan
SBC Radio 1, Singapore
SLBS, Freetown
Voice of Indonesia
ZNBC Radio 2, Lusaka [M-A]
0803
Croatian Radio, Zagreb [S]
0805
Radio Pyongyang
0810
Voice of Malaysia
0830
All India Radio (News Service)
Christian Science Monitor [M-F]
Radio Austria Int'l
Radio Moscow (World Service)
Radio Netherlands
0840
Voice of Greece [M-A]
0850
All India Radio (News Service)
(Special English)
0855
Radio Korea [M-F]
Voice of Indonesia

0900 UTC
(4:00 AM EST, 1:00 AM PST)
BBC
Christian Science Monitor
Deutsche Welle
GBC Radio 1, Accra [M-F]
GBC Radio 2, Accra
MBC, Blantyre M-A]
Radio Australia
Radio Bahrain
Radio Beijing
Radio Finland [T-A]
Radio Japan
Radio Moscow
Radio New Zealand Int'l [S-F]
SBC Radio 1, Singapore
Swiss Radio Int'l
Voice of Nigeria
0903
Croatian Radio, Zagreb [M-A]
0910
Radio Beijing*
0915
Radio Korea (News Service)
0930
All India Radio (News Service)
Christian Science Monitor [M-F]
Deutsche Welle (Africa)* [M-F]
Radio Afghanistan
Radio Finland [T-A]
Radio Moscow
Radio Netherlands
0940
Radio Togo
0950
Radio Pacific Ocean [A]
0955
Radio Japan [M-F]

1000 UTC
(5:00 AM EST, 2:00 AM PST)
All India Radio
BBC
BRT, Brussels [M-A]
Christian Science Monitor
GBC Radio 2, Accra [A]
HCJB
MBC, Blantyre [S]
Radio Australia
Radio Bahrain
Radio Beijing
Radio Moscow
Radio New Zealand Int'l [S-M, W-H]
Radio RSA
Radio Tanzania
SBC Radio 1, Singapore
Voice of America
ZNBC Radio 2, Lusaka [M-A]
1003
Croatian Radio, Zagreb [S]
1010
Radio Beijing*
1030
Christian Science Monitor [M-F]
MBC, Blantyre [M-F]
Radio Austria Int'l [M-F]
Radio Korea
Radio Moscow
RTM, Malaysia
UAE Radio, Dubai
Voice of Nigeria
1040
Voice of Greece [M-A]
1055
All India Radio

1100 UTC
(6:00 AM EST, 3:00 AM PST)
BBC
Christian Science Monitor
Deutsche Welle
GBC Radio, Accra [A-S]
Kol Israel
MBC, Blantyre [A-S]
Radio Australia
Radio Bahrain
Radio Japan
Radio Korea
Radio Moscow
Radio New Zealand Int'l
Radio Pakistan
Radio RSA
SBC Radio 1, Singapore
Swiss Radio Int'l
TWR, Bonaire [M-F]
Voice of America
ZNBC Radio, Lusaka
1105
Radio Pakistan (Special English)
Radio Pyongyang
1110
Radio Belize [T-A]
Radio Botswana [M-F]
1115
Radio Korea (News Service)
Radio Nepal
1125
Radio Belize [M]
Radio Botswana [A-S]
1130
Christian Science Monitor [M-F]
Deutsche Welle* [M-F]
Radio Austria Int'l [M-F]
Radio Czechoslovakia
Radio Lesotho
Radio Moscow
RTM, Malaysia*
1135
All India Radio (News Service)
Radio Thailand
1150
Radio RSA
1155
Radio Japan [M-F]
Radio Korea [M-F]

1200 UTC
(7:00 AM EST, 4:00 AM PST)
BBC
CBC, Northern Quebec [A-S]
Christian Science Monitor
MBC, Blantyre [M-F]
Radio Australia
Radio Bahrain
Radio Beijing
Radio Jordan
Radio Moscow
Radio Nacional do Brasil [M-A]
Radio New Zealand Int'l [S-F]
Radio Sofia
Radio Tashkent
Radio Thailand
RTM, Malaysia
SBC Radio 1, Singapore
SLBC, Sri Lanka
Voice of America
WWCR [M-F]
1210
Radio Beijing*
1215
HCJB [M-F]
Radio Korea
1225
Radio Finland [T-F]
1230
All India Radio (News Service)
BRT, Brussels [S]
Christian Science Monitor [M-F]
Radio Cairo
Radio France Int'l
Radio Moscow
Radio Yugoslavia
SLBC, Sri Lanka
TWR, Bonaire [A-S]
1235
Voice of Greece
1245
SLBC, Sri Lanka
1257
HCJB [M-F]
1258
Africa Number One, Libreville

1300 UTC
(8:00 AM EST, 5:00 AM PST)
BBC ("Newshour")
CBC, Northern Quebec [A-S]
Christian Science Monitor
GBC Radio, Accra
Polish Radio, Warsaw
Radio Australia
Radio Bahrain
Radio Beijing
Radio Belize
Radio Canada Int'l [M-F]
Radio Moscow
Radio New Zealand Int'l
Radio Romania Int'l
Radio Tanzania [A-S]
SBC Radio 1, Singapore
Swiss Radio Int'l
Voice of America
WWCR [M-F]
1303
Croatian Radio, Zagreb
1305
Radio Pyongyang
1310
Radio Beijing*
Radio Korea [M-F]
1320
SLBC, Sri Lanka
1325
HCJB [M-F]
1328
Radio Cairo
1330
All India Radio
Christian Science Monitor [M-F]
FEBC Radio Int'l, Philippines
Radio Austria Int'l [M-F]
Radio Canada Int'l (Asia)
Radio Finland [T-F]
Radio Moscow
Radio Netherlands
Radio Tashkent
RTM, Malaysia
UAE Radio, Dubai
Voice of America (SpecEnglish)
Voice of Turkey
1346
All India Radio [A]
1350
Radio For Peace Int'l [T-A]
1355
WYFR (Network) [M-F]

1400 UTC
(9:00 AM EST, 6:00 AM PST)
BBC
BRT, Brussels [M-A]
CBC, Northern Quebec
Christian Science Monitor
GBC Radio, Accra
Kol Israel
MBC, Blantyre [M-F]
Radio Australia
Radio Bahrain
Radio Beijing
Radio Belize [M-F]
Radio Canada Int'l [S]
Radio Finland [A]
Radio France Int'l
Radio Japan
Radio Jordan
Radio Korea
Radio Moscow
RTM, Malaysia*
SBC Radio 1, Singapore
Voice of America
ZNBC Radio 2, Lusaka [M-F]
1410
Radio Beijing*
1415
Radio Korea (News Service)
Radio Nepal
1425
HCJB [M-F]
1430
All India Radio (News Service)
Christian Science Monitor [M-F]
FEBC Radio Int'l, Philippines
Radio Austria Int'l
Radio Finland [T-F]
Radio Moscow
Radio Netherlands
Radio Romania Int'l
Radio Tirana
1445
BBC (East Asia) (Spec Eng) [M-F]
Voice of Myanmar
1455
All India Radio
Radio Korea [M-F]

1500 UTC
(10:00 AM EST, 7:00 AM PST)
BBC
CBC, Northern Quebec [A-S]
Christian Science Monitor
Deutsche Welle
GBC Radio 2, Accra
National Unity Radio,
Omdurman
Radio Australia
Radio Bahrain
Radio Beijing

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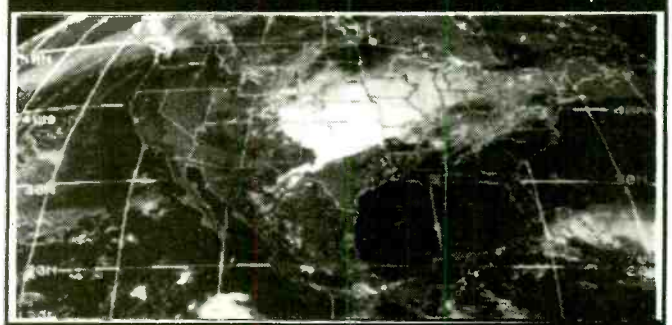

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Radio Canada Int'l [S]
Radio Japan
Radio Moscow
Radio Portugal [M-F]
RTM, Malaysia
SBC Radio 1, Singapore
SLBC, Sri Lanka
Swiss Radio Int'l
Voice of America
Voice of Ethiopia
WWCR [M-F]

1505
Radio Finland [T-A]
Radio Pyongyang

1510
Radio Beijing*

1515
Radio Canada Int'l (Europe)

1530
All India Radio (News Service)
Christian Science Monitor [M-F]
Deutsche Welle* [M-F]
FEBA, Seychelles
FEBC Radio Int'l, Philippines
Radio Austria Int'l [M-F]
Radio Moscow
Radio Netherlands
Voice of Ethiopia
Voice of Greece [M-A]
Voice of Nigeria

1540
Voice of Nigeria*

1545
Radio For Peace Int'l [T-A]
Radio Korea (News Service)

1600 UTC
(11:00 AM EST, 8:00 AM PST)
BBC
CBC, Northern Quebec [A-S]
Christian Science Monitor
Deutsche Welle
GBC Radio 2, Accra
MBC, Blantyre
Polish Radio, Warsaw
Radio Australia
Radio Bahrain
Radio Beijing
Radio Canada Int'l [S]
Radio France Int'l
Radio Jordan
Radio Korea
Radio Lesotho
Radio Moscow
Radio Pakistan
Radio RSA
Radio Tanzania
SBC Radio 1, Singapore
Voice of America
Yemen Radio
ZNBC Radio 2, Lusaka [M-A]

1609
BBC*

1610
Radio Beijing*
Radio Botswana [M-F]

1615
Radio Pakistan (Special English)

1620
Radio Tallinn [M-F]

1630
Christian Science Monitor [M-F]
HCJB [M-F]
Radio Canada Int'l
Radio Moscow
UAE Radio, Dubai
Voice of America (Europe)
(Special English)

1655
Radio Korea [M-F]

1700 UTC
(12:00 PM EST, 9:00 AM PST)
BBC
CBC, Northern Quebec [A]
Christian Science Monitor
GBC Radio 2, Accra
Radio Australia
Radio Bahrain
Radio Beijing
Radio Belize [M-F]
Radio Canada Int'l
Radio Japan
Radio Jordan
Radio Moscow
Radio Pakistan
Radio RSA
SLBC, Sri Lanka
Swiss Radio Int'l
Voice of America

1705
Radio Pyongyang

1710
Radio Beijing*

1715
Radio Korea (News Service)

1725
Radio Surinam Int'l [M-F]

1730
All India Radio (News Service)
Christian Science Monitor [M-F]
Radio Moscow
Radio Netherlands
Radio Romania Int'l
WYFR Network) [A]

1735
WYFR (Network) [M-F]

1740
BBC (Africa)*

1750
Radio RSA

1800 UTC
(1:00 PM EST, 10:00 AM PST)
All India Radio
BBC
CBC, Northern Quebec [A]
Christian Science Monitor
GBC Radio, Accra
Kol Israel
KVOH
MBC, Blantyre
Polish Radio, Warsaw
Radio Afghanistan
Radio Australia
Radio Bahrain
Radio Belize [M-F]
Radio Canada Int'l
Radio Czechoslovakia
Radio Moscow
Radio Nacional do Brasil [M-A]
Radio New Zealand Int'l [S-F]
Radio Tanzania
Voice of America
ZNBC Radio, Lusaka

1815
ZNBC Radio 2, Lusaka*

1825
WYFR (Network) [A]

1830
BSKSA, Riyadh
Christian Science Monitor [M-F]
Radio Austria Int'l
Radio Belize
Radio Kuwait
Radio Mogadishu
Radio Moscow
Radio Netherlands
Radio Sofia
Voice of America (Spec English)

1840
Voice of Greece

1845
BSKSA, Riyadh*
Radio Cote d' Ivoire
Radio Guinea, Conakry

1855
BBC (Africa)* [M-F]

1900 UTC
(2:00 PM EST, 11:00 AM PST)
All India Radio
BBC
BRT, Brussels
CBC, Northern Quebec [M-H]
Christian Science Monitor [M-A]
Deutsche Welle
GBC Radio 2, Accra*
HCJB
KVOH
Radio Australia
Radio Beijing
Radio Canada Int'l [M-F]
Radio Japan
Radio Korea
Radio Moscow
Radio New Zealand Int'l [S-F]
Radio Portugal [M-F]
Radio Romania Int'l
RAE, Buenos Aires [M-F]
SLBS, Freetown
Spanish National Radio
Voice of America

1910
Radio Beijing*
Radio Botswana

1920
Voice of Greece

1930
Christian Science Monitor [M-F]
Deutsche Welle* [M-F]
Polish Radio, Warsaw
Radio Czechoslovakia
Radio Finland [M-F]
Radio Ghana
Radio Moscow
Radio Netherlands
Radio Yugoslavia
Voice of Nigeria

1935
Radiotelevisione Italiana

1945
Radio Togo

1955
BBC (Africa)* [M-F]
Radio Finland
Radio Korea [M-F]
WYFR (Network) [M-A]

2000 UTC
(3:00 PM EST, 12:00 PM PST)
BBC
Christian Science Monitor
GBC Radio, Accra
Kol Israel
KVOH
MBC, Blantyre
Radio Australia
Radio Bahrain
Radio Beijing
Radio Belize [M-F]
Radio Canada Int'l
Radio Havana Cuba [M-A]
Radio Iraq Int'l
Radio Luxembourg
Radio Moscow
Radio New Zealand Int'l [S-F]
Radio Portugal [M-F]
SLBS, Freetown
Swiss Radio Int'l
Voice of America
Voice of Indonesia
Voice of Nigeria
ZNBC Radio 2, Lusaka

2005
Radio Pyongyang

2010
Radio Beijing*

2025
Radio Havana Cuba* [M-A]
Radiotelevisione Italiana

2030
Christian Science Monitor [M-F]
Polish Radio, Warsaw
Radio Havana Cuba [M-A]
Radio Moscow
Radio Nacional de Angola

2045
BSKSA, Riyadh
Radio Korea (News Service)
Radio Sofia

2055
Voice of Indonesia

2100 UTC
(4:00 PM EST, 1:00 PM PST)
All India Radio
BBC ("Newshour")
CBC, Northern Quebec [S-F]
Christian Science Monitor [M-A]
Deutsche Welle
GBC Radio 2, Accra*
KVOH
MBC, Blantyre
Radio Australia
Radio Bahrain
Radio Beijing
Radio Belize [M-F]
Radio Czechoslovakia
Radio Japan
Radio Luxembourg
Radio Moscow
Radio New Zealand Int'l [S-F]
Radio Romania Int'l
SLBS, Freetown
Spanish National Radio
Voice of America
Voice of Turkey
ZNBC Radio 2, Lusaka

2110
Radio Beijing*

2125
WYFR (Network) [M-F]

2130
Christian Science Monitor [M-F]
Radio Austria Int'l
Radio Cairo
Radio Moscow
WYFR (Network) [A]

2145
Radio Korea

2150
Radio For Peace Int'l [M-F]

2200 UTC
(5:00 PM EST, 2:00 PM PST)
All India Radio
BBC
BRT, Brussels
CBC, Northern Quebec [S-F]
Christian Science Monitor
CIQX, Montreal [M-F]
GBC Radio 2, Accra
MBC, Blantyre
Radio Australia
Radio Beijing
Radio Budapest
Radio Canada Int'l
Radio Czechoslovakia
Radio Havana Cuba [M-A]
Radio Luxembourg
Radio Moscow
Radio New Zealand Int'l [S-F]
Radio Tirana
Radio Ukraine Int'l
Radio Yugoslavia
Radiotelevisione Italiana
SBC Radio 1, Singapore
SLBS, Freetown
Swiss Radio Int'l
Voice of America
Voice of Free China

2203
Croatian Radio, Zagreb

2209
BBC*

2210
Radio Beijing*

2225
Radio Havana Cuba* [M-A]

2230
Christian Science Monitor [M-F]
Kol Israel
Radio Finland [M-F]
Radio Havana Cuba [M-A]
Radio Moscow
Radio Vilnius
Voice of America (Spec English)
WYFR (Network) [M-F]

2240
Radio Korea [M-F]

2245
GBC Radio, Accra
Radio Sofia
Radio Yerevan
Voice of Greece

2255
WYFR (Network) [M-A]

2300 UTC
(6:00 PM EST, 3:00 PM PST)
All India Radio
BBC
CBC, Northern Quebec [M-F]
Christian Science Monitor [M-A]
Radio Australia
Radio Belize [M-F]
Radio Canada Int'l
Radio Japan
Radio Luxembourg
Radio Moscow
Radio New Zealand Int'l
RTM, Malaysia
SBC Radio 1, Singapore
Voice of America
Voice of Turkey

2305
Radio Pyongyang

2320
Radio Thailand

2330
Christian Science Monitor [M-F]
Radio Moscow
Radio Nacional, Bogota [A]
RTM, Malaysia*

2340
Radio Yerevan

2345
Radio For Peace Int'l [M-F]
SLBC, Sri Lanka [M]

2355
Radio Japan [M-F]

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SONY Pro-80	$ 370
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English language

shortwave guide

0000 UTC [7:00 PM EST/4:00 PM PST]

FREQUENCIES

0000-0027	Czechoslovakia	7345na 9580na 11990na
0000-0030	Australia	13605pa 15170va 15320va 15365pa 17630as 17750as 17880as
0000-0030	Canada, RCI Montreal	5960am 9755am 13670am
0000-0030 a /var	Croatian Radio via WHRI	7315na
0000-0030	Iran, Islamic Republic	9022am 11790am 15260am
0000-0030 sm	Norway	15165am
0000-0030	Swiss Radio Int'l	6135na 9650na 9885na 12035na 17730na
0000-0030	United Kingdom,BBC London	5965as 5975na 6005af 6175na 6195as 7145as 7325na 9580as 9590na 9915na 11750sa 11945as 11955as 12095na 15070na 15260sa 15360pa 17830as
0000-0045	Bulgaria, Radio Sofia	11660na 11720na 15330na
0000-0050	North Korea	11335na 13760na 15115na
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	China, Radio Beijing	9770na 11715na
0000-0100	Cook Islands	11760pa
0000-0100	Costa Rica, AWR	9725ca 11870ca
0000-0100	Costa Rica, RFPI	7375na 7385na 13630na 15030na
0000-0100	Cuba, RHC Havana	11950am 13660na
0000-0100	Guam, KSDA Guam	15610as
0000-0100	India, All India Radio	9910as 11715as 11745as 15110as 15135as 15145as 17830as
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	11675na 11710va 11780va 11850va 12050va 15290va 15405va 15410va 15425va 15485va 15560va 17560va 17570va 17720na 17860va 17890va 21490na 21505na 21690va
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	7195eu 7250eu 9640eu 10344eu 11520eu 12060na 17605na 17690na
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	6130am 7405am 9455am 9775am 11580am 11695am 15120am 15205am 17820na
0000-0100	USA, WINB Red Lion, Penn.	15145eu
0000-0100	USA, WJCR Upton, Kentucky	7465na 7490na
0000-0100	USA, WRNO New Orleans	7355am
0000-0100	USA, WWCR Nashville	7435na 13815na
0000-0100	USA, WYFR Okeechobee, FL	5985am
0030-0100	Australia	15320va 15365pa 15420pa 17630as 17715pa 17750as 17795pa 17880as 21740pa 21775as
0030-0100 sm	Canada, RCI Montreal	5960am 9755am
0030-0100	Ecuador, HCJB Quito	9745am 15155am 21455am
0030-0100	Netherlands	6020na 6165na 9860as 11655as 11835na 13700as
0030-0100	South Korea, Seoul	15575na
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 WAR/var	Yugoslavia	11870am
0045-0100	South Korea World News	7275as

SELECTED PROGRAMS

Sundays

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 Radio Australia: Book Reading. Serialized readings from popular books.
0035 Radio Beijing: Music From China. Chinese music, from traditional to pop.
0035 Radio Netherlands: Newsline. News analysis from correspondents worldwide.
0045 Radio Korea: News Commentary. Opinion on developments in Korea and worldwide.
0050 Radio Korea: Sites And Sounds. A look at Korea's tourist attractions and industry.
0050 Radio Netherlands: Sounds Interesting. Listener feedback and the sights and sounds of Holland.

Mondays

0015 Radio Beijing: China Anthology. See S 1215.
0025 Radio Beijing: Music Album. See S 1225.
0030 BBC: In Praise Of God. Christian religious services and meditations.
0030 Radio Australia: Just Out. See S 0530.
0035 Radio Netherlands: Happy Station. See S 0135.
0040 Radio Beijing: Listeners' Letterbox. See S 1240.
0045 Radio Korea: Echoes Of Korean Music. See S 0615.

Tuesdays

0015 Radio Beijing: Current Affairs. See M 1215.
0030 BBC: Panel Game. How's your science knowledge? Quiz yourself on "The Litmus Test."
0030 Radio Australia: Music/Information. See M 0130.
0035 Radio Netherlands: Newsline. See S 0035.
0040 Radio Beijing: Learn To Speak Chinese. See M 1240.
0045 Radio Korea: News Commentary. See S 0045.
0050 Radio Korea: Seoul Calling. See M 0620.
0050 Radio Netherlands: Research File. See M 1350.

Wednesdays

0015 Radio Beijing: Current Affairs. See M 1215.
0030 BBC: Omnibus. Topical features on almost any topic, from Dracula to drugs.
0030 Radio Australia: Music/Information. See M 0130.
0035 Radio Netherlands: Newsline. See S 0035.
0040 Radio Beijing: Listeners' Letterbox. See S 1240.
0045 Radio Korea: News Commentary. See S 0045.
0050 Radio Korea: Seoul Calling. See M 0620.
0050 Radio Netherlands: Mirror Images. See T 1450.

Thursdays

0015 Radio Beijing: Current Affairs. See M 1215.
0030 BBC: Comedy/Drama (except 26th: Two Cheers For November). See W 1530.
0030 Radio Australia: Music/Information. See M 0130.
0035 Radio Netherlands: Newsline. See S 0035.
0040 Radio Beijing: Learn To Speak Chinese. See M 1240.
0045 Radio Korea: News Commentary. See S 0045.
0050 Radio Korea: Seoul Calling. See M 0620.
0050 Radio Netherlands: Feature Documentary. See W 1350.

Fridays

0015 Radio Beijing: Current Affairs. See M 1215.
0030 BBC: Music Feature. This month, from Bach to Beethoven —it's "The Story Of Western Music."
0030 Radio Australia: Music/Information. See M 0130.
0035 Radio Netherlands: Newsline. See S 0035.
0040 Radio Beijing: Culture In China. See H 1240.
0045 Radio Korea: News Commentary. See S 0045.
0050 Radio Korea: Seoul Calling. See M 0620.
0050 Radio Netherlands: Media Network. See H 0150.

Saturdays

0015 Radio Beijing: Current Affairs or The Business Show. See F 1215.
0030 BBC: From The Weeklies. A review of the British weekly press.
0030 Radio Australia: Word Of Mouth. Oral histories of Australians.
0035 Radio Netherlands: Newsline. See S 0035.
0040 Radio Beijing: In The Third World. See F 1240.
0045 BBC: Recording Of The Week. See M 0615.
0045 Radio Korea: News Commentary. See S 0045.
0050 Radio Korea: Let's Sing Together. See F 0620.
0050 Radio Netherlands: Rembrandt Express. See F 1350.

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English language

shortwave guide

0100 UTC [8:00 PM EST/5:00 PM PST]

FREQUENCIES

0100-0115	India, All India Radio	9910as	11715as	11745as	15110as
		15135as	15145as	17830as	
0100-0120	Italy, RAI, Rome	9575am	11800am		
0100-0125	Netherlands	6020na	6165na	9860as	11655as
		11835na	13700as		
0100-0127	Czechoslovakia	5930na	7345na	9580na	
0100-0130 twhfa	Canada, RCI Montreal	5960am	9755am		
0100-0130	Laos, National Radio of	7116as			
0100-0130 sm	Norway	9615am			
0100-0130	South Korea	15575om			
0100-0130	Sweden	9685as	11730as		
0100-0130	Uzbekhistan, R. Tashkent	5930as	5995as	7190as	7265as
0100-0150	Germany, Deutsche Welle	6040na	6085na	6145na	9565na
		9700na	11810na	11865na	13610na
		13770na	15105na		
0100-0159 sm	Canada, RCI Montreal	9535am	9755am	11845am	11940am
		13720am			
0100-0200	Australia	13605pa	15240pa	15320va	15365pa
		17630as	17715pa	17750as	17795pa
		17880as	21590as	21740pa	21775as
0100-0200	Australia, ABC Brisbane	4920do	9660do		
0100-0200	Australia, ABC Perth	9610do			
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	Cook Islands	11760pa			
0100-0200	Costa Rica, RFPI	7385na	7385na	13630am	15030am
0100-0200	Cuba, RHC Havana	11950am	13660na		
0100-0200	Ecuador, HCJB Quito	9745am	15155am	21455am	
0100-0200	Indonesia, Voice of	7125as	9675as	11752as	11785as
0100-0200	Japan NHK	5960na	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	New Zealand, RNZI	17770pa			
0100-0200	Philippines, FEBC Manila	15450as			
0100-0200	Russia, Radio Moscow	11710va	11780va	11850va	12050va
		15290va	15405va	15410va	15425va
		15485va	17560va	17560va	17570va
		17655va	17720na	17860va	17890va
		21490na	21505na	21690va	
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	17790va
		21715as			
0100-0200	USA, CSMonitor Boston	7395na	9850af	13760na	17555as
0100-0200 sa	USA, CSMonitor Boston	17865as			
0100-0200	USA, KTBN Salt Lake City	7510na			
0100-0200	USA, KVOH Los Angeles	17775am			
0100-0200	USA, VOA Washington	5995am	6130am	7405am	9455am
		9775am	11580am	15120am	15205am
		7115as	7205as	9740as	11705as
		15250as	17735as	21550as	
0100-0200	USA, WHRI Noblesville	7315am			
0100-0200	USA, WINB Red Lion, Penn.	15145na			
0100-0200	USA, WJCR Upton, Kentucky		7465na	7490na	
0100-0200	USA, WRNO New Orleans	7355na			
0100-0200	USA, WWCR Nashville	7435na	13815na		
0100-0200	USA, WYFR Okeechobee, FL		5985am	9505am	15440am
0130-0150 mtwhfa	Greece, Voice of	9395na	9420na	11645na	
0130-0155	Finland, YLE	11755na	15185na		
0130-0200	Austria, ORF Vienna	9875na	13730na		
0130-0200	Netherlands	9860as	11655as	13700as	
0130-0200	UAE Radio, Dubai	11795na	13695eu	15320eu	15435eu
0130-0200 WAR/var	Yugoslavia	11870na			
0145-0200	Vatican Radio	9650as	11935as		

SELECTED PROGRAMS

Sundays

0101 BBC: Play Of The Week. Hourlong productions from the BBC's crack drama team.
0105 Radio Korea: From Us To You. Listener letters, questions, and comments, interspersed with Korean music.
0130 Radio Australia: At Your Request. Dick Paterson plays music nrequests.
0135 Radio Netherlands: Happy Station. Tom Meyer's family entertainment program with music and letters.

Mondays

0101 BBC: Feature/Drama. Topical programming on various subjects.
0105 Radio Korea: Shortwave Feedback. See S 0635.
0130 Radio Australia: Music/Information. Overnight music, interspersed with news.
0135 Radio Netherlands: East Of Edam. See S 0235.
0145 BBC: Feature. The life story of violinist Guiseppe Tartini is the subject of "The Devil's Trill" (2nd).

Tuesdays

0105 BBC: Outlook. See M 1405.
0110 Radio Korea: Tales From Korea's Past. See M 0640.
0130 BBC: Folk In Britain. Ian Anderson is the host, folk music is the fare.
0130 Radio Australia: Music/Information. See M 0130.
0135 Radio Netherlands: Newsline. See S 0035.
0145 BBC: Health Matters. New medical developments and methods of keeping fit.
0150 Radio Netherlands: No Boundaries. Carl Joseph looks at development issues worldwide.

Wednesdays

0105 BBC: Outlook. See M 1405.
0110 Radio Korea: Korean Cultural Variety. See T 0640.
0130 BBC: Talks. Michael Rosen reads listener selections on "Poems By Post" (through December 23rd).
0130 Radio Australia: Music/Information. See M 0130.
0135 Radio Netherlands: Newsline. See S 0035.
0145 BBC: Country Style. David Allan profiles the country music scene on both sides of the pond.
0150 Radio Netherlands: Music Documentary. Topical programming on various musical subjects.

Thursdays

0105 BBC: Outlook. See M 1405.
0110 Radio Korea: Pulse Of Korea. See W 0640.
0130 BBC: Waveguide. See W 0415.
0130 Radio Australia: Music/Information. See M 0130.
0135 Radio Netherlands: Newsline. See S 0035.
0140 BBC: Book Choice. See W 0425.
0145 BBC: The Farming World. Agricultural news and technological innovations for farmers.
0150 Radio Netherlands: Media Network. Jonathan Marks surveys communications developments worldwide.

Fridays

0105 BBC: Outlook. See M 1405.
0110 Radio Korea: Forward To Reunification. See H 0640.
0130 BBC: Seven Seas. Malcolm Billings presents news about shipsand the sea.
0130 Radio Australia: Music/Information. See M 0130.
0135 Radio Netherlands: Newsline. See S 0035.
0145 BBC: Global Concerns. An update on environmental i issues.
0150 Radio Netherlands: Research File. See M 1350.

Saturdays

0105 BBC: Outlook. See M 1405.
0110 Radio Korea: Let's Learn Korean! See F 0640.
0130 BBC: Short Story. See S 0430.
0130 Radio Australia: Music/Information. See M 0130.
0135 Radio Netherlands: Newsline. See S 0035.
0145 BBC: Jazz Now And Then. George Reid presents a weekly mix of new releases, old tracks, and interviews.
0150 Radio Netherlands: Feature Documentary. See W 1350.

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0200 UTC [9:00 PM EST/6:00 PM PST]

FREQUENCIES

0200-0225	Netherlands	9860as	11655as	13700as	
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
0200-0230	United Kingdom,BBC London	5975na	6005sa	6175na	6195eu
		7135as	7325na	9410eu	9580as
		9590na	9670me	9915na	11750sa
		11955as	12095va	15260sa	15280as
		15360pa	15380as	17790as	21715as
0200-0230	USA, VOA Washington	5995am	7405am	9775am	11580am
		11695am	15120am	15205am	
0200-0250	Germany, Deutsche Welle	7285as	9615as	9690as	11945as
		11965as	15235as	15560as	
0200-0259 twhfa	Canada, RCI Montreal	9535sa	9755sa	11845sa	11940sa
		13720sa			
0200-0300 twhf	Argentina,RAE BuenosAires	11710am			
0200-0300	Australia	15240pa	15320va	15365pa	17630as
		17715pa	17750pa	17795pa	17880as
		21525as	21590as	21740pa	21775as
0200-0300	Australia, ABC Brisbane	4920do	9660do		
0200-0300	Australia, ABC Perth	6070do	9610do		
0200-0300	Canada, CFCX Montreal	6005do			
0200-0300	Canada, CFRX Toronto	6070do			
0200-0300	Canada, CFVP Calgary	6030do			
0200-0300	Canada, CHNX Halifax	6130do			
0200-0300	Canada, CKZU Vancouver	6160do			
0200-0300	Canada, RCI Montreal	6035eu	6125eu	7230eu	7260eu
		9650eu			
0200-0300	Cook Islands	11760pa			
0200-0300	Costa Rica, RFPI	7375na	7385na	13630na	
0200-0300	Cuba, RHC Havana	11950na	13660na		
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	New Zealand, RNZI	17770pa			
0200-0300	Romania, R.Romania Int'l	5990am	6155am	9510am	9570am
		11830am	11940am		
0200-0300	Russia, Radio Moscow	9470va	9530va	9685va	11710va
		11850va	12050va	15290va	15405va
		15410va	15425va	15560va	17560va
		17720na	17730va	17850va	17860va
		17890va	21490na	21505na	21690va
0200-0300	Sierra Leone, SLBS	3316do			
0200-0300	Singapore, SBC1	5010do	5052do	11940do	
0200-0300	South Africa, Radio RSA	7270af			
0200-0300	Taiwan, V. of Free China,	5950na	9680na	9765pa	11740ca
		11860as	15345as		
0200-0300	Thailand	4830as	9655as	11905as	
0200-0300	USA, CSMonitor Boston	9350af	9455na	13760sa	
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	15120am
		15205am	15250as	17735as	17740as
		21550as			
0200-0300	USA, WHRI Noblesville	7315na			
0200-0300	USA, WINB Red Lion, Penn.	15145eu			
0200-0300	USA, WJCR Upton, Kentucky		7465na	7490na	
0200-0300 vl	USA, WRNO New Orleans	7355am			
0200-0300	USA, WWCR Nashville	5920na	7435am		
0200-0300	USA, WYFR Okeechobee, FL		5985am	9505am	15440am
0230-0245	Pakistan	9515as	15115as	17640as	21730as
0230-0300	Albania, Radio Tirana	9580na 1	1825na		
0230-0300 s	Kenya, Voice of	4935do			
0230-0300	Netherlands	9860as	11655as	13700as	
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	17790va	21715as
0245-0300 varies	Armenia, Radio Yerevan	11675na	13645am	15580na	
0250-0300	Vatican Radio	7305na	9605na	11620na	
0255-0300	Bonaire, TWR Bonaire	11930am			

SELECTED PROGRAMS

Sundays

0230 BBC: Feature. Among this month's programs, take a look at Billy Graham and friends in "The Evangelicals" (1st, 8th).
0230 Radio Australia: Music Of Radio Australia. Selections by Radio Australia announcers.
0235 Radio Netherlands: East Of Edam. Dutch and international stories, music, and arts features.

