August 1989 Volume 8 Number 8

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MONITORING TIMES

A Publication Of
Grove Enterprises

The Blimp's In Town

How to Monitor the Excitement

ALSO...

- MT Reviews ICOM's Superset IC-R9000
- Choosing A Programmable Scanner
- DXing The Balkans

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NEW RZ-1 Wide-Band Receiver.

Hear it All!

R-5000
R-2000
High performance receivers.

Scan the entire frequency range from 100 kHz to 905 MHz with Kenwood's R-5000, R-2000 and RZ-1. Listen in on foreign music, news, and commentary. Monitor local police, fire, and other public safety services, as well as the Marine channels, and the many other services 50 MHz and above.

(The VHF converter options must be used in the R-5000 and R-2000.)

R-5000

The R-5000 is a high performance, top-of-the-line receiver, with 100 memory channels, and direct keyboard or main dial tuning—makes station selection super easy! Other useful features include programmable scanning, large, built-in speaker, 110 volt AC or 12 volt DC operation (with optional DCK-2 cable), VHF capability (108-174 MHz) with the VC-20 option, dual 24-hour clocks with timer, and even voice frequency readout with the VS-1 option.

R-2000

The R-2000 is an all band, all mode receiver with 10 memory channels and many deluxe features such as programmable scanning, dual 24-hour clocks with timer, all-mode squelch and noise blankers, a large, front-mounted speaker, 110 volt AC or 12 volt DC operation (with the DCK-1 cable kit), and 118-174 MHz VHF capability with VC-10 option.

RZ-1
Wide-band scanning receiver

The RZ-1 wide-band, scanning receiver covers 500 kHz-905 MHz, in AM, and narrow or wideband FM. The automatic mode selection function makes listening easier. One hundred memory channels with message and band marker, direct keyboard or VFO frequency entry, and versatile scanning functions, such as memory channel and band scan, with four types of scan stop. The RZ-1 is a 12 volt DC operated, compact unit, with built-in speaker, front-mounted phones jack, switchable AGC, squelch for narrow FM, illuminated keys, and a "beeper" to confirm keyboard operation.

Optional Accessory
- **PG-2N** Extra DC cable

Optional Accessories

R-2000:
- **VC-10** VHF converter
- **DCK-1** DC cable kit for 12 volt DC use.

R-5000:
- **VC-20** VHF converter
- **VS-1** Voice module
- **DCK-2** for 12 volt DC operation
- **YK-88A-1** AM filter
- **YK-88SN** SSB filter
- **YK-88C** CW filter
- **MB-430** Mounting bracket.

Other Accessories:
- **SP-430** External speaker
- **SP-41** Compact mobile speaker
- **SP-50B** Mobile speaker
- **HS-5** Deluxe headphones
- **HS-6** Lightweight headphones
- **HS-7** Mini-headphones.

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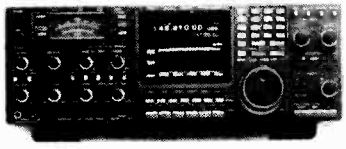
August 1989

MONITORING TIMES

Monitoring the Goodyear Blimps
by Dave Jones **6**

For many, the Goodyear blimp brings back childhood memories, long, lazy summer afternoons punctuated by the excitement of seeing one of these lighter-than-air crafts gliding through the blue sky. The Goodyear blimp still flies -- and makes memories. The next time "The Blimp" is in your area, tune it in. Dave Jones tells you how.

The New ICOM IC-R9000 by Lawrence Magne 10



Not every radio that comes out gets featured in the front of *Monitoring Times*. Fact is, only one has been so honored in the history of the magazine and that happened only two months ago. This month, we feature yet another super radio, the ICOM IC-R9000. Says Larry Magne, it's "the best SW communications receiver we have ever tested." And, as long-time *MT* readers well know, Magne is not easily impressed. If you're really serious about your radio -- and have 5,000-plus dollars -- this could be the radio for you.

Improving Receiver Audio Quality by Roger Dowd 14

An easy and effective way to improve the audio quality of your shortwave receiver or scanner is to use already-existing technology -- the graphic equalizer. Whether you use a plug-in, or wire it into the circuitry, it's bound to make a difference in picking signals out of the hash, as well as making it more enjoyable to listen to.

DXing the Balkans by Charles Sorrell 18

The Balkans. To the astute observer of world affairs, it's a place of palpable tensions, a potential flash point for ethnic unrest. The Balkans are not new to this sort of situation. A crossroads of cultures, it was held by the Turks until 1912. Shortly thereafter, World War I cooked out of its cauldron. Well represented on shortwave, the countries of the Balkans -- Albania, Bulgaria, Turkey Greece, Romania and Yugoslavia -- make for interesting summertime listening. Check 'em out.

Television's First Fifty Years 20

Speaking of memories, TV is 50 years old. For many, it is a time of great celebration, a chance to look at the development of a piece of technology so powerful that it has changed the very structure of society. From the first clunky sets exhibited as electronic curiosities at the 1936 Worlds Fair to today's "Surround Sound" large screen, high-definition TVs, *TV's First Fifty* looks at the history of television on its 50th birthday.

ON THE COVER: The Goodyear blimp courtesy Goodyear Tire & Rubber Company

Airborne ferry operation! 28

Several times every year, the U.S. Air Force ferries short range aircraft across the Atlantic and Pacific Oceans to replace aging craft, for exercises or a variety of other uses. Needless to say, Utility World columnist Larry Van Horn and his readers have ferreted out the best of the frequencies.

Voices in the sky 42

In an exclusive interview, Jean Baker interviews a busy air to ground communications and support service, Atlanta Flight Support. From modest beginnings, they now operate practically worldwide.

The timeless voice of New England 50

For 46 years, Bob Steele has been waking people with his warm, familiar voice. The morning announcer and personality at Hartford, Connecticut's WTIC, Steele earns a good 27 percent of the area's listening audience. But now, Steele is thinking of retiring... Meet the man behind the microphone in Karl Zuk's American BandScan column.

Choosing a scanner 88

If you're confused about where to start in looking for a scanner, Bob Grove will help you sort it out. What kind of listening do you want to do? How populous is your neighborhood? Answer a few of these questions, and chances are, you'll have a good idea what to buy.

Converting to low frequency 92

Those interested in picking up soldering iron might want to try their hand at this month's project by Doug DeMaw. DeMaw lays out plans for a low frequency converter. The project, which Demaw says is simple and low-cost, will allow you to use your radio to hear stations below 550 kHz. It's kind of weird down there but there are some exciting radio catches waiting to be had -- from maritime beacons to low-powered experimental stations.

Build your own discone 96

Finally, we show you how to build a wideband omnidirectional discone antenna. It's often refered to as the most commonly used low-gain, wideband base station antenna. And as such, it's worth your while to review. There's easy-to-build, easy-to-understand instructions from the father of antenna projects, Clem Small.

DEPARTMENTS

MONITORING TIMES

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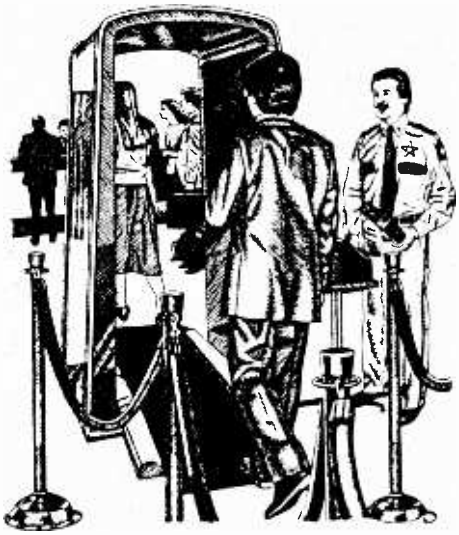
LETTERS



Never again!

Ian Geddes of Bel Air, Maryland, had quite an experience during a recent flight to London. Geddes was en route to Glasgow, Scotland when security personnel stopped him before boarding at Baltimore-Washington International airport.

"I was told that the x-rays did not penetrate a 'large mass' -- my PRO-2004 scanner -- in my shoulder bag. I took the radio out and was told by the security officer that I was not allowed to take it on board. Naturally, I questioned the decision.

"This brought about a conference of security personnel. The next thing I know, the pilot gets off the plane, takes the radio, and disappears through the gate.

"After ten minutes or so, I went back to security to enquire as to the whereabouts of my $400 radio. Nobody knew. So I demanded to talk with the pilot. Another huddle of security personnel began.

"Finally, I had my answer. The pilot, in his infinite wisdom, had decided to keep the radio in the cockpit where it would remain until we landed in London!

Ian got his radio back but when he tried to board the connecting flight to Scotland, he was once again stopped. "Once again I was asked to remove the radio from my shoulder bag." This time, however, the dialogue was altogether different:

"What is it?" asked security.

"A radio," Geddes replied.

"Plug it in."

"I can't, unless you have a 110 volt outlet," he told them.

"OK. Don't worry about it," they decided, waving him through, "Sorry for the inconvenience."

Not wishing to go through security with his '2004 again, Geddes found a different way to get his radio home. "The day before we departed for the States," he said, "I carefully packed the radio, addressed it to myself, and took it to the local post office."

Geddes' conclusion: "Never again!"

Paul Mitchell also decided to take a radio -- in his case a trusty Sony ICF-2003 -- aboard a flight, "unthinkingly hoping to receive some air-to-air communications."

"After strapping in, I was browsing through the literature in the pouch on the back of the seat when I happened to glance at the back of the "seat occupied" card.

"It plainly and reasonably lists the electronics devices which may be operated in-flight and excludes all others, making reference to '14CFR91.19,' and pointing out the danger involved."

Paul, who is a professional law librarian, hit the books. "91.19 specifically allows the use of several harmless devices and lets the 'air carrier' or pilot make the judgment call on the use of any others."

Mitchell's conclusion: "I gave myself a good scare and put the radio away. However, I think a more prominent warning might be in order."

Many thanks to both Ian and Paul for passing along that information.

"I hear that they're going to be shutting down all of those traveler information stations (TIS) on 1610 kHz" says AM DXer Mark Abbott of Los Angeles, California. "True or false?" he asks.

True. If you've ever been on an interstate near a large city or tourist attraction, you've probably seen signs for these low-powered stations: "Tune 530 kHz for traffic information" or whatnot.

Under a new international agreement to expand the AM broadcast band, TISs on 1610 would find themselves wiped out by considerably higher powered commercial stations on 1620 kHz.

Those currently on 1610 kHz can stay for now but eventually may be forced to move up to 1700 kHz (a channel with limited potential since few receivers can pick it up), drop down to 530 kHz or cease operation altogether.

"The June issue of *Monitoring Times* carried part of a letter from Marty Blaise concerning (AM) DXing in the standard broadcast band. I'm writing this to let him (and others) know that there are others who share his interest." Those words of encouragement come from Al P. LaPlaca of Centereach, New York.

"I have two set-ups for BC band DXing," Al continues. "The one in my ham shack consists of a Collins R-390A receiver and a homebrew transmatch (a 28 uH roller coil and up to 17,000 pF-variable) which is an L-section tuner with the ability to switch the capacitance to the input or output side of the tuner.

"The setup in my bedroom (built into the bookcase headboard) consists of a Yaesu FRG-8800 with Yaesu FRT-7700 tuner. Through a coaxial switch, either setup gets connected to a G5RV inverted-vee on the roof (apex at 41 feet)."

LaPlaca doesn't do too bad with these arrangements. We'll let him tell you the totals: "So far, I have logged 314 stations in 33 states and 6 countries. I also DX the 160-520 kHz range where I have logged 73 stations in 28 states and 18 countries."

How about a photo of that set up, Al? In fact, how about a picture of you and your radio? We could sure use them. Color shots are OK. Just send 'em along to Rachel Baughn in care of *Monitoring Times*, P.O. Box 98, Brasstown, NC 28902. Hey! And don't be shy. No one around here is all that handsome, either.

"I'm looking for a real DX challenge," says Ed Kuscik of Chico, California. "Stump me if you can."

Well, Ed, after you've heard all of the stations in our monthly frequency list, try for the Central Pacific island republic of Kiribati (pronounced *kiribas*) on 14918 kHz. It's been heard recently between 0745 and 0915 UTC.

"The May issue of *Monitoring Times* was excellent!" says Michael Urbano of Sacramento, California. The article on air shows was informative. I live near McClelland Air Force Base and was able to monitor the air-to-air communications of the Thunderbirds. The frequencies you had were to the number. Thanks for an excellent magazine!"

[Cont'd on page 100]

COMMUNICATIONS

FEMA Wants You And If They Get You, *We* Want You

Looking for work? The Federal Emergency Management Agency (FEMA) is recruiting reserve military personnel for duties in civil emergency response planning. Military or civilian training and experience in operations, communications, intelligence, transportation, supply and radiological defense are sought.

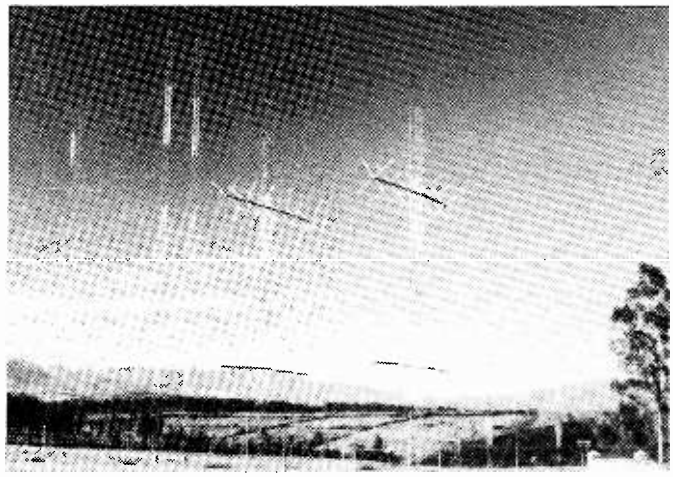
For more information, apply at your local, state or regional FEMA office or contact FEMA headquarters, IMA Program, Room 613, Washington, DC 20472. And by the way, if you do get hired, remember your friends at *Monitoring Times* and drop us a note to let us know what's going on with FEMA. (*The Retired Officer*)

Woodpecker Bogs Submarine Network

After surviving years of opposition from environmentalists, the U.S. Navy has found that its $360 million ELF submarine communications network has a new and even more determined foe: the pileated woodpecker.

The crow-sized birds, black and white with a red crest, have been pecking melon-sized holes in some of the 1,500 telephone poles that support ELF's 56 mile antenna. Several poles have had to be replaced. Officially, however, the Navy is playing down the bird threat. Says ELF commander John Smythe, "It's not a significant problem."

Two ELF systems, one at Republic, Michigan and the other at Clam Lake, Wisconsin, are scheduled to be fully operational in October. (*Chicago Tribune*)



They're at it again ... Those innovative folks at HCJB, no newcomers to innovative antenna design, are coming up with a soon-to-be-available state-of-the-art transmitter.

Photo by Ken MacHarg

Naughty, Naughty

Four Fort Lauderdale, Florida, police officers were fired recently after supervisors overheard them broadcasting vulgar conversations on the CB. Using portable units plugged into their cruisers, the officers used derogatory sexual language to describe a female sergeant, used racial slurs and talked about hiding their cars rather than patrolling.

"Said Chief Joe Gerwens, "These are the people we entrust with the safety of the community."

Good News for Monitors

The FBI's plan to build a nationwide DVP (Digital Voice Privacy) radio system is running behind (in terms of time) and ahead (in terms of budget). Fed up with citizens, the media and even criminals monitoring their radio calls, the FBI began an ambitious project in 1982 to build a nationwide radio system whose signals could not be intercepted.

In just two years, the cost of the program lept from $79 million to $204 million. The FBI admits that the total could run as high as $300 million.

Meanwhile, the General Accounting Office has reported that to service the system, the FBI wants $700,000 a year for 50 technicians and $450,000 more to buy 30 new vehicles for them to drive. The completion date, originally set at 1987, has been moved forward to 1992. (*U.S. News and World Report*)

New HC-100 Transmitter

HCJB, the powerhouse evangelical shortwave broadcaster in Quito, Ecuador, is nearing the completion of the design and fabrication of a new brand of shortwave transmitter. The new units, which will be called HC-100s, will provide 100 kW of power and can operate in any shortwave bands from 13 to 19 meters.

According to station officials, the transmitters are state-of-the-art, providing very high efficiency and thus reducing operating costs.

If you'd like to add one these little beauties to your shack, contact the station's engineering center at the

Crown International Plant in Elkhart, Indiana.

I Have a Request: Get in the Car

A cool-headed broadcaster's on-air plea for help led to the quick arrest of a man who broke into the station and took the program director away at gunpoint.

WBNZ News Director Chris Holbrook Anderson says she wasn't thinking of her safety when she quietly flipped on the microphone and asked listeners to call the sheriff. The sheriff received about 300 calls as the result of the broadcast.

Anderson said she and program director Phyllis Minor were alone at the station when Minor's husband, Ed Bartkowiak, broke down the door with a tire iron. Bartkowiak used to tire iron to smash the telephone Anderson was using to try and call police.

Anderson then went into another studio and made the on-air request, cautioning listeners that this was "no joke."

There were no injuries reported and police pulled the gunman over some two miles from the station. The couple had been arguing for a few days and "it just blew up into this," said DJ Gina Von.

GWEN Site Selection Narrowing

The Air Force has announced that it has narrowed its search for 40 radio towers site for the controversial GWEN or "Doomsday" radio network. Construction is envisioned from Maine to Georgia and from Virginia to California. In all, 26 states will probably have one or more of the final 40 towers.

The Ground Wave Emergency Network is an automated system of

radio transmitters consisting of 56 radio relay towers that link 38 terminals at military bases.

The center of the system is at Strategic Air Command headquarters in Omaha, Nebraska and is designed to ensure adequate communications links in time of war. Local protesters have objected to the sites because they might increase the likelihood of their towns becoming nuclear targets.

The Air Force said it would spend the next year conducting environmental studies, holding public hearings, and picking specific 11 acre sites needed within each state. Only after a specific site is approved can construction of the low-power, low-frequency radio towers begin.

All 96 sites are expected to be operational by 1992. The system carries a price tag of some $700 million dollars. (AP)

Space Station Freedom

The permanently manned space station Freedom program now has its own official logo. The stylized graphic depicts the pressurized modules where the crew members will work and live and the solar panels. The circular shape represents both the Earth and other planets.

Space Station Freedom will be an international space complex used for fundamental research in the materials and life sciences and to explore Earth and outer space.

Listening in on Mir

As the U.S. space station struggles to regain its impetus, the Russian program is having problems of its own as evidenced by the termination of the Donbasy in April of this year. Chris van den Berg of The Hague, Netherlands, suspected this would happen.

Chris monitors the Russian space program; his knowledge of the Russian language permitted him an inside look at the module as he heard the cosmonauts allude to low voltages, high humidity, water leakage in the electrical system and, finally, directives to return to Earth.

Chris notes that voice traffic could be monitored on 143.625 and 121.750 MHz.

While the MIR is unmanned, various telemetry status transmissions can be heard on 165.875 and 166.125 MHz as well.

Thanks to Fred Chesson, Waterbury, Connecticut; William T. Clark, Chico, CA; Steve Forest, Cincinnati, Ohio; Howard Lash, S. Holland, Illinois.

You can communicate with other ***Monitoring Times*** *readers. The next time you see an item about radio in a magazine or newspaper, clip it out and share it with the rest of us! Send it to Communications Editor, P.O. Box 98, Brasstown, NC 28902. You'll be glad you did.*

Monitoring the GOODYEAR Blimps

by Dave Jones

For many, the first sight of a Goodyear blimp is an unforgettable event, a delicious slice of childhood that can be savored over and over.

Despite the onrush of technology, these airships still fill those lucky enough to see them with awe and wonder. Children chase them on bicycles until the road ends, just so they can watch them for a few minutes longer. Adults, driving on busy highways, slow, stick their heads out the window and unabashedly gawk. There's no reason to be ashamed, either. Goodyear blimp watching goes back quite a few years.

PROUD HERITAGE

Goodyear has been producing lighter-than-air (LTA) airships since 1911. And during that time they have produced more of them than any other company.

It all started when the company, just after the turn of the century, began to use its expertise in rubberized fabric technology to build its first airship envelope. The airship envelope was gigantic -- 400,000 cubic feet -- and it used hydrogen as the lighter-than-air element.

Blimps were called into service in World War I and Goodyear was able to supply the Allies with nearly 100 airships and 1,000 observation/barrage balloons. Balloon technology surged forward.

The decade after World War I ushered in the first Goodyear company airship. In 1925, *Pilgrim* was built, inaugurating a long line of company airships. Instead of the more flammable hydrogen, *Pilgrim* used helium as its lighter-than-air element.

Goodyear operated the world's first and only airship mass-production line during World War II. The company manufactured 134 K-class airships from 1938 to 1943 in a special 1,175 foot marvel known as "The Airdock."

The airships were used by the Navy to perform coastal patrol, escort convoys, and conduct anti-submarine warfare. A total of 154 Goodyear-built Navy airships escorted 89,000 ships laden with millions of troops and billions of tons of cargo, all without the loss of a single vessel to enemy submarines -- an impressive wartime record.

Dave Jones

America's (N3A) gondola car carries six persons in addition to the pilot

When the Cold War erupted in the 1950s, airships built by Goodyear were once again called upon again to serve their country. Four Navy ZPG-3W airships were built in the late fifties. Each carried electronic early warning equipment for the nation's defense. In addition to the ZPG-3W early warning airships, Goodyear built ZS2G-1 and ZPG-2

Dave Jones

The GTR blimp tractor-trailer support vehicle and maintenance facility keeps spare parts and stores the mooring mast.

patrol airships in the 1950s.

Not all blimps go to war. Goodyear, seeing the publicity value of the airships, began to use them as aerial goodwill ambassadors. Anyone who has watched a professional football game has seen them. At major events, such as the bicentennial and Statue of Liberty birthday celebrations, the blimps played major roles -- but never forgot their military applications.

That's why, in the 1980s, when the government called, Goodyear answered. On several occasions the blimps cooperated with the U.S. Coast Guard and U.S. Customs Service in coastal surveillance and rescue exercises.

The 1980s also have seen several new blimp manufacturers enter the arena; however, they are not the Goodyear Blimp.

BLIMP OPERATIONS

Currently Goodyear operates three blimps in North America. A fourth formerly operated in Europe.

The American blimps are stationed at three locations -- one on each coast and one in-between. The Enterprise, tail number N1A, is based in Pompano Beach, Florida; the America, tail number N3A, is based near Houston, Texas; and the Columbia, tail number N4A, is based in Los Angeles.

The home bases serve as winter homes for the blimps. During the winter months the blimps undergo maintenance and may make local appearances. The remainder of the year is touring season for the blimps and their crews.

A fourth blimp, the Spirit of Akron, is currently undergoing FAA certification which is anticipated to be completed this year. When completed, the Spirit of Akron will replace the Enterprise in Pompano Beach.

A blimp was operated in Europe named the Europa, which was based in Rome. The consolidation of Goodyear Tire & Rubber (GTR) company in 1986 after an attempted hostile takeover forced the demise of Europa operations.

A twenty-two person ensemble consisting of sixteen ground crew members, five pilots and a public relations representative accompany each blimp during their touring season. (The blimps actually have 22 public relations representatives as each member represents the GTR blimp operations. Once you have talked to or listened to several members, you realize that being a blimp crew member is more than a job -- it is an exciting adventure which they eagerly share with the public.)

Ground crew responsibilities include the maintenance of the blimp and ground vehicles, as well as assisting during take-offs and landings. Each blimp is accompanied by a three vehicle ground fleet consisting of a van, a tractor-trailer, and a Greyhound-like bus.

The van is utilized for ferrying personnel and running errands while in town. The tractor-trailer contains work shops and provides for parts storage and storage of the mooring mast. The bus serves as a mobile command post with air crew quarters and provides the main mode of ground transportation for the blimp crew.

Each of the vehicles are custom painted in blue and white depicting scenes of airship operations. All vehicles are equipped for communications with each other and the blimp.

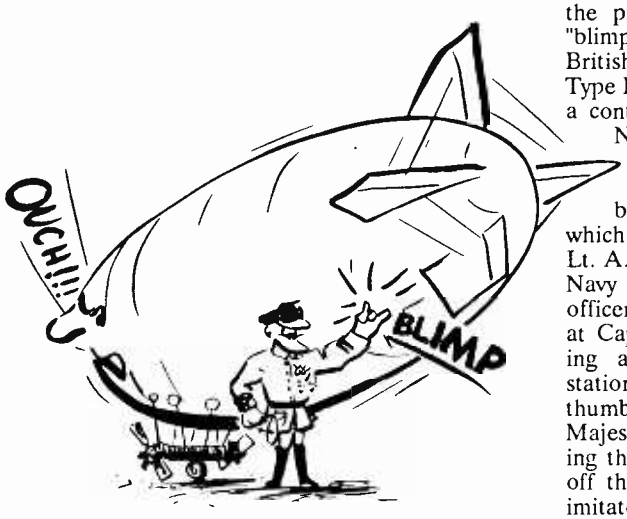
MONITORING THE BLIMP

The ground vehicles are all equipped with CB and VHF highband FM radios. The ground based communications corral also contains VHF AM aircraft band radios which I believe are limited to portables with the recent addition of UHF FM radios. The VHF FM radios currently utilized are Motorola units utilizing their Private Line (P.L.) tone encoded squelch.

The blimp utilizes a 10 watt output version while the bus, van, and tractor-trailer mobile

The Best Seat in the House: The blimp's inherent stability makes it an excellent aerial viewing platform. A microwave transmitter sends the camera signal to a ground dish antenna attached to the television network's control truck.

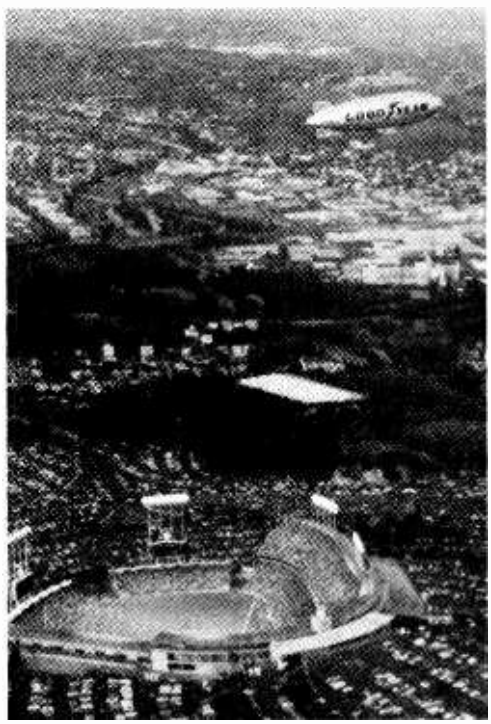
Bursting the Balloon

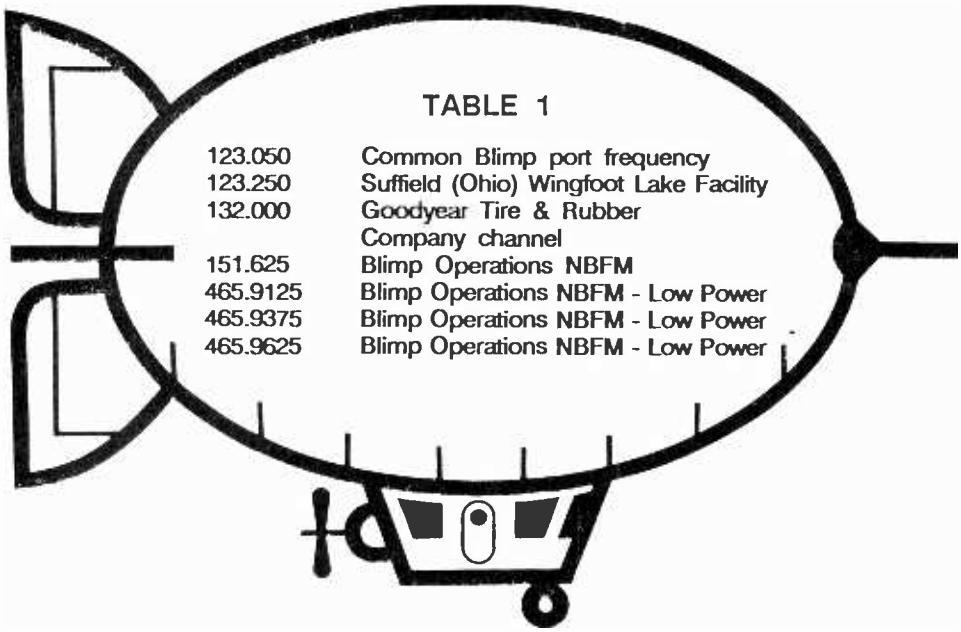


The dictionary will tell you that the probable origin of the name "blimp" is a contraction of the British airship known as "Balloon, Type B, limp." Others maintain it's a contraction of "bloody limp"!

Now it appears neither explanation is likely.

Dr. A.D. Topping brought to light the evidence which gives credit for the name to Lt. A.D. Cunningham of the Royal Navy Air Service, commanding officer of the British airship station at Capel in 1915. While conducting a weekly inspection of the station, he playfully flipped his thumb at the gasbag of His Majesty's Airshop SS-12. On hearing the resulting noise that echoed off the taut fabric, he humorously imitated the odd sound: "Blimp!" Believe it or not!





units utilize 50 watt output models. Handheld portables are also utilized in addition to the vehicle mobiles.

The communications between the blimp and ground crew are normally held on 151.625 MHz. Table 1 lists the frequencies in use by the Goodyear Blimps. Typical transmissions during transit are of the nature concerning motel reservations, weather conditions, and details about upcoming operations.

Transmissions during events are typically cues from the television producer to the pilot requesting "shots" of aerial views. The networks typically provide the camera personnel, with an exception being ESPN which uses Goodyear personnel to operate the camera.

The camera movement is controlled by two joysticks -- one to control the zoom function and a second for azimuth/elevation control. It is possible to clearly view a yard line on a football field when the blimp is at an altitude of 1000 feet and a distance of one mile away.

Weather reports and updates also will be monitored as the blimp and adverse weather conditions do not mix well. The blimp radio communications are not just limited to 151.625 MHz, however, as VHF AM aircraft band and new UHF FM channels are also utilized.

Blimp communications can be monitored on the GTR company frequency of 132.000 MHz in the AM mode in addition to the VHF FM frequency. The company frequency is utilized infrequently and mainly when there are problems with the 151.625 frequency either from interference or communication equipment failure.

The company frequency is not without its own problems as interference from feeder and commuter airlines on 132.000 occur. Blimp crew members favor the VHF FM as the range and transmission quality are much better than the VHF AM with typical communication ranges of 50 miles with 100 miles not being uncommon.

NEW FREQUENCIES

The use of split-channel low power UHF FM frequencies have found their way into blimp radio communications. The split-channel frequencies are located between standard 25 kHz assignments in the UHF land mobile band and are listed in Table 1. The UHF frequencies will be utilized for on-location operations as they are low power and the VHF FM will still be used in transit operations.

The blimps also can be monitored communicating on VHF AM commercial aircraft frequencies. The current blimps utilize two Narco brand two channel AM aircraft radio units. The radios are typically configured with a VOR and tower frequency and the GTR company frequency (along with another VOR-VHF Omni-Range). The radios are programmable to standard channel settings in the VHF AC band. The blimps fly under VFR - Visual Flight Rules and do not use or have assigned a special squawk code.

All blimp radio traffic is in the clear with no special or ten codes in use. Each blimp identifies itself with a call based on its tail number. The N-November portion of the tail number is generally dropped and the blimp call is usually #-Alpha.

The Enterprise pilot calling the tower will state "This is 1-Alpha Goodyear Blimp." The ground vehicles identify themselves in a similar manner as "1-Alpha Bus" or "1-Alpha Van." Crew members appear to have two digit number identifiers which are used at times; however, first names are most often used.

A THOUSAND LIGHTS

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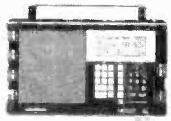

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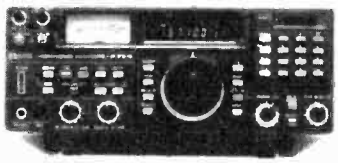

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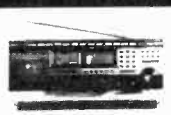

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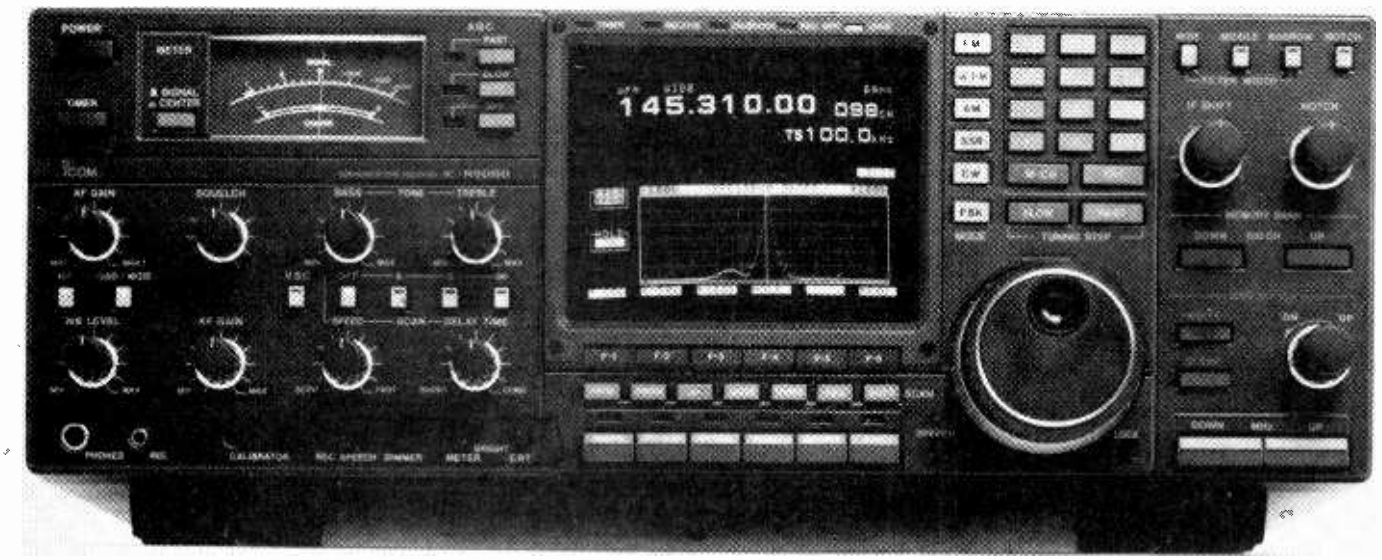


By Lawrence Magne

Editor-in-Chief
Passport to World Band Radio

For six years, you've tried in vain to hear your favorite island paradise, Tristan da Cunha. You've monitored the static-filled channel for thousands of hours, become a member of the super-secret DX club *Uno Tuno*, and suffered through interminable broadcasts of DX news. Still, Tristan Radio eludes your grasp.

Finally, you decide on one of two options. You'll get some really hotshot receiving equipment, or else you'll hire a boat and anchor it next to the island.

You choose the first option, hock the Bulgari watch Aristotle Onassis gave you when you saved his pet ocelot in France, and head to your favorite shortwave radio dealer. The lovely lady at the store sells you a spanking new receiver for five thousand smackers.

Now, with sweaty palms and pangs of hunger, you wonder, "What have I gotten for *all this money*?"

Broad Coverage of Radio Spectrum

ICOM has given us all a chance to find out. They recently introduced the model IC-R9000, which lists in the US at $5,459. That's dollars, not Polish zlotys, and the price tag is about the same as a new Hyundai.

This professional-grade superset, which is derived from ICOM's established IC-781 ham transceiver, operates in its U.S. version all the way from 100 kHz to just under 2,000 MHz -- "almost dc to daylight," as the cute saying goes. This fits in with the recent movement by Japanese manufacturers away from specialized receivers to those that cover all kinds of bands.

The reason for this is that, in principle, the market potential should increase as band coverage increases. After all, the '9000 can be used not only by shortwave freaks, but also by "lowfers," BCB DXers, VHF/UHF scanner enthusiasts -- even satellite eavesdroppers.

But the problem is that all this band coverage is expensive, which almost certainly reduces demand outside the confines of the Pentagon. After all, how many $5,000 radios have you seen at friends' homes lately?

So the '9000 is not just a shortwave receiver. It's also a VHF and UHF scanner (we didn't test those specialized functions, but initial secondhand reports are not encouraging), with an unusual plus: It has a video display that not only indicates the frequency, time and the like, but also shows signals on nearby frequencies.

Video Display Shows Spectrum Occupancy

Let's start with the display, since that's the most unusual feature of this set.

What it does is to show an amber pip on the screen for each station that's on the air within the viewing range of the display. That range is chosen by the listener, and can be plus or minus 25, 50 or 100 kHz. Which is to say, you can see 50, 100 or 200 kHz of spectrum at one glance. This is just fine for shortwave and the AM band, but is not wide enough for some VHF and UHF applications.

Of course, all you see for each signal is a pip. The display doesn't tell you the names of the stations whose pips you're seeing.

On the face of it, this would seem to be just gimmick, especially as it is more like a series of slightly delayed snapshots of the spectrum than it is a continuous real-time display. But what we found in weeks of listening is that it can help a bit in bandscanning when you're DXing.

On shortwave, the display shows even faint signals that you might otherwise tend to pass over when tuning around by ear. In fact, the display is so sensitive that it picks up static and other background noise and spurious signals, as well. But, all in all, for serious DXing the display does have at least some value.

Big, Beefy Set

Another unusual characteristic of the '9000 is its weight, and to some extent its size. At 44 pounds, or 20 kilos, this set weighs the same as hefty tube-type sets used to weigh. Its front panel is large, too, so that the display can be fit in.

There's also lots of room for the knobs and buttons, so it's not cramped and clunky to operate, the way ICOM's less expensive IC-R71A is. In general, greater weight and spacious size are pluses, as they often suggest more complex, rugged construction.

Cornucopia of Features

Additionally, the '9000, like the 'R71, has features of real interest to DXers. For example, there's a breathtakingly deep notch filter that goes to greater than sixty -- yes, *60!* -- dB down to wipe out heterodynes.

There's also what ICOM calls IF shift, but which Drake receiver users will recognize immediately as passband tuning -- and it works not only in the SSB mode, but also in the AM mode.

This nomenclature is confusing because on some models what is called passband tuning is what is called IF shift on other models, whereas what is called passband tuning on yet other models is actually a continuously variable bandwidth.

But what it comes down to is that the '9000's IF shift allows you to adjust the receiver to exactly where it provides the best mix of tonal quality and interference rejection for the specific signal you've tuned in. It's a real plus.

There are so many other features -- two shortwave antenna inputs, a sophisticated noise blanker, complex scanning facilities, and a *thousand* tunable memories, for example -- that we'd have to take up a whole article just to cover them. There is a wide variety of I/O ports for computer and other use, and even separate brightness controls for the signal meter and the video display.

Suffice it to say that if there's something you want on a communications receiver, the '9000 probably has it. One of the few shortcomings is that once the set is tuned to a memory channel, you can't simply switch back to the frequency the set was tuned to before the memory was called in.

Superior Audio Quality...

The audio quality of the '9000 is above average for a communications receiver, especially in the lower audio frequencies -- even if the built-in speaker, which faces upwards, seems almost like an afterthought. A good external speaker would be a fine addition to this set.

In addition to the tonal plus brought about by the IF shift, the '9000's audio is also helped by the inclusion of powerful

separate bass and treble tone controls. So, all in all, this is not just a DX receiver -- it's also a gilt-edged program listening set, as well. When you compare the '9000's commendable audio to the muddy audio found, for example, on the Japan Radio NRD-525, it's like night and day.

...but No Synchronous Detection

This is despite the fact that the '9000 doesn't have synchronous detection. Normally, this would be a real drawback -- especially at this price, where you don't expect shortcuts.

But in practice, the set tunes so precisely that you can use the single-sideband controls to select only one sideband with results that are reasonably close to those of a synchronous detection arrangement with selectable sideband. It's not ideal, but it's certainly more than acceptable.

Best Overall Performance of Any Set Tested

Of course, what counts at this price level is performance and quality of construction.

As to performance, the '9000 passed *Passport*'s lab tests better, overall, than has any other receiver we have ever tested. Sensitivity is excellent-to-superb, dynamic range good, and nearly all other measurements are either excellent or superb. Across the board, we found that this attention to good engineering practice translated to DXing reception quality of the highest order.

Certain Excellent Construction Characteristics

As to quality of internal construction, it's clearly above average, with rugged construction throughout and excellent circuit shielding. I was recently at a commercial receiver manufacturing facility, where the sets being made cost as much as some houses, and saw much of the same sorts of construction characteristics that are found within ICOM's '9000.

Across the board, attention to good engineering practice translated to DXing reception quality of the highest order.

Another plus is that, unlike ICOM's lesser IC-R71A, the '9000's software makes use of a ROM, rather than a battery-dependent RAM chip. This means that the '9000 will not cease to function because some tiny battery goes dead after years of use.

Nevertheless, the '9000 doesn't have the sort of handy, clean modular circuitry that's found in many other models of professional receiving equipment. Instead, the '9000's boards are interconnected in part by plug-in cables.

Some Unusual Bandwidths for Shortwave Listening

Of course, for this kind of money, you expect something special. But we did find some disappointments.

Easily the main performance shortcoming concerns the bandwidth filter choices. There are three AM bandwidth filters, which is more than the two normally found on communications receivers. These measure 11.3, 7.8 and 2.6 kHz.

All perform superbly, with excellent-to-superb shape factors and superb ultimate rejection of between 90-100 dB down. But while the narrow bandwidth is well-chosen, the medium is too wide for most shortwave listening purposes, and the wide is simply useless except for listening to local mediumwave AM stations.

Indeed, with the medium -- much less the wide -- filter, you can hear a station on a adjacent channel, fully 5 kHz away, almost as loud and clear as if it were on the channel the set is tuned to!

On the '9000, bandwidth choice is dependent on mode, so the AM bandwidths can't be switched in independently for single sideband, which has its own bandwidths. SSB filter performance is superb, but the two bandwidths have almost identical characteristics: The wide measures 2.8 kHz, while the narrow is an almost-identical 2.5 kHz. You can hardly tell the difference.

We've talked with two major American ICOM dealers, Electronic Equipment Bank and Universal Shortwave, and both have indicated that they plan to make available substitute filters with more suitable bandwidths in the very near future.

EEB's Collins AM filters will have bandwidths of 4 and 6 kHz, which should clear up the problem nicely. Nothing has yet been determined concerning a more suitable second SSB bandwidth, but presumably this will be made available, too.

Distortion Occasionally Found with Powerful Signals

The other performance shortcoming is that when very powerful signals are received and a good outdoor antenna is used, on our unit there was "breakup" distortion -- regardless of how the AGC and other non-attenuator controls were adjusted. This disappears when either or both of the attenuators are switched in, but this really shouldn't be happening on a set with this kind of price tag.

Quality of Front Panel Controls Only Average

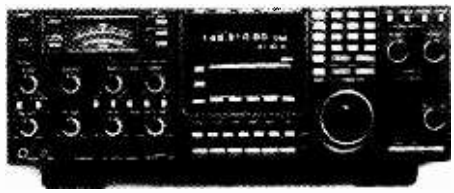
Similarly, the quality of the front-panel controls is only average. Plastic knobs are held onto short shafts only by friction, and when our set arrived from ICOM one knob was already loose. Additionally, the keypad -- although it is laid out in the familiar sequence found on telephones -- is

small, with buttons that are too wiggly and vague for a device that is supposed to be of professional caliber.

Power Supply Runs Hot

Worse, the power supply, even though it has a large heat sink, runs quite hot, and heat is a great enemy of component life. On our sample, we found the set failing after it had been turned on for a half hour after we had had it for only a few weeks. Eventually, it died altogether.

Apparently no other samples sold have had this problem, and as our set was only the 15th one built, presumably what we encountered was a teething problem not uncommon in early production of complex new devices. But high heat shortens component life and, again, major dealers are coming to ICOM's rescue by devising ways -- better heat dissipation or the addition of computer-type fans -- to make the set run cooler.



The Bottom Line

All that having been said, the bottom line is this: The ICOM IC-R9000, with at least one changed bandwidth filter and better cooling, qualifies as the best shortwave communications receiver we have ever tested.

Although *Passport's* chief monitor finds the Japan Radio NRD-515's controls to be more appropriate than those of the '9000 for hour-after-hour bandscanning, the rest of us that operated the '9000 all enthusiastically give it top honors. This set, with the dealer changes mentioned, should be a gem.

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You can hear Larry Magne's equipment reviews the first Saturday of each month, plus PASSPORT editors Don Jensen and Tony Jones the third Saturday, over Radio Canada's "SWL Digest." For North America, "SWL Digest" is heard at 8:10 PM ET on 5960 and 9535 kHz, with a repeat Tuesday at 8:30 AM ET on 9635, 11855 and 17820 kHz.

PASSPORT'S "RDI White Paper" equipment reports contain everything found during its exhaustive tests of communications receivers and advanced portables. These reports are now available in the US from Universal Shortwave and EEB; in Canada from PIF, C.P. 232, L.d.R., Laval PQ H7N 4Z9; and in Europe from Interbooks, 8 Abbot Street, Perth PH2 0EB, Scotland.

A catalog of these reports may be obtained by sending a self-addressed stamped envelope to International Broadcasting Services, Ltd., Box 300M, Penn's Park PA 18943 USA.

Improving Receiver Audio Quality with an Audio Graphic Equalizer

by Roger D. Dowd

An easy and effective way to improve the audio quality of your scanner or shortwave receiver is to use an audio graphic equalizer.

While more expensive shortwave receivers provide sharp filtering for Continuous Wave (CW) and Radio Teletype (RTTY), they may provide little or no audio filtering or only fixed Single Side Band filtering. Less expensive shortwave receivers and most scanners often come with no audio filtering at all.

CW and RTTY filters are much too sharp for audio filtering and SSB filters, as mentioned, are fixed and cannot be varied for other types of signals. By using a graphic equalizer, we can tailor the audio to our particular need.

A graphic equalizer is a device that consists of a number of fixed audio filters, each having its own volume control. Graphic equalizers are used mainly in home and auto stereo systems to compensate for excessive loss or boosting of frequencies because of inadequate speaker systems, amplifiers, poor room acoustics, and so forth.

Each filter frequency is called a "band." Graphic equalizers may have as few as three bands or as many as 20.

Different manufacturers often select different frequencies to represent the bands. For example, one graphic equalizer may have 500 Hz, 1 kHz, 5 kHz, etc., while another manufacturer may have 450 Hz, 1.5 kHz, and 5 kHz, etc.

With careful adjustment of the graphic equalizer controls, we can boost useful information while attenuating everything else. Or, if we desire, we can notch out one or more select frequencies, leaving the others alone or even boosting them at the same time.

In effect, what we have is a variable bandpass filter and a variable notch filter all in the same box. Obviously, the more bands that the graphic equalizer has, the sharper each band will be increasing the notch and bandpass resolution of the graphic equalizer.

As mentioned earlier, the better receivers will provide filtering for CW and RTTY, but what about Facsimile (FAX), Slowscan TV (SSTV) and other forms of telemetry, each of which have different bandpass characteristics? The graphic equalizer will allow you to change the audio bandpass of your receiver to meet a particular need.

When used with a scanner, a graphic equalizer can work wonders on weak and noisy signals. A signal that is barely discernible through all the popping, frying and other forms of static will come through loud and clear with the proper equalizer settings.

Two Types of EQ

There are basically two types of graphic equalizers on the market. One is an "inline" type commonly found in home stereo systems. It needs an external power amplifier to drive the speakers. This type of graphic equalizer is most often found to have ten to twenty bands.

The other type, which I like to refer to as an "outboard" type, is most commonly found in car stereo systems, and usually has only three to seven bands. The car stereo graphic equalizer almost always has a power amplifier to drive the speakers directly. Its input is taken from the tape player or radio speaker outputs.

Home stereo graphic equalizers usually come with separate controls for the left and right channels, while the car stereo graphic equalizers usually have one set of controls for both channels. Combining the two channels into one set of controls as well as the reduced number of bands makes it easy to adjust the car stereo graphic equalizer while in traffic.

Wiring up the equalizer is fairly easy and straightforward. But before you tear open your receiver/scanner and rip the graphic equalizer out of your car, read this article thoroughly! Be aware that opening your equipment may violate any existing warranties! Neither the publisher nor the author will assume any liability for any damages to your equipment relating to this article!

Connecting the "Outboard" Model

The outboard or car stereo graphic equalizer is the easiest to use and requires no modification of either the scanner/-receiver or the graphic equalizer. If you are (understandably) squeamish about performing surgery on your receiver/-scanner, then the outboard or car stereo graphic equalizer is for you. It will require a 12.6 VDC 2 AMP (at least) power supply. Booster type equalizers may require a higher amperage.

Nearly all receiver/scanners are equipped with an earphone jack. Use the audio from the earphone jack to drive the outboard graphic equalizer. The typical car stereo graphic equalizer comes with a minimum of six wires not including the power supply leads.

Some models may have more wires and may come with auxiliary power leads intended to power another device through the equalizer. These wires are often identified somewhere on the graphic equalizer. Be very sure you *know* what each wire is before you start hooking up the graphic equalizer to your receiver/scanner or you could wind up "smoking" the graphic equalizer and/or the receiver/scanner.

Follow the same procedure for wiring up the outboard graphic equalizer to the receiver/scanner as you would for wiring up to a car stereo. Only one channel of the graphic equalizer will be used. Be sure that if you use the LEFT channel input, that you also use the LEFT channel output.

Wire a connector that matches the earphone plug of your receiver/scanner to the AUDIO input wires of the graphic equalizer. Solder an 8 to 16 ohm load resistor to the output of the unused channel. This load resistor *must* be EQUAL to or GREATER in wattage than the channel it is wired to. Failure to install the load resistor may destory the power amplifier for that channel.

(It is quite possible, if you wish, to wire one channel up to a scanner and the other channel up to a shortwave receiver. This might make it difficult, however, to use both receivers at the same time.)

Before you apply power, be *very* sure you have everything wired up properly and that the volume control of the receiver/scanner and the graphic equalizer are at a minimum. If the graphic equalizer has a fader control, set the fader control to mid range position. Apply power and slowly adjust the volume controls of the receiver/scanner and graphic equalizer. If the graphic equalizer has a BYPASS switch, make sure it is set in the "equalize" position.

If you get no sound, immediately turn everything off and recheck ALL your wiring. Once you have everything working, adjust the graphic equalizer for the best sound possible.

Experiment with different settings and adjustments. Even similar devices, such as two-way radios, will have different bandpass characteristics. Compare the difference between "normal" audio and "equalized" audio by alternating with the BYPASS switch. You can really appreciate the difference on weaker signals.

Wiring the "In-line" Equalizer

The in-line home stereo type equalizer will require some modification to your receiver/scanner. Despite this fact, the inline graphic equalizer is the one I prefer. This is because, at will, I can hook up practically any kind of inline graphic equalizer simply by plugging in the one I want. This modification also provides a handy output for a tape recorder or external power amplifier.

First, drill two 1/4-inch holes approximately 1 inch apart at some convenient place on your receiver/scanner, and install a female phono plug in each hole. You will then need to locate the volume control potentiometer (pot). It is here that you will "break in" and "place" the graphic equalizer (see fig. 1).

Turn on the receiver, and using a signal tracer, find the "high" side of the pot. This is the contact that has a signal that does not vary with the pot setting.

Fig. 1: Schematic Diagram of Modification

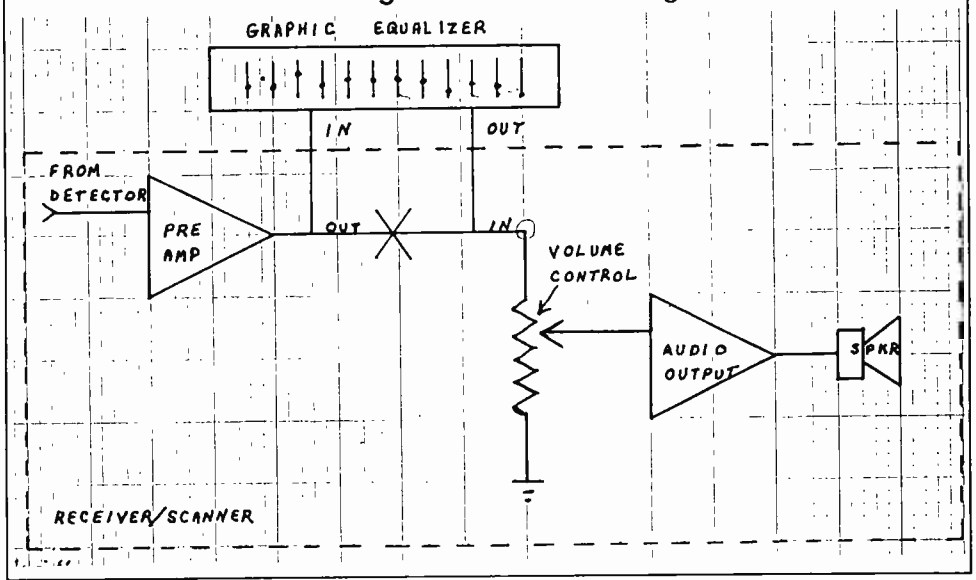
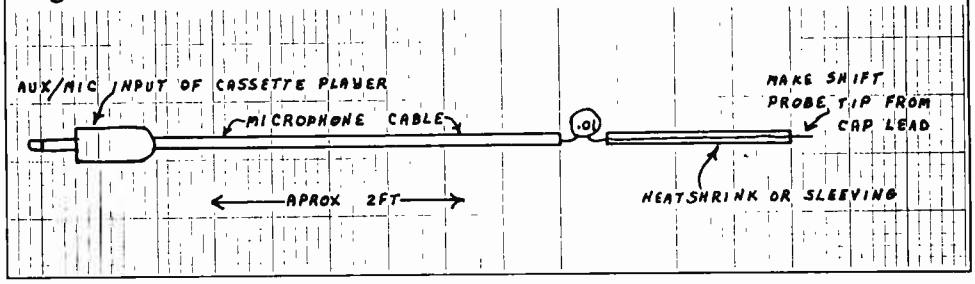
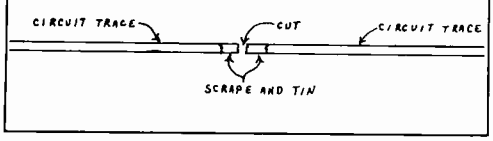


Fig. 2: Probe for Cassette Recorder Signal Tracer



If you don't have a signal tracer, you can make one from just about any cassette tape recorder. Make up a test cable from about two feet of microphone cable. On one end install a connector to fit the AUXILIARY (AUX) or MICROPHONE

Fig. 3: Example of "Cut" Circuit Trace



(AUX) jack of your cassette recorder. On the other end of the cable, solder a .01 uf 25V or greater capacitor (CAP) and place some heat sink or sleaving on the free lead of the CAP leaving about 1/8 inch of lead bare.

Use this lead as a simple probe to find the "high" contact (see fig. 2). Plug a small speaker or headphones into the EAR jack of the cassette tape recorder and put the cassette tape recorder into RECORD mode by inserting a blank cassette and pressing RECORD and PLAY.

Be very careful not to short any pins or contacts while probing around!

Once you have found the "high" contact, desolder the wire from this contact and run it to one of the phono jacks. Label this jack OUTPUT (to equalizer). Using only the shortest length of wire necessary (AWG 28 gauge), run a wire from the contact left bare to the other phono jack. Label this jack INPUT (from equalizer).

If the pot is mounted on a circuit board (as was the case with my scanner), find the "high" contact on the circuit board in the same manner described previously. Once you have found the "high" side contact on the circuit board, locate the trace that runs to this contact. Carefully cut completely through this trace using a sharp craftsman knife and remove approximately 1/16 inch of trace.