Mondays

0230 BBC: Composer Of The Month. Profiles of famous classical-music composers.
0230 Radio Australia: Music/Information. See M 0130.
0235 Radio Netherlands: Happy Station. See S 0135.

Tuesdays

0230 BBC: Quiz. See M 1215.
0230 Radio Australia: Music/Information. See M 0130.
0235 Radio Netherlands: Newsline. See S 0035.
0250 Radio Netherlands: Research File. See M 1350.

Wednesdays

0230 BBC: Development '92. Aid and development issues for developing nations.
0230 Radio Australia: Book Reading. See S 0030.
0235 Radio Netherlands: Newsline. See S 0035.
0250 Radio Netherlands: Mirror Images. See T 1450.

Thursdays

0230 BBC: Sports International. Live play-by-play, interviews, features, and discussions from the sports world.
0230 Radio Australia: Music/Information. See M 0130.
0235 Radio Netherlands: Newsline. See S 0035.
0250 Radio Netherlands: Feature Documentary. See W 1350.

Fridays

0230 BBC: Drama. See H 1130.
0230 Radio Australia: Music/Information. See M 0130.
0235 Radio Netherlands: Newsline. See S 0035.
0250 Radio Netherlands: Media Network. See H 0150.

Saturdays

0230 BBC: People And Politics. The background to the British political scene.
0230 Radio Australia: Music Of Radio Australia. See S 0230.
0235 Radio Netherlands: Newsline. See S 0035.
0250 Radio Netherlands: Rembrandt Express. See F 1350.

One of Radio Beijing's studios. Radio Beijing is being renamed China Radio International.

www.americanradiohistory.com

English language

shortwave guide

0300 UTC [10:00 PM EST/7:00 PM PST]

FREQUENCIES

0300-0315	Vatican Radio	7305na	9605na	11620na	
0300-0325	Netherlands	9860as	11655as	13700as	
0300-0330	Czechoslovakia	5930na	7345na	9540na	
0300-0330	Egypt, Radio Cairo	9475na	9675na		
0300-0330	Japan NHK	5960am	15230va	15325am	17810am
		17825am	21610am		
0300-0330	Phillipines, Manila	17760pa	17840pa	21580pa	
0300-0330	United Kingdom,BBC London	3255af	5975na	6005va	6175na
		6180eu	6190af	6195eu	7135me
		7325na	9410eu	9600af	9670me
		9915na	11730af	11760me	11955me
		12095eu	15070af		
0300-0330	United Kingdom,BBC London	11750sa	15260sa	15280pa	15310as
		21715va			
0300-0330	USA, VOA Washington	5965eu	11905me	15160me	17810eu
		17895me			
0300-0350	Germany, Deutsche Welle	6085na	6145na	9640na	9700na
		11810na	11890na	13610na	13770na
		15205na			
0300-0400	Australia	15240pa	15320va	15365pa	17630as
		17670as	17715pa	17750as	17795pa
		17880as	21525as	21590as	21740pa
		21775as			
0300-0400	Australia, ABC Brisbane	4920do	9660do		
0300-0400	Australia, ABC Perth	9610do			
0300-0400	Bonaire, TWR Bonaire	9535am	11930am		
0300-0400	Bulgaria, Radio Sofia	9850af	11720af	11765af	15160na
0300-0400	Canada, CFCX Montreal	6005do			
0300-0400	Canada, CFRX Toronto	6070do			
0300-0400	Canada, CFVP Calgary	6030do			
0300-0400	Canada, CHNX Halifax	6130do			
0300-0400	Canada, CKZU Vancouver	6160do			
0300-0400	China, Radio Beijing	9690na	9770na	11715na	
0300-0400	Cook Islands	11760pa			
0300-0400	Costa Rica, RFPI	7375na	13630na	15030na	
0300-0400	Costa Rica, TIFC	5055ca			
0300-0400	Cuba, RHC Havana	11950am	13710na		
0300-0400	Ecuador, HCJB Quito	9745am	15155am		
0300-0400	Guatemala, Radio Cultural	3300do			
0300-0400	Honduras, HRPC Luz y Vida	3250ca			
0300-0400	Kenya, Voice of	4935do			
0300-0400	Luxembourg, RTL	15350va			
0300-0400 smtwh	Malaysia, RTM Radio 4	7295do			
0300-0400	New Zealand, RNZI	17770pa			
0300-0400	Russia, Radio Moscow	9470va	9685va	11675va	11710va
		11850va	12030na	12050va	15405va
		15425va	17570va	17605va	17665va
		17730na	17735va	17850na	17860va
		17890va	21490na	21505na	21690va
0300-0400	Sierra Leone, SLBS	3316do			
0300-0400	Singapore, SBC1	5010do	5052do	11940do	
0300-0400	South Africa, Radio RSA	5960af	7270af		
0300-0400	Sri Lanka B'casting Corp.	9720as	15425as		
0300-0400	Taiwan, V. of Free China,	5950na	9680na	9765as	11745as
		15345na			
0300-0400	Tanzania	5985af	9685af	11765af	
0300-0400	Thailand	4830as	9655as	11905as	
0300-0400	Turkey, Voice of	9445na			
0300-0400	USA, CSMonitor Boston	9350af	9455na	13760sa	
0300-0400 sa	USA, CSMonitor Boston	17555as	17865as		
0300-0400	USA, KTBN Salt Lake City	7510am			
0300-0400	USA, KVOH Los Angeles	9785sa			
0300-0400	USA, VOA Washington	6035af	7265af	7280af	7405af
		9575af	11835af	11940af	15115af
		17715af 21600af			
0300-0400	USA, WHRI Noblesville	7315na			
0300-0400	USA, WJCR Upton, Kentucky		7465na	7490na	
0300-0400 vl, irr	USA, WRNO New Orleans	7395am			
0300-0400	USA, WWCR Nashville	5920na	7435na		
0300-0400	USA, WYFR Okeechobee, FL		5985am	9505am	
0330-0400	Albania, Radio Tirana	9580na	11825na		
0330-0400	Austria, ORF Vienna	9870ca	13730am		
0330-0400	Japan NHK	11870na	17810na		
0330-0400	Netherlands	9590na	11720na		
0330-0400	UAE Radio, Dubai	11945na	13675na	15400na	15435na
0330-0400	United Kingdom,BBC London	3255af	5975na	6005af	6175va
		6180eu	6190af	6195eu	9410eu
		9600af	9915na	11740af	11760me
		11955me	12095eu	15280as	15310as
		15420af	17885af	21715as	
0340-0350 mtwhfa	Greece, Voice of	9395na	9420na	11645na	

SELECTED PROGRAMS

Sundays

0313 Radio Australia: Back Page. Brendon Telfer looks at sports in the Asian/Pacific region.
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 Radio Australia: Monitor. A look at the impact of science and technology on society.
0335 Radio Beijing: Music From China. See S 0035.
0335 Radio Netherlands: East Of Edam. See S 0235.
0350 BBC: Write On... Listener letters, opinions, and questions.

Mondays

0313 Radio Australia: Sports Report. See S 1313.
0315 BBC: Sports Roundup. See S 0315.
0315 Radio Beijing: China Anthology. See S 1215.
0325 Radio Beijing: Music Album. See S 1225.
0330 BBC: Anything Goes. See S 1430.
0330 Radio Australia: Music/Information. See M 0130.
0335 Radio Netherlands: Happy Station. See S 0135.
0340 Radio Beijing: Listeners' Letterbox. See S 1240.

Tuesdays

0313 Radio Australia: Sports Report. See S 1313.
0315 BBC: Sports Roundup. See S 0315.
0315 Radio Beijing: Current Affairs. See M 1215.
0330 BBC: John Peel. Newly released albums and singles from the contemporary music scene.
0330 Radio Australia: Music/Information. See M 0130.
0335 Radio Netherlands: Newsline. See S 0035.
0340 Radio Beijing: Learn To Speak Chinese. See M 1240.
0350 Radio Netherlands: Research File. See M 1350.

Wednesdays

0313 Radio Australia: Sports Report. See S 1313.
0315 BBC: Sports Roundup. See S 0315.
0315 Radio Beijing: Current Affairs. See M 1215.
0330 BBC: Discovery. An in-depth look at scientific research.
0330 Radio Australia: Music/Information. See M 0130.
0335 Radio Netherlands: Newsline. See S 0035.
0340 Radio Beijing: Listeners' Letterbox. See S 1240.
0350 Radio Netherlands: Mirror Images. See T 1450.

Thursdays

0313 Radio Australia: Sports Report. See S 1313.
0315 BBC: Sports Roundup. See 0315.
0315 Radio Beijing: Current Affairs. See M 1215.
0330 BBC: Assignment. A weekly examination of topical issues, from Batman to bandits.
0330 Radio Australia: Music/Information. See M 0130.
0335 Radio Netherlands: Newsline. See S 0035.
0340 Radio Beijing: Learn To Speak Chinese. See M 1240.
0350 Radio Netherlands: Feature Documentary. See W 1350.

Fridays

0313 Radio Australia: Sports Report. See S 1313.
0315 BBC: Sports Roundup. See S 0315.
0315 Radio Beijing: Current Affairs. See M 1215.
0330 BBC: Focus On Faith. Comment and discussion on major issues in various religions.
0330 Radio Australia: Music/Information. See M 0130.
0335 Radio Netherlands: Newsline. See S 0035.
0340 Radio Beijing: Culture In China. See H 1240.
0350 Radio Netherlands: Media Network. See H 0150.

Saturdays

0313 Radio Australia: Music/Information. See M 0130.
0315 BBC: Sports Roundup. See S 0315.
0315 Radio Beijing: Current Affairs or The Business Show. See F 1215.
0330 BBC: The Vintage Chart Show. Paul Burnett with past Top 20 pop music hits.
0330 Radio Australia: Book Reading. See S 0030.
0335 Radio Netherlands: Newsline. See S 0035.
0340 Radio Beijing: In The Third World. See F 1240.
0350 Radio Netherlands: Rembrandt Express. See F 1350.

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0400 UTC [11:00 PM EST/8:00 PM PST]

FREQUENCIES

0400-0425	Netherlands	9590na	11720na		
0400-0427	Czechoslovakia	5930na	7345na	9540na	
0400-0430	Bonaire, TWR Bonaire	9535am	11930am		
0400-0430	Bulgaria, Radio Sofia	9850eu	11720eu	15160eu	
0400-0430	Canada, RCI Montreal	9650eu	11905eu	15275me	15445me
0400-0430 varies	Croatian Radio via WHRI	7315na	9495na		
0400-0430	Cuba, RHC Havana	9655na	11950am		
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		
0400-0450	Germany, Deutsche Welle	6130af	6145af	7150af	7225af
		9565af	9765af	11705af	11765af
		13610af	13770af		
0400-0450	North Korea	15180as	15230as	17765as	
0400-0500	Australia	15240pa	15365pa	17630as	17715pa
		17750as	17795pa	21525as	21740pa
		21775as			
0400-0500	Australia, ABC Brisbane	4920do	9660do		
0400-0500	Australia, ABC Perth	9610do			
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	11680na	11840na		
0400-0500	Cook Islands	11760pa			
0400-0500	Costa Rica, RFPI	7375na	7385na	13630na	15030om
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	New Zealand, RNZI	17770pa			
0400-0500	Russia, Radio Moscow	11675va	12015na	12030na	12040va
		12050va	13645na	13665va	15210va
		15320va	15405va	15425va	15470va
		15550va	17570va	17605na	17860va
		17870va	17890va	21690va	21775va
0400-0500	Sierra Leone, SLBS	3316do			
0400-0500	Singapore, SBC1	5010do	5052do	11940do	
0400-0500	South Africa, Radio RSA	5960af	9695af		
0400-0500 vl	South Africa,Radio Oranje	3215do			
0400-0500	USA, CSMonitor Boston	9455am	9840af	9870na	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, VOA Washington	5995eu	6035me	6040me	6065me
		6140me	7170eu	7200eu	7265me
		7280me	7405me	9575me	9715eu
		11835me	15115me	15205me	
0400-0500	USA, WHRI Noblesville	7315na	9495sa		
0400-0500	USA, WJCR Upton, Kentucky		7465na	7490na	
0400-0500 smtwhf	USA, WMLK Bethel, Penna.	9465eu			
0400-0500	USA, WRNO New Orleans	7395am			
0400-0500	USA, WWCR Nashville	5920na	7435na		
0400-0500	USA, WYFR Okeechobee, FL		5985am	9505am	
0415-0440	Italy, RAI, Rome	7275me	9575me		
0430-0500	Cuba, RHC Havana	9655na	11950na		
0430-0500	Nigeria	3326do	4770do		
0430-0500	Swaziland, TWR Swaziland	5055af	5965af	7215af	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
0445-0500 t	Sri Lanka B'Casting Svc	9720am	15425am		
0455-0600	Nigeria, Voice of	7255af			

SELECTED PROGRAMS

Sundays

0415 BBC: Feature. Leading African women singers are the fare on "Half The Sky" (1st, 8th).
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. Dramas written by BBC listeners (except 1st: Seeing Stars, a monthly look at astronomy).
0430 Radio Australia: World Of Country Music. A look at country music from all around the world.
0435 Radio Beijing: Music From China. See S 0035.
0445 BBC: Talks. Ghosts, specters, and apparitions from around the UK feature in "Encounters With The Unknown" (1st).

Mondays

0415 BBC: Talks. A look at the new-look Victoria and Albert Museum? It's a trip "Behind The Glass Case" (2nd, 9th).
0415 Radio Beijing: China Anthology. See S 1215.
0425 Radio Beijing: Music Album. See S 1225.
0430 BBC: Off The Shelf. Serialized readings from famous books.
0430 Radio Australia: Matters Of Faith. Dallas Adair examines the doctrines and beliefs of Asian/Pacific faiths.
0440 Radio Beijing: Listeners' Letterbox. See S 1240.
0445 BBC: Andy Kershaw's World Of Music. Exotic music from the world over.

Tuesdays

0415 BBC: Health Matters. See T 0145.
0415 Radio Beijing: Current Affairs. See M 1215.
0430 BBC: Off The Shelf. See M 0430.
0430 Radio Australia: Arts Roundabout. The arts in Australia, past and present.
0440 Radio Beijing: Learn o Speak Chinese. See M 1240.
0445 BBC: Talks. See M 2315.

Wednesdays

0415 BBC: Waveguide. Tips on how to hear the BBC better.
0415 Radio Beijing: Current Affairs. See M 1215.
0425 BBC: Book Choice. A short review of a recently released book.
0430 BBC: Off The Shelf. See M 0430.
0430 Radio Australia: Australian Country Style. Graham Bell surveys the Australian country music scene.
0440 Radio Beijing: Listeners' Letterbox. See S 1240.
0445 BBC: Country Style. See W 0145.

Thursdays

0415 BBC: The Farming World. See H 0145.
0415 Radio Beijing: Current Affairs. See M 1215.
0430 BBC: Off The Shelf. See M 0430.
0430 Radio Australia: Dispatches. Issues affecting developing countries.
0440 Radio Beijing: Learn To Speak Chinese. See M 1240.
0445 BBC: From Our Own Correspondent. See S 0330.

Fridays

0415 BBC: Feature. See M 0145.
0415 Radio Beijing: Current Affairs. See M 1215.
0430 BBC: Off The Shelf. See M 0430.
0430 Radio Australia: Science File. See H 1130.
0440 Radio Beijing: Culture In China. See H 1240.
0445 BBC: Folk In Britain. See T 0130.

Saturdays

0415 BBC: Good Books (except 21st: A Month In The Country). See W1445.
0415 Radio Beijing: Current Affairs or The Business Show. See F 1215.
0430 BBC: Jazz Now And Then. See A 0145.
0430 Radio Australia: Music Of Radio Australia. See S 0230.
0440 Radio Beijing: In The Third World. See F 1240.
0445 BBC: Worldbrief. See F 2315.

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0500 UTC [12:00 AM EST/9:00 PM PST]

FREQUENCIES

0500-0510	Lesotho, Maseru	4800do			
0500-0510 w	Malawi B'casting Corp.	3381do			
0500-0515	Israel, Kol Israel	11588am			
0500-0515 t	Sri Lanka B'Casting Svc	9720am	15425am		
0500-0530	Cameroon CRTV Beau	3970do			
0500-0530	Swaziland, TWR Swaziland	5965af	9655af	11750af	
0500-0530	United Kingdom,BBC London	3255af	3955eu	6005af	6180as
		6190af	6195eu	7120eu	9410eu
		9600af	9640na	11760me	12095va
		15070as	15310as	15400af	15420af
		15590va	17885af	21470af	21715as
		5975na	15280as	15575as	
0500-0530	Vatican Radio	7250eu	11625af	15090af	17730af
0500-0550	Germany, Deutsche Welle	5960na	6130na	9515na	9670na
		11705na	11925na	13610na	13790na
0500-0600	Australia	15240pa	15320pa	15365pa	17630as
		17715pa	17750as	17795pa	21525as
		21740pa	21775as		
0500-0600	Australia, ABC Brisbane	4920do	9660do		
0500-0600	Australia, ABC Perth	9610do			
0500-0600	Canada, CFCX Montreal	6005do			
0500-0600	Canada, CFRX Toronto	6070do			
0500-0600	Canada, CFVP Calgary	6030do			
0500-0600	Canada, CHNX Halifax	6130do			
0500-0600	Canada, CKZU Vancouver	6160do			
0500-0600	China, Radio Beijing	11840am			
0500-0600	Cook Islands	11760pa			
0500-0600	Costa Rica, RFPI	7375na	7385na	13630na	15030na
0500-0600	Cuba, RHC Havana	9550na			
0500-0600	Ecuador, HCJB Quito	11925am	21455am		
0500-0600 sa	Eq.Guinea, R.East Africa	9585af			
0500-0600 varies	Italy, IRRS Milan, Italy	7125eu			
0500-0600	Japan NHK	11870na	15195na	15230na	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	New Zealand, RNZI	17770pa			
0500-0600	Nigeria	3326do	4770do	4990do	7255af
0500-0600	Russia, Radio Moscow	11675na	11885va	11980va	12030na
		12050va	12060va	13645va	13665va
		15405va	15425va	15550va	17560va
		17605va	17890va		
0500-0600	Sierra Leone, SLBS	3316do			
0500-0600	Singapore, SBC1	5052do	11940do		
0500-0600	South Africa, Radio RSA	9695af			
0500-0600	Spanish National Radio	9530na			
0500-0600	Thailand	4830as	9655as	11905as	
0500-0600	USA, CSMonitor Boston	9455na	9840af	9870na	13760na
		17780as			
0500-0600 sa	USA, CSMonitor Boston	17555as			
0500-0600	USA, KTBN Salt Lake City	7510am			
0500-0600	USA, KVOH Los Angeles	9785am			
0500-0600	USA, VOA Washington	5995eu	6035me	6040me	6060eu
		6140me	6873eu	7170me	7200me
		7405me	9575me	9670me	9700eu
		9715me 1	1815me	11825me	11850me
		15115me	15205me		
0500-0600	USA, WHRI Noblesville	7315na			
0500-0600	USA, WINB Red Lion, Penn.	15145eu			
0500-0600	USA, WJCR Upton, Kentucky		7465na	7490na	
0500-0600 mtwhfa	USA, WMLK Bethel, Penna.	9465eu			
0500-0600	USA, WRNO New Orleans	7395am			
0500-0600	USA, WWCR Nashville	5920na	7435na		
0500-0600	USA, WYFR Okeechobee, FL	5985am	9850eu	11580am	11915eu
		13695am	15565am		
0510-0515	Botswana, Gaborone	5955af	7255af		
0510-0600 vl	South Africa,Radio Oranje	9630do			
0518-0559 mtwhf	Canada, RCI Montreal	6050eu	6150eu	7295eu	9750eu
		11775me	17840me		
0520-0530	Finland, YLE	6120va	9665va	11755va	15440va
0524-0600 f	Ghana, Radio 2, Accra	3366do			
0525-0600	Ghana, Radio 1, Accra	4915do			
0530-0600	Austria, ORF Vienna	6015na	6155eu	13730eu	21490me
0530-0600	Cameroon CRTV Yaounde	4850do			
0530-0600	Romania, R.Romania Int'l	15340af	15380af	17720af	17745af
		17790af	21665af		
0530-0600	Swaziland, TWR Swaziland	5965af	11750af		
0530-0600	UAE Radio, Dubai	15435as	17830as	21700as	
0530-0600	United Kingdom,BBC London	3255af	3955eu	5975na	6005af
		6180as	6190af	6195eu	7120eu
		9410eu	9600af	9640na	11760me
		12095va	15070as	15280as	15310as
		15400af	15420af	15575af	21470af
		21715as			
0545-0600	Cameroon CRTV Beau	3970do			

SELECTED PROGRAMS

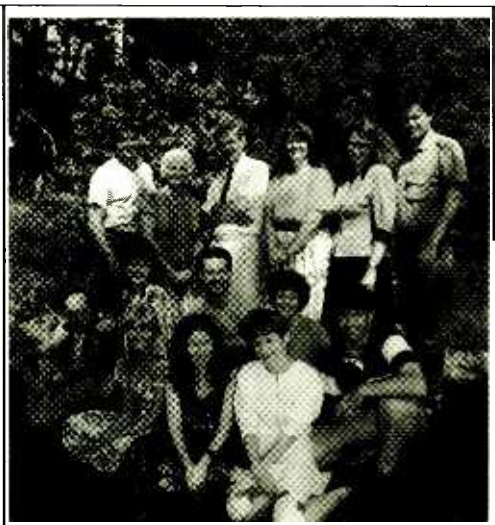
Sundays
0513 Radio Australia: Back Page. See S 0313.
0530 Radio Australia: Just Out. Recent Australian music releases.

Mondays
0513 Radio Australia: Music Of Radio Australia. See S 0230.
0530 Radio Australia: Music/Information. See M 0130.

Tuesdays
0513 Radio Australia: Music Of Radio Australia. See S 0230.

Wednesdays
0513 Radio Australia: Music Of Radio Australia. See S 0230.
0530 Radio Australia: Education Focus. Trevor Robertson presents education issues of the Asian/Pacific region.

Fridays
0513 Radio Australia: Music Of Radio Australia. See S 0230.
0530 Radio Australia: AgriNews. News about agriculture of the Asian/Pacific region, with Denis Gibbons.



Radio Norway International Staff. Photo by Ole Kaland

0513 Radio Australia: Music Of Radio Australia. See S 0230.
0530 Radio Australia: Lane's Company. See S 1130.

Saturdays
0513 Radio Australia: Music Of Radio Australia. See S 0230.
0530 Radio Australia: Interaction. Patti Orofino explores the experiences of multicultural Australia.

www.americanradiohistory.com

0600 UTC [1:00 AM EST/10:00 PM PST]

FREQUENCIES

0600-0610 s	Malawi B'casting Corp.	3381do			
0600-0625	Cameroon CRTV Yaounde	4850do			
0600-0625	Kenya, Voice of	4935do			
0600-0630	Laos, National Radio of	7116as			
0600-0630 s	Latvia, Radio Riga	5935eu			
0600-0630	Swiss Radio Int'l	15430af	17565af	21770af	
0600-0630	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		
0600-0640 last a	Lithuania, RadioCentras	9710eu			
0600-0645 s	Cameroon CRTV Douala	4795do			
0600-0650	Germany, Deutsche Welle	11780af	13610af	13790af	15185af
		15205af	17875af		
0600-0650	North Korea	15180as	15230as		
0600-0700	Australia	11720pa	15240pa	15320pa	15365pa
		17630as	17715pa	17750as	17795pa
		17880pa	21525as	21590pa	21740pa
		21775as			
0600-0700	Canada, CFCX Montreal	6005do			
0600-0700	Canada, CFRX Toronto	6070do			
0600-0700	Canada, CFVP Calgary	6030do			
0600-0700	Canada, CHNX Halifax	6130do			
0600-0700	Canada, CKZU Vancouver	6160do			
0600-0700	Cook Islands	11760pa			
0600-0700	Costa Rica, RFPI	7375na	7385na	13630am	15030na
0600-0700 West NA	Cuba, RHC Havana	9550na			
0600-0700	Czechoslovakia	6055va	7345va	9505va	11990va
0600-0700	Ecuador, HCJB Quito	11925am	21455am		
0600-0700 sa	Eq.Guinea, R.East Africa	9585af			
0600-0700	Ghana, Radio 1, Accra	4915do			
0600-0700 f	Ghana, Radio 2, Accra	3366do			
0600-0700 varies	Italy, IRRS Milan, Italy	7125eu			
0600-0700	Lebanon, King of Hope	6280me			
0600-0700	Luxembourg, RTL	15350va			
0600-0700 smtwha	Malaysia, RTM Radio 4	7295do			
0600-0700	Malaysia, Voice of	6175as	9750as	15295as	
0600-0700	Malta, V. of the Medit.	9765eu			
0600-0700	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, Radio Moscow	11765va	11880va	11885va	11950va
		12010na	12030na	12035va	12050va
		12055va	13645va	15125va	15225va
		15405va	15425va	15550va	17560va
		17605va	17635va	17890va	21690va
0600-0700	Sierra Leone, SLBS	3316do			
0600-0700	Singapore, SBC1	5010do	5052do	11940do	
0600-0700	South Africa, Radio RSA	15220af			
0600-0700 vl	South Africa,Radio Oranje	9630do			
0600-0700	South Korea, Seoul	7275om	11810na	15170na	
0600-0700	Swaziland, TWR Swaziland	5965af	7200af	11750af	
0600-0700 sa	Thailand	4830as	9655as	11905as	
0600-0700	USA, CSMonitor Boston	9455na	9840eu	9870am	17555as
		17780as			
0600-0700	USA, KTBN Salt Lake City	7510na			
0600-0700	USA, KVOH Los Angeles	9785na			
0600-0700	USA, VOA Washington	3980eu	5995eu	6040eu	6060me
		6110eu	6140eu	6873eu	7170me
		7325me	11805me	11815me	11825me
		11915me	15205me		
		6035af	6125af	7405af	9530af
		9575af	15115af	17715af	
0600-0700	USA, WHRI Noblesville	7315eu	9495am		
0600-0700	USA, WJCR Upton, Kentucky		7465na	7490na	
0600-0700 smtwhf	USA, WMLK Bethel, Penna.	9465eu			
0600-0700	USA, WWCR Nashville	5920na	7435na		
0600-0700	USA, WYFR Okeechobee, FL	5985am	7355eu	9680eu	11725na
		13695af	15565am		
0603-0610 tent	Croatian Radio, Zagreb	6210eu	9830eu	13830eu	
0615-0630 s	Cameroon CRTV Bertoua	4750do			
0615-0630	South Korea World News	7550eu	15575me		
0625-0700	Kenya, Voice of	4935do			
0630-0635 mtwhf	Congo, RTV Congolaise	7105do	9610do		
0630-0655	Belgium, BRT Brussels	5910au	11695eu		
0630-0700	Austria, ORF Vienna	6015na			
0630-0700 smtwhf	New Zealand, ZLXA	3935do			
0630-0700	United Kingdom,BBC London	5975na	6180eu	6190af	6195eu
		7230eu	9410eu	9600af	9640pa
		11760me	11940af	11955as	12095eu
		15070va	15310as	15400af	15420af
		15590va	17830as	17885af	21470af
		7150pa	15280as	15360pa	17790as
		21715as			
0630-0700	Vatican Radio	11625af	15090af	17730af	
0635-0700	Monaco, TWR Monaco	9480eu			
0645-0700	Finland, YLE	6120eu	9560af	11755eu	
0645-0700	Ghana B'casting Corp.	6130af			
0645-0700	Romania, R.Romania Int'l	11810pa	11940pa	15335pa	17720pa
		17805pa	21665pa		

SELECTED PROGRAMS

Sundays

0615 BBC: Letter From America. Alistair Cooke presents his unique reflections on the USA.
0615 Radio Korea: Echoes Of Korean Music. No details available.
0630 BBC: Jazz For The Asking. Digby Fairweather plays listener requests.
0635 Radio Korea: Shortwave Feedback. Listener letters, opinions, and suggestions, and news about shortwave radio.

Mondays

0615 BBC: Recording Of The Week. A personal choice from the new classical music releases.
0615 Radio Korea: News Commentary. See S 0045.
0620 Radio Korea: Seoul Calling. Music, features, and short interviews relating to Korea.
0630 BBC: Feature. See S 1401.
0630 Radio Australia: Music Of Radio Australia. See S 0230.
0640 Radio Korea: Tales From Korea's Past. The history of Korea.

Tuesdays

0615 BBC: The World Today. See M 1645.
0615 Radio Korea: News Commentary. See S 0045.
0620 Radio Korea: Seoul Calling. See M 0620.
0630 BBC: Rock/Pop Music. From Susannah Hoffs to Slash, "West Coast Sound" looks at California's vibrant rock-music scene (3rd).
0630 Radio Australia: Music Of Radio Australia. See S 0230.
0640 Radio Korea: Korean Cultural Variety. A look at Korean cultural and artistic traditions.

Wednesdays

0615 BBC: The World Today. See M 1645.
0615 Radio Korea: News Commentary. See S 0045.
0620 Radio Korea: Seoul Calling. See M 0620.
0630 BBC: Meridian. Events in the world of the arts.
0630 Radio Australia: Pacific Women. Conversations with Pacific women about their lives and concerns.
0640 Radio Korea: Pulse Of Korea. Reports on the development of Korea.

Thursdays

0615 BBC: The World Today. See M 1645.
0615 Radio Korea: News Commentary. See S 0045.
0620 Radio Korea: Seoul Calling. See M 0620.
0630 BBC: Sports International. See H 0230.
0630 Radio Australia: Arts Roundabout. See T 0430.
0640 Radio Korea: Forward To Reunification. The prospects for reunion between orth and South Korea.

Fridays

0615 BBC: The World Today. See M 1645.
0615 Radio Korea: News Commentary. See S 0045.
0620 Radio Korea: Let's Sing Together. A sing-along program, featuring the always-popular Song of the Month.
0630 BBC: Meridian. See W 0630.
0630 Radio Australia: Australian Country Style. See W 0430.
0640 Radio Korea: Let's Learn Korean! Korean language lessons for native English speakers.

Saturdays

0615 BBC: The World Today. See M 1645.
0615 Radio Korea: News Commentary. See S 0045.
0620 Radio Korea: Sites And Sounds. See S 0050.
0630 BBC: Meridian. See W 0630.
0630 Radio Australia: At Your Request. See S 0130.
0635 Radio Korea: From Us To You. See S 0105.