Scrape back the lands at the break point about 1/4 inch on each side of the break until the copper is shiny. Carefully tin the exposed copper surface on each side of the break, taking care not to bridge the break with solder (see fig. 3).

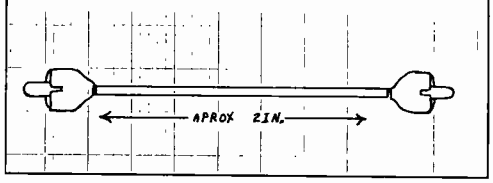
Locate the trace that connects to the pot. Using the shortest length of wire necessary, solder one end of the wire to one of the phono jacks and label this jack INPUT (from equalizer). Using the same procedure, solder a wire to the tinned area of the remaining trace. Solder the other end of this wire to the remaining phono jack and label this jack OUTPUT (to the equalizer).

Next, make a jumper by taking a 2-inch piece of AWG 20 gauge wire and solder a male phono jack at each end (see fig. 4). This jumper will be needed whenever you use your receiver/scanner without the graphic equalizer.

When you're all done, double-check your work, making sure your solder connections are good and that there are no solder bridges anywhere. Once you are sure that your work is okay, apply power to the graphic equalizer and the scanner/receiver. If you get no sound turn everything off and recheck your work.

If you get sound but the equalizer controls have no effect, make sure that the BYPASS switch is in the proper setting. Most graphic equalizers come equipped with a bypass switch to let you return to a "normal" setup. BYPASS may be part of the ON/OFF switch function.

Fig. 4: "Phono Plug Jumper"



If you still aren't getting any sound, make sure you have the patch cable going to the proper inputs and outputs of the graphic equalizer and the receiver/-scanner. When you are positive everything is working okay, put your receiver/scanner back together.

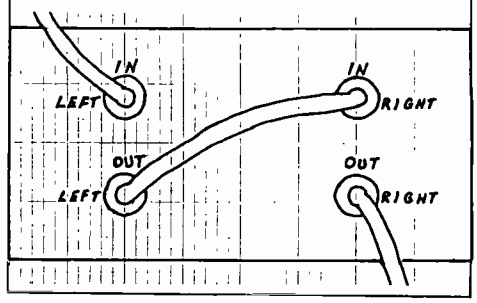
Where to find a graphic equalizer

Graphic equalizers are relatively inexpensive, depending on the type and size (number of bands) that you purchase. More often, you will find bargains on used graphic equalizers through yard sales and flea markets.

You may find "giveaways" with only one channel working because it is cheaper to replace it with a new one than to have it fixed, and since you will likely be using only one channel, you can't go wrong. I picked up a little five band outboard for $3.00. One channel was burned out, but the other channel works great.

I also picked up an inline seven band Realistic (Tandy Corp.) at a ham fest for $5.00. I repaired a cold solder joint in it and now it works like brand new. The outboard equalizer is hooked up to my shortwave receiver while the inline equalizer is hooked up to my scanner. As

Fig. 5: Cascading Left and Right Channels (Inline equalizer only)



mentioned, both work great.

An advantage to the inline graphic equalizer that I did not mention earlier is the ability to cascade the left and right channels (providing both channels work). By feeding the left channel into the right channel (or the other way around), this will increase the overall selectivity of the graphic equalizer (see fig. 5).

The Realistic equalizer that I am currently using is a model 12-1867 seven-band Car Stereo Frequency Equalizer. It currently sells for less than $50.00 new. The specification sheets on this particular equalizer say that the unit will boost the signal 12 dB and attenuates the signal 12 dB (from flat response). Combining the left and right channels will increase this range, if not double it (I don't have the test equipment to say precisely).

Every graphic equalizer is different, so check with the manufacturer's spec sheet if it is available. I *do not recommend* this procedure for the outboard type equalizer!

Remember that although the graphic equalizer will enhance your receiver/-scanner's audio, it can do little to improve poor receiver design. The graphic equalizer will not increase receiver selectivity (adjacent channel interference). Only good IF filtering can effectively do that. The graphic equalizer *will* reduce noise and other unwanted interference.

My thanks to Kevin Haywood, N4QVC, and John Huff, KE4WT, for their help and encouragement. I hope you will find this project both useful, informative and fun. Enjoy!

About the author: *Roger Dowd, WA4QAS, is an Electronic Technician and an Advanced Class Amateur Radio Operator. His hobbies include packet radio, computers, SWLing and building and experimenting with all types of electronic projects.*

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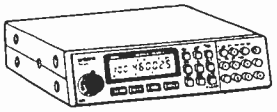

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DXing the Balkans

by Charles Sorrell

Balkanize: to break up (as a region or group) into smaller and often hostile units. So says the dictionary.

That about sums up the story of the Balkans, a collection of small states that periodically break up into even smaller units, combine into larger empires, and break up again. The process can be as fascinating as it is tragic to watch.

The early history of the region showed the Turks winning and holding area from the 1300s until 1912. Several years later, the Balkans -- specifically Yugoslavia -- hosted the opening ceremonies for World War II, the assassination of Archduke Ferdinand, the heir-apparent to the Austro-Hungarian throne.

But this is the kind of hand that history dealt to the Balkans. Certainly not bad hands, like those dealt to Bangladesh or Ethiopia, but enough to cause friction today. Border changes after World War II, for example, left more than half of Albania's population in present-day Yugoslavia. Today, Yugoslavia is accused of repression, even genocide, against this minority. Romania is accused of mistreating its Hungarian minority. And on it goes.

All of its failings and troubles aside, the Balkans are at least well-represented on shortwave. All six nations of the region can be tuned in with English programs beamed to North America. And each allows us to sample some of the region's flavor through the features and music they air. We also can get a healthy helping of the mutual hostility that still pervades this region.

Here's a look at where and when to tune for the Balkan broadcasters:

Albania

Good old Radio Tirana -- the butt of shortwave listeners' jokes for decades -- airs five half hour broadcasts in English to North America daily. These are from 2330-0000 on 9760 kHz, 0230-0300 on 9500, 0330-0400 on 9500, 0430-0500 on 9480 and 0530-0600 on 9500 kHz.

There have been some signs of improvement in Tirana's programs but most listeners would probably agree that with the exception of the music, Radio Tirana is as dull as ever. One mainstay of the station's programming -- long readings about or by Albania's revered leader, Enver Hoxa -- remain, despite the fact that he died some time ago.

To be fair, however, Albania has been opening its doors ever so slightly. There even seems to be a good chance that the first ham radio DXpedition to this country may occur next month.

DXers will want to try for the home service outlet, Shqiptar Radio at Gjirokaster, which operates on 5057 kHz from 0400 to 2200 UTC in Albanian. Chances are you won't understand a word of the program but long stretches of local music speak a universal tongue.

Balkanize: *To break up (as a region or group) into smaller and often hostile units.*

Bulgaria

The Soviet Union's closest Eastern European ally still maintains a pretty hard line despite Russia's requests to "ease up" a bit. On shortwave, Bulgarian radio broadcasts to its Balkan neighbors in all applicable languages except Romanian.

Sofia's 250/500 kilowatt transmitters beam English to North America at 0300-0400 UTC on 11735 kHz, 2300-0000 on 9700, 11720 and 11735 and to Europe and North America at 2030-2100 on 9700, 11720 and 11735 kHz.

Like Albania, Bulgaria also transmits local programs over shortwave and DXers will want to check out the home service transmitter at Stolnik which is on the air with 150 kilowatts from 0400 on 7670 and from 0830 on 11765 kHz. Some of the foreign service programs are from transmitters at Plovdiv, also used by the Soviets to relay broadcasts of Radio Moscow.

Greece

The Voice of Greece airs English to North America in little ten minute news lumps that are nestled within an otherwise all-Greek-language broadcast. English is on at 0130 on 7430, 9420 and 11645; 0340 on 7430, 9395 and 9420; 1235 on 9905, 11645 and 15630; and 1535 on 11645, 15630 and 17565. Incidentally, there is a service intended for the Balkans at 2000-2050 UTC on 7430, 9395 and 9425 kHz.

Regional station Radiofonikos Stathmos Macedonias at Thessaloniki, a one-time Voice of America relay, is no great challenge. You can hear this one in Greek from 1000 (Sundays from 0600) to 2255 UTC on 9935 and 11595 kHz. The Voice of Greece makes use of the 250 kW VOA Kavala relay, in addition to its own 100 kW station at Avlis.

Romania

Romania still marches to Stalin's tune and seems uninterested in loosening up, unlike some other East Europeans. Radio Bucharest has, for years, aired an hour of English to North America at 0200-0300 and has been pretty stable in its frequency usage as well. On the other hand, it is one of the toughest stations to receive clearly. Try 5990, 6155, 9510, 9570, 11830 and 11940 kHz. A half hour English segment airs at 0430 UTC.

Turkey

The Voice of Turkey is an easy tune. English to North America is at 2200-2300 and 0300-0400 on 9445 kHz. If you're interested, there's a service in Turkish intended for the Balkans which airs from 1700-2100 on 5980, 0300-0500 on 6140 and 1000-1230 (in various languages) on 11875 kHz.

Programs on the Voice of Turkey are rich in history and culture but short on animation. One visitor to the station reported bored announcers reading articles out of newspapers, magazines and even encyclopaedias in

an effort to fill air time. Still, the station treats its listeners well in other ways, providing a number of all-expense-paid trips to the country each year.

DXers will also be interested in a couple of more difficult targets -- Turkish Police Radio (a broadcaster, despite the name) on 6340 kHz from 0558 UTC sign on, all in Turkish, and Turkish Meteorological (also a broadcaster and not a utility station) on 6900 kHz from its 0358 sign on. Both of these can sometimes be received at quite good levels.

Yugoslavia

It used to be one of shortwave journalism's standing jokes. For years, whenever there wasn't any news to report, writers used to fill with "Radio Yugoslavia is expecting to put its new facility on the air shortly..."

Well, after what seemed like decades of waiting, the station did gets its 500 kW behemoth on the air -- and in the process added some new times and frequencies for English broadcasts to Europe and North America. Currently, the 0000 airing on 7215, 11735 and 15105 is being heard well on the latter two frequencies.

The station also recently began using the 11 meter band and has been heard signing on at 1158 UTC on the dizzyingly high frequency of 25795 with an English broadcast.

Radio Yugoslavia gives shortwave program time to local radio stations as well. Even though there is virtually no English used, it's still fun to try and hear all of these. The overall schedule is somewhat cumbersome so we'll present just the most widely heard one here: 5980, 7240 and 9620 kHz from 2100 to 2130 (winter) and 2000-2030 (summer). Winter offers the better opportunity to hear these. Check for the following:

Radio Beograd in Serbo-Croate on Sundays; Radio Lubljana in Slovene, German and English on Mondays; Radio Zagreb in Serbo-Croate on Tuesdays; Radio Sarajevo in Serbo-Croate on Wednesdays; Radio Pristina in Albanian on Thursdays (2100-2115) and Radio NoviSud in Hungarian on Thursdays at 2115-2130. Radio Titograd is in serbo-Croate on Fridays and Radio Skopje in Macedonian on Saturdays.

QSL hounds will enjoy trying to verify these. Most of them do reply and some have quite nice QSL cards. Radio Yugoslavia itself, on the other hand, can be in a "yes" mode today and a "no" mode tomorrow so getting a QSL out of them is largely a matter of luck and persistence.

The rest of the foreign services from the Balkans are pretty easy to QSL. Radio Sofia, however, doesn't like to issue cards for the Plovdiv or Stolnik sites and the two Turkish 6 megahertz broadcasters can be troublesome.

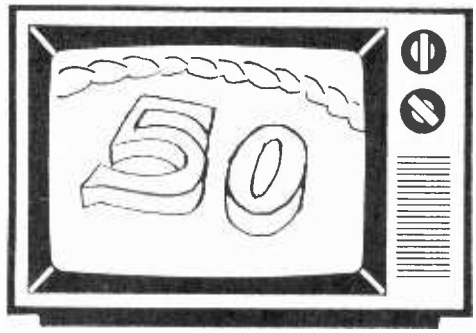
By and large, though, hearing and QSLing the Balkan broadcasters isn't something you'll have to sweat over very much, which makes it a perfect DX activity for what's left of the summer.

mt

Radio Bucharest, Romania

RADIOTELEVIZIONI SHQIPTAR

Television's First Fifty Years



On April 29, 1939, David Sarnoff, president of the Radio Corporation of America (RCA), stood before television cameras at the opening of the New York World's Fair and proclaimed "the birth of an industry." Ten days later, Franklin Delano Roosevelt became the first president to appear on commercial television, formally dedicating a fair whose theme was "The World of Tomorrow."

Only a few viewers -- mostly connected with the broadcasting industry -- were able to witness this historic event on television, and they were confined to New York and vicinity. Many more spectators witnessed the event live at the fairgrounds at Flushing Meadows, Queens.

Sarnoff's proclamation, followed by the start of regular telecasting by NBC, is generally regarded as the birth of commercial television in the United States. The RCA Pavilion demonstrated to fairgoers some of the first televisions, which formally went on sale at the fair's opening. There were two principal models: a five-inch set for about $200 and a "giant-screen" 12-incher for $500.

The 12-inch tube, with a round face masked off into a pumpkin shape, was so long that it had to be mounted vertically so the cabinet would fit through a standard doorway. Its screen faced upwards and was reflected in a mirror in the hinged lid of the cabinet.

The RCA televisions were joined at the fair by several other all-electronic receivers. There were sets bearing the logo of Allen B. DuMont Laboratories, and these actually were the first ones to appear on the market, beating the RCA models by a matter of days. Also supplying sets at the time were Andrea Radio Corporation, General Electric, and Philco.

On the Air!

The debut of commercial television broadcasting was the result of many years of experimentation. "Television" itself had become a familiar word long before there was an available product or service by that name. In fact, the first recorded use of the word dates back to 1900.

Television, it turns out, was the result of several inventions which took place throughout the world. As early as 1884, experiments were being conducted in Germany which led to the formation of mechanical television. Scientists in Russia and England also worked toward the development of television during the early 1900s.

But it wasn't until the 1920s, however, that TV really began to take shape. In the United States, two pioneers, Philo Farnsworth and Vladimir Zworykin, simultaneously developed electronic television systems. The first experimental station permits were issued by the government in 1928, and after a few sporadic broadcasts, regular weekly broadcasts were presented in Washington by Charles Francis Jenkins, a TV pioneer who also was the inventor of the modern motion picture projector. Prior to the 1939 fair, however, television was an innovation enjoyed only by hobbyists from within the radio industry.

Once TV was introduced to the public, however, the Federal Communications Commission (FCC) realized the potential for rapid growth and asked that proposals be developed for standardizing transmissions.

Hardly had the FCC finalized the specifications for television broadcasting when the United States entered World War II, and all TV set makers converted to military electronics. The lessons of wartime production sharpened the skills of the manufacturers, and after returning to television production, sold 6,000 TVs in

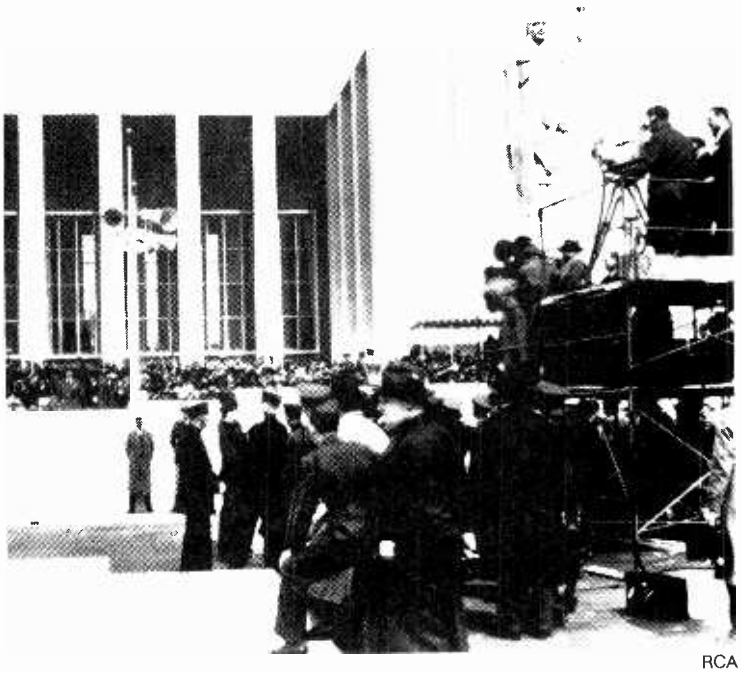
When David Sarnoff dedicated RCA's pavilion April 20, 1939, it marked the first time a news event was ever covered by television cameras. General Sarnoff's speech, "Birth of an Industry," predicted television would become an important entertainment medium.

1946. By 1948, television was a 226 million dollar peacetime business with the total number of receivers produced rising to three million in 1949. Consumers stood in line to buy them.

In light of this boom, it was obvious that more stations would be added to the 107 already in existence across the United States. In 1948 the FCC instituted a freeze on all new station grants while it formulated plans for the orderly expansion of television. Four years later, it came up with a nationwide allocation plan which allowed for 70 channels in the new ultra high frequency (UHF) spectrum. Up to that point, all stations were in the very high frequency (VHF) spectrum, and the VHF band simply could not accommodate the many stations destined to appear in the future.

America's television viewing audience also expanded during this time, thanks to the emergence of cable TV in 1948. The origin of cable has been traced to both Mahoney, Pennsylvania, and across the country to Astoria, Oregon, where enterprising individuals in areas too remote to receive broadcast signals began to devise ways to use coaxial cable to bring the signals down from nearby mountain tops into their towns. Word of the wonders of television spread quickly, and despite a rocky history, the cable industry has grown to the point where 52 percent of American households now utilize cable.

The first movement toward color television occurred around the same time cable was getting started. In 1947, the Columbia Broadcasting System (CBS) approached the FCC to issue standards for color television based on a system developed by CBS engineers. Many broadcasters and most television manufacturers,



RCA

President Franklin Roosevelt became the first President to be seen as well as heard on the air, as he opened the 1939 New York's World Fair. The telecast of the opening ceremonies marked the start of television service in the U.S. on a regular basis.

Chronology of TV and ATV Development

1884 - German scientist Paul Gotliebb Nipkow invents scanning device which transmits over short distances.

1928 - Philo T. Farnsworth, a native-born American, invents electronic scanning.

1923 - Vladimir K. Zworykin invents the inconoscope and kinescope.

1928 - (October 9) The Radio Manufacturers Association (RMA, predecessor to EIA) Television Committee is established and meets to create a framework for the introduction of television (still in experimental stages).

1928 - First experimental TV station permits issued by the government.

1928 - Zworykin demonstrates the first completely electronic television system.

1936 - RCA installs television receiver in 150 homes in New York area. Felix the Cat is used as the first guinea pig.

1936 - RCA demonstrates a prototype television receiver to the RMA.

1938 - (June) The RMA Engineering Department submits proposed television standards to the RMA's Board of Directors.

1938 - (September 20) Standards adopted by the RMA Board of Directors and submitted to the Federal Communications Commission (FCC).

1939 - (April 20) The first public broadcast of television takes place at the New York World's Fair.

1940 - (January) FCC holds hearings on proposed television standards. Controversy over the standard setting process leads to the creation of the National Television System Committee (NTSC) to study alternatives and recommend a final standard to the Commission.

1941 - (July 1) The NTSC proposed monochrome standard (525 lines per frame; 4:3 aspect ratio; 6 MHz channel, etc.) is adopted by the FCC.

1945 - Nine commercial TV stations are on the air.

1947 - Annual television production reaches 175,000 receivers.

1947 - RMA, working with the FCC, forms three engineering committees to analyze feasibility of color telecasts.

1948 - (April 18) The RMA helps form a Joint Technical Advisory Committee (JTAC) to study the possible allocation of frequency from 216 to 300 megacycles for color television.

1949 - (September 19) At its Board of Directors meeting, the RMA announces a broad policy outline to govern RMA recommendations to the FCC on color television. Among other criteria, RMA supports "a compatible color system in which monochrome will not deteriorate in quality."

1950 - The FCC chooses a color TV system incompatible with existing black and white sets as the national standard.

1950 - A second NTSC is formed to develop standards for color broadcasts, as RMA believes the color broadcast situation is more complex than monochrome and calls for a monochrome compatible standard.

1950 - Television receiver production reaches 5.2 million per year.

through RMA, opposed the CBS standard, because it was incompatible with the existing black-and-white system.

The RMA was successful in blocking this first attempt, but in 1950, midway into the FCC freeze on TV station expansion, the FCC heeded pleas by CBS that color broadcasting be permitted. The Commission accepted the CBS field-sequential system, as it was the only color system ready for use at that time.

The CBS system provided good color, but because no color tubes had been developed at the time, it required a spinning disc divided into red, green, and blue transparencies in front of a black-and-white picture tube, known throughout the industry as the CBS "Fly Wheel" system. Because it was incompatible with the current black-and-white system, however, the vast majority of viewers could not watch the broadcasts, even in black-and-white, without modification. Industry dissatisfaction with the CBS system led to the formation of a second NTSC which was compatible with existing sets.

Meanwhile, major changes were occurring in the technology of the TV set. The most important, starting in 1967, was the elimination of receiving tubes, and the emergence of the solid-state TV set, with no tubes except the picture tube. This move resulted in substantial energy saving, longer equip-

TV camera men at the 1939 New York World's Fair. Only a few people in the New York area -- mostly connected with the broadcasting industry -- were able to view this historic event on actual television sets.

1950 - 140 firms are manufacturing TVs.
1951 - "I Love Lucy" series begins.
1953 - NTSC color system approved by FCC.
1953 - (December) The FCC reverses its 1950 decision and adopts the NTSC developed compatible color television system after a three year battle over the standards.
1954 - Regular transmission of color programs begins.
1956 - The first generation of color receivers enters the marketplace.
1956 - Start of black and white portable era.
1956 - Only 50 companies are still manufacturing TVs.
1956 - Videotape recording introduced to TV stations.
1960 - First battery-operated transistorized TV is offered to the public.
1962 - Color television penetration of U.S. households reaches 1.2 percent.
1962 - Congress passes a law requiring all new TV sets to be able to tune all channels.
1963 - Annual factory sales of television sets, including color TV, passes the $1 billion mark

1963 - First home videotape recorders demonstrated.
1964 - The all-channel receiver bill becomes law ending the VHF vs. UHF battle that has raged for a decade.
1964 - (April 30) Complete conversion to all-channel receiver production (capable of receiving both the 12 VHF and 70 UHF channels in existence) is made resulting from the FCC adoption of EIA's recommendations.
1965 - An all time peak of 8.4 million units for monochrome television factory sales is reached. After 1965, monochrome sales figures decline while color TV sales increase.
1967 - 94 percent of the nation's estimated 60 million households have one or more TVs.
1967 - Solid state color sets marketed.
1967 - For the first time, the Consumer Price Index (CPI) includes TV set prices in its statistics.
1968 - First generation of automated television assembly equipment (a technology perfected by Japanese firms) is in operation. This leads to drastic reductions in assembly manhours.
Late 1960s - Technological thrust of American and foreign TV manufacturers is heading in opposite directions. U.S. manufacturers rely upon tried and true tube technology and concentrate on producing large sets. Japanese firms specialize in smaller units which incorporate semi-conductor technology and automate the assembly process to cut production costs.
1970 - First all electronic TV tuners, without moving parts, introduced in the U.S.
1972 - First home color videocasette recorders marketed.
1973 - Two landmarks in color TV sales are reached; production exceeds ten million sets and factory value passes the $3 billion mark.
1974 - Home projection TVs introduced.
1976 - 35 percent of color TVs sold in the United States are imports.
1978 - The number of color sets in use exceeds black and white.

ment life and the virtual elimination of many -- perhaps most -- TV set failures.

Technology's advance is continuing -- even accelerating. In 1984, the FCC approved the start of true stereo audio broadcasts by TV stations. Though the Commission did not specify a standard, TV set manufacturers and broadcasters adopted the system recommended by the EIA Multichannel TV Sound Subcommittee.

All three commercial TV networks, the Public Broadcasting System (PBS), and many local stations now feature stereo audio on regularly scheduled and special broadcasts. In addition, some big-screen TVs now include surround sound, making use of matrixed directional clues in the sound channel. Digital television circuits have made possible improved definition TV (IDTV), which doubles the number of scanning lines, giving the impression of higher resolution.

Now, 50 years after its introduction to the American public, television is on the brink of yet another revolution as significant as any in its history -- the move to high definition television (HDTV). Once introduced, HDTV will provide viewers with a widescreen picture sharpness equal to a 35mm motion picture and the audio quality of a compact disc. It will encourage the development of life-size screens, and because of the greater resolution, it will invite viewers to sit closer, to immerse themselves in the picture.

With more than 160 million TV sets now in use and a record number of color TVs sold in 1988 (over 20 million), it is undisputable that television has become a major part of the American lifestyle.

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1980 - Closed captioning of TV programs for hearing-impaired begins and decoders go on sale.

1980 - Only five U.S.-owned companies still manufacture TVs.

1982 - First flat-screen personal portable TV introduced.

1984 - The FCC approves stereo audio broadcasts by TV stations, by protecting stereo transmission signals. TV set manufacturers and broadcasters adopt the standard recommended by EIA.

1984 - Black and white "pocket" TVs are introduced.

1984 - First stereo TV broadcasters begin and sales of MTS color TV receivers and adaptors start.

1986 - 90 percent of American homes have color TV.

1987 - Over 3.5 million black and white television sets are sold to retailers in the United States. All are imported, virtually all are portables or table models, and more than 50 percent are designed for battery or battery-AC operation.

1987 - First Advanced Television (ATV) and High-Definition TV (HDTV) systems demonstrated in the U.S.

1987 - More than 19 million color TV sets are sold to retailers.

1987 - (December) General Electric's consumer electronics manufacturing facilities are sold to Thomson Consumer Electronics.

1988 - Twenty companies are manufacturing color televisions in 30 U.S. cities. Only two of these companies are U.S. owned. Annual domestic television production is over 16 million.

Shortwave Broadcasting

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AFGHANISTAN Radio Afghanistan, in English at 1900-1930 UTC is now on 15510 and 11755 kHz (Dave Kernick, England, RCI SWL Digest) This is probably still via relay transmitters in the Soviet Union though political changes may put an end to this arrangement.

ALASKA KNLS has big plans. The station says that by 1992 it will not only move its production facilities from Ohio to Nashville, Tennessee, but that it will find a relay site capable of enabling the station to cover the Mediterranean and Europe. (My Wave, via SW DX Guide, via Australian DX News)

ARGENTINA (?) Gabriel Ivan Berrera of Argentina reports that a mysterious pirate called "Aeromusica" has been heard almost daily in Santiago, Chile. The station, which has 1000 watts on 6544 kHz, broadcasts from around 0200 to 0220 UTC with a program of melodic music. The announcer does not give his name or the station's location, however, his accent points to the Argentine border area with Chile. (Radio Nederland Radio-Enlace)

ASCENSION The BBC relay here is adding two new transmitters to the four already in use; also, antennas for Africa, South Africa, Central Africa, South America should be ready sometime this month.

Improved audio processing has been originating from London but now each relay station will get Optimods specially made for shortwave. (Jeff Spells, BBC Transmitter Planning Unit, Radio Netherlands Media Network) This should also allow more flexibility and increased relay swapping with VOA, perhaps other stations. Though never designated for North America, Ascension often provides better BBC signals in parts of North America than any other site.

AUSTRIA Radio Canada International seems never to have solved the problem of keeping its own and relayed station program feeds straight. More than once, the BBC relay on 9515 after 1200 has been replaced by Austria in German. (William Westenhaven, Quebec, World of Radio) If you find Moscow in Chinese blocking Austria in English as usual on 17870 at 1130, give 9515 a try for another slip-up!

BELIZE Radio One was surprisingly strong around 0200 on second harmonic 6570, and again at 1140 (not to be confused with Burma); new transmitter? (Bob Wilkner, DX South Florida via Radio Nuevo Mundo)

BOLIVIA A new station is Radio Perla del Agro, in Cobija, Pando, on 4600.0 kHz, heard from 0150 to sign-off at 0252 UTC, another day closing abruptly at 0229. (Gabriel Ivan Barrera, Argentina, W.O.R.)

BRAZIL Another new station is Radio Nova Esperanca, Porto Alegre, heard at 1900-2001 on both 6160 and 9550; gospel programs. (Barrerra, ibid.)

Radio Anhanguera on new 6080 from 0130 to fade at 0300, perhaps a move from 4915 though Rado Marunbi planned to use 6080; parallel to weaker 11830. (Ernie Behr, Ontario, SWLD)

Radio Globo, Sao Paulo, heard at 1943 on fourth harmonic 24480; then at 1947, Radio Globo in Rio was heard on 24830, which does not work out to be a harmonic. (M. Molano, Spain, Play-DX)

BBC Spanish relay via Brasilia is to stop in September due to the high cost of feeding programs to the site. (Jeff Spells, BBC, RNMN) This has been on 15175 at 1100-1130, following two hours of English. A roundabout routing has had to be used, with poor audio quality resulting.

COLOMBIA The station on 6150.1 has a new ID, Radio Reloj de Neiva, no longer CARACOL, and not parallel to 4945.3; heard all night from 0300 past 1000. (Ernie Behr, Ont.) La Voz de las Canas is the correct name for last month's station on 5068. (Gieseppe Zella, Italy, Play-DX)

COSTA RICA TIASD, Radio Mundial Adventista (Adventist World Radio), also known as Radio Lira Internacional, showed up with a good signal on 11870, including English around 2200-2400, Spanish at 0000-0400, some of it nonreligious; also noted in French from opening at 1210. The schedule may vary on weekends. The first few days it was actually on 11866.7, and announced incorrectly as if on 9725.

CZECHOSLOVAKIA Radio Prague moved unexpectedly to 15540 (mixed with Moscow) and 13715 (bothering WRNO 13720 before 0000) including English at 0100 and 0300. Perhaps these replace the poorly-heard 9 MHz band outlets, as it is still on 5930, 7345, 11990.

CHILE An experimental Christian action station in Maipu with 70 watts and a 15 meter high antenna is heard daily at 0200-0400 on 1625.3 varying to 1630 kHz; address is Casilla 372, Correo Central, Santiago. (Gabriel Ivan Barrera, Santiago, RN Radio Enlace)

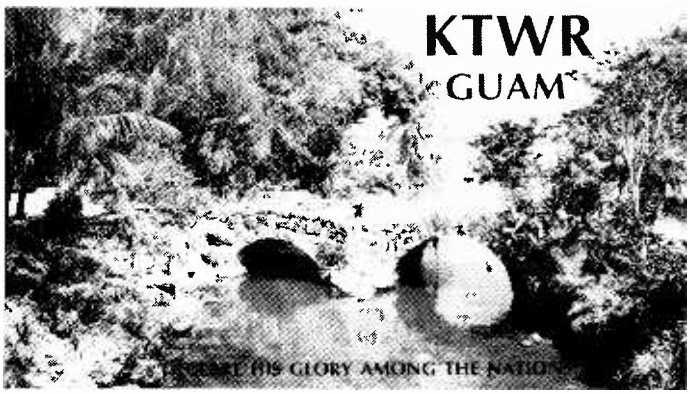
Radio Universidad de Concepcion, 6135 opened at 1010, stronger than the Bolivian Radio Santa Cruz, on 6134.77. (Ernie Behr, Ont.) Our summer/their winter means a nice darkness path as late as 1100, when we heard a traffic report during a network newscast, Correo Matinal de Mineria.

ECUADOR Radio Catolica Nacional noted on 5030.1 instead of 5055 until 0205. (M. Molano, Spain, Play-DX) This may be why Radio Impacto, Costa Rica, shifted from 5030 to 5044, at least until 0500.

EQUATORIAL GUINEA Radio Africa found on new 7188.9 (occasionally 7188.8) from around 2130 with fundamentalist Gospel programs. Sign-off times vary considerably depending on day of week, as late as 2258 on a Saturday, by which time the signal is outstanding. Still claims to be on 9852. (Bob Hill, MA, W.O.R.) Even though it had

been on 9582 instead for some time.

GABON A late addition to Radio Japan's schedule was 0000-0030 in Japanese on 21635, via this relay. (Bob Padula, Australia) English heard at 0325 on 21375, a third harmonic from here. (Ed LaCrosse, CA, SWL Digest) Africa Number One replaced 15475 with 9580 at 2100-2300. (William Westenhaver, Montreal, SWLD)



QSL from Hugh Hawkins of San Antonio, TX

GUAM KTWR is now scheduled in English: 0805-0930 to Far East on 15210; 0930-1100 to Australia on 11805; 1500-1635 (Monday 1705) to India on 11650. The only program departing (partially) from evangelism is Pacific DX Magazine, Saturday 1000 and 1515, Sunday 0845. (via John S. Carson, OK, W.O.R.)

HAWAII KQMQ, Honolulu, which broadcasts only on AM 690 and FM 93.1 says it is not responsible for relays on a military frequency, shortwave 11003 USB, at 0500. Reports are wanted, however, to help track down whoever is doing this. Phone 808-946-2869, or fax 944-0690. (RNMN)

INDONESIA Programa Nasional is heard on new 15155 at 2200-0100, and again from 0800, apparently replacing 11865. (Craig Seager, Radio Australia) Probably due to the Japanese invasion of 11865 after 1200; but what about Indonesia's external service on 15150?

LEBANON Even after Ramadan ended, Voice of Lebanon, 6549.5, was heard in Arabic from 2300 past 0200, so it seems to be 24 hours. (Bob Hill, MA, SWLD)

World Movement for Liberation of Lebanon seems to be a genuine clandestine, heard on CB calling frequency 27555 USB saying it would broadcast at 0815 on 27855. The five-minute live attack on Syria came on again at 1015, not a taped repeat; in poor English, on a Sunday. (David Ward, England, RNMN)

MALI Radio Beijing relays, from 0000 in English, 0100 to 0256 in Chinese languages, heard with superpower signals on 15128.8 and 17714.7, both variable. I don't believe these are Mali's old 50 kW transmitters; must be 250 kW or more, though China has never admitted this. 15128.8 puts out strong, noisy spurs on 15006, 15067, 15190, 15252. (Ernie Behr, Ont, W.O.R.) Also at 0300 in English on 15129 and 11715, continuing after the massacre.

MEXICO Six years ago there was a Mexican broadcaster using the FM mode on 14920. Now an unidentified outlet has been heard around 14570 to 14575 kHz at 0614-0659. (Ed LaCrosse, CA, W.O.R.)

NIGERIA The "permanent" closing of Voice of Nigeria was short lived. A few weeks later, it was back on 7255 to West Africa at 0830, still a far cry from its heyday of multiple frequencies and targets on higher bands.

PHILIPPINES Radio Veritas Asia, in English at 1500-1530, keeps changing frequencies; try 15445 and 11740. (via Bruce MacGibbon, OR, DX Spread)

SIERRA LEONE SLBS has reactivated 3316 kHz, fading in at 1950, and with a clear ID at 2110. (Roland Schulze, West Germany, RCI SWLD)

SYRIA Damascus concluding English at 2210 on 17710, also noted on equally strong spurs of 17510, 17610, 17810, 17910. (Dave Kernick, England, SWLD)

UNITED ARAB EMIRATES Abu Dhabi in English at 2200-2400 moved from 11965 to 11985, still parallel 13605. (Mrs. Leslie Edwards, PA, and Ernie Behr, Ont.)

USA Don't forget it's still possible to hear AFRTS at times on shortwave via SSB feeders, probably in England. 13651 was heard on a Saturday from 2100 with "All Things Considered," still going strong at 0400 with baseball. (Tim Hendel, FL, W.O.R.) Also heard at various times on lower sideband: 7572, 9242, 9929. Unlike VOA feeders, these drift somewhat, and may be 0.1 kHz higher. (Jim Wishner, IA, W.O.R.)

Here's the answer as to when KGEI broadcasts in Romany: Saturday 2300-2330 on 15280, UTC Sunday 0500-0530 on 9615. (George Thurman, IL, W.O.R.)

The VOA "bicycle program" tests at 0930 on 9560 came from Delano, they say; so the same may be true of 0700 on 6020 and 2200 on 21535. (Thurman, ibid.)

VATICAN English to North America is at 0050 on 9650, 11780, 15180; at 0310 on 11725. Try the 21 MHz band for some off-the-back broadcasts: 1115 and 1200 on 21485; 1200 weekdays on 21515; 1545 on 21650.

VIETNAM Lai Chau, 6252 at 1215 is one of very few Indo China regionals audible currently. (Peter Bunn, Oz DX) Bac Thai has reactivated 6690 at 1300, and an unID on 4821 at 1215 could be Ha Tuyen. (Hiroshi Fujita, Japan, Radio Australia)

YUGOSLAVIA Radio Yugoslavia booms in at 0000 on 15105, also announcing 11735 and 7215; also at 2100. (Eric Swedberg, OR, DX Spread) It seems each frequency goes to widely separated target areas. Judging from comparative reception, 17740 is for North America at 1200-1230.

Read much more about shortwave broadcasting in REVIEW OF INTERNATIONAL BROADCASTING and/or DX LISTENING DIGEST. Samples are $2 each in North America; 7 IRCs or US$3 each overseas airmail, US funds on a US bank, from Glenn Hauser, Box 1684-MT, Enid, OK 73702.

Monitor Glenn Hauser's broadcasts each week for the latest shortwave and other media news. WORLD OF RADIO is on WRNO, New Orleans, Thurs at 1530 UTC on 11965; 2300 on 13720; UTC Sat 0300 on 6185, 2330 on 13720; Sun 2030 on 15420; also at numerous times on Radio for Peace International, Costa Rica, on 13660, 21566, 25945; listen for announcements.

A separate DX news report concludes each SWL DIGEST on Radio Canada International: Sat 0337, 2107, 2137; Sun 0007, 0107, 2307; Tues 1233, 1907; Wed 0407. See schedule pages.

Broadcast Loggings

Let other readers know what you're enjoying.
Send your loggings to ***Gayle Van Horn***
P.O. Box 1088, Gretna, LA 70053-1088

English broadcast unless otherwise noted.

0000 UTC on 9620
Yugoslavia: Radio Yugoslavia. International news, "The Past Week In Yugoslavia" program, followed by "People and Events" and music. Monitored to 0030 UTC. (Bob Hurley, Baltimore, MD)

0035 UTC on 6755
Clandestine: Radio Patria Libre. Spanish. News, Latin music, and ID at 0042 UTC. (Bob Doyle, Shelton, CT)

0037 UTC on 9630
Spain: Spanish Foreign Radio. Beautiful Spanish instrumentals. "Film News" program features movie filmed in the Canary Islands, and interview with Anthony Quinn. News on the Spanish National Theater and an opera selection. (Rod Pearson, St. Augustine, FL)

0046 UTC on 9605
Vatican City: Vatican Radio. French/English. Station IDs and signal melody. News on medical symposium on the subject of Downs Syndrome. News on Baltimore's archdiocese, and current affairs topics of Israel and Lebanon. Monitored on parallel frequencies 6150 and 11780 kHz. (Frank Hillton, Charleston, SC)

0100 UTC on 6549.4
Lebanon: Voice of Lebanon. (tentative) Arabic. Male/female announcer duo to 0125 UTC. Arabic music selections to signal fade-out. (Bob Doyle, Shelton, CT)

0102 UTC on 9565
West Germany: Deutsche Welle. European news headlines and brief ID break. "Newsline Cologne" magazine show. (Rod Pearson, St. Augustine, FL)

0110 UTC on 6020
Netherlands: Radio Netherlands. "Youth in Holland" program, discussing their attitudes on sex, marriage, and other social matters. (Bob Hurley, Baltimore, MD)

0115 UTC on 6666
Clandestine: La Voz de Alpha 66. Spanish. Discussion about Castro and Gorbachev. Station ID at 0139 UTC. (Bob Doyle, Shelton, CT)

0120 UTC on 4835
Guatemala: Radio Tezulutlan. Spanish. Marimba music program. IDs with frequencies at 0136 UTC. Audible on parallel frequency 3370 kHz. (Bob Doyle, Shelton, CT)

0120 UTC on 7355
United States: WRNO. Rock music from Survivor and Chicago. Commercial for Air and Space Smithsonian magazine, and Howard Cosell's sports news. Greyhound Package Express commercial and rock from Poison and Motley Crew. (Frank Hillton, Charleston, SC)

0130 UTC on 7345
Czechoslovakia: Radio Prague. "News Magazine" program with news on summer sports activities and station ID. Weekly report on national economics and featured Czech folk tunes. Audible on parallel frequencies 5930 and 9540 kHz. (Frank Hillton, Charleston, SC)

0130 UTC on 15084
Iran: Voice of the Islamic Republic of Iran (V.O.I.R.I.) Spanish. Newscast and economic report. Moderate signal with strong fading. (Bob Landau, Secaucus, NJ)

0146 UTC on 9590
United Kingdom: BBC. Country and western music show in progress at tune in, followed by international newscast at the hour. Parallel frequencies audible were 9915, 9410 (fair), 7325, 6175 (fair), 5975, and 6005 kHz (with RSA interference). (Rod Pearson, St. Augustine, FL)

0153 UTC on 5960
Japan: Radio Japan. Discussion comparing Japanese ambulance drivers to American paramedics. Musical interlude and frequency schedule. Time pips to end of service at 0200 UTC. (Bob Hurley, Baltimore, MD)

0157 UTC on 11745
Brazil: Radio Nacional Braz. English sign-on with regular program/feature schedule. National news headlines and featured Brazilian musical selections. (Rod Pearson, St. Augustine, FL)

0159 UTC on 13660
Costa Rica: Radio for Peace Int'l. Talk with a physician on public health care. Barely audible under Morse code and utility interference. (Bob Landau, Secaucus, NJ) Monitored on 25946 kHz from 2115-2141 UTC. (Harold Frodge, Midland, MI)

0200 UTC on 7418.5
Pirate: Radio Free America. very professional format with taped phone-in program. Business news at 0206 UTC with abrupt sign-off at 0210 UTC. (Harold Frodge, Midland, MI)

0205 UTC on 9475
Egypt: Radio Cairo. Instrumental Egyptian music at tune-in. Discussion on the national economy and station ID. (Rod Pearson, St. Augustine, FL)

0210 UTC on 11730
South Africa: Radio RSA. Political editorial on Mandela. "Africa South" magazine show. (Harold Frodge, Midland, MI)

0210 UTC on 15115
Ecuador: HCJB. "Ham Radio Today" looks into the amateur radio hobby in Japan. Weak signal. (Bob Hurley, Baltimore, MD) (Lance Micklus, Essex Junction, VT)

0215 UTC on 12035
Switzerland: Swiss Radio Int'l. "Dateline" with international news. "Swiss Shortwave Merry-Go-Round" mailbag show to 0227 UTC. Swiss music to 0230 UTC, switching to German service. (Bob Hurley, Baltimore, MD) Monitored at 2115 UTC on 13635 kHz. (Bob Doyle, Shelton, CT)

0215 UTC on 6215
Pirate: Radio Caroline. Rock music with British announcer. Weak signal under excessive interference and fading. Recheck at 0300 UTC included a clear ID. (Bob Landau, Secaucus, NJ)

0219 UTC on 15140
Chile: Radio Sistema Nacional. Spanish. Music mix of Spanish and English selections to station ID. (Harold Frodge, Midland, MI)

0230 UTC on 11620
Romania: Radio Bucharest. Featured selections from a social poet of Bucharest. Considerable interference from co-channel stations. (Bob Hurley, Baltimore, MD)

0235 UTC on 4955
Brazil: Radio Marajoara. Portuguese. Religious program with music. Poor signal quality until 0301 UTC sign-off. (Bob Landau, Secaucus, NJ)

0239 UTC on 4895
Colombia: La Voz de Rio Arauca. Spanish. Voice and instrumental pop music. Weak signal with moderate fading until national anthem and sign-off. (Bob Landau, Secaucus, NJ)

0300 UTC on 9780
Yemen Arab Republic: Radio San'a. Arabic. Open carrier prior to tone and sign-on routine. Martial national anthem, and IDs repeated several times. Frequency quote from announcer to Koran recitations. (Aboe Thaliep, Batang, Indonesia)

0303 UTC on 5095
Colombia: Radio Sutatenza. Spanish. National Colombian news closing with a time check. Canned station ID and intros for international news topics. (Rod Pearson, St. Augustine, FL)

0304 UTC on 9445
Turkey: Voice of Turkey. Newscast to 0306 UTC "Turkish Press Review." Program feature on National Children's Day. (Harold Frodge, Midland, MI) (Stephen Price, Conemaugh, PA)

0314 UTC on 5040
Venezuela: Radio Maturin. Spanish. Latin music with station IDs between songs. Poor signal with fading, but clearly audible through bottom of the hour. (Bob Landau, Secaucus, NJ)

0317 UTC on 9690
Spain: Radio Beijing relay. In-depth discussion about an ongoing archeological dig in northern China. (Harold Frodge, Midland, MI)

0345 UTC on 17705
New Zealand: Radio New Zealand. News and Wellington weather report. Native Maouri music with singers. Fair signal quality. (Jim Reagan, Mustang, OK)

0834 UTC on 15425
Australia: Australian BC Corp. (ABC). Classic rock music and ABC news at 0900 UTC. Moderate signal. (Bob Landau, Secaucus, NJ)

0936 UTC on 9735
Paraguay: Radio Nacional. Spanish. Latin music with several IDs and time checks. News at the hour under weak signal. (Bob Landau, Secaucus, NJ)

0945 UTC on 3976
Indonesia: Java. Radio Republik Indonesia-Surabaya. Indonesian. Discusson on agriculture to 1008 UTC. Station ID as, "Inilah Radio Republik Indonesia Surabaya program regional Jawa Timur." Pop music program by Nani Sudarso. (Aboe Thaliep, Batang, Indonesia)

0950 UTC on 4881.7
Peru: Radio Nuevo Mundo. Weak signal during Peruvian vocals to 0957 UTC. Male announcer with top of the hour ID. (Frank Hillton, Charleston, SC)

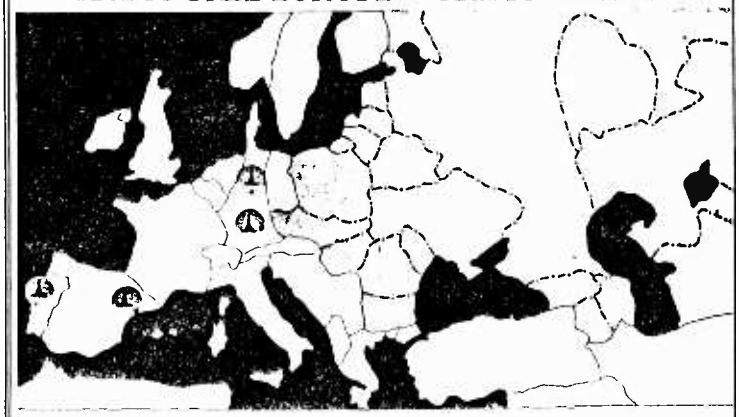
0955 UTC on 6116
Colombia: La Voz del Llano. Spanish. Local time check and ID for station and Cadena Super network. (Frank Hillton, Charleston, SC)

1000 UTC on 3375
Brazil: Radio Educadora. Portuguese. Canned station promotional to Brazilian pop vocals. Morning local time check and ID.-ed.

1013 UTC on 11805
Guam: KTWR. "Radio Bible Class" program, with moderate interference until 1056 UTC for ID and sign-off. (Bob Landau, Secaucus, NJ)

1040 UTC on 11865
Indonesia: Java. Radio Republik Indonesia-Jakarta. English language

RADIO FREE EUROPE – RADIO LIBERTY



BROADCASTING TO THE PEOPLES
OF EASTERN EUROPE AND THE SOVIET UNION

Jaromir Macku of SF, CA, listens to Czech language programs from Radio Free Europe

program with American pop music and poetic scenario about the sun and mountains. Station ID at 1058 UTC, and interval signal tune ("Song of the Coconut Islands") with time tips at 1100. ID as "Radio Indonesia Jakarta . . . program Nacional." Monitored for several consecutive days. (Nick Terrence, Huntington, NY)

1055 UTC on 12015

Mongolia: Ulan Bator Radio. Mongolian. Announcements in progress at tune-in. Interval signal at 1055 UTC, with chimes and clear station ID. Lady repeats ID at 1057. Program feature to chime signal at 1059. Monitored to 1100 until co-channel interference, from Radio Beijing. (Nick Terrence, Huntington, NY)

1100 UTC on 9455

United States: WSHB. Station ID at tune-in as "the World Service of the Christian Science Monitor." World news in Spanish on the hour. Features following in English, French, German, and Spanish. (Leslie Edwards, Doylestown, PA)

1110 UTC on 3215

Indonesia: Sulawesi. Radio Republik Indonesia-Manado. Closing Jakarta news relay into Indonesian music. Local programming with chimes at 1115 UTC. (Aboe Thaliep, Batang, Indonesia)

1113 UTC on 11835

Sri Lanka: Sri Lanka BC Corp. (SLBC) News and current affairs to quarter hour time signals and IDs. Extreme co-channel interference and fading until sign-off. (Bob Landau, Secaucus, NJ)

1119 UTC on 3315

Papua New Guinea: Admiralty Islands. Radio Manus. Pidgin. Talk from DJ type format. Typical country and western music to island choral music. Id at 1130 UTc to American pop tunes. (Frank Hillton, Charleston, SC)

1120 UTC on 3220

Papua New Guinea: New Guinea. Radio Morobe. Pidgin. Native PNG type island music with drums. ID announcement and intros for easy-listening music. (Frank Hillton, Charleston, SC)

1205 UTC on 4874.6

Indonesia: Irian Jaya. Radio Republik Indonesia-Sorong. Indonesian. Newscast relay from Jakarta, interval signal at 1215 UTC, including time tips. Pop music program suffering interference from PBS Jinling on 4875 kHz. (Aboe Thaliep, Batang, Indonesia)

1215 UTC on 5030

Malaysia: RTM Sarawak. Malay. Lady announcer introduces native Malaysian music. Station ID at 1230 UTC, including time-pips. (Aboe Thaliep, Batang, Indonesia)

1300 UTC on 9580

Australia: Radio Australia. Newscast followed by "News Weekly" magazine show on credit card rates increasing, as well as tunnel tolls and embalming cost. (Bob Hurley, Baltimore, MD) Heard on 21740 kHz at 2159 UTC. (Harold Frodge, Midland, MI)

1320 UTC on 9775

Bangladesh: Radio Bangladesh. Nepali. Station ID, "yo Radio Bangladesh ho," Bengali type music with a lady vocalist. Monitored on 4880 kHz from 1410-1420 UTC. (Aboe Thaliep, Batang, Indonesia)

1330 UTC on 15160

Philippines: Voice of America. World news in special slow-speed script. "Words and Their Stories" program, discussing that soap was invented 2600 years ago by the Phoenicians, as a dressing for wounds. (Bob Hurley, Baltimore, MD)

1350 UTC on 15390

Finland: Radio Finland. "Good Morning North America" show with music and commentary on human behavior. (Bob Hurley, Baltimore, MD) Monitored on 15185 kHz at 0230 UTC. (Harold Frodge, Midland, MI)

1530 UTC on 15630

Greece: Voice of Greece. English newscast until 1539 UTC. Barely audible with extreme noise through the news, with fading. (Bob Landau, Secaucus, NJ)

1650 UTC on 17620

France: Radio France Int'l. International newscast, station ID and QSL address. Program schedule for English service. (Lance Micklus, Essex Junction, VT)

1750 UTC on 11580

United States: WYFR. "Developing Country Radio Network" with instructions on how to filter drinking water to pervent ingestion of parasitic Guinea worms. (Bob Hurley, Baltimore, MD)

1800 UTC on 11665

Kuwait: Radio Kuwait. Station ID with frequency schedule. Vocal music and signal fades. (Bob Hurley, Baltimore, MD)

1905 UTC on 15215

Algeria: Radio Algiers. Newscast followed by American rock music selections. (Bob Landau, Secaucus, NJ)

1930 UTC on 17734.9

Oman: Radio Oman. Arabic. Announcement break for instrumental music and ID as "Sultunate Omaniyya min Muscat." Clear and strong signal. (Stephen Price, Conemaugh, PA)

1959 UTC on 13659.9

Iraq: Radio Baghdad. National anthem with broadcast schedule and Arabic music. News at the hour, and easy-listening music. Fair signal reception. Monitored also on 17749.9 at 1930 UTC in Arabic, and 15149.8 at 2000 UTC. (Stephen Price, Conemaugh, PA)

2010 UTC on 17710

Syria: Radio Damascus. News with ID at 2011 UTC. Monitored despite a poor signal quality. (Bob Landau, Secaucus, NJ) (Stephen Price, Conemaugh, PA)

2045 UTC on 11720

Bulgaria: Radio Sofia. Mailbag show. Haunting Bulgarian aria by women's choir. "Question and Answer Time" discussing glassware production and a philatelic exposition. (Bob Hurley, Baltimore, MD) Heard also on 11735 kHz at 0315 UTC. (Harold Frodge, Midland, MI)

2057 UTC on 15165

Denmark: Radio Denmark. Interval signal with English and Danish IDs. Full English ID at 2100 UTC, followed by Danish programming. News and interviews with short musical breaks. Moderate signal affected by noise and fading. (Bob Landau, Secaucus, NJ)

2100 UTC on 9835

Jordan: Radio Jordan. Arabic. Clear station ID and lengthy Arabic music program. Very good reception. (Stephen Price, Conemaugh, PA)

2143 UTC on 11820.6

Qatar: Qatar Broadcasting Service (QBS). Arabic. Male/female duo present a radio drama. ID and references to Doha at the hour. Moderate signal throughout. (Bob Landau, Secaucus, NJ)

2200 UTC on 9860

Lithuanian SSR: Radio Vilnius. Commentary on Soviet elections, and DXer's program. Excessive interference and moderate signal for a difficult copy. (Bob Landau, Secaucus, NJ)

2209 UTC on 11620

India: All India Radio (AIR). News commentary to 2210 UTC, covering the policies on the Indian chemical industry. (Harold Frodge, Midland, MI)

2250 UTC on 15350

Luxembourg: Radio Luxembourg. French. American and British rock music. Station Id at 2300 UTC with fair signal. (Nick Terrence, Huntington, NY)

2255 UTC on 7415

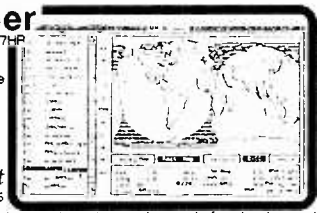
United States: WENJ. New Jersey pirate playing oldies. Phone number and Hilo, Hawaii, address given for QSLs. (Bob Landau, Secaucus, NJ)

2300 UTC on 13605

United Arab Emirates: Voice of the UAE-Abu Dhabi. Station ID with news and "Press Review." Musical selections by Walter Troelson, and The Establishment. Continuing fascinating tales of old throughout the week on Sinbad, Scherazade, and the Rubaiyat of Omar Khayyam. Excellent reception also for 11965 and 9595 kHz. (Leslie Edwards, Doylestown, PA) (Stephen Price, Conemaugh, PA)

2340 UTC on 11910

Hungary: Radio Budapest. Fair signal battling with Radio Havana. Rather boring dialogue on internal law in Hungary. ID at 2342 UTC as "This is the international newsroom from Radio Budapest." Poor signal quality for parallel 9835 kHz. (Nick Terrence, Huntington, NY) Monitored on 9835 kHz at 0030 UTC. (Bob Hurley, Baltimore, MD)



Utility World

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USAF Coronet Deployments

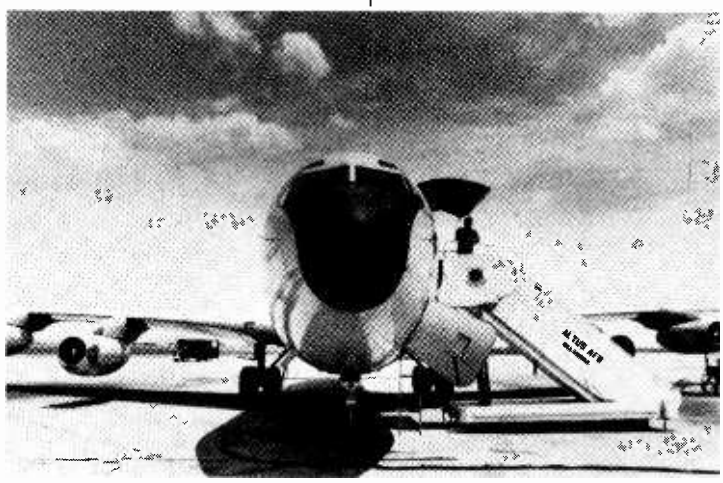
Several times each year, the U.S. Air Force ferries short range aircraft across the Atlantic and Pacific Oceans. These deployments are needed to get aircraft replacements overseas for exercise purposes, or a variety of other reasons. This month, Mr. U.K. checks in with the story of the "USAF Coronet Deployments."

Coronet deployments which cross the Atlantic Ocean are termed "Coronet East" and those that cross the Pacific, "Coronet West." What follows is the description of a typical Coronet East deployment.

Normal procedures

Aircraft callsigns -- "Retro **" where ** is 11, 21, or 31, etc., for each cell of fighter aircraft. For larger deployments, word callsigns may be different. Tanker aircraft use color type callsigns, i.e. -- "Gold **" or "Blue **."

The larger Coronet deployments use an airborne command post which flies with one of the fighter cells, and uses the callsign "Head Dancer." This aircraft will normally be an EC-135K of the 8th TDCS at Tinker AFB, Oklahoma. The tail numbers are 53118 or 91518 and their general air traffic callsign is "word 10" or "word 20" etc., or they may use numbers 98 or 99.



Steve Douglass

Converted into an EC-135K, a KC-135A such as this one accompanies replacement aircraft across the Atlantic or Pacific.

The "Head Dancer" works through Global Command and Control Stations such as MacDill, Lajes, and Croughton, etc., either using published frequencies or nonpublished discrete frequencies. Discrete frequencies to look out for are 5710, 6757, 9017, 9023, 11180, 11226, 13201, 15038, and 17972.

If a Head Dancer is heard establishing contact with a GCCS station on its published frequency at the beginning of its flight, careful monitoring is required in case the discrete frequency is passed to the flight.

Head Dancer is used for running phone patches to various agencies concerning fuel offload reports, weather observations, status of the aircraft, estimated time of arrival, and so forth.

Offload reports are relayed from a tanker to the Command Post on military UHF frequencies, but if great distances are involved, discrete frequencies in the HF spectrum are used.

Offload reports are relayed by the Head Dancer aircraft to 2nd ADG Langley AFB (callsign Raymond 01) using a standard format. These are often referred to as JJ reports.

A sample JJ report follows:

Item #1 -- 05 (This refers to the number of the message sent by Head Dancer to Raymond 01, i.e. -5)
Item #2 -- Combo 51 (This refers to the callsign of the lead aircraft in the cell that is being refueled -- they may use the full callsign or just the number)
Item #3 -- 03 (This is the number of the refueling taking place)
Item #4 -- 1225 (This is the on boom time of the first receiver aircraft to be refueled)
Item #5 -- 1248 (This is the off boom time of the last receiver)
Item #6 -- -- (Estimated landing time -- normally omitted)
Item #7 -- 4.8, 5.3, 5.5, 5.0, 5.1, 5.0 (Amount of fuel off loaded to each aircraft in thousands of pounds, i.e. 4.8 is equal to 4800 pounds)
Item #8 -- On 5459N 04638W Off 5456N 04138W (Position of the start and finish of refueling)
Item #9 -- Ops normal (Any other remarks)

This flight was monitored on 9017 (Croughton) on September 2, 1988, and was the first of two cells (six aircraft per cell) of A-7 Corsair light attack aircraft. These aircraft were flying from Sioux Falls, South Dakota, to St. Truiden, Belgium.

By careful monitoring of items 7 and 8, the direction of the flight and numbers of aircraft can be determined. The amount of fuel offloaded can also provide a clue as to the type of aircraft. For example, 10,000 pounds of av gas is surely the gas guzzling F4 Phantom.

The Head Dancer also maintains contact with "Raymond Metro" (Langley weather) where weather reports are issued using station numbers beginning at one and working upwards.

As the flights progress, station weather reports are dropped or added for relevant airfields in their sector, although destination weather is always included. It is possible to work out some of the stations by the conversations between the Command Post and weather observer, but they are not fixed and vary with each deployment.

As weather is updated from airbases worldwide on the hour, the Meteo officer on board the Command Post aircraft allows a little time for this data to be correlated by the USAF Global Weather Center and for the meteo officer at Langley AFB to extract the weather for the stations of particular interest. Because of this, "Head Dancer Metro," as he is known, usually requests phone patches to Langley at about 20 to 30 minutes past the hour.

A typical report might sound like this:

"Station 12, 2500 scattered, 3500 broken (cloud heights), 7 miles (visibility), 300/15 (surface wind direction/speed in knots).

Tanker color callsigns: tasked from the following bases --

BLACK	Seymour Johnson	GREEN	Zaragoza
WHITE	Barksdale	BLUE	Mildenhall
GOLD	Pease	BROWN	Fairford
TAN	McConnel	FAWN	????
RED	Loring	SILVER	Loring
PINK	Warner Robins	???	March

I believe that Coronet West operates in much the same fashion. Since TAC AF is responsible for these operations, and knowing the U.S. government's love for standardization, I fully believe that the west ops would be along much the same line.

Another reader, Mr. GB, has also passed on some information on Coronet operations. The EC-135Ks are also known as TDCA (Tactical Deployment Control Aircraft) and have been in USAF service for a large number of years. In fact, EC-135K (53118) was the first production KC-135A ever to be handed over to the USAF and was converted to the Command Post role much later in its life. Obviously this aircraft has clocked up a large number of flying hours.!

From his own experience, Mr. GB states that the EC-135Ks have stopped using the numbers 98 and 99 in favor of 10 or 20. He does mention, however, that there are exceptions. For instance, while flying VIPs to Europe, the KC-135Ks normally use the callsign "TAC 01." He does mention, however, that these aircraft rarely visit Europe in this role.

Also from his experience, when supporting deployments, the callsigns used are changed on a regular basis. Lately these aircraft have been using the callsigns "Relay 10" or "Relay 20."

As well as the two EC-135Ks, the job of the TDCA has over the past five years or more seen an increase in the use of the KC-10 extender in this role. This particular aircraft has an impressive suite of UHF, VHF, and HF radios and is ideal for the job.

One of the reasons for the more common use of the KC-10A, however, is due to the fact that in time of "International Tension," as it is commonly referred to, the EC-135Ks could not cope with the vast amount of reinforcement aircraft requiring escort to their European and Pacific wartime locations. It is also plausible that they have normal Command Post duties assigned for wartime, but this has not been confirmed.

The KC-10 is able not only to act as escort, but can fly direct with the fighter squadron to the required base with both the unit's support equipment and personnel on board. This is so the aircraft under escort can go straight into a wartime scenario as soon as they land.

Mr. GB also adds that the "JJ reports" are sometimes referred to as "MSR" reports which is an acronym for "Mission Status Report."

I would like to thank both Mr. U.K. and Mr. GB for their assistance in preparing this informative look at "USAF Coronet Operations." Mr. GB would also like to pass along the information that any monitor on the west coast who is truly interested in Coronet West operations and would like to correspond with him is invited to send him a query via this column. I will forward all correspondence to him directly.

Salute to a Top DXer

Hank Holbrook saw his name mentioned in the June column and dropped me a very nice and interesting letter about his years of Utility DX experiences and QSLs.

Hank started DXing in 1959 and reported ships mainly on 500 kHz and 2 MHz (especially 2182 kHz). In those days 500 and 2182 kHz were very active.

At one time Hank used the Lloyds of London list for ship information. Hank says that the Lloyds list has become very expensive to get now. "I also have an ITU list which is way out of date so I just recently purchased a new call and ship list from the ITU. I also use a good U.S. list of ships/boats on microfiche which I purchased through the following address: U.S. Department of Commerce, National Technical Information Service, Springfield, Virginia 22161."

Is Hank successful at QSLing? My humble opinion is, yes. Anyone that has 13,951 station all band QSLs has done a lot of QSLing. Hank has 4,322 ships/boats QSLed with 491 on VHF, over 1,000 on 2182 kHz, and 1,158 on 500 kHz.

Hank's top country for ship QSLs is, of course, the United States, with 2,013 ships/boats. He has collected QSLs from 61 different flags, or countries.

"Many radio officers that answer me now tell me that most transmissions are via satellite, etc., and they seldom use 500 kHz anymore except on rare occasions," Hank says. "That would seem to go for HF as well, as you might hear mainly Liberian and Greek ships. It's been years since I have noted a Norwegian ship (Norway was a very good verifier but Liberia just passed them, but I only get 50 percent back from Liberia while Norway was about 75 percent)."

What does Hank rate as his top Ute ship QSLs? Well, here they are:

On 500 kHz:	MAYJ Freighter Pando Head 25-54N 178-25W 275 watts.
On 2182 kHz:	DJCH Freighter Karl Gunther Lohse in the English channel, 15 miles WSW of Dungeness.
On 2716 kHz:	NFPS USS Forrest Sherman 200 miles east of the Azores, only 30 watts sideband phone.
On HF:	WLNK Research vessel (Australian Navy) Kimbla off Sydney, Australia, on 8373 kHz, only 40 watts on CW.
On VHF:	Most distant is CG-161507 (16 ft Boston whaler USCG) 156.8 MHz (VHF channel 16), 20 watts at about 120 air miles. Also WYU-8850 Ferry, New Jersey Cape May canal, NJ 156.8 MHz 25 watts.

The most interesting part of this story is Hank's receiving equipment. I figured it would be state of the art, but here is the real story:

Receivers (mostly old) National RLB2 and RBL5 (for 500 kHz), Hammarlund SP-600 (two of them) for 2 MHz and HF. SP-400 (mostly for LW broadcast as it does not have 500 kHz. On VHF Hank is using Sony Air-8 (excellent for VHF ships and an older Regency DR-200.

Hank also adds that he has QSLed close to 2,000 LW beacons since the mid fifties. Thanks, Hank, for the QSL tips and a fascinating look at your years of DX activity. You are truly a Dean of Utility DXers; and with that, it's time to check what else our readers are hearing in the Utility World.

Utility World

Utility Loggings

Abbreviations used in this column

All times UTC, frequencies in kilohertz. All voice transmissions are English unless otherwise noted.

AM	Amplitude modulation	ISB	Independent sideband
ARQ	SITOR	LSB	Lower sideband
CW	Morse code	RTTY	Radioteletype
FAX	Facsimile	UNID	Unidentified
FEC	Forward error correction	USB	Upper sideband
ID	Identification		

2161.0 Military Tactical comms by M2V/I1P/Y4U in USB at 2200. (Bill Frantz, Thomasville, GA) *Welcome back, Bill, this one's probably a Navy channel. --ed.*

3216.0 German female five-digit number station heard at 0444. (Harold Frodge, Midland, MI)

3223.0 USAF Regional broadcast station (*Elkhorn? --ed.*) with FAX weather maps 120/576 at 0200. (Tom Sundstrom, NJ)

4030.0 Conversations and relays among AAR5BX, AAR6BX, and AAR7BX about opening the Bravo net with no time schedule, referring questions on time to the region manager. The net control station was gone and there were general discussions of weather and opening the Bravo net during the week from 0100 to 0300. In USB. (John Gilbert, Kansas City, MO)

4125.0 USCG COMSTA Kodiak, Alaska, working the vessel Amalask II in USB at 0834 with medical emergency. CG giving instructions by the numbers.
". . . #7: Start oral antibiotics erythromyicin or ampicillin.
. . . #8: Severed section unlikely to be salvageable.
. . . #9: Proceed to port."
Kodiak advises that vessel ETA of 1800 in Dutuch harbor will be relayed to Juneau CG. That was ten more hours until port reached. (Hulse, OR)

4428.7 USCG COMSTA Kodiak, Alaska, working the MOAA ship Miller Freeman over a NMN high seas broadcast in USB at 0425. (Hulse, OR)

4675.0 Mac-104/Express 505/NW 36 aircraft working ATC Gander, Newfoundland, Canada, in USB at 0449. (Frodge, MI)

4741.0 Victor Echo Lima called Four Tango Zero for a radio check in USB at 0246. No idea who these stations are. (Bruce Bouley, Norwich, CT) *Welcome to the column, Bruce. These are probably navy units on a Navy Tactical channel. --ed.*

5091.0 English female five-digit number station heard at 0440. (Frodge, MI)

5529.0 Santo Domingo ATC working several aircraft for flight coordination in Spanish at 0308 in USB. Shares channel with Madrid Air. (Mark Vargas, Bronx, NY) *Welcome to the column, Mark, Thanks for choosing Ute World for your only logs column to contribute to. --ed.*

6643.0 Venezuela Air Radio heard at 0714 working TWA 900 passing a position report in USB. (Vargas, NY)

6649.0 Panama Air Radio working Argentine Air 384 in Spanish in USB at 0703. (Vargas, NY)

6802.0 Spanish female four-digit number station heard at 0438. (Frodge, MI)

6840.0 English female five-digit number station at 0221. (Gilbert, MO)

6850.0 English female 3/2-digit number station heard at 0436. (Frodge, MI)

6906.0 USAF Regional broadcast station (*Elkhorn? --ed.*) heard at 0200 with FAX weather maps 120/576. (Sundstrom, NJ)

6980.0 English female five-digit number station heard at 0437. (Frodge, MI)

7407.0 CML5-Havana, Cuba, heard at 0044 in RTTY 425/50R with "Quick Brown Foxes," and 1234567890 count. (Art Blair, San Francisco, CA)

7541.7 CCM-Magallanes, Chile, with RTTY RYs at 0155. 170/50N also switched to 100 baud. (David Kimpton, Thunder Bay, ON)

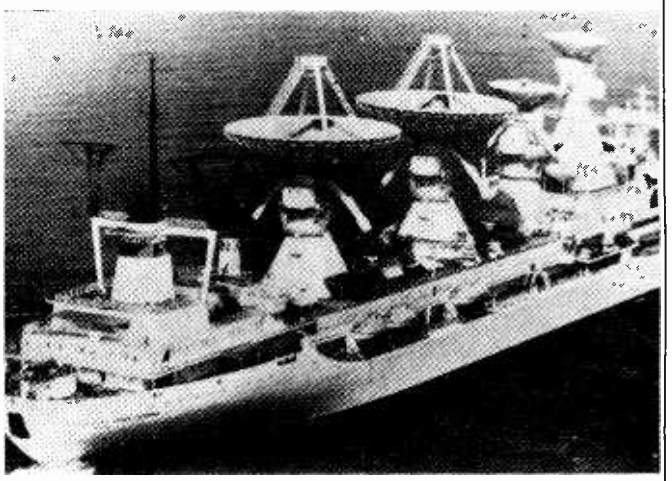
7585.0 6VY41-Dakar Meteo, Senegal, with RTTY weather reports for north and east Africa at 0206. 941/50N. (Kimpton, ON)

7690.0 TUH-AFTN Abidjan, Ivory Coast, with RTTY RYs at 0159. 425/50. (Ricks, PA)

7863.0 BJZ21-Hangzhou, PRC, heard at 1223 in RTTY 425/50R with coded meteo. Have logged them in the past with 350/50R. (Blair, CA)

8388.0 UPEU-Soviet M/V Captain Ivmyakov heard in CW at 0535 working CLJ with messages for Havana and Klajpeda (Lithuania). (Garie Halstead, Saint Albans, WV) *Welcome back, Garie. --ed.*

8389.0 P30T2-Cypriot M/V Gull heard in CW at 0753 working 7TAG with a message for Algiers advising arrival at Oran. Ready to commence discharging wheat in bulk. (Halstead-WV)



U.S.Navy

Several ship comms are reported this month, including one from the giant spacetracking ship "Yuri Gargarin," pictured above.

8391.0 5BXR-M/V Axion Estin of Cypriot registry heard in CW at 0642 working 7TA with an ETA message for Oran. (Halstead, WV)

8395.0 5BUU-Cypriot M/V Belita Star heard in CW at 0503 working WLO with a message for Boca Raton asking if the Limon cargo was on pallets or loose. (Halstead, WV)

8402.0 SZGI-Greek M/T Kriti Episkopi heard in CW at 0553 working SUH with a message for Cairo. Message gave an ETA for Alexandria and a cargo of kerosene. (Halstead, WV)

8406.0 ULFU-Soviet M/V Fedor Varaksin heard in CW at 0555 with an OBS message for WLO. Vessel located at 40N/46.2W in North Atlantic. (Halstead-WV)
UUKU-Soviet M/V Karogory heard in CW at 0655 working OBC3 with a SHIPREP message for harbor master at Callao. Vessel located off Ecuador. (Halstead, WV)

8411.0 UUIR-Soviet M/V Leningradskaya Pravada heard in CW at 0542 working OBC3 with a SHIPREP message for the harbor master at Callao. (Halstead-WV)
ULRD-Soviet trawler (M/V Simonok) heard in CW at 0555 working OBC3 with a message for Callao Concordia. (Halstead, WV)

8418.0 UKFI-Soviet spaceflight tracking ship KOSMONAUT YURI GAGARIN calling UISZ, AKADEMIK SERGEI KOROLEV in CW at 0305 on net frequency. The Gagarin, world's largest research ship, was replacing the Korolev off Canada. (Ricks, PA)

8951.0 ATC Tokyo, Japan, working Casse (Cathay?) 800 in USB at 0830. (Hulse, OR)

8989.0 Ironclaw calling McClellan with a TTY (*the military slang for RTTY --ed.*) McClellan request going to 7992, but Ironclaw remains too weak for McClellan, who asks for location. Ironclaw says southwest of McClellan. McClellan says to go back to 8989, then when on 8989 says to go to 6730, where both say they are strong enough to initiate TTY. Heard in USB at 0403. (Gilbert, MO)
McClellan working Presidio in USB at 0810. Presidio requests a CB876 check. McClellan moves to 8992 USB where at 0811 following voice contact Presidio begins sending RTTY data. (Hulse, OR)

9017.0 Andrews AFB, Maryland, working SAM 682 in USB at 1745. (Frantz, GA)

9265.0 ZRH-Capetown, South Africa, heard at 0105 with AMVERS RTTY traffic. (Kimpton, ON)

9961.0 Unknown station with an FDM transmission at 1350. AP news and weather on channel 1, 75 baud five letter groups on channel 2. Anybody know who this is? (Sundstrom, NJ) *My guess is another Croughton AFRTS/Mil channel Tom, anybody else? --ed.*

10048.0 ATC Tokyo, Japan, calling ATC Honolulu on "one zero" in USB at 0831; no reply heard. (Hulse, OR)

10233.0 VOA Greenville, North Carolina, heard at 0043 with VFT news feeders in English. 85/75N. (Kimpton, ON)

10277.0 Unknown stations using clumsy military type IDs. Sometimes they pass personal/humorous messages to other parties. Other comms concerned with setting up antennas, finding a good location for the transmitter, signal reports with various antennas, any ideas on this

one? (Frantz, GA) *Bill, I think this is a DOE convoy, this is a DOE channel. --ed.*

10390.0 FSB57-Interpol Paris, France, with CW marker followed by ARQ idler at 0043. (Kimpton, ON)

10580.0 HMF46-Pyongyang, North Korea, heard at 1542 in RTTY with 250/50R with KCNA news in English. (Blair, CA)

10805.0 Buenos Aires, Argentina, heard at 1200 in RTTY 800/75R with "Noticias Argentinas" news in Spanish. (Blair, CA)

10893.5 LRB39-Buenos Aires, Argentina, heard at 1148 in RTTY 800/50R with TELAM news in Spanish. (Blair, CA)

11073.5 Slingshot and several others here in USB at 1535. DEA freq! (Frantz, GA) *Customs, Bill. --ed.*

11157.5 USCG COMSTA Portsmouth working the cutter Escanaba in USB at 1410. Not in any directories. (Frantz, GA)

11233.0 Odyssey 504 (a relatively new Canadian Charter airline en route to Antigua) requesting Trenton military for a phone patch at 1503 with personal traffic in USB. (John Miller, Ariss, ON) *Welcome to Utility World, John. Please report often--ed.*

11241.69 UNID RTTY with long messages of five letter groups from "Bustan Washington" to "Khargla Cairo" at 0202/ARQ/170/100. Occasionally goes into plain language in the middle of a message. Signed "Ambassador Abdel Rouf El Reedy." Would like some help on this one. (Kimpton, ON) *Looks like an Egyptian embassy link to KNY29 in Washington, DC. They might have moved from their 11250 frequency. Anybody in DC can find out who Ambassador Reedy works for? --ed.*

11255.0 At 1332 in USB heard several units using Navy TAC type calls conducting radio checks. (Gilbert, MO) *Sounds like a Navy TAC channel. --ed.*

11600.0 CLN327-Havana, Cuba, with 400/50N RTTY telegrams in Spanish to Florida addresses. (Sundstrom, NJ)

12505.4 UKOS-Soviet hydrophysical, biological, chemical research ship NIS AKADEMIK SERGEI VAVILOU wigh a water temperature, salinity table for Severmorsk Hydromet station via UNM-2, Klaipeda Radio at 0316. Vessel was at equator, north of Ascension Island enroute to Abidjan, Ivory Coast. RTTY 170/50. (Ricks, PA)

12579.0 SPTO-M/S Lenino heard in CW at 0706 working SPH. Message text (in Polish) stated the "group has elected Zbigniew Dachniewski." Message was signed Grupowy Kapitan (Group Captain). (Halstead, WV)

12588.0 BKCO-Chinese vessel "Oryong No. 501" heard in CW at 0547 working KFS with a lengthy message (check of 110) addressed to Profish in Seattle. Message contained the weekly catch report. (Halstead, WV)

12590.0 CLDO-Cuban vessel "Juarez" heard in CW at 0609 working XFM with an OBS message for Meteo Manzanillo. Vessel located in the Pacific at 18.3N/123.8W. Advised XFM he was QRD from Panama bound Japan. (Halstead, WV)

13247.0 At 0233 heard GLB to TAC 0, Goodriche, Larborg (?) and Election conducting radio checks. These were followed by a Strike Command Control message for DDY3B. This message was also repeated on 4416, 8778, and 13181 at 0323. (Gilbert, MO) *This frequency seems to be getting more bizarre by the minute. Think I'll trip on over to the receiver for an extended stay on this one. --ed.*

13291.0 General Motors 5103 and Speedbird Concorde 188 working ATC New York Aero with position reports in USB at 1903. (Miller, ON)

13553.0 UNID FDM station sending AP news and weather on channel 1 and 75 baud KAWN coded weather at 1600. Parallel to 9961.0. (Sundstrom, NJ) *That convinces me that much more, Tom. Props, etc., suggest Europe and the traffic mirrors Croughton traffic on other channels. --ed.*

13844.0 KRH51-U.S. Embassy London, England, with RTTY foxes at 2029. 850/75R. (Ricks, PA)

14495.0 Male English five-digit number station heard at 0402. (Gilbert, MO)

14556.0 RIW-Soviet Naval Radio station Khiva, USSR calling "RMGB QTC" at 0128 in CW. (Kimpton, ON)

14600.0 CAK-Santiago Air, Chile, with RTTY weather reports from South America at 0140. 850/50R. (Kimpton, ON)

14722.0 TNL-AFTN Brazzaville, Congo, RTTY RYs at 0045. 425/50. (Ricks, PA)

14823.0 XVH-Hanoi Meteo, Vietnam, with coded weather and RYs at 0047. RTTY 425/50. (Ricks, PA)

14875.0 RFLI-French Naval Radio-Fort de France, Martinique, heard with ARQ-E3 at idle at 2300. Monitored two ZNR messages passed at 2345. 425/48. (Sundstrom, NJ)

14925.0 RFTJ-French Naval Radio-Dakar, Senegal, at 0030 with ARQ-E3 broadcast at idle, then news, messages in French. (Sundstrom, NJ)

14958.2 Unknown station heard with an ARQ-M@ idle using 850/96 at 2300. Both channel A and B idle through 0045 time out. (Sundstrom, NJ)

14967.0 Idling on the same frequency as the "U" beacon traffic for several U . . callsigns and CMU 967 with dummy message traffic at 1706 in CW. (Dave White, Cherryfield, ME)

15593.0 KRH51-U.S. Embassy London, England, with foxes at 0139. RTTY 850/75R. (Ricks, PA)

15830.0 RUZU-Soviet Antarctic research station at Moledezhnaya, Antarctica, with coded weather at 0105. RTTY 425/50R. (Ricks, PA)

16117.0 6VK317-Dakar, Senegal, head at 1643 in RTTY 425/50R with PANA news in English. (Blair, CA)

16136.0 BZP54-Xinhua News Agency, Beijing, with RYs and QRA markers at 1204. RTTY 425/75R. (Ricks, PA)

16664.9 UJFO-Soviet Hydromet weather research ship NIS PROFESSOR MULTANOVSKIY with coded weather report for RNO Arctic-Antarctic Meteo Radio, Moscow, at 1311. In the Norwegian Sea, above the Arctic Circle, west of Tromso, Norway. RTTY 170/50. (Ricks, PA)

16695.9 EREB-Soviet Hydromet weather research ship NISP Volna, with coded weather reports for Vladivostok and Moscow Hydromet via UPA Providenya Radio at 0220. Position was 1500 miles east of Hawaii in North Pacific. RTTY 170/50. (Ricks, PA)

18018.0 Romeo 4 working Architect at 2031 in USB with a radio check. Rainbow (?) working Architect at 2051 giving departure time from Nairobi, ETA Seychelles and SELCAL check made. (Miller, ON)

18696.0 CNM82/X9-Rabat, Morocco, heard at 1535 in RTTY 425/50N with MAP news in English. (Blair, CA)

19322.0 USAF Regional broadcast, Elkhorn, Nebraska, with RTTY weather reports at 0237. 100/75R. (Kimpton, ON)

19328.0 USAF Regional broadcast station (I wonder who this is? --ed.) sending continuous weather FAX maps at 1800 to 2330+. 120/576. (Sundstrom, NJ)

19942.0 UNID military station sending weather FAX charts at 2210 (3 maps East Asia/Japan/Korea/China) until 2340 sign-off. 120/576. (Sundstrom, NJ) *These Regional broadcast outlets are popping up faster than their own headquarters knows about them being on the air. Guess I will have to make another phone call! --ed.*

20150.0 Several fishing boats discussing catches, weather, spotting fish from a helicopter. Lots of XXX language. Locations seem to be from the west end of the Gulf of Mexico. Strong here in USB at 1610. (Frantz, GA)

22108.11 UNID RTTY with long messages of five figure cypher groups to "Tanaznia/Orfinario" signed "Embacuba/Tanzania" at 2030. 660/50R. Would like help IDing this one. (Kimpton, ON) *Looks like another Embacuba channel, David, in the middle of the marine ship duplex USB channels. --ed.*

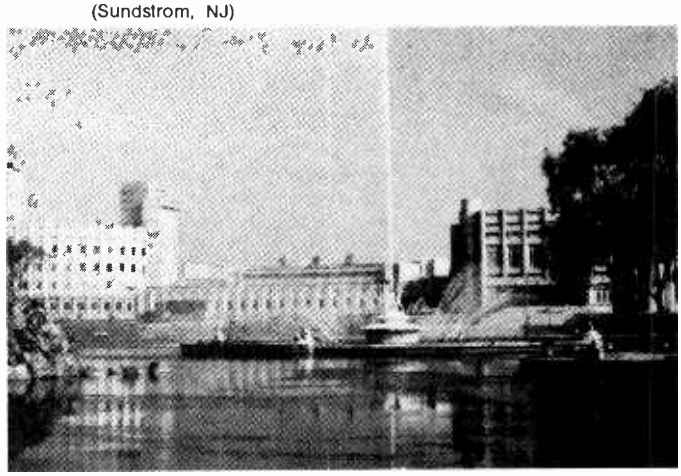
22915.0 FTW91-Diplo Paris, France, with French RTTY news 425/50R heard with a fair signal. (Sundstrom, NJ)

24790.0 ISX24-ANSA press service Rome, Italy, heard at 1230 with RTTY English news. 600/50R. (Sundstrom, NJ)

24800.5 Y7A91-MFA Berlin, East Germany, with RTTY five-letter groups, one clear text message in German, RYs and ID at 1245. 250/50N. (Sundstrom, NJ)

25223.0 HB?-MFA Berne, Switzerland, heard at 1250 with a SITOR-A broadcast of five-letter groups, French news, and a private message in French. (Sundstrom, NJ)

26262.0 OXZ95-Lyngby Radio, Denmark, with a CW CQ marker at 1310. (Sundstrom, NJ)



Some time ago, Carl Smith of Texas sent this picture of Pyongyang; Blair of California checks in this month with news in English from this North Korean city.

The Scanning Report

Bob Kay
P.O. Box 98
Brasstown, NC 28902

The Antenna Specialists MON-52 antenna attached to a metal railing, ten floors above Washington, D.C.

Immediately upon stepping up to the front desk, I was greeted by a young and very friendly hotel employee.

"Welcome to the Hampshire Hotel. May I help you?"

"Yes, I'm checking in."

"Your name please?" she politely asked.

"Bob Kay."

"Bob Kay with *Monitoring Times* magazine?"

"Yes, that's right."

Typing my name into the computer, she stared at the screen for a moment and then handed me a room key.

"Your reservations call for a suite on the top floor, Mr. Kay. It's room 1001."

Taking the key from her hand, I couldn't help but to ask how she instantly made the connection between my name and *Monitoring Times* magazine.

"I make it a point to review the daily guest list," she replied. "Since you were on the VIP list, it wasn't hard to remember the name."

After thanking her for the warm and courteous welcome, I turned to pick up my bags, but the porter was already carrying them toward the elevator.

The tenth floor suite was exquisitely furnished and decorated in eighteenth century styles. My two daughters loved the hair dryers, full length mirrors, AM/FM alarm clock radio and color TV with HBO movies. My wife especially liked the blue paisley bedspreads, drapes, and sofa upholstery that were complemented by the plush brown carpeting.

A full kitchen with a live plant, Godiva chocolates, a coffee maker, and a basket of designer toiletries also impressed the girls. As for me, I walked right across the room and opened the sliding glass doors that lead to the balcony.

The treetop view of Washington DC was quite stunning. Looking over the various buildings, the excitement of scanning the nation's capital began to get the best of me -- it was time for *MT*'s scanning columnist to set up shop.

When the Antenna Specialists heard that I was planning a trip to the nation's capital, they provided a MON 52 mobile scanning antenna. The antenna featured full spectrum coverage with enhanced 800 MHz reception.

Having been accustomed to traveling with three women and their luggage, I knew that there wouldn't be any "spare" room in the car. Before embarking upon the three hour trip between Pennsylvania and Washington, I changed the trunk lid mount of the MON 52 to a magnetic mount. This allowed the antenna to be easily removed from the car and attached to the metal railing along the balcony. The lead-in coax was carefully routed through the sliding glass doors and connected to my PRO-2004.

For test purposes, I searched across the cellular frequencies and it immediately became evident that car phone activity in Washington DC was phenomenal. To prevent nearby signals from stepping on weaker transmissions, I had to use the dB switch located on the rear panel of the PRO-2004.

To check the antenna's sensitivity on the low bands, I punched up the cordless frequencies and listened. There were a few distant conversations, but nothing local.

The baby monitor frequencies were my next target. When the PRO-2004 locked up on 49.830, it came in like an FM radio station! It was the strongest and clearest baby monitor signal that I've ever heard.

A woman was changing an infant, and I could even hear the rustling of the diaper. As she moved around, I could also hear the tapping of her heels on the floor. This was intriguing because all the rooms in the hotel were carpeted. Evidently, the baby monitor was being used in one of the nearby condominiums.

With everything in working order, it was time to do some serious scanning. But I had forgotten to pack my list of frequencies for the Washington area!

While the girls went off to check out the spa, steambath, and whirlpool, I called for my car to be brought around and I made a quick trip to the nearest Radio Shack store. To my surprise, the folks at Radio Shack didn't have a current listing of local frequencies. When I asked for volume # 6 of the *Police Call Guide*, (Washington DC area), they politely indicated that they didn't carry it.

A helpful sales clerk jotted down a few frequencies from memory, but when I returned to the hotel and punched them into my PRO-2004, they turned out to be nothing more than the local and well-known police frequencies.

How could I ever live this one down? After planning a trip to Washington DC for months and finally being invited as a guest in one of the finest hotels in the area, I had forgotten to bring my frequency list.

However, all was not lost. Right before I departed, I remembered packing the latest edition of *North East Scanning News*. Included in its pages was a column titled "Capitol Hill Monitors." Under that heading I discovered many interesting frequencies that I immediately programmed into my scanner. Many thanks to the DC Metro Editor, Alen G. Henney, for providing a very interesting and useful column.

Every imaginable agency from federal agents to civilian airplanes could easily be monitored from my location. Transmissions were so numerous that it took the PRO-2004 three and a half minutes to scan thirty channels!

Personally, I would have been content to sit in front of my scanner for the entire evening. But my wife had made dinner reservations at the Hampshire Hotel's Lafitte Restaurant. Well known for its spicy and sumptuous New Orleans style of cooking, the Lafitte offered authentic French Creole cuisine.

Leaving the kids behind to make their own dinner in the full kitchen, we took the elevator to the lobby and found the Lafitte to be only a few steps away from the front desk.

At the entrance, we were immediately seated at a cozy corner table.

On top of the cream linen tablecloth, a fresh spray of flowers and a hurricane lamp candle helped to create a very romantic atmosphere. When I whispered to my wife that I was going to ask for a scanner radio to be brought to the table, she abruptly kicked my leg.

After dinner was over, we returned to the room and I resumed scanning. I knew that the scanning action would get hotter after dark but I never expected the nonstop action that filled my scanner. With my PRO-2004 in the scan mode, I had to manually step through the city police frequencies.

One of the more interesting frequencies that I discovered during my stay belonged to the National Park Service. The main dispatch frequency for Special Events taking place near the Capitol can be monitored on 166.725. This frequency provided valuable information concerning traffic jams, available parking, and the general size of the crowds.

If you go, the Hampshire Hotel can be reached toll free at 800-368-5691. For a free listing of 90 hotels offering special weekend deals, phone the D.C. Committee to Promote Washington, 800-DC-VISIT.

To receive a copy of *North East Scanning News*, write to Les Mattson, Editor, 212 West Broad Street, Paulsboro, NJ 08066. Interested parties can also phone the editor between the hours of 6:30 p.m. and 8:30 p.m. by dialing 609-423-1603.

When packing your bags, remember that the scanning action demands that you at least take two scanner radios. And don't forget to take along the following list of DC frequencies:

150.725	Aqueduct Police
164.80/164.625/164.60	Capitol Police
166.725	Park Service (primary for special events)
166.85/166.95/166.925/167.075	Park Service
169.20	Smithsonian Institute
460.10/465.10	Northwest tactical
460.15/465.15	Sixth District Dispatch
460.20/465.20	Fifth District Dispatch
460.25/465.25	Second District Dispatch
460.025/465.025	Third District Dispatch
460.275/465.275	District Police Spec Ops (may also use 460.450)
460.30	Tone/data channel
460.325/465.325	Citywide Police Emergency
460.350/465.350	First District Dispatch
460.40/465.40	Southeast tactical
460.50/465.50	Fourth District Dispatch
463.15	Medical Dispatch

The following is a list of frequencies that were found during a random search. Can anyone identify the agencies?

164.05	165.2625	413.725	411.625	411.825	411.925
415.10	464.00	464.375	464.575	464.725	855.312
855.5375	858.3625	859.1125	859.6375		

MT Treasure Hunt

I know that it's hard to believe, but this month marks the beginning of the third Treasure Hunt. The June/July Treasure Hunt that featured two amplified speakers is officially over. The two winners will be selected by a random drawing and notified by mail. The names of the winners will also appear in a future column.

For this Treasure Hunt, the folks at Procomm/Digitrex have provided a top of the line, wide band discone antenna. The "Supercone DX-1515" is a professional grade antenna consisting of 16 stainless steel elements. All the elements are threaded and the antenna can be easily assembled in less than twenty minutes.

Originally made for the Ham market, the Supercone also features a helically wound whip which allows for transmitting on the ten meter band, 28.0 to 29.70.

Weighing in at two pounds, the base width of the antenna is 37 inches. With the whip installed, the height is approximately 60 inches. When I first received the Supercone, I couldn't resist placing it on my roof. The results were quite noteworthy.

Although the whip had been specifically made to transmit and receive on the ten meter band, the antenna had no difficulty monitoring the VHF low band between 30 and 54 MHz. When fed with low loss RG-6, I successfully monitored frequencies between 25 and 1000 MHz.

The Supercone is a rugged, dependable, and well-made antenna. To win this outstanding performer for your rooftop, simply find all the clues and send your answers to: Treasure Hunt, P.O. Box 98, Brasstown, NC 28902.

1. WA4PYQ is the amateur call sign for whom?
2. Count the letters in the individual's name found in clue # 1.
3. Using the number discovered in clue # 2, turn to that particular page in the May issue of *MT*.
4. Name the two objects that are photographed on that page.
5. List the emergency frequency for the objects found in clue # 4.

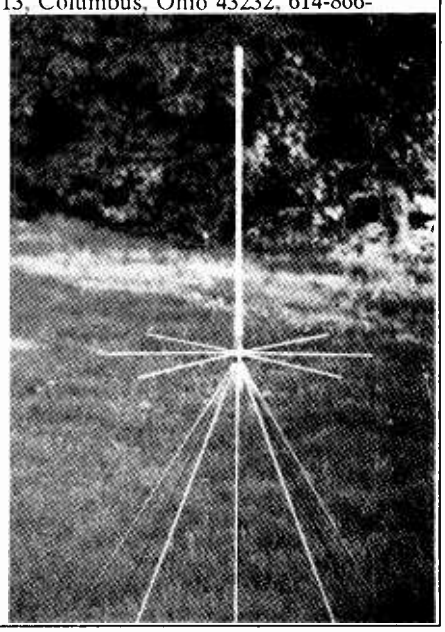
In the meantime, if you simply can't wait to find out if you're the lucky winner, the folks at Procomm will provide you with a Supercone for about $100.00. Write to 1948 Coventry Court, Thousand Oaks, California 91362, or call 805-497-2397.

But wait, there's still more! When Universal Electronics discovered that we were giving away antennas, they sent along several samples of their popular Coax-Seal. Coax-Seal is a space age plastic material that effectively seals all types of coax fittings from damaging moisture.

Coax-Seal stays flexible year round and is the only sealer that adheres to poly vinyl outer coax covers. The hand moldable material comes in a one-half inch wide, 60 inch long roll.

I personally use Coax-Seal on balun connections, beam antenna parts, and wherever a watertight electrical connection is required. Best of all, access to the protected area is accomplished by simply pulling the Coax-Seal away.

The winner of the Supercone will also receive a roll of Coax-Seal that provides protection for up to nine coax fittings. To order your own personal supply, contact Universal Electronics, 4555 Groves Road, Suite 13, Columbus, Ohio 43232, 614-866-4605.



Procomm's Supercone discone antenna will be awarded to the winner of Treasure Hunt 3

Frequency Exchange

Robert A. Barber is a police officer in Kansas City. After realizing that most of the published frequencies for his area were incorrect, he decided to compile his own confirmed list of frequencies and verified call signs:

Frequencies for the Kansas City metro area --

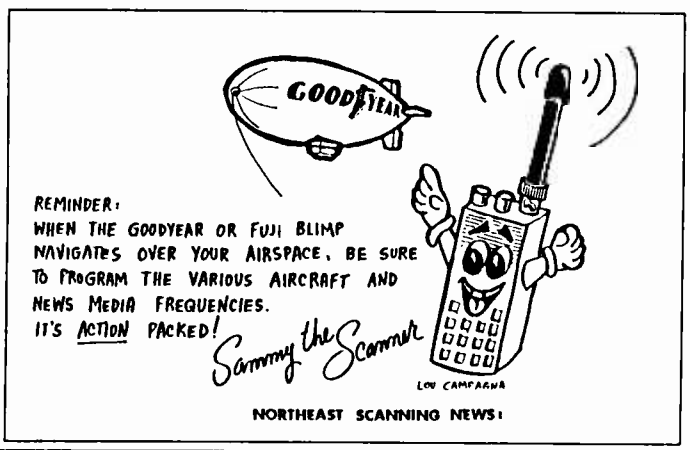
151.460	Bartle Hall Security and Maintenance	KIB872
154.515	Gold Cross Ambulance	KTN617
155.100	Johnson County KS Courthouse Maintenance	KNID723
155.130	CMSU (Warrensburg) Campus Police	KRZ868
155.160	Truman Medical Center Security	KAN851
155.175	Olathe Medical Center Security	KB80844
155.220	Kansas City Ambulance	KAG373
155.235	Huckaby Ambulance	WSW871
155.265	Gold Cross Ambulance	KNGQ570
155.280	St. Lukes Hospital	KQY768
155.325	Ransom Memorial Hospital	KXD307
155.400	Spelman Memorial Hospital	KWH479
155.400	Excelsior Springs Memorial Hospital	KTR870
156.210	Blue Valley (KS) School Campus Police	KNDV739
453.000	KC Star Newspaper	KAI702
453.100	Kansas State University Admin., Lawrence KS	KNBN573
453.150	KCMO Housing Authority	KNJL404
453.225	University of MO at KC Campus Police	KUB886
453.975	KU Med Center Maintenance	KWL457
460.275	KU Med Center Police	KIA790
163.5625	Sunflower Ammunition Plant (KS)	
164.450	EPA	
171.625	St. Louis MO Arch (Nat'l Park Service)	
173.4625	Lake City Ammunition Plant (MO)	
153.995	Johnson County KS Civil Defense	KAV268
155.805	Douglas County KS Civil Defense	KQL884
155.820	Leavenworth County KS Civil Defense	KNBY309
155.895	Wyandotte County KS Civil Defense	WDP499
158.745	Shawnee County KS Civil Defense	KFX261
158.820	M.E.R.S. (Metro Emergency Radio System)	KNIS980
34.640	Miami County KS Sheriff/Civil Defense	KAC332

Nice job, Bob; we hope that you'll share more of your confirmed loggings with us in the future!

In Far Rockaway, New York, Ben LaMagna has been trying to locate the frequency for Bayswater Security. Ben claims that Bayswater Security patrols his neighborhood. Can anyone help?

If you are ever in Reston, Virginia, keep an eye out for Bob Eisner. Bob is a fast food frequency hunter and here's his most recent list of confirmed kills:

30.84/154.57	35.020/154.60	154.57/170.245
154.60/171.105	457.5125/467.7375	457.525/467.75
457.5375/476.7625	457.55/467.775	457.5625/467.7875
457.575/467.80	457.5875/467.8125	457.60/467.825
457.6125/467.8375	460.9975/465.8875	462.7625/476.8875



Bob claims that these particular frequencies travel in "pairs" as listed above. Best of all, there's no closed season for frequency hunters. Simply pull into your local fast food chain, punch these frequencies into your scanner and good hunting!

If fast food hunting isn't your cup of tea, consider joining forces with Rich Bircher for some zoo frequency hunting. Rich has been trying for over a year to capture the operating frequencies for the Topeka Zoo in Topeka, Kansas.

Rich would also like to share two of his most recently confirmed frequencies: 464.675 for Hypermart USA and 461.6375 for the Westridge Mall.

For anyone living near the Ford Auto Assembly Plant in Chicago, Illinois, here are the three major frequencies in use at the plant: 462.350 for Production Control, 462.30 for Plant Security, and 465.00 for paging. This "inside scoop" came from a 13 year employee of the plant named Dave.

Leaky Scanning Antennas

The lady living next door to Charles Brenner in Huntington Station, New York, claims that his scanning antennas are "leaking" into her cable TV service and causing her to experience poor reception.

Charles wrote and asked me to explain that since he wasn't transmitting a signal, her poor cable reception couldn't be blamed on him.

I would certainly agree. Even if Charles were transmitting a signal, it's doubtful that it would interfere with cable TV reception. I suggest that she have her cable installation checked by the company that is charging her for the poor service.

Cordless Phones in Court

A lower court overturned the conviction of a marijuana dealer because police did not obtain a court order to record his cordless phone conversations. However, the Wisconsin Supreme Court upheld the conviction. The court stated that, "In light of the nature of technology used -- broadcast radio communication -- there could be no reasonable expectation of privacy. (News clipping from Joe Olig, Wisconsin)

Cellular Phone Scanning

According to the *Boston Globe Daily News*, Bostonian scanner buffs are having the time of their lives eavesdropping on cellular phones. The Secretary of Finance and the Mayor of Boston have been heard on numerous occasions.

One listener stated that at 7:00 a.m. the construction people use their car phones to complain that suppliers have delivered the wrong stuff. At 9:00, it's the lawyers telling their clients how to lie in court, and around noon the romance starts as lovers begin calling one another.

Now, I'm really surprised at you folks in Boston. While the ECPA has scared most scanner buffs away from monitoring the cellular bands, you folks are not only listening, you're publishing what you hear in the local paper!

What was that you said? The big bad ECPA man don't scare you? Boy, you guys in Boston are tuff dudes. Well, how about it, America? Are there any other areas of the country monitoring the cellular bands? If so, drop me a line. Or better yet, send me a John Wayne style picture of your scanner holster and cellular antenna hat!

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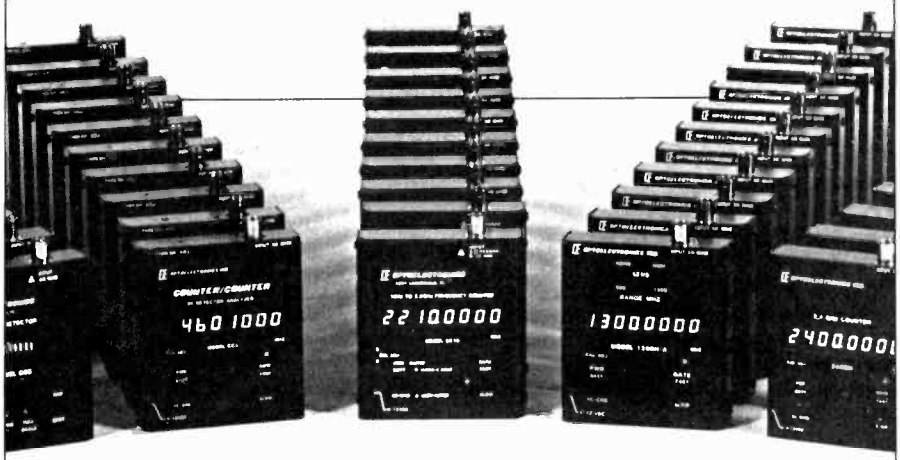

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PRICE	$219	$169	$189	$299	$99
SENSITIVITY					
1 KHz	< 5 mv	NA	NA	NA	NA
100 MHz	< 3 mv	< 1 mv	< 3 mv	< .5 mv	< 5 mv
450 MHz	< 3 mv	< 5 mv	< 3 mv	< 1 mv	< 5 mv
850 MHz	< 3 mv	< 20 mv	< 5 mv	NA	< 5 mv
1.3 GHz	< 7 mv	< 100 mv	< 7 mv	NA	< 10 mv
2.2 GHz	< 30 mv	NA	< 30 mv	NA	< 30 mv
ACCURACY ALL HAVE +/- 1 PPM TCXO TIME BASE.					

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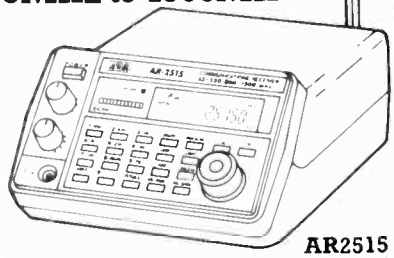

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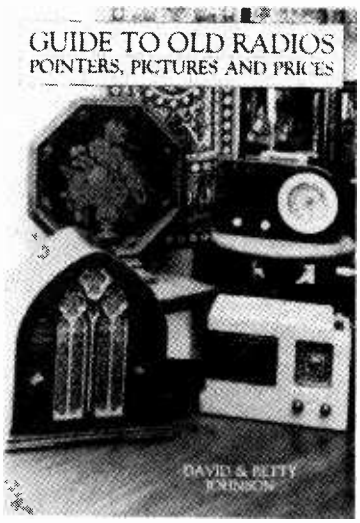
OVER-ANXIOUS To Receive Your MT?

We are very gratified by the eagerness with which our readers await their new issue of Monitoring Times. In order to keep our news as timely as possible, we cut our deadlines very close. If your MT doesn't show up in your mailbox, please don't call us for a replacement issue until the tenth of the current month, just in case it's delayed a couple of days. Our staff will be greatly appreciative.

what's new?



Guide to Old Radios

Radios today are great. Punch in the frequency on a keypad. A digital display reads it out, exactly. It's highly polished hi-tech.

And despite all the undeniable advantages, for some, these whole-radio-on-a-chip-the-size-of-a-pinhead receivers have taken the romance out of radio. They long for the days when clusters of brightly lit tubes cast a warm orange glow on the wall behind the radio.

If you've ever thrilled to the sight of an antique radio -- and what red-blooded radio hobbyist hasn't -- then this book is for you. Authors Dave and Betty Johnson have packed *Guide to Old Radios* with over 350 photos and hundreds of stories that bring the radios of old back to life -- names like RCA, Zenith, Westinghouse, DeForest, Crosley, and Philco.

But *Guide to Old Radios* is more than just a great read. It's also tips on identifying and dating old radios. And pointers on where to find the best buys and how to check them for value.

And there's an 83 page buyer's guide that includes listings for over 3,300 collectible radios and related items detailing model names and numbers, descriptions, and price ranges for each.

Guide to Old Radios is available for $16.95 plus $2.50 UPS or $1.25 book rate from DX Radio Supply, P.O. Box 360, Wagontown, PA 19376. PA residents (only) add $1.17 tax.

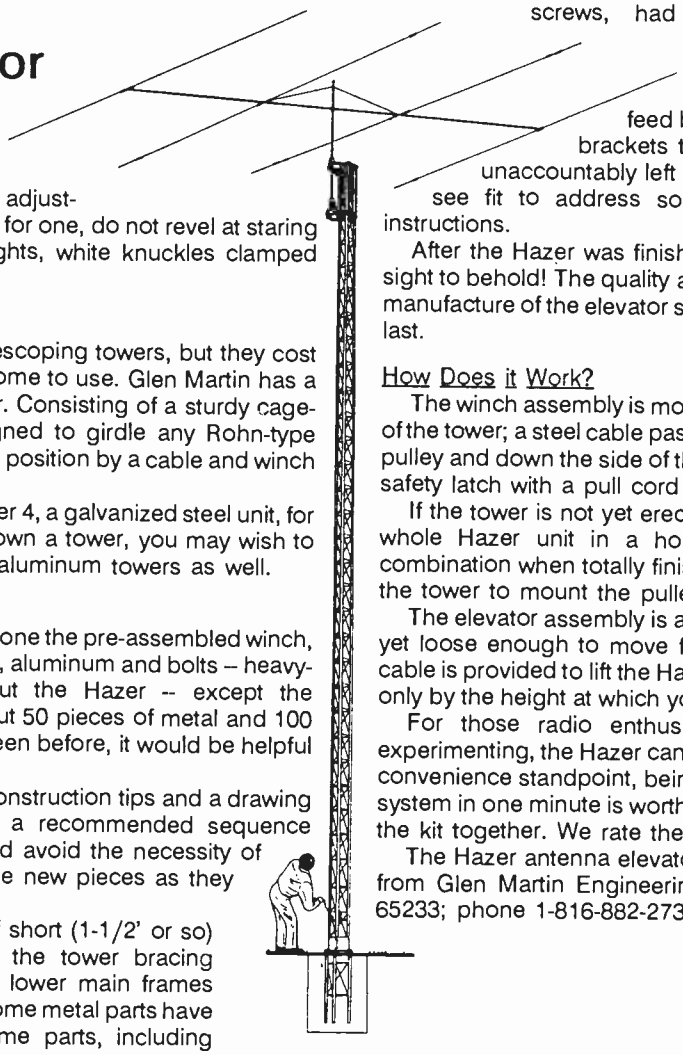
New Repeater from ICOM

They are calling it "the ultimate in repeaters." The truth is that the ICOM IC-RP1510 VHF repeater does include a lot of the latest technology, such as local or remote control, automatic battery reverting and extensive RF shielding.

The 'RP1510 also offers 25 watts of power, broad band frequency coverage (144-148 MHz), an adjustable tone out timer, programmable call sign identifier and a built-in speaker and microphone connector.

Suggested retail price on the RP1510 is $1,849.00.

The "Hazer" Antenna Elevator



Towers are great for mounting antennas, but who among us really enjoys climbing them to make adjustments, repairs and installations? I, for one, do not revel at staring at the ground from dizzying heights, white knuckles clamped around small pieces of pipe!

Alternatives

Sure, there are tilt-over and telescoping towers, but they cost big bucks and are often cumbersome to use. Glen Martin has a less expensive solution: the Hazer. Consisting of a sturdy cage-type elevator, the Hazer is designed to girdle any Rohn-type triangular tower and is hoisted into position by a cable and winch assembly.

We selected the heavy duty Hazer 4, a galvanized steel unit, for our installation. If you do not yet own a tower, you may wish to consider one of the Glen Martin aluminum towers as well.

Let's build it

The Hazer arrived in two boxes, one the pre-assembled winch, the other a carton of zinc-plate iron, aluminum and bolts -- heavy-duty stuff. Nothing skimpy about the Hazer -- except the instructions! When faced with about 50 pieces of metal and 100 nuts and bolts that you've never seen before, it would be helpful to have assembly steps.

There is a parts list, a sheet of construction tips and a drawing of the completed assembly, but a recommended sequence would make the job go easier and avoid the necessity of later disassembly to accommodate new pieces as they randomly come along.

We discovered that a couple of short (1-1/2' or so) scraps of lumber stuck through the tower bracing handily supported the upper and lower main frames which should be assembled first; some metal parts have holes that required no bolts; some parts, including screws, had preferred orientation to avoid interference with other parts during later alignment and tightening; the winch cable must feed between the reel shaft and mounting brackets to avoid rubbing; a few parts were unaccountably left over. Perhaps the manufacturer will see fit to address some of these oversights in future instructions.

After the Hazer was finished -- several hours later -- it was a sight to behold! The quality and craftsmanship in the design and manufacture of the elevator system is truly impressive. It is built to last.

How Does it Work?

The winch assembly is mounted as low as possible at the base of the tower; a steel cable passes up through the tower, out over a pulley and down the side of the tower to the elevator assembly. A safety latch with a pull cord assures that the Hazer cannot fall.

If the tower is not yet erected, you may wish to assemble the whole Hazer unit in a horizontal position, hoisting up the combination when totally finished. This will save having to climb the tower to mount the pulley and string the cable.

The elevator assembly is a good fit, snug enough not to rattle, yet loose enough to move freely up the tower. Enough winch cable is provided to lift the Hazer up a 50 foot Rohn tower, limited only by the height at which your tower brace or guy wires attach.

For those radio enthusiasts who do a lot of antenna experimenting, the Hazer can be a life saver -- literally! And from a convenience standpoint, being able to raise or lower an antenna system in one minute is worth any amount of aggravation putting the kit together. We rate the Hazer tops for antenna utility.

The Hazer antenna elevator systems are approximately $300 from Glen Martin Engineering, Rt. 3 Box 322, Boonville, MO 65233; phone 1-816-882-2734.

-- Bob Grove

Crystal Catalogue

Monitors that own old crystal controlled receivers and scanners might be interested in Crystek Crystals' new catalogue. Crystek provides marine, scanner, amateur, CB and radio control crystals at prices ranging from $4.50 to $6.50 each.