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0700 UTC 2:00 AM EST/11:00 PM PST]

0700-0710	Cameroon CRTV Bafoussam		4000do		
0700-0710 w	Malawi B'casting Corp.	3381do	5995do		
0700-0715	Romania, R.Romania Int'l	11810au	11940au	15335au	17720au
		17805au	21665au		
0700-0730	Australia	15170pa	15240pa	15320va	15365pa
		17630as	17715pa	17750as	17795pa
		21525as	21740pa	21775as	
0700-0730	United Kingdom,BBC London	5975na	7150pa	9640va	11955as
		15280as	15360pa	21715as	
		6180eu	6190af	6195eu	7230eu
		7325af	9410eu	9760eu	11760me
		11940af	12095eu	15070eu	15310as
		15400af	15420af	15575as	17640va
		17790as	17885af	21470af	21660af
0700-0750	North Korea	15350as	17765as		
0700-0800	Canada, CFCX Montreal	6005do			
0700-0800	Canada, CFRX Toronto	6070do			
0700-0800	Canada, CFVP Calgary	6030do			
0700-0800	Canada, CHNX Halifax	6130do			
0700-0800	Canada, CKZU Vancouver	6160do			
0700-0800	Cook Islands	11760pa			
0700-0800	Costa Rica, RFPI	7375na	7385na	13630na	15030na
0700-0800 West NA	Cuba, RHC Havana	11760na			
0700-0800	Ecuador, HCJB Quito	11730eu	15270eu	21455eu	
0700-0800 sa	Eq.Guinea, R.East Africa	9585af			
0700-0800	Ghana B'casting Corp.	6130af			
0700-0800	Ghana, Radio 1, Accra	4915do			
0700-0800 f	Ghana, Radio 2, Accra	3366do			
0700-0800 varies	Italy, IRRS Milan, Italy	7125eu			
0700-0800	Japan NHK	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	Monte Carlo, TWR	9480eu			
0700-0800	New Zealand, RNZI	17770pa			
0700-0800 smtwhf	New Zealand, ZXLA	3935do			
0700-0800	Nigeria	3326do	4990do		
0700-0800	Russia, Radio Moscow	4740va	4950va	4975va	5960va
		7130va	7160va	7310va	9855va
		11705va	11765va	11880va	11975va
		12010va	12055va	13705va	15280va
		15295va	15345va	15350va	15375va
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			
0700-0800	USA, WJCR Upton, Kentucky		7465na	7490na	
0700-0800 smtwhf	USA, WMLK Bethel, Penna.	9465eu			
0700-0800	USA, WWCR Nashville	5920am	7435am		
0700-0800	USA, WYFR Okeechobee, FL	9850af	11915af	13695eu	15566na
0703-0800 s	Croatian Radio, Zagreb	7240eu	9830eu	21480eu	
0705-0800 a	Cameroon CRTV Douala	4795do			
0730-0745 mtwhf	Icelandic National Radio	9265om			
0730-0745 mtwhfa	Vatican Radio	6245do	7250do	9645na	15210na
0730-0800	Australia	11880pa	15170va	15240pa	15320va
		15365pa	17630as	17715pa	17750as
		17795pa	21525as	21775as	
0730-0800	Czechoslovakia	17725pa	21705as		
0730-0800	Ecuador, HCJB Quito	9745au	11730eu	11925au	15270eu
		21455va			
0730-0800	Netherlands	9630pa	11895pa		
0730-0800	United Kingdom,BBC London	6180eu	6190af	7325eu	9410eu
		9600af	9760eu	11760me	11860af
		11940af	12095va	15070eu	15105af
		15400af	15420af	15590af	17640va
		17830as	17885af	21470af	21660af
		7150pa	9640va	11955as	15280as
		15310as	15360pa	17790as	21715as

0800 UTC [3:00 AM EST/12:00 AM PST]

0800-0803 daily	Croatian Radio, Zagreb	6210eu	9830eu	21480eu	
0800-0810	Cameroon CRTV Bafoussam		4000do		
0800-0810 w	Malawi B'casting Corp.	3381do			
0800-0825	Finland, YLE	17800as	21550as		
0800-0825	Malaysia, Voice of	6175as	9750as	15295as	
0800-0825	Netherlands	9630pa	11895pa		
0800-0825	Swaziland, TWR Swaziland	7200af	11750af		
0800-0830	Australia	6080pa	15240pa	17630as	17715pa
		17750as	21725as		
0800-0830	Ecuador, HCJB Quito	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	Monte Carlo, TWR	9480eu			
0800-0845	Pakistan	17902eu	21520eu		
0800-0850	North Korea	15180as	15230as		
0800-0900	Australia, ABC Brisbane	9660do			
0800-0900 Au	Australia, ABC Brisbane	9660do			
0800-0900	Australia, ABC Perth	15425va			
0800-0900 a	Cameroon CRTV Douala	4795do			
0800-0900	Canada, CFCX Montreal	6005do			
0800-0900	Canada, CFRX Toronto	6070do			
0800-0900	Canada, CFVP Calgary	6030do			
0800-0900	Canada, CHNX Halifax	6130do			
0800-0900	Canada, CKZU Vancouver	6160do			
0800-0900	Cook Islands	11760pa			
0800-0900	Costa Rica, RFPI	7375na	15030na		
0800-0900 sa	Eq.Guinea, R.East Africa	9585af			
0800-0900	Ghana, Radio 1, Accra	4915do			
0800-0900 f	Ghana, Radio 2, Accra	3366do			
0800-0900 asmtwh	Guam, KTWR Guam	15200as			
0800-0900	Indonesia, Voice of	7125as	9675as	11752as	11785as
0800-0900 varies	Italy, IRRS Milan, Italy	7125eu			
0800-0900	Kenya, Voice of	4935do			
0800-0900	Lebanon, King of Hope	6280me			
0800-0900	Luxembourg, RTL	15350va			
0800-0900 smtwha	Malaysia, RTM Radio 4	7295do			
0800-0900	New Zealand, RNZI	9700pa			
0800-0900 smtwhf	New Zealand, ZXLA	3935do			
0800-0900	Nigeria	3326do	4990do		
0800-0900	Nigeria, Voice of	7255af			
0800-0900	Papua New Guinea	4890do			
0800-0900	Russia, Radio Moscow	4740va	4940va	4975va	5960va
	7130va 7160va	7310va	9535va	11705va	11765va
	11920va 11975va	12010va	12055va	13705va	15295va
	15345va 15350va	15420va	15435va		
0800-0900	Sierra Leone, SLBS	3316do	5980do		
0800-0900	Singapore, SBC1	5010do	5052do	11940do	
0800-0900 vl	South Africa,Radio Oranje	9630do			
0800-0900	South Korea, Seoul	7550eu	13670eu		
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		7465na	7490na	
0800-0900 smtwhf	USA, WMLK Bethel, Penna.	9465eu			
0800-0900	USA, WWCR Nashville	692am	5920na		
0803-0810 tent	Croatian Radio, Zagreb	7240eu	9830eu	21480eu	
0803-0900 s	Croatian Radio, Zagreb	7240eu	9830eu	21480eu	
0830-0845	Vatican Radio	6245eu	7250eu	9645eu	15210eu
0830-0900	Australia	6080pa	9580pa	9710va	15240pa
		17630as	17750as	21725as	21775as
0830-0900	Austria, ORF Vienna	6155eu	13730eu	15450au	21490as
0830-0900	Ecuador, HCJB Quito	9745au	11925au	15270eu	21455au
0830-0900	Finland, YLE	15355as	17800as		
0830-0900	Italy, AWR Italy	7230eu			
0830-0900	Netherlands	9630pa	11895pa		
0830-0900	United Kingdom,BBC London	6180eu	6190eu	7325eu	9410eu
	9660eu 9760eu	11860af	11940af	11955as	12095eu
	15070va 15280as	15360pa	15400af	15420af	15590me
	17640va 17830as	21660af	21715as	17885af	
0835-0850 smtwhf	Monte Carlo, TWR	9480eu			
0835-0850 mtwhf	Swaziland, TWR Swaziland	7200af	11750af		
0850-0900 s	Monte Carlo, TWR	9480eu	940va	4975va	5960va

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0900 UTC [4:00 AM EST/1:00 AM PST]

0900-0903 s	Croatian Radio, Zagreb	7240eu	9830eu	21480eu		
0900-0905	Ghana, Radio 1, Accra	4915do				
0900-0905 f	Ghana, Radio 2, Accra	3366do				
0900-0910	Malawi B'casting Corp.	5995do				
0900-0912 f	Guam, KTWR Guam	15200as				
0900-0915	Lebanon, Radio Voice of	6550me				
0900-0915 s	Monte Carlo, TWR	9480eu				
0900-0925 mtwhf	Belgium, BRT Brussels	9905eu	13675eu			
0900-0925	Netherlands	9630pa	11895pa			
0900-0930	Costa Rica, RFPI	7375na	15030na			
0900-0930 asmtwf	Guam, KTWR Guam	15200as				
0900-0930 mtwhf	New Zealand, ZLXA	3935do				
0900-0930	Swiss Radio Int'l	9560as	13685as	17670as	21770as	
0900-0930	United Kingdom,BBC London	1170as	5975eu	6045eu	6180u	
	6190af 6195as	7325eu	9410eu	9660eu	9740as	
	9750eu 9760eu	11760me	11860af	11940af	12095eu	
	15070va 15400af	17640va	21660af	15190sa	15280as	
	15310as 15360as	15420af	15575me	15590me	17705eu	
	17790af 17830as	17885af	21470af	21660af	21715as	
0900-0950	Germany, Deutsche Welle	6160as	9565af	11915as	15410af	
	17780as 17820as	21465as	21600af	21650as	21680as	
0900-1000	Australia	6080pa	9580pa	9710va	13605as	
		15170as	21725as			
0900-1000	Australia, ABC Brisbane	9660do				
0900-1000 s	Bhutan Broadcasting Svc	6035do				
0900-1000	Canada, CFCX Montreal	6005do				
0900-1000	Canada, CFRX Toronto	6070do				
0900-1000	Canada, CFVP Calgary	6030do				
0900-1000	Canada, CHNX Halifax	6130do				
0900-1000	Canada, CKZU Vancouver	6160do				
0900-1000	China, Radio Beijing	8450au	11755au	15440au	17710au	
0900-1000	Cook Islands	11760pa				
0900-1000	Ecuador, HCJB Quito	9745au	11925au	21455au		
0900-1000 sa	Eq.Guinea, R.East Africa	9585af				
0900-1000	Guam, KTWR Guam	11805as				
0900-1000 s	Italy, AWR via Portugal	9670eu				
0900-1000 varies	Italy, IRRS Milan, Italy	7125eu				
0900-1000	Japan NHK	11815eu	11840eu	15270au	17860as	
		21610as				
0900-1000	Kenya, Voice of	4935do				
0900-1000	Lebanon, King of Hope	6280me				
0900-1000	Luxembourg, RTL	15350va				
0900-1000	Malaysia, RTM Radio 4	7295do				
0900-1000	New Zealand, RNZI	9700pa				
0900-1000	Nigeria	3326do	4990do			
0900-1000	Nigeria, Voice of	7255af				
0900-1000	Papua New Guinea	4890do				
0900-1000	Philippines, FEBC Manila	9800as	11685as			
0900-1000	Russia, Radio Moscow	4740do	4940do	4975do	6000am	
	7130am 7245va	9535va	9780va	9855va	11705va	
	11765va 11920va	11975va	12055va	13705va	15175va	
	15280va 15295va	15345va	15545na			
0900-1000	Sierra Leone, SLBS	3316do				
0900-1000	Singapore, SBC1	5010do	5052do	11940do		
0900-1000 vl	South Africa,Radio Oranje	9630do				
0900-1000	Tanzania	5985af	9685af	11765af		
0900-1000	USA, CSMonitor Boston	9445am	11705eu	13615pa	15665pa	
		17555as				
0900-1000	USA, KTBN Salt Lake City	7510am				
0900-1000	USA, VOA Washington	11735eu	15160eu	15195me	21455me	
		21570eu				
0900-1000	USA, WJCR Upton, Kentucky		7465na	7490na		
0900-1000 smtwhf	USA, WMLK Bethel, Penna.	9465eu				
0900-1000	USA, WWCR Nashville	5920am	7435am			
0905-1000	Cameroon CRTV Yaounde	4850do				
0905-1000 sa	Ghana, Radio 1, Accra	4915do				
0905-1000 mtwhf	Ghana, Radio 2 School prg	7295do				
0905-1000 sa	Ghana, Radio 2, Accra,	3366do				
0910-0940 smwha	Mongolia, Ulaanbaatar	11850pa	12015pa			
0915-0930	South Korea World News	9570am	13670eu			
0930-1000	Afghanistan, Kabul	9635as				
0930-1000	Netherlands	9630pa	11895pa			
0930-1000	United Kingdom,BBC London	5975eu	6045eu	6180eu	6190af	
	6195as 9410eu 9	660eu	9740as	9750eu	9760eu	
	11750as 11760me	11940af	12095eu	15070va	15310as	
	15400af 15420af	15575me	15590me	15190sa	17640va	
	17705eu					
0940-0950	Greece, Voice of	17525eu				
0950-0953 a	Russia, Vladivostok	4050do	4485do	5015do	5905do	
	6035do 6175pa	7175pa	7210pa	7260pa	7270pa	
	7345pa 9530pa	9600pa	9635pa	9825pa	9905pa	
	11815pa 15535pa	15595pa	17620pa			
0950-0953 a	Russia, Vladivostok	17695pa	17825pa	17850pa		

1000 UTC [5:00 AM EST/2:00 AM PST]

1000-1025	Netherlands 9630pa	11895pa				
1000-1030 tent	Afghanistan, Kabul	9635as				
1000-1030	Israel, Kol Israel	17545eu				
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	6080pa	9580pa	9710va	11880pa	
		13605pa	21725as			
1000-1100	Cameroon CRTV Yaounde	4850do				
1000-1100	Canada, CFCX Montreal	6005do				
1000-1100	Canada, CFRX Toronto	6070do				
1000-1100	Canada, CFVP Calgary	6030do				
1000-1100	Canada, CHNX Halifax	6130do				
1000-1100	Canada, CKZU Vancouver	6160do				
1000-1100	China, Radio Beijing	8450au	11755au	15440au	17710au	
1000-1100	Cook Islands	11760pa				
1000-1100	Costa Rica, AWR	9725ca				
1000-1100	Costa Rica, RFPI	7375na	15030na			
1000-1100	Ecuador, HCJB Quito	9745au	11925au	21455au		
1000-1100 sa	Eq.Guinea, R.East Africa	9585af				
1000-1100 sa	Ghana, Radio 1, Accra	4915do				
1000-1100 mtwhf	Ghana, Radio 2 School Prg	7295do				
1000-1100 sa	Ghana, Radio 2, Accra	3366do				
1000-1100	India, All India Radio	15050as	17387as	17895as	21735as	
1000-1100 varies	Italy, IRRS Milan, Italy	7125eu				
1000-1100	Kenya, Voice of	4935do				
1000-1100	Luxembourg, RTL	15350va				
1000-1100	Malaysia, RTM Kuching	7160do				
1000-1100 mtwh	Malaysia, RTM Radio 4	7295do				
1000-1100	New Zealand, RNZI	9700pa				
1000-1100	Nigeria	4990do	7285do			
1000-1100	Nigeria, Voice of	7255af				
1000-1100	Philippines, FEBC Manila	9800as	11665as			
1000-1100	Russia, Radio Moscow	9455na	9495na	11840na	15485na	
1000-1100	Sierra Leone, SLBS	3316do				
1000-1100	Singapore, SBC1	5010do	5052do	11940do		
1000-1100	South Africa, Radio RSA	11900af				
1000-1100 vl	South Africa,Radio Oranje	9630do				
1000-1100	USA, CSMonitor Boston	9455am	9495na	13625as	17555as	
1000-1100 sa	USA, CSMonitor Boston	15665me				
1000-1100	USA, VOA Washington	5985as	11720au	15425au		
1000-1100	USA, WHRI Noblesville	7315na				
1000-1100	USA, WJCR Upton, Kentucky		7465na	7490na		
1000-1100	USA, WWCR Nashville	5920am	15690na			
1000-1100	USA, WYFR Okeechobee, FL		5950am			
1030-1040 mtwhf	Malawi B'casting Corp.	5995do				
1030-1100	Czechoslovakia	6055va	7345va	9505va	11990va	
1030-1100	Iran, Islamic Republic	9525as	11715af	11790as	11910as	
		11930me				
1030-1100	South Korea, Seoul	11715na				
1030-1100	Sri Lanka B'casting Corp.	11835as	15120as	17850as		
1030-1100 sa	Tanzania	5985af	9685af	11765af		
1030-1100	UAE Radio, Dubai	13675eu	15320eu	15435as	21605as	
1030-1100	United Kingdom,BBC London	5975eu	6045eu	6180eu	6190af	
	6195as 9410eu	9660eu	9740as	9750eu	9760eu	
	11750as 11760me	11940af	12095eu	15070va	15190sa	
	15310as 15400af	15420af	15575me	17640va	17705eu	
	17790af 17885af	21470af	21660af			
1040-1050	Greece, Voice of	15650as	17525as			
1055-1100	Bonaire, TWR Bonaire	11815am	15345am			

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1100 UTC [6:00 AM EST/3:00 AM PST]

FREQUENCIES

1100-1110 mtwhf	Ghana, Radio 2 School Prg	7295do			
1100-1110 sa	Malawi B'casting Corp.	5995do			
1100-1120	Pakistan	17902eu	21520eu		
1100-1130	Ecuador, HCJB Quito	9745au	11925au	15155au	21455au
1100-1130	Iran, Islamic Republic	9525af	11515af	11790as	11910as
		11930me			
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
		21600af			
1100-1150	North Korea	6576na	9977na	11335na	
1100-1200	Australia	6020pa	6080pa	7240pa	9580pa
		9710va	11880pa	13605pa	21725as
1100-1200	Bonaire, TWR Bonaire	11815am	15345am		
1100-1200	Bulgaria, Radio Sofia	11630af			
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		
1100-1200	Czechoslovakia	6055va	7345va	9505va	11990va
1100-1200	Ghana, Radio 1, Accra	4915do			
1100-1200 sa	Ghana, Radio 2, Accra	3366do			
1100-1200 varies	Italy, IRRS Milan, Italy	7125eu			
1100-1200	Japan NHK	6120na	11815sa	11840na	
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	9600na	12055na	15485na	17830na
1100-1200	Singapore, SBC1	5010do	5052do	11940do	
1100-1200	South Africa, Radio RSA	11900af			
1100-1200 vl	South Africa,Radio Oranje	9630do			
1100-1200	South Korea World News	15575af			
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	
1100-1200	USA, WHRI Noblesville	7315na	9465na		
1100-1200	USA, WJCR Upton, Kentucky		7465na	7490na	
1100-1200	USA, WWCR Nashville	13815na	15690na		
1100-1200	USA, WYFR Okeechobee, FL		5950am	7355am	
1115-1130	South 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		
1125-1150 mtwhf	Finland, YLE	15400na			
1130-1140	Lesotho, Masseru	4800do			
1130-1155 s	Belgium, BRT Brussels	17555va	21810na		
1130-1200	Austria, ORF Vienna	6155eu	11780as	13730va	15450as
1130-1200	Ecuador, HCJB Quito	11925am	15115am	17890am	21455am
1130-1200	Italy, AWR Italy	7230eu			
1130-1200	South 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 WAR/var	Yugoslavia	17710as	17740am	21605pa	

SELECTED PROGRAMS

Sundays

1113 Radio Australia: Music Of Radio Australia. See S 0230.
1115 Radio Korea: Echoes Of Korean Music. See S 0615.
1130 BBC: The Ken Bruce Show. See S 0030.
1130 Radio Australia: Lane's Company. Terry Lane talks with people from all walks of life.
1135 Radio Korea: Shortwave Feedback. See S 0635.

Mondays

1113 Radio Australia: Music Of Radio Australia. See S 0230.
1115 Radio Korea: News Commentary. See S 0045.
1120 Radio Korea: Seoul Calling. See M 0620.
1130 BBC: Composer Of The Month. See M 0230.
1130 Radio Australia: This Australia. Documentaries about the land "down under."
1140 Radio Korea: Tales From Korea's Past. See M 0640.

Tuesdays

1113 Radio Australia: Music Of Radio Australia. See S 0230.
1115 Radio Korea: News Commentary. See S 0045.
1120 Radio Korea. Seoul Calling. See M 0620.
1130 BBC: Megamix. Music, sports, fashion, health, travel, news, and opinion for young people.
1130 Radio Australia: Communicator. The latest developments in the media and communications world.
1140 Radio Korea: Korean Cultural Variety. See T 0640.

Wednesdays

1113 Radio Australia: Music Of Radio Australia. See S 0230.
1115 Radio Korea: News Commentary. See S 0045.
1120 Radio Korea: Seoul Calling. See M 0620.
1130 BBC: Meridian. See W 0630.
1130 Radio Australia: One World. Reports on environmental issues of the Asian/Pacific region.
1140 Radio Korea: Pulse Of Korea. See W 0640.

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Thursdays

1113 Radio Australia: Music Of Radio Australia. See S 0230.
1115 Radio Korea: News Commentary. See S 0045.
1120 Radio Korea: Seoul Calling. See M 0620.
1130 BBC: Drama. Whodunit? Hear the exciting conclusion of Agatha Christie's "Sad Cypress" (5th).
1130 Radio Australia: Science File. Ian Wood examines science, medicine and technology news.
1140 Radio Korea: Forward To Reunification. See H 0640.

Fridays

1113 Radio Australia: Music Of Radio Australia. See S 0230.
1115 Radio Korea: News Commentary. See S 0045.
1120 Radio Korea: Let's Sing Together. See F 0620.
1130 BBC: Meridian. See W 0630.
1130 Radio Australia: Business Weekly. Developments in business and finance in Asia and the Pacific.
1140 Radio Korea: Let's Learn Korean! See F 0640.

Saturdays

1113 Radio Australia: Music Of Radio Australia. See S 0230.
1115 Radio Korea: News Commentary. See S 0045.
1120 Radio Korea: Sites And Sounds. See S 0050.
1130 BBC: Meridian. See W 0630.
1130 Radio Australia: Parliament Program. A roundup of events in the Australian parliament.
1135 Radio Korea: From Us To You. See S 0105.

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1200UTC [7:00 AM EST/4:00 AM PST]

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	Bulgaria, Radio Sofia	11630af			
1200-1230 smwha	Mongolia, Ulaanbaatar	11850as	12015as		
1200-1230 as	Norway	17860as	21705as		
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
1200-1255	Polish Radio Warsaw	6135eu	7145eu	9525eu	11815eu
1200-1300	Australia	6020pa	6080pa	7240pa	9580pa
		9710pa	21725as		
1200-1300	Australia, ABC Brisbane	4920au			
1200-1300	Australia, ABC Katherine	2485do			
1200-1300	Australia, ABC Perth	6140do	9610do		
1200-1300	Bonaire, TWR Bonaire	11815am	15345am		
1200-1300	Brazil, Radiobras	15445am			
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 mtwhf	Canada, RCI Montreal	9635am	11855am	17820am	
1200-1300	China, Radio Beijing	8425au	9665na	9715as	11600pa
		11660as	15450pa		
1200-1300	Cook Islands	11760pa			
1200-1300	Costa Rica, AWR	9725ca	11870ca		
1200-1300	Costa Rica, RFPI	13630na	15030na		
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 varies	Italy, IRRS Milan, Italy	7125eu			
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			
1200-1300	Russia, Radio Moscow	9655na	9755na	11840na	11985na
		12050na	12055na	15280na	15485na
		17670na	17830na		
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			
1200-1300	USA, WJCR Upton, Kentucky		7465na	7490na	
1200-1300	USA, WWCR Nashville	13815na	15690na		
1200-1300	USA, WYFR Okeechobee, FL	5950am	6015am	11830am	17760am
1203-1210 as	Croatian Radio, Zagreb	7240eu	9830eu	21480eu	
1215-1300	Egypt, Radio Cairo	17595as			
1215-1300	South Korea, Seoul	9750am			
1226-1300	Ghana, Radio 2, Accra	7295do			
1230-1255 mtwhf	Finland, YLE	15400na	17880na		
1230-1300	Bangladesh	15200as	15605as	15647as	17750as
1230-1300	France, RFI Paris	9805eu	11670eu	15195eu	15365eu
		15425eu	21645na		
1230-1300	Netherlands	9855eu			
1230-1300	Sri Lanka B'casting Corp.	6075as	9720as		
1230-1300	Sweden	15170as	17740as		
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	15635na	15650na	17515na	

SELECTED PROGRAMS

Sundays

1201 BBC: Play Of The Week. See S 0101.
1215 Radio Beijing: China Anthology. Episodes from China's past, with profiles of historical figures.
1225 Radio Beijing: Music Album. A combination of traditional and Western musical selections.
1227 Radio Australia: Tattslotto Results. And tonight's winning numbers are...
1230 Radio Australia: At Your Request. See S 0130.
1230 Radio Korea: Echoes Of Korean Music. See S 0615.
1240 Radio Beijing: Listeners' Letterbox. Listener letters and information about China.
1250 Radio Korea: Shortwave Feedback. See S 0635.

Mondays

1209 BBC: Words Of Faith. Speakers from various faiths discuss scripture and their beliefs.
1215 BBC: Quiz. "Screenplay" tests your knowledge of movie lore (through December 7th).
1215 Radio Beijing: Current Affairs. An in-depth look at events and happenings in China.
1230 Radio Australia: Soundabout. Contemporary music from Australia and around the world.
1230 Radio Korea: News Commentary. See S 0045
1235 Radio Korea: Seoul Calling. See M 0620.
1240 Radio Beijing: Learn To Speak Chinese. Chinese language lessons for English speakers.
1245 BBC: Sports Roundup. See S 0315.
1255 Radio Korea: Tales From Korea's Past. See M 0640.

Tuesdays

1209 BBC: Words Of Faith. See M 1209.
1215 BBC: Multitrack 1: Top 20. See M 2330.
1215 Radio Beijing: Current Affairs. See M 1215.
1230 Radio Australia: Soundabout. See M 1230.
1230 Radio Korea: News Commentary. See S 0045.
1235 Radio Korea: Seoul Calling. See M 0620.
1240 Radio Beijing: Listeners' Letterbox. See S 1240.
1245 BBC: Sports Roundup. See S 0315.
1255 Radio Korea: Korean Cultural Variety. See T 0640.

Wednesdays

1209 BBC: Words Of Faith. See M 1209.
1215 BBC: New Ideas. See M 1615.
1215 Radio Beijing: Current Affairs. See M 1215.
1227 Radio Australia: Tattslotto Results. See S 1227.
1230 Radio Australia: Soundabout. See M 1230.
1230 Radio Korea: News Commentary. See S 0045.
1235 BBC: Talks. See M 1635.
1235 Radio Korea: Seoul Calling. See M 0620.
1240 Radio Beijing: Learn To Speak Chinese. See M 1240.
1245 BBC: Sports Roundup. See S 0315.
1255 Radio Korea: Pulse Of Korea. See W 0640.

Thursdays

1209 BBC: Words Of Faith. See M 1209.
1215 BBC: Multitrack 2. See W 2330.
1215 Radio Beijing: Current Affairs. See M 1215.
1230 Radio Australia: Soundabout. See M 1230.
1230 Radio Korea: News Commentary. See S 0045.
1235 Radio Korea: Seoul Calling. See M 0620.
1240 Radio Beijing: Culture In China. The rich cultural heritage of China, as manifested in literature and art.
1245 BBC: Sports Roundup. See S 0315.
1255 Radio Korea: Forward To Reunification. See H 0640.

Fridays

1209 BBC: Words Of Faith. See M 1209.
1215 BBC: Feature. Topical programming on various subjects.
1215 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.
1230 Radio Australia: Soundabout. See M 1230.
1230 Radio Korea: News Commentary. See S 0045.
1235 Radio Korea: Let's Sing Together. See F 0620.
1240 Radio Beijing: In The Third World. Reports and music from developing nations.
1245 BBC: Sports Roundup. See S 0315.
1255 Radio Korea: Let's Learn Korean! See F 0640.

Saturdays

1209 BBC: Words Of Faith. See M 1209.
1215 BBC: Multitrack 3. See F 2330.
1215 Radio Beijing: Press Clippings. See S 0015.
1220 Radio Beijing: Travel Talk. See S 0020.
1227 Radio Australia: Tattslotto Results. See S 1227.
1228 Radio Beijing: Cooking Show. See S 0028.
1230 Radio Australia: Music Deli. Paul Petran and Stephen Snelleman present music from a variety of cultures.
1230 Radio Korea: News Commentary. See S 0045.
1235 Radio Beijing: Music From China. See S 0035.
1235 Radio Korea: Sites And Sounds. See S 0050.
1245 BBC: Sports Roundup. See S 0315.
1250 Radio Korea: From Us To You. See S 0105.

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English language

shortwave guide

1300 UTC [8:00 AM EST/5:00 AM PST]

FREQUENCIES

1300-1315	South Korea, Seoul	9750na			
1300-1320	Brazil, Radiobras	15445am			
1300-1325	Belgium, BRT Brussels	17555va	21810na		
1300-1325	Kenya, Voice of	4935do			
1300-1325	Netherlands	9855eu			
1300-1330	Afghanistan, Kabul	9635as			
1300-1330	Bonaire, TWR Bonaire	11815am	15345am		
1300-1330 mtwhf	Cameroon CRTV Douala	4795do			
1300-1330	Egypt, Radio Cairo	17595as			
1300-1330 as	Finland, YLE	15400na	17880na		
1300-1330 as	Norway	9590eu	15270af		
1300-1330	Swiss Radio Int'l	6165eu	7480as	9535eu	11690as
		12030eu	13635as	15505as	17670as
		21770as			
1300-1330	United Kingdom,BBC London	5965am	6180eu	6190af	6195ca
		9410eu	9515na	9660eu	9740as
		9750eu	9760eu	11750as	11760me
		11820as	11940af	12095eu	15070va
		15220na	15310as	15420af	15575me
		7180as	15220na	17640va	17705eu
		17790af	17840af	17885af	21470af
		21660af			
1300-1330	USA, VOA Washington	6110as	9760au	11715as	15155au
		15425au			
1300-1350	North Korea	9325eu	9345eu	9640as	13650as
		13650am	15230as	15230am	
1300-1400	Australia	5995pa	6080pa	7240pa	9580pa
		11800pa			
1300-1400	Australia, ABC Alice Sprg	2310do			
1300-1400	Australia, ABC Brisbane	4920do			
1300-1400	Australia, ABC Katherine	2485do			
1300-1400	Australia, ABC Perth	9610do			
1300-1400	Australia, ABC Tennant Cr	2325do			
1300-1400	Canada, CFCX Montreal	6005do			
1300-1400	Canada, CFRX Toronto	6070do			
1300-1400	Canada, CFVP Calgary	6030do			
1300-1400	Canada, CHNX Halifax	6130do			
1300-1400	Canada, CKZU Vancouver	6160do			
1300-1400 s	Canada, RCI Montreal	11955am	17820am		
1300-1400	China, Radio Beijing	9715as	11660va	11855na	
1300-1400	Cook Islands	11760pa			
1300-1400	Costa Rica, RFPI	13630na	15030na		
1300-1400	Ecuador, HCJB Quito	11925am	15115am	17890am	21455am
1300-1400 sa	Eq.Guinea, R.East Africa	9585af			
1300-1400	Ghana, Radio 1, Accra	4915do			
1300-1400	Ghana, Radio 2, Accra	7295do			
1300-1400	Luxembourg, RTL	15350va			
1300-1400	Malaysia, RTM Radio 4	7295do			
1300-1400	Nigeria	4990do	7285do		
1300-1400	Nigeria, Voice of	7255af			
1300-1400	Papua New Guinea	4890do			
1300-1400	Philippines, EBC Manila	11995as			
1300-1400	Romania, R.Romania Int'l	11940eu	15365eu	17720eu	17850eu
1300-1400	Russia, AWR Russia	11855as			
1300-1400	Russia, Radio Moscow	7370va	9640na	9655na	9755na
		9755na	9895na	11655na	11870va
		11985na	11995va	12050na	17830na
1300-1400	Sierra Leone, SLBS	3316do	5980do		
1300-1400	Singapore, SBC1	5010do	5052do	11940do	
1300-1400 vl	South Africa,Radio 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	11580as			
1300-1400	USA, KTBN Salt Lake City	7510am			
1300-1400	USA, WHRI Noblesville	9465na	11790na		
1300-1400	USA, WJCR Upton, Kentucky		7465na	7490na	
1300-1400	USA, WWCR Nashville	13815na	15690na		
1300-1400	USA, WYFR Okeechobee, FL	5950am	6015am	11550as	11830am
		13695na	17750na	17760am	
1315-1330	Lebanon, Radio Voice of	6549.5			
1320-1400	Jordan	9560eu			
1325-1400 mtwhf	Kenya, Voice of	4935do			
1330-1345	South Korea World News	7275as	11740as		
1330-1357	Canada, RCI Montreal	9535as	11795as		
1330-1400	Austria, ORF Vienna	11780as	15450as		
1330-1400	Cameroon CRTV Douala	4795do			
1330-1400	Finland, YLE	15400na	17880na		
1330-1400	India, All India Radio	9665as	11760as	15120as	
1330-1400 a	Indonesia,Radio Republik	3385do	6070do		
1330-1400	Laos, National Radio of	7116as			
1330-1400	Netherlands	17580pa	17605pa	21665pa	
1330-1400	UAE Radio, Dubai	13675eu	15320eu	15435as	21605as
1330-1400	United Kingdom,BBC London	5975eu	6045eu	6180eu	6190af
		6195ca	7180af	9410eu	9515na
		9660eu	9740as	9750eu	9760eu
		11820as	11940af	12095eu	15070va
		15220na	15310as	15420af	15575me
		7180as	17640va	17705eu	17790af
		17840af	17885af	21470af	21660af
1330-1400	USA, VOA Washington	6110as	9760as	15155au	15425au
1330-1400	Uzbekhistan, R.Tashkent	5945as	9540as	15470as	17745as
1330-1400	Vietnam, Voice of	9840as	12020as	15010as	
1345-1400	Vatican Radio	11640au	15090au	17525au	21515au

SELECTED PROGRAMS

Sundays

1313 Radio Australia: Sports Report. Results and reports on sporting events from the world over.
1315 Radio Beijing: China Anthology. See S 1215.
1325 Radio Beijing: Music Album. See S 1225.
1330 Radio Australia: Lane's Company. See S 1130.
1335 Radio Netherlands: Happy Station. See S 0135.
1340 Radio Beijing: Listeners' Letterbox. See S 1240.

Mondays

1313 Radio Australia: Sports Report. See S 1313.
1315 Radio Beijing: Current Affairs. See M 1215.
1330 Radio Australia: Innovations. Desley Blanch reports on inventions and innovative practices.
1335 Radio Netherlands: Newsline. See S 0035.
1340 Radio Beijing: Learn To Speak Chinese. See M 1240.
1350 Radio Netherlands: Research File. The latest developments in science and technology.

Tuesdays

1313 Radio Australia: Sports Report. See S 1313.
1315 Radio Beijing: Current Affairs. See M 1215.
1330 Radio Australia: This Australia. See M 1130.
1335 Radio Netherlands: Newsline. See S 0035.
1340 Radio Beijing: Listeners' Letterbox. See S 1240.
1350 Radio Netherlands: No Boundaries. See T 0150.

Wednesdays

1313 Radio Australia: Sports Report. See S 1313.
1315 Radio Beijing: Current Affairs. See M 1215.
1330 Radio Australia: One World. See W 1130.
1335 Radio Netherlands: Newsline. See S 0035.
1340 Radio Beijing: Learn To Speak Chinese. See M 1240.
1350 Radio Netherlands: Feature Documentary. Topical programming on various subjects.

Thursdays

1313 Radio Australia: Sports Report. See S 1313.
1315 Radio Beijing: Current Affairs. See M 1215.
1330 Radio Australia: Science File. See H 1130.
1335 Radio Netherlands: Newsline. See S 0035.
1340 Radio Beijing: Culture In China. See H 1240.
1350 Radio Netherlands: Media Network. See H 0150.