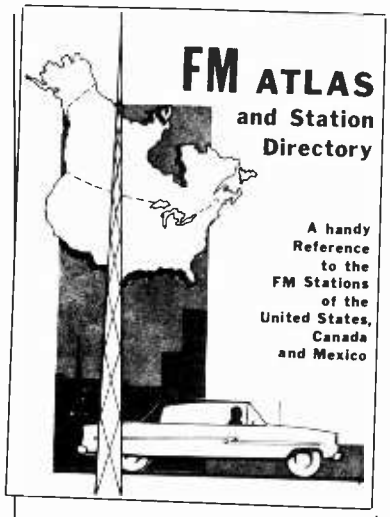
For more information, call 1-800-237-3061 or write 2351/2371 Crystal Drive, P.O. Box 06135A, Ft. Myers, Florida 33906-6135.

QSL Album from Azimuth

Throw away your shoe boxes! Shake off the dust and take your rare, hard-earned QSLs off the wall! At last, an easy way to organize and protect the cards you've worked so hard to get. It's the Azimuth QSL Library.

Each album is manufactured of first quality, durable vinyl and comes with 20 crystal-clear, scratch resistant pages -- enough for 120 cards. Each pocket is big enough for a 4 x 6 inch card.

The Azimuth QSL Library is available for $19.90. Extra 20 page packs are $12.95. Add $2.50 shipping per album and page pack. CA residents add sales tax. Visa and Mastercard accepted. Call 1-800-882-7388. Or write: 11845 West Olympic Bl., Suite 1100-A, Los Angeles, CA 90064.



To have your new product or book considered for review in Monitoring Times, send it to Editor, 140 Dog Branch Road, Brasstown, NC 28902.

FM Atlas No. 12

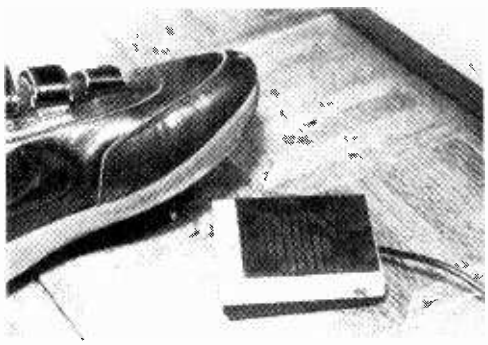
In the 13 months since the last edition of Bruce Elving's *FM Atlas*, some 526 new stations and 240 translators have taken to the air. Add to that countless station call letter and format changes and you've got edition number 12 of this very popular book.

As in past years, Elving has produced a book that is useful not only for DXers but casual listeners and travelers as well.

Stations are arranged in two separate lists, by state (which includes frequency, call letters, primary coverage area and SCA) and by frequency (city, state, call letters, stereo, power, etc.). A separate list covers low-power translators and boosters on the FM broadcast bands.

In addition, Elving provides 90 pages of maps detailing the exact location of each station so, when traveling, you can simply page through, find out where you are, and sample the aural treats available for your consideration.

FM Atlas is perfect for local listening, DXing or traveling. Regularly $9.95, it is available for $8.95 plus $2.00 UPS or $1.00 book rate (please specify) from DX Radio Supply. Conditions apply. PA residents add 66 cents sales tax. DX Radio Supply, P.O. Box 360, Wagontown, PA 19376.



Hands Free Transmitting

When operating a radio, having just one more hand might be the difference between correctly copy and missing a vital piece of information. You have to scramble to tune the radio with one hand, key the microphone with the other and write with yet another hand. In some situations, the difference might be life or death.

Enter the affordable Heil FS-1. It's a professional grade, heavy-duty footswitch that can be used to key practically any transmitter push-to-talk circuit. A top and bottom non-skid rubber pad keeps the FS-1 where you want it and frees one of your three hands for other, more important duties.

The FS-1 footswitch is just $22.95 and is available from Heil Sound, Ltd., Heil Industrial Blvd., P.O. Box 78, Marissa, Illinois 62257.

T.J. "Skip" Arey WB2GHA
P.O. Box 644
Waterford Works, NJ 08089

QSL Quid Pro Quo

I was once forced to suffer the slings and arrows of living with my mother-in-law. The woman didn't understand me or my hobby. The truth is that she didn't see playing with radios as being particularly productive. It was hell.

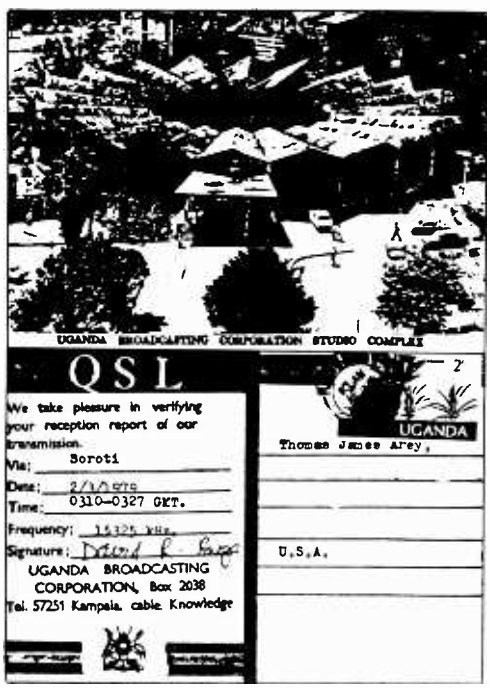
As all things go, we were eventually able to move on to our own place where I could string as much antenna wire as I wanted. No longer living together, we grew to tolerate each other in small doses. She even took to hanging on to any mail that arrived after our forwarding privileges expired.

Is there a point to all this, Uncle Skip???

In the winter of 1982, during one of my infrequent return engagements at mommy-in-law's, she handed me a pile of mail that had come addressed to me. It was mostly outdated missals with pictures of Ed McMahon on them. But in that pile was one obviously overseas postcard.

The affixed stamp told the tale. UGANDA. Uganda had verified reception of a listening session from over three years ago! My memory being a sieve, I had to wait till I got home to check my log to figure out the circumstances surrounding this "missing" QSL.

Remember when I told you folks to keep good notes in your log books? A brief notation next to the entry for my Ugandan logging told all. I had logged and sent my verification request out one short week prior to the fall of Idi Amin's government.



Three years is not too long to wait for a QSL!

At the time I just figured that I could kiss the two International Reply Coupons I had sent goodbye. I would go after a QSL of Uganda somewhere down the log.

Life being what it can be, I just never quite got around to tracking down Radio Uganda. Like so many stations, it was one you didn't have to dig for, so I would get around to it one of these days. (I never said diligence was one of my glowing characteristics, now did I?) Thanks to mommy-in-law-dearest, I didn't have to.

The point is, if you decide to enter the weird world of verification of your loggings, you can expect some interesting twists and turns as your QSL cards and letters wing their way to you. And this, of course, is an obvious entry into . . .

UNCLE SKIP'S GUIDE TO QSLing

There have probably been volumes written in the radio press about verification strategy. Most of what is written, however, tends to make the process sound like magic. "Send two IRCs, one American dollar, a picture of your first born child, and a hood ornament from a Buick during any month with an "R" in it..."

This tends to get the beginner somewhat confused. While some "experts" will disagree for days, most broadcasters are more than happy to verify reception if you follow a few simple guidelines. All the magic and machinations apply only to the more obscure outlets, those stations intended for internal reception and tended by folks who could care less about how well they are heard in the US of A.

Newcomers can fill a book with cards, and build some good DX savvy, long before they have to worry about extracting a card from some 25 watt domestic farm report station. Keep in mind we are talking broadcasters here, and not utility stations. The rules are somewhat different for nonbroadcasters so we will cover that subject in another column.

Why QSL?

Sending out verification reports is really a win-win situation. The station receiving the report gets an idea about who is listening and how they are being heard. In return, the monitor gets a QSL card or letter attesting to their prowess as a listener.

Old Uncle Skip maintains that QSLing solely for the purpose of verifying reception will turn you stodgy before your time. QSLing should be just as much fun as any other aspect of the hobby. Don't let it bog you down.

The fun purpose for sending out reports is that you get all this interesting mail from all over the world that just impresses the socks off your postperson. (Mailman? Mailwoman? Femaleman? This nonsexist language is getting me confused.) Actually, you get certifiable memories of your accomplishments, and that is fun.

How to QSL

QSLing is as easy as falling off a log. (There's a pun in there if you dig for it). Start with a plain sheet of paper. In the upper right hand corner, type or print clearly (no cursive writing please) your name, full address without abbreviations, zip code, and United States of America.

Next put in the date. Make sure you spell out the month. This avoids confusion because, in some countries, when you put the date numerically (i.e. 5/9/89 for May 9, 1989) they will read it as if the center digit is the month (May 9, 1989, becomes September 5, 1989).

Now that the station knows who to reply to, you need to figure out who to send the report to and include this name and address in the traditional place on your letter -- the left side of the page below your address. If the station indicates an address during their broadcast, you are home free. If not, you will need to consult another source.

Gayle Van Horn's "The QSL Report" column here in *MT* usually gives the addresses people have used successfully for verifications, along with additional information that might help get the card.

Another source for station addresses is the most current edition of *The World Radio Handbook*, available from DX Radio Supply for $19.95 + $2.50 UPS.

With the formalities of the addresses out of the way, you can concentrate on reporting what you have heard. Begin with a paragraph informing the station that you are a radio hobbyist who enjoys listening to stations from all over the world, especially those at some distance away.

In the second paragraph, restate the date and give the time you began to monitor their particular station. I always give the time in UTC/GMT. If you refer to both forms of Universal Time, you can't go wrong; anyway, the numbers are the same. I also use a world time table to include the local time at the broadcaster's location. This time game may

represent a "suspenders and a belt" view of things but it does cut down on confusion quite a bit.

In the next few paragraphs, report exactly what you heard with as much detail as possible. Did the program have a name? What was the program content? Was the announcer male or female? Was the broadcast solely in English or did you hear another language as well? Note the times things begin and end. Take particular note of the times of any station identifications, sign-on and sign-offs.

At this point you can really make or break your verification if you are not mindful of the needs of the folks on the other end. Tell them what you thought of their program. Tell them what you enjoyed. Tell them if you liked the music. Let them know if their program was informative. If you learned something new and different about their country, be sure to tell them.

Nothing can sour the QSL process faster then making the station feel that the only thing they exist for is to wait around to send you a card. Needless to say, if you disagree with a station's politics or religious point of view, a verification request is not the place to get into such matters. At least not if you expect a reply.

Something for the Engineer

After you report what you have heard and how much you liked it, include a paragraph about the conditions. First let them know what equipment you were using, including your antenna and any accessories that might have helped clean up the signal. You can then report the reception quality using the universal SINPO code, reporting Signal, Interference, Noise, Propagation, and Overall merit on a scale of one through five, with five indicating the best possible conditions.

In addition, stations really appreciate details about any man-made interference. Any details you can give in this area are genuinely helpful to the broadcaster. Some folks shun the SINPO code in favor of stating the facts in their own words. Doing this might give you the edge when you are going after broadcasters who are not used to QSling. Keep this in mind.

A Strong Finish

In your closing paragraph, you can politely ask for verification of your report. Don't push!! No station in the world is under any obligation to reply. State what you have enclosed in terms of return postage and thank the station profusely for their time and kind consideration.

Playing Post Office

In sending your report out, always use "Plain Jane" U.S. Air Mail stamps in a standard size envelope that is thick enough to avoid too much inspection in front of a lightbulb. Fancy stamps and IRCs visible through a thin envelope tend to get your mail sidetracked long before it gets to your station.

On the outside of your envelope, once again include complete addresses, both yours and the station's. Avoid using American nicknames for countries that might be considered offensive. Mail sent to the People's Republic of China but addressed to RED CHINA just gets put in the dumpster. Remember, the folks on the other end are just as proud of their homeland as you are of yours.

Return postage can take the form of International Reply Coupons (IRCs). These are available at larger post offices. While one is supposed to be enough to assure an equivalent return postage, most folks include two or three. IRCs, however, are relatively expensive.

Another way to cut the cake is to include mint (unused) stamps from the country you are writing to. You can get such stamps at many Stamp Collector dealers or you can utilize the DXers Stamp Service set up by William J. Plum, 12 Glenn Road, Flemington, NJ 08822. Bill can get you the appropriate return postage for most locations at very reasonable rates. An SASE will bring you a list of his latest prices.

Some DXers include an American dollar thinking that the hard currency will speed things along. Maybe it does, but it tends to mess things up for the rest of us. Sending money is not a good idea unless it is clear through sources such as *Monitoring Times* that it is the only way a particular country is going to cut loose with a QSL card.

Re-Reporting

As you can see from the pages of "The QSL Report" in this magazine, you should probably hear back from your request within about three months if you are using air mail postage on both ends. After ninety days, you might want to think about sending out another report.

If the station was not too hard to hear and the original request was not for some special reason, you might just want to listen again and send a whole new report. A copy of your first report will be just as effective in most cases, but be sure to include a note indicating that this is your second try.

Once again, include appropriate return postage. It is very seldom the fault of the station that your reply is not forthcoming, so don't berate them about not getting your card. You might also try a multi-language report form (available from many sources) to make sure that language is not the barrier to your reply.

If you don't get a response to your second try, you may want to see if the third time is a charm. Old Uncle Skip recommends that you don't waste the time and postage unless it is a very rare contact, not likely to be easily heard in the future. For stations that don't QSL, I prefer to tape the contact and maintain that as my verification.

The Best QSL Insurance

In the old movie, "Harvey," James Stewart, in the character of Elwood P. Dowd, said that a person could be successful in this world "if they are either very smart or very pleasant." Like Dowd, "I recommend pleasant." Especially if you are trying to increase your QSL quotient.

mt

Dave Jones

430 Garnor Drive
Suffield, OH 44260

Photo by Mark Swarbrick

Secret Service radioman carrying a portable repeater

Cracking the Codes

"Critter to John-boy on C-2. The rabbit is making rabbit tracks your November, switch to the private side as outside agency is nearby."

The opening sentence of this month's column is: 1) the recorded ramblings of a deeply psychotic patient, 2) an English translation of a quaint Bulgarian saying about fall or 3) a tactical transmission between two FBI field agents on a surveillance.

The answer is "3." If you guessed 1 or 2, don't feel bad. It wasn't meant to be understood by listeners or readers.

Similar transmissions, just like the one above, can be monitored nationwide from federal surveillances and even some local (nonfederal) agency surveillances. This month the Federal File walks through the strange world of code words, tactical transmissions, and common federal ten codes.

The monitoring of surveillance can be quite interesting, fun and even challenging. The challenging part is to translate such transmission, by way of reasoning and deduction, from a tactical level to the common English.

Let's take a look at the conversation that two FBI agents -- Critter and John-boy -- are having. Critter has the surveillance subject under view and informs John-boy that the surveillance subject (the rabbit) is on the move (making rabbit tracks) to the north (your November) of John-boy's position.

Table 1

COMMON CODE WORDS AND PHRASES

Big K, The	K-Mart
Bird Dog	Surveillance aircraft
Break Off	End surveillance, apply distance between suspect and surveillance units
Cave, The	Surveillance listening post
C.I.	Confidential informant
Diaper Change	Replacing batteries in mobile trailing transmitter
Digital	Reference to digital scrambling transmission
ECC	Extended car-to-car (i.e. repeater)
Eden	Hired subject
Eyeball	Surveillance subject under agent's direct view
Eyes	Starlight nightvision optics
F.F.	Field file
Flyer	Surveillance aircraft pilot
H.T.	Handie-talkie (hand-held unit)
Half-Signal	Agent's spouse
Home Front	Agent's home office
I, The	Interstate highway
In the Clear	Transmit without scrambling
In the Pocket	Subject in surveillance net, subject whereabouts known by agents
Kennel	Agent's office
L.L.	Land line (telephone)
Main Man	Primary surveillance subject of interest
Mickey D's	McDonald's
Nest	Off-site surveillance office
Noisemaker	Mobile trailing transmitter
Number One Man	Primary subject under surveillance
O, The	Agent's office
Out of Pocket	Subject no longer under surveillance, subject whereabouts unknown to agents
Our Boy	Subject under surveillance
Our Friend	Subject under surveillance
Our Main Interest	Primary subject under surveillance
Our Man	Subject under surveillance
Outside Agency	News Media
Package	Subject or object under surveillance
Papa	Voice scrambling
Pigeon	Subject under surveillance
Plank	A bridge
Port	Agent's hotel/motel
Private	Switch to digital scrambling
Private Side	Switch to digital scrambling
R, The	Agent's residence
Rabbit	Subject under surveillance
Rabbit Tracks	Subject under surveillance on the move
Redballed	Stopped at traffic light with subject
Redboarded	Stopped at traffic light, subject not stopped
R.D.O.	Regular day off (agent's)
S.W.	Search warrant
Signal	Field agent
Solo	Agent alone on field assignment
Standard	Operate in the clear
Staging Area	Area where agents meet prior to surveillance or apprehension of subject(s)
Subject	Person under surveillance
Target	Subject under surveillance
Ten Check	Message check
Truck	Surveillance aircraft
Truck Garage	Surveillance aircraft hangar
U.C.	Undercover
Uniform	Straight ahead
Wagon	Surveillance van
War Wagon	Surveillance van
Wire	Body transmitter
Walking the Dog	Agent following subject on foot

Table 2

COMMON TEN CODES

10-0	Negative
10-4	Okay
10-7	Out of service
10-8	In service
10-9	Repeat previous transmission
10-10	Message check
10-15	Subject in custody
10-16	Message check (FBI)
10-20	Location
10-21	Telephone call
10-22	Report to your office
10-23	Stand by
10-26	Wanted/warrant check
10-28	Vehicle registration check
10-29	Operator's license check
10-42	Residence (agent's)
10-58	Mileage (vehicle)
10-66	Alarm (?)
10-76	Enroute
10-77	Bank alarm
10-85	Meet with agent . . .
10-90	Bank robbery
10-91	Bank robbery in progress
10-95	Subjects apprehended, area cleared and secure
10-99	Assist agent

Critter further communicates to John-boy to switch to the DES (Digital Encryption Standard) scrambling mode (the private side) because the news media (outside agency) is nearby.

The tactical transmission conveys a message that is understandable to the intended recipient but to the eavesdropper the message may be difficult -- but not impossible -- to understand. This is done not to hang a veil of secrecy over the operation but to throw off or mislead the casual listener.

After a little monitoring, however, the code words and phrases can be reasoned by the astute listener.

The code words and code word phrases often have a wit about them. Rarely are they chosen out of the blue, so-to-speak. Table 1 lists common code words and phrases. They are used to to identify landmarks, surveillance subjects, vehicles, agents, and just about anything else related to a surveillance or the operation of one.

Let's all eat at Mickey D's, then go to the Big K.

McDonald's is a favorite meeting place as well as a familiar landmark in most every community. It is commonly known as Mickey D's. Another familiar landmark through most of the United States is the Big K, or K-Mart.

Codes are not always as clear or easy to reason as was Mickey D's and the Big K. The deduction of the code word meaning can be greatly enhanced if notes are taken while monitoring, and with familiarity of the general vicinity of the surveillance.

Once I monitored a tactical transmission that I never translated which stated "We are in the right church, but the wrong pew." I took notes during the surveillance, but yet I was not familiar with the area of the surveillance.

One may, and can, conjecture about the meaning of the phrase; however, without confirmation it is just conjecture. This example, though, is more of a rarity in my loggings. After years of listening and note taking, many things have come together.

Bird Dog is a phrase for a surveillance aircraft and a bird dog is one who tracks and informs the hunter of the location of the bird(s). A surveillance aircraft performs a function that is analogous to that of a bird dog; the agent in the aircraft tracks the suspect(s) and reports the location to ground units (ala the hunter).

Another favorite of mine -- since I just recently had my first child -- is Diaper Change. The phrase is utilized by agents to indicate that the battery is being changed in a mobile (vehicle) trailing transmitter -- the agent changes the new battery for the old worn-out dirty battery.

When a word or phrase is heard that is not in Table 1, remember that in all likelihood the word or phrase is keenly related to the actual message context. The ten signals are used to convey routine, daily type of radio traffic.

The ten code usage appears to be fairly standard among the major federal agencies and commonalities exist between federal and state/local usage (i.e. 10-28 for vehicle license/registration check or 10/29 for operator's license check).

Armed with over 50 confirmed code words and phrases and over twenty 10-codes, you are well prepared to venture into the land of monitoring surveillances and being able to decipher them.

The Federal File welcomes your comments, suggestions, and inputs. Please remember that if a personal response is desired, please enclose a self-addressed, stamped envelope (SASE) with your request. Neither the Federal File column nor myself are wholesale frequency list/directory distributors -- there are several directories currently available for the federal/military monitor as well as several scanner clubs with columns on such.

mt

Jean Baker, KIN9DD
213 W. Troy Ave. 4C
Indianapolis, IN 46228

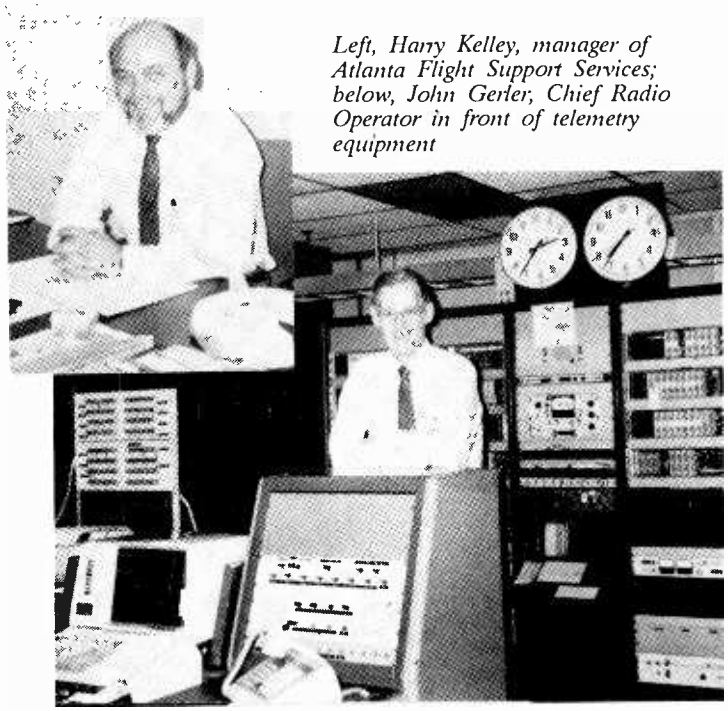
Atlanta Flight Support

"All flights calling Atlanta, please stand by. There's a phone patch working on this frequency."

The radio operator's voice was pleasant but firm as I watched quietly from my observer's seat next to the operator's console. For a *Monitoring Times* exclusive, Harry Kelley, Manager of Flight Support Services, and John Gerler, Chief Radio Operator, had invited me to visit the Communications Center.

Atlanta Flight Support Services is a division of Eastern Airlines, providing air/ground radio communications, flight planning and other services for their own flights as well as 80 or so other airlines. Kelley, who has been with the company for 15 years, is manager.

According to Kelley, Atlanta Flight Support came into being in the early 1970s. "We only had about five or six operators then and did not work flights west of Texas. Now we have 18 operators, three supervisors, and various support personnel. We have eight frequencies across the United States. From a mere 94,022 contacts during 1974, our first year of operations, Atlanta Flight Support went to 711,970 in 1988!



Left, Harry Kelley, manager of Atlanta Flight Support Services; below, John Gerler, Chief Radio Operator in front of telemetry equipment

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MT: It seems to me that you have a larger VHF network than most people realize -- even those of us who are aero communications monitors. Until recently, even I wasn't fully aware of the scope of your operations. But how about your HF network -- will you tell us something about it?

Kelley: Certainly! We'll start with the Lima, Peru, operation. Now, I should mention at this point that the facilities at Lima are our company's. However, those at UK Radio and Rainbow Radio stations are not. They work our flights through a contract arrangement.

Eastern Airlines bought South American landing rights from Braniff a few years back, and I went down to Lima, Peru, to train the operators. The HF station was already there, staffed with former Braniff employees. This was my first experience listening to High Frequency transmissions all day long.

MT: What did you think of it?

Kelley: I've never complained about VHF again since then! [Laughs] They had equipment down there -- well, the switchboard was from 1936, and the radio equipment itself had to have been from the late 1940s. Anyway, it's since all been upgraded. They've just gotten a new antenna put in, for instance, and it's all become really top-notch now.

MT: Do you just have HF or are there also VHF facilities at the Lima station?

Kelley: There is one VHF frequency -- 130.700, which is just for the radius around Lima. In regard to HF, we just got a new frequency down there: 17937. Up until then, 11306 was the highest one that we had in use there.

UK (United Kingdom) Radio is owned by British Telecom International, and it's a very large maritime outfit -- which is their main thrust of operations. Handling LDOC air/ground communications is only a small part of it. They only came into the HF business in 1984. We worked out a contract deal with them, just as we did with Rainbow Radio in St. John's, Newfoundland, Canada (see chart). These contracted stations work not only our company flights, but those of our clients as well.

MT readers might be interested to know that one of our clients has flights which take them over Russia. UK Radio takes position reports from the pilots of these flights and almost instantaneously they (the reports) are transmitted to the airlines' computers at their home base -- no telex or anything like that is involved. It's handled through data links and similar equipment.

Incidentally, all of the equipment installed in the stations located outside the United States is also linked to the main computer at Miami headquarters.

MT: A good many of our readers seem to be fascinated with Rainbow Radio. I think part of it is the name itself; do you know why it's called that?

Kelley: It's because the antennas are located in a place called "Rainbow Creek." I wondered about the same thing at one time. Incidentally, they have six operators, but only one is on duty at a time. As in the case of UK Radio, they're primarily a maritime station, but now work a/g communications, also.

MT: Readers of *MT* have asked me why an airline might have to use more than one air/ground radio service. Can you explain why this happens?

Kelley: Certainly. For example, ARINC handles communications for our ATC traffic over the Atlantic Ocean; ATC has required checkpoints -- including those over places without radar coverage. When an Eastern Flight calls in a reception report, then ATC pays half and the company pays the other half.

If a flight wants a phone patch, then he'll call one of our LDOC stations. Sometimes they'll give a position report to ARINC and then turn around and give the same report to one of our stations for company use.

Since we don't quite cover the globe, our clients have to talk with somebody, which is why they do talk with other stations. We're growing and eventually will work our own flights and those of our clients over the Pacific -- which will give us just about complete coverage.

Jean, one of the reasons that we are where we are today is due to the high quality and low turnover of employees we have working for us. One of these employees is John Gerler, our Chief Radio Operator, who has been with us for 29 years. John will fill you in on the actual operations and nuts-and-bolts of Atlanta Flight Support.

MT: Thank you for all of this fascinating information, Mr. Kelley. I know that our readers will really appreciate it.

Kelley: I've enjoyed it too, Jean. Actually, I didn't know that there were so many people out there who were interested in listening to us!

MT: Mr. Gerler, with eight VHF frequencies giving you radio coverage from coast to coast, how many actual A/G antenna sites do you have now?

Gerler: Over 110 right now. They're all connected by telephone lines. Our equipment is located mostly at airports, but in some places --

Flight Support HF Int'l Comms

EUROPEAN SECTOR
Rainbow Station

3458	13285
5604	17910
8819	

U.K. Station

3482	12133
4807	13865
5610	14890
6634	16370
8170	17405
8185	18210
8960	19510
10291	20065
11306	21765

AFRICAN SECTOR
U.K. Station

3482	12133
4807	13865
5610	14890
6634	16370
8170	17405
8185	18210
8960	19510
10291	20065
11306	21765

ATLANTIC SECTOR
U.K. Station

3482	12133
4807	13865
5610	14890
6634	16370
8170	17405
8185	18210
8960	19510
10291	20065
11306	21765

Rainbow Station

3458	13285
5604	17910
8819	

FAR EAST
U.K. Station

6634	14890
8170	16370
8185	17405
8960	18210
10291	19510
12133	20065
13865	21765

SOUTH AMERICAN SECTOR
Lima Station

5535	11306
8885	

U.K. Station

6634	14890
8170	16370
8185	17405
8960	18210
10291	19510
12133	20065
13865	21765

SOUTH PACIFIC SECTOR
U.K. Station

6634	16370
8960	17405
10291	18210
12133	18510
13865	20065
14890	21765

Lima Station

5535	11306
8885	

well, for instance our station in Goodland, Kansas, is located in a little two-way radio shop in downtown Goodland, only because we don't need any on-the-ground coverage there. All we need in that location is coverage for flights overflying that area. However, we do land in Denver, so we have to have an on-site station there.

Now our Grand Cayman and San Juan sites are on satellite circuits. These work out very well. In regard to the San Juan circuit, the satellite is pointed to Washington, DC, where the equipment is located. From there, the land lines run down this way. World Communications (ITT) handles this. The only problem is that there is a two-second delay on the circuit after you transmit. The same thing happens when a flight calls -- it also stays keyed for two seconds.

We have a dial access system in both Grand Turk and Nassau. How it works is that a pilot will key the microphone three times. This sends a signal to the equipment, which automatically searches for an open line and upon finding one, dials the number up here. Conversely, if we want to reach a flight in that area for a patch or whatever, we just dial that phone number and then it picks up the line and activates the transmitter. Then we'll do our SELCALs, and so forth.

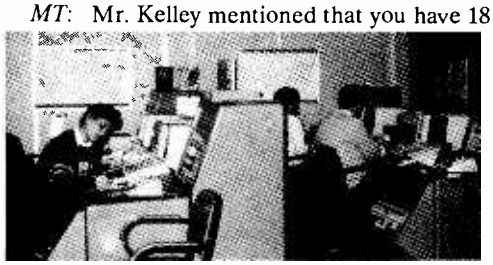
MT: Is this Atlanta Flight Support Services' only communication's center?

Gerler: Yes, this is it. We work all of our VHF frequencies from right here in Atlanta. There are three frequencies for Atlanta, itself, since this area tends to get congested with flights coming in and calling from all over. There are also three freqs for the northeast part of the country, and two more for the northwest and western regions. (The eight VHF frequencies used by Atlanta Flight support Services are 130.900, 130.875, 131.125, 130.450, 130.950, 131.000, 130.700, 131.250.)

MT: Regarding the HF nets: one thing I noticed when you sent me the HF chart is that UK Radio uses some frequencies that are not in the usual HF aero bands. How come?

Gerler: That question has crossed my mind, too. The only answer that I can come up with is because their parent company, BTI, handles all of the maritime and HF air/ground comms for the United Kingdom that they have to use all of the bands assigned to them to be able to handle it -- even though some are out of band for usual a/g transmissions.

MT: Mr. Kelley mentioned that you have 18 operators here at the Atlanta Communications Center altogether. How many work each shift?



Radio operators at work at Atlanta Flight Support Services

Gerler: As you know, handling air/ground communications for our customers goes on 24 hours a day, 365 days a year. We have three shifts, with six operators on the day shift; then three are on duty until 1:00 a.m. for the evening shift. At that time, we go down to two operators until 4:00 a.m., when one more person comes in just to handle the cargo traffic.

MT: What are the most common requests from pilots when they call in to the Communications Center?

Gerler: Position reports, out/off reports, requests for SELCAL checks, and phone patches. But we also get requests for ball game scores and other things. You just never can anticipate what might come up.

MT: While sitting here observing you and the other operators at work, I was wondering just how you know on which frequency a flight may be calling you if the pilot doesn't mention it on initial callup.

Gerler: Okay. Here's how it works: each radio site is represented by a small lamp cube and is labeled with the appropriate three-letter identifier for that location. Each frequency is arranged on a horizontal strip of lamp cubes. All of these lamp cubes are on a vertical panel shared by each row of consoles. When a flight calls within range of a radio site (approximately 185 nautical miles at 30,000 feet), the lamp cube on that frequency strip lights up.

To prevent a squeal being transmitted to the aircraft, some of our transmitter frequencies are alternated 6 kHz. Additionally, we key alternate transmitters in two separate combinations. This is accomplished with the two foot pedals beneath the consoles. The keying combinations are referred to as "left or right key." To aid the operator in determining which keying combination to use, all lamp cubes are colored in either red or green plastic. Red is left keying (left pedal), green is right keying (or right pedal).

When you are busy, your eyes first determine if the flight is lighting red or green cubes. Sometimes, both may be lighting, in which case the operator can either key left or right and make contact with the aircraft.

MT: Do the radio operators work the same frequencies for their whole shift?

Gerler: Yes, they generally work the same freqs for their shift, but there are variations in the frequencies they may handle. During the evening hours, a particular frequency may be busier than the daylight hours; consequently, the operator would just work that frequency net by itself. Another variation depends on personnel staffing. If five operators are working, then some of them would be working a single frequency and others will work combinations. Less operators, more frequencies to work.

MT: I understand that you've been with the company for 29 years. You really enjoy your work, don't you?

Gerler: You mean it shows? Ha, yes, you're right, I really do enjoy it. This is the best job I've had since I started with Eastern Airlines.

Thank you, Harry Kelley and John Gerler, for contributing to this interesting glimpse into the workings of an air/ground radio service.

The flying public has little, if any, knowledge of the existence of air/ground radio services. Without these companies, air travel would be virtually impossible. They should be commended for the work that they do.

Ike Kerschner, N3IK

R.D. 1, Box 1237
Kunkletown, PA 18058

Crying Shame

You study for weeks, months, even years. Finally, you pass the Morse code portion of the FCC exam and you get your ticket. And after all that hard work, the first thing most beginners do is run -- not walk -- from Morse. Why? It takes too long to send.

Here's a CW QSO I heard a few weeks ago. It went something like this:

"The name here is Homer and the QTH is Saint Louis, Mo. Your signal is RST 579. My rig is a Kenwood 130 running 100 watts to a dipole antenna. So how do you copy? Back to you."

Besides being a particularly dull transmission, there are about 130 characters that, at five words per minute, takes about five full minutes to send. Halfway into the transmission, the person at the other end is either squirming in his seat or catching a quick nap.

Try sending that same message again, only this time telescope it.

"Name hr Homer ur RST 579 in St Louis Mo Rig is Knwd 130 at 100 wts to dipole hw? K"

That's sixty-one characters, sendable in less than half the time of the original transmission.

Or you can reduce the message even further, bringing it down to 45 words and less than 2 minutes transmission time:

"Name homer ur 579 in st louis mo rig 100 wt to dipole hw? K"

Take note of what we did, first I took out every word I could and still retain the meaning, then the punctuation was discarded and abbreviations are used where possible.

While the type of rig may be important to us, it does not really mean much; a 100 watt rig is 100 watts be it a kilo buck commercial or a home brew clunker that cost 25 bucks. If in the course of the conversation the other operator shows interest in the brand of rig, go ahead and tell him.

Changes in Part 97 Rules

The last time the Part 97 rules governing ham radio got a good overhaul was 1951. At that time, most communications systems were using high-frequency, hand-keyed telegraphy and amplitude modulated telephony.

Given that background, the FCC recently set itself to the task of overhauling these laws. And while the commission did not achieve the 40% reduction in size that they had hoped for (they were able to gnaw off 25%), practically every section was re-addressed and revised.

According to the *W5YI Report,* the revision was undertaken in order to "make the amateur service rules easier to understand ... and to provide a foundation upon which future advancements in communications can be incorporated into the amateur service. The Commission also deleted many unnecessary, obsolete and redundant rule provisions."

The changes were unveiled just before this summer's ARRL national convention.

FCC: A Big Year

Part 97 rules weren't the only thing on the FCC's mind in 1988. Former FCC Chairman Dennis Patrick has been boasting to Congress about how much work the commission did last year.

According to Patrick, the FCC responded to some 50,000 interference complaints (resolving 42,883 of them through public service efforts) and investigated 894 cases of suspected marketing violations. At the same time, four vehicles were equipped with state-of-the-art investigative/monitoring systems.

Brown Out Blues

All too often, electronic gear can do strange things -- things that defy explanation. When the frequency of our rig shifts, power drops or circuit breakers/fuses kick out, the first thing we suspect is "THE WORST"!

With summer (i.e. air conditioning) weather upon us the unusual malady can often be traced to a brown out or low AC line voltage condition.

Most modern gear will function well between 105 to 125 volts. If the voltage rises or falls beyond these limits too often we experience the strange things mentioned earlier.

It is possible to monitor our line voltage with a simple voltmeter; however, a device called an ESV (expanded scale voltmeter) is a much better choice. The ESV looks at a limited range of voltage (95 to 135 volts) and allows us to keep accurate tabs on our line voltage at all times. This can be very important to anyone using electronics gear; especially if you live in an area of brown outs.

I wanted such a device for many years, so was pleased as could be when I saw an ESV at the MFJ booth at the Orlando Hamfest. I picked one up and have been using it for the past four months.

It is quite interesting to see how the line voltage varies during the course of a day. During warm weather the voltage at this location will often drop to a bit over 100 volts. MFJ calls this gem the MFJ-850 and at a price of $19.95 it is cheap insurance.

The instructions are easy to follow. As long as the voltage is in the green area everything is hunky-dory and we can go blissfully on our way. But should the voltage swing into either red region the instructions tell us to shut off electronic gear, home appliances, and so forth, to prevent damage.

This handy device is a welcome addition to any ham shack, or anywhere electronic or electrical gear is in use. For more info stop by your local dealer, or contact MFJ at 921 Louisville Road, Starkville, MS 39759.

Ike Gets More Mail

We received a letter from a chap who was quite upset about my comments regarding the no code license. The reason for his complaint is different from what we normally hear.

"Ike, you know the no code license will fail. It will not bring thousands of hams into the hobby! You know it and should be honest about it. The ARRL no-code proposal is a farce, they know it won't work because they will not allow CB type operations on the two meter band and that is the only thing that will bring thousands of people into the hobby! They don't want thousands of new hams. They want the proposal to fail."

This person did not sign the letter as you might expect. However in reading the letter I became aware that the fellow simply did not understand the nature of the proposal and the character of the bands the No-Code licensee will receive. Let me explain a few things that may bring comprehension to others who feel the same way.

First of all, understand that two meters simply will not support a large influx of new amateurs in some areas of the country. Secondly, other bands will provide the same type of communications that can be found on two meters.

FM operation on 220 and 435, for example, is the equal of two meters in every way. Six meters will allow the newcomer an opportunity to work DX around the world.

The basic idea behind the no-code license is to allow technically oriented individuals an opportunity to communicate and experiment with radio. It is a great chance to attract youngsters and encourage them to advance in the communications/electronics field.

It must be understood there will be a lot of folks on these bands chatting away and just having fun. And there is nothing wrong with this for there will be a large number of people who are interested in the technical end of the hobby too. And this mix is what we need to keep amateur radio strong.

Propagation

The Solar flux continues its rapid rise/fall characteristic that we have seen in the past several months. Flux levels in May and June exceeded 200 on many days and on others fell to 150 or so.

Generally good to excellent conditions, coupled with the many sessions of Sporadic E, has been producing DX opportunities on ten and six meters. Openings on 144, 220 and 450 have been excellent with many 1500 to 2000 mile contacts taking place during the E_S.

We can expect conditions to continue like this for the balance of summer. DX on the HF bands should be excellent as winter sets in. Get the antennas up in the air now while the weather is nice so you can clean up on 20, 18, 15, 12 and 10 meters this fall and winter.

That's all folks. Stay cool. And please feel free to write with questions, comments, gripes or whatever (please sign your letters; if you don't want your name in print, just say so).

73, Ike, N3IK

the qsl report

Gayle Van Horn

P.O. Box 1088
Gretna, LA 70053-1088

Bolivia

Radio Panamericana, 6105 kHz. No data personal letter and full data map/logo card. Verification signer, Daniel Sanchez Rocha, Director. Received in 35 days for a Spanish report and one U.S. dollar. Station address: Casilla 5263, La Paz, Bolivia. (Richard Coday, Oildale, CA)

Bulgaria

Radio Sofia, 11720 kHz. Two full data QSL cards, without verification signer. Received in 123 days for an English report and one IRC. Station address: 4 Dragan Tsankov Blvd., Sofia, Bulgaria. (David Fields, Louisville, KY)

Denmark

Radio Denmark, 15165 kHz. Full data flower painting card. Received in 21 days for an English report. Station address: Danmarks Radio, Rosenorns Alle 22, Dk-1999 Fredericksberg C Denmark. (Richard Coday, Oildale, CA)

Honduras

La Voz Evangelica, 4820 kHz. No data station form letter and color logo card. Received in 122 days for a Spanish report and U.S. mint stamps. Station address: Apartado Postal 145-C, Tegucigalpa, D.C., Honduras, C.A. (Mike Maxson, Toledo, OH) Welcome to MT.-ed.

Iceland

Icelandic State Broadcasting Service, 11745 kHz. Partial data scenery card with station stamps and illegible signer. Received in 22 days for an English report. Station address: P.O. Box 120, Reykjavik, Iceland. (Nick Grace, Harvard, MA)

Italy

RAI RadioTelevisione Italy, 11905 kHz. Full data card of sculpture, without verification signer. Received in 92 days for an English report, and one IRC. Station address: Casella Postale 300, Centro Corrispondenza, 001 00 Roma, Italia. (Thomas Maslanka, Cleveland, OH) (Fraser Bonnett, Kettering, OH)

Japan

Radio Japan, 6120 kHz. No data winter scenery card, without verification signer. Received in 31 days for an English report and one IRC. Station address: NHK Tokyo 150, Japan. (Tom Maslanka, Cleveland, OH)

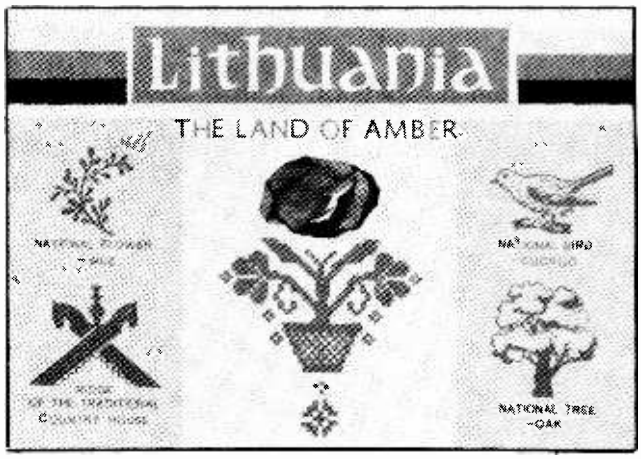
Kuwait

Radio Kuwait, 11665 kHz. Partial data QSL, with illegible signature. Received in 30 days for an English report and one IRC. Station address: Ministry of Information, Engineering Dept., P.O. Box 397, 13004 Safat, Kuwait. (Fraser Bonnett, Kettering, OH) (David Fields, Louisville, KY)

Lesser Antilles

DJKL, MV Sirius (West German container ship), 16587 kHz-USB. Full data prepared form card with call sign stamp. Verification signer, Friedrich Kindel, Radio Officer. Received in 50 days for a German utility report, a souvenir post card, and one U.S. dollar for postage. Station address: C/O Flensburger Containschiff Gesellschaft, Postfach 1539, 2390 Flensburg, Federal Republic of Germany. (Rick Albright, Merced, CA)

Thanks to John Delisle of N.Palm Beach, Florida, for the QSL from the Lithuanian Radio Service.



Nepal

Radio Nepal, 5005 kHz. Full data card with picture of studio building in Singha Durbar. Verification signer, R.S. Karks. Received in 341 days for an English report, tape recording of program, and one U.S. dollar. Station address: Radio Broadcasting Service, P.O. Box 634, Singha Durban, Kathmandu, Nepal. (Carl Radtke, Santa Ana, CA) Welcome to QSL Report.-ed.

New Caledonia

FJP4, 4368 kHz. Full data scenery card. Verification signer, H. Pesnel. Received in 19 days for an English utility report and two U.S. mint stamps. Station address: Noumea Radio, Boite Postal 224, Noumea, New Caledonia. (Nick Grace, Harvard, MA)

New Zealand

Radio New Zealand Int'l, 15150 kHz. Full data combination QSL pennant. Verification signer, Rudi Hill, Manager. Received in 21 days for an English report and three IRCs. (All QSL/correspondence requires 3 IRCs) Station address: Box 2092, Wellington, New Zealand. (Bob Landau, Secaucus, NJ) (Fraser Bonnett, Kettering, OH)

North Sea

Pirate-Radio Caroline, 6215 kHz. Full data fill-in station info form letter. Verification signer, Mike Watts, Station Engineer. Received in 93 days for an English report and one U.S. dollar. QSL address: P.O. Box 146, Playa D'Aro, Gerona, Spain. (Harold Frodge, Midland, MI)

Pacific Coast

DDUR, MS German Senator (West Germain container ship), 16587 kHz-USB. Full data prepared form card and a color photo of the ship. Verification signer, Michael Groetschel, Radio Officer. Received in 99 days for a German utility report, a souvenir postcard, and one U.S. dollar. Station address: c/o Southern Steam Inc., 181 Fremont St., San Francisco, CA 94105. (Rick Albright, Merced, CA)

Poland

Radio Polonia, 7270 kHz. Full data QSL card (station emblem). Verification signer, Miroslaw Lubon, Editor-English section. Received in 83 days for an English report. Station address: P.O. Box 46, Warsaw 00-950 Poland. (Bob Landau, Secaucus, NJ)

Qatar

A7D, Doha Marine Radio, 84735 kHz CW/Morse. Full data QSL letter. Verification signer, Abbas Ahmed Abbas, Senior Engineer. Received in 51 days for an English utility report, a souvenir postcard, and one U.S. dollar. Station address: Qatar Public Telecommunications Corp., Box 217, Doha, Qatar, Persian Gulf. (Rick Albright, Merced, CA)

Qatar Broadcasting Service (QBS), 9905 kHz. Full data card. personal letter, and QSB information booklet. Verification signer, Jassem Mohd. Al-Qattan. Received in 193 days for an English report, pamphlet, two packages of American candy. Station address: P.O. Box 3939, Doha, Qatar, Persian Gulf. (Nick Grace, Harvard, MA)

Saipan

KYOI, 11900 kHz. Full data prepared WSL card. Verification signer, E. Bare. Received in 73 days for an English report to WCSN with a prepared card enclosed. Station address: c/o WCSN, P.O. Box 527, Boston, MA 02117. (Bob Combs, Campbell, CA)

South American Waters

DLAL, MS Europa (West German cruise ship), 16587 kHz-USB. Full data prepared form card, fact sheet, and color photo of the ship. Verification signer, H. Kuehl, Chief Radio Officer. Received in 110 days for a German utility report, souvenir postcard, and one U.S. dollar for postage. Station address: c/o Hapag Lloyd Line, 1 Edgewater Plaza, Staten Island, NY 10305. (Rick Albright, Merced, CA)

United States

KDHL-920-AM. Partial data personal letter. Verification signer, Rex C. Wilder. Station address: 601 Central Avenue, Fairbault, MN 55021. (Harold Frodge, Midland, MI)

CBA-1070-AM. Full data blue CBC card, personal letter, and coverage map. Verification signer, Sylvia Roy, Audience Relations. Station address: P.O. Box 950, Moncton, New Brunswick, E1C 8N8, Canada (Harold Frodge, Midland, MI)

USSR

Byelorussia SSR-Radio Minsk, 9560 kHz. Full data card with illegible signature. Received in 176 days for an English report. Station address: Minsk, Byelorussia, SSR, USSR. (Nick Grace, Harvard, MA)

Uzbek SSR-Radio Tashkent, 11785 kHz. Full data QSL card of hammer and sickle symbol, without verification signer. Also received two souvenir postcards and program schedules. Received in 58 days for an English report. Station address: 49 Khorezm Street, Tashkent, Uzbeck SSR, USSR. (Bob Landau, Secaucus, NJ) (Fraser Bonnett, Kettering, OH)

Jack Albert

203 York Place
New Lenox, IL 60451

Piccolog

After spending many hours during the last two months tracking down Piccolo frequencies. we were able to log 48 stations. We call it the *Monitoring Times* Piccolog!

MKK (London, UK)

To MSS: 9053, 10760, 13445, 14473, 16344, 17515, 18512, 18525, 19810, 19915, 20170, 23761.

To MTS: 11584, 13580, 14510, 16205, 18750, 20436, 22890, 23850

MSS *(Belize City, Belize)*

To MKK: 7822, 11440, 12270, 14710, 14828, 15815, 16270, 18420, 18941, 19005, 22922, 24333 (sometimes on LSB)

MTS *(Falkland Islands?)*

To MKK: 9265, 14593, 15855, 16390, 18879 (sometimes on LSB)

MKD *(Akrotiri, Cyprus)*

To MUH86844, 10249, 11465, 13968, 16233, 19056.5, 20124, 23374

MUH8 *(location unknown)*

To MKD: 10854, 16254, 23794

GEC *(location unknown)*

Sending: RYRY DE GEC FOXES on 14853

GYU *(Gibralter)*

15870

Strange Signal *(Book 2)*

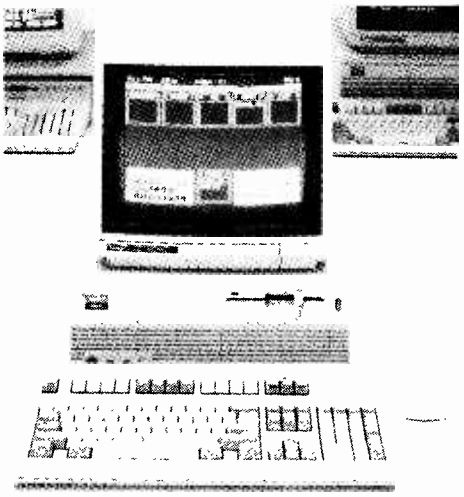
I copied another strange signal I thought was piccolo. I heard it on 19.154 MHz. It was comprised of an MFSK signal; however, the tones were spaced wider and the sequence repeated over and over.

The tones almost sounded like the national anthem from one of the Banana Republic's AM broadcast during sign-on. But the same tones were repeated for hours. If you know what this is, let me know! The tune is driving me nuts!

Tandy Introduces a Computer/Sound Analyzer

Last December I decided to upgrade my computer system. I made this decision after seeing an ad in a Christmas Wish Book that came in the mail. The flyer was from Tandy and they featured their new 1000 SL and TL computers.

The thing that caught my eye was the fact that both computers have sound recording capabilities. The ad pictured the 1000 SL with an oscilloscope-like display



and sound waves stretched across the monitor in dazzling color. A microphone can be plugged into the computer's front panel and a computer program can digitally record the sound and then save it to disk.

Immediately, my head started to spin as I saw all sorts of possibilities such as recording RTTY signals and analyzing the pops, beeps, and whistles that I normally hear on the shortwave bands. I made inquiries in the first Radio Shack I could find.

Two weeks later I installed the 1000 TL (Tandy's IBM AT compatible) in my listening post and I use it for Amateur Packet Radio, computer programming, receiving RTTY, or for writing this "RTTY" column.

The sound program is a very good tool for acquiring and displaying any sound that you may encounter. It has the capability of recording short sound segments and saving them to disk (the time of the recording depends on the sample rate and which Tandy model you have).

The display looks very much like an expensive storage oscilloscope (without the grid lines) that is used in a medical laboratory or hospital. You can expand the sound waves until the individual cycles can be seen (see Figure 1).

Figure 2 is a printout that was sent to me by a protege who is in the process of perfecting a program that runs on the Tandy 1000 SL/TL using the sound capabilities. The printout is a spectral display of an FDM RTTY signal. It was recorded on the computer and the program, which uses a math calculation called "Fast Fourier Transforms" (it's way over my head), printed the picture showing the individual FDM channels.

My friend said he used an ICOM R71 which was connected to the computer via

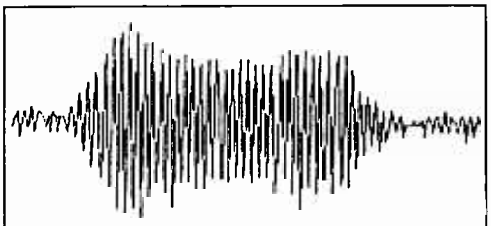


Fig 1: *A single "Mark" tone from 850 Hz shift RTTY copied on 10.500 MHz (M7000 scope output), displayed on a Tandy 1000TL*

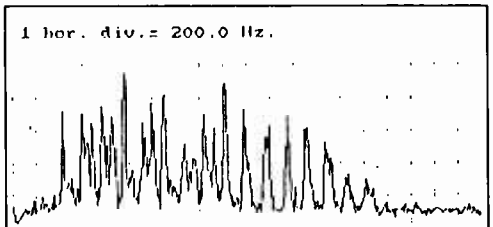


Fig 2: *5383 USB, 16 ch. FDM*

the tape jack on the receiver's front panel. Equipment to do the same thing costs well over $10,000. This can open a new field in the shortwave hobby. I'll let you know when this program becomes available.

News Flash

For the last several months the military has been switching to a VNSK (Very Narrow Shift Keying) mode on two VLF frequencies: 134.9 kHz and 88 kHz. The shift is so narrow (20 Hz or less), the M7000 had a difficult time copying it because the mark/space LEDs on the front panel wouldn't light up.

Is the military experimenting with this mode because they want to decrease the bandwidth? Or are they trying to make it harder for hobbyists, like myself, to copy their signals?

RTTY He Wrote

I recently did an article on the 6028 series FDM modem and received a letter from Clint Gilliland, the co-inventor of the system. He said the article was well written and that it explained the system very well. He also said that I made an error when I mentioned the operation of the time diversity voting system. I said that if the Unit copied "YYBRTEX", it would declare the character as a "Y" (which suggests a 2 out of 7 voting system). He said that the unit uses a 4 out of 7 channel vote system.

Ken Reitz, KC4GQA

Route 5, Box 156A
Louisa, VA 23093

Chasing Away Sparklies

After as little as one-half hour of being possessed by a satellite TV system, one becomes irrevocably adjusted to the clarity of the pictures on the screen. There is no going back to the dark ages of terrestrial TV signals.

The problem with this adjustment comes in the second half hour of dish ownership when it becomes apparent that all channels on all satellites do not have the same signal strength. Some channels have "sparklies."

To the uninfected, these little dancing points of white upon the screen may not even be noticeable. But to the jaded dishowner it's enough to make one hysterical.

Sparklies are present when not enough signal is gathered in at the dish and fed to the receiver. The less signal received, the more sparklies show. It's video noise and it shows up in the audio as well.

Your local cable company or TV station does not suffer from sparklies. The reason is that they're using much bigger parabolic reflectors (dishes), stationary mounts (no moving parts), and better hardware (feed horns, LNBs, etc.). In fact, it's a tribute to designers of TVRO gear that you're seeing so few sparklies on your marginal home equipment.

Fighting Sparklies

The pursuit of satellite TV is foremost a pursuit of the sparkle free picture. But it may not be necessary to rush out and buy a big dish. You could already have good enough quality components to give you sparkle free pictures. It could be that all you need is a tune up.

Getting Off the Track

During the course of a year your dish has plenty of mechanical parts that can loosen up and cause it to start drifting off the Clarke belt track. This doesn't take much. In fact at Ku frequencies, such misalignments, while imperceptible, can make the picture unwatchable.

It may also be that during the initial installation the dish was not properly peaked. This is particularly true of do-it-yourself installations.

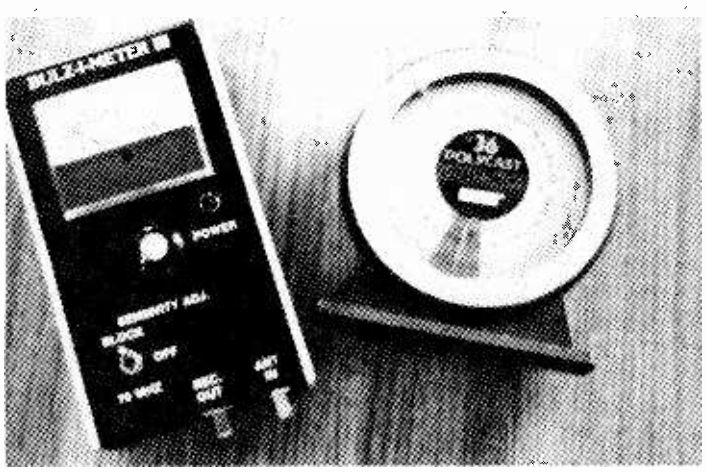
Two Solutions

Luckily there are two solutions to the problem. One is to contact your local satellite TV service company. Expect to wait a week or more to schedule an appointment and expect to pay $50.00 per hour plus transportation for quality service. Or you can do-it-again-yourself.

Doing it yourself can be a time-consuming pain or a relatively easy procedure. The first time I peaked my dish was a nightmare. Not having a cable long enough to go from the house back to the dish so that the picture could be observed while making adjustments, I had to erect a scaffold on which to set the TV facing out of a window so that I could view it through binoculars while adjusting the dish. Not recommended.

I've also tried having an accomplice inside the house viewing the picture and relaying comments via walkie-talkie as I made adjustments at the dish: "(Crackle) How's that look?" "(Beep) Mmm . . . I think it was better before." "(Crackle) What?" Not recommended.

I've also done the old "peak and run" method whereby one makes a one-tenth turn on a bolt and then dashes into the house to the TV and tries to figure out if it looks any different than it did two minutes ago. Again, not recommended.



With the Bulz-I-Meter, an inclinometer, and a couple of wrenches, you can peak the sparklies right off your screen!

No Help From Designers

Don't look to your receiver for assistance. While there are exceptions, most signal strength meters on satellite receivers are a joke. Consisting of a few LEDs or an LCD panel, these meters are useless for sensitivity purposes but they do look real neat. Some receivers don't even have meters.

Bulz-I-Meter III

While professional satellite TV installers have the benefit of expensive test gear and portable equipment to peak the system at the dish, such a solution has not been practical for the home TVRO owners until now.

To the rescue of the home dish owner comes the Bulz-I-Meter III. The meter, which measures 3-1/4" x 6" x 1-1/2" and weighs about a pound, is the answer to the headaches of peaking your satellite TV system. Simply put, the meter is a low power relative strength meter which measures the signal from the down-converter at the dish and before it gets to the receiver.

Setting It Up

To use the meter simply feed the signal from the LNB into the "F" connector marked "Ant In." Now feed the coax going to the receiver out of the "Rec Out" "F" connector. Put the toggle switch into the "Block" position for systems using block downconversion (the "power" LED will light up using line voltage in the cable). For older single conversion systems put the switch in the 70 MHz position (a 9 volt battery must be installed).

Now set the sensitivity adjustment knob to an easily read mark and begin peaking the dish. As adjustments are made and signal improves, the meter will read higher. It's that simple.

Making It Clear

Use the meter to make sure your north-south alignment is correct, that your feedhorn is properly centered, that the focal length is right, that the Polarotor is in the middle of the probe's travel ability, and that the elevation angle is set.

You will be amazed at the improvement in the performance of your antenna just by being able to peak the dish. And you'll find that the $104.00 price tag will be justified the first time you use it.

Bulz-I-Meters are available directly from

the manufacturer: Vinson's TV and Electronics, 1955 Lucas Road, Fallon, NV 89405; phone 702-867-2105; or The Sky Store, St. Hilaire, MN 56754; phone 800-328-7733 (phone orders only).

MAILBAG: SCPC and TVRO On the Go

"I graduated to a Uniden 9000 receiver and bought a VideoCypher II separately. I can still receive SCPC/SSB signals by running a lead from the composite out jack on my receiver to my shortwave radio but SCPC/FM signals now elude me entirely." -- David Brooks, Athens, GA

One of the problems with the more sophisticated contemporary satellite receivers such as the UST 9000 is that manufacturers are dispensing with the 70 MHz loop out of the back of the receiver. This loop was originally provided so that consumers in high terrestrial interference (TI) environments could add a filter which would reduce the offending signal.

Tuning the 70 MHz loop was the way to get the SCPC/FM signals because your TV audio radio tunes either side to the 70 MHz IF. Your TV audio radio will not tune through the frequencies coming out of the composite video port because this contains the "raw" signals of everything from 950-1450 that's coming from the satellite.

But don't worry, David, you can still get SCPC signals by using method four in the SCPC diagram in the October 1988 *Monitoring Times*. This method employs a 950-1450 MHz splitter (it must allow only 950-1450 and have a DC block on one leg) which feeds your UST 9000 (the master) and a separate receiver which has a 70 MHz loop (the slave).

I suggest using another of the Unidens such as the 7000 which can be bought used for about $200.00. This will also provide you with a back-up receiver for that inevitable lightning hit which will see your new receiver in the shop for six weeks.

In addition, Heil Ltd. has a new SCPC/FM audio only receiver called the SC-1 which features a built-in tuner for 950-1450 MHz and will tune SCPC signals without needing another satellite receiver. I'll report on this unit in detail as soon as I can get hold of one.

Have Dish Will Travel

"Enclosed is a clipping from J.C. Whitney's Auto Parts catalog about a satellite TV system. . . . What do you think I could realistically expect from such an outfit?" -- Elmer May, Baltimore, MD.

Well, Elmer, it's a great idea. In fact, a lot of folks who have home dishes find watching anything else even on the road totally unacceptable. Hence, there are a number of systems which have been put together with the RV owner in mind. But I have to say that this particular system is probably not what you need.

The problem with the ad is that it's uncomfortably vague. But it is possible to deduce enough to make the following observations: 1. The receiver, which looks like the old "Sky Eye" series made by KLM years ago, features the woefully lacking analog tuning similar to that used on AM/FM radios. 2. It uses the old style LNA/downconverter which, while probably adequate, is not as good as you might get at a similar price. 3. The 4-1/2 foot dish may work well on the higher-powered satellites if you are traveling through the lower midwest but don't expect much from it at your home on the east coast. 4. The "mounting ring for exceptional stability" as they phrase it is questionable. Gentle gusts of wind swirling around the campground may not toss the dish around but it won't take much to shift the dish off the bird you're trying to watch.

The biggest problem with it is that you want more from this system than it is prepared to deliver. You would probably want this system to serve as a home dish too, for which it is not acceptable in your location. In short, what you're being offered is liquidated gear with which I think you would soon be disappointed.

There is a company that makes dishes designed for mounting on top of RVs. While I have not seen their products in action, their 6-1/2 foot dish looks like it might do the job. It is also motorized and folds to only 18 inches on the roof.

You'll have to provide the electronics (feedhorn, LNB, receiver, etc.) but good used gear shouldn't cost more than what you'd pay for the liquidated stuff, and you'll have started off on the right foot. You might be a lot happier and you can probably use the system with some satisfaction at your home. Write to The Dometic Corp., P.O. Box 490, Elkhurst, IN 46515. Ask about the Travel-Sat.

Transponder Notes

CBS has had problems with its scrambling system. The result is that most of its services remain in the clear.

That network is not alone in technical malfunctions. Many Major League Baseball backhauls have been observed in the clear.

In addition, cable Pay Per View (PPV) movie channels have had their problems. It's not uncommon to find these services in the "fixed key" mode which means that authorization is not functioning and any VCII will descramble the picture.

If you're not watching "Sunday Night Satellite," you're missing the best TVRO-only show on today. Featuring industry news, programming reviews, editorials on current TVRO issues, and other subjects, it is also a show window for TVRO oriented products. Look for "Sunday Night Satellite" Sundays and Thursdays at 9:00 p.m. ET on W5-4.

Karl Zuk

P.O. Box 98
Brasstown, NC 28902

The Timeless Voice of New England

Bob Steele, WTIC's friendly wake-up call

Bob Steele visits hundreds of thousands of bedrooms every morning. Many consider him to be the most popular man in New England. Almost everyone knows him and considers him an old friend.

For the past 46 years, Bob Steele has been waking people with his warm familiar voice. He is the morning announcer and personality at 50 kilowatt clear-channel WTIC, 1080 radio in Hartford, Connecticut. With fierce competition from dozens of stations in southern New England, 27 percent of the listening audience tunes to Bob. At any given time in the morning, he has about 80,000 pairs of ears hanging on his every word!

What's his secret? "I don't know what it is. I feel I know my audience. I walk up to people I don't know and I talk to them, and we feel like we're old friends." Although he gets 40 to 100 letters a day, he reads them all himself and personally answers the ones that require a reply. "You keep in contact with your audience. When people receive answers, like a guy in Vermont, he'll tell his friends that I answer my mail and he lets other people know I do."

Answering letters is only part of his style. Every morning, his warm and comforting voice is an unusual treat. Steele doesn't scream or tell off-color jokes. He doesn't use heavily produced jingles or comedy routines. He talks slowly and with authority.

One of his simplest, yet most timeless features is "The Word of the Day." "I'm not into grammar but I look for a word that people mispronounce. Something that people should know better. It's the perfect medium to help people. Face to face, you can offend someone, but on the air you don't offend anybody. You don't have to look them in the eye and tell them that they mispronounce words like 'etcetera'."

People trust and admire Steele. He sounds like your favorite grandfather or, maybe, Kris Kringle. Few people are more consistent. He's been getting up at four every weekday morning since March of 1943 to be the master of ceremonies at WTIC's 6 to 10 a.m. show. That's a 46 year stretch, amazing in itself. But Steele's tenure at WTIC goes back even farther.

In the summer of 1936, Steele travelled from California, where he was an announcer for radio station KGFJ, and a public address announcer at motorcycle races. He needed a job and a friend of his found him one in Connecticut, again announcing at a motorcycle racetrack.

The motorcycle season ended in September and he was out of work. He always wanted to be in radio, so on his last day before going back home, he walked into WTIC and asked for an audition. "I didn't have another job, so I decided to give it a shot."

The station was owned by the Traveller's Insurance Company, which was how the station got its call letters. Luck was with him, and he was hired on the spot for $30 a week as a staff announcer. Six and a half years later he was promoted to morning personality and has been there ever since.

Steele is contemplating retirement next year after 54 years at WTIC. How does he want to be remembered? "As a friend of the audience with their best interests at heart. I'm just a regular guy earning a buck." Bob Steele will be 78 years old this month. Happy Birthday, Bob!

The FM Authority

If you need an excellent guide through the jungle we know as FM, Bruce Elving is your man. There may be no better authority on the 88 to 108 megahertz band. He has been listening to FM since 1948 and became fascinated with it. "Back then, there was only one station on the air, and the band was wide open."

In his Duluth, Minnesota, home, Bruce began to hear stations from hundreds of miles away by skip. "The first time I heard skip, it was great! I heard a station from Jacksonville, Florida, briefly, and then it faded away. I couldn't understand why I couldn't hear it the next day. Later I heard Wisconsin and Winnipeg, Manitoba. It was only 300 miles away, but it was rare skip. It was amazing."

Much later, he discovered that many other people had the same experiences and were curious about what they were hearing. Bruce decided to meet the needs of these long distance listeners. In Milwaukee, Wisconsin, in 1971 he published the first edition of the *FM Atlas*, and the new twelfth edition has just been published. Almost 200 pages long, it features very detailed listings of all the FM stations in the United States, Canada, and Mexico.

He also started writing about changes in ownership, call letters, and frequencies of FM stations for a listener's club, the Worldwide TV-FM DX Association. The informative monthly column is now also published as a newsletter called *FMedia!*

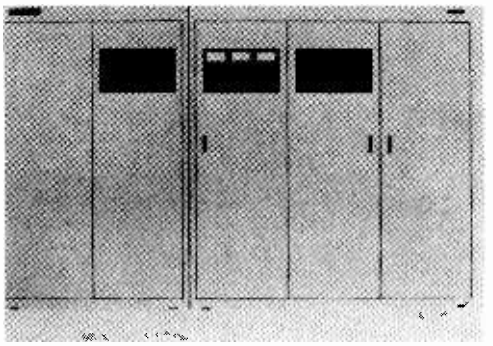
Elving decided to go into the printing business simply because he collected so much information that he didn't know what to do with all of it. Elving says his sources are "From everything and anything: FCC news releases, *The M Street Journal* (which now publishes its own annual station directory), reporters in clubs, and directly from broadcasters. It's a great source of information."

Bruce really enjoys comments from appreciative people, and that's what makes it all worthwhile. "I get lots of letters with praises from people. It makes me very happy! I almost get too many! It's hard for me to reply to them all, but I do!"

Elving works on many other projects as well. He's married and an active Christian. "Radio can take over one's life and I try to keep it in perspective. Radio is only one of my many interests."

Bruce is also an expert on the reception of SCA subcarriers of FM stations. These are the signals that carry Muzak, and radio services for the blind, or in foreign languages. Bruce sells kits and adaptors to pick up these interesting signals.

If it's on FM, ask Bruce! Better yet, get a copy of his new *FM Atlas*. It's available from DX Radio Supply (P.O. Box 360, Wagontown, PA 19376) for $9.95 plus 2.00 UPS. PA residents add 6% sales tax.



Look, Maw, no tubes! The Harris DX-50 is really 128 AM transmitters in one!

Bits and Pieces

It's really 128 transmitters in one! The digital age has come to AM broadcasting. Harris Corporation is now marketing a 50 kilowatt transmitter with no tubes whatsoever! Their new DX-50 transmitter features 128 transmitting modules that are digitally combined to create a high-powered AM signal. They also have lower powered models: the DX-10 and the DX-25U.

This new technology may be very important to thousands of stations with very tight budgets. The DX-50 operates at 85-90 percent efficiency. Older transmitters run with 55-60 percent efficiency or less. The amount of money saved on power consumption could keep a station with marginal finances on the air. And its new, clean sound is very easy on the ears.

"A Prairie Home Companion" host, Garrison Keillor, returns to American Public Radio network stations on Saturday night, September 30, at 6 p.m. He'll be doing 12 new shows for the network this fall, and another 12 next spring.

Be an American BandScan Reporter. *See any stories about radio in the local paper? Send them to Monitoring Times, P.O. Box 98, Brasstown, NC 28902.*

Mailbag

Ron Carruthers of Edinburgh, Scotland, sends in a long-distance question this month. "What exactly is an FM translator station?"

Ron, this could be one of the strangest arrangements for broadcasting around. An FM translator is a very low-powered transmitter that rebroadcasts another radio station continuously. East of the Mississippi River they are limited to one watt output.

Their antenna height and gain are almost unlimited, as long as they don't interfere with stations making their primary broadcasts on a channel. For example, W276AQ in Fort Lee, New Jersey, on 103.1 MHz rebroadcasts WALK 97.5 MHz from Patchogue, New York. The station uses a one watt transmitter and a 13-stacked-element antenna, and can be heard for at least 15 miles around.

Another quirk: the translator's operator and licensee cannot be the same as the owner and operator of the station it repeats. Gerry Turro owns and operates W276AQ and hopes, someday, to be able to become a low-powered independent FM broadcaster, should there be a change in FCC rules and regulations to allow for very local FM stations.

Western U.S. translators can be authorized to operate with up to ten watts. All translators can broadcast 30 seconds of programming an hour that they don't rebroadcast from the mother station, but few do. There are almost 2,000 translator stations on the air in the United States today. Thanks for asking, Ron!

New Station Grants

Here's a real odd one! The FCC has granted WNZK-AM in Westland, Michigan, the right to operate on a split frequency! They will broadcast on 690 kHz during the day, and on 680 kHz at night. Look for these new stations: Dahlonega, Georgia, on 104.3; Pearson, Georgia, on 101.9; Vidalia, Louisiana, on 104.7; Henderson, Tennessee, on 107.7; Farmville, Virginia, on 101.3; and Woodbury, Tennessee, on 104.9.

For Sale

A 10 kW AM is on sale in the tri-cities of Kingsport, Johnson City, and Bristol, Tennessee. All the equipment is four years old or younger. Call Jim Charron at 615-349-6133.

The owner is ready to retire and wants to sell now in a small West Texas town. He's ready to sell his profitable AM-FM station, and will consider all serious offers. Call him at 806-272-5378.

An Illinois Class A FM is for sale, including buildings and real estate. The owner must sell before July and will accept the best cash offer over $600,000. Write to the General Manager, P.O. Box 583, Wilmette, Illinois 60091.

And an AM/FM combo station is available in Michigan. Including real estate, the owner is asking $250,000. Contact T.L. Laidlaw at 701-256-1080.

New Station Grants and For Sale information courtesy of *Broadcasting* magazine.

International Bandscan

The United States and the United Kingdom are not the only places where deregulation has dramatically changed what people hear on the radio. Mulungushi Radio became Zambia's first commercial radio station in February. Singapore residents are now enjoying "ZOO 101.6" from nearby Indonesia, their first taste of commercial radio.

In Spain, a recently approved FM Radio Technical Plan will double the number of commercial radio stations. The public stations, Radio Nacional de Espana and Radio Cadena Espanola, will go from 256 transmitters to about 1500 total. Spain currently has only one private AM radio station, known as "107."

And in Argentina, Buenos Aires has a new FM station, "FM Municipal" on 92.7 MHz. They broadcast from 6:30 a.m. to half-past midnight daily. This is the twelfth FM station in that nation's capitol.

Please send your comments, questions, suggestions, and news items, or anything else of interest to: American Bandscan, Monitoring Times, P.O. Box 98, Brasstown, NC 28902. Until next month, happy trails!

mt

Credits: Thanks to Bob Steele at WTIC, Hartford, Connecticut; Bruce Elving, Broadcasting, Radio World, and World Broadcast News magazines, the British DX Club; The Worldwide TV-FM DX Association; The Harris Corpoartion; and to Ron Carruthers of Edinburgh, Scotland, for their generous contributions to this month's column.

Dr. John Santosuosso

P.O. Box 1116
Highland City, FL 33846

Government Games

THOUGHT FOR THE DAY: *"A final thing to ponder involves the motives behind the deception over the actual locations of the KKN stations. What is the point? Surely the KGB, DGI, and other "enemy" intelligence services aren't fooled for a second by such ruses, and probably know the exact locations and purposes behind these stations. The ones the deception is being aimed at are people like us."* -- Harry Helms in the May issue of his newsletter, UMBRA ET LUX.

Harry raises an interesting and vital point. Recent revelations in *Monitoring Times* and elsewhere have shown that all is not what it is claimed to be in regard to such alleged State Department stations as KKN39 and KKN44. They appear to use multiple transmitting sites, and at least in certain instances seem to be closely associated with numbers stations. Increasingly it is evident that they are utilized by government agencies other than the State Department.

You can consider what follows an editorial, rather than objective reporting. Why cannot our government stop playing games with us? Why cannot it admit that it is responsible for some of the numbers transmissions and that these as well as the KKN stations are involved in intelligence matters? How would such a statement compromise the security of this or any other nation? Instead, we get denials and disinformation, and we have been getting that for over twenty years. Why?

While on this subject, from Maine, Dave White writes with further observations on KKN39. On 9325 kilohertz he has found it apparently linked with another station. Whenever the unidentified "sister" station sends its numbers groups, KKN39 deliberately shuts down.

Dave notes that while there is some difference in the signal quality between the two stations, signal strength is virtually identical. He hypothesizes they may even be located in the same building! For those who want to look into this further, probably the best time to monitor the frequency would be around 1700 or 1800 UTC.

In regard to our recent report on oral CW on 13387, Dave (who did most of the monitoring on that frequency) says it can be explained by the fact that one of the operators was a pretty bad sender by key, and thus oral CW was more effective. The same explanation has been offered by Don Schimmel. In commenting on one of the operators, Don notes, "His fist was really bad." Don also provides us with the identification of two of the stations associated with the mysterious traffic on 13377.

Mark Chinsky was able to determine that ADL is the callsign of the Ethiopian Ministry of Foreign Affairs in Addis Ababa, Ethiopia, while KNY44 belongs to the Ethiopian Embassy in Washington. Our thanks to Dave and Don for their further insight on the fascinating traffic on 13377.

We welcome further observations and comments on all of the above.

Not Really Twins

Yes, folks, there are two stations which have the call letters WKND. Connecticut's Pete Kemp advises us there is a licensed station in Windsor, Connecticut, using that call. If you want to try for it, the frequency is 620 kilohertz.

If there is any connection between this and pirate WKND, we do not know about it. However, a number of "Outer Limits" readers have been logging the pirate lately. Look for WKND on 1620 and 6240 kHz.

According to Ohio's Fraser Bonnett, pirate WKZP, "K-ZAP Shortwave," is also using the same maildrop. He found this one on the popular pirate frequency of 7415 at 2207 UTC with rock music and comedy parodies. New York's Christopher Kissel was another reader who logged K-ZAP, which claimed to be "commercial-free" pirate radio. Pat Murphy has also bagged WKZP and says it "sounded suspiciously familiar, like WKND."

It Really Got Them Buzzing

A reader who wishes to remain anonymous recently brought to our attention a fascinating piece of pirate history. The January 31, 1982, issue of Long Island, New York's highly respected paper *Newsday* contained an interesting item in its radio listings. At 8:00 p.m. WBUZ on 103.1 MHz was listed as carrying the call-in show "Long Island Talks Back."

What the folks at Newsday did not discover until after the 31st was that WBUZ was a pirate! Apparently this episode caused enough of a stir that WCBS New York (880 kHz) reported it.

United World Radio

Look for some new sounds from this pirate. About two years ago it began broadcasting in true independent sideband AM stereo with 300 watts. While improvements were made during the last year, it used the facilities of the Voice of Free Long Island. UWR now has obtained a complete ISB exciter chain which should deliver outstanding stereo fidelity; and the station should be boosting power to one or two kilowatts.

UWR reports have been received here in Florida in the past. With these changes we expect to receive more. We hope at a later date, as station plans firm, to have more details for you on frequencies and times.

Meanwhile, while being relayed, UWR is being heard. Ohio's Mike Mason recently came across them on 7415 kHz at 2358, just at closing. What he monitored indicates UWR can get rather philosophical, or perhaps we should say political. There were chants of "power to the people" along with an instrumental version of "What the World Needs Now Is Love Sweet Love." In addition to UWR, Mike is another reader who logged K-ZAP.

That Venerable Old Pirate, Radio Clandestine, is showing up a great deal lately. North Carolina's Gregg Allenson advises us it also has a new address. You can reach the folks at Clandestine by writing the Pirate Radio Network, P.O. Box 3114, Kingston, New York 12401. Gregg logged Radio Clandestine on 7414. New York's Cathy Turner had them on 7415 at 2355 UTC. The legendary R.F. Burns along with Wanda Lust was hosting a "Dead Head Special," featuring music by the Grateful Dead.

6:01 PM—WFUV: A Box at the Opera. (Stereo)
6:00 PM—WNCN-FM: Anniversary Concert. "Franz Schubert."
7:00 PM—WNCN-FM: Sunday Opera. Mozart's "La Clemenza di Tito." (Stereo)
7:05 PM—WQXR-FM: Command Performance. Featuring Janos Starker, cellist
8:00 PM—WNEW-FM: Pat Benatar Special. (Stereo)
8:00 PM—WRCN: History of Rock. "Rolling Stones." Part II.
8:00 PM—WBUZ (103.1): Long Island Talks Back. Call-in show.
8:05 PM—WQXR-FM: Delta Opera House. Rossini's "Semiramide." With Joan Sutherland and Marilyn Horne.
9:00 PM—WLIR: Sunday at Nine. "And Then There Were Three." A tribute to Genesis.

Newsday's historic 1982 listing of pirate WBUZ.

Gregg and Cathy bring to our attention the fact that the above address can also be used for Radio Morania. Gregg heard them on 7389, while Cathy found them on 7415.

This writer would like very detailed reports on any monitoring of Radio Morania. We once had it on very good authority that no new Morania programs would ever be produced. In fact, there were originally only two shows done. Both have become classics, and the logs we are receiving appear to contain at least excerpts from those shows. But Morania never had a maildrop.

Radio NewYork International????

Jim Hayes also found Radio Clandestine on 7415, but he came across something else on 6240. From 2245 to 2247 he heard a station testing and claiming to be Radio Newyork International. The announcer said they were moving to another old RNI frequency, 1620, to continue testing, but Jim heard nothing there. A good friend of the genuine RNI staff advises us that it is highly unlikely the real RNI had anything to do with this. Still, it is interesting nonetheless.

and Much, Much More!

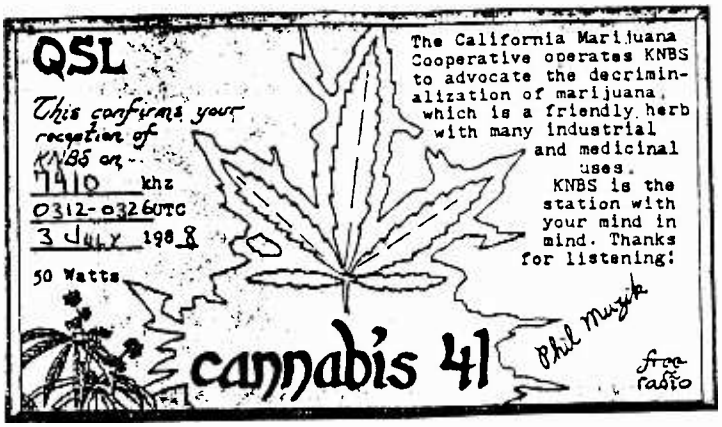
The mailbox continues to overflow these days. We try to acknowledge all communications. Please forgive us if we get behind, you are inadvertently overlooked, or your contributions have to be condensed. Everything is deeply appreciated. Without your help there would be no "Outer Limits." Here is more of what readers have come across recently.

New Jersey's Mike Bronowicz is the proud owner of a QSL from the ever popular and widely heard Falling Star Radio. You can find this one on 6240. After ten months Pat Murphy finally got his QSL from KNBS, Cannabis Radio, which claims to be run by the "California Marijuana Cooperative." KNBS uses the Box 5074, Hilo, HI 96720 maildrop.

Less fortunate in the QSL department was clandestine chaser Scott Edwards of California. He says that anti-Khomeini clandestine Radio Flag of Freedom cannot be reached via the 20 Rue Condorcet, Paris, address which has been given elsewhere. At least his reports keep coming back. Can anybody help Scott out on this? And we surely would love to hear from more readers on the west coast along with the mountain and plains states. How about you Canadians, also?

Quite a few other pirates are being reported to Box 1116, some for the first time. Gregg Allenson found WART on 7389 kilohertz and wants to know if anybody might have an address. Fraser Bonnett heard Free Radio One on 7415 announcing an address of 3434 North Pacific Highway, Medford, OR 97501. He also heard "Radio Free America, Satellite Radio," on 7415 at 0105 and wonders if this might be somebody relaying the programs of a real satellite. Pat Murphy has also heard something strange on 7415, the relay of a Portland, Maine, medium wave station. Anybody know what is going on on 7415 these days?

Cathy Turner reports Radio Candy on 1620 at 0313 with oldies and fake ads. She discovered WDRI on 7530 at 0215 with reggae music. The station gives its ID to the sound of drums. Still another log was WCPR with a "basic Christian religious broadcast" on 7480 at 2240. This one announces a phone number for QSLs. Cathy's loggings show the wide variety of things to be heard these days. Stay tuned! You never know what might come your way!



finally
Pat Murphy received this QSL from KNBS

Across the Pond

It is great to hear from our British readers, and we have received two letters recently from England's Martin Lester. Martin advises we made a goof when, in a recent column, we referred to London's Capital Radio as a pirate. He notes it is legally licensed for operation on both AM and FM. Sorry about that, Martin. We confused it with an earlier operation we believe was a pirate.

Martin clarifies still another matter for us. A number of North American listeners did receive Radio FAX last winter on 6205. There has been some confusion as to where this was located. Martin says the studios and staff were always in England and all tapes made there. The tapes were then shipped to Ireland, and all actual transmissions took place there.

With the closing of the Irish pirates, Radio FAX is gone for now. However, Martin notes Radio Dublin seems poised for a return, at least on medium wave. We may not have heard the last from Ireland yet. Thanks to Martin, we have a good deal of other information on the British pirate scene, but we will have to hold that until later.

Thanks, everybody. Your support has been absolutely tremendous!

mt

Joe Woodlock

P.O. Box 98
Brasstown, NC 28902

QSLs and Rare Events

We are into those "hazy, lazy" days of summer when a wonderful feeling of lethargy takes over. If you tune your receiver down to the low frequencies, you may get to hear some of the best thunderstorms of the year. Unless you are west of the Rockies!

It's hard to remember that summer in the northern hemisphere is winter in the other half. August-September is about the best opportunity of the year for people on the west coast to catch beacons from "down under." Australia, New Zealand, Fiji, Cook Islands, and Indonesia may be lurking out there amidst the static.

So, if you are beyond the Rockies, take a shot at the south Pacific. You will probably hear a lot of the usual summer static, but you may also come up with one of those rare moments that you will be talking about for years to come.

Those of us further to the east will have to find something else to keep us busy between baseball games and golf tournaments. This seems like a good time to discuss QSLing beacons.

For those of you totally new to the wonders of radio, a QSL is a written verification of reception. Amateurs use them to verify contact with another amateur. Because amateurs want to get a QSL from the other party, they are quite likely to send their own.

International broadcasting stations send them out, sometimes almost automatically. Originally, international broadcasters were anxious to receive reports of how well they were being heard in various parts of the world. This information was of great value to their engineering staff as guides to power usage and both type and direction of antennas that were most effective in reaching their desired area.

Today they are more interested in program content to show that their programs are reaching adequate numbers of listeners.

Both of these goals were sufficient to encourage the returning of their own QSLs to those who reported. Both amateur and international broadcast QSLs make nice wall displays or albums (like photograph albums).

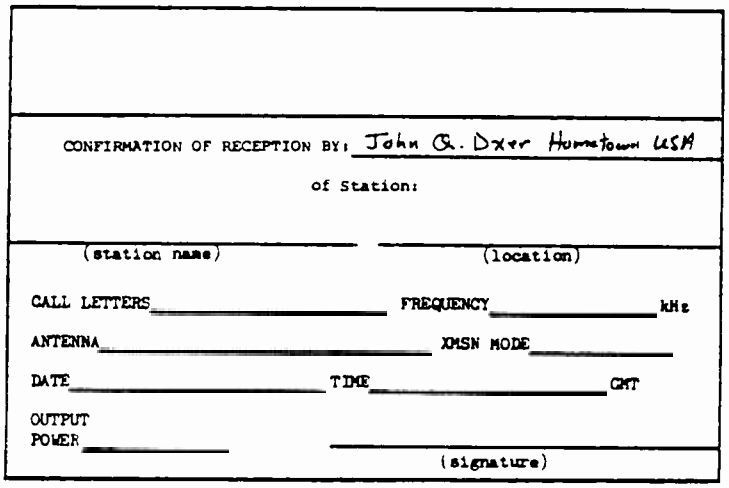
Now for the bad news ...

Beacons are utility stations and utility stations are a little different. Utility stations don't really care whether you hear them; they'd probably prefer that you didn't even listen. So you start off in a down situation. But don't give up; there are ways.

The important questions are how to reach these utility stations, what to tell them, and how to get them to respond.

How to reach them -- in the case of low frequency beacons, they are either aeronautical or marine. The aeronautical beacons will be connected with an airport. You might try writing to: Airport Manager, Name of Airport, City, State.

You won't know the name of the manager, but you should be able to identify the airport. Local Airport may be enough identification in North Overshoe, but it won't be adequate in a town that has two or more airports. (And it is surprising how many do have multiples.)


CONFIRMATION OF RECEPTION BY: John G. Dxer Hometown USA

of Station:

(station name) (location)

CALL LETTERS _____ FREQUENCY _____ kHz

ANTENNA _____ XMSN MODE _____

DATE _____ TIME _____ GMT

OUTPUT POWER _____

(signature)

Sending a prepared form card (such as this one from a Speedx publication) may make the difference when it comes to receiving a reply.

This information may be found in guides and reference books, including, as a last resort, the local classified telephone directory.

What to tell them -- of course, you will report the date and the time (UTC) that you heard the beacon. You should mention the kind of receiver you have and the antenna you were using. Add how strong they were coming in, using general terms rather than signal strength codes. The recipient of your report may not be familiar with codes such as these.

You can also note any strong interference from other beacons, particularly if the interfering beacon is fairly close to the airport you are reporting to. Whatever benefit your report may have for the transmitting station will be in this information.

But how can you prove that you heard their beacon? With international broadcasters, you can report program content to prove that you heard the broadcast. Even with an amateur, you could report time and the ID of the other party to show that you heard that particular transmission. But a beacon sends the same thing over and over. And most beacons are on the air for many hours a day or continuously.

The answer is in their ID. Does the ID have a long dash after it, or after several IDs? How many IDs are sent per minute? How many seconds does it take from the start of one ID to the start of the next? You may need a stopwatch to time a cycle, but you can count the number of IDs per minute using the second hand on your watch. Providing this kind of information shows that you have probably heard their beacon.

How to get them to respond -- there is no real incentive for this person to respond. There probably aren't half a dozen beacons in the entire world that have prepared QSL cards or letters waiting to be used. So you have to make life easy for them.

Prepare a card that shows all of the known information (ID, frequency, location, date, and time of reception) already entered and has a line for their signature. You may also provide space for the other information that you would like by showing "Antenna" and "Power" with a blank line after each. All the signer has to do is fill in a couple of brief items and sign it. This could be the difference in getting a return and not getting one back.

Of course, provide return postage. You can enclose a stamped self-addressed envelope or put your name and address on the reverse side of your (PFC) card along with postage stamps to cover the mailing cost.

Remember, the station is doing you a favor by signing and returning the card. Be nice to them.

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If you order **now,** you will receive in early September the 1990 edition of *Passport to World Band Radio,* recognized as the leading guide to shortwave listening -- the "bible" of SWLs worldwide -- at a discount.

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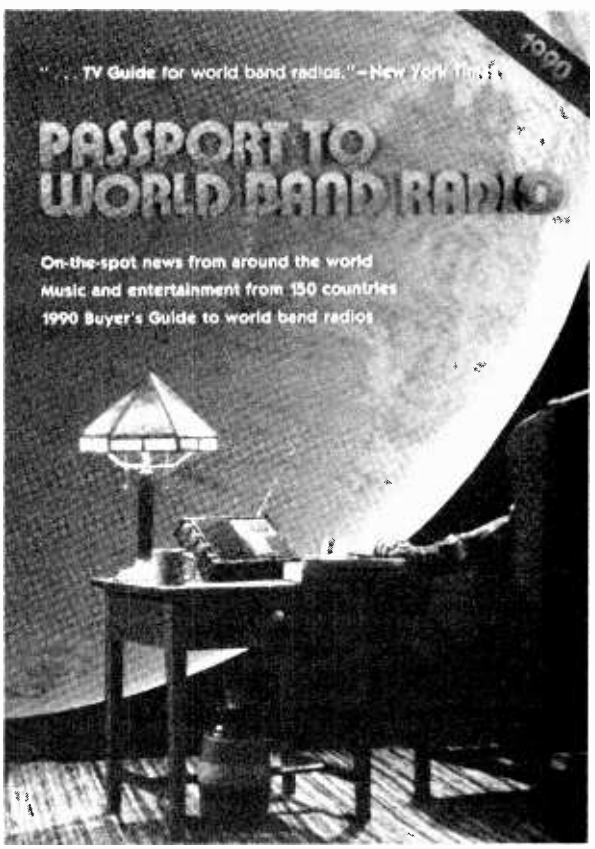
The 1990 Passport to World Band Radio



* Payment will be processed at time of order. For foreign surface mail add $5.00 (Canada) or $6.00 (Europe); foreign air mail add $6.00 (Canada) or $20.00 (Europe).

program guide

Sunday

August 6, 13, 20, 27

0008 Radio Canada Int'l: SWL Digest. Ian MacFarland presents DX news and features.
0009 Radio Yugoslavia: Music Break. A brief musical interlude.
0010 Kol Israel: Spotlight. A weekly news magazine.
0011 Radio Yugoslavia: Current Affairs. Background reports and analysis on current news items.
0016 Radio Yugoslavia: Art and Culture. A look at different art displays and other cultural happenings in Yugoslavia.
0030 BBC: Composer of the Month. Profiles and music of famous composers.
0030 Radio Canada Int'l: Music Spot. The latest in popular music.
0038 Radio Canada Int'l: Spotlight on Science. The latest developments in science and technology.
0101 BBC: Play of the Week. Hour-long drama selections.
0108 Radio Canada Int'l: Innovation Canada. A look at Canada's new ideas and technological developments.
0109 Deutsche Welle: Commentary. Opinion on current issues.
0110 Kol Israel: Spotlight. See S 0010.
0113 Deutsche Welle: Sports Report. The latest news from the world of sports.
0113 Radio Prague: Commentary of the Week. Czech commentary on major world news developments of the past week.

Rita Oliver, Margaret Rentrop, Cynthia Pesch and Hilary Dederichs answer letters at Deutsche Welle.

0117 Deutsche Welle: Mailbag/To the Top/Checkpoint. Rotating features and music programs.
0118 Radio Prague: Music Requests. Musical requests from listeners' letters.
0122 Radio Prague: Report on Religion. Current activities of Christian religious groups in Europe are outlined.
0127 Radio Prague: Stamp Corner. New information on the hobby of stamp collecting.
0130 Radio Austria Int'l: Report from Austria. A magazine program, covering all aspects of Austrian life and events in the news.
0130 Radio Canada Int'l: Music Spot. See S 0030.
0136 Radio Prague: Spin the Discs. A music program featuring top Czech pop stars.
0138 Radio Canada Int'l: SWL Digest. See S 0008.
0139 Deutsche Welle: German by Radio. A German language course for English speakers.
0209 BBC: British Press Review. Survey of editorial opinion in the British press.
0209 Deutsche Welle: Commentary. See S 0109.
0213 Deutsche Welle: Sports Report. See S 0113.
0215 BBC: Global Concerns. A look at major environmental problems facing the world.
0216 Deutsche Welle: Asia in the German Press. A look at what German papers and weeklies have to say about Asia.
0223 Deutsche Welle: Mailbag Asia. Answers to listeners' queries, musical requests, and the club corner.
0230 BBC: The Ken Bruce Show. A mix of popular music and entertainment news.
0300 Radio Canada Int'l: Listeners' Corner. Ian MacFarland and Francoise Borel present listener comments and music requests.
0309 Deutsche Welle: Commentary. See S 0109.
0313 Deutsche Welle: Sports Report. See S 0113.
0313 Radio Prague: Commentary of the Week. See S 0113.
0315 BBC: From Our Own Correspondent. In-depth news stories from correspondents worldwide.
0317 Deutsche Welle: Mailbag/To the Top/Checkpoint. See S 0117.
0318 Radio Prague: Music Requests. See S 0118.
0322 Radio Prague: Report on Religion. See S 0122.
0327 Radio Prague: Stamp Corner. See S 0127.
0330 BBC: My Word! A quiz show filled with questions about - you guessed it - words.
0336 Radio Prague: Spin the Discs. See S 0136.
0339 Deutsche Welle: German by Radio. See S 0139.
0352 Radio Canada Int'l: Music. Selections by Radio Canada International announcers.
0409 Deutsche Welle: Religion and Society. A roundup of news and developments concerning the world's major religions.
0419 Deutsche Welle: Africa in the German Press. A look at what German papers and weeklies have to say about Africa.
0430 BBC: Stuart Colman's Record Hop. Classic and contemporary rock and roll.
0434 Deutsche Welle: People and Places. A program for Africa with interviews, stories, and music.
0445 BBC: Worldbrief. A 15-minute roundup of the week's news headlines and other events.
0509 BBC: Twenty-Four Hours. Analysis of the main news of the day.
0509 Deutsche Welle: Commentary. See S 0109.
0513 Deutsche Welle: Sports Report. See S 0113.
0517 Deutsche Welle: Mailbag/To the Top/ Checkpoint. See S 0117.
0530 BBC: Financial Review. A look back at the financial week.
0530 Radio Austria Int'l: See S 0130.
0539 Deutsche Welle: German by Radio. See S 0139.
0540 BBC: Words of Faith. People share how their scripture gives meaning to their lives.
0545 BBC: Letter from America. Alistair Cooke's distinctly British view of America.
0600 Radio Norway Int'l: Norway Today. A magazine program on issues and people affecting modern-day Norway.
0609 Deutsche Welle: Religion and Society. See S 0409.
0619 Deutsche Welle: African in the German Press. See S 0419.
0630 BBC: Jazz for the Asking. A jazz music request show.
0634 Deutsche Welle: People and Places. See S 0434.
0709 BBC: Twenty-Four Hours. See S 0509.
0730 BBC: From Our Own Correspondent. See S 0315.
0730 Radio Austria Int'l: Report from Austria. See S 0130.
0745 BBC: Book Choice. Short reviews of current or future best-sellers.

MT Program Team

Kannon Shanmugam, Program Manager
4412 Turnberry Circle
Lawrence, KS 66047

Jim Frimmel
Willow Park, Texas

Dale Vanderpoel
Ft. Lauderdale, Florida

LEGEND

* The first four digits of an entry are the program start time in UTC.
* The time is followed by the station name, program name, and a brief summary of the program's content.
* Some listings may be followed by "See X 0000." The letter stands for a day of the week:

S=Sunday M=Monday
T=Tuesday W=Wednesday
H=Thursday F=Friday
A=Saturday

The four digits stand for a time in UTC. Listeners should check back to that date and time to find out more about that particular program.

* All broadcasts are listed in chronological order, starting on Sunday at 0000 UTC and ending on Saturday at 2359 UTC.
* All days are in UTC. Remember that if you are listening in North American prime time, it is actually the next morning UTC. For example, if you are listening to a program at 8:01 pm [EDT] on your Thursday night, that's equal to 0001 UTC and therefore Friday morning UTC.

We suggest that you tune in to a program a few minutes before the schedule start time, as some stations have tentative schedules which may slightly vary. We invite listeners and stations to send program information to the program manager at the address above.

program guide

0750 BBC: Waveguide. How to hear the BBC better.
1109 Deutsche Welle: Arts on the Air. Reports and interviews on major cultural events and developments.
1115 BBC: From Our Own Correspondent. See S 0315.
1130 BBC: Composer of the Month. See S 0030.
1130 Radio Austria Int'l: Austrian Shortwave Panorama. Developments in communications and DX news.
1134 Deutsche Welle: German by Radio. See S 0139.
1200 Radio Norway Int'l: Norway Today. See S 0600.
1201 BBC: Play of the Week. See S 0101.
1300 Radio Norway Int'l: Norway Today. See S 0600.
1304 Radio Canada Int'l: Sunday Morning. A three-hour magazine program, covering virtually everything under the sun.
1308 Radio Canada Int'l (Asia/Pacific): Innovation Canada. See S 0008.
1309 BBC: Twenty-Four Hours. See S 0509.
1330 BBC: Sports Roundup. The day's sports news.
1330 Radio Austria Int'l: Report from Austria. See S 0130.
1345 BBC: Worldbrief. See S 0445.
1400 Radio Norway Int'l: Norway Today. See S 0600.
1401 BBC: Feature. Programming on various subjects.
1430 BBC: Anything Goes. Sounds from the BBC archives as requested by listeners.
1430 Radio Austria Int'l: Austrian Shortwave Panorama. See S 1130.
1509 Deutsche Welle: Commentary. See S 0109.
1513 Deutsche Welle: International Talking Point. A round-table discussion on major trends and events.
1515 BBC: From the Proms. Highlights from the Promenade classical music concerts at London's Royal Albert Hall.
1534 Deutsche Welle: Pop from Germany. A look at the German pop music scene.
1600 Radio Norway Int'l: Norway Today. See S 0600.
1609 Deutsche Welle: Arts on the Air. See S 1109.
1615 BBC: Khomeini's Children or Feature. A look at Islam today (except August 20th, 27th: Feature, programming on various subjects).
1630 Radio Austria Int'l: Report from Austria. See S 0130.
1634 Deutsche Welle: German by Radio. See S 0139.
1645 BBC: Letter from America. See S 0545.
2300 Radio Norway Int'l: Norway Today. See S 0600.
2300 Radio Vilnius: Sunday Mailbag Program. Answers to listener letters and questions about Radio Vilnius and Lithuania.
2308 Radio Canada Int'l: SWL Digest. See S 0108.
2309 BBC: Book Choice. See S 0745.
2310 Kol Israel: Calling All Listeners. A mailbag program.
2310 Radio Vilnius: Sunday Special. A focus on the people and customs of Lithuania.
2315 BBC: Letter from America. See S 0545.
2325 Kol Israel: DX Corner. Ben Dalfen presents DX news.
2330 BBC: Khomeini's Children (except August 20th, 27th: Feature). See S 1615.

Jimmy Savile presents past top ten hits on the BBC's Vintage Chart Show, Saturdays at 0330 UTC.

Monday

August 7, 14, 21, 28

0000 Radio Norway Int'l: Norway Today. See S 1300.
0008 Radio Canada Int'l: Listeners' Corner. See S 0300.
0010 Kol Israel: The Week in Review. Comment in the Israeli press.
0011 Radio Yugoslavia: International Economic Review. A look at the economic situations in different countries worldwide.
0014 Radio Yugoslavia: Music Break. See S 0009.
0016 Radio Yugoslavia: Tourism. Visits to many popular tourist spots in Yugoslavia.
0020 Radio Yugoslavia: Music Box. Interviews with Yugoslavian composers and excerpts from some of their compositions.
0030 BBC: In Praise of God. A half-hour program of worship.
0101 BBC: Conan Doyle and the Edalji Case. Details unannounced at press time.
0108 Radio Canada Int'l: Listeners' Corner. See S 0300.
0109 Deutsche Welle: Commentary. See S 0109.
0110 Kol Israel: Calling All Listeners. See S 2310.
0112 Deutsche Welle: Letter from Berlin/Bonn. The tale of two cities as seen by Deutsche Welle correspondents.
0113 Radio Prague: Prague Mosaic. Various cultural events in the Czech capital.
0116 Deutsche Welle: Religion and Society. See S 0409.
0126 Deutsche Welle: International Talking Point. See S 1513.
0126 Radio Prague: Visitor's Guide to Czechoslovakia. What there is to see in Czechoslovakia.
0130 Radio Austria Int'l: Report from Austria. See S 0130.
0132 Radio Prague: Questions and Answers. Questions are put to invited guests in an interview session.
0138 Radio Prague: Sunday Concert. Classical opera music presented by Czech musicians.
0145 BBC: A Tenor Octave. A look at the great tenors of the past and present (except August 28th: Musical Feature, programming on various musical topics).
0209 BBC: British Press Review. See S 0209.
0209 Deutsche Welle: Morning Magazine. A magazine program with background information on major world events.
0215 BBC: Andy Kershaw's World of Music. Exotic and innovative music from the world over.
0230 BBC: Science in Action. The latest in scientific developments.
0234 Deutsche Welle: Science and Technology. New scientific and technological developments.
0304 Radio Canada Int'l: L'attitude. No details available at press time.
0309 Deutsche Welle: Commentary. See S 0109.
0312 Deutsche Welle: Letter from Berlin/Bonn. See M 0112.

NEWS GUIDE

This is your guide to news broadcasts on the air. All broadcasts are daily unless otherwise noted by brackets. These brackets enclose day codes denoting days of broadcast. The codes are as follows:

S= Sunday
M= Monday
T= Tuesday
W=Wednesday
H= Thursday
F= Friday
A= Saturday

We invite listeners and stations to send program information to the program manager.

0000 BBC: Newsdesk
0000 Kol Israel: News
0000 KVOH: UPI Radio News
0000 KYOI: News [M-F]
0000 Radio Australia: International Report
0000 Radio Beijing: News
0000 Radio Canada Int'l: News [S-M]
0000 Radio Moscow: News
0000 Spanish National Radio: News
0000 Voice of America: News
0000 WCSN: News [T-F]
0010 Radio Beijing: News About China
0030 KVOH: UPI Headline News
0030 Radio Kiev: News
0030 Radio Moscow (World Service): News in Brief
0030 Radio Netherlands: News [T-S]
0030 Voice of America (Americas, East Asia): News (Special English) [T-S]
0030 Voice of America (East Asia): News (Special English) [M]
0030 WCSN: News [T-F]
0045 Radio Berlin Int'l: News
0051 Spanish National Radio: News Summary [S]
0100 BBC: News Summary
0100 Belize Radio One: Network News
0100 Deutsche Welle: World News
0100 Kol Israel: News
0100 KVOH: UPI Radio News [T-A]
0100 KYOI: News [M-F]
0100 Radio Australia: World and Australian News
0100 Radio Berlin Int'l: News
0100 Radio Canada Int'l: News [S-M]
0100 Radio Japan: News [M-A]
0100 Radio Moscow: News
0100 Radio Prague: News
0100 Radiotelevisione Italiana: News
0100 Spanish National Radio: News
0100 Voice of America: News
0100 WCSN: News [T-F]
0130 KVOH: UPI Headline News [T-A]

program guide

0313 Radio Prague: Prague Mosaic. See M 0112.
0315 BBC: Good Books. A recommendation of a book to read.
0316 Deutsche Welle: Religion and Society. See S 0409.
0326 Deutsche Welle: International Talking Point. See S 1513.
0326 Radio Prague: Visitor's Guide to Czechoslovakia. See M 0126.
0330 BBC: Anything Goes. See S 1430.
0332 Radio Prague: Questions and Answers. See M 0132.
0338 Radio Prague: Sunday Concert. See M 0138.
0404 Radio Canada Int'l: Coast to Coast. Issues and opinions affecting Canadians.
0409 Deutsche Welle: Morning Magazine. See M 0209.
0430 BBC: Off the Shelf. A reading selected from the best of world literature.
0434 Deutsche Welle: Africa Report. Reports and background to the news from correspondents.
0445 BBC: Nature Now. Information about flora, fauna, and natural resources.
0509 BBC: Twenty-Four Hours. See S 0509.
0509 Deutsche Welle: Commentary. See S 0109.
0512 Deutsche Welle: Letter from Berlin/Bonn. See M 0112.
0516 Deutsche Welle: Religion and Society. See S 0409.
0526 Deutsche Welle: International Talking Point. See S 1513.
0530 BBC: Waveguide. See S 0750.
0530 Radio Austria Int'l: Report from Austria. See S 0130.

Sara Manobla and Leila Jacobson prepare for a Kol Israel broadcast.

0540 BBC: Words of Faith. See S 0540.
0545 BBC: Recording of the Week. A personal choice from the latest classical music releases.
0609 Deutsche Welle: Morning Magazine. See M 0209.
0630 BBC: Feature. See S 1401.
0634 Deutsche Welle: Africa Report. See M 0434.
0709 BBC: Twenty-Four Hours. See S 0509.
0730 BBC: Khomeini's Children (except August 21st, 28th: Feature). See S 1615.
0730 Radio Austria Int'l: Report from Austria. See S 0130.
1109 Deutsche Welle: Newsline Cologne. A current affairs program with worldwide reports and a German press review.
1115 BBC: Health Matters. A look at new developments in the world of fitness and medicine.
1115 Radio Beijing: Current Affairs. Background commentary on national news items, and a regular mini-feature.
1130 BBC: The Ken Bruce Show. See S 0230.
1130 Radio Austria Int'l: Report from Austria. See S 0130.
1134 Deutsche Welle: Hallo Africa. Musical requests and greetings to friends.
1140 Radio Beijing: Let's Learn Chinese. Lessons on proper Chinese grammar with commentary in English.
1215 BBC: Brain of Britain. THE general-knowledge quiz show of all time; a must listen.
1215 Radio Beijing: Current Affairs. See M 1115.
1230 Radio Canada Int'l: North Country. Sports, weather, and the stock market report.
1234 Radio Canada Int'l: Innovation Canada. See S 0108.
1240 Radio Beijing: Let's Learn Chinese. See M 1140.
1245 BBC: Sports Roundup. See S 1330.
1308 Radio Canada Int'l: Current Affairs. In-depth news programming.
1309 BBC: Twenty-Four Hours. See S 0509.
1330 BBC: Good Books. See M 0315.
1330 Radio Austria Int'l: Report from Austria. See S 0130.
1345 BBC: Recording of the Week. See M 0545.
1405 BBC: Outlook. An excellent magazine (i.e., covering everything!) program.
1415 Radio Beijing: Current Affairs. See M 1115.
1430 BBC: Off the Shelf. See M 0430.
1430 Radio Austria Int'l: Report from Austria. See S 0130.
1440 Radio Beijing: Let's Learn Chinese. See M 1140.
1445 BBC: Global Concerns. See S 0215.
1509 Deutsche Welle: Newsline Cologne. See M 1109.
1515 BBC: Conan Doyle and the Edalji Case. See M 0101.
1515 Radio Beijing: Current Affairs. See M 1115.
1534 Deutsche Welle: Weekend Sport. A review of the major sporting events of the weekend.
1538 Deutsche Welle: Monday Special. An interview or report on an event or development with special relevance for Africa.
1540 Radio Beijing: Let's Learn Chinese. See M 1140.
1609 Deutsche Welle: Newsline Cologne. See M 1109.
1611 Radio Portugal: Sun and Sea. A look at tourism and favorite tourist spots in Portugal.
1615 BBC: Good Books. See M 0315.
1630 BBC: Health Matters. See M 1115.
1630 Radio Austria Int'l: Report from Austria. See S 0130.
1634 Deutsche Welle: Asia-Pacific Report. Correspondents' reports, interviews, and background news from the Asia-Pacific region.
1645 BBC: The World Today. News analysis on a selected location or event in the news.
2308 Radio Canada Int'l: Current Affairs. See M 1308.
2309 BBC: Commentary. Background to the news from a wide range of specialists.
2310 Kol Israel: Spectrum. A look at science and technology in Israel.
2315 BBC: Feature. Programming on various subjects.
2330 BBC: Multitrack 1: Top 20. What's hot on the British pop music charts.

Tuesday

August 1, 8, 15, 22, 29

0008 Radio Yugoslavia: Commentary of the Week. Selected topics for commentary are discussed.
0010 Kol Israel: Concert Hall. Israeli classical music.
0018 Radio Yugoslavia: People and Events. The lives of Yugoslavian people and topics that affect their way of life.
0030 BBC: Megamix. A compendium of music, sport, fashion, health, travel, news and views for young people.
0101 BBC: Outlook. See M 1405.
0109 Deutsche Welle: Newsline Cologne. See M 1109.
0110 Kol Israel: Spectrum. See M 2310.
0113 Radio Prague: Newsview. Commentary on

news guide cont'd from p.57

0130 Radio Moscow (World Service): News in Brief [S-M]
0130 WCSN: News [T-F]
0149 Radio Veritas Asia: World News [M-F]
0150 HCJB: News [T-A]
0151 Spanish National Radio: News Summary [S]
0152 Radio Veritas Asia: World News [A]
0153 Radio Prague: News Wrap-Up
0155 HCJB: News [S]
0200 BBC: World News
0200 Deutsche Welle: World News
0200 HCJB: News [M]
0200 KVOH: UPI Radio News [T-A]
0200 KYOI: News [M-F]
0200 Radio Australia: International Report
0200 Radio Berlin Int'l: News
0200 Radio Canada Int'l:As It Happens[T-A]
0200 Radio Moscow: News
0200 Radio RSA: News
0200 Swiss Radio Int'l: News
0200 Voice of America: News
0200 Voice of Free China: News and Commentary
0200 WCSN: News [T-F]
0215 Radio Cairo: News
0230 KVOH: UPI Headline News [T-A]
0230 Radio Finland: Northern Report [T-A]
0230 Radio Moscow (World Service): News in Brief [S]
0230 Radio Portugal: News [T-A]
0230 WCSN: News [T-F]
0245 Radio Berlin Int'l: News
0300 BBC: World News
0300 Belize Radio One: News
0300 Deutsche Welle: World News
0300 HCJB: News [T-A]
0300 KVOH: UPI Radio News [T-A]
0300 KYOI: News [M-F]
0300 Radio Australia: World and Australian News
0300 Radio Beijing: News
0300 Radio Berlin Int'l: News
0300 Radio Canada Int'l: News [M-F]
0300 Radio for Peace Int'l: News [T,A]
0300 Radio Japan: News [M-A]
0300 Radio Moscow: News
0300 Radio Prague: News
0300 Voice of America: News
0300 Voice of Free China: News and Commentary
0300 WCSN: News [T-F]
0309 BBC: News About Britain
0310 Radio Beijing: News About China
0315 Radio Cairo: News
0330 KVOH: UPI Headline News [T-A]
0330 Radio Moscow (World Service): News in Brief [S-M]
0330 Radio Netherlands: News [T-S]
0330 WCSN: News [T-F]
0350 Radiotelevisione Italiana: News
0353 Radio Prague: News Wrap-up
0400 BBC: Newsdesk
0400 Deutsche Welle: World News

program guide

BULLETIN BOARD

"Off the Shelf"

The BBC World Service has revised its dramatic readings programs. Instead of featuring a weekly serialized reading from a (usually British) novel, the BBC will broadcast a daily reading on weekdays only. The readings, grouped under the name "Off the Shelf," will air at 0430 and 1430 UTC on weekdays.