Fridays

1313 Radio Australia: Sports Report. See S 1313.
1315 Radio Beijing: Current Affairs or The Business Show. See F 1215.
1330 Radio Australia: Business Weekly. See F 1130.
1335 Radio Netherlands: Newsline. See S 0035.
1340 Radio Beijing: In The Third World. See F 1240.
1350 Radio Netherlands: Rembrandt Express. A look at social affairs in Northern Europe.

Saturdays

1313 Radio Australia: Sports Report. See S 1313.
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 Radio Australia: Parliament Program. See A 1130.
1335 Radio Beijing: Music From China. See S 0035.
1335 Radio Netherlands: Newsline. See S 0035.
1350 Radio Netherlands: Sounds Interesting. See S 0050.

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1400 UTC [9:00 AM EST/6:00 AM PST]

FREQUENCIES

1400-1410	Malawi B'casting Corp.	3381do				
1400-1415	Vatican Radio	15090au	17525au	21515au		
1400-1425	Netherlands	17580pa	17610pa	21665pa		
1400-1430	Cameroon CRTV Douala	4795do				
1400-1430	Ecuador, HCJB Quito	11925am	15115am	17890am	21455am	
1400-1430 smtwh	Israel, Kol Israel	11587am	11603na	15650as	17575eu	
		17590eu				
1400-1430	Malaysia, RTM Kuching	4950do				
1400-1430	United Kingdom,BBC London	6190af	6195af	6195as	7180as	
	9410eu 9515na	9660eu	9740as	9750eu	9760eu	
	11750as 11820as	11940af	12095eu	15070eu	15220na	
	15310as 15575me	17640va	17705eu	17790af	17840na	
	17880af 21470af	21660af				
1400-1500	Australia	5995pa	6060pa	6080pa	7240pa	
	9540pa 9580pa	9770va	11800pa	15170va		
1400-1500	Australia, VLW6 Wanneroo,	6140do				
1400-1500	Cameroon CRTV Yaounde	4850do				
1400-1500	Canada, CFCX Montreal	6005do				
1400-1500	Canada, CFRX Toronto	6070do				
1400-1500	Canada, CFVP Calgary	6030do				
1400-1500	Canada, CHNX Halifax	6130do				
1400-1500	Canada, CKZU Vancouver	6160do				
1400-1500 s	Canada, RCI Montreal	11955am	17820am			
1400-1500	China, Radio Beijing	11815as	11855na	15165as		
1400-1500	Cook Islands	11760pa				
1400-1500	Costa Rica, RFPI	7375na	13630na	15030am		
1400-1500	France, RFI Paris	11910as	17650as	17695as		
1400-1500	Ghana, Radio 1, Accra	4915do				
1400-1500	Ghana, Radio 2, Accra	7295do				
1400-1500	India, All India Radio	9665as	11760as	15120as		
1400-1500 varies	Italy, IRRS Milan, Italy	7125eu				
1400-1500	Japan NHK	11865va				
1400-1500	Jordan	9560eu				
1400-1500 mtwhf	Kenya, Voice of	4935do				
1400-1500	Lebanon, King of Hope	6280me				
1400-1500	Luxembourg, RTL	15350va				
1400-1500	Malaysia, RTM Radio 4	7295do				
1400-1500	Malta, V. of the Medit.	11925eu				
1400-1500	Nigeria	4990do	7285do			
1400-1500	Nigeria, Voice of	7255af				
1400-1500	Philippines, FEBC Manila	11995as				
1400-1500	Russia, Radio Moscow	7370va	9505na	9640na	9655na	
	9675na 9755na	9755na	9895na	11655na	11870va	
	11995na 12015va	15490va	15580va	17670na	17695va	
	17810va 21690na					
1400-1500	Sierra Leone, SLBS	3316do	5980do			
1400-1500	Singapore, SBC1	5010do	5052do	11940do		
1400-1500 vl	South Africa,Radio Oranje	9630do				
1400-1500	South Korea, Seoul	9570as				
1400-1500	Sri Lanka B'casting Corp.	6075as	9720as			
1400-1500 sa	Tanzania	5985af	9684af	11765af		
1400-1500	USA, CSMonitor Boston	9530as	13625as	13760am	15665eu	
		17555am				
1400-1500 sa	USA, CSMonitor Boston	13710na				
1400-1500	USA, KTBN Salt Lake City	7510na				
1400-1500	USA, VOA Washington	6110as	9760as	15160au	15425au	
1400-1500	USA, WHRI Noblesville	9465na	15105na			
1400-1500	USA, WJCR Upton, Kentucky		7465na	7490na		
1400-1500	USA, WWCR Nashville	15690am	17535na			
1400-1500	USA, WYFR Okeechobee, FL	6015am	11550as	11830am	17760am	
1405-1430	Finland, YLE	6120va	6155eu	9730af	11755eu	
		11820va	15440me	17880eu		
1415-1425	Nepal, Kathmandu	3230do	5005do	7165do		
1415-1429	Canada, RCI Montreal	11935eu	15305eu	15315eu	15325eu	
		17795eu	17820eu	21545eu		
1415-1500	Bhutan Broadcasting Svc	5023do				
1430-1500	Albania, Radio Tirana	7155eu	9760eu			
1430-1500 mtwhfa	Cameroon CRTV Douala	4795do				
1430-1500	Ecuador, HCJB Quito	11925am	17890am	21455am		
1430-1500	Iraq	15240as				
1430-1500	Myanmar, Voice of, Burma	5990do				
1430-1500	Netherlands	9890as	15150as	17610as	21665as	
1430-1500	Romania, R.Romania Int'l	11775as	15335as	17720as		
1430-1500	United Kingdom,BBC London	6180eu	6190af	6195as	9410eu	
	9515na 9740as	9750eu	9760eu	11750as	11820as	
	11940af 12095eu	15070va	15310as	15575me	17640va	
	17705eu 17790af	17840va	17880af			
	7180as 21470af	21660af				
1430-1500 **NEW**	USA, KJES New Mexico ****	11715na				
1445-1500 smwha	Mongolia, Ulaanbaatar	7260as	13780as			

SELECTED PROGRAMS

Sundays

1401 BBC: Feature. Topical programming on various subjects.
1415 Radio Beijing: China Anthology. See S 1215.
1415 Radio Korea: Echoes Of Korean Music. See S 0615.
1425 Radio Beijing: Music Album. See S 1225.
1430 BBC Anything Goes. Bob Holness' music variety.
1430 Radio Australia: At Your Request. See S 0130.
1435 Radio Korea: Shortwave Feedback. See S 0635.
1435 Radio Netherlands: East Of Edam. See S 0235.
1440 Radio Beijing: Listeners' Letterbox. See S 1240.

Mondays

1405 BBC: Outlook. Conversation, controversy, and color.
1415 Radio Beijing: Current Affairs. See M 1215.
1415 Radio Korea: News Commentary. See S 0045.
1420 Radio Korea: Seoul Calling. See M 0620.
1425 Radio Australia: Stock Exchange Report. Financial news.
1430 BBC: Off The Shelf. See M 0430.
1430 Radio Australia: World Of Country Music. See S 0430.
1435 Radio Netherlands: Newsline. See S 0035.
1440 Radio Beijing: Learn To Speak Chinese. See M 1240.
1440 Radio Korea: Tales From Korea's Past. See M 0640.
1445 BBC: Talks. See S 0445.
1450 Radio Netherlands: Feature. Topical programming.

Tuesdays

1405 BBC: Outlook. See M 1405.
1415 Radio Beijing: Current Affairs. See M 1215.
1415 Radio Korea: News Commentary. See S 0045.
1420 Radio Korea: Seoul Calling. See M 0620.
1425 Radio Australia: Stock Exchange Report. See M 1425.
1430 BBC: Off The Shelf. See M 0430.
1430 Radio Australia: Jazz Notes. Selections of the best in Australian jazz.
1435 Radio Netherlands: Newsline. See S 0035.
1440 Radio Beijing: Listeners' Letterbox. See S 1240.
1440 Radio Korea: Korean Cultural Variety. See T 0640.
1445 BBC: Feature. See M 0145.
1450 Radio Netherlands: Mirror Images. An arts magazine, featuring film, theatre, opera, books, and music.

Wednesdays

1405 BBC: Outlook. See M 1405.
1415 Radio Beijing: Current Affairs. See M 1215.
1415 Radio Korea: News Commentary. See S 0045.
1420 Radio Korea: Seoul Calling. See M 0620.
1425 Radio Australia: Stock Exchange Report. See M 1425.
1430 BBC: Off The Shelf. See M 0430.
1430 Radio Australia: Blacktracker. Aboriginal music.
1435 Radio Netherlands: Newsline. See S 0035.
1440 Radio Beijing: Learn To Speak Chinese. See M 1240.
1440 Radio Korea: Pulse Of Korea. See W 0640.
1445 BBC: Good Books. Recommendations of books to read (except 25th: A Month In The Country, Michael Hayes' wanderings of rural Britain).
1450 Radio Netherlands: Music Documentary. See W 0150.

Thursdays

1405 BBC: Outlook. See M 1405.
1415 Radio Beijing: Current Affairs. See M 1215.
1415 Radio Korea: News Commentary. See S 0045.
1420 Radio Korea: Seoul Calling. See M 0620.
1425 Radio Australia: Stock Exchange Report. See M 1425.
1430 BBC: Off The Shelf. See M 0430.
1430 Radio Australia: Australian Country Style. See W 0430.
1435 Radio Netherlands: Newsline. See S 0035.
1440 Radio Beijing: Culture In China. See H 1240.
1440 Radio Korea: Forward To Reunification. See H 0640.
1445 BBC: Recording Of The Week. See M 0615.
1450 Radio Netherlands: Research File. See M 1350.

Fridays

1405 BBC: Outlook. See M 1405.
1415 R. Beijing: Current Affairs or Business Show. See F 1215.
1415 Radio Korea: News Commentary. See S 0045.
1420 Radio Korea. Let's Sing Together. See F 0620.
1425 Radio Australia: Stock Exchange Report. See M 1425.
1430 BBC: Off The Shelf. See M 0430.
1430 Radio Australia: Fine Music Australia. Classical.
1435 Radio Netherlands: Newsline. See S 0035.
1440 Radio Beijing: In The Third World. See F 1240.
1440 Radio Korea: Let's Learn Korean! See F 0640.
1445 BBC: Global Concerns. See F 0145.
1450 Radio Netherlands: Feature Documentary. See W 1350.

Saturdays

1401 BBC: John Peel. See T 0330.
1415 Radio Beijing: Press Clippings. See S 0015.
1415 Radio Korea: News Commentary. See S 0045.
1420 Radio Beijing: Travel Talk. See S 0020.
1420 Radio Korea: Sites And Sounds. See S 0050.
1428 Radio Beijing: Cooking Show. See S 0028.
1430 BBC: Sportsworld. The latest soccer, cricket, tennis, golf.
1430 Radio Australia: Music Deli. See A 1230.
1435 Radio Beijing: Music From China. See S 0035.
1435 Radio Korea: From Us To You. See S 0105.
1435 Radio Netherlands: Newsline. See S 0035.
1450 Radio Netherlands: Airtime Africa. Analysis of issues that concern both Europe and Africa.

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English language

shortwave guide

1500 UTC [10:00 AM EST/7:00 AM PST]

FREQUENCIES

1500-1515 smwha	Mongolia, Ulaanbaatar	7260as	13780as		
1500-1525	Netherlands	9890as	15150as	17605as	21665as
1500-1530 mtwhf	Portugal	21515me			
1500-1530	Romania, R.Romania Int'l	11775as	15335as	17720as	
1500-1530	Sweden	15270va	17870na	21500na	
1500-1530	Swiss Radio Int'l	13635as	15505as	17670as	21770as
1500-1530 sa	Tanzania	5985af	9684af	11765af	
1500-1530	United Kingdom,BBC London	3915as	5975eu	6045eu	6180eu
		6190af	6195eu	6195as	9410eu
		9515na	9740na	9750eu	9760eu
		11750as	11940af	12095eu	15070va
		15310as	15400af	15420af 1	7840na
		15260na	15575me	17640va	17705eu
		17790af	17860af	17880af	21470af
		21490af	21660af		
1500-1550	Germany, Deutsche Welle	9735af	11965af	13610af	17735af
		17765af	21600af		
1500-1550	North Korea	9325eu	9640af	9977af	11705eu
1500-1555	Polish Radio Warsaw	7285eu	9525eu	11840eu	
1500-1555	Seychelles, FEBA	9810as	11685af	15330as	
1500-1600	Australia	5995pa	6060pa	6080pa	7240pa
		9540pa	9580pa	9770pa	11800pa
		12000pa	13755pa	15170as	17565as
1500-1600	Bangladesh	4880do			
1500-1600	Cameroon CRTV Yaounde	4850do			
1500-1600	Canada, CFCX Montreal	6005do			
1500-1600	Canada, CFRX Toronto	6070do			
1500-1600	Canada, CFVP Calgary	6030do			
1500-1600	Canada, CHNX Halifax	6130do			
1500-1600	Canada, CKZU Vancouver	6160do			
1500-1600 s	Canada, RCI Montreal	11955am	17820am		
1500-1600	China, Radio Beijing	7405na	11815as	15165as	
1500-1600	Cook Islands	11760pa			
1500-1600	Costa Rica, RFPI	13630na	15030am		
1500-1600	Ecuador, HCJB Quito	11925am	17890am	21455am	
1500-1600	Ethiopia, Voice of	7165af			
1500-1600	Ghana, Radio 1, Accra	4915do			
1500-1600	Ghana, Radio 2, Accra	7295do			
1500-1600	Guam, KTWR Guam	11650as			
1500-1600	Japan NHK	11865am	15355na		
1500-1600	Jordan	9560eu			
1500-1600 mtwhf	Kenya, Voice of	4935do			
1500-1600	Luxembourg, RTL	15350va			
1500-1600	Malaysia, RTM Radio 4	7295do			
1500-1600	Malta, V. of the Medit.	11925eu			
1500-1600	Myanmar, Voice of, Burma	5990do			
1500-1600	Nigeria	4990do	7285do		
1500-1600	Nigeria, Voice of	7255af			
1500-1600	Philippines, FEBC Manila	11995as			
1500-1600	Russia, Radio Moscow	7370va	9655na	9755na	11665na
		11840na	11995na	12015va	12030na
		12050na	13645na	15405na	15485na
		17670na			
1500-1600 twhfa	Seychelles, FEBA	9810as	15330as		
1500-1600	Sierra Leone, SLBS	3316do	5980do		
1500-1600	Singapore, SBC1	5010do	5052do	11940do	
1500-1600 vl	South Africa,Radio Oranje	9630do			
1500-1600	Sri Lanka B'casting Corp.	6075as	9720as		
1500-1600	USA, CSMonitor Boston	9530as	13625as	13760pa	15665eu
		17555am			
1500-1600 sa	USA, CSMonitor Boston	13710na			
1500-1600	USA, KTBN Salt Lake City	15590na			
1500-1600	USA, VOA Washington	6110as	7125as	9645as	9760as
		15395as			
1500-1600	USA, VOA Washington	9700eu	9760eu	15205me	
1500-1600	USA, WHRI Noblesville	9465sa	15105na		
1500-1600	USA, WJCR Upton, Kentucky		7465na	7490na	
1500-1600 vl, irr	USA, WRNO New Orleans	15420na			
1500-1600	USA, WWCR Nashville	1092	13815na 1	5690am	
1500-1600	USA, WYFR Okeechobee, FL		11705am	11830am	
1530-1540 mtwhfa	Greece, Voice of	15630na	15650na	17525na	
1530-1600	Austria, ORF Vienna	6155eu	11780as	13730eu	21490va
1530-1600	Netherlands	9890as	15150as	17580as	17605as
		21665as			
1530-1600	Sudan Nat'l B'casting Cor	9540do	9550do	11635do	
1530-1600	Switzerland, SRI	15430va			
1530-1600	Tanzania	5985af	9684af	11765af	
1530-1600	United Kingdom,BBC London	6190af	6195eu	6195as	7180as
		9410eu	9740na	9750eu	11750as
		11775na	12095eu	15070va	15260as
		15310as	15400af	17640va	17705eu
		17840na	17880af	21470af	21660af
1545-1600	South Korea World News	7275va			
1545-1600	Vatican Radio	15090au	17865au		

SELECTED PROGRAMS

Sundays

1513 Radio Australia: Music Of Radio Australia. See S 0230.
1515 BBC: Concert Hall. Classical music from the world's great concert halls.
1515 Radio Beijing: China Anthology. See S 1215.
1525 Radio Beijing: Music Album. See S 1225.
1530 Radio Australia: Lane's Company. See S 1130.
1535 Radio Netherlands: Happy Station. See S 0135.
1540 Radio Beijing: Listeners' Letterbox. See S 1240.

Mondays

1513 Radio Australia: Pacific Sunrise. Business and export development in the Pacific basin.
1515 BBC: Feature/Drama. See M 0101.
1515 Radio Beijing: Current Affairs. See M 1215.
1530 Radio Australia: Innovations. See M 1330.
1535 Radio Netherlands: Newsline. See S 0035.
1540 Radio Beijing: Learn To Speak Chinese. See M 1240.
1550 Radio Netherlands: Research File. See M 1350.

Tuesdays

1513 Radio Australia: Pacific Sunrise. See M 1513.
1515 BBC: A Jolly Good Show. Dave Lee Travis presents listener rock music requests.
1515 Radio Beijing: Current Affairs. See M 1215.
1530 Radio Australia: Communicator. See T 1130.
1535 Radio Netherlands: Newsline. See S 0035.
1540 Radio Beijing: Listeners' Letterbox. See S 1240.
1550 Radio Netherlands: No Boundaries. See T 0150.

Wednesdays

1513 Radio Australia: Music Of Radio Australia. See S 0230.
1515 BBC: Talks. See M 0415.
1515 Radio Beijing: Current Affairs. See M 1215.
1530 BBC: Comedy/Drama. The BBC's crack comedy team a presents half-hour production (except 25th: Two Cheers For November, a humorous look back at the month just past).
1530 Radio Australia: This Australia. See M 1130.
1535 Radio Netherlands: Newsline. See S 0035.
1540 Radio Beijing: Learn To Speak Chinese. See M 1240.
1550 Radio Netherlands: Feature Documentary. See W 1350.

Thursdays

1513 Radio Australia: Music Of Radio Australia. See S 0230.
1515 BBC: Music. See S 2315.
1515 Radio Beijing: Current Affairs. See M 1215.
1530 Radio Australia: Science File. See H 1130.
1535 Radio Netherlands: Newsline. See S 0035.
1540 Radio Beijing: Culture In China. See H 1240.
1550 Radio Netherlands: Media Network. See H 0150.

Fridays

1513 Radio Australia: Music Of Radio Australia. See S 0230.
1515 BBC: Music Review. See H 2315.
1515 Radio Beijing: Current Affairs or The Business Show. See F 1215.
1530 Radio Australia: Business Weekly. See F 1130.
1535 Radio Netherlands: Newsline. See S 0035.
1540 Radio Beijing: In The Third World. See F 1240.
1550 Radio Netherlands: Rembrandt Express. See F 1350.

Saturdays

1513 Radio Australia: Music Of Radio Australia. See S 0230.
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 Radio Australia: Parliament Program. See A 1130.
1535 Radio Beijing: Music From China. See S 0035.
1535 Radio Netherlands: Newsline. See S 0035.
1550 Radio Netherlands: Sounds Interesting. See S 0050.

www.americanradiohistory.com

1600 UTC [11:00 AM EST/8:00 AM PST]

FREQUENCIES

1600-1605	Singapore, SBC1	5010do	5052do	11940do	
1600-1610	Lesotho, Maseru	4800do			
1600-1610	Malawi B'casting Corp.	3381do			
1600-1625	Netherlands	9890as	15150as	17580as	17605as
		21665as			
1600-1630	Canada, RCI Montreal	11935eu	15305eu	15325eu	17820eu
		21545eu			
1600-1630 as	Norway	15230af	17720as		
1600-1630	Pakistan	11570me	13665me	15060me	15550af
		17555af	17725me		
1600-1630	United Kingdom,BBC London	5975as	6190af	6195eu	9410eu
		9515na	9630af	9740me	9750eu
		11750as	11940af	12095eu	15070eu
		15400af	17640va	17695eu	17705eu
		17840na	17860af	17880af	
		7180as	15260na	15310as	21470af
		21660af			
1600-1630	USA, VOA Washington	9700eu	15205me	15225me	
1600-1630	Vietnam, Voice of	9840eu	12020eu	15010eu	
1600-1630	Yemen	5970as	7190as		
1600-1635	Guam, KTWR Guam	11650as			
1600-1640 vl	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	9875as	15105as
		15415as	15595as	17810as	21680as
1600-1700	Australia	5995pa	6060pa	6080pa	9580pa
		9860pa	11800pa	11880pa	11910pa
		12000pa	13755pa	15170as	17565pa
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	China, Radio Beijing	11575af	15130af	15170af	
1600-1700	Cook Islands	11760pa			
1600-1700	Costa Rica, RFPI	7375na	13630na	15030na	
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	Luxembourg, RTL	15350va			
1600-1700	Nigeria	4990do			
1600-1700	Nigeria, Voice of	7255af			
1600-1700	Russia, Radio Moscow	9755na	9825na	11665na	11840na
		11900va	11940va	11995na	12030na
		12050na	13645na	13665va	15375na
		15425na	15485na	17670na	17695na
1600-1700	Saudi Arabia BC Svc	9705au	9720eu		
1600-1700	Sierra Leone, SLBS	3316do	5980do		
1600-1700	South Africa, Radio RSA	9565af	11885af		
1600-1700	South Korea, Seoul	5975om	9870af		
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	17510na	21640af
1600-1700 sa	USA, CSMonitor Boston	13710na	17555am		
1600-1700	USA, KTBN Salt Lake City	15590am			
1600-1700	USA, VOA Washington	9575af	11920af	11995af	15225af
		15410af	15495af	15580af	17650af
		17800af	21625af		
1600-1700	USA, WHRI Noblesville	9465am	15105am		
1600-1700	USA, WJCR Upton, Kentucky		7465na	7490na	
1600-1700 vl, irr	USA, WRNO New Orleans	15420na			
1600-1700	USA, WWCR Nashville	13815am	15690am		
1600-1700	USA, WYFR Okeechobee, FL	11705na	11830am	15355am	17750na
		21525eu	21615af		
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	21480om
1630-1700	Egypt, Radio Cairo	15255af			
1630-1700 mtwhf	Portugal	21515me			
1630-1700	United Kingdom,BBC London	5975as	6190af	6196eu	9410eu
		9515na	9630af	9740me	11750as
		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			
1700-1705	Ghana, Radio 2, Accra	7295do			

SELECTED PROGRAMS

Sundays

1615 BBC: Feature. See S 0230.
1615 Radio Beijing: China Anthology. See S 1215.
1615 Radio Korea: Echoes Of Korean Music. See 0615.
1625 Radio Beijing: Music Album. See S 1225.
1630 Radio Australia: Sports Report. See S 1313.
1635 Radio Korea: Shortwave Feedback. See S 0635.
1640 Radio Beijing: Listeners' Letterbox. See S 1240.
1645 BBC: Letter From America. See S 0615.

Mondays

1615 BBC: New Ideas. Innovative developments in technology and new products.
1615 Radio Beijing: Current Affairs. See M 1215.
1615 Radio Korea: News Commentary. See S 0045.
1620 Radio Korea: Seoul Calling. See M 0620.
1630 Radio Australia: Sports Report. See S 1313.
1635 BBC: Talks. Topical discussions on various subjects.
1640 Radio Beijing: Learn To Speak Chinese. See M 1240.
1640 Radio Korea: Tales From Korea's Past. See M 0640.
1645 BBC: The World Today. A look at a topical aspect of the international scene.

Tuesdays

1615 BBC: Megamix. See T 1130.
1615 Radio Beijing: Current Affairs. See M 1215.
1615 Radio Korea: News Commentary. See S 0045.
1620 Radio Korea: Seoul Calling. See M 0620.
1630 Radio Australia: Sports Report. See S 1313.
1640 Radio Beijing: Listeners' Letterbox. See S 1240.
1640 Radio Korea: Korean Cultural Variety. See T 0640.
1645 BBC: The World Today. See M 1645.

Wednesdays

1615 BBC: Rock/Pop Music. See T 0630.
1615 Radio Beijing: Current Affairs. See M 1215.
1615 Radio Korea: News Commentary. See S 0045.
1620 Radio Korea: Seoul Calling. See M 0620.
1630 Radio Australia: Sports Report. See S 1313.
1640 Radio Beijing: Learn To Speak Chinese. See M 1240.
1640 Radio Korea: Pulse Of Korea. See W 0640.
1645 BBC: The World Today. See M 1645.

Thursdays

1615 BBC: Network UK. Issues and events affecting people across the UK.
1615 Radio Beijing: Current Affairs. See M 1215.
1615 Radio Korea: News Commentary. See S 0045.
1620 Radio Korea: Seoul Calling. See M 0620.
1630 Radio Australia: Sports Report. See S 1313.
1640 Radio Beijing: Culture In China. See H 1240.
1640 Radio Korea: Forward To Reunification. See H 0640.
1645 BBC: The World Today. See M 1645.

Fridays

1615 BBC: Science In Action. The latest news about scientific innovations
1615 Radio Beijing: Current Affairs or The Business Show. See F 1215.
1615 Radio Korea: News Commentary. See S 0045.
1620 Radio Korea: Let's Sing Together. See F 0620.
1630 Radio Australia: Sports Report. See S 1313.
1640 Radio Beijing: In The Third World. See F 1240.
1640 Radio Korea: Let's Learn Korean! See F 0640.
1645 BBC: The World Today. See M 1645.

Saturdays

1615 BBC: Sportsworld See A 1430.
1615 Radio Beijing: Press Clippings. See S 0015.
1615 Radio Korea: News Commentary. See S 0045.
1620 Radio Beijing: Travel Talk. See S 0020.
1620 Radio Korea: Sites And Sounds. See S 0050.
1628 Radio Beijing: Cooking Show. See S 0028.
1630 Radio Australia: Sports Report. See S 1313.
1635 Radio Beijing: Music From China. See S 0035.
1635 Radio Korea: From Us To You. See S 0105.

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English language

shortwave guide

1700 UTC [12:00 PM EST/9:00 AM PDT]

1700-1710	Cameroon CRTV Bafoussam		4000do		
1700-1715	Israel, Kol Israel	11587na	11675eu	15590af	15650va
1700-1728	Sierra Leone, SLBS	3316do	5980do		
1700-1730 mtwhf	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	13635af	15430af	17635af	21770af
1700-1730	United Kingdom,BBC London	9515na	15260na	17895af	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 Washington	3980eu	6040me	9575af	9700eu
		9760me	11920af	15205me	15390af
		15410af	15445af	15495af	15580af
		17650af	17800af	21625af	
1700-1750	North Korea	9325eu	9640af	9977af	11705eu
1700-1755	Polish Radio Warsaw	7270eu	9525eu		
1700-1800	Algeria, R. Algiers	17745na			
1700-1800	Australia	5995pa	6060pa	6080pa	9540pa
		9580pa	9860pa	11880pa	11910pa
		12000pa	13755pa	15170as	
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	4130af	8260af	9570af	11575af
		15345af			
1700-1800	Cook Islands	11760pa			
1700-1800	Costa Rica, RFPI	7375na	13630na	15030na	
1700-1800	Ecuador, HCJB Quito	15270me	17790me	21455me	21480na
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	13720af			
1700-1800 varies	Italy, IRRS Milan, Italy	7125eu			
1700-1800	Japan NHK	7140as	11815na	11865na	15210me
		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	11840na	11900va	11940va	11995na
		12030na	12050na	13645na	13665va
		15375na	15375na	15425na	15510na
		15580na	17670na	17695na	17710na
1700-1800	Saudi Arabia BC Svc	9705eu	9720eu		
1700-1800	South Africa, Radio RSA	9565af	11885af		
1700-1800	Tanzania	5985af	9684af	11765af	
1700-1800	USA, CSMonitor Boston	11580as	13625as	17510na	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	13760am	15105am		
1700-1800	USA, WJCR Upton, Kentucky		7465na	7490na	
1700-1800 smtwhf	USA, WMLK Bethel, Penna.	9465eu			
1700-1800	USA, WWCR Nashville	13815na	15690na		
1700-1800	USA, WYFR Okeechobee, FL		21500va		
1706-1800	Ghana, Radio 2, Accra	3366do			
1715-1730	Cameroon CRTV Beau	3970do			
1715-1730	South Korea World News	7550as	15575as		
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			
1730-1800	Bulgaria, Radio Sofia	9700af	11720af	11765af	15330af
		17780af	17825af		
1730-1800 a	Latvia, Radio Riga	5935eu			
1730-1800	Netherlands	6020af	9605af	21515af	21590af
1730-1800	Romania, R.Romania Int'l	15340af	15365af	17745af	17805af
1730-1800	Swaziland, TWR Swaziland	3200af			
1730-1800	United Kingdom,BBC London	3255af	3915as	5975as	6005af
1730-1800	United Kingdom,BBC London	6180eu	6190af	6195eu	9410eu
		9630af	9740me	11775na	12095eu
		15070eu	15260na	15310as	15400af
		15420af	17640va	17695eu	17860af
		17880af	21660af		
1730-1800	USA, VOA Washington	6040eu	9575af	9700eu	9760eu
		11920af	15205eu	15205me	15410af
		15495af	15580af	17650af	17800af
		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 [1:00 PM EST/10:00 AM PDT]

1800-1810	Malawi B'casting Corp.	3381do			
1800-1825	Belgium, BRT Brussels	9905eu	17750af		
1800-1825	Netherlands	6020af	9605af	21515af	21590af
1800-1830	Canada, RCI Montreal	13670af	15260af	17820af	
1800-1830	Congo, RTV Congolaise	3265af	4765af		
1800-1830	Czechoslovakia	5930eu	6055au	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			
1800-1900	Australia	5995pa	6060pa	6080pa	9505pa
		9580pa	9860pa	11910pa	12000pa
1800-1900	Brazil, Radiobras	15265eu			
1800-1900	Bulgaria, Radio Sofia	9700af	11720af	11765af	15330af
		17780af	17825af		
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	Cook Islands	11760pa			
1800-1900	Costa Rica, RFPI	13630am	15030am	21465na	
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 varies	Italy, IRRS Milan, Italy	7125eu			
1800-1900	Ivory Coast, Abidjan	11920af			
1800-1900 mtwhf	Kenya, Voice of	4935do			
1800-1900	Kuwait, Radio Kuwait	13620na			
1800-1900	Luxembourg, RTL	15350va			
1800-1900 irreg	Mozambique	3265af	4855af	9618af	
1800-1900	Nigeria	3326do	4990do		
1800-1900	Russia, Radio Moscow	9795va	9855va	9860va	9875va
		9895va	11630va	11685va	11745va
		11840am	11995na	12030na	12050na
		15375va	15425na	15515na	15580va
		17565va	17655va	17695na	17710na
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	15445af
		15580af	17650af	17800af	21625af
1800-1900	USA, WHRI Noblesville	13760na	17835sa		

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1800 UTC cont'd

1800-1900	USA, WINB Red Lion, Penn.	15295eu			
1800-1900	USA, WJCR Upton, Kentucky		7465na	7490na	
1800-1900	USA, WMLK Bethel, Penna.	9465eu			
1800-1900	USA, WWCR Nashville	13815na	15690na		
1800-1900	USA, WYFR Okeechobee, FL		21500va		
1815-1830	Lebanon, Radio Voice of	6550me			
1815-1900	Bangladesh	12030as	15255as		
1830-1900	Afghanistan, Kabul	9635am			
1830-1900	Austria, ORF Vienna	5945eu	6155eu	12010me	13730af
1830-1900 as	Canada, RCI Montreal	13670me	15260me	17820me	
1830-1900	Finland, YLE	6120eu	9730af	11755af	15440eu
1830-1900	Iran, Islamic Republic	9022af	15260eu		
1830-1900	Netherlands	6020af	9605af	21515af	21590af
1830-1900	Sri Lanka B'casting Corp.	9720eu	15120eu		
1830-1900	United Kingdom,BBC London	3255af	3955eu	6005af	6180eu
		6190af	6195eu	7325eu	9410eu
		9600af	11750as	11955va	12095eu
		15070eu	15400af	17880af	21660af
1830-1900 WAR	Yugoslavia	6100eu	7200eu		
1833-1900	Ivory Coast, Abidjan	11920af			
1840-1850 mtwhfa	Greece, Voice of	15630af	17525af		
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 [2:00 PM EST/11:00 AM PST]

1900-1915	Tanzania	5985af	9684af	11765af	
1900-1920	Brazil, Radiobras	15265eu			
1900-1925	Netherlands	6020af	9605af	21515af	21590af
1900-1930 mtwhf	Canada, RCI for UN Forces	5995eu	7235eu	13650eu	15325eu
		17875eu	21675eu		
1900-1930 mtwhf	Canada, RCI Montreal	13670me	15260me	17820me	
1900-1930 as	Canada, RCI Montreal	5995eu	7235eu	13650eu	15325eu
		17875eu	21675eu		
1900-1930	Iran, Islamic Republic	9022af	15260eu		
1900-1930	Israel, Kol Israel	11587eu	11605sa	11675eu	15640eu
		17575eu	17630af		
1900-1930	Ivory Coast, Abidjan	11920af			
1900-1930	Japan NHK	9640am	11850af	11865va	
1900-1930 s	Lebanon, King of Hope	11530me			
1900-1930 as	Norway	17860va	21705va		
1900-1930	United Kingdom,BBC London	3255af	3955eu	6005af	6180eu
		6190af	6195eu	160me	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	11785af	11810af	13780af	13790af
		15350af	15390af	17810af	
1900-2000	Argentina,RAE BuenosAires	15345eu			
1900-2000	Australia	5995pa	6060pa	6080pa	7240pa
		9505pa	9580pa	9860pa	11720as
		11910pa	12000pa		
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	9440af	11515af		
1900-2000	Cook Islands	11760pa			
1900-2000	Costa Rica, RFPI	13630am	15030am	21465na	
1900-2000	Ecuador, HCJB Quito	15270eu	17790eu	21455eu	21480eu
1900-2000 sa	Eq.Guinea, R.East Africa	7190af			
1900-2000	Ghana B'casting Corp.	6130af			
1900-2000	Ghana, Radio 1, Accra	4915do			
1900-2000	Ghana, Radio 2, Accra	7295do			
1900-2000	India, All India Radio	7412va	9950va	11620va	11860va
		11935va	15080va		
1900-2000 mtwhf	Kenya, Voice of	4935do			
1900-2000	Kuwait, Radio Kuwait	13620na			
1900-2000	Luxembourg, RTL	15350va			
1900-2000 s	Morocco, Rabat	11920as			
1900-2000 smtwhf	New Zealand, RNZI	15120pa			
1900-2000	Nigeria	3326do	4990do		
1900-2000	Nigeria, Voice of	7255af			
1900-2000	Romania, R.Romania Int'l	7145eu	9690eu	9750eu	11940eu
1900-2000	Russia, Radio Moscow	11900va	11995va	12050va	12055va
		12060va	12070na	13645na	13665va
		15180na	15375na	15405na	15415na
		15425na	15500na	15580na	17565va
		17605na	17655va	17695na	17795va
1900-2000	Saudi Arabia BC Svc	9705eu	9720eu		
1900-2000	Sierra Leone, SLBS	3316do			
1900-2000	Spanish National Radio	6130as	9675af	9685eu	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	
1900-2000	USA, WHRI Noblesville	13760na	17835na		
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	13815na	15690am		
1900-2000	USA, WYFR Okeechobee	15355eu	21615af		
1910-1915	Botswana, Gaborone	3356af			
1920-1930	Cameroon CRTV Beau	3970do			
1930-2000	Canada, RCI Montreal	6010eu	7230eu	13650eu	15325eu
		17875eu	21675eu		
1930-2000	Czechoslovakia	6055eu	7345eu		
1930-2000 fa	Kazakhstan, R. Alma Ata	3955do	5035do	5260do	5960eu
		5970eu	7115eu	9505eu	9690eu
		11825eu	15215eu	15250eu	15270eu
		15285eu	15315eu	15360eu	15385eu
		17605eu	17730eu	17765eu	21490eu
1930-2000	Netherlands	17605af	21590af		
1930-2000	Polish Radio Warsaw	6095eu	6135eu	7145eu	7270eu
		9525eu			
1930-2000	Saipan, KFBS Saipan	9460af			
1930-2000	United Kingdom,BBC London	3255af	3955eu	6005af	6180eu
		6190af	6195eu	7160me	7325eu
		9410eu	9600af	9630af	11750pa
		12095eu	15070eu	15400af	17880af
		21660af			
1935-1945	Togo, RTV Togolaise	5047af			
1935-1955	Italy, RAI, Rome	7275eu	9710eu	11800eu	
1940-2000 smwha	Mongolia, Ulaanbaatar	11850eu	12015eu		
1945-2000	Bulgaria, Radio Sofia	11765as	17780as	17825as	
1945-2000	South Korea World News	6135as			
1950-2000	Sudan Nat'l B'casting Cor	9540do	9550do	11635do	
1950-2000	Vatican Radio	5885eu	7250eu		

The mountains of New Zealand our highlighted in this QSL from RNZ, submitted by John Carson, Norman, OK.