In July, the BBC opened the new program with Charles Dickens' *A Tale Of Two Cities*, abridged in twenty episodes. Details for August were not available at press time.

The new program means that all broadcasts of "Outlook," the BBC's magazine program, will be the same length: 25 minutes. Previously various transmissions of the program were of different lengths. That program can be heard at 1405 and 1901 UTC Mondays through Fridays, and at 0101 UTC Tuesdays through Saturdays.

current news items in Czechoslovakia.
0122 Radio Prague: Folk Music Section. Traditional folk music from the Slovak region.
0125 BBC: Financial News. News of commodity prices and significant moves in currency and stock markets.
0126 Radio Prague: Introducing Czechoslovakia. Different facets of work and life in Czechoslovakia.
0130 BBC: Short Story. Brief tales written by BBC listeners.
0130 Deutsche Welle: Ah Yes; I Remember It Well. Reflections and reminiscences on the past.
0130 Radio Austria Int'l: Report from Austria. See S 0130.
0130 Radio Prague: Sports Roundup. Full coverage of European sports, and sports commentaries.
0133 Radio Prague: Meet the People. Questions from listeners are posed to guests in the studio.
0134 Deutsche Welle: Arts on the Air. See S 1109.
0139 Radio Prague: The World Federation of Trade Unions Calling. Reports on business dealings and trade unions.
0145 BBC: Europe's World. A magazine program reflecting life in Europe and its links with other parts of the world.
0149 Radio Prague: Interview Time. Interviews with tourists visiting Czechoslovakia.
0209 BBC: British Press Review. See S 0209.
0209 Deutsche Welle: Morning Magazine. See M 0209.
0215 BBC: Network UK. A look at the issues and events that affect the lives of people throughout the UK.
0230 BBC: Sports International. Feature program on a topic or person making sports headlines.
0234 Deutsche Welle: Economic Notebook. A look at the economic scene in Germany and around the world.
0241 Radio Portugal: Sun to Sea. See M 1611.
0308 Radio Canada Int'l: Current Affairs. See M 1308.
0309 Deutsche Welle: Newsline Cologne. See M 1109.
0313 Radio Prague: Newsview. See T 0113.
0315 BBC: The World Today. See M 1645.
0322 Radio Prague: Folk Music Section. See T 0122.
0326 Radio Prague: Introducing Czechoslovakia. See T 0126.
0330 BBC: John Peel. Tracks from newly released albums and singles from the contemporary music scene.
0330 Deutsche Welle: Ah Yes; I Remember It Well. See T 0130.
0330 Radio Prague: Sports Roundup. See T 0130.
0333 Radio Prague: Meet the People. See T 0133.
0334 Deutsche Welle: Arts on the Air. See S 1109.
0339 Radio Prague: The World Federation of Trade Unions Calling. See T 0139.
0349 Radio Prague: Interview Time. See T 0149.
0404 Radio Canada Int'l: Innovation Canada. See S 0108.
0409 Deutsche Welle: Morning Magazine. See M 0209.
0430 BBC: Off the Shelf. See M 0430.
0434 Deutsche Welle: Africa Report. See M 0434.
0445 BBC: New Ideas. A radio shop window for new products and inventions.
0455 BBC: Book Choice. See S 0745.
0509 BBC: Twenty-Four Hours. See S 0509.
0509 Deutsche Welle: Newsline Cologne. See M 1109.
0530 BBC: Financial News. See T 0125.
0530 Deutsche Welle: Ah Yes; I Remember It Well. See T 0130.
0530 Radio Austria Int'l: Report from Austria. See S 0130.
0534 Deutsche Welle: Arts on the Air. See S 1109.
0540 BBC: Words of Faith. See S 0540.
0545 BBC: The World Today. See M 1645.
0609 Deutsche Welle: Morning Magazine. See M 0209.
0630 BBC: Counterpoint. The best in blues, jazz, and pop music, and talks with the performers who create it.
0634 Deutsche Welle: Africa Report. See M 0434.
0709 BBC: Twenty-Four Hours. See S 0509.
0730 BBC: Europe's World. See T 0145.
0730 Radio Austria Int'l: Report from Austria. See S 0130.
0745 BBC: Network UK. See T 0215.
1109 Deutsche Welle: Newsline Cologne. See M 1109.
1115 BBC: Waveguide. See S 0750.
1125 BBC: Book Choice. See S 0745.
1130 BBC: Megamix. See T 0030.
1130 Radio Austria Int'l: Report from Austria. See S 0130.
1134 Deutsche Welle: Hallo Africa. See M 1134.
1215 BBC: Multitrack 1: Top 20. See M 2330.
1230 Radio Canada Int'l: North Country. See M 1230.
1234 Radio Canada Int'l: SWL Digest. See S 0008.
1245 BBC: Sports Roundup. See S 1330.
1308 Radio Canada Int'l: Current Affairs. See M 1308.
1309 BBC: Twenty-Four Hours. See S 0509.
1330 BBC: Network UK. See T 0215.
1330 Radio Austria Int'l: Report from Austria. See S 0130.
1345 BBC: Stuart Colman's Record Hop. See S 0430.
1405 BBC: Outlook. See M 1405.
1430 BBC: Off the Shelf. See M 0430.
1430 Radio Austria Int'l: Report from Austria. See S 0130.
1445 BBC: A Tenor Octave (except August 28th: Musical Feature). See M 0145.
1509 Deutsche Welle: Newsline Cologne. See M 1109.
1515 BBC: A Jolly Good Show. Dave Lee Travis presents your record requests and dedications in his own unique way, including the Album of the Month.
1534 Deutsche Welle: Insight. An in-depth feature, giving the background to political events and international developments.
1609 Deutsche Welle: Newsline Cologne. See M 1109.
1615 BBC: Omnibus. A half-hour program on practically any topic.
1630 Radio Austria Int'l: Report from Austria. See S 0130.
1634 Deutsche Welle: Asia-Pacific Report. See M 1634.
1645 BBC: The World Today. See M 1645.

0400 HCJB: News [M-A]
0400 Kol Israel: News
0400 KYOI: News [M-F]
0400 Radio Australia: International Report
0400 Radio Beijing: News
0400 Radio Berlin Int'l: News
0400 Radio Canada Int'l: News [M-F]
0400 Radio Havana Cuba: International News
0400 Radio Moscow: News
0400 Radio RSA: News
0400 Swiss Radio Int'l: News
0400 Voice of America: News
0400 WCSN: News [M-F]
0410 Radio Beijing: News About China
0425 Radiotelevisione Italiana: News
0430 Radio Havana Cuba: News Update
0430 Radio Moscow (World Service): News in Brief
0430 Radio Netherlands: News [M-A]
0430 WCSN: News [T-F]
0445 Radio Berlin Int'l: News
0500 BBC: World News
0500 Deutsche Welle: World News
0500 HCJB: News [S-M]; Latin American News [T-A]
0500 KYOI: News [M-F]
0500 Radio Australia: World and Australian News
0500 Radio Berlin Int'l: News
0500 Radio Japan: News [S-F]
0500 Radio Moscow: News
0500 Radio New Zealand Int'l: News
0500 Spanish National Radio: News
0500 Voice of America: News
0500 WCSN: News [M-F]
0515 Radio Canada Int'l: News [M-F]
0530 Radio Moscow (World Service): News in Brief [S]
0530 WCSN: News [T-F]
0545 Radio Canada Int'l: News [M-F]
0550 HCJB: News [T-A]
0551 Spanish National Radio: News Summary [S]
0555 HCJB: News [S]
0600 BBC: Newsdesk
0600 Deutsche Welle: World News
0600 HCJB: News [M]
0600 KYOI: News [M-F]
0600 Radio Australia: International Report
0600 Radio Korea: News
0600 Radio Moscow: News
0600 Voice of America: News
0600 WCSN: News [M-F]
0615 Radio Berlin Int'l: News
0630 Radio Finland: Northern Report [T-A]
0630 Radio Moscow (World Service): News in Brief [S-M]
0630 Swiss Radio Int'l: News
0630 WCSN: News [T-F]
0655 HCJB: News [M-A]
0700 BBC: World News
0700 BRT, Brussels: News [M-F]
0700 KYOI: News [M-F]
0700 Radio Australia: World and Australian News

program guide

Yishai Eldar presents "Calling All Listeners," Kol Israel's mailbag program, on Sunday broadcasts. "Calling All Listeners" is Kol Israel's longest-running shortwave program.

2308 Radio Canada Int'l: Current Affairs. See M 1308.
2309 BBC: Commentary. See M 2309.
2310 Kol Israel: With Me in the Studio. An interview with a studio guest.
2315 BBC: From the Proms. See S 1515.
2325 Kol Israel: Faith to Faith. A look at religion and Israeli communities.

Wednesday

August 2, 9, 16, 23, 30

0010 Kol Israel: Israel Sound. The latest in pop and rock music.
0030 BBC: Omnibus. See T 1615.
0101 BBC: Outlook. See M 1405.
0109 Deutsche Welle: Newsline Cologne. See M 1109.
0110 Kol Israel: With Me in the Studio. See M 2310.
0113 Radio Prague: Newsview. See T 0113.
0124 Radio Prague: Culture. Interviews with Czech people on living and working in Czechoslovakia.
0125 BBC: Financial News. See T 0125.
0130 BBC: Feature. Programming on various subjects.
0130 Deutsche Welle: Ah Yes; I Remember It Well. See T 0130.
0130 Radio Austria Int'l: Report from Austria. See S 0130.
0132 Radio Prague: Economic Report. Updates on the business world in Czechoslovakia.
0134 Deutsche Welle: Economic Notebook. See T 0234.
0144 Radio Prague: Folk Music. Original Czech folk music is presented (except August 30th: Brass Band Music, a look at recent Czech brass band sounds).
0145 BBC: Country Style. Uh oh - it's back! British country music! Hide the children!
0209 BBC: British Press Review. See S 0209.
0209 Deutsche Welle: Morning Magazine. See M 0209.
0215 BBC: Tech Talk. See M 1115.
0230 BBC: Bring Your Own Popcorn. Adrian Love presents music from the movies.
0234 Deutsche Welle: Insight. See T 1534.
0308 Radio Canada Int'l: Current Affairs. See M 1308.
0309 Deutsche Welle: Newsline Cologne. See M 1109.
0313 Radio Prague: Newsview. See T 0113.
0315 BBC: The World Today. See M 1645.
0324 Radio Prague: Culture. See W 0124.
0330 BBC: Pop Science. Questions regarding science interspersed with record requests.
0330 Deutsche Welle: Ah Yes; I Remember It Well. See T 0130.
0332 Radio Prague: Economic Report. See W 0132.
0334 Deutsche Welle: Economic Notebook. See T 0234.
0344 Radio Prague: Folk Music (except August 30th: Brass Band Music). See W 0144.
0404 Radio Canada Int'l: SWL Digest. See S 0008.
0409 Deutsche Welle: Morning Magazine. See M 0209.
0430 BBC: Off the Shelf. See M 0430.
0434 Deutsche Welle: Africa Report. See M 0434.
0445 BBC: Country Style. See W 0145.
0509 BBC: Twenty-Four Hours. See S 0509.
0509 Deutsche Welle: Newsline Cologne. See M 1109.
0530 BBC: Financial News. See T 0125.
0530 Deutsche Welle: Ah Yes; I Remember It Well. See T 0130.
0530 Radio Austria Int'l: Report from Austria. See S 0130.
0534 Deutsche Welle: Economic Notebook. See T 0234.
0540 BBC: Words of Faith. See S 0540.
0545 BBC: The World Today. See M 1645.
0609 Deutsche Welle: Morning Magazine. See M 0209.
0630 BBC: Meridian. The world of the arts, including music, drama, and books.
0634 Deutsche Welle: Africa Report. See M 0434.
0709 BBC: Twenty-Four Hours. See S 0509.
0730 BBC: Development '89. Aid and development issues.
0730 Radio Austria Int'l: Report from Austria. See S 0130.
1109 Deutsche Welle: Newsline Cologne. See M 1109.
1115 BBC: Country Style. See W 0145.
1130 BBC: Meridian. See W 0630.
1130 Radio Austria Int'l: Report from Austria. See S 0130.
1134 Deutsche Welle: Hallo Africa. See M 1134.
1215 BBC: In a Nutshell. A look at the "isms" of our time, from humanism to communism.
1225 BBC: The Farming World. Issues in agriculture.
1230 Radio Canada Int'l: North Country. See M 1230.
1234 Radio Canada Int'l: L'attitude. See M 0304.
1245 BBC: Sports Roundup. See S 1330.
1308 Radio Canada Int'l: Current Affairs. See M 1308.
1309 BBC: Twenty-Four Hours. See S 0509.
1330 BBC: Development '89. See W 0730.
1330 Radio Austria Int'l: Report from Austria. See S 0130.
1405 BBC: Outlook. See M 1405.
1430 BBC: Off the Shelf. See M 0430.
1430 Radio Austria Int'l: Report from Austria. See S 0130.
1445 BBC: Business Matters. See W 0430.
1509 Deutsche Welle: Newsline Cologne. See M 1109.
1515 BBC: Feature. See M 2315.
1530 BBC: Flying the Flag. Intrigue and comedy in a fictional communist nation (except August 2nd: Two Cheers for July, a satirical look back at the month just past, and August 30th: Two Cheers for August).
1534 Deutsche Welle: Living in Germany. The social scene in Germany.
1609 Deutsche Welle: Newsline Cologne. See M 1109.
1611 Radio Portugal: Sun and Sea. See M 1611.
1615 BBC: Counterpoint. See T 0630.
1630 Radio Austria Int'l: Report from Austria. See S 0130.
1634 Deutsche Welle: Asia-Pacific Report. See M 1634.
1645 BBC: The World Today. See M 1645.
2307 Voice of Turkey: Review of the Turkish Press. A look at what is being reported in the Turkish newspapers.
2308 Radio Canada Int'l: Current Affairs. See M 1308.
2309 BBC: Commentary. See M 2309.
2310 Kol Israel: Jewish News Review. A look at events affecting followers of Judaism.

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0700 Radio Japan: News [S-F]
0700 Radio Moscow (World Service): News
0700 Voice of Free China: News and Commentary
0700 WCSN: News [M-F]
0730 Radio Moscow (World Service): News in Brief
0730 Radio Netherlands: News [M-A]
0730 WCSN: News [T-F]
0745 Radio Berlin Int'l: News
0800 BBC: World News
0800 KYOI: News [M-F]
0800 Radio Australia: International Report
0800 Radio Berlin Int'l: News
0800 Radio Finland: Northern Report [T-S]
0800 Radio Korea: News
0800 Radio Moscow (World Service): News
0830 Radio Finland: Northern Report [T-S]
0830 Radio Moscow (World Service): News in Brief [S-M]
0830 Radio Netherlands: News [M-A]
0830 Swiss Radio Int'l: News
0900 BBC: World News
0900 BRT, Brussels: News [M-F]
0900 Deutsche Welle: World News
0900 KYOI: News [M-F]
0900 Radio Australia: World and Australian News
0900 Radio Japan: News [S-F]
0900 Radio Moscow (World Service): News
0930 Radio Canada Int'l: News [M-F]
0930 Radio Moscow (World Service): News in Brief [S]
1000 BBC: News Summary
1000 Kol Israel: News
1000 KYOI: News [M-F]
1000 Radio Australia: International Report
1000 Radio Berlin Int'l: News
1000 Radio Moscow (World Service): News
1000 Radio New Zealand Int'l: News [M-F]
1000 Swiss Radio Int'l: News
1000 Voice of America: News
1030 KYOI: News [T-F]
1030 Radio Moscow (World Service): News in Brief [S-M]
1030 Radio Netherlands: News [M-A]
1100 BBC: World News
1100 Deutsche Welle: World News
1100 KYOI: News [M-F]
1100 Radio Australia: World and Australian News
1100 Radio Beijing: News
1100 Radio Berlin Int'l: News
1100 Radio Finland: Northern Report [T-F]
1100 Radio Japan: News [S-F]
1100 Radio Korea: News
1100 Radio Moscow (World Service): News
1100 Radio New Zealand Int'l: News
1100 Radio RSA: News
1100 Swiss Radio Int'l: News
1100 Voice of America: News
1109 BBC: News About Britain
1110 Belize Radio One: News Summary [T-F]
1110 Radio Beijing: News About China

2310 Voice of Turkey: Review of the Foreign Media. An insight into what is being reported in the media of other nations.
2313 Voice of Turkey: Letterbox. The sights of and historical background to various attractions in Turkey.
2315 BBC: Good Books. See M 0315.
2315 Kol Israel: Living Here. A look at people who have made Israel their home.
2330 BBC: Multitrack 2. Mitchell Johnson presents pop music and news.
2335 Voice of Turkey: Home in Turkey. A look at social reforms in Turkey, and the Turkish people.
2340 Voice of Turkey: Music. Upbeat, modern Turkish music.

Thursday

August 3, 10, 17, 24, 31

0008 Radio Yugoslavia: Current Affairs. See S 0011.
0010 Kol Israel: Israel Mosaic. A weekly magazine on life in Israel.
0018 Radio Yugoslavia: Spotlight on Culture. A program focusing on the different aspects of Yugoslavian culture.
0030 BBC: Flying the Flag (except August 3rd, 31st: Two Cheers for...). See W 1530.
0034 Radio Kiev: News Commentary. An editorial commentary on recent matters of interest to those in Kiev and the USSR.
0038 Radio Kiev: Political Commentary. A review of current political actions in the USSR and their effect on the nation.
0040 Radio Kiev: Ukraine Today. A feature program focusing on local news, cultural events, and the people of the Ukraine.
0101 BBC: Outlook. See M 1405.
0109 Deutsche Welle: Newsline Cologne. See M 1109.
0110 Kol Israel: Living Here. See W 2315.
0113 Radio Prague: Newsview. See T 0113.
0121 Radio Prague: Czech Scrapbook. A contest and music program, including "Rock Rodeo," a segment on Czech rock music.
0125 3BC: Financial News. See T 0125.
0130 BBC: Waveguide. See S 0750.
0130 Deutsche Welle: Ah Yes; I Remember It Well. See T 0130.
0130 Radio Austria Int'l: Report from Austria. See S 0130.
0134 Deutsche Welle: Living in Germany. See W 1534.
0140 BBC: Book Choice. See S 0745.
0145 BBC: Society Today. A weekly look at the changes in Britain.
0209 BBC: British Press Review. See S 0209.
0209 Deutsche Welle: Morning Magazine. See M 0209.
0215 BBC: Network UK. See T 0215.
0230 BBC: Assignment. A weekly examination of a topical issue.
0234 Deutsche Welle: Living in Germany. See W 1534.
0241 Radio Portugal: Sun and Sea. See M 1611.
0308 Radio Canada Int'l: Current Affairs. See M 1308.
0309 Deutsche Welle: Newsline Cologne. See M 1109.
0313 Radio Prague: Newsview. See T 0113.

Peter Senger heads Deutsche Welle's radio frequency department.

0315 BBC: The World Today. See M 1645.
0321 Radio Prague: Czech Scrapbook. See H 0121.
0330 BBC: Brain of Britain. See M 1215.
0330 Deutsche Welle: Ah Yes; I Remember It Well. See T 0130.
0334 Deutsche Welle: Living in Germany. See W 1534.
0404 Radio Canada Int'l: L'attitude. See M 0304.
0409 Deutsche Welle: Morning Magazine. See M 0209.
0410 Radio Berlin Int'l: Musical Interlude. Popular German songs.
0414 Radio Berlin Int'l: Commentary. East German views are expressed on current happenings worldwide.
0423 Radio Berlin Int'l: Pop Corner. Performances from top East German pop artists and reports on concerts.
0430 BBC: Off the Shelf. See M 0430.
0430 Radio Berlin Int'l: Question Time. An interview and commentary program with responses to listener letters.
0434 Deutsche Welle: Africa Report. See M 0434.
0445 BBC: Andy Kershaw's World of Music. See M 0215.
0509 BBC: Twenty-Four Hours. See S 0509.
0509 Deutsche Welle: Newsline Cologne. See M 1109.
0530 BBC: Financial News. See T 0125.
0530 Deutsche Welle: Ah Yes; I Remember It Well. See T 0130.
0530 Radio Austria Int'l: Report from Austria. See S 0130.
0534 Deutsche Welle: Living in Germany. See W 1534.
0540 BBC: Words of Faith. See S 0540.
0545 BBC: The World Today. See M 1645.
0609 Deutsche Welle: Morning Magazine. See M 0209.
0630 BBC: In a Nutshell. See W 1215.
0634 Deutsche Welle: Africa Report. See M 0434.
0640 BBC: The Farming World. See W 1225.
0709 BBC: Twenty-Four Hours. See S 0509.
0730 BBC: Mediawatch. A look at the new technology behind and significance of communications.
0730 Radio Austria Int'l: Report from Austria. See S 0130.
0745 BBC: Network UK. See T 0215.
1109 Deutsche Welle: Newsline Cologne. See M 1109.
1115 BBC: New Ideas. See T 0445.
1125 BBC: Book Choice. See S 0745.
1130 BBC: Play. A dramatization of a play or book excerpt.
1130 Radio Austria Int'l: Report from Austria. See S 0130.
1134 Deutsche Welle: Hallo Africa. See M 1134.
1215 BBC: Multitrack 2. See W 1830.
1230 Radio Canada Int'l: North Country. See M 1230.
1234 Radio Canada Int'l: Spotlight on Science. The latest developments in science and technology.
1245 BBC: Sports Roundup. See S 1330.
1308 Radio Canada Int'l: Current Affairs. See M 1308.
1309 BBC: Twenty-Four Hours. See S 0509.
1330 BBC: Network UK. See T 0215.
1330 Radio Austria Int'l: Report from Austria. See S 0130.
1345 BBC: Folk in Britain (August 3th, 17th, 31th) or Jazz Scene UK (August 10th, 24th). A look at folk or jazz music on the British Isles.
1405 BBC: Outlook. See M 1405.
1430 BBC: Off the Shelf. See M 0430.

1120 Belize Radio One: News Summary [A]
1125 Belize Radio One: News Summary [M]
1130 KYOI: News [T-F]
1130 Radio Moscow (World Service): News in Brief
1130 Radio Netherlands: News [M-A]
1152 Radio RSA: News in Brief
1200 BBC: News Summary [S]; Newsreel [M-A]
1200 KYOI: News [M-F]
1200 Radio Australia: International Report
1200 Radio Beijing: News
1200 Radio Canada Int'l: World Report [M-F]
1200 Radio Finland: Northern Report [T-F]
1200 Radio Moscow (World Service): News
1200 Swiss Radio Int'l: News
1200 Voice of America: News
1210 Radio Beijing: News About China
1215 Radio Berlin Int'l: News
1230 BRT, Brussels: News [M-S]
1230 KYOI: News [T-F]
1230 Radio Berlin Int'l: News
1230 Radio Moscow (World Service): News in Brief [S-M]
1300 BBC: World News
1300 Belize Radio One: News
1300 KYOI: News [M-F]
1300 Radio Australia: World and Australian News
1300 Radio Berlin Int'l: News
1300 Radio Canada Int'l (Asia/Pacific): News [S-F]
1300 Radio Canada Int'l: News [S]
1300 Radio Finland: Northern Report [T-A]
1300 Radio Moscow (World Service): News
1300 Radio RSA: News
1300 Voice of America: News
1325 HCJB: News [M-F]
1330 KYOI: News [T-F]
1330 Radio Moscow (World Service): News in Brief [S]
1330 Swiss Radio Int'l: News
1330 Voice of America: News (Special English)
1345 Radio Berlin Int'l: News
1352 Radio RSA: News in Brief
1400 BBC: News Summary [A-S]; World News [M-F]
1400 KYOI: News [M-F]
1400 Radio Australia: International Report
1400 Radio Beijing: News
1400 Radio Berlin Int'l: News
1400 Radio Japan: News [S-F]
1400 Radio Korea: News
1400 Radio Moscow (World Service): News
1400 Radio RSA: News
1400 Voice of America: News
1405 Radio Finland: Northern Report [T-A]
1410 Radio Beijing: News About China
1425 HCJB: News [M-F]
1430 Radio Moscow (World Service): News in Brief
1430 Radio Netherlands: News [M-A]
1445 Radio Canada Int'l: News
1500 BBC: Newsreel
1500 Belize Radio One: News [M-A]

program guide

1430 Radio Austria Int'l: Report from Austria. See S 0130.
1445 BBC: Mediawatch. See H 0730.
1509 Deutsche Welle: Newsline Cologne. See M 1109.
1515 BBC: The Pleasure's Yours. Gordon Clyde presents classical music requests.
1534 Deutsche Welle: Spotlight on Sport. Background stories and coverage of important sporting events.
1609 Deutsche Welle: Newsline Cologne. See M 1109.
1615 BBC: Assignment. See H 0230.
1630 Radio Austria Int'l: Report from Austria. See S 0130.
1634 Deutsche Welle: Asia-Pacific Report. See M 1634.
1645 BBC: The World Today. See M 1645.
2308 Radio Canada Int'l: Current Affairs. See M 1308.
2309 BBC: Commentary. See M 2309.
2310 Kol Israel: Ulpan of the Air. Hebrew language lessons for English speakers.
2310 Voice of Turkey: Review of the Turkish Press. A roundup of current news items in the daily Turkish newspapers.
2313 Voice of Turkey: Turkey - At the Threshold of the European Community. Commentary and a look at Turkey's economic situation.
2315 BBC: Music Review. Classical music events and developments from around the world.
2324 Voice of Turkey: Music. Modern arrangements of traditional Turkish songs.
2330 Voice of Turkey: Turkish Cuisine. History of the great variety of Turkish dishes.
2336 Voice of Turkey: Songs of Love. Traditional Turkish love songs performed by local musicians.

Friday

August 4, 11, 18, 25

0010 Kol Israel: Studio Three. Studio Three. A look at the arts, music, and culture.
0030 BBC: Oratorio. A look at the form of religious drama utilized by Handel, Bach, Haydn, and others.
0101 BBC: Outlook. See M 1405.
0109 Deutsche Welle: Newsline Cologne. See M 1109.
0110 Kol Israel: Ulpan of the Air. See W 2310.
0113 Radio Prague: Newsview. See T 0113.
0125 BBC: Financial News. See T 0125.
0125 Radio Prague: Folk Music Section. See T 0122.
0128 Radio Prague: Health and Medicine. A look at different aspects of health care in Czechoslovakia.
0130 BBC: Folk in Britain (August 4th, 18th) or Jazz Scene UK (August 11th, 25th). See H 1345.
0130 Deutsche Welle: Ah Yes; I Remember It Well. See T 0130.
0130 Radio Austria Int'l: Report from Austria. See S 0130.
0134 Deutsche Welle: Science and Technology. See M 0234.
0135 Radio Prague: Letter from Czechoslovakia. A program focusing on the real personal life in Czechoslovakia, and opinions of Czech individuals.
0140 Radio Prague: DX Chat. Reception reports and DX news.
0145 BBC: Profile. Character sketches of today's public figures.
0149 Radio Prague: The World Federation of Trade Unions Calling. See T 0139.
0209 BBC: British Press Review. See S 0209.
0209 Deutsche Welle: Morning Magazine. See M 0209.
0215 BBC: Seven Seas. A weekly program about ships and the sea.
0230 BBC: Play. See H 1130.
0234 Deutsche Welle: Spotlight on Sport. See H 1534.
0308 Radio Canada Int'l: Current Affairs. See M 1308.
0309 Deutsche Welle: Newsline Cologne. See M 1109.
0313 Radio Prague: Newsview. See T 0113.
0315 BBC: The World Today. See M 1645.
0325 Radio Prague: Folk Music Section. See T 0122.
0328 Radio Prague: Health and Medicine. See F 0128.
0330 BBC: Focus on Faith. Comment and discussion on the major issues in the worlds of faith.
0330 Deutsche Welle: Ah Yes; I Remember It Well. See T 0130.
0334 Deutsche Welle: Science and Technology. See M 0234.
0335 Radio Prague: Letter from Czechoslovakia. See F 0135.
0340 Radio Prague: DX Chat. See F 0140.
0349 Radio Prague: The World Federation of Trade Unions Calling. See T 0139.
0404 Radio Canada Int'l: Spotlight on Science. See H 1234.
0409 Deutsche Welle: Morning Magazine. See M 0209.
0412 Radio Havana Cuba: Spotlight on Latin America. Analysis of issues affecting Latin America.

The BBC's "Assignment" team braves small wars and exotic lands to present weekly examinations of topical issues. The program airs Thursdays at 0230 UTC, repeated on Thursdays at 1015 UTC. The team is Owen Bennett-Jones, Alistair Lock, Judy Swallow, and Matt Frei.

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1500 Deutsche Welle: World News
1500 KYOI: News [M-F]
1500 Radio Australia: World and Australian News
1500 Radio Beijing: News
1500 Radio Japan: News [S-F]
1500 Radio Moscow (World Service): News
1500 Radio RSA: News
1500 Voice of America: News
1510 Radio Beijing: News About China
1525 HCJB: News [M-F]
1527 Radio Veritas Asia: World News [M-A]
1530 BRT, Brussels: News [M-S]
1530 Deutsche Welle: African News [M-F]
1530 Radio Moscow (World Service): News in Brief [S-M]
1530 Swiss Radio Int'l: News
1545 Radio Berlin Int'l: News
1552 Radio RSA: News in Brief
1600 BBC: World News
1600 Deutsche Welle: World News
1600 Radio Australia: International Report
1600 Radio Berlin Int'l: News
1600 Radio Korea: News
1600 Radio Moscow (World Service): News
1600 Radio Portugal: News [M-F]
1600 Voice of America: News
1600 WCSN: News [M-F]
1609 BBC: News About Britain
1615 Radio Canada Int'l: News
1625 HCJB: News [M-F]
1630 Radio Moscow (World Service): News in Brief [S]
1630 Radio Netherlands: News [M-A]
1630 Voice of America (except Africa): News (Special English)
1630 WCSN: News [M-F]
1700 BBC: World News
1700 Belize Radio One: News [M-F]
1700 Kol Israel: News
1700 Radio Australia: World and Australian News
1700 Radio Japan: News [S-F]
1700 Radio Moscow (World Service): News
1700 Voice of America: News
1700 WCSN: News [M-F]
1715 Radio Berlin Int'l: News
1730 BRT, Brussels: News
1730 Radio Berlin Int'l: News
1730 Radio Moscow (World Service): News in Brief
1730 Radio New Zealand Int'l: News [S-F]
1730 Swiss Radio Int'l: News
1730 WCSN: News [M-F]
1800 BBC: Newsdesk
1800 Belize Radio One:Headline News[M-A]
1800 KYOI: News [M-F]
1800 Radio Australia: International Report
1800 Radio Canada Int'l: News
1800 Radio Korea: News
1800 Radio Moscow (World Service): News
1800 Radio New Zealand Int'l: News
1800 Radio RSA: News
1800 Voice of America: News

0415 Radio Havana Cuba: Headliners. Views behind the stories making news this week.
0420 Radio Havana Cuba: The Cuban Music Scene. Latin music from the island nation of Cuba.
0430 BBC: Off the Shelf. See M 0430.
0434 Deutsche Welle: Africa Report. See M 0434.
0435 Radio Havana Cuba: Feature Report. Interviews with prominent figures on topics in the news.
0443 Radio Havana Cuba: Kaleidoscope. Interviews with Cuban artists talking about their own contributions to Cuba's culture and the arts.
0445 BBC: Folk in Britain (August 4th, 18th) or Jazz Scene UK (August 11th, 25th). See H 1345.
0450 Radio Havana Cuba: Contemporary Music Section. Music from popular international groups and Latin solo artists.
0509 BBC: Twenty-Four Hours. See S 0509.
0509 Deutsche Welle: Newsline Cologne. See M 1109.
0530 BBC: Financial News. See T 0125.
0530 Deutsche Welle: Ah Yes; I Remember It Well. See T 0130.
0530 Radio Austria Int'l: Report from Austria. See S 0130.
0534 Deutsche Welle: Science and Technology. See M 0234.
0540 BBC: Words of Faith. See S 0540.
0545 BBC: The World Today. See M 1645.
0609 Deutsche Welle: Morning Magazine. See M 0209.
0630 BBC: Meridian. See W 0630.
0634 Deutsche Welle: Africa Report. See M 0434.
0709 BBC: Twenty-Four Hours. See S 0509.
0730 BBC: Hurrah for Revolution! A look at the great events of the French revolution.
0730 Radio Austria Int'l: Report from Austria. See S 0130.
1109 Deutsche Welle: Newsline Cologne. See M 1109.
1115 BBC: Profile. See F 0145.
1130 BBC: Meridian. See W 0630.
1130 Radio Austria Int'l: Report from Austria. See S 0130.
1134 Deutsche Welle: Hallo Africa. See M 1134.
1215 BBC: Hurrah for Revolution! See F 0730.
1230 Radio Canada Int'l: North Country. See M 1230.
1234 Radio Canada Int'l: Coast to Coast. See M 0404.
1245 BBC: Sports Roundup. See S 1330.
1308 Radio Canada Int'l: Current Affairs. See M 1308.
1309 BBC: Twenty-Four Hours. See S 0509.
1330 BBC: John Peel. See T 0330.
1330 Radio Austria Int'l: Report from Austria. See S 0130.
1405 BBC: Outlook. See M 1405.
1430 BBC: Off the Shelf. See M 0430.
1430 Radio Austria Int'l: Report from Austria. See S 0130.
1445 BBC: Nature Now. See M 0445.
1509 Deutsche Welle: Newsline Cologne. See M 1109.

Bishop Desmond Tutu of South Africa, winner of the Nobel Peace Prize, interviewed by a Radio Beijing reporter.

1515 BBC: Music Review. See H 2315.
1534 Deutsche Welle: Economic Notebook. See T 0234.
1609 Deutsche Welle: Newsline Cologne. See M 1109.
1611 Radio Portugal: Mailbag or DX/Philately. Programs on listeners' letters, shortwave listening, and stamp collecting can be heard in this broadcast.
1615 BBC: Science in Action. See M 0230.
1630 Radio Austria Int'l: Report from Austria. See S 0130.
1634 Deutsche Welle: Asia-Pacific Report. See M 1634.
1645 BBC: The World Today. See M 1645.
2308 Radio Canada Int'l: Current Affairs. See M 1308.
2309 BBC: Commentary. See M 2309.
2310 Kol Israel: Letter from Jerusalem. News commentary.
2315 BBC: From the Weeklies. A review of the British weekly press.
2315 Kol Israel: Thank Goodness It's Friday. A look at Judaism today.
2330 BBC: Multitrack 3. Sarah Ward presents innovative and alternative rock music.

Saturday

August 5, 12, 19, 26

0010 Kol Israel: Shabbat Shalom. Sabbath greetings and record requests.
0011 Radio Yugoslavia: Current Affairs. See S 0011.
0016 Radio Yugoslavia: Sidewalk Rock. Rock music from the Third World and other developing countries.
0030 BBC: Personal View. Opinion on topical issues in British life.
0045 BBC: Recording of the Week. See M 0545.
0101 BBC: Outlook. See M 1405.
0109 Deutsche Welle: Newsline Cologne. See M 1109.
0110 Kol Israel: Thank Goodness It's Friday. See F 2315.
0113 Radio Prague: Newsview. See T 0113.
0120 Radio Prague: The Week's Events in Czechoslovakia. A weekly news review of recent happenings in Czechoslovakia.
0125 BBC: Financial News. See T 0125.
0125 Radio Prague: The Arts in Czechoslovakia. A look at the cultural atmosphere in Czechoslovakia.
0127 Deutsche Welle: Caribbean Report. A weekly look at developments in the Caribbean region.
0130 BBC: Women of the French Revolution. A look at the importance of women during the French revolution (except August 19th, 26th: Feature, programming on various subjects).
0130 Deutsche Welle: Ah Yes; I Remember It Well. See T 0130.
0130 Radio Austria Int'l: Report from Austria. See S 0130.
0134 Deutsche Welle: Random Selection. Larry Wayne takes a look at Germany from the lighter side.
0135 Radio Prague: North American Mailbag Program. Reception reports, musical requests, and listener letters.
0145 BBC: Book Choice. See S 0745.
0150 BBC: New Ideas. See T 0445.
0209 BBC: British Press Review. See S 0209.
0209 Deutsche Welle: Commentary. See S 0109.
0213 Deutsche Welle: International Talking Point. See S 1513.

1800 WCSN: News [M-F]
1803 Radio Jamahiriya, Libya: Headlines
1830 Belize Radio One: Network News
1830 Radio Canada Int'l: News [M-F]
1830 Radio Finland: Northern Report [M-F]
1830 Radio Kuwait: News
1830 Radio Moscow (World Service): News in Brief [A-S]
1830 Radio Netherlands: News [M-A]
1830 Radio New Zealand Int'l: News [M-F]
1830 Swiss Radio Int'l: News
1830 Voice of America: News (Special English)
1830 WCSN: News [M-F]
1847 Radio Jamahiriya, Libya: News
1852 Radio RSA: News in Brief
1900 BBC: News Summary
1900 Deutsche Welle: World News
1900 HCJB: Latin American News [M-F]
1900 Kol Israel: News
1900 KYOI: News [M-F]
1900 Radio Australia: World and Australian
1900 Radio Canada Int'l: News [M-F]
1900 Radio Havana Cuba: Int'l News
1900 Radio Japan: News
1900 Radio Moscow (World Service): News
1900 Radio New Zealand Int'l: News
1900 Radio Portugal: News [M-F]
1900 Radio RSA: News
1900 Spanish National Radio: News
1900 Voice of America: News
1900 WCSN: News [M-F]
1915 Radio Berlin Int'l: News
1930 Radio Havana Cuba: News Update
1930 Radio Moscow (World Service): News in Brief [S]
1930 WCSN: News [M-F]
1935 Radiotelevisione Italiana: News
1945 Radio Berlin Int'l: News
1950 HCJB: News [M-F]
2000 BBC: World News
2000 KYOI: News [S-F]
2000 Radio Australia: International Report
2000 Radio Berlin Int'l: News
2000 Radio Jordan: News
2000 Radio Moscow (World Service): News
2000 Radio New Zealand Int'l: News
2000 Radio RSA: News
2000 Voice of America: News
2000 WCSN: News [M-F]
2025 Radiotelevisione Italiana: News
2030 KYOI: News [M-H]
2030 Radio Korea: News
2030 Radio Moscow (World Service): News in Brief
2030 Radio Netherlands: News [M-A]
2030 WCSN: News [M-F]
2052 Radio RSA: News in Brief
2100 BBC: News Summary
2100 Belize Radio One: News [M-F]
2100 BRT, Brussels: News
2100 Deutsche Welle: World News
2100 KVOH: UPI Radio News
2100 KYOI: News [S-F]
2100 Radio Australia: World and Australian News

program guide

A technician at the mixing board for a Voice of Turkey program.

0215 BBC: Network UK. See T 0215.
0230 BBC: People and Politics. Background to the British political scene.
0234 Deutsche Welle: Man and Environment. A program on all topics relating to the environment in industrial and developing countries.
0241 Radio Portugal: Mailbag or DX/Philately. See F 1611.
0308 Radio Canada Int'l: Innovation Canada. See S 0108.
0309 Deutsche Welle: Newsline Cologne. See M 1109.
0313 Radio Prague: Newsview. See T 0113.
0315 BBC: The World Today. See M 1645.
0320 Radio Prague: The Week's Events in Czechoslovakia. See A 0120.
0325 Radio Prague: The Arts in Czechoslovakia. See A 0125.
0327 Deutsche Welle: Caribbean Report. See A 0127.
0330 BBC: The Vintage Chart Show. Past top ten hits with Jimmy Savile.
0330 Deutsche Welle: Ah Yes; I Remember It Well. See T 0130.
0330 Radio Canada Int'l: SWL Digest. See S 0008.
0334 Deutsche Welle: Random Selection. See A 0134.
0335 Radio Prague: North American Mailbag Program. See A 0135.
0352 Radio Canada Int'l: Music Spot. See S 0030.
0404 Radio Canada Int'l: Spotlight on Science. See H 1234.
0409 Deutsche Welle: Africa Highlight. A weekly feature on an important topic concerning Africa.
0423 Deutsche Welle: Development Forum. Reports and interviews on projects and progress in Africa and Asia.
0430 BBC: Here's Humph! All that jazz with Humphrey Lyttelton.
0434 Deutsche Welle: Science and Technology. See M 0234.
0445 BBC: Personal View. See A 0030.
0509 BBC: Twenty-Four Hours. See S 0509.
0509 Deutsche Welle: Newsline Cologne. See M 1109.
0527 Deutsche Welle: Caribbean Report. See A 0127.
0530 BBC: Financial News. See T 0125.
0530 Deutsche Welle: Ah Yes; I Remember It Well. See T 0130.
0530 Radio Austria Int'l: Report from Austria. See S 0130.
0534 Deutsche Welle: Random Selection. See A 0134.
0540 BBC: Words of Faith. See S 0540.
0545 BBC: The World Today. See M 1645.
0609 Deutsche Welle: Africa Highlight. See A 0409.
0623 Deutsche Welle: Development Forum. See A 0423.
0630 BBC: Meridian. See W 0630.
0634 Deutsche Welle: Science and Technology. See M 0234.
0709 BBC: Twenty-Four Hours. See S 0509.
0730 BBC: From the Weeklies. See F 2315.
0730 Radio Austria Int'l: Report from Austria. See S 0130.
0745 BBC: Network UK. See T 0215.
1109 Deutsche Welle: Panorama. A review of the major events of the week.
1115 BBC: Women of the French Revolution (except August 19th, 26th: Feature, programming on various subjects). See A 0130.
1130 BBC: Meridian. See W 0630.
1130 Radio Austria Int'l: Austrian Coffeetable. A look at the arts, especially music.
1134 Deutsche Welle: Mailbag Africa. Listeners' questions, music requests, and the club corner.
1215 BBC: Multitrack 3. See F 2330.
1245 BBC: Sports Roundup. See S 1330.
1300 Radio Canada Int'l: Canadian Journal. A magazine program on Canadian life.
1309 BBC: Twenty-Four Hours. See S 0509.
1330 BBC: Network UK. See T 0215.
1330 Radio Austria Int'l: Report from Austria. See S 0130.
1345 BBC: Sportsworld. Paddy Feeny presents almost three hours of live sports.
1430 Radio Austria Int'l: Austrian Coffeetable. See A 1130.
1509 Deutsche Welle: Commentary. See S 0109.
1513 Deutsche Welle: Africa This Week. A review of trends and events on the African continent.
1534 Deutsche Welle: Man and Environment. See A 0234.
1609 Deutsche Welle: Panorama. See A 1109.
1623 Deutsche Welle: Development Forum. See A 0423.
1630 Radio Austria Int'l: Report from Austria. See S 0130.
1634 Deutsche Welle: Religion and Society. See S 0409.
2308 Radio Canada Int'l: Innovation Canada. See S 0108.
2309 BBC: Book Choice. See S 0745.
2310 Kol Israel: Spotlight. See S 0010.
2315 BBC: A Jolly Good Show. See T 1515.
2338 Radio Canada Int'l: Coast to Coast. See M 0404.

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2100 Radio Berlin Int'l: News
2100 Radio Canada Int'l: News [A-S]; The World at Six [M-F]
2100 Radio Finland: Northern Report [M-F]
2100 Radio Japan: News
2100 Radio Moscow (World Service): News
2100 Spanish National Radio: News
2100 Swiss Radio Int'l: News
2100 Voice of America: News
2100 WCSN: News [M-F]
2130 Kol Israel: News
2130 KVOH: UPI Headline News
2130 KYOI: News [M-H]
2130 Radio Canada Int'l (Africa): News
2130 Radio Canada Int'l: As It Happens [M-F]
2130 Radio Moscow (World Service): News in Brief [A-S]
2130 Swiss Radio Int'l: News
2130 WCSN: News [M-F]
2200 BBC: Newshour
2200 KVOH: UPI Radio News
2200 KYOI: News [S-H]
2200 Radio Australia: International Report
2200 Radio Berlin Int'l: News
2200 Radio Canada Int'l (Asia/Pacific): News
2200 Radio Canada Int'l: News [A-S]; The World at Six [M-F]
2200 Radio Moscow: News
2200 Radiotelevisione Italiana: News
2200 Voice of America: News
2200 Voice of Free China: News and Commentary
2200 WCSN: News [M-F]
2230 KVOH: UPI Headline News
2230 KYOI: News [M-H]
2230 Radio Moscow (World Service): News in Brief [A-S]
2230 Radio Polonia: News
2230 Voice of America: News (Special English)
2230 WCSN: News [M-F]
2245 Radio Berlin Int'l: News
2300 BBC: World News
2300 Belize Radio One: News [M-F]
2300 Kol Israel: News
2300 KVOH: UPI Radio News
2300 KYOI: News [S-H]
2300 Radio Australia: World and Australian News
2300 Radio Berlin Int'l: News
2300 Radio Canada Int'l: News
2300 Radio for Peace Int'l: News [F]
2300 Radio Japan: News [S-F]
2300 Radio Moscow: News
2300 Radio New Zealand Int'l: News
2300 Voice of America: News
2300 Voice of Turkey: News
2300 WCSN: News [M-F]
2330 BRT, Brussels: News
2330 KVOH: UPI Headline News
2330 KYOI: News [M-H]
2330 Radio Canada Int'l: As It Happens [M-F]; News [A]
2330 Radio for Peace Int'l: News [M]
2330 Radio Korea: News
2330 Radio Moscow (World Service): News in Brief [M]
2330 Radio New Zealand Int'l: News [S-H]
2330 WCSN: News [M-F]
2335 Voice of Greece: News [S]

MT Monitoring Team

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frequency section

0000 UTC [8:00 PM EDT/5:00 PM PDT]

0000-0030		BBC, London, England	5975	6005	6175	7325
			9590	9915	12095	15260
			15310	15360	17875	
0000-0030		Kol Israel, Jerusalem	11605	15615	15640	
0000-0030		Radio Berlin Int'l, East Germany	6080	11890		
0000-0030		Radio Korea (South), Seoul	15575			
0000-0030	M	Radio Norway, Oslo	11845			
0000-0045		Radio Yugoslavia, Belgrade	9620	11735	15105	
0000-0045		WINB, Red Lion, Pennsylvania	15145			
0000-0050		Radio Pyongyang, North Korea	15115	15160		
0000-0055		Radio Beijing, PR China	15130	17715	17855	
0000-0100		All India Radio, New Delhi	6055	7215	9535	9910
			11715	11745	15110	
0000-0100		CBC Northern Quebec Service	6195	9625		
0000-0100		CBN, St. John's, Newfoundland	6160			
0000-0100		CBU, Vancouver, British Colombia	6160			
0000-0100		CFCF, Montreal, Quebec	6005			
0000-0100		CFCN, Calgary, Alberta	6030			
0000-0100		CHNS, Halifax, Nova Scotia	6130			
0000-0100		Christian Science World Service	7400	9850	13760	
0000-0100		CKWX, Vancouver, British Colombia	6080			
0000-0100		CFRB, Toronto, Ontario	6070			
0000-0100		FEBC, Manila, Philippines	15445			
0000-0100		KSDA, Guam	15125			
0000-0100	T-A	KVOH, Rancho Simi, California	17775			
0000-0100		Radio Australia, Melbourne	15140	15160	15240	15320
			17750	17795	21740	
0000-0100		Radio Canada Int'l, Montreal	5960	9755		
0000-0100		Radio Havana Cuba	11820			
0000-0100		Radio Luxembourg	6090			
0000-0100		Radio Moscow	11845	12025	17850	17880
			21585	21690	21790	
0000-0100		Radio Moscow N. America Service	9530	9765	11710	11730
			11750	11850	11930	15290
0000-0100		Radio New Zealand, Wellington	15150	17705		
0000-0100		Radio Thailand, Bangkok	9655	11905		
0000-0100		Radio Tonga, Tonga	5050			
0000-0100		SBC Radio One, Singapore	5010	5052	11940	
0000-0100		Spanish Foreign Radio, Madrid	9630	15110		
0000-0100	T-S	Superpower KUSW, Utah	15580			
0000-0100		Voice of America, Washington	5995	6130	9455	9775
			9815	11580	11695	11740
			15205			
0000-0100		WHRI, Noblesville, Indiana	7365	9495		
0000-0100		WRNO, New Orleans, Louisiana	7355			
0000-0100		WYFR, Oakland, California	5985	9505	15170	
0030-0045		BBC, London, England*	6195	7235	9570	11945
			15360	17875		
0030-0100		BBC, London, England	5975	6005	6175	7325
			9515	9580	9915	9590
			11955	12095	15260	
0030-0100		HCJB, Quito, Ecuador	9745	11775	15155	15230
0030-0100		Radio Budapest, Hungary	6110	9520	9585	9835
			11910	15160		
0030-0100		Radio Netherlands, Hilversum	6020	6165	15315	
0030-0100		SLBC, Colombo, Sri Lanka	6005	9720		
0035-0040		All India Radio, New Delhi	3925	4860		
0045-0100		Radio Korea (South), Seoul	15575			
0045-0100		Radio New Zealand, Wellington	15150	17705		
0048-0100		WINB, Red Lion, Pennsylvania	15145			
0050-0100		Vatican Radio, Vatican City	9605	11780	15180	

0100 UTC [9:00 PM EDT/6:00 PM PDT]

0100-0110		Vatican Radio, Vatican City	9605	11780	15180	
0100-0115		All India Radio, New Delhi	6055	7215	9535	9910
			11715	11745	15110	
0100-0120		RAI, Rome, Italy	9575	11800		
0100-0130		Kol Israel, Jerusalem	11605	15615	15640	
0100-0130	W,A	Radio Budapest, Hungary	6110	9520	9585	9835
			11910	15160		
0100-0130		Radio Canada Int'l, Montreal	9535	11845	11940	13720
0100-0130		Radio Japan, Tokyo	17825			
0100-0130		Radio Netherlands, Hilversum	6020	6165	15315	

LEGEND

- The first four digits of an entry are the broadcast start time in UTC. The second four digits represent the end time.
- In the space between the end time and the station name is the broadcast schedule.

S=Sunday M=Monday T=Tuesday W=Wednesday
H=Thursday F=Friday A=Saturday

If there is no entry, the broadcasts are heard daily. If, for example, there is an entry of "M," the broadcast would be heard only on Mondays. An entry of "M,W,F" would mean Mondays, Wednesdays and Fridays only. "M-F" would mean Mondays through Fridays. "TEN" indicates a tentative schedule and "TES" a test transmission.

- [ML] after a frequency indicates a multi-lingual transmission containing English-language programs.
- The last entry on a line is the frequency. Codes here include "SSB" which indicates a Single Sideband transmission, and "V" for a frequency that varies. [ML] after a frequency indicates a multi-lingual transmission containing English-language programs.
- v after a frequency indicates that it varies
- Notations of USB and LSB (upper and lower sideband transmissions) usually refer only to the individual frequency after which they appear.
- Listings followed by an asterisk (*) are for English lessons and do not contain regularly scheduled programming.

We suggest that you begin with the lower frequencies that a station is broadcasting on and work your way up the dial. Remember that there is no guarantee that a station will be audible on any given day. Reception conditions can change rapidly, though, and if it is not audible one night, it may well be on another.

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 (the are divided into east coast, midwest and west coast of North America). Then look for the one most closely describing the geographic location of the station you want to hear.

Once you've located the correct charts, look along the horizontal axis of the graph for the time that you are listening. The top line of the graph shows the Maximum Useable Frequency [MUF] and the lower line the Lowest Useable Frequency [LUF] as indicated on the vertical axis of the graph.

While there are exceptions to every rule (especially those regarding shortwave listening), you should find the charts helpful in determining the best times to listen for particular regions of the world. Good luck!

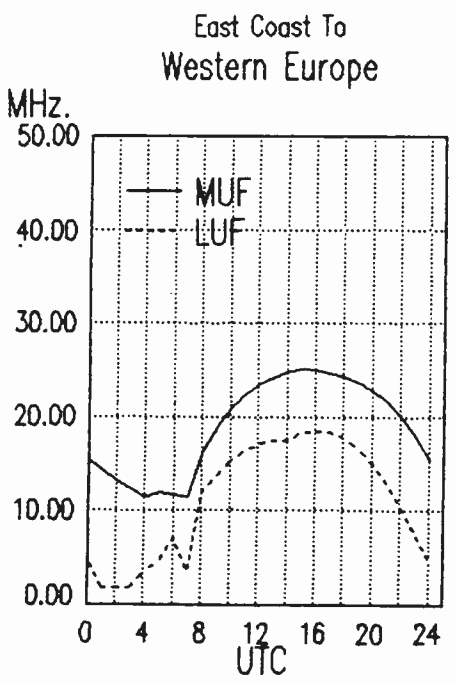
frequency section

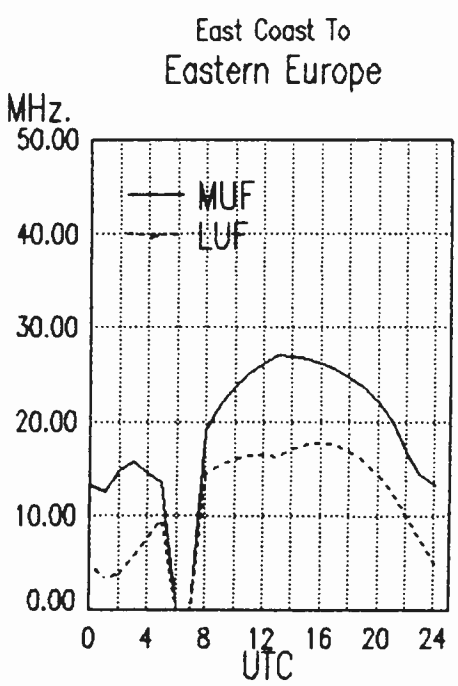
0100-0130	Radio Sweden, Stockholm	15405 17800
0100-0130	Laotian National Radio	7113v
0100-0130 S,M	WINB, Red Lion, Pennsylvania	15145
0100-0145	Radio Berlin Int'l, East Germany	6080 11890
0100-0150	Deutsche Welle, West Germany	6040 6085 6145 9565
		9735 11865 15105
0100-0200	BBC, London, England	5975 6005 6175 7325
		9410 9590 9915 12095
		15260 17815
0100-0200	CBC Northern Quebec Service	6195 9625
0100-0200	CBN, St. John's, Newfoundland	6160
0100-0200	CBU, Vancouver, British Colombia	6160
0100-0200	CFCF, Montreal, Quebec	6005
0100-0200	CFCN, Calgary, Alberta	6030
0100-0200	CHNS, Halifax, Nova Scotia	6130
0100-0200	Christian Science World Service	7400 9850 13760
0100-0200	CKWX, Vancouver, British Colombia	6080
0100-0200	CFRB, Toronto, Ontario	6070
0100-0200	FEBC, Manila, Philippines	15445
0100-0200	HCJB, Quito, Ecuador	9745 11775 15155 15230
0100-0200 T-A	KVOH, Rancho Simi, California	13695
0100-0200	Radio Australia, Melbourne	15160 15180 15240 15320
		15395 17715 17795
		17750 21740
0100-0200	Radio Havana Cuba	11820
0100-0200	Radio Japan, Tokyo	5960 17810 17835 17845
0100-0200	Radio Luxembourg	6090
0100-0200	Radio Moscow	11845 15590 17600 17655
		17825 17850 17860 17880
		17890 21585 21690 21790
0100-0200	Radio Moscow, N. American Service	9530 9765 11710 11730
		11750 11850 15290 15330
0100-0200	Radio New Zealand, Wellington	15150 17705
0100-0200 T-A	Radio for Peace, Costa Rica	13663 21565 25945(A)
0100-0200	Radio Prague, Czechoslovakia	5930 7345 9540 9625
		11685 11990 13715 15540
0100-0200	Radio Thailand, Bangkok	9655 11905
0100-0200	Radio Tonga, Tonga	5050
0100-0200	RAE, Buenos Aires, Argentina	9690
0100-0200	SBC Radio One, Singapore	5052 11940
0100-0200	SLBC, Colombo, Sri Lanka	6005 9720 15425
0100-0200	Spanish Foreign Radio, Madrid	9630 15110
0100-0200 T-S	Superpower KUSW, Utah	11695
0100-0200	Voice of America, Washington	5995 6130 7205 9455
		9740 9775 9815 11580
		11740 15160 15205 17735
		18157 USB
0100-0200	Voice of Indonesia, Jakarta	9680 11790
0100-0200	WHRI, Noblesville, Indiana	7365 9495
0100-0200	WRNO New Orleans, Louisiana	7355
0100-0200	WYFR, Oakland, California	5985 9505 9680 15170
0130-0140 T-S	Voice of Greece, Athens	9395 9420 11645
0130-0145WHAM	Radio Budapest, Hungary	6110 9520 9585 9835
		11910 15160
0130-0155	Radio Austria Int'l, Vienna	9870 9875 13730
0130-0200	Radio Baghdad, Iraq	11810 11945
0130-0200 S,M	Radio Canada Int'l, Montreal	9535 11845 11940 13720
0130-0200	Radio Veritas Asia, Philippines	15330 15365
0130-0200	WINB, Red Lion, Pennsylvania	15145
0145-0200	Radio Berlin Int'l, East Germany	6080 11785 11890 15125

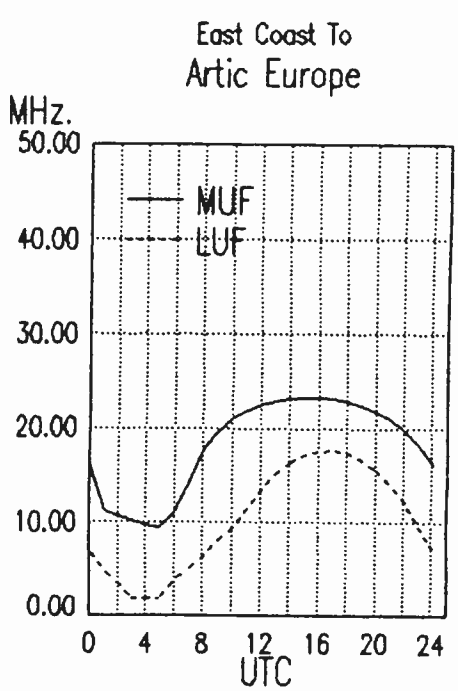
0200 UTC [10:00 PM EDT/7:00 PM PDT]

0200-0215	Vatican Radio, Vatican City	6145 7125 9650
0200-0230	Burma Bcasting Service, Rangoon	7185
0200-0230	Radio Berlin Int'l, East Germany	6080 11785 11890 15125
0200-0230	Radio Kiev, Ukrainian SSR	11675 11790 12000 13645
		15180 15455
0200-0230	Swiss Radio Int'l, Berne	6095 6135 9725 9885
		12035 17730
0200-0250	Deutsche Welle, West Germany	6035 7285 9690 11945
		15205 15235 17770
0200-0250	Radio Bras, Brasilia, Brazil	11745v
0200-0255	Radio Bucharest, Romania	6155 9510 9570 11830
		11940 15380
0200-0300	BBC, London, England	5975 6005 6175 7325
		9410 9515 9590 9915
		12095 15260 15310 17875
0200-0300	CBC Northern Quebec Service	6195 9625
0200-0300	CBN, St. John's, Newfoundland	6160
0200-0300	CBU, Vancouver, British Colombia	6160
0200-0300	CFCF, Montreal, Quebec	6005
0200-0300	CFCN, Calgary, Alberta	6030
0200-0300	CFRB, Toronto, Ontario	6070
0200-0300	CHNS, Halifax, Nova Scotia	6130
0200-0300	Christian Science World Service	9455 9850 13760
0200-0300	CKWX, Vancouver, British Colombia	6080
0200-0300	HCJB, Quito, Ecuador	9745 11775 15155

East Coast

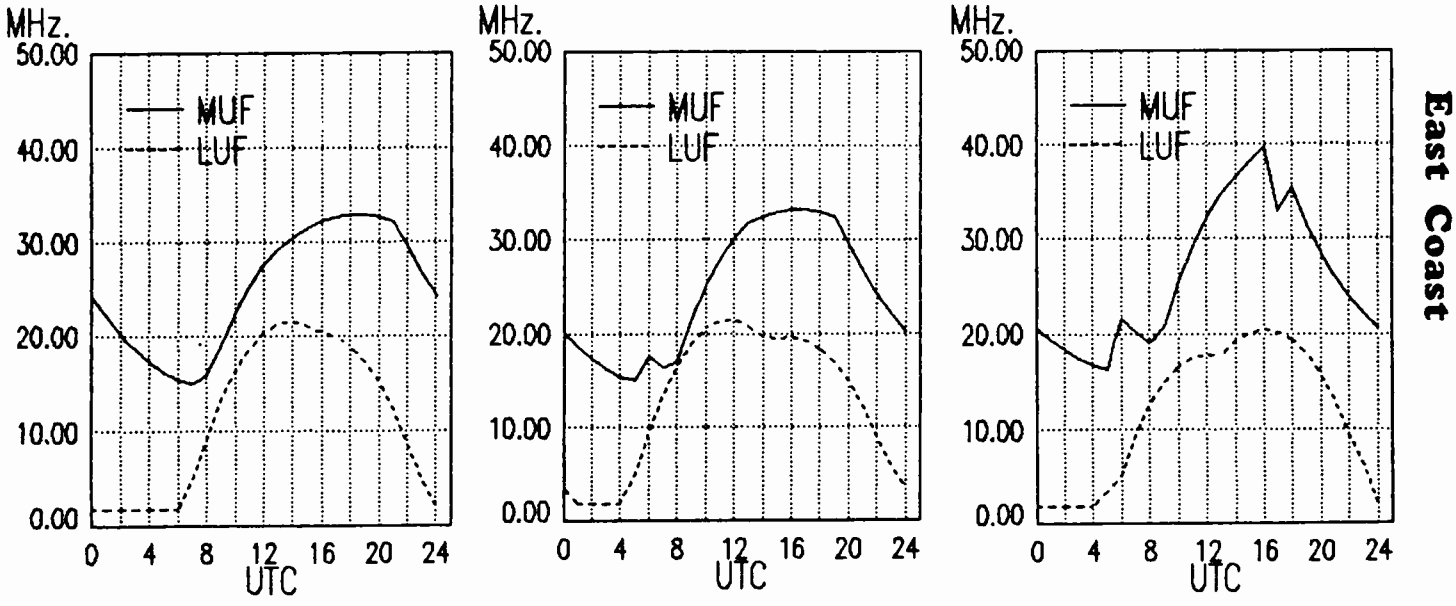






0200-0300	A,S	KSDA, Guam	17865			
0200-0300	T-A	KVOH, Rancho Simi, California	13695			
0200-0300		Radio Australia, Melbourne	15160	15180	15240	15320
			15395	17715	17750	17795
			21740			
0200-0300		Radio Baghdad, Iraq	11810	11945		
0200-0300		Radio Cairo, Egypt	9475	9675		
0200-0300	T-A	Radio Canada Int'l, Montreal	9535	9755	11845	11940
0200-0300		Radio Havana Cuba	9710	11820		
0200-0300		Radio Luxembourg	6090			
0200-0300		Radio Moscow, USSR	12025	13745	17600	17880
			21690			
0200-0300		Radio Moscow N. America Service	9530	9765	11710	11730
			11750	11850	11930	15290
			15330	15540	17860	
0200-0300		Radio Orion, South Africa	3955			
0200-0300	T-A	Radio for Peace, Costa Rica	13663	21565	25945(A)	
0200-0300	A	Radio New Zealand, Wellington	15150	17705		
0200-0300		Radio RSA, South Africa	6010	9580	9615	
0200-0300		Radio Thailand, Bangkok	9655	11905		
0200-0300		Radio Tonga, Tonga	5050			
0200-0300		SBC Radio One, Singapore	5052	11940		
0200-0300		SLBC, Colombo, Sri Lanka	6005	9720	15425	
0200-0300	T-S	Superpower KUSW, Utah	11695			
0200-0300		Voice of America, Washington	5995	6035	7205	9740
			15160	15205	18157	USB
0200-0300		Voice of Asia, Taiwan	7285			
0200-0300		Voice of Free China, Taiwan	5950	7445	9680	9765
			11740	11860	15345	
0200-0300		Voice of Kenya, Nairobi	6045			
0200-0300		WINB, Red Lion, Pennsylvania	15145			
0200-0300		WHRI, Noblesville, Indiana	7365	9495		
0200-0300		WRNO, New Orleans, Louisiana	7355			
0200-0300		WYFR, California	5985	9505	15170	
0215-0220		Radio Nepal, Kathmandu	5005	7165		
0230-0240		Port Moresby, Papua New Guinea	3925	4890	5960	5985
			6020	6040	6080	6140
			9520			
0230-0245		Radio Pakistan, Islamabad	7010	11570	15115	15580
			17660			
0230-0300		Radio Berlin Int'l, E. Germany	9730	13610	15240	
0230-0300		Radio Finland, Helsinki	11755	15185		
0230-0300	T-A	Radio Portugal, Lisbon	6060	6080	9600	9680
			9705	11840		

0240-0250		All India Radio, New Delhi	3905	4860	4880	4895
			5960	5990	6110	6120
			7195	7295	9550	9610
			11830	11870	15305	
0245-0300		Radio Korea, Seoul, South Korea	9640	15575		
0255-0300		Radio Yerevan, Armenian SSR	13645	15455		



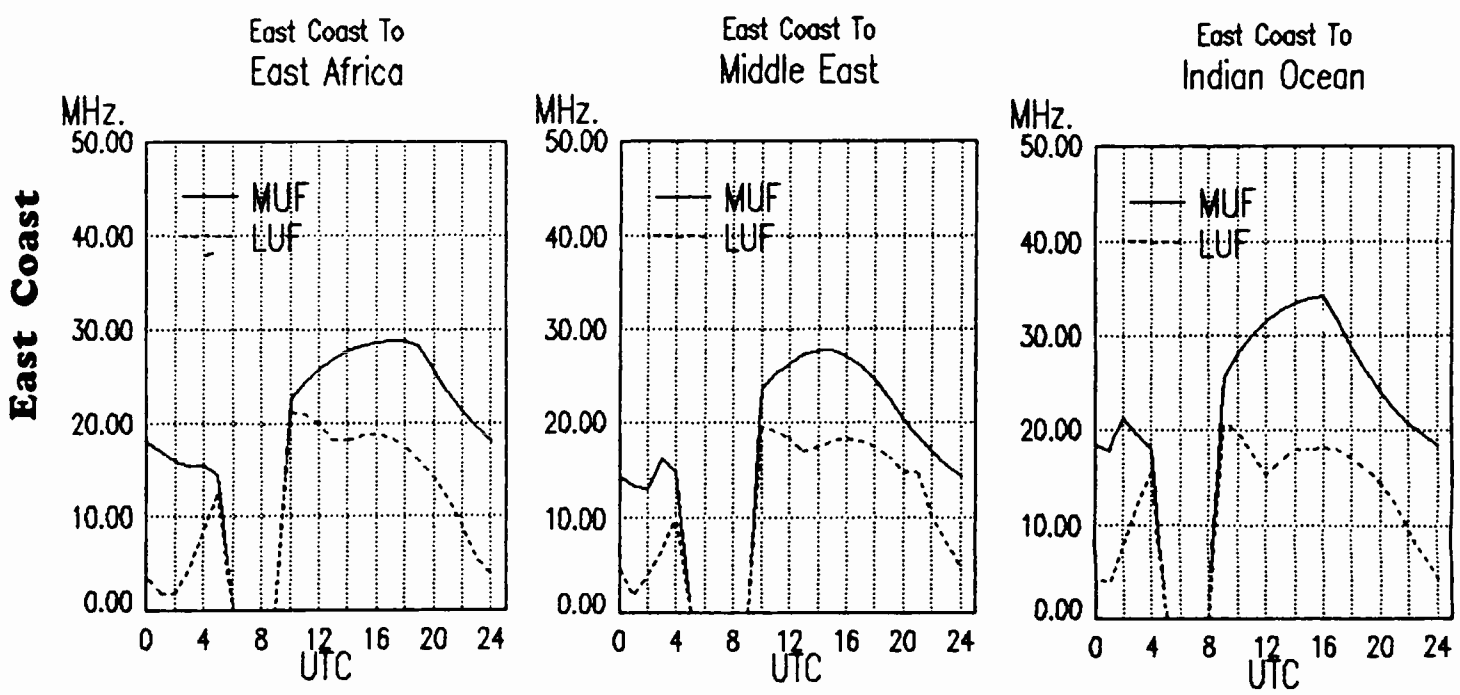
frequency section

0300 UTC [11:00 PM EDT/8:00 PM PDT]

0300-0315		Radio Berlin Int'l, E. Germany	6125 11750 13610
0300-0330		WINB, Red Lion, Pennsylvania	15145
0300-0307		Radio Pakistan, Islamabad	5090 5930 7095
0300-0330		BBC, London, England	3955 5975 6005 6175 6195 7325 9410 9660 9915 11750 11845 12095 15260 15280 15310 15420 17815 17875
0300-0330		Radio Cairo, Egypt	9475 9675
0300-0330		Radio Japan, Tokyo	9645 15325 17765 17825 17835
0300-0330		Radio Sweden Int'l, Stockholm	9695 11705
0300-0345		Radio Berlin Int'l, East Germany	11785 15125
0300-0345	A	Radio New Zealand, Wellington	15150 17705
0300-0350		Deutsche Welle, West Germany	6085 9545 9605 9700 11810 15205
0300-0350		Radio Baghdad, Iraq	11810 11945
0300-0355		Radio Beijing, China	9690 15130 15510 17855
0300-0400		CBC Northern Quebec Service	6195 9625 9770 11715 15510 17855
0300-0400		CBN, St. John's, Newfoundland	6160
0300-0400		CBU, Vancouver, British Colombia	6160
0300-0400		CFCF, Montreal, Quebec	6005
0300-0400		CFCN, Calgary, Alberta	6030
0300-0400		CHNS, Halifax, Nova Scotia	6130
0300-0400		Christian Science World Service	9455 9850 13760
0300-0400		CKWX, Vancouver, British Colombia	6080
0300-0400		CFRB, Toronto, Ontario	6070
0300-0400		HCJB, Quito, Ecuador	9745 11775 15155
0300-0400	T-A	KVOH, Rancho Simi, California	13695
0300-0400		La Voz Evangelica, Honduras	4820
0300-0400		Radio Australia, Melbourne	11945 15160 15240 15320 15395 17715 17750 17795 21740
0300-0400		Radio Havana Cuba	9710 11820
0300-0400		Radio Japan, Tokyo	17765 17810 17835
0300-0400		Radio Moscow, USSR	9530 9765 11675 11710 11850 11930 12010 12050 15180 15330 15405 15425 15455 17860 17880
0300-0400	T-A	Radio for Peace, Costa Rica	13660v 21565 25945
0300-0400		Radio Prague, Czechoslovakia	5930 7345 9540 11685 11990 13715 15540
0300-0400		Radio Sofia, Bulgaria	11765 15290 17825
0300-0400		Radio Thailand, Bangkok	9655 11905
0300-0400		SBC Radio One, Singapore	5052 11940
0300-0400		SLBC, Colombo, Sri Lanka	6005 9720 15425
0300-0400	T-S	Superpower KUSW, Utah	11695
0300-0400		Trans World Radio, Bonaire	9535 11930
0300-0400		Voice of America, Washington	5995 6035 7280 9525 9575 11835
0300-0400		Voice of Free China, Taiwan	5950 7445 9680 11745 15345
0300-0400		Voice of Kenya, Nairobi	6045
0300-0400		Voice of Turkey, Ankara	9445 17760
0300-0400		WHRI, Noblesville, Indiana	7365 9495
0300-0400		WMLK, Bethel, Pennsylvania	9465
0300-0400		WRNO, New Orleans, Louisiana	6185
0300-0400		WYFR Satellite Net, California	5985 9505 15566
0310-0330		Vatican Radio, Vatican City	11725
0315-0345		Radio France Int'l, Paris	3965 5990 7135 7280 9550 9745 9790 11670 11700 11790 11995 15135 15300
0330-0400		BBC, London, England	3955 5975 6005 6175 6195 9410 9915 12095 15420 17815
0330-0400		Radio Netherland, Hilversum	6165 9590
0330-0400	S,M	WINB, Red Lion, Pennsylvania	15145
0335-0400		Radio New Zealand, Wellington	15150 17705
0330-0400		Radio Tanzania, Dar es Salaam	9684
0330-0400		Radio Tirana, Albania	9500
0330-0400		United Arab Emirates Radio	11940 15435 15555 17890
0335-0340		All India Radio, New Delhi	3905 4860 9610 11830 11870 11890 15305
0340-0350	M-A	Voice of Greece, Athens	7430 9395 9420
0345-0400		Radio Berlin Int'l, East Germany	11785 15125
0350-0400		RAI, Rome, Italy	15330 17795 21610

0400 UTC [12:00 AM EDT/9:00 PM PDT]

0400-0405		Radio Uganda, Kampala	4976 5026
0400-0410		Radio Thailand, Bangkok	9655 11905
0400-0410		RAI, Rome, Italy	6155 11905 15330

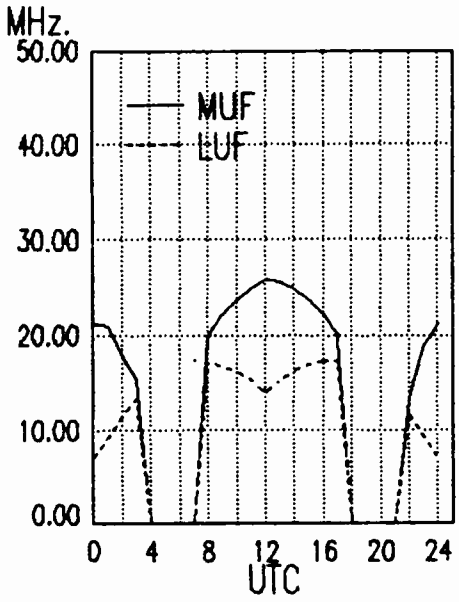


0400-0415		Kol Israel, Jerusalem	15640	17575	17630	17685
0400-0420		Radio Botswana, Gabarone	4820			
0400-0420	T-S	Radio Zambia, Lusaka	3345	6165		
0400-0425		Radio Bucharest, Romania	6155	9510	9570	11830
			11940	15380		
0400-0425		Radio Netherland, Hilversum	6165	9590		
0400-0430		BBC, London, England	3955	5975	6005	6195
			7105	9410	9540	9580
			9600	9915	12095	15070
			15420	17815	17885	
0400-0430		La Voz Evangelica, Honduras	4820			
0400-0430		Radio Berlin Int'l, East Germany	11785	15125		
0400-0430		SLBC, Colombo, Sri Lanka	6005	9720	15425	
0400-0430		Radio Tanzania, Dar es Salaam	9684			
0400-0430		Swiss Radio Int'l, Berne	6135	9725	9885	12035
0400-0430		Trans World Radio, Bonaire	9535	11930		
0400-0430	S,M	WINB, Red Lion, Pennsylvania	15145			
0400-0450		Deutsche Welle, West Germany	7150	7225	9565	9765
			15265			
0400-0450		Radio Pyongyang, North Korea	15160	15180		
0400-0455		Radio Beijing, China	11685	11840	15195	
0400-0500		CBC Northern Quebec Service	6195	9625		
0400-0500		CBN, St. John's, Newfoundland	6160			
0400-0500		CBU, Vancouver, British Colombia	6160			
0400-0500		CFCF, Montreal, Quebec	6005			
0400-0500		CFCN, Calgary, Alberta	6030			
0400-0500		CHNS, Halifax, Nova Scotia	6130			
0400-0500		Christian Science World Service	9455	9870	13760	
0400-0500		CKWX, Vancouver, British Colombia	6080			
0400-0500		CFRB, Toronto, Ontario	6070			
0400-0500		FEBC, Manila, Philippines	11850			
0400-0500		HCJB, Quito, Ecuador	11775	15155		
0400-0500		Radio Australia, Melbourne	11910	15160	15240	15320
			17715	17795	21740	
0400-0500		Radio Havana Cuba	5965	9710	11760	11820
0400-0500		Radio Moscow, USSR	9765	11675	11690	11845
			11850	12050	13645	13685
			13710	15180	15230	15280
			15320	15425	15455	17860
			17880	21585		
0400-0500		Radio Moscow North America Svc	15405	15425	15540	
0400-0500		Radio New Zealand, Wellington	15150	17705		
0400-0500		Radio Tonga, Tonga	5050			
0400-0500		Radio 5, South Africa	4880	11880		
0400-0500		SBC Radio One, Singapore	5052	11940		
0400-0500	T-S	Superpower KUSW, Utah	11695			
0400-0500		Voice of America, Washington	3980	5995	6030	6040
			7170	7200	7280	9525
			9540	9575	11835	15205
0400-0500		Voice of Kenya, Nairobi	6045			
0400-0500V		Voice of Nicaragua, Managua	6100			
0400-0500		WHRI, Noblesville, Indiana	7365	9495		
0400-0500		WMLK, Bethel, Pennsylvania	9465			
0400-0500		WRNO, New Orleans, Louisiana	6185			
0400-0500		WYFR Satellite Net, California	5985	9520		
0425-0440		RAI, Rome, Italy	5990	7275		
0430-0455		Radio Netherlands, Hilversum	9895	13700		
0430-0500		BBC, London, England	3955	5975	6005	7185
			9410	9510	9580	9600
			11940	12095	15070	15280
			15245	15420	17815	
0430-0500		BBC, London, England*	7210	9750	11945	
0430-0500		Radio Tirana, Albania	9480	11835		
0430-0500	S,M	Trans World Radio, Bonaire	9535	11930		
0430-0500		Trans World Radio, Swaziland	3205	7205		
0432-0500	A,M	FEBA, Seychelles	15325	17820	(irr)	
0450-0500		Voice of Nigeria, Lagos	7255			

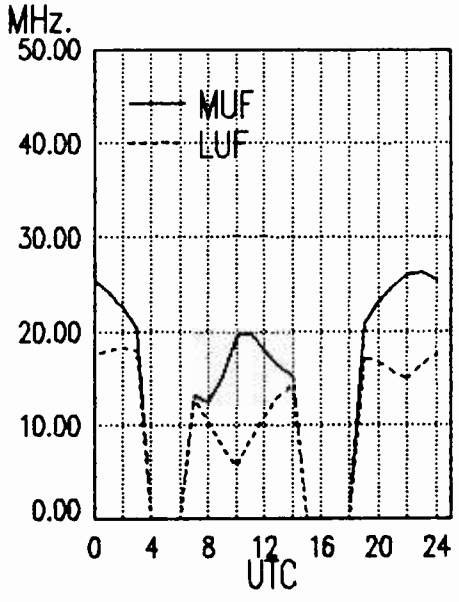
0500 UTC [1:00 AM EDT/10:00 PM PDT]

0500-0510		Radio Lesotho, Maseru	4800			
0500-0510	M-A	Radio Zambia, Lusaka	3345	6165		
0500-0515		GBC, Accra, Ghana	4915			
0500-0515		Vatican Radio, Vatican City	9645	11740	15190	
0500-0530	S,M	Trans World Radio, Bonaire	9535	11930		
0500-0530		Trans World Radio, Swaziland	3205	5055	7210	
0500-0545		Radio Berlin Int'l, East Germany	5965	6115	9645	11810
			13610			
0500-0550		Deutsche Welle, West Germany	6130	9670	9700	9845
			11705	11845		
0500-0600		BBC, London, England	5975	6005	6195	9410
			9510	9600	9915	11940
			12095	15070	15420	17740
			17815	17885	21470	
0500-0600		CBC Northern Quebec Service	6195	9625		
0500-0600		CBU, Vancouver, British Colombia	6160			
0500-0600		CFCF, Montreal, Quebec	6005			
0500-0600		CFCN, Calgary, Alberta	6030			

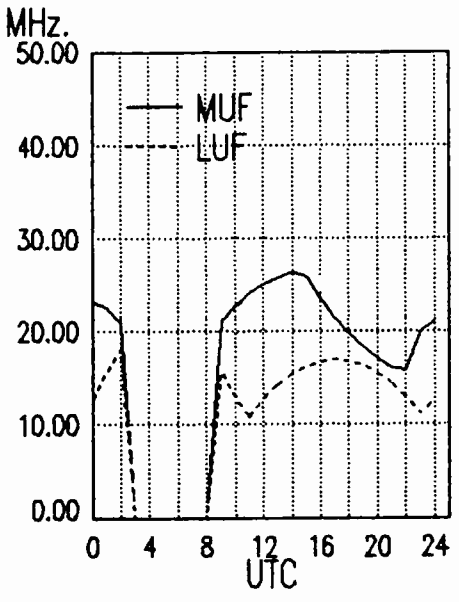
East Coast To
Central Asia



East Coast To
Far East



East Coast To
South East Asia

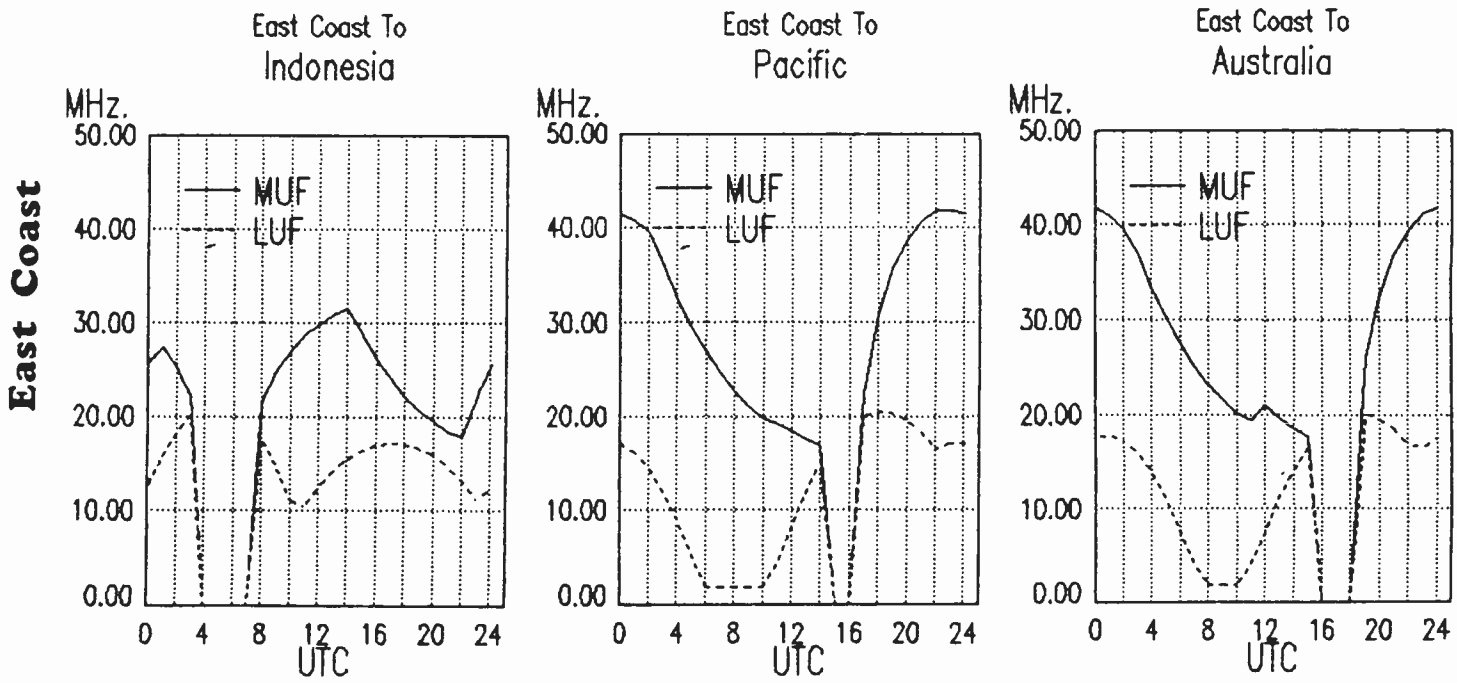


frequency section

0500-0600		CHNS, Halifax, Nova Scotia	6130			
0500-0600		Christian Science World Service	9455	9870	13760	
0500-0600		CKWX, Vancouver, British Colombia	6080			
0500-0600		CFRB, Toronto, Ontario	6070			
0500-0600		FEBC, Manila, Philippines	11850			
0500-0600		HCJB, Quito, Ecuador	6230	9745	11775	
0500-0600		Radio 5, South Africa	4880	11880		
0500-0600		Radio Australia, Melbourne	11910	15160	15240	15320
			17715	17750	17795	21740
0500-0600		Radio Havana Cuba	5965	11760	11820	
0500-0600		Radio Japan, Tokyo	15195	15270	17765	17810
			17825			
0500-0600		Radio Kuwait	15345			
0500-0600		Radio Moscow, USSR	9765	12050	13710	15180
			15230	15280	15320	15405
			15445	15540	17570	17600
			17635	17860	17880	
0500-0600		Radio New Zealand, Wellington	15150	17705		
0500-0600		Radio Thailand, Bangkok	9655	11905		
0500-0600		Radio Tonga, Tonga	5050			
0500-0600	S,M	Radio Zambia, Lusaka	11880			
0500-0600		SBC Radio One, Singapore	5052	11940		
0500-0600		Spanish Foreign Radio, Madrid	9630			
0500-0600	A,S	Superpower KUSW, Utah	6175			
0500-0600	S	Swaziland Commercial Radio	6155	9705		
0500-0600		Voice of America, Washington	6035	7170	7200	7280
			9540	9575	15205	
0500-0600		Voice of Kenya, Nairobi	6045			
0500-0600	IRR	Voice of Nicaragua, Managua	6100			
0500-0600		Voice of Nigeria, Lagos	7255	15120	15185	
0500-0600		WINB, Red Lion, Pennsylvania	15145			
0500-0600		WHRI, Noblesville, Indiana	7365	9495		
0500-0600	M-A	WMLK, Bethel, Pennsylvania	9465			
0500-0600		WYFR Satellite Net, California	5985	11580	15566	17640
0510-0520		Radio Botswana, Gaborone	3356	4820	7255	
0515-0530	M-F	Radio Canada Int'l, Montreal	6055	6140	7155	9740
			9760	11840	15225	
0515-0600		Radio Berlin Int'l, East Germany	15240	17880	21540	
0527-0600	F	FEBA, Seychelles	17820			
0530-0545		BBC, London, England*	3990	6050	6140	7210
			9750			
0530-0555		Radio Austria Int'l, Vienna	6015			
0530-0555		Radio Bucharest, Romania	9640	11840	11940	15340
			15380	17720		
0530-0600		Radio Tirana, Albania	7300			
0530-0600		Trans World Radio, Swaziland	5055	7210		
0530-0600		UAE Radio, United Arab Emirates	15435	17775	21700	
0545-0600		Radio Berlin Int'l, East Germany	15240	17800	21645	
0545-0600	M-F	Radio Canada Int'l, Montreal	6055	6140	7155	9740
			9760	11840	15225	
0555-0600		Ghana Broadcasting Corp., Accra	4915			
0555-0600		Voice of Malaysia, Kuala Lumpur	6175	9750	15295	

0600 UTC [2:00 AM EDT/11:00 PM PDT]

0600-0615		Radio Ghana, Accra	3366	4915		
0600-0615	M-A	Radio Zambia, Lusaka	6165	7235		
0600-0620		Vatican Radio, Vatican City	6185	9645		
0600-0630	F	FEBA, Mahe, Seychelles	17820			
0600-0630		Laotian National Radio	7113			
0600-0630		Radio Australia, Melbourne	11910	15160	15240	15395
			17715	17750	21740	
0600-0630		Radio Berlin Int'l, East Germany	15240	17880	21645	
0600-0630		Trans World Radio, Swaziland	6070			
0600-0630		Voice of Kenya, Nairobi	6045			
0600-0645		Radio Berlin Int'l, East Germany	5965	11810		
0600-0645	S	Radio Cameroon, Yaounde	4850			
0600-0650		Deutsche Welle, West Germany	11765	13790	15185	17875
0600-0650		Radio Pyongyang, North Korea	13650	15160	15180	
0600-0700		BBC, London, England	5975	6005	6195	7150
			9410	9580	9600	9610
			9640	9760	11925	
			11940			
			12095	15070	15280	21470
0600-0700		CBC Northern Quebec Service	6195	9625		
0600-0700		CBU, Vancouver, British Colombia	6160			
0600-0700		CFCF, Montreal, Quebec	6005			
0600-0700		CFCN, Calgary, Alberta	6030			
0600-0700		CHNS, Halifax, Nova Scotia	6130			
0600-0700		Christian Science World Service	9455	9840	11980	
0600-0700		CKWX, Vancouver, British Colombia	6080			
0600-0700		CFRB, Toronto, Ontario	6070			
0600-0700		HCJB, Quito, Ecuador	6230	9745	11775	
0600-0700		King of Hope, South Lebanon	6215			
0600-0700		Radio Havana Cuba	11835			
0600-0700		Radio Jordan, Amman	9560			
0600-0700		Radio Korea, Seoul, South Korea	7275	9570	11830	
0600-0700		Radio Kuwait	15345			

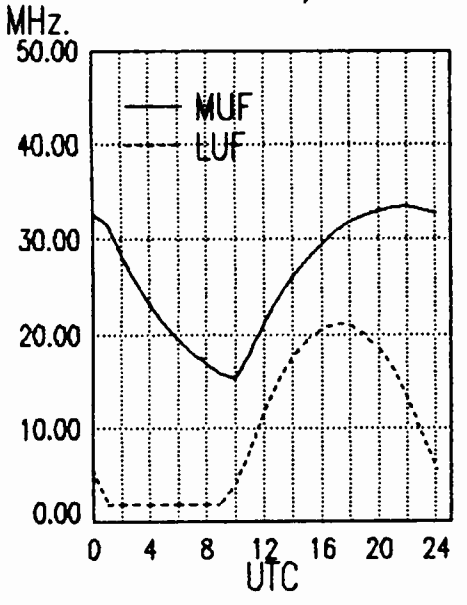


0600-0700		Radio Moscow, USSR	9765	13605	13710	15180
			15405	15425	15480	17635
			17665	17570	21645	
0600-0700		Radio New Zealand, Wellington	15150	17705		
0600-0700	A,S	Radio Thailand, Bangkok	9655	11905		
0600-0700		Radio Tonga, Tonga	5050			
0600-0700	IRR	Radio Zambia, Lusaka	11880			
0600-0700		Radio 5, South Africa	11880			
0600-0700		SBC Radio One, Singapore	5052	11940		
0600-0700	S	Superpower KUSW, Utah	6175			
0600-0700		Voice of America, Washington	6035	6080	6125	7170
			7200	7280	7325	9530
			9575	9550	11915	
0600-0700		Voice of Asia, Taiwan	7285			
0600-0700		Voice of Malaysia, Kuala Lumpur	6175	9750	15295	
0600-0700		Voice of Nicaragua, Managua	6100			
0600-0700		Voice of the Mediterranean	9765			
0600-0700		Voice of Nigaria, Lagos	15185			
0600-0700		WHRI, Noblesville, Indiana	9495	9620		
0600-0700	M-A	WMLK, Bethel, Pennsylvania	9465			
0600-0700		WYFR, Oakland, California	13760	11580		
0600-0700		WYFR Satellite Net, California	5985	6065	7355	9852.5
			17640			
0615-0630	M-A	Vatican Radio, Vatican City	15190	17730		
0625-0700		Trans World Radio Monte Carlo	7105			
0630-0635	M-F	RTVC, Brazzaville, Congo	15190	Irr		
0630-0700		AWR, Forli, Italy	7125			
0630-0700		Radio Australia, Melbourne	11910	15160	15240	15395
			17715	17750	21740	
0630-0700		Radio Bucharest, Romania	21600			
0630-0700		Radio Finland, Helsinki	6120	9560	11755	15270
0630-0700		Radio Polonia, Warsaw, Poland	6135	7270	15120	
0630-0700		Swiss Radio Int'l, Berne	3985	6165	9535	12030
			15430	17570		
0630-0700		Trans World Radio, Swaziland	5055	6070	7210	9725
0630-0700	A,S	Voice of Kenya, Nairobi	7270			
0645-0700		BBC, London, England*	6150	7260	11945	
0645-0700		Radio Ghana, Accra	6130			
0645-0700		Radio Bucharest, Romania	11940	15250	15335	17790
			17805	21665		

0700 UTC [3:00 AM EDT/12:00 PM PDT]

0700-0708		WHRI, Noblesville, Indiana	9495	9620		
0700-0710		Radio Bucharest, Romania	11940	15250	15335	17790
			17805	21665		
0700-0710		Radio Sierra Leone, Freetown	5980			
0700-0715		Radio Ghana (HS), Accra	3366	4915		
0700-0730		BBC, London, England	3955	5975	7150	9410
			9600	9640	9760	11940
			12095	15070	15280	15400
			17815	21470		
0700-0730		Burma Bcasting Service, Rangoon	9730			
0700-0730		Radio Australia, Melbourne	9655	11720	11910	15160
			15240	15395	15425	17715
			21740			
0700-0730		Radio Bucharest, Romania	21600			
0700-0730		Radio New Zealand, Wellington	15150	17705		
0700-0730	S	Radio Zambia, Lusaka	11880			
0700-0750		Radio Pyongyang, North Korea	15340	17795		
0700-0800		ABC, Perth, Australia	15425			
0700-0800		CBU, Vancouver, British Colombia	6160			
0700-0800		CFCF, Montreal, Quebec	6005			
0700-0800		CFCN, Calgary, Alberta	6030			
0700-0800		CHNS, Halifax, Nova Scotia	6130			
0700-0800		Christian Science World Service	9455	9840	11980	
0700-0800		CKWX, Vancouver, British Columbia	6080			
0700-0800		CFRB, Toronto, Ontario	6070			
0700-0800		ELWA, Monrovia, Liberia	11830			
0700-0800		HCJB, Quito, Ecuador	6130	9610	9745	11835
			11925			
0700-0800		King of Hope, South Lebanon	6215			
0700-0800		Radio Ghana, Accra	6130			
0700-0800		Radio Havana Cuba	11835			
0700-0800		Radio Japan, Tokyo	5990	15195	15270	15325
			17765	17810	21500	21690
0700-0800		Radio Jordan, Amman	11955			

East Coast To
Central America/Caribbean

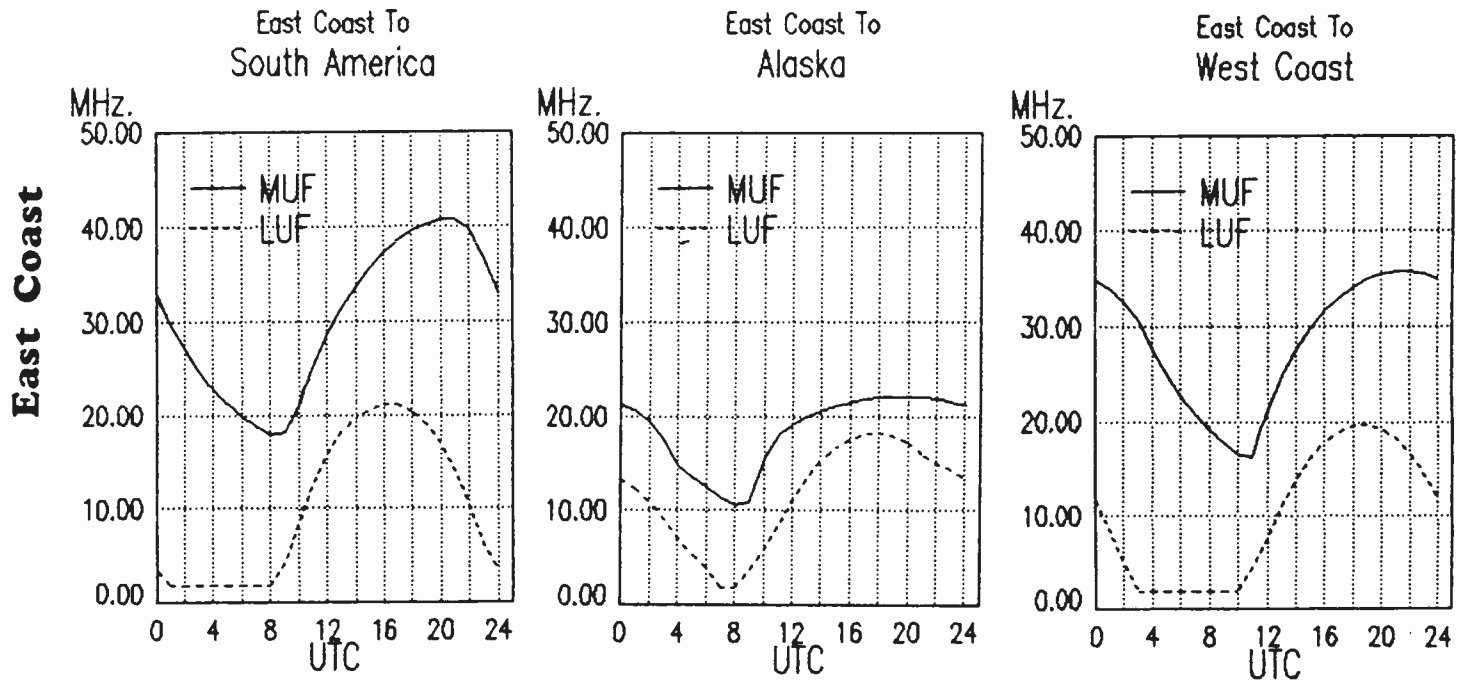


frequency section

0700-0800		Radio Korea, Seoul, South Korea	6060	7275	9570	
0700-0800		Radio Kuwait	15345			
0700-0800		Radio Moscow, USSR	9765	11845	13710	15135
			15480	15540	17660	21690
0700-0800	A,S	Radio Thailand, Bangkok	9655	11905		
0700-0800		Radio Tonga, Tonga	5050			
0700-0800		SBC-1, Singapore	5052	11940		
0700-0800		Soloman Islands Broadcasting Corp	9545			
0700-0800	S	Superpower KUSW, Utah	6135			
0700-0800		Trans World Radio, Monte Carlo	9485			
0700-0800		Trans World Radio, Swaziland	6070	9725		
0700-0800		Voice of America, Washington	6020			
0700-0800		Voice of Free China, Taiwan	5950			
0700-0800	A,S	Voice of Kenya, Nairobi	7270			
0700-0800		Voice of Malaysia, Kuala Lumpur	6175	9750	15295	
0700-0800		Voice of Nigeria, Lagos	15120	15185		
0700-0800	M-A	WMLK, Bethel, Pennsyvlania	9455			
0700-0800		WYFR, Oakland, California	6065	7355	9852.5	
0700-0800		WYFR Satellite Network	13760			
0715-0730		Radio Korea, Seoul, South Korea	13670	15575		
0715-0730	M-A	Vatican Radio, Vatican City	11725	15190		
0715-0735	S	FEBA, Mahe, Seychelles	15115	17785		
0715-0800		Radio Berlin Int'l, East Germany	6040	7185	9730	21465
			21540			
0720-0730	M-A	Vatican Radio, Vatican City	6248	9645	11740	
0730-0735		All India Radio, New Delhi	5990	6010	6020	7110
			7205	9610	9675	11850
			11935	15235	15250	17705
0730-0800		ABC, Alice Springs, Australia	2310	[ML]		
0730-0800		ABC, Katherine, Australia	2485			
0730-0800		ABC, Tennant Creek, Australia	2325	[ML]		
0730-0800		Radio Australia, Melbourne	9655	15160	15395	17715
0730-0745		BBC, London, England*	3975	6010	7230	9915
0730-0755		Radio Austria Int'l, Vienna	6155	13730	15410	21490
0730-0755		Radio Finland, Helsinki	6120	9560	11755	
0730-0800		AWR, Forli, Italy	7125			
0730-0800		BBC, London, England	3955	7150	7325	9410
			9600	9640	9760	11860
			11940	12095	15070	15280
			15400	17815	21470	
0730-0800		Radio Netherland, Hilversum	9630	9715		
0730-0800		Radio Prague, Czechoslovakia	11685	17840	21705	
0730-0800		Swiss Radio Int'l, Berne	3985	6165	9535	
0740-0750	W	Radio Free Europe, Munich*	5985	7115	9695	9725
			11895	15355		
0745-0800		Radio Berlin Int'l, East Germany	6040	6115	7185	9730
			21465	21540		
0755-0800		Radio Pacific Okean, USSR	12050	12070	17605	

0800 UTC [4:00 AM EDT/1:00 AM PDT]

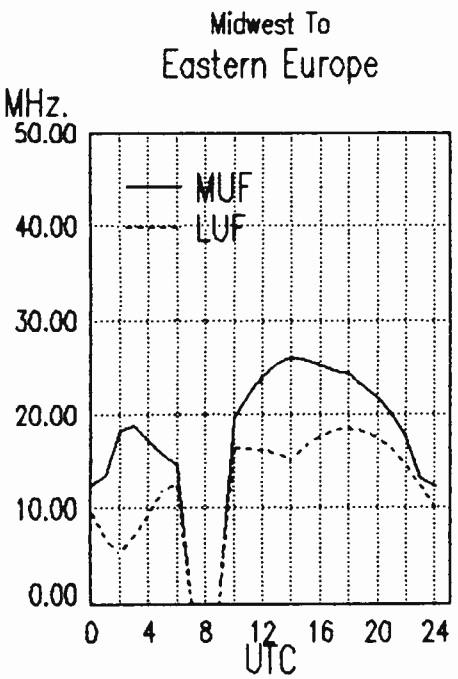
0800-0805	M-F	Port Moresby, Papua New Guinea	3925	4890	5960	5985
			6020	6040	6080	6140
			9520			
0800-0805		Soloman Islands Broadcasting Corp	9545			
0800-0815	M-A	Radio Zambia, Lusaka	6165	7235		
0800-0825	M-A	Radio Finland, Helsinki	17795	21550		
0800-0825		Radio Netherland, Hilversum	9630	9715		
0800-0825		Voice of Malaysia, Kuala Lumpur	6175	9750	15295	
0800-0830		HCJB, Quito, Ecuador	6130	9610	9745	11835
			11925			
0800-0830	S	Radio Austria Int'l, Vienna	6155	13730	15410	15450
0800-0830		Radio Bangladesh, Dhaka	12030	15525		
0800-0830		Radio Berlin Int'l, East Germany	6040	6115	7185	9730
			21465	21540		
0800-0830	S	Radio Norway, Oslo	15165	21730		
0800-0830		Radio Tirana, Albania	9500	11835		
0800-0830		Voice of Nigeria, Lagos	7255	15185		
0800-0830		Voice of Islam, Pakistan	15525	17870		
0800-0835	S	FEBA, Mahe, Seychelles	15325,	17785		
0800-0835		Trans World Radio, Swaziland	6070	9725		
0800-0840		Trans World Radio, Monte Carlo	9485			
0800-0850		Deutsche Welle, West Germany	9770			
0800-0850		Radio Pyongyang, North Korea	11830	15115	15160	15180
0800-0900		ABC, Alice Springs, Australia	2310	[ML]		
0800-0900		ABC, Katherine, Australia	2485			
0800-0900		ABC, Perth, Australia	15425			
0800-0900		ABC, Tennant Creek, Australia	2325	[ML]		
0800-0900		AFAN, Antarctica	6010.5			
0800-0900		BBC, London, England	7150	9410	9640	9760
			11860	11940	12095	15280
			15360	15070	15400	17815
			15240			
0800-0900		CBN, St. John's, Newfoundland	6160			
0800-0900		CBU, Vancouver, British Colombia	6160			
0800-0900		CFCF, Montreal, Quebec	6005			
0800-0900		CFCN, Calgary, Alberta	6030			
0800-0900		CHNS, Halifax, Nova Scotia	6130			

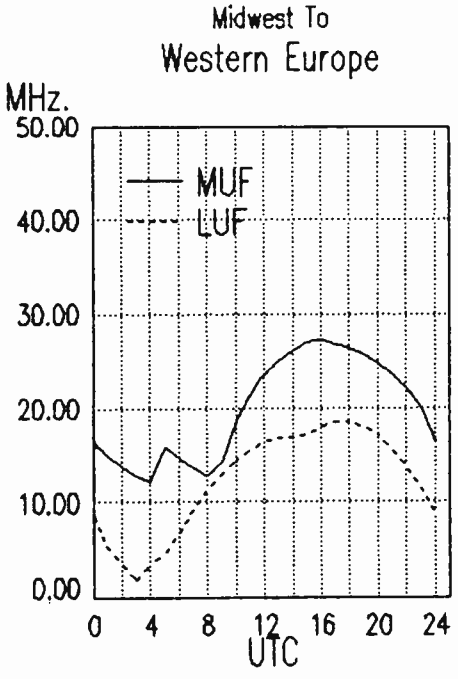


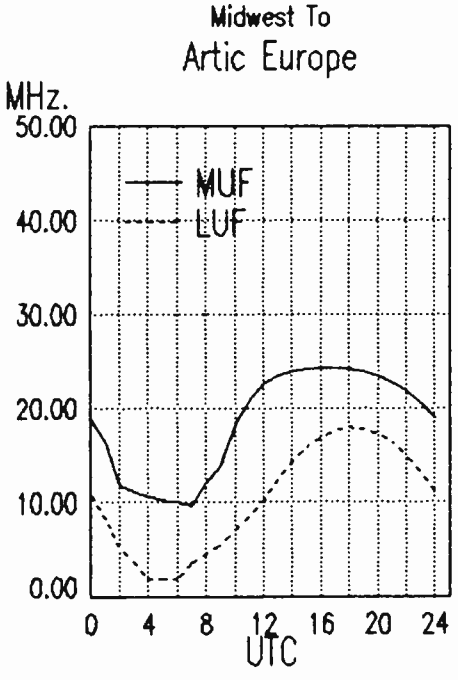
0800-0900		Christian Science World Service	9455	17855		
0800-0900		CKWX, Vancouver, British Colombia	6080			
0800-0900		CFRB, Toronto, Ontario	6070			
0800-0900		King of Hope, South Lebanon	6215			
0800-0900		KNLS, Anchor Point, Alaska	11715			
0800-0900		Radio Australia, Melbourne	5995	6020	9580	9655
			9710	11720	11750	11770
			15395	17715		
0800-0900		Radio Jordan, Amman	11955			
0800-0900		Radio Moscow, USSR	12030	15135	15535	15580
			15585	17570	17660	21585
			21800			
0800-0900		Radio for Peace, Costa Rica	12030			
0800-0900		Radio Tongo, Tongo	5050			
0800-0900		SBC Radio One, Singapore	5052	11940		
0800-0900	S	Superpower KUSW, Utah	6135			
0800-0900		Voice of Indonesia, Jakarta	11790	15105		
0800-0900	A,S	Voice of Kenya, Nairobi	7270			
0805-0900		KTWR, Guam	15210			
0815-0845	M-F	Voice of America, Washington DC	7175	9575	9750	11710
			11915	15600	17715	21500
			[ML]			
0830-0840		All India Radio, New Delhi	5960	5990	6010	6020
			6050	6065	6100	6140
			7110	7140	7160	7250
			7280	7295	9610	11850
			15235	15250	17705	
0830-0900	S	Bhutan Bcasting Service, Thimpu	6035			
0830-0900		FEBC, Manila, Philippines	11850	15350		
0830-0900		HCJB, Quito, Ecuador	6130	9745	11925	
0830-0900		Radio Beijing, China	9700	11755	15440	
0830-0855		Radio Finland, Helsinki	15245	17795		
0830-0900		Radio Netherlands, Hilversum	9770	17575	21485	
0830-0900		Radio Prague, Czechoslovakia	11685	17840	21705	
0830-0900		Swiss Radio Int'l, Berne	9560	9885	13685	17830
			21695			
0830-0900		Voice of Nigeria, Lagos	7255	15120		
0840-0850	M-A	Voice of Greece, Athens	9855	15630		
0840-0900	S-F	Trans World Radio, Monte Carlo	7105			
0845-0900		Radio Prague, Czechoslovakia	6055	7345	9505	
0850-0900		All India Radio, New Delhi	5960	5990	6010	6020
			6050	6065	6100	6140
			7110	7140	7150	7160
			7250	7280	7295	9610
			11850	15235	15250	17705
0850-0900		Radio Korea, Seoul	13670			

0900 UTC [5:00 AM EDT/2:00 AM PDT]

0900-0910		All India Radio, New Delhi	5960	5990	6010	6020
			6050	6065	6100	6140
			7110	7140	7150	7160
			7250	7280	7295	9610
			11850	15235	15250	17705
0900-0910	S	Trans World Radio, Monte Carlo	7105			
0900-0910		Voice of Lebanon, Beirut	6548			
0900-0920		ABC, Perth, Australia	15425			
0900-0925		BRT, Brussels, Belgium	5915	17595	21810	26050
0900-0925		Radio Netherlands, Hilversum	17575	21485		
0900-0930		FEBC, Manila, Philippines	11850	15350		
0900-0930		KTWR, Agana, Guam	15210			
0900-0930		Nippon Broadcasting Corp.	3925			
0900-0930		Radio Beijing, China	11755	15440		
0900-0930		Radio Norway, Oslo	17840			
0900-0930	A,S	Radio Prague, Czechoslovakia	11685	17840	21705	
0900-0945		Radio Berlin Int'l, East Germany	9770	11890	21540	
0900-0950		Deutsche Welle, West Germany	6160	9650	11785	11945
			17780	21650		
0900-1000		ABC, Alice Springs, Australia	2310	[ML]		
0900-1000		ABC, Katherine, Australia	2485			
0900-1000		ABC, Tennant Creek, Australia	2325	[ML]		
0900-1000	S	Adventist World Radio, Portugal	9670			
0900-1000		BBC, London, England	9410	9740	9750	11750
			11845	11860	11940	11955
			12095	15070	15175	15280
			15360	15400	17705	17640
			17790	17815	21470	
0900-1000		CFCF, Montreal, Quebec	6005			
0900-1000		CFCN, Calgary, Alberta	6030			
0900-1000		CHNS, Halifax, Nova Scotia	6130			
0900-1000		Christian Science World Service	9455	17855		
0900-1000		CKWX, Vancouver, British Colombia	6080			
0900-1000		CFRB, Toronto, Ontario	6070			
0900-1000		HCJB, Quito, Ecuador	6130	9745	11925	
0900-1000		King of Hope, South Lebanon	6215			
0900-1000		KNLS, Anchor Point, Alaska	6065			
0900-1000		Radio Afghanistan, Kabul	4450	6085	15435	17720