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English language

shortwave guide

2000 UTC [3:00 PM EST/12:00 PM PST]

2000-2010 mtwhf	Kenya, Voice of	4935do			
2000-2010 w	Malawi B'casting Corp.	3381do			
2000-2010 smwha	Mongolia, Ulaanbaatar	11850eu	12015eu		
2000-2015 mtwhfa	Greece, Voice of	7450eu	9395eu		
2000-2025	Netherlands	17605af	21590af		
2000-2025	Polish Radio Warsaw	6095eu	6135eu	7145eu	7270eu
		9525eu			
2000-2030	Bulgaria, Radio Sofia	11765as	17780as	17825as	
2000-2030	Nigeria, Voice of	7255af			
2000-2030 mtwhf	Portugal	11740eu			
2000-2030	Swiss Radio Int'l	9885eu	9885me	12035me	13635me
		15505me			
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	9645af	11625af	15090af	
2000-2050	North Korea	6576eu	9345eu	9640af	9977af
2000-2100	Australia	5995pa	6060pa	6080pa	7240pa
		9580pa	9860pa	11720as	11910pa
		12000pa			
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 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	11675na	11840na	12050va	13665na
		15375na	15405na	15425na	15500va
		15560na	17655va	17695na	17795va
2000-2100	Saudi Arabia BC Svc	9705eu	9720eu		
2000-2100	Sierra Leone, SLBS	3316do			
2000-2100	Swaziland, TWR Swaziland	3200af	3240af		
2000-2100	USA, CSMonitor Boston	9455as	13625pa	15665eu	17510am
		17555sa			
2000-2100	USA, KTBN Salt Lake City	15590am			
2000-2100	USA, VOA Washington	6040eu	9700eu	9760eu	11710eu
		13710af	15160eu	15205eu	15410af
		15445af	15495af	15580af	17650af
		17800af	17895af	21485af	21625af
2000-2100	USA, WHRI Noblesville	13760af	17835va		
2000-2100	USA, WJCR Upton, Kentucky		7465na	7490na	
2000-2100	USA, WMLK Bethel, Penna.	9465eu			
2000-2100	USA, WRNO New Orleans	15420na			
2000-2100	USA, WWCR Nashville	13815na	15690na		
2000-2100	USA, WYFR Okeechobee, FL	7355eu	15355na	15566eu	15585eu
		17610na	17750af	21525eu	21615na
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	Egypt, Radio Cairo	15375af			
2030-2100 mh	Estonia, Tallinn	5925eu	9560eu		
2030-2100 varies	Georgian Radio, Tbilisi	11760eu			
2030-2100	Korea, Seoul	6480eu	7550af	15575eu	
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	
2030-2100	Vietnam, Voice of	9840eu	12020eu	15010eu	

2100 UTC [4:00 PM EST/1:00 PM PST]

2100-2105	Syria, Radio Damascus	12085na	15095na		
2100-2110	Malawi B'casting Corp.	3381do			
2100-2110	Vatican Radio	5885eu	7250eu		
2100-2115	Swaziland, TWR Swaziland	3240af			
2100-2125	Belgium, BRT Brussels	5910eu	9905eu		
2100-2129	Canada, RCI Montreal	5995eu	7235eu	13650eu	
2100-2130	China, Radio Beijing	3985eu	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	17845na	21705va		
2100-2130 mtwhf	Portugal	15250af			
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	
2100-2130 WAR/var	Yugoslavia	6100eu	7200eu		
2100-2150	Germany, Deutsche Welle	9670eu	9765eu	11785eu	13780as
		15350as	15360as		
2100-2200	Australia	5995pa	6060pa	6080pa	11720pa
		11880pa	13705pa	15365as	
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	Canada, RCI Montreal	15325af	17875af		
2100-2200	China, Radio Beijing	9920eu	11500eu	15170eu	
2100-2200	Cook Islands	11760pa			
2100-2200	Costa Rica, RFPI	13630na	15030na	21465am	
2100-2200	Cuba, RHC Havana	13660eu	15330eu	17705eu	17815me
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		
2100-2200	Japan NHK	11815me	11840eu	15430eu	17810as
		17890as			
2100-2200	Luxembourg, RTL	15350va			
2100-2200	Nigeria	3326do	4990do		
2100-2200	Romania, R.Romania Int'l	5955eu	7145eu	9690eu	9750eu
		11940eu			
2100-2200	Russia, Radio Moscow	9685na	11780na	12040na	12050na
		12070na	13645na	13665na	15355na
		15375na	15405na	15425na	15485na
		15500na	15560na	17605na	17655va
		17690na	17710va	17735va	21690va
2100-2200	Sierra Leone, SLBS	3316do			
2100-2200	Spanish National Radio	6130eu			
2100-2200	Sri Lanka B'casting Corp.	15120as			
2100-2200	Ukraine, Kiev	5960eu	7250eu	7340eu	9600eu
		9635eu	9865eu	15135na	15570eu
2100-2200	USA, CSMonitor Boston	9455as	13625pa	15665eu	17510na
		17555sa			
2100-2200	USA, KTBN Salt Lake City	15590na			
2100-2200	USA, KVOH Los Angeles	17775sa			
2100-2200	USA, VOA Washington	6040eu	9700eu	9760me	11710me
		11870pa	11960me	15185pa	15205me
		15410af	15495af	15580af	17650af
		17735pa	17800af	17895me	19261af
		21485af	21625af		
2100-2200	USA, WHRI Noblesville	13760am	17835na		
2100-2200	USA, WJCR Upton, Kentucky		7490na		
2100-2200	USA, WMLK Bethel, Penna.	9465eu			
2100-2200	USA, WRNO New Orleans	15420na			
2100-2200	USA, WWCR Nashville	13815am	15690am		
2100-2200	USA, WYFR Okeechobee, FL	7355eu	15566eu	17750af	21525eu
2103-2110 tent	Croatian Radio, Zagreb	7240eu	9830eu	21480eu	
2110-2200	Syria, Radio Damascus	12085na	15095na		
2115-2130 s	Indonesia, R. Republik	6070do			

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2100 UTC

2115-2130 mtwhf	United Kingdom,BBC Carib.	15140ca	17715ca		
2115-2200	Egypt, Radio Cairo	9900eu			
2130-2145	Cameroon CRTV Beau	3970do			
2130-2155	Finland, YLE	6120af	11755as	15440eu	
2130-2200	Austria, ORF Vienna	5945eu	6155eu	9870af	
2130-2200	Canada, RCI Montreal	11880af	15150af	17820af	
2130-2200	Ecuador, HCJB Quito	15270eu	17790eu	21455eu	21480eu
2130-2200	Kazakhstan, R. Alma Ata	3955do	5035do	5260do	5960eu
		5970eu	7115eu	9505eu	9690eu
		11825eu	15215eu	15250eu	15270eu
		15285eu	15315eu	15360eu	15385eu
		17605eu	17730eu	17765eu	21490eu
2130-2200 smtwhf	Lebanon, King of Hope	6280me			
2130-2200	Lithuania, Radio Vilnius	9530na	17605na	17690na	
2130-2200	New Zealand, RNZI	17770pa			
2130-2200	United Kingdom,BBC Falk.I	13660sa			
2130-2200	United Kingdom,BBC London	3255af	3955eu	5975ca	6005af
		6180eu	6195as	7325eu	9410eu
		9590na	11750pa	12095eu	15070na
		15260sa	15340pa	15400af	
2145-2200	Bulgaria, Radio Sofia	11660na	11720am	15330eu	
2145-2200	Cameroon CRTV Yaounde	4850do			

2200 UTC [5:00 PM EST/2:00 PM PST]

2200-2210	Cameroon CRTV Bafoussam		4000do		
2200-2210	Syria, Radio Damascus	12085na	15095na		
2200-2215	Cameroon CRTV Yaounde	4850na			
2200-2218	Congo, RTV Congolaise	4765dc	5985do		
2200-2225	Italy, RAI, Rome	9710as	11800as	15330as	
2200-2230	Albania, Radio Tirana	9760eu	11825eu		
2200-2230	Canada, RCI Montreal	5960na	9755na	11705as	11905na
		13670na			
2200-2230 2Russia	China, Radio Beijing	9740eu			
2200-2230	Czechoslovakia	5930eu	6055eu	7345eu	9605eu
2200-2230 a	Indonesia,Radio Republik	3385do	4805do		
2200-2230	Swiss Radio Int'l	9810sa	9885sa	12035sa	15570sa
2200-2230 s	USA, KGEI San Francisco	15280sa			
2200-2230	USA, VOA Washinton	9530eu 1	1905me	11960me	15225me
		15445me	17885eu		
2200-2245	Egypt, Radio Cairo	9900eu			
2200-2245	USA, WINB Red Lion, Penn.	15185eu	15195eu		
2200-2300	Australia	11720pa	11880pa	13705as	15240pa
		15320pa	15365as	17795pa	
2200-2300	Bulgaria, Radio Sofia	11660am	11720am	15330eu	
2200-2300	Canada, CFCX Montreal	6005do			
2200-2300	Canada, CFRX Toronto	6070do			
2200-2300	Canada, CFVP Calgary	6030do			
2200-2300	Canada, CHNX Halifax	6130do			
2200-2300	Canada, CKZU Vancouver	6160do			
2200-2300	Cook Islands	11760pa			
2200-2300	Costa Rica, RFPI	13630ca	15030ca	21465am	
2200-2300 sa	Eq.Guinea, R.East Africa	7190af			
2200-2300	Ghana, Radio 1, Accra	4915do			
2200-2300	Ghana, Radio 2, Accra	7295do			
2200-2300	India, All India Radio	7412eu	9910eu	9950eu	11620eu
		11715eu	15265eu		
2200-2300	Luxembourg, RTL	15350va			
2200-2300 smtwha	Malaysia, RTM Radio 4	7295do			
2200-2300	New Zealand, RNZI	17770pa			
2200-2300	Nigeria	3326do	4990do		
2200-2300	Russia, Radio Moscow	11710na	12050na	15355na	15405na
		15410na	15425na	15485na	17570na
		17655va	17720va	17735na	21690na
2200-2300	Sierra Leone, SLBS	3316do			
2200-2300	Singapore, SBC1	5010do	5052do	11940do	
2200-2300	Taiwan, V. of Free China,	17750eu	21720eu		
2200-2300	Turkey, Voice of	9445na			
2200-2300	UAE Radio Abu Dhabi	13605na	15305na	17855na	
2200-2300	United Kingdom,BBC London	5975na	6195as	7325am	9410eu
		9570pa	9590na	9915ca	11750sa
		11945as	11955as	12095na	15070na
		15260sa	15340as	15400af	17830as
2200-2300	USA, CSMonitor Boston	9465na	13625as	15405as	15665eu
		17555am			
2200-2300	USA, KTBN Salt Lake City	15590am			
2200-2300	USA, VOA Washington	7120as	9770as	11760as	15185au
		15290au	15305au	17735au	17820au
2200-2300	USA, WHRI Noblesville	13760na	17835sa		
2200-2300	USA, WJCR Upton, Kentucky		7490na		
2200-2300	USA, WRNO New Orleans	15420na			
2200-2300	USA, WWCR Nashville	12160na	13815na	15690na	
2200-2300	USA, WYFR Okeechobee, FL		17610na	17750eu	21525eu
2230-2300 mtwhf	Congo, RTV Congolaise	4765do			
2230-2300	Israel, Kol Israel	9435eu	1158711	11603eu	11675eu
		15640sa	17575eu		
2230-2300	Sweden	6065eu			
2230-2300	USA, VOA Washington	9530eu	11905me	11960me	17885me
2240-2250 smtwhf	Greece, Voice of	11645au			
2245-2300	Armenia, Radio Yerevan	11920am	12050am	17660am	
2245-2300	USA, WINB Red Lion, Penn.	15145eu			
2245-2300	Vatican Radio	9600au	11830au	15090au	

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2300 UTC [6:00 PM EST/3:00 PM PST]

FREQUENCIES

2300-0000	Australia	11720pa	11880pa	15240pa	15320pa
		15365as	17795pa		
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	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	17630as		
2300-0000	Japan NHK	11735eu	11815am	15195as	17810pa
		17840va			
2300-0000	Luxembourg, RTL	15350va			
2300-0000 smtwha	Malaysia, RTM Radio 4	7295do			
2300-0000	New Zealand, RNZI	17770pa			
2300-0000	Russia, Radio Moscow	11710na	12050na	15355na	15405na
		15410na	15425na	15485na	17560na
		17570na	17685na	17720va	17735na
		17860na	17890na	21690na	
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	13605na	15305na	17855na	
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		7465na	7490na	
2300-0000	USA, WRNO New Orleans	7355na			
2300-0000	USA, WWCR Nashville	12160na	13815na		
2300-2305	Ghana, Radio 1, Accra	4915do			
2300-2305	Ghana, Radio 2, Accra	7295do			
2300-2315	Bulgaria, Radio Sofia	11660am	11720am	15330eu	
2300-2330	Canada, RCI Montreal	11940sa	15235na		
2300-2330	Lithuania, Radio Vilnius	9675na	9710na	11780na	13645na
		15580na	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
		17830af			
2300-2350	North Korea	11700am	13650am		
2300-2350	Turkey, Voice of	9445na			
2300-2400	USA, KVOH Los Angeles	9725am			
2315-0000 vl	Iraq, Radio Iraq Int'l	15150na	17740sa		
2330-0000 as	Canada, RCI Montreal	11940sa	15235sa		
2330-0000	Canada, RCI Montreal	9755am	11730am	13670am	
2330-0000 a	Colombia, R.Nacional	11822.5	17865am		
2330-0000	Iran, Islamic Republic	9022am	11790am	15260am	
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	13655na		
2335-2345 smtwhf	Greece, Voice of	7450eu	9425sa	11645sa	

SELECTED PROGRAMS

Sundays

2305 BBC: World Business Review. The previous week's news and upcoming events.
2313 Radio Australia: Sports Report. See S 1313.
2315 BBC: Classics With Kay. No, not Tracey Ullman, but Brian Kay with his choice of classical music.
2330 Radio Australia: Business Report. A look at the day's business developments.

Mondays

2305 BBC: World Business Report. The latest news from the markets worldwide.
2313 Radio Australia: Sports Report. See S 1313.
2315 BBC: Talks. John Turtle examines education issues in "The Learning World" (through December 28th).
2330 BBC: Multitrack 1: Top 20. Tim Smith presents the smash singles on the UK pop music charts.
2330 Radio Australia: Business Report. See S 2330.

Tuesdays

2305 BBC: World Business Report. See M 2305.
2313 Radio Australia: Sports Report. See S 1313.
2315 BBC: Concert Hall. See S 1515.
2330 Radio Australia: Business Report. See S 2330.

Wednesdays

2305 BBC: World Business Report. See M 2305.
2313 Radio Australia: Sports Report. See S 1313.
2315 BBC: From Our Own Correspondent. See S 0330.

The BBC's West African correspondent Ofeibia Quist-Arcton speaks six languages.

2330 BBC: Multitrack 2. Graham Bannerman presents new pop records, interviews, news, and contests.
2330 Radio Australia: Business Report. See S 2330.

Thursdays

2305 BBC: World Business Report. See M 2305.
2313 Radio Australia: Sports Report. See S 1313.
2315 BBC: Music Review. News and views from the world of classical music.
2330 Radio Australia: Business Report. See S 2330.

Fridays

2305 BBC: World Business Report. See M 2305.
2313 Radio Australia: Book Reading. See S 0030.
2315 BBC: Worldbrief. A roundup of the week's news headlines and developments.
2330 BBC: Multitrack 3. News and releases from the British alternative music scene.

Saturdays

2305 BBC: Words Of Faith. See M 1209.
2310 BBC: Book Choice. See W 0425.
2313 Radio Australia: Back Page. See S 0313.
2315 BBC: A Jolly Good Show. See T 1515.
2330 Radio Australia: Monitor. See S 0330.

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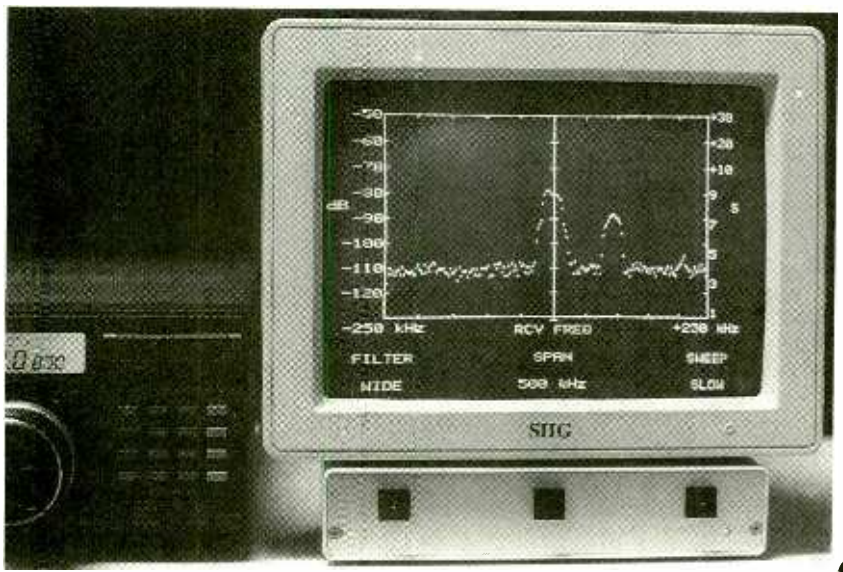
Enjoy the high-tech advantage of countermeasures professionals who find eavesdropping transmitters ("bugs"), unlicensed intruders, jammers, interference and hidden transmitters. Study signal propagation, test antennas, align receivers and transmitters, and much more!

Up to 10 MHz of spectrum displayed simultaneously with your target signal at the center of the screen. As the "spikes" appear on the screen you can tune them in quickly; no need to wait for the slow hit-and-miss search of a scanner. Nail those unknowns as soon as they transmit!

Connect the SDU-100 to any TTL monochrome monitor, or order the matching VID-100 9" CRT monitor. 12 VDC powered for mobile or field environment; AC adaptor included (the VID-100 is AC powered).

The SDU-100 is configured to operate with a variety of receiver intermediate frequencies (IFs), including 8.8, 10.7, 21.4, 45 and 70 MHz (specify at time of order).



Specifications:

SPAN: 10, 5, 2, 1 MHz; 500, 200, 100, 0 (Time) kHz
DISPLAY ACCURACY: +/-3% or +/-3 dB, whichever is larger
RESOLUTION BANDWIDTH: 5, 30 kHz
SWEEP TIME: 0.1, 0.5, 2, 6 seconds
IF: SDU-100A 8.83, 10.7, 21.4 MHz
SDU-100B 45, 70 MHz (other available)
VIDEO OUTPUT: TTL to optional monochrome monitor
INPUT MINIMUM DETECTABLE SIGNAL (MDS): Adjustable, -130 to -50 dBm
DISPLAY DYNAMIC RANGE: 90 dB

ORDER THE SDU-100 TODAY for only:

$499.95

SDU-100 Spectrum Display Unit $499.95
VID-100 9" CRT Monitor $149.95
or BOTH for only $599.95!

GROVE ENTERPRISES, INC.
1-800-438-8155
140 Dog Branch Road
Brasstown, NC 28902

NOTE: Demand for this spectrum display system, due for release in December, is expected to be heavy. Reserve orders are being taken now.

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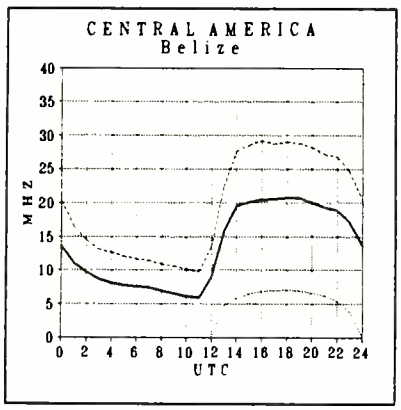
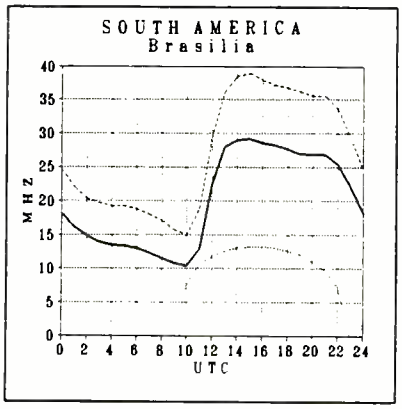
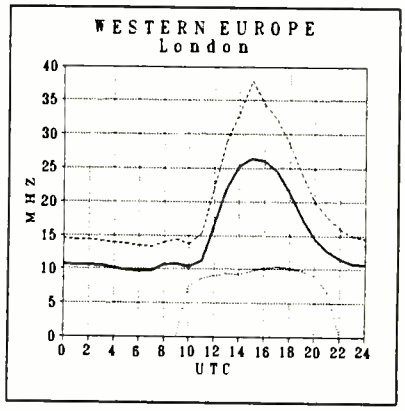
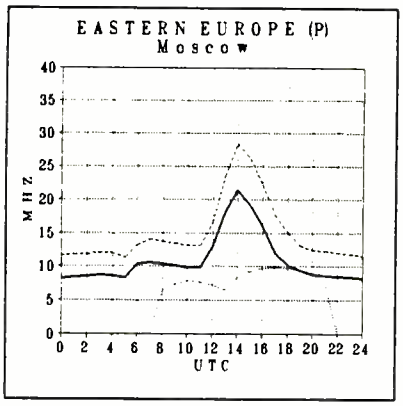
Propagation conditions: Eastern United States

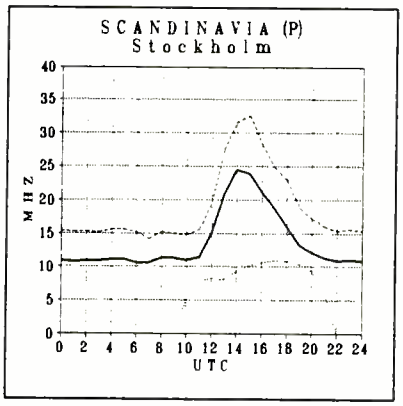
How to use the propagation charts: Propagation charts can be an invaluable aid to the DXer in determining which frequencies are likely to be open at a given time. To use the propagation charts, choose those for your location. Then look for the one most closely describing the geographic location of the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

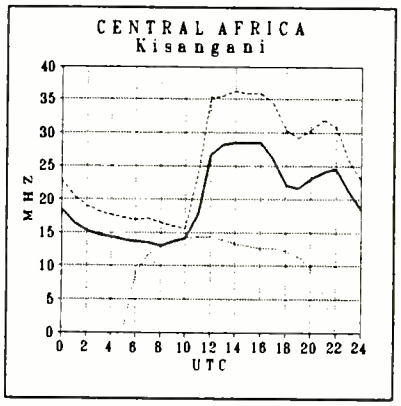


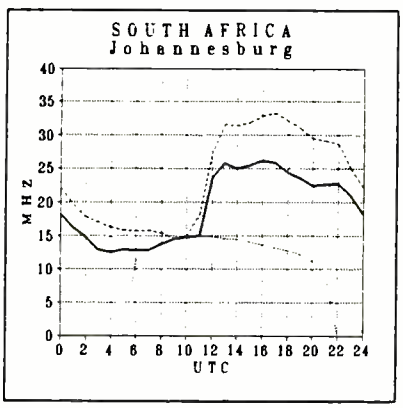


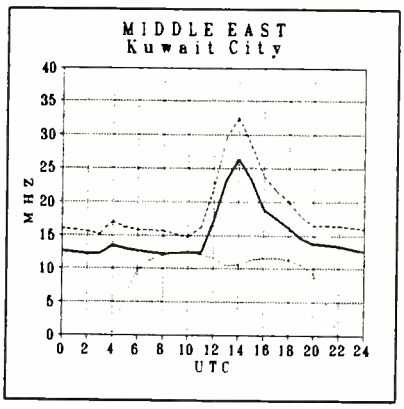


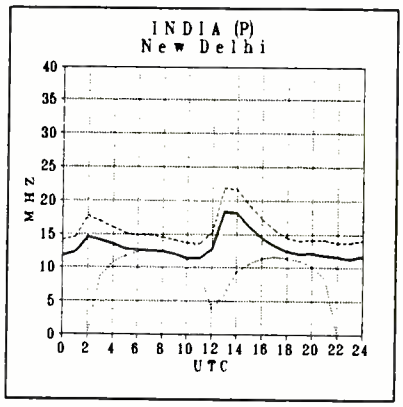


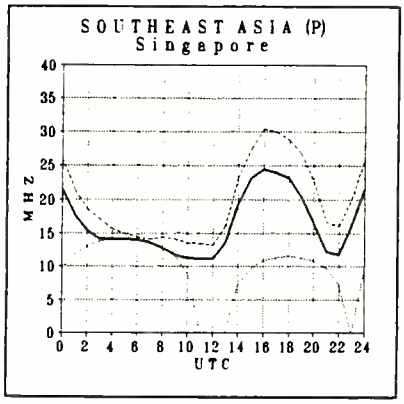


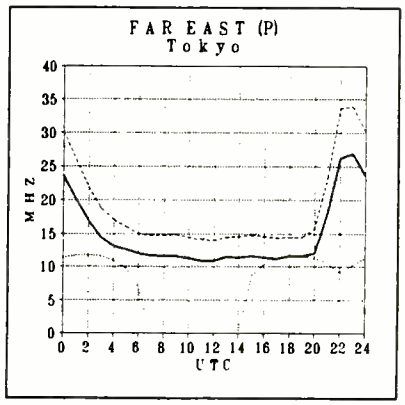


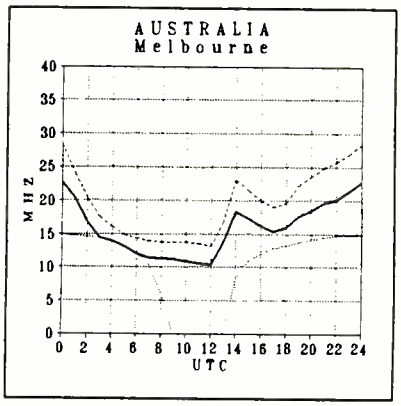












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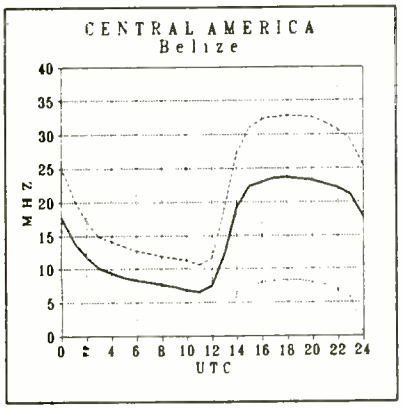
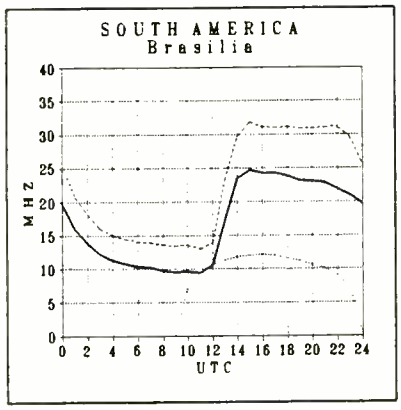
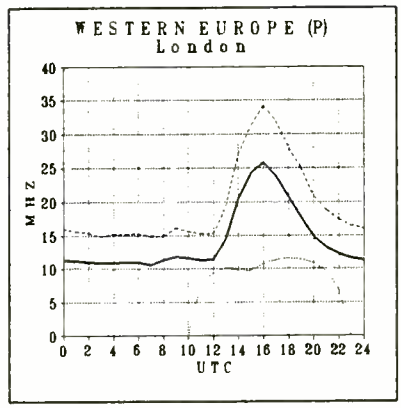
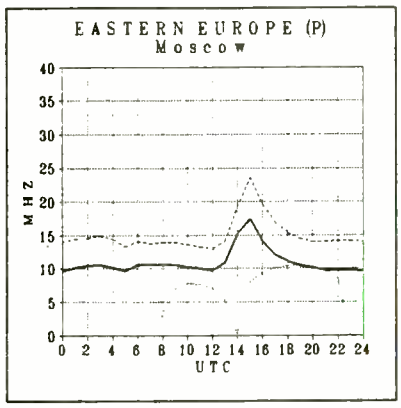
Propagation Conditions: Western United States

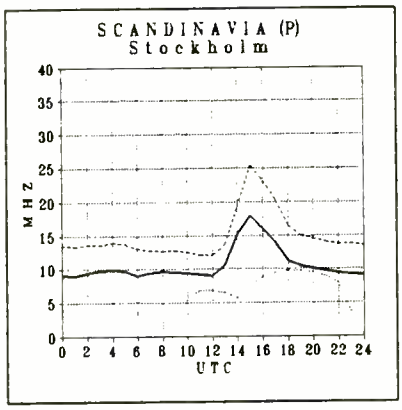
Once you've located the correct charts, look along the horizontal axis of the graph for the time you are listening. The top line of the graph shows the maximum usable frequency (MUF), the heavy middle line is the frequency for best reception, or optimum working frequency (OWF), and finally, the bottom line is the lowest usable frequency (LUF). You will find the best reception along the heavy middle line. Circuits labeled (P) cross the polar auroral zone. Expect poor reception on these circuits during ionospheric disturbances.

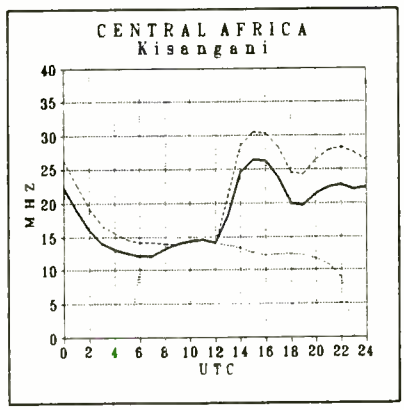


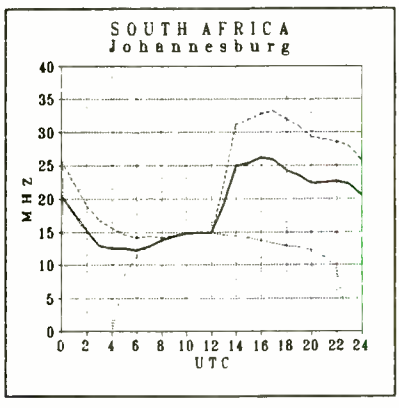


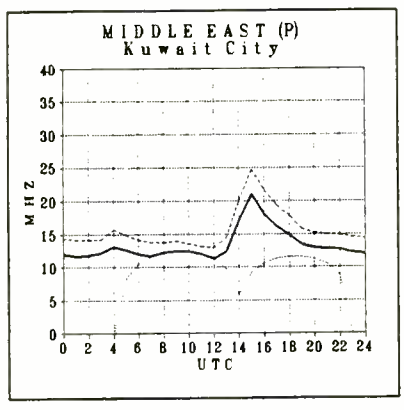


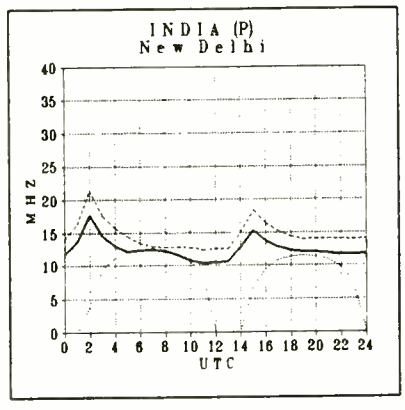


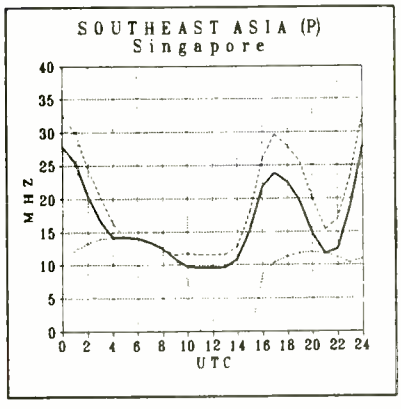


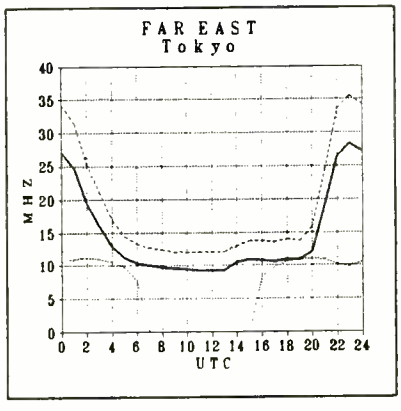


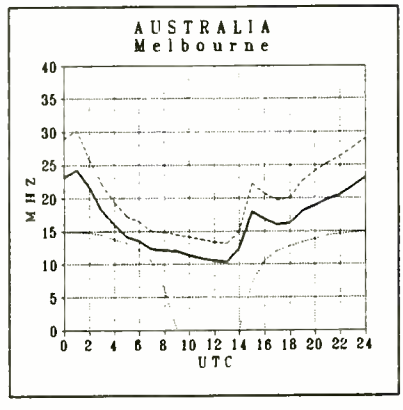












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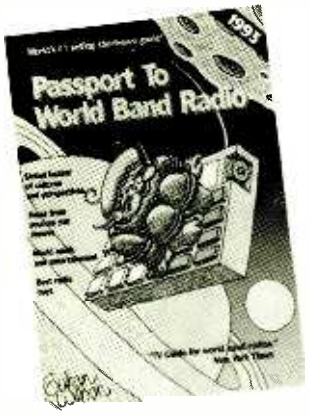
what's new?

Larry Miller



Passport '93

The new *1993 Passport To World Band Radio* is out, and it has transcended the cover copy that bills it merely as a "TV Guide for world band radios." It is, instead, a veritable feast for world band radio listeners.

Sporting a new Gahan Wilson cartoon cover for the second year in a row, *Passport '93* begins the smorgasbord with the Top 10 programs of the year. (There are some surprises, to be sure.) There's also a "how to get started" article, an excellent primer on RTTY, Larry Magne's world band radio buyer's guide (including an index of tested receivers 1985-1993), an hour-by-hour listing of programs, including descriptions, broadcasts in English by country, station addresses (plus QSL policies, freebies, etc.). And most importantly there are the incomparable "Blue Pages" — the exacting by-frequency "TV Guide" of shortwave radio.

Passport To World Band Radio now clearly leads the field as the most comprehensive and accurate single reference source for shortwave information.

Passport is available from virtually every shortwave radio store in the world as well as most other retail booksellers. The price is $16.95.

Catch 'Em and Count 'Em

Shortwave listeners who enjoy the thrill of keeping tabs on their listening will absolutely love the European DX Council's new Radio Country list. Called the *DXers Guide to Radio Countries*, it is primarily a list which you tick off as you log different stations/countries.

Countries are arranged first by continent (Europe, Africa, etc.) then alphabetically by country. Next to each is a space for the date you heard the country, whether you received a QSL, and the nature of the station (you can also use it for DXing utilities and ham stations). A final entry indicates the status of the radio country, its origin and an explanation of why it is considered a country (Croatia, for example).

The list runs some 21 pages and is one of the hobby's last bargains at US$4.00 (includes postage!). We don't often give out five stars, but this one — because of its quality, price, usefulness and "fun value" — get 'em all.

Get your copy of the *DXers Guide to Radio Countries* by sending your check, money order or cash to EDXC, P.O. Box 4-MT, St. Ives Huntingdon, Cambs PE17 4FE, England.

Guide to Programming

Okay, you use the "English Language Shortwave Guide" in the center pages of *MT* religiously to find who's on when. That's fine for the DXer, who wants to check off the country in his log book and move on. But for the listener who tunes in for program content, the task is much more difficult, especially if he is searching for a specific type of program.

That's what makes Kannon Shanmugam's *1993 Guide to Shortwave Programs* such a perfect companion to *Monitoring Times*—20,000 English-language programs from 100 broadcasters are listed for all 24 hours. A listing of frequencies most used by each broadcaster enables non-subscribers to utilize the book as well.

The *Guide* is divided into summer and winter seasons and is referenced by month, day of the week, and time. A must for the serious program listener!

The *Guide to Shortwave Programs* is $15.95 plus $4 UPS/ $1.50 book rate from the publisher: Grove Enterprises, PO Box 98-MT, Brasstown, NC 28902; ph. 800-438-8155.

Time and Temperature

An item always in demand by shortwave listeners is a clock that continuously displays both local and world time. Magellan's pocket-sized world time clock is great for the SWL, or for the traveler — turn the thumbwheel and you can view both the hour in your current location and at home as well (in either 12 or 24-hour format).

The tiny world time clock also has a snooze button, flip-out stand with time-zone map, built-in timer and hard protective cover. The price is quite affordable, just $19.95. We found it easy, once we noted it, to ignore the error in compensating for Daylight Savings Time (We thought we had the patent on that mistake!). To make the adjustment, the thumbwheel should be turned to the left, rather than the right as marked.

Magellan's catalog of gadgets for the traveler contains several other items of interest, including their "Conversion Master." Shortwave broadcast listeners who feel that they have missed something when the announcer speaks in metric — "the earthquake was centered some 300 kilometers north of Ankara..." — might be interested in Magellan's easy converter. Kept handy by the SW radio, you'll instantly be able to get the full impact of kilometers, kilograms and local currencies by converting 34 metric types of measurements to U.S. formats (fahrenheit to celsius, miles to kilometers, ounces to grams, and so forth) at the touch of a button. Conversion Master is $24.95.

The address for Magellan's is Box 5485 Santa Barbara, California 93150-5485. Their toll-free number is 1-800-962-4943. Ask for their Catalog of Travel Essentials and tell them *Monitoring Times* sent you.

BBC Directory of Broadcasters

The BBC Monitoring Service has announced that it will be adding another shortwave broadcast title, albeit on a professional level. *The WBI Directory: A Guide to International Broadcasters* will be a loose-leaf publication which will "present a picture of each international broadcaster through-

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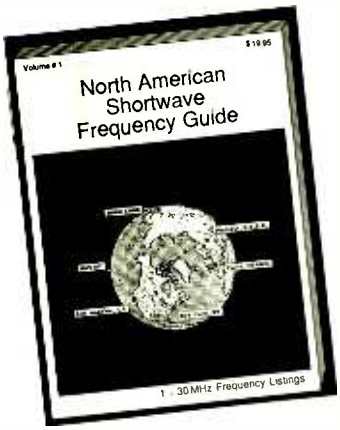
out the world by detailing, where available, its stated aim and funding, its current services and transmission facilities, its ranking in the world in terms of programme and frequency hours and its current state of development."

The Beeb has not announced a price for this publication — you can be assured that it will be high — and instead asks that you "express your interest" by writing to Marketing Department, The WBI Directory, BBC Monitoring, Caversham Park, Reading RG4 8TZ, England. Please be sure to tell them that your interest was aroused by *Monitoring Times*.



Frequency Guide

The *North American Shortwave Frequency Guide* by Captain James D. Pickard says that it covers English and Spanish language broadcasts from around the world but it resembles a personal logbook more than a comprehensive directory. Arranged in strict frequency order, columns are provided for Frequency, Mode, Call Sign and Service/Times.

The book begins at .1225 MHz (an awkward way of saying 122.5 kHz) with an odd mixture of utilities and broadcasters in the VLF and mediumwave bands. Domestic overseas broadcasters such as the Voice of Guyana on 560 kHz (which have almost no chance of being heard in NA) are intermingled with North American utilities.

Shortwave broadcast listings are inconsistent in their reliability. "Radio Saudi Arabia," for example, is correctly listed on 15.060 MHz but incorrectly named, missing an end time and giving no hint whatsoever as to language. Other station listings show a similar lack of familiarity with international broadcasting.

Most bothersome is what is left out. Many major international broadcasters are omitted (including Spanish ones). The omission of location for many of the utility listings (which comprise roughly one-third of the book), greatly reduces the usefulness of this directory. With only a callsign to go on this means you're going to have to buy another directory to use this directory.

While the information itself appears somewhat out of date, the concept of listing broadcasting and utility stations in frequency order does provide a useful perspective of the radio spectrum. The *North American Shortwave Frequency Guide* is available for $19.95 plus $4.00 shipping from Artsci Publications, P.O. Box 1848-MT, Burbank, California 91507 or call 818-843-4080.


QUICK-N-EASY SHORTWAVE LISTENING #1
GUIDE FOR 0000-0559 UTC, 8PM-1:59AM EDT, 5PM-10:59PM PDT
0000 UTC 0100 UTC 0200 UTC
8PM EDT 9PM PDT 10PM EDT 7PM PDT

Shortwave Cards

Another firm hoping to cash in on the shortwave listening craze/hobby is FB Enterprises. Based in Vancouver, Washington, FB Enterprises produces shortwave schedules on laminated 8-1/2" x 5-1/2" cards. Each card contains listings for six hours; a complete set presumably is comprised of four cards. Since each card is $3.95, a complete set will put you back $15.80 — (only $4.15 less than a year's subscription to *Monitoring Times*, which updates its schedules monthly).

Our CD-1 COMMUNICATIONS DECODER Is A MUST For All VHF/UHF SWL's

Introductory price: $199

THE MODEL CD-1 DECODES & DISPLAYS:
- ***104 DCS CODES (Digital)***
- ***50 CTCSS TONES (Analog)***
- ***16 DTMF DIGITS (Touchtone)***

The CD-1 lets you see which codes are used on the various emergency, business and amateur transmissions you monitor. No other decoder offers all three formats at such an outstanding price.

The CD-1 normally displays DCS or CTCSS but gives priority to displaying DTMF (Touchtone) when someone is making a phone call or controlling a system with Touchtones. When the DTMF is through, the CD-1 automatically redisplays the sequence just in case you missed something

Toll Free (800) 545-1349
Phone (805) 642-7184 • FAX (805) 642-7271

Connect Systems Inc.
2064 Eastman Ave. #113
Ventura, CA 93003

CSI is a registered trademark of Connect Systems Inc.

Still, the cards do look nice and would be handy to use; nicely produced and certainly a welcome gift for the non-radio hobbyist who wants to tune in the major shortwave broadcast stations.

For more information, contact FB Enterprises at 15800 NW 31st CT, Vancouver, WA 98685. Mention *MT*.

Homemade Lightning

This new release has nothing to do with moonshine, but if visions of spark gaps and Frankenstein's laboratory dance in your head, you'll enjoy R.A. Ford's easy-to-read history of high voltage generation.

Largely paraphrased around original drawings, instructions and patents, *Homemade Lightning* is a collection of electrostatic generators through the ages, from the electrophorus to the Wimshurst machine.

Leyden jars, electrostatic motors, Winter's machine, the electroscope and many other archaic and fascinating explorations into the realm of man-made lightning are included, including shock therapy and "anti-gravity" devices. Fun reading and informative.

For a good stocking-stuffer, order *Homemade Lightning* by R.A. Ford from TAB Books, Blue Ridge Summit, PA 17294-0850, for $14.95.

Computerized Monitoring

The mating of the computer to the radio has been one of the true revolutions in radio monitoring since the introduction of the transistor. In some cases, this marriage can almost eliminate the need for the actual monitor (person) entirely, searching for and recording frequencies in a

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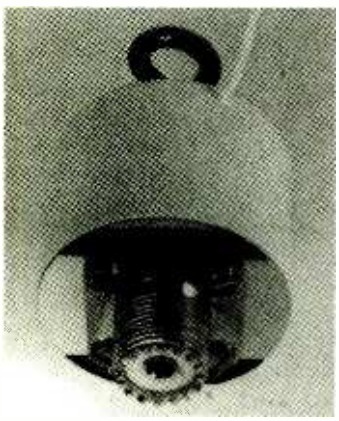
ruthless, relentless manner that no human could match.

The field is not altogether without its pitfalls — not everyone has the computer literacy or knowledge of programs necessary to take full advantage of the possibilities.

This is where author Todd Dokey comes in. In his book, *Computerized Radio Monitoring*, Dokey reviews many of the major pieces of software, explaining what they do and how they do it. He also looks at some of the most popular interface-able radios, among them the Kenwood R-5000 and the Icom R-9000.

In the case of both hardware and software, Dokey looks at what they can do and gives some tricks and techniques.

Computerized Radio Monitoring is available from Tiare Publications for $22.95 plus $2 shipping. Their address is P.O. Box 493-MT, Lake Geneva, WS 53147.



Help for Longwires

One of the problems associated with long random wire antennas has always been noise pick-up on the feedline. The longwire itself is usually up above household noise sources but the single wire that connects the antenna to the radio comes down through the jungle of RF created by home computers, light dimmers, TV sets and other sources of noise.

Palomar Engineers' Magnetic Longwire Balun connects at the antenna and allows the use of shielded coaxial cable between the antenna and the radio. Coax does not pick up the noise and therefore provides quieter reception.

The balun is for reception only and works from 500 kHz to 30 MHz. The balun is completely waterproof and requires no electrical power. An SO-239 connector is provided.

Price for the Palomar Magnetic Longwire Balun is just $39.95 plus $4.00 shipping to U.S. and Canadian addresses. For more information, contact Palomar Engineering at Box 462222-MT, Escondido, California 92046 or call 619-737-3343.

R10 Interceptor

Imagine a scanner that does not scan. That's the idea behind Optoelectronics new "Interceptor."

Unlike scanners that must be tuned to a specific frequency or scan through a fixed frequency range, the interceptor instantly tunes in any strong signal between 30 MHz and 2+ GHz — with no gaps in coverage. The mode is FM only, so it will not receive aircraft communications.

Reception of a 5 watt UHF or VHF transmitter, says the manufacturer, is typically from 200 to 400 feet. The demodulated audio is available from a stereo phone jack where one can listen in.

The R10 FM Communications Interceptor will not tell you the frequency you are hearing but it will pick up and lock on to the strongest signal available.

Available from Optoelectronics, the R10 is priced at $395 and includes an internal NiCad battery pack for up to six hours operation and an AC wall plug charger.

To get more information, write Optoelectronics at 5821 NE 14th Avenue, Fort Lauderdale, Florida 33334 or call 1-800-327-5912; mention you heard about the R10 in *MT*.

New Scanner Charger

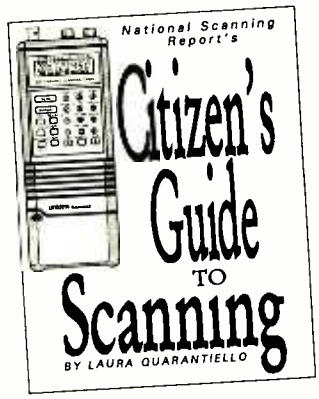
MetroWest has introduced its new Pro Power 3 scanner battery charger. The new charger retain the styling and operational features of the well-known Pro Power II but has added the ability to accommodate either Nickel Cadmium (NiCad) or the new Nickel-Metal-Hydride (NMH) batteries. The NMH batteries, which are also available from MetroWest, offer nearly twice the run time of the typical NiCad.

Charge time on the Pro Power 3 has been reduced and the charger allows for a half recharge cycle. The price will be between $49 and $56 — not set as of press time. For more information, write to MetroWest, 822 N. Spring Ave., Dept. MT, La Grange Park, Illinois 60525 or call 708-354-2125.

Upgrades for owners of Pro Power II models will also be available.

Citizen's Guide to Scanning #2

It has been one of the most popular books on scanning in the past decade. Out of print for over half a year, the new second edition is now completely revised by a new author and includes the most accurate and up-to-date information available today.



The National Scanning Report's *Citizen's Guide to Scanning* is designed to help you get the most out of your scanner, giving in-depth coverage to virtually all aspects of monitoring, from law enforcement to fire communications, aero to cordless to cellular. Innumerable tuning tips (including frequencies) are based on author Laura Quarantiello's decade-plus years of hands-on scanning experience.

There's something for everybody, from seasoned vet to scanning newcomer. The *Citizen's Guide to Scanning* is available this month from DX Radio Supply, P.O. Box 360, Wagontown, PA 19376 for $19.95 plus 2.00 book rate or $3.50 UPS.

Three New Scanner Directories

From the Windy City comes Ericson's *Chicagoland* (Cook, DuPage and Lake Counties) *Scanner Radio Listings*. There are some 200 pages which cover everything from aircraft to amateur, buses to business, federal, railroad and marine radio, as well as law enforcement, fire and EMS. The nearly 200 page book is $21.95 including shipping and local sales tax. Contact Erickson at 1-800-621-5802 or write 5456 N. Milwaukee Ave., Department MT, Chicago, Illinois 60630.

www.americanradiohistory.com

Southeastern Michigan and Northwest Ohio residents will want to get a copy of Daryll Symington's excellent *Scanner Frequency Directory*. This is the 8th edition of Symington's book, so you know he must be doing something right. Inside you'll find coverage of police, fire, business, government, mobile phones, aircraft, marine and hospitals. Symington's book is excellent and a bargain at only $10.95 plus $3.00 UPS or $2.00 book rate shipping. The address is P.O. Box 399-MT, Holland, Ohio 43528. Checks should be made out to "Radio InfoSystems."

There's a new Betty Bearcat frequency directory for Canada. Weighing in at just under 400 pages, the book covers all of Canada, arranged first by province, then by service and then by location. Included are law enforcement, fire and EMS as well as local government, forestry radio, marine radio, mobile phones, aircraft and weather radio.

You can order your copy of the *Betty Bearcat Canadian Frequency Directory* by calling 1-513-299-3855 or by sending your check or money order for $14.95 to Mr. Scanner, P.O. Box 291918-MT, Kettering, Ohio 45429.

In a Class by Itself

Bob Grove says he's seen massive frequency directories before, but nothing like the *Arizona Frequency Directory*! If you live in the states of Arizona, Colorado, New Mexico or Nevada, there is plenty to interest you in this tome by Jerry Schumacher.

If you don't feel up to spending sixty bucks on a book, there are still three excerpted booklets available as well: *The Type Service Handbook* ($19.19), *The Frequency Handbook* ($19.95) and *The Micro-List* ($9.95).

The "Big Book" is the result of years of collection and corroboration by an intense group of monitoring enthusiasts in the four-state area. It is a not-for-profit venture to share information among similar listening hobbyists.

The listings are cross-referenced by frequency, type service and location. Services include aircraft, business, emergency, government (federal, state, local), law enforcement, military and recreation.

Additional material covers antenna lengths, PL tones, government agency breakdowns, county maps, ten codes, radio system descriptions, a glossary and amateur allocations.

Quite a collection, and worth every penny of the $59.95, which you should send to PO Box 2114-MT, Glendale, AZ 85311-2114.

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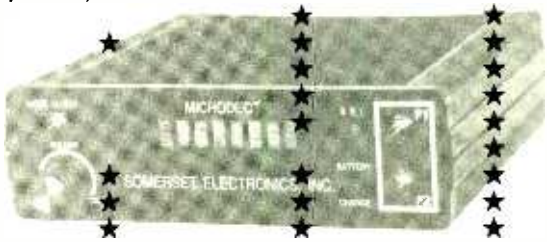

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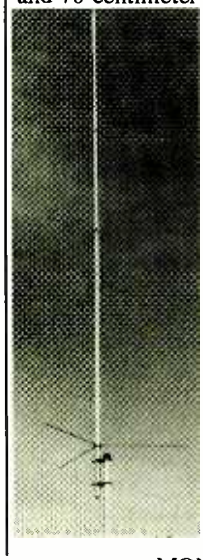
It's a 16 and a half foot stick, specially designed for hams operating on the 2 meter and 70 centimeter bands. With 9 dB of VHF gain and 12 dB of UHF gain, the ARX270 features non-metallic joints to eliminate pattern distortion and maintain a low angle of radiation — to keep the signal on the horizon where it belongs. Wind survivability is 90 mph and a factory installed pigtail feed makes waterproof connections a snap. The ARX270 is factory tuned and includes steel mounting hardware.



For more information, contact Cushcraft at P.O. Box 4680-MT, Manchester, New Hampshire 03108 or call 603-627-7877. Cushcraft does not make pricing information available to publications, thus allowing dealers wide berth in setting retail price. Shop around.

Hams Calling

Wanna make telephone calls over your ham radio but don't want to spend a fortune on an interface? Check out j-Com's new SDP-600 "Personal Autopatch." A low-cost microprocessor-controlled interface between a VHF/UHF transceiver and a telephone line allows the user to make and receive phone calls from any HT or mobile rig within range of the base station.

Best of all, unlike many other low-cost autopatches, the SDP-600 operates in full-duplex so that both sides of the conversation can be heard. You can even take calls over the air. With the reverse patch option enabled, incoming calls will cause a short ring-out over the air. The user then can answer the call using his access password.

The j-Com Personal Autopatch is manufactured in the U.S. and is priced at $199.95. Call j-Com to order: 1-408-335-9120 or write to P.O. Box 194-MT, Ben Lomond, California 95005.

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Hot Ham Fun

It's one of those things that can get into your blood and cause you a lifetime of fun. Obviously, we're not talking about the AIDS virus. We're talking about ham radio contesting, where intensity, concentration, excitement and challenge are the symptoms and "more" is the only cure.

Ham Radio Contesting is a new book by Robert Halprin, former ARRL staffer whose duties included overseeing the League's contest program. Thoroughly informed, Halprin not only disseminates a wealth of practical information but also manages to convey a level of excitement that could easily be contagious to non-hams.

Ham Radio Contesting is priced at $14.95 from your local ham radio dealer or from Tiare Publications, P.O. Box 493, Lake Geneva, Wisconsin 53147. Add $2.00 for shipping and handling. Wherever you buy the book, tell them that you heard about it in *MT*.

Ham Software — Cheap

Russell Grokettt has assembled a collection of hard-to-find ham software for the Amiga computer. Included in this package of public domain and shareware software are Morse trainers, packet terminals, WEFAX, MINMUF, SSTV, contest logs, electronic circuit designers, Amiganos for packet and much more.

A set of 12 disks is available for $29.95 (includes shipping). To order, send a check or money order to Kinetic Designs, P.O. Box 1646, Orange Park, Florida 32067-1646 or send a self-addressed, stamped envelope (2 stamps) and ask for their catalog.

Amateur TV Today!

Ham radio writer Mike Stone has introduced a newsletter on ham TV. Called *Amateur Radio TV Today*, the publication is available for $15.00 a year (10 issues). Samples are $2.50. Send your check or money order to Amateur TV Today!, P.O. Box 1677, Weatherford, Texas, 76086-1677.

Our Spies Tell Us...

Company Business, the newsletter dedicated to CIA activities, which was advertised for the past three months in *MT*, never got off the ground. The would-be publisher, Spy Supply, told *MT* that all checks are being returned or refunded.

Reviews

By Bob Grove

AT&T Telephone Interference Filter

Nearby transmitters—CB, ham or broadcast—can often cause interference on telephone lines. The new Z100B1 from AT&T is an in-line, common-mode filter designed to reduce such RF interference.

We decided to test a sample in our own ham shack. A nearby 100 watt amateur radio transmitter was keyed up in the AM mode and a test voice transmission was made. The level of interference from audio rectification was noted.

We then inserted the Z100B1 between the modular wall plug and the desk telephone. While the interference was not eliminated, the reduction was enough to make the difference between tolerable and distracting audio.

The manufacturer also suggests that the filter may be effective in reducing similar transmitter interference to computer modems.

The unit cannot be used with electronic (key system) telephones and may be too large (1" square and 3" long) to install behind some wall phones which cover the modular jack.

The Z100B1 filter is available from AT&T Phone Centers for $17.99. For more information call 800-222-3111.

GE Superadio

Years ago, Radio Shack® stores offered a TRF (tuned radio frequency) AM/FM radio receiver that boasted superior performance to other tabletop sets. It was a popular favorite among AM DXers who enjoyed shooting for those elusive medium wave stations.

Now GE seems to have captured the attention of this niche hobby with their new "Eurostyle" Superadio III, a large (12"W x 9"H x 4"D), AC/battery portable for the discriminating listener on a limited budget.

The Superadio III (model 7-2887) boasts excellent audio, and rightfully so. Its 6-1/2" midrange/bass speaker and 2" cone tweeter are driven by a minimum of 700 milliwatts of audio, contoured by separate bass and treble controls. A mono earphone jack is provided.

Performance

Of greater importance to the DX enthusiast, however, is selectivity, a radio's ability to reject adjacent-frequency interference, and here is where the Superadio is set apart from other over-the-counter AM/FM portables.

On AM its four tuned IF stages as well as TRF front end amplification are assisted by a narrow/wide filter switch. During normal strong signal reception the listener would choose wide filtering for its attendant frequency response, but when the going gets rough on weak, distant stations, the narrow filter can often mean the difference between reception and interference.

The slide rule dial is calibrated in actual frequency (not the annoying 54-160 with a X10 indicator found on most other portables) and tunes from 530 to 1700 kHz, allowing reception of TIS (travelers information stations) as well as the newly expanded medium wave broadcast band.

On 88-108 MHz FM there are three tuned IF stages and a ceramic filter, but no wide/narrow selection. An AFC (automatic frequency control) switch improves optimum frequency adjustment.

A 38" telescoping antenna may be used for FM reception and the internal 8" ferrite loop for AM, or the listener may utilize the rear-panel screw terminals for external antennas.

The radio's dual power supply offers 120 VAC accommodation as well as battery operation for up to 460 hours from six D cells (not included).

The GE Superadio III is available from GE dealers nationwide or for $54.95 plus $8 shipping from Chilton Pacific, Ltd., 5632 Van Nuys Blvd., #222, Van Nuys, CA 91401; ph. 818-780-2730.

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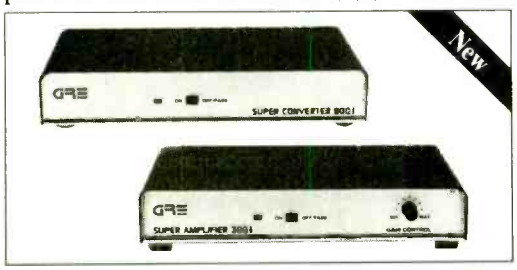
Improve Your Scanning Coverage!

GRE America is proud to introduce a new family of products to enhance your scanning pleasure! First, GRE has designed the new **Super Converter 9001** for base model scanners. The 9001 converts 810 MHz - 950 MHz down to 410 MHz - 550 MHz. The 9001 is the perfect alternative to buying a new, expensive scanner covering the 800 MHz band. Next, GRE announces the new **Super Amplifier 3001** for base model scanners. The 3001 will increase gain by as much as 20 dB, and is engineered to help scanners with low sensitivity pull in weak signals. Both products use BNC connectors, (1) 9 volt battery and have an off/pass switch for returning to normal operation.



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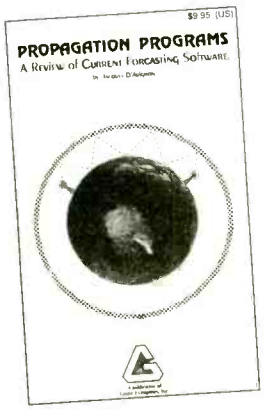

Bandaid? Miniprop? Ionsound? The number of shortwave radio propagation prediction programs on the market is bewildering. Which is best for you? This up-to-date review of the ten leading programs will help you make the right choice the first time!

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magne tests

Lawrence Magne
Editor-in-Chief
Passport to World Band Radio

• Jäger PL-440
• Reduced Distortion on Grundig Satellit 700
• New Competition for Drake R8?

German with Chopsticks

Time was when Asian firms would give their products American-sounding names in order to enhance their prestige. No more. Nowadays, chances are that label cachet will come from an English or European appellation. The latest of this genre: The Jäger PL-440...from none other than the People's Republic of China.

This compact travel model, which differs little from several other low-cost portables now emanating from East Asia, displays the frequency digitally—almost a must these days, regardless of price. There are 20 presets (five for shortwave), slew tuning, straightforward scanning, power lock, 24-hour clock, sleep-off and timer. There's no tuning knob or keypad, but the antenna rotates, as well as swivels.

Who Hid the Channels?

Shortwave frequency coverage is limited to certain key segments between 5.95-15.6 MHz. That's okay for international listening during the evening, except that many important band-edge segments are missing: 7305-9495, 9905-10000, 11550-11645 and 12055-12095 kHz. In all, this is a pretty mediocre showing.

Take the BBC. It has only a certain number of clear channels to the Western Hemisphere. Yet, of these, 7325, 9410, 9915 and 12095 kHz are missing altogether. Evenings, forget such private U.S. broadcasters as WRNO, WWCR, WJCR or KTBN. They're loud and clear on most radios, but nowhere to be found on the PL-440.

Tuning in Slow Motion

Even if the station you wish to hear can be tuned, getting to it can be a top-rank Maalox moment. There's no way to tune the '440 except by presets and a pair of single-speed up/down slewing buttons. Those buttons are S - L - O - W. The radio chuga-chugas its way up the shortwave spectrum with all the zip of a constipated tortoise. The only hope of tuning without pulling your hair in frustration is to use the presets as band-selector buttons—say, one preset within 49 meters, the others within 41, 31, 25 and either 22 or 19 meters.

After all this, the remaining characteristics seem relatively palatable. Selectivity is downright poor—Chinese radio designers apparently haven't yet caught on that good adjacent-channel rejection has been a key variable in shortwave receiver design since the Truman era. But sensitivity is at least okay for basic shortwave listening; ditto audio quality.

Too Little, Too Much

The Jäger PL-440 is pleasing to the eye—it certainly doesn't "look cheap." Perhaps that's why it sells for the relatively stiff price of $85.95, including shipping. With the DAK MS-101s, a much better model, currently going for half as much, it's hard to see what of merit the '440 has to offer.

Reduced SSB Distortion on Grundig Receiver

In our first tests of the new Grundig Satellit 700 portable, we found overall distortion in the single-sideband mode to be as high as 30%. We recently tested a newer unit and found overall distortion to be more like 3%, a vast improvement. Similarly, sideband asymmetry in the synchronous detector circuit of the first unit was much reduced—i.e., improved—in the second.

Best guess: The "shakedown cruise" seems to be over, with Grundig's Portugal plant now turning out higher-quality production.

Drake R8 Wannabe in the Works?

Lowe reportedly plans to introduce its HF-250 receiver sometime early next year. Likely to be priced at just under $1,000, it appears to be targeted to compete with Drake's superb R8.

Look for a full range of performance goodies similar to those found on the R8, but with the legendary Lowe sturdiness of construction. Unknown is whether Lowe will persist with its annoying habit of having precise tuning circuits with relatively imprecise digital readouts.

Stay tuned!

MT

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to protect their information by using some sort of code or encryption technique. Legal action will normally be taken only if it appears that the listener has intentionally defeated a mechanism that was installed to ensure privacy.

Several Canadian cellular companies are already well on their way to converting to digital systems, but even they admit it will not guarantee total privacy. Steve Pellerine, owner of Steve's Radio in Halifax, was quoted as saying: "For anything that can be broadcast on an airwave, there is always something that can pick it up."

Brian Keegan also requested a clarification of an item in the 2nd edition of the *Handbook*. He says that the "Scan-Tenna" reviewed on page 88 of that edition is a simple dipole configuration built by Valor, not the Grove Scantenna, which is a dipole cluster design.

Jeffrey Johnston's plea for more Canadian content sounds like an echo from West Coast readers of a few years ago. *Monitoring Times* certainly has enough Canadian subscribers to have a very active "Canadian element" represented within its pages, but it's up to the readers. Jeffrey has done his part by submitting a superb list of scanner frequencies for his area. So have some others; see this month's "Scanning Report."

I encourage Canadians to become a member of the Canadian International DX Club or the Ontario DX Club, which put out two of the best club publications in the hobby. Look for their addresses on the Club Circuit page. And meantime—writers, don't forget our neighbors to the north.

Visit to an ELF

Bart Paine of Tucson, Arizona, visited the ELF station (Extra Low Frequency) near Clam Lake, Wisconsin, this past summer. He says, "I stood under the twin cables, (28 miles of them) and my Sony video camera did not like it. The view finder jittered in a vertical fashion at about 7 Hz... This was either a beat between the vertical rate and the modulation or the carrier frequency... when the camera was parallel to the lines, but when I turned 90 degrees the jitter was gone."

Does this indicate something about the type of modulation or the frequency used? Bart is still trying to find out.

HP ID

We received two great responses to Richard Ashley's request (September Letters) for identification of some Hewlett Packard equipment found in an EC-135 on display. Here is what Sheldon Daitch, who works for the Voice of America, had to say:

Hewlett-Packard HP 3586A

"Ashley had identified the top unit as an HP 3386B. I believe that it should be an HP 3586B. The HP 3586B Selective Level Meter and the HP 3336B Synthesizer/Level Generator are marketed by HP as a mature stage set of test instruments designed for the test and alignment of analog frequency division multiplex equipment, normally used for telephone analog communications links.

"The SLM is simply a calibrated frequency selective meter used to measure the absolute levels of signals in its operating range. The SLM is tuned to a desired frequency and the level of that signal may then be measured on the meter or display. There is a monitoring speaker so the signals may be heard by the operator. The synthesizer may be tracked to the SLM frequency for easy measurement of systems, when both ends are available at the test equipment.

"Of course, the HP 3586B may be used as a receiver, although one can usually find equal or better sensitivity in many state-of-the-art receivers and at a much better price." ($12,700!)

Larry Ledlow, Jr., of Bennington, New Hampshire, also responded to the question, and agreed the HP 3386 was probably an error. Both units appeared to be 1980s vintage, he said. "The receiver is probably used as test equipment aboard the aircraft. The receiver can measure modulation, power, and other signal parameters. The synthesis generator is actually a synthesized frequency generator, probably used to provide a stable reference frequency for the measurement receiver." (At $5,920, it ought to be stable!)

Larry says calling the aircraft an EC-135 ELINT "is a bit of an oxymoron. The EC-135 designator is reserved for airborne command posts. This correlates with the mission description spelled out by Richard Ashley. However, ELINT is an acronym for ELectronic INTelligence, not a nickname for an aircraft. If the airplane was, in fact, an ELINT bird, the designator should be RC-135. Much of the equipment shown appears to be communications-oriented, thus supporting the command post idea and not the intelligence mission."

Here's a short course in acronyms from Larry: "ELINT is one of three basic disciplines making up Signals Intelligence (SIGINT). It involves primarily interception of enemy radar and weapon-associated signals. Communications Intelligence (COMINT) focuses on enemy communications. Finally, intelligence activity involving the interception and analysis of enemy satellite and missile telemetry is called FISINT, Foreign Instrumentation Signals Intelligence."

Yeah, I knew that. Thanks, Larry and Sheldon, for proving once again the amount of Intelligence possessed by *MT* readers!

Seeking RTTY and Singing the Blues

"Will we see a commercial RTTY station directly serving the public somewhere in the world in the future?" asks Walter Chmara of Bensalem, Pennsylvania. "I was thrilled to learn that the Swiss had begun teletype transmissions, though I'm not so thrilled now months later to see that they are dragging their feet when it comes to transmitting something in English other than their transmission schedule."

Tune in next month for the rest of Walter's letter and his unique proposal geared to lonely RTTY listeners. Until then, let's breathe a word of thanks for good friends and good monitoring times.

Rachel Baughn,
Editor

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801HF Wrap-Up

We ended last month after giving the basic set-up commands and screens of 801HF V1.0 from Terzon Systems for the ICOM R71, R72, R9000 and IC735. The first operational command which is encountered across the top of the screen is BANK. 801HF makes you organize your frequency/station data into groups or banks. For example, you could title a bank "Coast Guard" and then store all your Coast Guard stations in this bank. This methodology is very similar to using a scanner with ten banks, each of which can store ten channels or frequencies. In the same way, 801HF allows the user to select which banks and which frequencies are to be scanned or "locked-out."

Using the arrow keys we can move to the next command title at the top of the main screen: CHANNEL—the terminology Terzon uses for each frequency and its accompanying station information. With the press of the enter key we enter the world of station details. It is from this command that monitoring data is entered into the program. First you choose the bank that you want to work on. Let's use one that comes with the program for illustration—the BBC. Four self-explanatory choices of operations are displayed: Update Channels, Change Bank Name, Remove(delete) Bank and Enter Name Again. The "Update Channels" is the one you will be using most of the time. This channel screen displays six fields of information per frequency entry: Channel Number, Frequency, Description, Mode, Lockout and the scheduled time and days-of-the-week that the station can be heard.

By using a unique feature on the main screen—Scan Mode-Scheduled (entered via the F6 key)—we can scan only those channels which are scheduled for transmission during the time and day we are listening. Pretty nifty! But in my thirty years of monitoring I have found that the schedule is rarely the complete story when trying to predict the next time to monitor a station. So 801HF provides the option of entering one more element—the day-of-the-week—in its channel details.

Scanning based on channel number can also be performed. In fact, HF801 can scan a specified range and store the active frequencies for you while you are at work or out to the movies. Of course, all of the scanning functions require a receiver interface which has squelch detect, such as the one that is available from Terzon. This Terzon interface was not provided, so no comments can be made on the operation of this unit.

Summary and Comments of Terzon 801HF V1.0

Although we have given 801HF more than a month's column we have not covered all of its features or capabilities. I am impressed with the comprehensive F1 Help assistance available in most situations. I'm also impressed by the ability to change radio parameters, such as the tuning step, on-the-fly as you change your monitoring targets from the BBC to the USAF. Other programmers take notice!

I would like to see Terzon add the possibility of tuning in steps finer than 0.1 kHz which is currently the smallest programmable frequency step. A step of .01 kHz is useful in digital signal monitoring, such as RTTY and SITOR.

I found the forty-five character description field in the channel section to be too small. The Notepad command partially makes up for this limitation, but is not as easily accessed.

Although 801HF V1.0 allows use of a terminal unit, using the TermUnit command erases the command/F key screen, replacing it with the lines of the terminal unit output. A compromise screen option which would display less lines of terminal unit output, while maintaining a major portion of the command screen, would be a very useful modification to an already powerful package.

With all of its flexibility and power, 801HF may be overwhelming to a computer novice or beginner. But overall, 801HF is a very well presented package, with fast screen write routines, a comprehensive and impressive list of monitoring capabilities, and it will be invaluable to owners of ICOM R71, R72, R9000 and IC735 with moderate experience with computers.

801HF requires an ICOM R71, UX-14 port, IBM compatible with a minimum of 512K RAM and a floppy disk drive. An RS232 to TTL interface is also required. Terzon's ad in the September issue of *MT* says that 801HF is available for "other transceivers." The cost of 801HF V1.0 is $94.95 and the interface is available for an additional $60.00.

I mentioned last month that 801HF had been developed along with a companion program for the ICOM R7000 and R9000 receivers, 801SCAN V3.02. This program has the same command and bank structure with a slightly different screen format and modifications of commands to be useful on VHF\UHF. My impressions and comments concerning 801HF apply equally to 801SCAN. For $5.00 Terzon will provide a Demo disk of either program which does not require a receiver for demonstration purposes.

Terzon Systems Inc., PO Box 835921, Richardson, TX 75083, Tel. (214) 234-8222.

Return to Scancat

And now, a first for this column: a next-generation review. In January 1992, the first column I wrote for *MT* was on a program called Scancat Version 1.0. Well, the people at J&J Enterprises have not sat on their, er ah,... laurels!

Scancat was one of the first programs to provide an almost total monitoring environment at an affordable $50. Still, it was with a bit of skepticism that I parted with my $50 back in 1989. The closest competitor at the time was at the $200 level!

Well, much has changed since 1989. Prices of monitoring software have come down to below the $100 level in most cases, and Scancat has continued to improve on their excellent first attempt. The latest from Scancat is version 4.5.03, supplied on either 5.25 or 3.5 inch disks. The minimum required computer equipment hasn't changed: PC compatible, 512K RAM, Serial Port (s), one floppy drive and just about any video monitor. A Serial RS232 to TTL interface is required.

The instruction manual has gone from a disk file and a few sheets of paper to a spiral book of fifty pages. It is basic in its format, has small print, but is very complete in telling (and showing) how to use Scancat to its fullest. Actual screens are shown throughout the manual, making reading possible without having a running computer in front of you. With few exceptions the opening screen is the same familiar one used in the previous versions.

The number of radios that Scancat works with can be viewed by pressing the "R" key. Over thirty—yes, THIRTY—radios can be used immediately by simply pressing the corresponding key next to the radio's name. Although these are mostly ICOM radios, also included are radios by Kenwood, Yaesu, AOR, Japan Radio Company, Radio Shack and Drake. No constructing of configuration files by the user to use a radio! No re-starting of the program to change radios! For people like myself, who use more than one radio, this makes life easier and cheaper than having to buy two or more different programs.

The main command screen and method of accessing commands have changed very little from the version previously reviewed. Setting the serial ports for the receiver control and the terminal unit, getting time zone and current time and displaying data from a terminal unit are each initiated by a single keystroke. Sending frequency and mode information to the receiver is

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done with the "1" key, displaying on the computer screen the now familiar generic receiver "box" simulation with the frequency shown on its display.

Pressing the "2" key on the main screen allows you to scan between two user defined frequency limits by an adjustable frequency increment. Or if you often search the 6 MHz commercial aircraft band, for example, you can choose one of the 30 preset ranges. Scancat comes pre-loaded with useful frequency scan ranges, which are re-definable.

In other words, once you go into any of these main screen command modes, the new screen will either lead you through the required sequence of keyboard responses required, and/or indicate command choices and their corresponding keypresses at the bottom of the screen.

So far it's pretty similar to the original version. So where have J&J put all their efforts? The answer lies in two areas: display and editing of frequency/mode/time/comment files and automatic scanning and logging. In the first Scancat versions, editing or reviewing a list of previously saved frequencies had to be done by loading each individual frequency into the receiver separately. This is no longer the case with a new "Select/Edit" file command which displays all the information associated with ten frequencies in the file of interest. Paging to the next, or previous, ten frequencies is easily done with the arrow keys, making editing a file very simple and quick.

Putting together two separate files into one larger file is now possible with the MERGE FILE command. Reading of frequency files from sources other than Scancat files is now possible with a program (included with Scancat) called Scanport, whose detailed instructions are at the back of the manual. Automatic updating of the frequency displayed on the computer when the receiver is manually tuned is a feature for some radios using the Autoread function.

The Cherry on Top

Now let's look at what is to me the most impressive addition to Scancat's features. Clearly noted in the manual, but not on the main screen of command choices, is the "Special Functions" screen accessed via the F key. In my last review I suggested capabilities that I would like to see added in order to get closer to a Total Monitoring Environment. Automatic computer control of start/stop file scanning and logging of such events was one on my "wish-list." J&J were way ahead of me! Both capabilities are included, for ICOM radios and the FRG9600, in this version of Scancat. With the purchase of a squelch detect cable, available from J&J for under $25, Scancat takes control of your radio, scans the file or range which you have defined, waits for the squelch to be broken by a signal, either logs a new frequency not previously found or adds one to the "HITS" counter on a previously logged frequency.

You will be surprised at the catches after reviewing a day's list of unattended intercepts! Of course, due to the signal propagation mechanisms in the shortwave bands, only strong stations can be reliably counted on to activate the squelch, but the results are surprisingly good. However, for use with a VHF\UHF receiver such as the FRG9600, the results are consistently excellent. In fact, especially for scanner users, Scancat will remember frequencies which have receiver generated signals (birdies) and will scan around them if you define a scan/search range where they exist. This is much more effective than the channel lockout found on most scanners.

The results of your scans can be displayed in a spectrum-type graphic analysis so that the active frequencies can easily be picked out.

Any Corrections or Additions?

Well, for one thing, J&J is so busy making upgrades that their manual is lagging behind the current version. The result is screen layouts in the manual which don't quite match what we see on the screen. But, which would you rather have—the latest version or matching pictures in the manual?

However, assuming that all the added scanning/control features can be added to the original version without paying some price is like believing in Santa Claus; sorry, Virginia. There is a very real and noticeable reduction in the maximum scanning rate of the latest versions when compared to earlier versions, even version 4.0. This is very noticeable when scan delays of less than 0.1 of a second are attempted. At 0 delay the earlier version scans at almost three times the rate of version 4.5.03. This performance reduction can be the difference between catching or missing an active frequency when scanning a file of over three hundred frequencies. Maybe a little less features and a little more speed is called for.

With all of these added features, it is of little surprise that files from earlier versions are not compatible with later Scancats. This almost had me sucking on my car tailpipe with the engine running, when I considered the megabytes of files and the time I had invested with earlier Scancats. Luckily, although not easily found in the manual, all is not lost. At the screen that allows the loading of disk files, a press of the "O" key enables the reading of Old Scancat files and conversion to the new version format.

For future versions I would recommend that a few lines of the terminal output be viewable from the receiver control screen, instead of having to switch screens so often. Also, the inclusion of the popular and computer-controllable Yaesu Transceiver FT-747 as a supported radio could expand the audience.

Let Your Computer Control Your Radio! . . . with SCANCAT

Once you use the SCANCAT computer program with your radio, you will never operate your radio again without it! SCANCAT Version 4.5 controls the following radios:

- ★ AOR 2500, 3000
- ★ DRAKE R-8
- ★ ICOM R-71, R-7000, R-9000
- ★ JRC NRD-525, NRD-535
- ★ KENWOOD R-5000, TS-440, TS-450, TS-711, TS-950
- ★ YAESU FRG-757GX, FRG-9600

UNIVERSAL FEATURES "Windows Compatible"

- ★ Create Frequency Databases
- ★ Scan between ANY frequencies
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AOR-3000, ICOM, NRD-535, FRG-9600 FEATURES

- ★ Auto signal detection/scan stop
- ★ Auto logging to diskfiles
- ★ Spectrum analysis with spectacular graphics
- ★ Save/load radio's memories to disk

Version 4.5 also includes SCANPORT. SCANPORT allows you to download your favorite BBS or import most columnar frequency lists to a running SCANCAT file.

CALL or write for FREE information or for our $5.00 fully operational demo disk. We are so convinced you will buy SCANCAT, we'll even refund the cost of the demo and postage when you purchase SCANCAT!

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Finally, a very useful command is the "Tweek" feature which allows the user to use the same file with receivers having different frequency calibrations or tuning displays. For example, when in the upper sideband mode on the ICOM R71, the display shows the actual center frequency, but on other receivers you must tune off the center frequency by the amount of the sideband. The "Tweek" feature lets the user dial in this difference, thereby allowing the use of frequency files generated on one receiver to be used with other receivers—a very elegant and useful amenity. But to be very accurate, or to use it on shortwave with an FRG9600 and an HF converter, at least another digit of "Tweek" is required.

I guess by now you know my overall, very positive, opinion of Scancat version 4.5.03. With all these added features the price (including post and packing) has been raised, relative to the first version, by $5.00. Not bad at all. However, Scancat is no longer alone in this price range. J&J have turned their excellent first attempt into an excellent product while maintaining their high value-to-cost ratio. At $49.95 (plus $5.00 shipping) Scancat version 4.5.03 is available from *J&J Enterprises, 4001 Parkway Dr., Bossier City, LA 71111 (Telephone 318-631-3081).* See the original Scancat review, *MT* Jan 92, for more program details. Keep up the ground-breaking work, J&J!

MT

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Doug Demaw, W1FB

Choosing and Using Resistors

I have fielded a number of reader questions about resistors in the past two years. The neophyte experimenter and builder seems to accept resistors for their intended purposes, but appears to need advice about the many types of resistors and how to select the proper one for a particular circuit. Let's discuss some of the more subtle aspects of these seemingly ordinary devices.

Common Types of Resistors

Most solid-state circuits contain low-wattage resistors of the carbon composition or carbon film variety. Generally speaking, these resistors are 1/8-, 1/4-, 1/2- or 1-watt units. Higher power circuits, such as power supplies, employ resistors of higher wattage ratings, such as 3, 5, 10, or even 25 watts.

Low-wattage resistors of the carbon family are supplied with solid carbon elements, or a spiral-wound carbon inner element (carbon-film resistor). The latter type is the most prevalent one today. Both kinds of resistors are enclosed in a protective composition outer skin.

How do these resistors compare in their performance? In the frequency range from, say, 100 kHz to 30 MHz, you will not detect a difference in performance. But, in the VHF and UHF regions of the spectrum, we can experience problems with the carbon-film resistor. This is because this resistor contains unwanted inductance, however minor it may be. The spiral carbon element acts like a coil (inductor) and causes unwanted inductive reactance to exist at these higher frequencies. The greater the resistance value the greater the inductance (known as XL). The carbon-composition resistor is far more suitable at VHF and UHF, but can also exhibit some XL because of the wire pigtails (they should be kept as short and straight as practicable).

Power resistors come in two types also. The conventional ones contain nichrome wire as the spiral element, which is rated in a given number of ohms per inch or foot. This wire winding is encapsulated by vitreous enamel. The wirewound resistor is highly inductive, even at the lower frequencies. Power resistors that are not significantly inductive are marked with the letters "NIT" (noninductive type). If you wish to build a dummy antenna from power resistors, for example, use the NIT variety.

I should say that all of the foregoing resistors are suitable for use in dc and audio circuits, where unwanted XL is seldom a problem. It is only at radio frequencies that problems occur with XL. Figure 1 illustrates the resistors we are discussing.

Resistor Codes and Specs

Power resistors usually come with the resistance and wattage ratings marked on them. Those that do not are probably of surplus origin and may contain only the manufacturer's coded numbers. You will need to use your ohmmeter to learn the resistance value. You will have to guess at the wattage ratings of unmarked power resistors. This is fairly easy to do after you have seen marked resistors and observed their sizes.

The smaller carbon composition and carbon film resistors have bands of different colors that indicate the resistance and tolerance ratings. A silver band at one end of the resistor tells you that it is within 10% of the marked value. A gold band on one end means that the resistor is within 5% of the marked value.

For most of our experimentation we need not use 5% resistors. Special, close-tolerance circuits sometimes call for 1% resistors. They are costly, but can be purchased from some suppliers.

Table 1 lists the colors used on resistors and shows examples of resistor values versus the color bands. A magnifying glass is often used to determine exactly what color the bands are on the 1/8- and 1/4-watt carbon resistors.

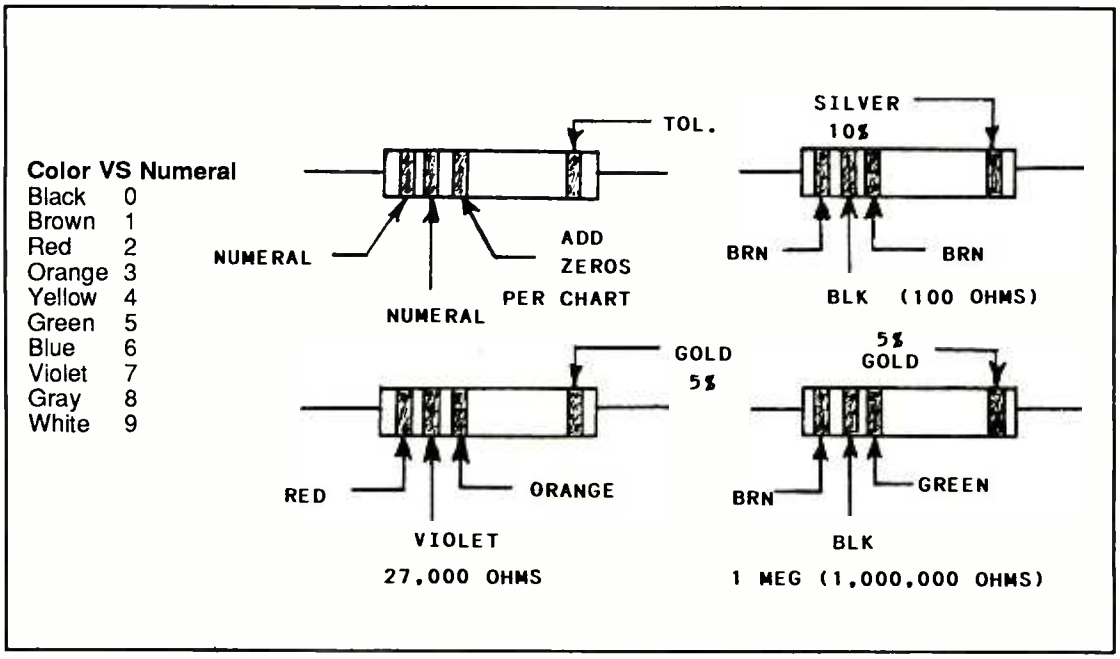

Table 1: Color bands versus numerals and number of zeros for resistor color coding. Examples of color coded resistors are given with the resistor values.

Games You Can Play With Resistors

There are times when you will need a resistance value that is not available in your parts bin. Resistors can be used in series to increase the resistance value. For example, a 100-ohm and a 1200-ohm resistor connected in series will yield a value of 1300 ohms. The wattage rating is the same as for the resistor of the lowest wattage rating. In other words, if you series-connect a 1/2-watt and a 5-watt resistor, the power rating is 1/2-watt.

Equal values of resistor, when placed in parallel, have half the resistance value of either resistor, but the wattage rating is twice that of either of the units. Hence, if we parallel two 100-ohm, 1-watt resistors, we have a net resistance of 50 ohms and 2 watts of power rating.

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When we parallel two resistors of unlike values we have a different situation. The following equation lets us know what the net value of resistance is.

$$\frac{1}{1/R1 + 1/R2 + 1/R3, \text{ etc.}} \text{ ohms}$$

where R = resistance in ohms and R1, R2 and R3 are the paralleled unlike-value resistors. For example, suppose we parallel a 12,000 ohm and a 47,000 ohm resistor. The net resistance value is 9559.3 ohms, per the above formula.

Now, let's suppose that we have a 100,000-ohm resistor, but our circuit calls for a 110,000-ohm unit. We can use a small rat-tail or similar file to grind away some of the carbon inside a carbon-composition (not carbon film) resistor. The more carbon we remove, the higher the resistance. An ohmmeter may be used to follow our progress. When we obtain the desired resistance we can seal the wound with quick-setting epoxy cement.

I have used this same scheme when reducing the value of disc-ceramic capacitors. I merely snip small pieces from the top edge of the capacitor (keeping track of the change in value with a capacitance meter) until I obtain the desired value. A small pair of diagonal cutters works well for this job. I seal the wound with epoxy cement after the trimming is completed. A colleague, who had not seen this done before, laughed and dubbed the component the "DeMaw Precision Capacitor."

Choosing the Correct Wattage Rating

A number of factors must be considered when choosing the wattage rating of a resistor in a given circuit. Among the considerations are cabinet ventilation, ambient heat from the overall circuit and whether or not the resistor is flat against a chassis or PC board versus being suspended slightly above the chassis or PC board. It is wise to allow space for air flow below a power resistor. This helps to keep it cooler.

Also, the duty cycle of the circuit plays a role in the wattage picture. If current flows constantly through the power resistor it is wise to select a unit that has twice the calculated wattage rating. This allows a safety factor. The wattage of the resistor under normal conditions should be twice or greater the wattage dissipated in the resistor.

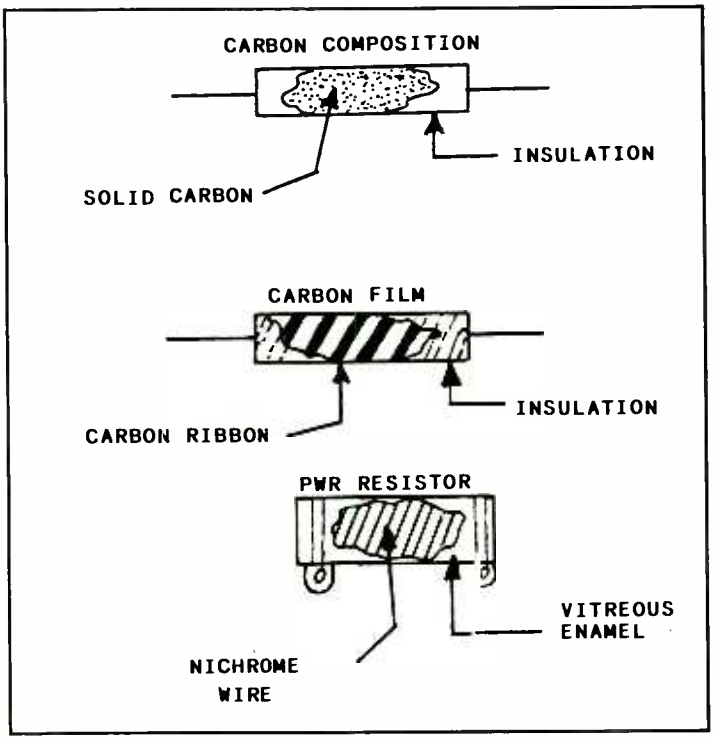

Figure 1: Examples of three common types of resistor. It can be seen that the middle resistor (carbon film) can exhibit unwanted XL (inductance) by virtue of the ribbon of carbon acting as a coil (see text).

If you know the voltage drop across the resistor, plus the current that is flowing, you can calculate the power dissipated within the resistor (Watts = EXI, where W is the wattage, E is the voltage drop and I is the current). Thus, if we need to drop a voltage from 12 to 6 and the current through the resistor is 1 ampere, the power dissipated within the resistor is 6 watts. We would install a 6-ohm, 12-watt resistor to serve our need (R = E/I, where R is in ohms, E is in volts and I is in amperes). If there is a lot of heat in the cabinet you may want to use a 25-watt resistor to ensure longevity.

Globar Resistors

Globar resistors are found in TV sets and some other circuits. They are noninductive components, but you should be aware that they change in resistance value with heat caused by the flow of current. As their operating temperature increases, the resistance value decreases.

In a manner of speaking, they are used somewhat as fuses to protect circuits from high initial surges of current. You may use them in circuits that do not draw enough current to heat them appreciably. Otherwise, take into account the change in resistance value (cold versus hot).

In Conclusion

These common sense rules should help you to better understand the character of resistors. With this knowledge you will be able to enjoy your workbench activities without scratching your head while wondering which resistor is correct for your application. Additional information is available in the *ARRL Handbook*. MT

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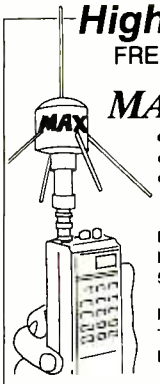

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Bill Cheek

Electronic Microsurgery and R-5000 Mods

Joanne Haines of San Mateo, CA, asks, *"When you're doing a mod on your precious radio circuit board and happen to damage one of those microcircuit traces, what is the best procedure for repair? Also, what are the proper ways to remove, replace, and add wire connections to Surface Mount Devices (SMD)?"*

Great questions, Joanne! A volume could be written in reply, but let's see what we can do with a few paragraphs of hard-core hacker lore without the theory and dull lecture:

Repairing Damaged Circuit Traces

Inevitably, this happens to the most novice of hackers as well as the saltiest pro's. Most of the time, it's no big deal. The repair can be tedious, depending on location of the damaged circuit trace, so settle down and relax; with some patience, the right tools and materials and all will be well.

When you have determined the location of a damaged circuit trace, follow it off to both sides of the break and find two good spots where you can insert a sharp tool such as an Xacto Knife or, better still, a dental tool like a plaque scraper. Gently scrape the surface lacquer off the traces on either side of the break at the accessible locations. Scrape until the copper shows bright and shiny for a length of at least 1/8" to 1/4".

Tin your soldering pencil (***fine tip, please***) and then apply a bit of fresh solder to the shiny copper traces. Ensure a nice little blob of solder on each trace. Then cut a tiny wire, preferably a solid, single strand 26-30ga insulated wire, to fit between the solder blobs on the traces. Strip a bit of insulation from each end of the wire and tin those stripped ends with solder. Then solder one end of the wire to one solder blob and the other end to the other solder blob. Job done!

Now there's another way to doctor up damaged circuit traces, but I don't have a good feel for the best procedures. For some time now, there have been available special "pens" with conductive inks just for the purpose of "drawing" your own traces on circuit boards. I think this approach is hardly the ideal solution, but might be great for certain situations. For more info, contact **Planned Products; 303 Potrero St; Suite 53; Santa Cruz, CA 95060; (408) 459-8088**

Working With Surface Mount Components

We can only touch lightly upon this subject now. If you only need to solder a wire to one end of a surface mount component, no sweat: tin your soldering pencil tip, and then apply a bit of fresh solder to the desired solder pad of the component. In effect, you'll just freshen the solder on the pad; nothing more. Then strip the end of your wire and tin it with fresh solder. Then solder that wire end to the end of the surface mount component. Job done.

Removing Surface Mount Components

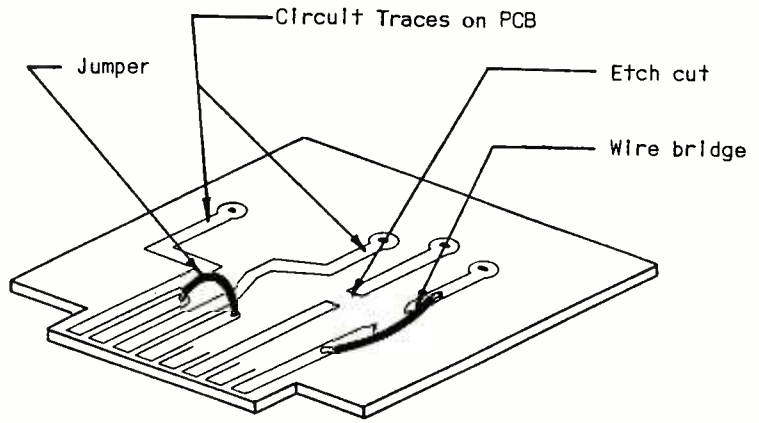
Well, heck, there's no good way to do it without a very expensive desoldering tool. So, just crush the component with diagonal cutting pliers, and then desolder the broken ends from each pad. Replacing surface mount devices is easier, if you have them, but you'll need tweezers or fine tipped forceps and a steady hand to position the SMD component properly before soldering one end. In most cases, surface mount components can be replaced by standard wire-lead components if you pay attention to where you route the leads and position the component.

Surface Mount Chips...

Can be a migraine headache sometimes, especially the stock memory chips in the PRO-2004/5/6, PRO-2022/2021, PRO-37/34/32, PRO-2026, BC-760/950XLT, and BC-590/600XLT. The pro's prefer to just snip these chips out first and then desolder the cut leads from the solder pads. This is the safest procedure for the printed circuit board, but of course, the chip is about as useful as shoulders on a snake after that. If you're a Klutz, maybe that's the best way to remove an SM chip.

I can't stand to destroy things, so I use desoldering wick to first absorb all excess solder from each pin/pad. I do two or three applications of the wick in brief periods. Then I slip a stout hat pin (the kind with a "pearl" on one end) under one row of pins and exert a gentle upward pressure as I run the soldering pencil down the row of pads. This process makes the pins pop free kind of like a row of dominoes falling. Repeat the process on the other row and put the chip away in a safe place. Use desoldering wick to clean up the vacant pads.

PRINTED CIRCUIT BOARD TECHNIQUES



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This technique CAN result in damaged pads and traces if you're not careful, though. There's a fine line between TOO MUCH heat and not enough; TOO MUCH force and not enough. I boogered up a few pads and traces in my earlier days, though I can't recollect damaging any in the last couple of years. Nowadays, I can pop a 24-pin SMD chip in less than five minutes with no damage. But I've done a couple hundred in getting that good at it.

Take your choice of these two methods, but in either one, exercise GREAT PATIENCE and don't get rattled or hurried. Patience is the KEY in every area of electronic hacking! Take your time and be sure of the correctness of every step you take!

Kenwood R-5000 Mods

From Mike Agner of Glen Burnie, MD

All mods are performed on the RF board, which is located on the underside of the set, on the side nearest the antenna connections.

MW Sensitivity Increase

Stock mediumwave sensitivity is adequate for most users, but more gain would be nice with an non-amplified loop or while DXing in a very quiet location. The MW band pass input filter contains a fixed attenuator, consisting of R9, R10 and R11. Jumper R10 with a short length of wire, and cut R11. Then simply cut R9 and put a 470 ohm resistor in a series to increase the resistance.

Values aren't critical but there must be a DC path for the switching control voltage. The 470 ohm resistor allows the DC switching voltage to pass but introduces very little attenuation to the RF signal. A quick version of this mod is to clip either (not both) R9 or R11. This gives quite an increase in gain, with minimum effort.

LW Sensitivity Increase

The LW band pass filter has no fixed attenuator but R7 can be increased by installing a 470 ohm resistor in series with it. This improves the sensitivity somewhat but there still is some loss through the low pass filter components (L7 - L9, C19 -C26). I do not suggest changing or altering this at all, since it provides a large degree of rejection to local signals above 500 kHz.

SSB Level Increase

The R-5000, with its extremely accurate and stable tuning, sharp filter options and pleasant audio, is an excellent performer for non-synchronous heterodyne detection (NSHD), a fancy name for tuning an AM signal in the SSB mode. However, there is a considerable difference in signal levels when switching between AM and either SSB position. A simple remedy is to increase the SSB detector output by paralleling R148 on the IF board with a 22K ohm resistor. R148 is very small and you may wish to lift the IF board and desolder it, and replace it with a 27K resistor. The value isn't that critical.

Scanning Modifications

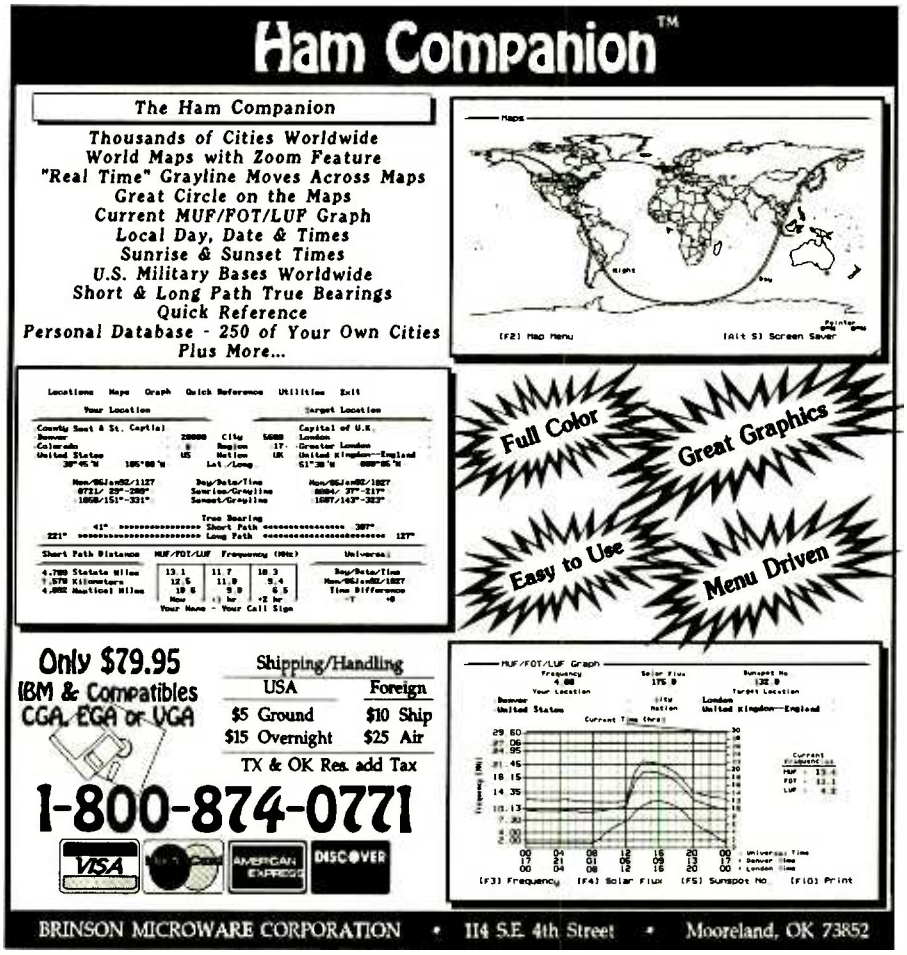
In memory scan, the R-5000 will pause a few seconds on each frequency stored in an SSB mode, regardless of whether a signal is present or not. AM and FM channels halt scan only if a signal is present, i.e. BUSY light is on. For more conventional scanning operation, Diode D68 on the CONTROL board (located on the rear of the front panel) should be cut. This lets the scan stop only on a "BUSY" channel, regardless of the mode. The scan will resume after a few seconds.

Scan speed and resume time is adjustable via the trimmer pots on the board attached to the rear of the squelch pot. Jumper W64 on the IF board controls timed or carrier operated scan resume. Cutting W64 will cause the scan to halt as long as a carrier is detected. W64 is located between plug J2 and J10, near the center of the board. Since the desired scan mode may change according the band, mode and operator, it would be very convenient if these functions were switchable without soldering jumpers and diodes! Possibly, some miniature DIP switches or small toggle switches could be mounted on the rear panel.

Beep Tone Adjustment

If you tire of those beeps and Morse code letters when you attack the front panel keys, there is an easy change. VR8 on the IF board adjusts the "beep" level from very loud to completely off. *Guess where I adjusted mine*! The audible beep and Morse identifiers can be of use in some situations, as in a dark room or for the visually handicapped, since they indicate which mode has been selected, or if you made an error, (four quick beeps). On the CONTROL board (X53-3020-XX), there are additional ways to control and modify the beep tone. Diode D9 enables the "Beep" oscillator. D66 selects between Morse and a single beep for the mode annunciator.

MT



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W. Clem Small, KR6A, CET

The Palomar Loop Antenna System

An Active Antenna with Very Wide Frequency Coverage

Active antennas appeal to many of us because they offer performance somewhat comparable to outdoor wire antennas and yet they require no outside wires at all. Most of them are small enough to sit out of the way on a corner of your operating desk.

This month we review the Palomar Loop Antenna, an active antenna system which covers from 10 kHz to 16 MHz. This very sizable chunk of coverage of the RF spectrum is made possible by use of a different plug-in loop antenna-element for each band. These loops are mounted such that they can be rotated to null out undesired signals or noise. In addition, all loops, except the 5 to 16 MHz loop, can also be tilted for even greater depth to the null they provide. In some instances it is nothing short of amazing to hear interference quietly fade away as you find the proper position for the null.

The negative side of active antennas is that they are susceptible to problems of intermodulation distortion and desensitization if they are located near strong RF fields (i.e., a station's transmitting antenna is close to your house). In my experience with several active antennas over the years these problems have never plagued me, and I believe that they are relatively infrequent.

The Palomar Loop Antenna System connects to the receiver via a short coaxial cable and a PL-259 plug, or couples to it via the Palomar Loop Coupler if the receiver has no antenna-input connector. The receiver used in this review was the receiver portion of a Kenwood TS-930S transceiver. To review the antenna down to 10 kHz, which was below the bottom-end of the receiver's coverage (100 kHz to 30 MHz), a Palomar VLF converter was used.

The antennas to which the Palomar Loop Antenna was compared in this review were a shortwire (SW) of about 12 ft hung up near the ceiling in a second-floor room of a wood house, and a longwire antenna (LW) around 250 ft in length and averaging perhaps 20 ft in height. Comparing a small table-top loop to a longwire antenna this long is like asking little David to fight the giant Goliath. But, as you will read below, I encountered many signals for which the little loop was, like David, the more successful performer.

Activating the Antenna

Between 10 and 40 kHz the only signal I found was the Omega station at 20 kHz. Reception of this signal via the loop was dramatically more quiet than with either of the long wires.

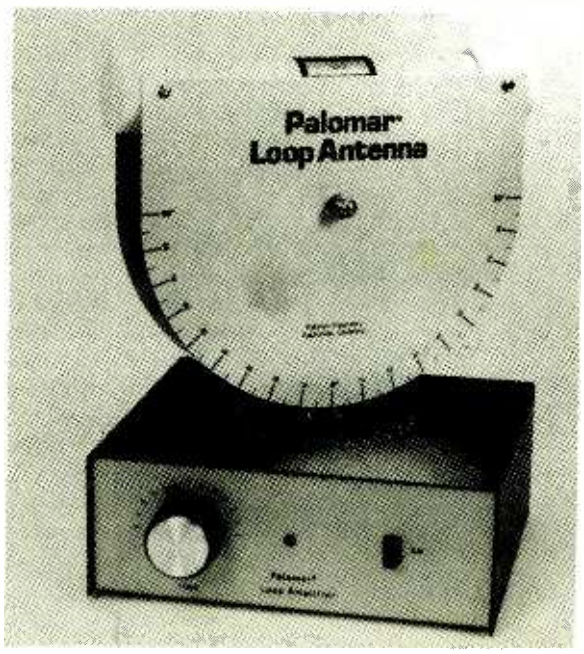
I did my tests both at mid-day and at late night. Noise was more of a problem during the day. In the daytime, until the receiver's noise blanker was turned on, the Omega station could not be heard using either wire antenna. At night, when the noise level was lower, Omega was copyable on the LW without the noise blanker. At both listening times, although the S-meter indicated that the LW gave a much stronger signal level than the loop, copy was much better on the loop due to the significantly lower noise level of that antenna.

In evaluating the results from 10 kHz on up to the AM broadcast band, keep in mind that if the receiver had not had a noise blanker, there would have been very little but noise heard from either of the wire antennas during the day. For a receiver without a noise blanker the loop would have been the only really functional daytime antenna for frequencies below the AM broadcast band.

With either of the wire antennas, WWVB at 60 kHz was buried too deep in the noise to detect in the daytime. At night it seemed to have disappeared even from the loop. Other signals in this range which could be detected using the wire antennas were still much better copy on the loop. For example, signals coming in 30 dB stronger on the LW nevertheless sounded much cleaner and were easier to copy from the loop.

In my daytime test, I found a signal at 121 kHz which was embedded in less noise than most; it was inaudible on the SW, strong and clear on the LW, and weaker but decent copy on the loop. At night the same signal was copyable on all three antennas, but the loop still gave the less noisy output. So, although the loop can't equal a really long wire for signal level, it produces greater output than a modest length wire. And when noise is heavy, the loop can make a significant improvement in signal copy, even over the stronger signal level from the long wire.

During both the day and night testing in the 200 to 300 kHz range I encountered several beacon signals identifying in Morse code and also some unmodulated carriers. The performance of the loop here sometimes gave copyable signals when the wire antennas would not, and vice versa. The loop gave better copy than the



Palomar Loop Antenna System with the AM broadcast loop in place.

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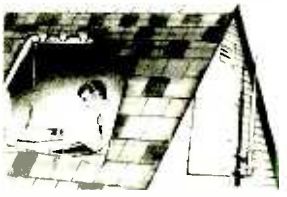

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really-long wire sometimes, and usually beat the shorter wire for good copy.

By both day and night on the AM broadcast band the loop consistently outperformed the SW while the LW produced signals of considerably greater strength than those from either of the other two antennas. On the two remaining high-frequency loops (1.6 to 16 MHz) the loop gave lower signal levels than either wire antenna. The interference nulling feature remains a useful aid on these frequencies.

In Summary

The Palomar Loop Antenna, because of its high signal-to-noise output, gives excellent performance on the lower bands. As we move upward in frequency and into the AM broadcast band, output from the loop is significantly less than with outside wire antennas. And at these frequencies the noise level is lower and the quiet nature of the loop did not give the advantage which was found on the lower frequencies. However, in very noisy locations the low-noise character of the loop should be more useful at the higher frequencies than was true at my relatively quiet rural site. The loop's interference nulling capabilities are an important factor in its usefulness across the entire frequency range.

The amplifier and each different loop of the Palomar Loop Antenna system are sold separately. The price of the loop Amplifier (LA-1) is $99.95 in my recent catalog. Loops are $89.95 each. A Loop Coupler, needed for using the loop with receivers without external antenna-input sockets, is $49.95. The VLF converter is available at $79.95 in two models: VLF-A for receivers covering 3510-4000 kHz, and VLF-S for receivers covering 4010-4500 kHz. Shipping and handling is $4.00 for each item.

Radio Riddles

Last Month

Last month I asked you to name the sources of various kinds of noise which interfere with radio reception. How did you do?

Probably many of us knew that lightning discharges from distant electrical storms account for much of the background noise in radio reception. In some areas there is also considerable noise generated by sparks, arcs, and rapid current changes in electrical machinery. At times there is even precipitation static noise when dust or snow particles strike an antenna. And each receiver actually has interfering noise generated within its own circuits.

But the most interesting sources of radio-noise interference have to be those emanating from far out in the Milky Way galaxy. The discovery that these sources emit what we now call "cosmic noise" was actually the start of the field of radio astronomy! So have a little patience with that troublesome noise coming from your receiver; who knows what other important things it may lead to in the future?

This Month

Roy Lewallen, in the manual to his antenna design program "ELNEC," points out that a dipole in free space is commonly known to have a gain of 2.15 dB over an isotropic reference antenna. But he tells us that that same antenna, plucked from free space and mounted in your backyard, has a gain of 6.8 dB over the same isotropic reference antenna! In other words, the dipole gains almost 5 dB just from being yanked out of the sky and hung up in your backyard! How can this happen?

You'll find an answer to this month's riddle, and much more, in your next issue of *Monitoring Times*. 'Til then, Peace, DX, and 73.

MT

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ask bob

Bob Grove, WA4PYQ

Q. *While listening through the FM educational band (88.1-91.9 MHz), I came across a station identifying as either KPHS or KPHF in Phoenix, Arizona. Which is it? (Robert Brock, Phoenix, AZ)*

A. According to the *1992 FM Atlas* by Bruce Elving, there are only two educational stations in Phoenix. You are mostly likely to have heard KPHF on 88.3 MHz.

Q. *What is the difference between crystals used by different manufacturers for use in crystal-controlled scanners? Can they be interchanged? (Jeff Hooper, Blairsville, GA)*

A. If the different manufacturers used exactly the same procedure to generate their local oscillator frequency, they would be interchangeable. The problem is, they don't.

A crystal has a fundamental frequency (its own characteristic resonance at which it vibrates) depending upon its size, thickness, type of cut and mounting. This frequency is then multiplied to a harmonic or overtone to correctly mix with incoming signals to produce the intermediate frequency, or IF, of the scanner.

One manufacturer may use a 10 MHz fundamental frequency multiplied by 6 to get 60 MHz, while another may use a 15 MHz crystal multiplied by 4. Not only that, but some manufacturers use 10.7 MHz for the IF, while others use 10.8 or 10.85 MHz.

Q. *Does anyone know where I can buy a recent model of the Zenith Transoceanic radio? (Allen Grower, 1121 Edgewater Drive #4, Orlando, FL 32804-6363).*

A. The popular portable was discontinued many years ago, but perhaps one of our readers has one of the last versions to sell. Contact Allen direct at his address listed above.

One excellent source of parts, products and service for antique and discontinued radios is Antique Radio Classified; a free sample is available by writing to them at PO Box 2, Carlisle, MA 01741.

Q. *Even with my new NRD535 receiver and InfoTech M7000 decoder I am unable to decode many radioteletype signals I hear on the shortwave bands. The diagnostic routine on the decoder says everything is OK, so what's wrong? (Walter Brown, Honolulu, HI)*

A. There are many non-standard shifts used by worldwide utilities, most of which are not available on the M7000. Remember, a RTTY signal consists of speed (baud rate) and frequency shift (mark/space tones). The M7000 can decode only certain of the more common combinations.

Q. *Promotional literature has stated, "All serious radio enthusiasts should own a.....frequency counter." I can see why the user of a transmitter would want one, but of what use would it be to a shortwave listener? Can it be used to measure receiver frequencies? (Karl Leist, Munich, Germany)*

A. A frequency counter does only one thing: reads out the frequency of the closest (strongest) radio signal. If you walk up near a walkie-talkie, cordless phone, mobile radio, ham rig, CB, or any other source of discrete radio frequency energy, the display will register the frequency.

At any consequent distance from such sources, however, the display will flash random readings, indicating that it is responding either to nearby electrical interference or a composite of distant signals.

Q. *I have two scanners connected to one antenna, but I can get only one scanner to work at a time. How come? (Bill Silvey, Shelby, NC)*

A. Darned if I know. If you are using a conventional TV splitter (one cable in, two out) and all connections are secure (check for opens and shorts), it HAS to work!

Q. *How can I protect my receiver from static electricity burnout when I use an external antenna? (Scott Spada, Irwin, PA)*

A. The easiest and cheapest way is to connect two silicon signal diodes (1N914, 1N4148 or similar) or, even better, two Schottky diodes (1N5712 or similar) in parallel, but cross-polarized. This means to connect the two diodes together positive to negative (+ to -) at both ends. Then connect the parallel diodes from antenna to ground (chassis).

While nothing will withstand the direct strike of a lightning bolt, the measure described above will prevent static electricity buildup and strong, nearby signals from destroying the input transistor of your radio.

Q. *Does unplugging a radio to protect it from a thunderstorm cause any harmful effects on its circuitry or battery? (David Share, Boston, MA)*

A. None whatsoever, provided the radio is switched off before plugging or unplugging it. If the radio is left on, it is possible for the current surge to produce voltage "spikes" (transients) which can damage semiconductors.

In our August, 1992, column, we quoted a spokesperson from Cellular One who identified certain abbreviations found on car phones. Apparently they were not all correct.

RSSI is, indeed, received signal strength indicator, a kind of S meter.

SAT stands for supervisory advisory tone (actually there are three tones, each separated by 30 Hz) which prevents the phone from accessing more than one cell site; they are filtered out by the phone so that the subscriber won't hear them.

SID, or system identification, is an arbitrary designator assigned by the FCC to identify the phone's home cellular system. If the cell doesn't identify the user as being on his home system, it goes into the "roam" mode.

Thanks to Rick Edwards, Jim Lange, Robert Vallone, Bart Bishop, Mark Nelson and several other sharp-eyed and sharp-minded readers for their input on this one!

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Bob's Tip of the Month

Uniden BC855XLT 100 Memory Channel Expansion

Jeff Coloby of Bolingbrook, Illinois, contributes this method to double the memory channel capacity of the Uniden BC855XLT. After the simple modification, the Bearcat will store 20 channels in each of its five banks rather than the factory-provided ten channels in each bank.

NOTE: The following modification may void your warranty and should only be performed by someone familiar with electronic circuitry and soldering. Grove Enterprises assumes no responsibility for damages or other liability resulting from attempting this procedure.

TOOLS NEEDED: Philips screwdriver, wire cutters, 1/4 or 1/2 watt resistor measuring 4.7k to 22k ohms (see note in 4 below), a small soldering pencil and small gauge, rosin core solder.

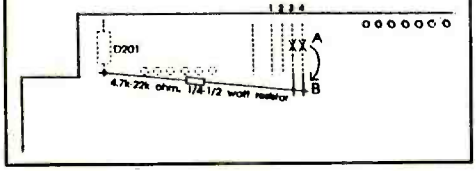
With the power cord disconnected and the bottom edge of the scanner facing you, turn it over on a soft surface to avoid scratching.

(1) Remove the five Philips-head cabinet screws and carefuly separate the cabinet.
(2) Grasping the speaker plug (not the wires), carefully pull the plug from its socket. Lay the two cabinet halves side by side.
(3) Refer to the illustration and find the third jumper in a row at the top of the right-hand circuit board. Cut "A" and bend it down as shown.

NOTE: If you have already performed the cellular restoration described in an earlier issue of *MT*, (done by cutting lead 4 and routing and soldering as shown) simply solder the jumper to the same resistor lead and move on to step 5. If not, proceed with step 4.

(4) Route the resistor under the lower lead of diode D201 and under the jumper lead. Solder points A and B carefully; do not use excessive heat. If the jumper comes loose from beneath the board, it will reattach when the solder cools.
(5) Snip off and remove excess wire from the resistor leads; plug the speaker lead back in place; reassemble cabinet. If factory service is required, the resistor may be removed and the jumper lead resoldered.

Your scanner will now store 100 channels (01-00) in five banks of 20 channels each.



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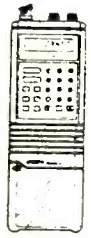

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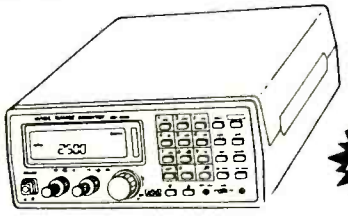

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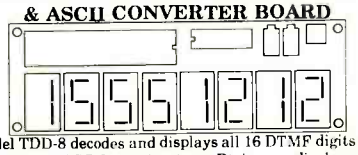

Model TDD-8 decodes and displays all 16 DTMF digits and provides an ASCII serial output. Digits are displayed on eight LED's. 32 character memory can be scrolled. It will accept almost any audio source, such as a scanner, tape recorder, telephone answering machine, etc. Serial output can be connected to your computer. IBM compatible software included for displaying, storing and/or printing time, date and number for automatic logging.

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Club Circuit

Club Profiles

RCMA (Radio Communications Monitoring Association, Inc.)

RCMA is the first national and international scanner club for people who like to monitor two-way communications, with special emphasis on communications of all modes above 30 MHz.

The club publishes a monthly magazine, the RCMA *Journal*, which is sent to members as part of their membership. The columns are written by members with input from the general membership reporting from across the country and the world. Columns address frequencies and callsigns, system profiles, new product announcements and reviews, technical tips, modifications, FCC topics and much more. We could find no price for a sample copy, but $2.95 is the single issue price on the cover—and worth every penny.

RCMA encourages the conducting of regional clubs and tours and activities on a regional basis. Currently active are RCMA chapters in West Los Angeles, Wisconsin, Capitol Hill area, and Minneapolis-St. Paul. Membership in the U.S. is $24; $28 in most other countries.

For more information on RCMA, write P.O. Box 542, Silverado, CA 92676.

IRCA (International Radio Club of America)

Founded in 1964, the IRCA is dedicated to serious broadcast and AM band DXers. Their publication, *DX Monitor*, is published 34 times a year: weekly during the winter DX season, and monthly during the summer. Each issue contains tips on US and foreign stations heard on the broadcast band, technical articles on antennas, receivers, etc., and new stations and station changes.

The bulletin contains a "DX Test" calendar (CPC tests) as well as reader contributions. A sample bulletin is $1 or two IRC's. Dues are $25 per year in the U.S. or $27 in Canada. There is an additional one-time fee of $2 for new members, which apparently covers a packet of materials.

IRCA holds an annual convention in August which meets in a different location each year. In 1991, for example, it was held in California and in 1992 in Alabama. For more information write IRCA, 11300 Magnolia #43, Riverside, CA 92505.

Club News

- The administrative address of the New Zealand Radio DX League has changed to National Secretary, NZ Radio DX League, P.O. Box 3011, Auckland, New Zealand. The addresses for the monthly magazine and other services haven't changed.
- The Suriname DX Club International has three publications which may be of interest to the DXer: the *Brazilian MW SW FM Stations List* (US$4 or 8 IRCs), the *QSL Survey* (US$7 or 14 IRCs), and the *Latin American DX Calendar* (US$1 or 2 IRCs). Write to Suriname DX Club Int'l, Bechaniestraat 58, Paramaribo, Suriname; to join, send $10 US, and receive their official bulletin, *Suricall*.
- Suggested at the MT Convention: If your club is wondering how to make the best use of its free *MT* subscription, why not donate it to your public library and make *Monitoring Times* available to more people? Be sure to attach the name and phone number of a contact person for your club for potential new members.

Club Listings

Do you mean to tell me there's no listener's club in Atlanta, Georgia? No club in Washington, D.C., or Louisville, KY, or Seattle, Washington?! People do call our office and ask, and we can't tell them there is if we don't know.

Also bear in mind that we won't list you unless you ask; you must take the initiative. All you have to do is request a listing form for the Club Circuit.

A-L

All Ohio Scanner Club: Dave Marshall, 50 Villa Rd., Springfield, OH 45503-1036. Ohio and surrounding states; VHF/UHF and some HF and amateur coverage. *American Scannergram.*

American SW Listener's Club: Stewart MacKenzie, WDX6AA, 16182 Ballad Lane, Huntington Beach, CA 92649, (714) 846-1685. Western US, Pacific, Asia, & Middle East; SWBC, utilities, longwave. *SWL.*

Association of Clandestine Enthusiasts (A.C.E.): Kirk Baxter, P.O. Box 11201, Shawnee Mission, KS 66207. US, Europe and Middle East; Pirate and clandestine. *The A.C.E.*

Association of DX Reporters (ADXR): Reuben Dagold, 7008 Plymouth Rd. Baltimore, MD 21208. International; Utilities, ham band, QSLing, MW, LW, and SWBC. *DX Reporter.*

Association of Manitoba DX'ers (AMANDX): Shawn Axelrod, 30 Becontree Bay, Winnipeg, Manitoba, R2N 2X9 Canada, (204) 253-8644. Manitoba; LW, MW, SW, and VHF/UHF

Bay Area Scanner Enthusiasts: Herman Frisch, 4718 Meridian Ave. #265, San Jose, CA 95118. San Francisco Bay area; 30+ MHz. *Listening Post*

Bayonne Emergency Radio Network (BERN): Ray Baron, P.O. Box 1203, Bayonne, NJ 07002, 201-662-2222. NE Jersey; Fire/disaster.

Bearcat Radio Club: Larry Miller, Box 360, Wagontown, PA 19376, 1-800-423-1331. US and Canada; Scanning only. *National Scanning Report.*

Boston Area DXers: Paul Graveline, 9 Stirling St., Andover, MA 01810, (508)470-1971, 50 mile radius Boston; SWBC.

Canadian International DX Club: Sheldon Harvey, 79 Kipps St., Greenfield Park, Quebec, Canada, J4V 3B1, 514-462-1459. Canada nationwide; General coverage; Publication: The Messenger.

Canadian Int'l DX Club: Sheldon Harvey, President, 79 Kipps St., Greenfield Pk., Quebec , Canada J4V 3B1, (514)462-1459. Canada nationwide/membership open to all; General coverage. *The Messenger*

Chicago Area DX Club: Edward G. Stroh, 53 Arrowhead Dr., Thornton, IL 60476. 150 mile radious of Chicago; Dxing all bands. *DX Chicago.*

Cincinnati Area Monitoring Exchange (MONIX): John Vodenik, (513) 398-5968. SE Indiana, Kentucky, SW Ohio; SWBC, utility, military, satellites, scanning, BCB.

Decalco Mania: Paul Richards, P.O. Box 126, Lincroft, NJ 07738, (206) 356-3927 (Phil). Collecting radio related items.

Drake SPR4 Int'l Club: Rick Sitz, 5210 14th St. W. #11, Bradenton, FL 34207. Worldwide; Drake SPR4 owners.

DX Audio Service (NRC): NRC Publications Center, P.O. Box 164, Mannsville, NY 13661-0164. Worldwide; AM/FM; DXAS Cassette 90-min monthly audio magazine. Sample $3 to above address

DX Club of India: Navin Patel, 809, M.G. Road, 1-Dutt Niwas, Mulund, Bombay-400 080, India. India; SW DXing.

European DX Council: Michael Murray, P.O. Box 4, St. Ives, Huntingdon, Cambs PE17 4FE, England. Europe.

Ft. Wayne Radio Listeners Club: Robert E. Hilton, 5809 Heatherview, Fort Wayne, IN 46818, (219)489-5821. Ft. Wayne area; All aspects of radio.

Int'l Radio Club of America (IRCA): Ralph Sanserino, 9705 Mary NW, Seattle, WA 98117. Worldwide; BCB/AM DX. *DX Monitor.*

Longwave Club of America: Bill Oliver, 45 Wildflower Rd., Levittown, PA 19057, (215)945-0543. Worldwide; Longwave only. *The Lowdown.*

New Additions:

North Central Texas SWL Club: Alton Coffey, 1830 Wildwood Drive, Grand Prairie, TX 75050. Central TX area; All bands.

Triangle Area Scanner/SW Listening Group: Curt Phillips, KD4YU, P.O. Box 28587, Raleigh, NC 27611. Central NC.

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SPECIAL EVENT CALENDAR

Date	Location	Club/Contact Person
Oct 31-Nov 1	**Odessa, TX**	1992 Odessa Hamfest/West Texas ARC, P.O. Box 7033 P.O. Box 7033, Odessa, TX 79760 Location: Holiday Inn Convention Center, 6201 E. Highway 80 $7 admission, 8 am to 5 pm Sat; 8 am - 2 pm Sun.
Oct 31-Nov 1	**Lawrenceville, GA**	Computer Expo Hamfest '92/Alford Memorial Radio Club Hamfest P.O. Box 3100, Lithonia, GA 30058 Location: Gwinnett Cty Fairgrounds.
Nov 14	**West Monroe, LA**	Twin City Hams/Jimmy Ramsey, N5DMX 103 W. Fairway Drive, West Monroe, LA 71291
Nov 21-22	**Tampa, FL**	Florida State Convention/Pat Barbiere, WB1GZW 2225 Glen Dr., Safety Harbor, FL 34695.
Dec. 6	**Largo, MD**	HolidayFest '92/P.O. Box 1037, College Park, MD 20740; 301-572-2362. Benefits Prince George's County RACES/ARES, Inc. Location: Prince George's Comm College Campus. $4 donation. Talk-in on 147.180, 146.520.

Monitoring Times is happy to run brief announcements of radio events open to our readers. Send your announcements at least 60 days before the event to:

Monitoring Times Special Event Calendar
P.O. Box 98
Brasstown, NC 28902-0098

DX RADIO TESTS

The International Radio Club of America (IRCA), is a club devoted to the hobby of hearing distant stations on the standard AM broadcast band. For more information, or a sample issue of *DX Monitor*, write to: The International Radio Club of America (IRCA), 11300 Magnolia #43, Riverside, CA 92505, USA. Please enclose 1 U.S. dollar or 3 IRCs if you are requesting a sample issue.

These tests were arranged by J.D. Stephens for IRCA.

Thursday, November 5, 1992: KBOA-830, P.O. Box 509, Kennett, MO 63857 will conduct a DX test between 1:00 & 1:30 am EST. The test will include Morse code and tones. This test will be conducted with a power of 10 kW and an omnidirectional antenna pattern. Reception reports may be sent to: Mr. Larry Anthony, Chief Engineer.

Saturday, November 7, 1992: WWLS-640, 4000 W. Indian Hills Rd., Norman, OK 73072 will conduct a DX test between 1:00 & 1:30 am EST. The test will include Morse code, tones and voice ID's and will be inserted in breaks during the station's automated nighttime programming reception reports may be sent to: Mr. Tony Sellars, Operation Manager.

Monday, November 9, 1992: KMFI-1470, 2700 Fry Blvd., Suite B-4, Sierra Vista, AZ 85635 will conduct a DX test between 2:00 & 5:00 am EST. The test will include Morse code and tones. Reception reports may be sent to: Mr. Richard Mize, Chief Engineer.

Wednesday, November 25, 1992: WSMI-1540, P.O. Box 10, Litchfield, IL 62056 will conduct a DX test between 1:00 & 1:10 am EDT. The test will include Morse code, tones and voice ID's and will be part of the station's monthly frequency check. Reception reports may be sent to: Mr. Brian Talley, N9OWV, Chief Engineer. Mr. Talley requests an SASE be included with all reports.

Saturday, November 28, 1992: WIMA-1150, 667 W. Market St., Lima, OH 45801 will conduct a DX test from 12:30-1:00 am EST. The test will include Morse code, voice ID's and march music. Reception reports may be sent to: Mr. Mark Gierhart, Director of Engineering.

Monday, November 30, 1992: KCNO-570, P.O. Box 570, Alturas, CA 96101 will conduct a DX test from 3:30-4:00 am EST. The test will include Morse code, polkas and march music. Reception reports may be sent to: Carol Irwin, Program Director.

The following test was arranged by the Courtesy Program Committee of the National Radio Club.

Monday, November 2, 1992: WRIV-1390, P.O. Box 1390, Riverhead, NY 11901 will conduct a special DX test between 0530 and 0600 EST. The test will include polkas, voice ID's and possible code ID's. Our thanks to Mr. Bruce Tria, program manager.

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Closing Comments

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We've all heard the excuses:

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- "I don't like any of the candidates" (Yeah, but some are worse than others—don't let them in!);
- "I'm just too busy" (You mean you don't have enough control over your life to plan a few minutes to help forge your own destiny and that of your country?);
- "I'll be out of town" (Ever heard of an absentee ballot?).
- "My wife and I would cancel each other's ballots" (On every issue and every candidate? That's statistically impossible without doing it deliberately!).

I can't recall in recent history seeing such a swell of animosity against our elected officials; many states' electorate have already sent their representatives packing. More are due.

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On Capitol Hill there's a rule of thumb that says one letter represents 10,000 voters. Let's see now; 30,000 *MT* readers' letters times 10,000 equals 300,000,000—more than the entire U.S. population. That message should come through loud and clear!

Bad laws are passed when no one opposes them. Don't blame the lawmakers—new laws are always hotly debated. If a bad law is passed—or a good law is rejected—it is often because special interests made a better case than the apathetic public and their ineffectual representatives.

If you want even more clout in Washington, join a citizens' lobby like Common Cause (2030 M St., Washington, DC 20036; phone 202-833-1200); they hold tremendous power on the Hill and apply pressure at state and local levels as well.

Common Cause represents democracy at its finest with an eminently qualified board of directors elected by you, the membership, who also determine all issues and positions.

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At the local level, be an activist: Call in on talk shows, write letters to your newspaper editors, attend town meetings and be heard, distribute pamphlets with your message loud and clear.

I'm never more proud of being an American than I am on election day when I see large crowds at the voting precincts exercising their most precious heritage, the right to vote. Will you be there?

Bob Grove
Publisher

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