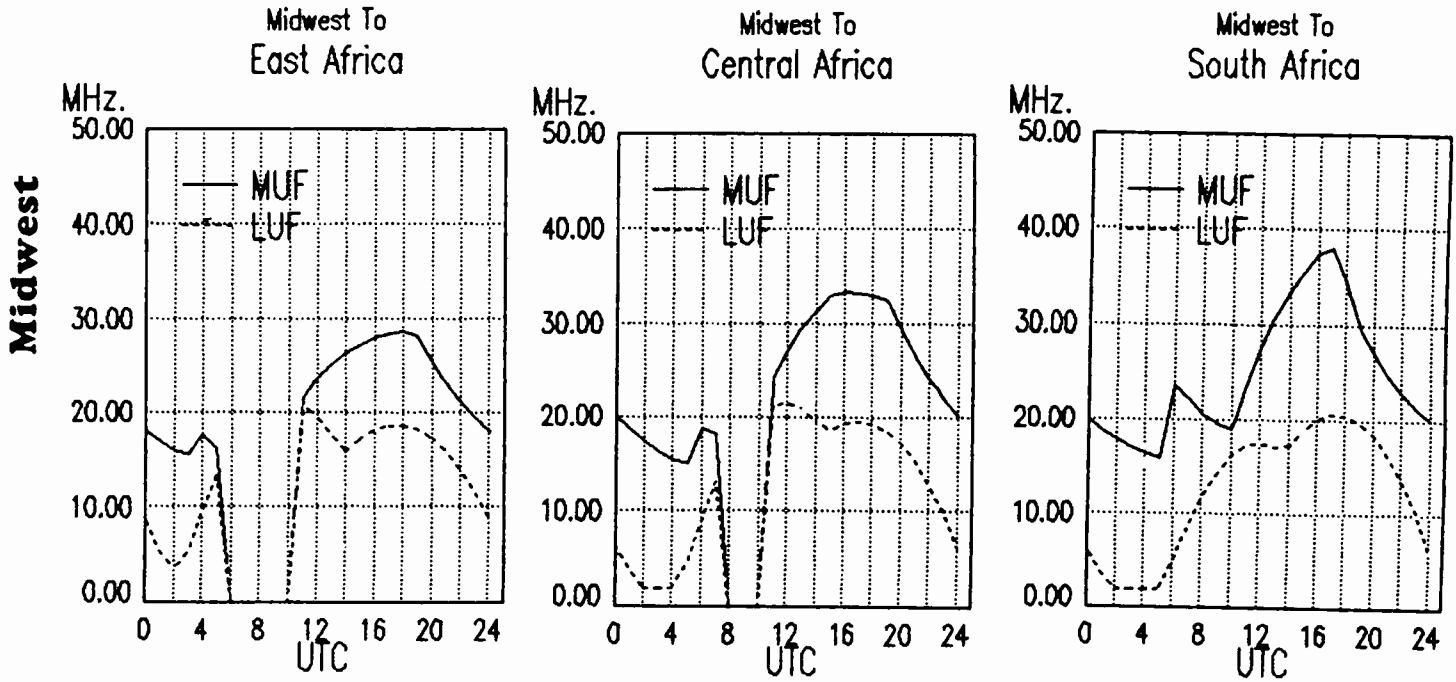
Midwest

frequency section

0900-1000		Radio Australia, Melbourne	5995	6080	9580	9655
			9710	9760	11720	11770
			15415			
0900-1000		Radio Japan, Tokyo	11840	11885	15270	17810
			17890			
0900-1000		Radio Korea, Seoul, South Korea	7550	13670		
0900-1000		Radio Moscow, USSR	15135	15535	15540	15580
			17570	17660	21585	
0900-1000		Radio New Zealand, Wellington	9850			
0900-1000		Radio for Peace, Costa Rica	13660			
0900-1000	S	Radio Prague, Czechoslovakia	6055	7345	9505	[ML]
0900-1000		Radio RSA, South Africa	11805			
0900-1000		Radio Tanzania, Dar es Salaam	7165			
0900-1000		Radio Tonga, Tonga	5050			
0900-1000		SBC Radio One, Singapore	5010	5052	11940	
0900-1000	S	Superpower KUSW, Utah	6135			
0900-1000		Voice of America, Washington	5985	6030	6130	9560
			11720			
0900-1000		Voice of Kenya, Nairobi	7270			
0900-1000		Voice of Nigeria, Lagos	7255	15120	15185	
0900-1000		WHRI, Noblesville, Indiana	7355	9495		
0900-1000		WYFR, Oakland, California	5950	11580		
0915-0930		Radio Korea, Seoul, South Korea	9570			
0915-0950	M-A	Radio Ulan Bator, Mongolia	9615	12015		
0920-1000		ABC, Perth, Australia	6140			
0930-0935		All India Radio, New Delhi	5960	5990	6010	6020
			6050	6065	6100	6140
			7110	7140	7160	7250
			7280	7295	9610	11850
			15235	15250	17705	
0930-0945		BBC, London, England*	9725	11955		
0930-1000		CBN, St. John's, Newfoundland	6160			
0930-1000		Radio Beijing, China	9700	11755	15440	
0930-1000		Radio Sweden Int'l, Stockholm	15390			
0945-1000		BBC, London, England*	5995	7180	9725	11955
0945-1000		Radio Berlin Int'l, East Germany	6115			
0945-1000	M-A	Radio Prague, Czechoslovakia	6055	7345	9505	

1000 UTC [6:00 AM EDT/3:00 AM PDT]

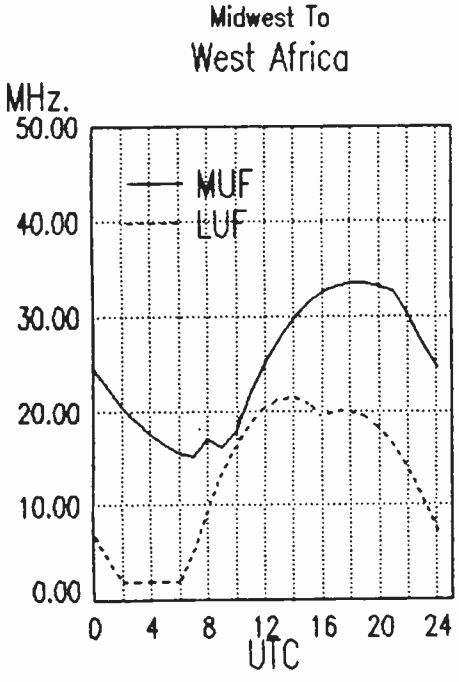
1000-1030		HCJB, Quito, Ecuador	6130	9745	11925	
1000-1030		Kol Israel, Jerusalem	15650	17575	21760	
1000-1030		Radio Afghanistan, Kabul	4450	6085	15435	17720
1000-1030		Radio Beijing, China	11755	15440	17710	
1000-1030		Radio Berlin Int'l, East Germany	6115			
1000-1030		Radio Tanzania, Dar es Salaam	7165			
1000-1030		Swiss Radio Int'l, Berne	9560	13685	17670	21695
1000-1030		Voice of Ethiopia, Addis Ababa	9560			
1000-1030		Voice of Vietnam, Hanoi	9840	15010		
1000-1055	A	Trans World Radio, Monte Carlo	7105			
1000-1100		ABC, Alice Springs, Australia	2310	[ML]		
1000-1100		ABC, Katherine, Australia	2485			
1000-1100		ABC, Perth, Australia	9610			
1000-1100		ABC, Tennant Creek, Australia	2325	[ML]		
1000-1100		All India Radio, New Delhi	11860	11915	15130	15335
			17387	11785		
1000-1100		BBC, London, England	9410	9740	11750	11940
			12095	15070	15360	17640
			17705	17790	17830	21470
			25750			
1000-1100		CBN, St. John's, Newfoundland	6160			
1000-1100		CFCF, Montreal, Quebec	6005			
1000-1100		CFCN, Calgary, Alberta	6030			
1000-1100		CHNS, Halifax, Nova Scotia	6130			
1000-1100		Christian Science World Service	9455	9495		
1000-1100		CKWX, Vancouver, British Colombia	6080			
1000-1100		CFRB, Toronto, Ontario	6070			
1000-1100		FEBC, Manila, Philippines	11850			
1000-1100		KSDA, Guam	13720			
1000-1100		KTWR, Agana, Guam	11805			
1000-1100		KYOI, Saipan	9530			
1000-1100		Radio Afghanistan, Kabul	15435	17720		
1000-1100		Radio Australia, Melbourne	5955	5995	6020	7205
			9580	9655	9710	9655
			9770	15415		
1000-1100		Radio Moscow, USSR	9600	15110	15130	15405
			15420	15520	15535	15550
			15585	15590	17660	17815
			17830	21690	21800	
1000-1100		Radio New Zealand, Wellington	6100	9850		
1000-1100	S	Radio Prague, Czechoslovakia	6055	7345	9505	[ML]
1000-1100		Radio RSA, South Africa	11805			
1000-1100		SBC Radio One, Singapore	5010	5052	11940	
1000-1100	S	Superpower KUSW, Utah	6135			
1000-1100		Voice of America, Washington	6030	5985	6165	9530
			9590	11720	15425	
1000-1100		Voice of Kenya, Nairobi	7270			
1000-1100		Voice of Nigeria, Lagos	7255	15120		
1000-1100		WHRI, Noblesville, Indiana	7355			

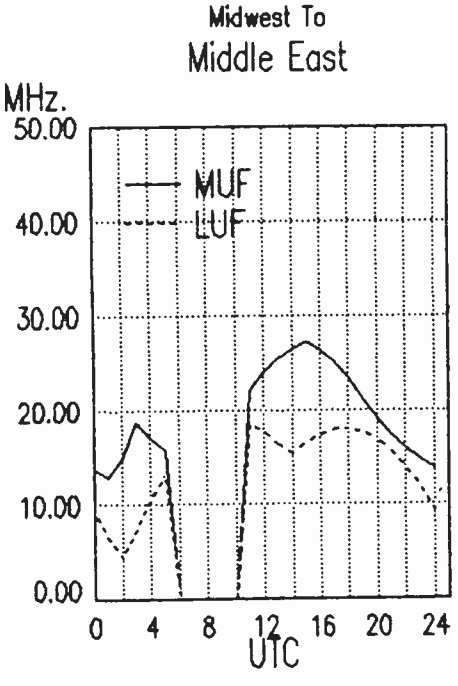


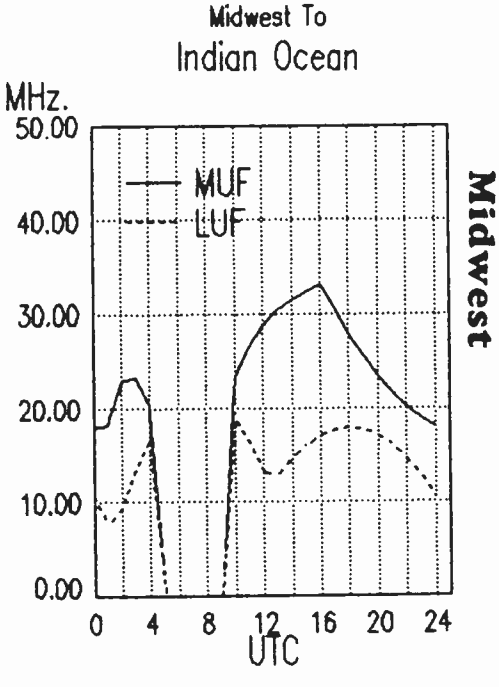
1000-1100		WYFR, Oakland, California	5950	17530		
1005-1010		Radio Pakistan, Islamabad	15606	17660		
1030-1040		Voice of Asia, Taiwan	5980			
1030-1045	A	Radio Budapest, Hungary	7220	9585	9835	11910
			15160	15220		
1030-1055		Radio Austria Int'l, Vienna	15450	21490		
1030-1100		BBC, London, England*	7180	9660	9725	
1030-1100		HCJB, Quito, Ecuador	6130	9745	11925	
1030-1100		Radio Netherlands, Hilversum	6020	9675		
1030-1100	A,S	Radio Tanzania, Dar es Salaam	7165			
1030-1100		SLBC, Colombo, Sri Lanka	11835	15120	17850	[ML]
1030-1100		UAE Radio, United Arab Emirates	15320	15435	17865	21605
1030-1100		Voice of America, Washington*	11965			
1040-1050	H	Radio Free Europe, Munich*	7115	9695	9725	
			11895	15355		
1040-1050	M-A	Voice of Greece, Athens	11645	15630		
1045-1100	S	Radio Budapest, Hungary	7220	9585	9835	11910
			15160	15220		
1045-1100	M-A	Radio Prague, Czechoslovakia	6055	7345	9505	
1055-1100		Trans World Radio, Bonaire	11815	15345		
1055-1100	S	Trans World Radio, Monte Carlo	7105			

1100 UTC [7:00 AM EDT/4:00 AM PDT]

1100-1105		Radio Pakistan, Islamabad	6090	7290		
1100-1115		Radio New Zealand, Wellington	6100	9850		
1100-1120		Radio Pakistan, Islamabad	15606	17760		
1100-1125		Radio Netherland, Hilversum	6020	9675		
1100-1130		BBC, London, England*	7120			
1100-1130		HCJB, Quito, Ecuador	6130	9745	11925	
1100-1130		KTWR, Guam*	9820	11665		
1100-1130		Radio Finland, Helsinki	15400	21550		
1100-1130		Radio Mozambique, Maputo	9525	11818	11835	
1100-1130		SLBC, Colombo, Sri Lanka	11835	15120	17850	[ML]
1100-1130		Swiss Radio Int'l, Berne	13635	15570	17830	21550
1100-1130		Voice of Vietnam, Hanoi	12010	15010		
1100-1145		Radio Berlin Int'l, East Germany	6115	9665	17775	
1100-1150		Deutsche Welle, West Germany	15410	17765	17800	21600
1100-1150		Radio Pyongyang, North Korea	9600	9977	11735	
1100-1155		Radio Beijing, China	9660	15540	17855	
1100-1200		ABC, Alice Springs, Australia	2310	[ML]		
1100-1200		ABC, Katherine, Australia	2485			
1100-1200		ABC, Perth, Australia	9610			
1100-1200		ABC, Tennant Creek, Australia	2325	[ML]		
1100-1200		BBC, London, England	5965	6195	7180	9410
			9515	9740	9750	9760
			11750	11775	15070	15360
			15420	17640	17790	21710
			21470	25750		
1100-1200		CBC Northern Quebec Service	6065	9625		
1100-1200		CBN, St. John's, Newfoundland	6160			
1100-1200		CFCF, Montreal, Quebec	6005			
1100-1200		CFCN, Calgary, Alberta	6030			
1100-1200		CHNS, Halifax, Nova Scotia	6130			
1100-1200		Christian Science World Service	9455	9495		
1100-1200		CKWX, Vancouver, British Colombia	6080			
1100-1200		CFRB, Toronto, Ontario	6070			
1100-1200		KYOI, Saipan	9530			
1100-1200		Radio Australia, Melbourne	5995	6020	6060	6080
			7205	7215	9580	9645
			9710	9770		
1100-1200		Radio Japan, Tokyo	6120	11815	11840	
1100-1200		Radio Moscow, USSR	9600	15135	15220	15520
			15585	17645	17660	17815
			17890	21690	21800	
1100-1200		Radio RSA, South Africa	11805	11900	21590	
1100-1200	A,S	Radio Tanzania, Dar es Salaam	7165			
1100-1200	S	Radio Zambia, Lusaka	11880	[IRR]		
1100-1200		SBC-1, Singapore	5010	5052	11940	
1100-1200	S	Superpower KUSW, Utah	9850			
1100-1200		Trans World Radio, Bonaire	11815	15345		
1100-1200		Voice of America, Washington	5985	6110	6165	9590
			9660	9760	11720	11745
			11915	15425		
1100-1200		Voice of Asia, Taiwan	5980	7445		
1100-1200		Voice of Kenya, Nairobi	7270			
1100-1200		Voice of Nigeria, Lagos	7255	15120		
1100-1200		WHRI, Noblesville, Indiana	9465	11790		
1100-1200		WYFR, Oakland, California	5950	11580	17530	17640
1110-1120	M-F	Radio Botswana, Gaborone	4820	5955	7255	
1115-1130		Radio Korea, Seoul, South Korea	11740			
1115-1130		Vatican Radio, Vatican City	17840	21485		
1115-1145		Radio Nepal, Kathmandu	5005			
1130-1145	A	Radio Budapest, Hungary	7220	9585	9835	11910
			15160	15220		
1130-1155		Radio Austria Int'l, Vienna	6155	13730	15450	17870
1130-1200		HCJB, Quito, Ecuador	11740			
1130-1200		Radio Berlin Int'l, East Germany	15440	17880	21465	21540





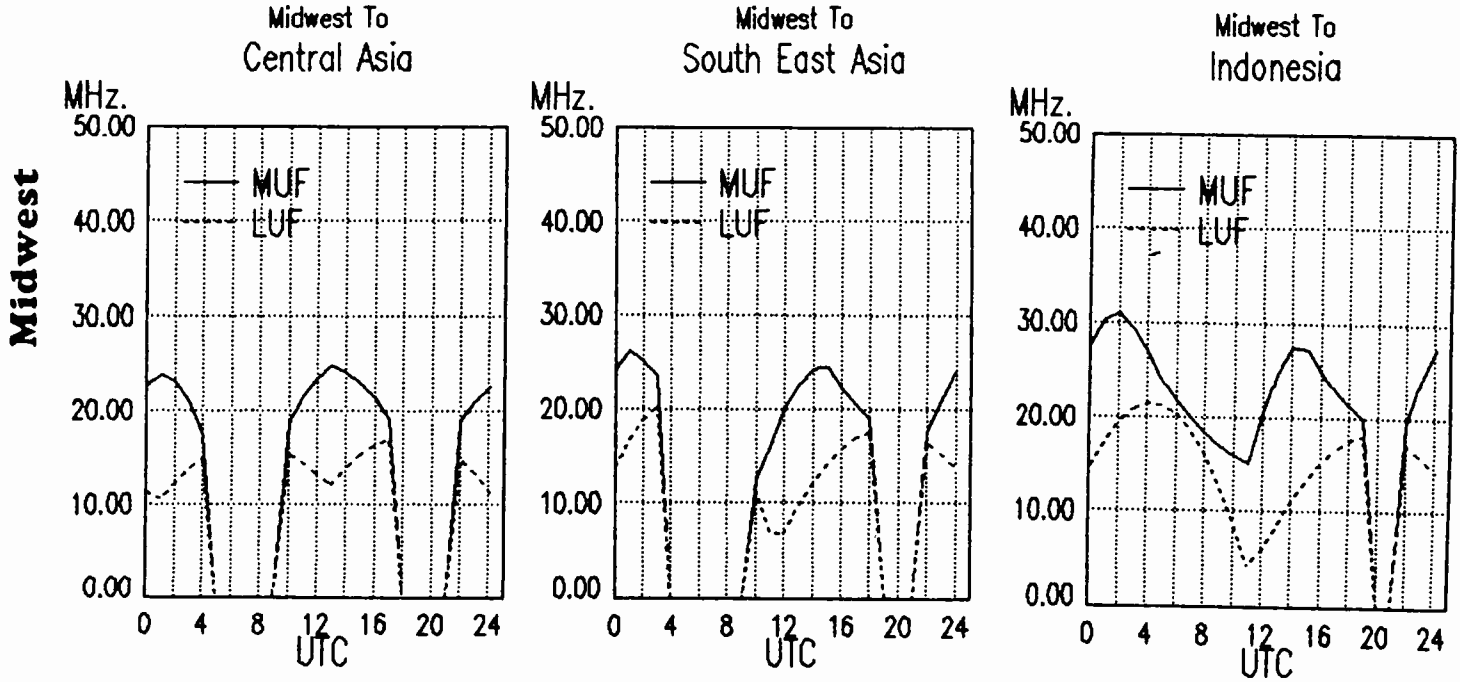


frequency section

1130-1200		Radio Netherland, Hilversum	5955	9715	17575	21480
			21520			
1130-1200		Radio Thailand, Bangkok	9655	11905		
1130-1200		Radio Tirana, Albania	9480	11855		
1130-1200		Voice of Islamic Republic Iran	7230	9520	9685	11790
1135-1140		All India Radio, New Delhi	6065	7110	9610	9675
			11850	15320		
1140-1145	M-A	Vatican Radio, Vatican City	6248	9645	11740	
1145-1200		BBC, London, England*	7180	15280		
1145-1200		Radio Bangladesh, Dakha	15255	17740		
1145-1200		Radio Prague, Czechoslovakia	6055	7345	9505	

1200 UTC [8:00 AM EDT/5:00 AM PDT]

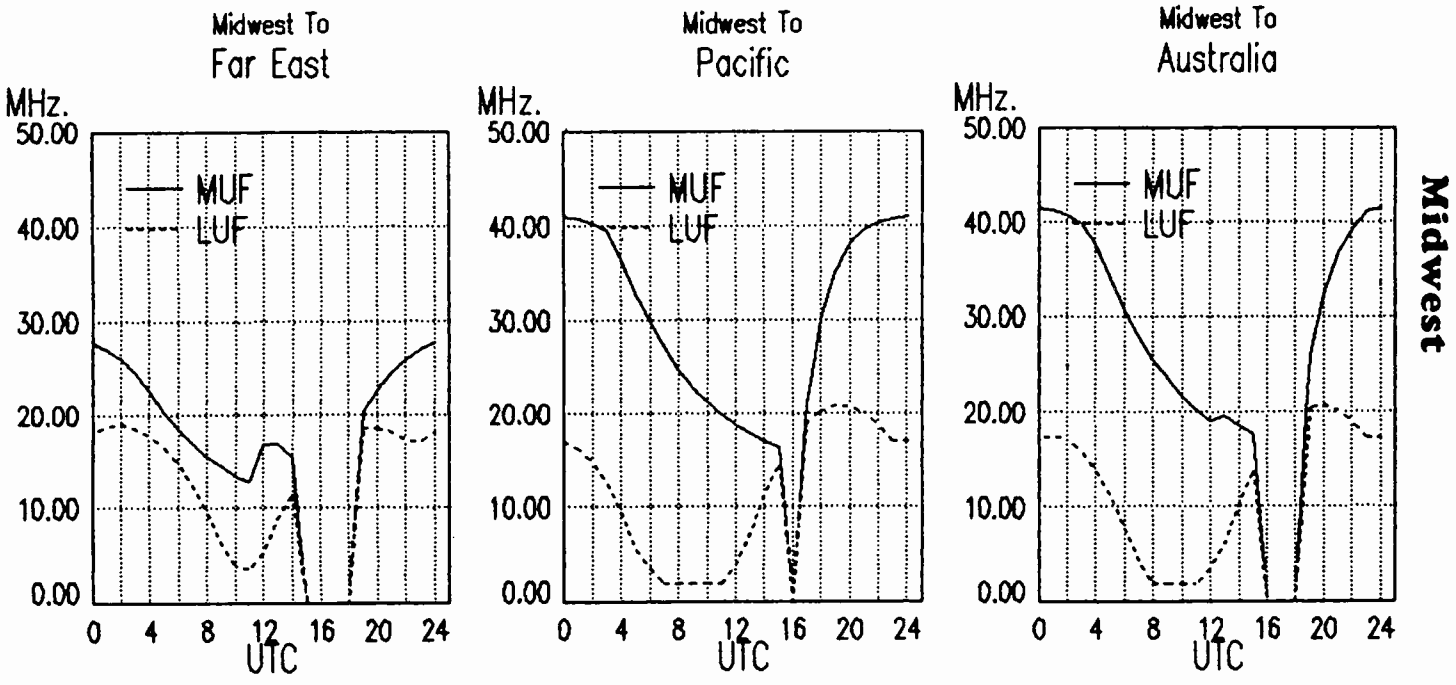
1200-1215		BBC, London, England*	3915	6065	7275	
1200-1215		Radio Berlin Int'l, East Germany	15440	17880	21465	21540
1200-1215		Vatican Radio, Vatican City	17865	21515		
1200-1215		Voice of Kampuchea, Phnom-Penh	9693	11938		
1200-1220		Radio Bucharest, Romania	17720	21665		
1200-1225	M-F	Radio Finland, Helsinki	15400	21550		
1200-1225		Radio Japan, Tokyo	12110			
1200-1225		Radio Polonia, Warsaw, Poland	6095	7285		
1200-1230		Radio Netherland, Hilversum	5955	9715	17575	21480
			21520			
1200-1230	S	Radio Norway, Oslo	15325			
1200-1230		Radio Somalia, Mogadishu	6095			
1200-1230		Radio Tashkent, Uzbek, USSR	9540	9600	11785	15460
1200-1230		Radio Thailand, Bangkok	9655	11905		
1200-1230		Radio Yugoslavia, Belgrade	17740	21555	25795	
1200-1230	S	Radio Zambia, Lusaka	11880	[IRR]		
1200-1230		Swiss Radio Int'l, Berne	6165	9535	12030	
1200-1235	M-A	Radio Ulan Bator, Mongolia	9615	12015		
1200-1255		Radio Beijing, China	11600	11660	15400	15540
			17855			
1200-1300		ABC, Alice Springs, Australia	2310	[ML]		
1200-1300		ABC, Katherine, Australia	2485			
1200-1300		ABC, Perth, Australia	9660			
1200-1300		ABC, Tennant Creek, Australia	2325	[ML]		
1200-1300	S	Adventist World Radio, Africa	17890			
1200-1300		AFAN, Antarctica	6012			
1200-1300		BBC, London, England	6195	9510	9740	11750
			11775	11940	12095	15070
			17640	17705	17790	21470
			21710	25750		
1200-1300		CBC Northern Quebec Service	6065	9625		
1200-1300		CBN, St. John's, Newfoundland	6160			
1200-1300		CFCF, Montreal, Quebec	6005			
1200-1300		CFCN, Calgary, Alberta	6030			
1200-1300		CHNS, Halifax, Nova Scotia	6130			
1200-1300		Christian Science World Service	9495	11930		
1200-1300		CKWX, Vancouver, British Colombia	6080			
1200-1300		CFRB, Toronto, Ontario	6070			
1200-1300		HCJB, Quito, Ecuador	11740	15115	17890	
1200-1300		Radio Australia, Melbourne	5995	6020	6060	6080
			7205	7215	9580	9710
			9770	11800		
1200-1300		Radio Canada Int'l, Montreal	11855	17820		
1200-1300		Radio Moscow, USSR	9600	9875	11685	12025
			15110	15130	15490	15520
			15550	15585	15595	17570
			17645	17660	17665	17815
			17830	21630		
1200-1300		Radio RSA, South Africa	9585	11805	21590	
1200-1300	A,S	Radio Tanzania, Dar es Salaam	7165			
1200-1300		SBC Radio One, Singapore	5010	5052	11940	
1200-1300	A,S	Superpower KUSW, Utah	9850			
1200-1300		Trans World Radio, Bonaire	11815	15345		
1200-1300		Trans World Radio, Sri Lanka	11920			
1200-1300		Voice of America, Washington	6110	9760	11715	15155
			15160	15425		
1200-1300		Voice of Kenya, Nairobi	7270			
1200-1300		Voice of Nigeria, Lagos	7255	15120		
1200-1300		WHRI, Noblesville, Indiana	9465	11790		
1200-1300		WYFR, Oakland, California	5950	6015	11580	11830
			13695	15215	15255	
1215-1245		Radio Korea, Seoul, South Korea	7275	11740		
1215-1300		Radio Berlin Int'l, East Germany	11705	15240		
1215-1300		Radio Cairo, Egypt	17595			
1230-1235		All India Radio, New Delhi	3905	4800	4920	7280
			9565	9615	11735	15120
			17620			
1230-1255	M-A	BRT, Brussels, Belgium	17555	21815		
1230-1255		Voice of Turkey, Ankara	15255			
1230-1300		BBC, London, England*	6125	7255	6195	9635
			9660	11780	12040	15270
			15390	15435	17695	
1230-1300		Radio Bangladesh, Dhaka	15195	17710		
1230-1300		Radio Sweden, Stockholm	17405	21610		



1240-1250	M	Radio Free Europe, Munich*	5985	7115	9695	9725
			11895	15355		
1245-1300		Radio Berlin Int'l, East Germany	15440	17880	21465	21540
1245-1300		Radio France Int'l, Paris	9805	11670	15155	15195
			15365	17720	21645	
1235-1245		Voice of Greece, Athens	11645	15630	17565	

1300 UTC [9:00 AM EDT/6:00 AM PDT]

1300-1310		Radio France Int'l, Paris	11670	15155	15365	17720
			21645			
1300-1325		Radio Bucharest, Romania	9690	11940	15405	17720
1300-1330		BBC, London, England	5995	6195	7180	9515
			9740	11750	11775	11940
			12095	15070	15310	15420
			17640	17790	17885	18080
			21470	21710	25750	
1300-1330		Radio Berlin Int'l, East Germany	15440	17880	21465	21540
1300-1330		Radio Cairo, Egypt	17595			
1300-1330		Radio Finland, Helsinki	15400	21550		
1300-1330		Radio Ghana, Accra	4915	7295		
1300-1330	S	Radio Norway Int'l, Oslo	9590			
1300-1330		Trans World Radio, Sri Lanka	11920			
1300-1330		Voice of Kenya, Nairobi	7270			
1300-1332	A,S	Trans World Radio, Bonaire	11815	15345		
1300-1350		Radio Pyongyang, North Korea	9325	9345	9555	9600
			11335	11735		
1300-1355		Radio Beijing, China	11600	11660	11855	15280
			15455			
1300-1400		ABC, Alice Springs, Australia	2310	[ML]		
1300-1400		ABC, Katherine, Australia	2485			
1300-1400		ABC, Perth, Australia	9610			
1300-1400		ABC, Tennant Creek, Australia	2325	[ML]		
1300-1400		CBC Northern Quebec Service	9625	11720		
1300-1400		CBN, St. John's, Newfoundland	6160			
1300-1400		CBU, Vancouver, British Colombia	6160			
1300-1400		CFCF, Montreal, Quebec	6005			
1300-1400		CFCN, Calgary, Alberta	6030			
1300-1400		CHNS, Halifax, Nova Scotia	6130			
1300-1400		Christian Science World Service	9495	9530	11930	
1300-1400		CKWX, Vancouver, British Colombia	6080			
1300-1400		CFRB, Toronto, Ontario	6070			
1300-1400	S	ELWA, Monrovia, Liberia	11830			
1300-1400		FEBC, Manila, Philippines	11850			
1300-1400		HCJB, Quito, Ecuador	11740	15115	17890	
1300-1400		KNLS, Anchor Point, Alaska	7355			
1300-1400		Radio Australia, Melbourne	5995	6060	6080	7205
			9580			
1300-1400	S	Radio Canada Int'l, Montreal	9625	11720	11955	17820
1300-1400		Radio Jordan, Amman	9560			
1300-1400		Radio Korea (South), Seoul	9750	15575		
1300-1400		Radio Moscow, USSR	11840	11900	11955	12050
			13710	15220	15540	15320
			15490	15550	15595	17570
			17645	17815	17830	21630
			21725			
1300-1400		Radio RSA, South Africa	11805	17730	21590	
1300-1400	A,S	Radio Tanzania, Dar es Salaam	7165			
1300-1400		SBC Radio One, Singapore	5010	5052	11940	
1300-1400	A,S	Superpower KUSW, Utah	9850			
1300-1400		Voice of America, Washington	6110	9760	11715	15155
			15160	15425		
1300-1400		Voice of Malaysia	7295			
1300-1400		Voice of Nigeria, Lagos	7255	15120		
1300-1400		WHRI, Noblesville, Indiana	9465	11790		
1300-1400		WYFR, Oakland, California	5950	6010	9680	11580
			11830	13695	15055	15215
			15365			
1330-1345		Radio Korea, Seoul, South Korea	7275	11740		
1330-1400		BBC, London, England	5995	6195	7180	9410
			9740	11750	11940	15070
			15140	15310	17640	17790
			17885	21470	21710	25750
1330-1400		All India Radio, New Delhi	9545	10330	11810	15335
1330-1400		Laotian National Radio	7113			
1330-1400	S	Radio Finland, Helsinki	15400	21550		
1330-1400		Radio Tashkent, Uzbek, USSR	5945	9540	9600	11785
			15455			
1330-1400		Swiss Radio Int'l, Berne	9620	11695	13635	15570
			17830	21695		
1330-1400		UAE Radio, United Arab Emirates	15435	17865	21605	
1330-1400		Voice of Islamic Republic Iran	9525	9685	9770	
1330-1400		Voice of Kenya, Nairobi	6100			
1330-1400		Voice of Vietnam, Hanoi	12010	15010		
1332-1400	A	Trans World Radio, Bonaire	11815	15345		
1345-1400		Radio Berlin Int'l, East Germany	9730			



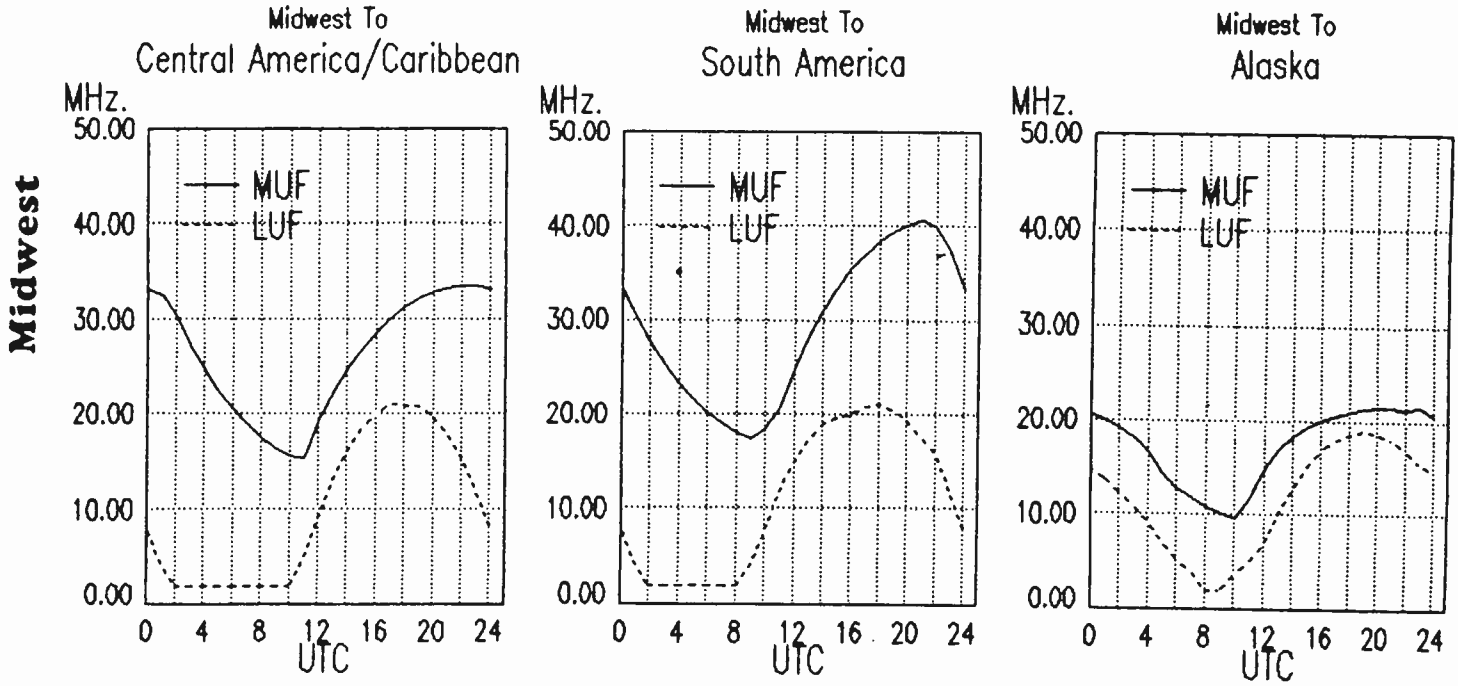
frequency section

1400 UTC [10:00 AM EDT/7:00 AM PDT]

1400-1427		Voice of Nigeria, Lagos	15120
1400-1430		ABC, Alice Springs, Australia	2310 [ML]
1400-1430		ABC, Tennant Creek, Australia	2325 [ML]
1400-1430		Radio Finland, Helsinki	9560 11715 11925 15185 17800
1400-1430		Radio France Int'l, Paris	21780
1400-1430	S	Radio Norway Int'l, Oslo	21710
1400-1430		Radio Polonia, Warsaw, Poland	6095 7285
1400-1430		R.Station Peace & Progress USSR	11890 15220 17610 17635 17645
1400-1430		Radio Sweden Int'l, Stockholm	17740 21610
1400-1430		Radio Tirana, Albania	9500 11985
1400-1430		Voice of Ethiopia, Addis Ababa	9550 11710
1400-1450	T	Radio Free Europe, Munich*	5985 7115 7695 9725 11895 15355
1400-1450		Radio Pyongyang, North Korea	6576 11735
1400-1455		Radio Beijing, China	7405 11600 11855 15165
1400-1500		ABC, Katherine, Australia	2485
1400-1500		ABC, Perth, Australia	9610
1400-1500		Adventist World Radio, Italy	7275
1400-1500		All India Radio, New Delhi	9545 11810 15335
1400-1500		BBC, London, England	5995 6195 7180 9740 9750 11750 12095 15070 15310 15400 17705 17640 17790 17840 21710 21470 25750
1400-1500		CBN, St. John's, Newfoundland	6160
1400-1500		CBC Northern Quebec Service	9625 11720
1400-1500	M-A	CBU, Vancouver, British Colombia	6160
1400-1500		CFCF, Montreal, Quebec	6005
1400-1500		CFCN, Calgary, Alberta	6030
1400-1500		CHNS, Halifax, Nova Scotia	6130
1400-1500		Christian Science World Service	13760 17555 21780
1400-1500		CKWX, Vancouver, British Colombia	6080
1400-1500		CFRB, Toronto, Ontario	6070
1400-1500	S	ELWA, Monrovia, Liberia	11830
1400-1500		FEBC, Manila, Philippines	9670 11850
1400-1500		HCJB, Quito, Ecuador	11740 15115 17890
1400-1500		Radio Australia, Melbourne	5995 6035 6060 6080 7205 9580 15140
1400-1500	S	Radio Canada Int'l, Montreal	9625 11720 11955 17820
1400-1500		Radio Japan, Tokyo	9505 9695 11865 11815 15410
1400-1500		Radio Korea, Seoul	9570 9750 15575
1400-1500		Radio Moscow, USSR	9755 11840 11900 11995 12050 13710 15320 15490 15585 17570 17660 21630 21725
1400-1500		Radio RSA, South Africa	11925 17745 21590 25790
1400-1500	A,S	Radio Tanzania, Dar es Salaam	7165
1400-1500		SBC Radio One, Singapore	5010 5052 11940
1400-1500	A,S	Superpower KUSW, Utah	9850
1400-1500		Voice of America, Washington	6110 9645 9700 9760 11920 15160 15205 15425
1400-1500		Voice of Kenya, Nairobi	6100
1400-1500		Voice of Malaysia, Kuala Lumpur	4950
1400-1500		Voice of Mediterranean, Malta	11925
1400-1500		Voice of Nigeria, Lagos	7255
1400-1500		WHRI, Noblesville, Indiana	11790 15105
1400-1500		WYFR, Oakland, California	5950 11830 15215
1400-1500		WYFR Satellite Net, California	13695
1415-1420		Radio Nepal, Kathmandu	3230 5005
1430-1500	F	ABC, Alice Springs, Australia	2310 [ML]
1430-1500	F	ABC, Tennant Creek, Australia	2325 [ML]
1430-1500		Burma Broadcasting Service	5985
1430-1500		King of Hope, Southern Lebanon	6280
1430-1500		KTWR, Agana, Guam	9780
1430-1500		Radio Austria Int'l, Vienna	6155 11780 13730 21490
1430-1500		Radio Netherland, Hilversum	5955 13770 15150 17605
1430-1500		Radio Prague, Czechoslovakia	9605 11685 13715 15110 17705 21505
1430-1500		Radio Sofia, Bulgaria	7245 9740 11735
1445-1500		Radio Berlin Int'l, East Germany	15240 17880
1445-1500		Radio Canada Int'l, Montreal	11935 15160 15305 15325 17795 17820 21545
1445-1500	M-A	Radio Ulan Bator, Mongolia	9575 15305

1500 UTC [11:00 AM EDT/8:00 AM PDT]

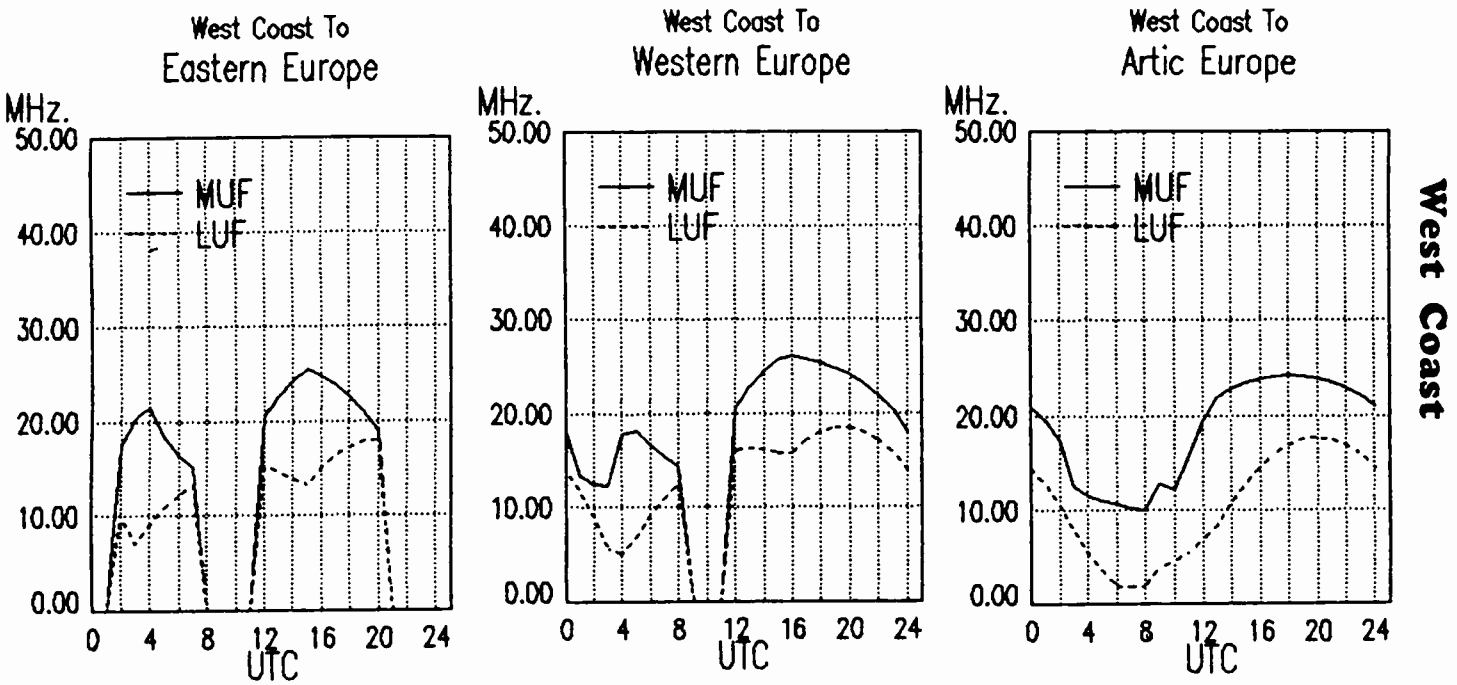
1500-1505	Africa No. 1, Gabon	7200 15200
1500-1510	Vatican Radio, Vatican City	11955 15090 17870
1500-1600	BBC, London, England	5995 6155 6195 7180 9410 9740 11750 11775 11940 12095 15070 15260 15400 17640 17705 17740



			17770	17790	21470	21660
			21710	25750		
1500-1515		FEBA, Mahe, Seychelles	15325			
1500-1520		Radio Ulan Bator, Mongolia	9575	15305		
1500-1525		Radio Bucharest, Romania	9510	9690	11775	11940
			15250	15335		
1500-1525		Radio Netherland, Hilversum	5955	13770	15150	17605
1500-1530		Radio Berlin Int'l, East Germany	15240	17880		
1500-1530		Radio Sofia, Bulgaria	9560	11735	15310	
1500-1530	A,S	Radio Tanzania, Dar es Salaam	7165			
1500-1530		Radio Veritas Asia, Philippines	9770	15220		
1500-1550		Deutsche Welle, West Germany	9735	11965	17810	21600
1500-1550		Radio Pyongyang, North Korea	6576	9325	9345	9640
			9977	11740		
1500-1555		Radio Beijing, China	7405	11600	11795	15165
1500-1600	F	ABC, Alice Springs, Australia	2310 [ML]			
1500-1600		ABC, Perth, Australia	9610			
1500-1600	F	ABC, Tennant Creek, Australia	2325 [ML]			
1500-1600		AWR, Alajuela, Costa Rica	15460			
1500-1600		Burma Broadcasting Service	5985			
1500-1600		CBC Northern Quebec Service	9625	11720		
1500-1600		CBN, St. John's, Newfoundland	6160			
1500-1600		CBU, Vancouver, British Colombia	6160			
1500-1600		CFCF, Montreal, Quebec	6005			
1500-1600		CFCN, Calgary, Alberta	6030			
1500-1600		CHNS, Halifax, Nova Scotia	6130			
1500-1600		Christian Science World Service	13760	17555	21780	
1500-1600		CKWX, Vancouver, British Colombia	6080			
1500-1600		CFRB, Toronto, Ontario	6070			
1500-1600	S	ELWA, Monrovia, Liberia	11830			
1500-1600		FEBC, Manila, Philippines	11850			
1500-1600		HCJB, Quito, Ecuador	11740	15115	17890	
1500-1600		King of Hope, Southern Lebanon	6280			
1500-1600		KNLS, Anchor Point, Alaska	11650			
1500-1600		KTWR, Agana, Guam	11650			
1500-1600		Radio Australia, Melbourne	5995	6035	6060	6080
			7205	7215	9580	15140
1500-1600	S	Radio Canada Int'l, Montreal	9625	11720	11955	17820
1500-1600		Radio Japan, Tokyo	11815	11865	15195	21700
1500-1600		Radio Jordan, Amman	9560			
1500-1600		Radio Korea (South), Seoul	9870			
1500-1600		Radio Moscow, USSR	9755	11840	11900	11995
			12030	12050	15135	15245
			15490	15585	17660	17685
1500-1600		Radio RSA, South Africa	11925	17745	21590	25790
1500-1600		SBC Radio One, Singapore	5010	5052	11940	
1500-1600		SLBC, Sri Lanka	9720			
1500-1600		Superpower KUSW, Utah	9850			
1500-1600		Voice of America, Washington	6110	9575	9645	9700
			9760	15205	15260	
1500-1600		Voice of Ethiopia, Addis Ababa	7165	9560		
1500-1600		Voice of Indonesia, Jakarta	11790	15150		
1500-1600		Voice of Kenya, Nairobi	6100			
1500-1600		Voice of Malaysia, Kuala Lumpur	4950			
1500-1600		Voice of Mediterranean, Malta	11925			
1500-1600		Voice of Nigeria, Lagos	7255	11770		
1500-1600		WHRI, Noblesville, Indiana	15105	21840		
1500-1600		WRNO, New Orleans, Louisiana	11965			
1500-1600		WYFR, Oakland, California	5950	11580		
1500-1600		WYFR Satellite Net	11830	13695	15215	
1515-1530	M-H	Radio Budapest, Hungary	7220	9585	9835	11910
			15160	15220		
1515-1600		FEBA, Mahe, Seychelles	11865	15325		
1515-1600		Radio Berlin Int'l, East Germany	6115	7295	9730	15255
1530-1545		All India Radio, New Delhi	3905	3925	4860	6160
			7160	7412	9545	9950
1530-1555		BRT, Brussels, Belgium	17580	21810		
1530-1600		Radio Prague, Czechoslovakia	6055	7395	9605	11685
			11990	13715	15110	15155
			17705	21505		
1530-1600		Radio Sweden, Stockholm	17880	21610	21675	
1530-1600		Radio Tanzania, Dar es Salaam	9684			
1530-1600		Radio Tirana, Albania	9480	11835		
1530-1600		Radio-Television Morocco, Rabat	17595			
1530-1600		Swiss Radio Int'l, Berne	13685	15430	17830	21630
1530-1600		Voice of Asia, Taiwan	5980	7445		
1530-1600		Voice of Nigeria, Lagos	15120			
1540-1550	M-A	Voice of Greece, Athens	15630	17550		
1545-1600		Radio Berlin Int'l, East Germany	7295	9730	15340	17775
1545-1600		Vatican Radio, Vatican City	15120	17730	21650	
1545-1600		Voice of Vietnam, Hanoi	10011	11750		
1550-1600	H-S	KTWR, Agana, Guam	9780			

1600 UTC [12:00 PM EDT/9:00 AM PDT]

1600-1605	SBC Radio One, Singapore	5010	5052	11940	
1600-1610	FEBA, Mahe, Seychelles	11865	15325		
1600-1610	Radio Lesotho, Maseru	4800			

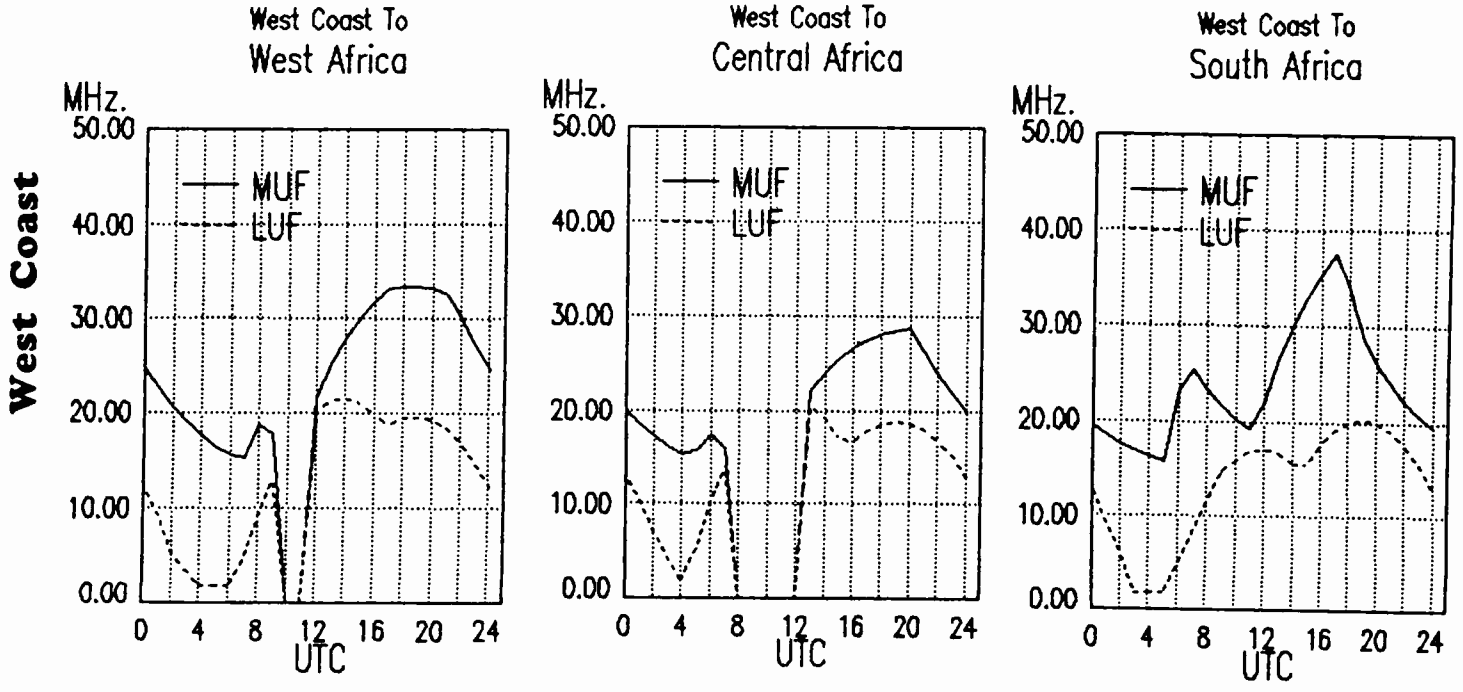


frequency section

1600-1625		Radio Budapest, Hungary	6110	9585	9835	11910
			15160			
1600-1625		Radio Prague, Czechoslovakia	6055	9605	11665	11685
			11990	13715	15110	15155
			17705	21505		
1600-1630		ELWA, Monrovia, Liberia	11830			
1600-1630		HCJB, Quito, Ecuador	15115	17890		
1600-1630		Radio Berlin Int'l, East Germany	7295	9730	15355	17780
1600-1630	S	Radio Norway Int'l, Oslo	15310	17780		
1600-1630		Radio Pakistan, Islamabad	7365	9465	9785	11615
			11625	15125		
1600-1630		Radio Polonia, Warsaw, Poland	6135	9540		
1600-1630	M-F	Radio Portugal, Lisbon	15120			
1600-1630		SLBC, Colombo, Sri Lanka	6075	9720		
1600-1630		Trans World Radio, Swaziland	5055	9525		
1600-1630		Voice of Asia, Taiwan	5980	7445		
1600-1630		Voice of Vietnam, Hanoi	12020	15010		
1600-1645		Radio Nacional Angola, Luanda	7245	9535	11955	
1600-1645		UAE Radio, United Arab Emirates	11730	15435	17865	
1600-1650		Deutche Welle, West Germany	6170	7200	9745	15105
			15595	17825	21680	
1600-1655		Radio Beijing, China	9570	11600	11715	15110
1600-1700	F	ABC, Alice Springs, Australia	2310	[ML]		
1600-1700		ABC, Perth, Australia	9610			
1600-1700	F	ABC, Tennant Creek, Australia	2325	[ML]		
1600-1700		AWR, Alajuela, Costa Rica	15460			
1600-1700		BBC, London, England	5975	5995	6195	7180
			9740	9410	11640	11750
			11775	11940	12095	15070
			15260	15400	17640	17705
			17880	21470	21710	25750
1600-1700		CBC Northern Quebec Service	9625	11720		
1600-1700		CBN, St. John's, Newfoundland	6160			
1600-1700		CBU, Vancouver, British Colombia	6160			
1600-1700		CFCF, Montreal, Quebec	6005			
1600-1700		CFCN, Calgary, Alberta	6030			
1600-1700		CHNS, Halifax, Nova Scotia	6130			
1600-1700		Christian Science World Service	21640			
1600-1700		CKWX, Vancouver, British Colombia	6080			
1600-1700		CFRB, Toronto, Ontario	6070			
1600-1700		KNLS, Anchor Point, Alaska	12020			
1600-1700		KSDA, Guam	11980			
1600-1700		KTWR, Guam	11650			
1600-1700		Radio Australia, Melbourne	5995	6035	6060	6080
			7205	7215	9580	
1600-1700		Radio Beijing, China	15130			
1600-1700		Radio France Int'l, Paris	6175	11705	15360	17620
			17795			
1600-1700		Radio Jordan, Amman	9560			
1600-1700		Radio Korea, Seoul, South Korea	5985	9870		
1600-1700		Radio Malawi, Blantyre	3380	5995		
1600-1700		Radio Moscow, USSR	11840	11900	11995	12030
			12050	15135	15585	17685
1600-1700		Radio Riyadh, Saudi Arabia	9705	9720		
1600-1700		Radio Tanzania, Dar es Salaam	9684			
1600-1700		Superpower KUSW, Utah	15650			
1600-1700		Voice of America, Washington, DC	9575	9645	9760	11920
			15205	15410	15445	15580
			15600	17785	17800	17870
1600-1700		WHRI, Noblesville, Indiana	11790	21840		
1600-1700		WINB, Red Lion, Pennsylvania	15295			
1600-1700		WRNO, New Orleans, Louisiana	11965			
1600-1700		WYFR, Oakland, California	11580	15215	17845	21615
1600-1700		WYFR Satellite Network	13695	15170	15345	
1600-1700		Radio Zambia, Lusaka	9580			
1605-1700	F,A	SBC Radio One, Singapore	5052	11940		
1615-1630		Radio Canada Int'l, Montreal	15305	15325	17795	17820
			21545			
1615-1630		Voice of Vietnam, Hanoi	10011	11750		
1630-1700	A	Radio Austria Int'l, Vienna	6155	11780	13730	21490
1630-1700		Radio Netherlands, Hilversum	6020	15570		
1630-1700		Radio Peace & Progress, USSR	6110	6135	9830	11670
			11695	11910	11775	12055
			17595	17615		
1630-1700		RTM Morocco	17595	17815		
1645-1700		Radio Canada Int'l, Montreal	15305	15325	17795	17820
1645-1700		Radio Korea (South), Seoul	5975	7275	9870	

1700 UTC [1:00 PM EDT/10:00 AM PDT]

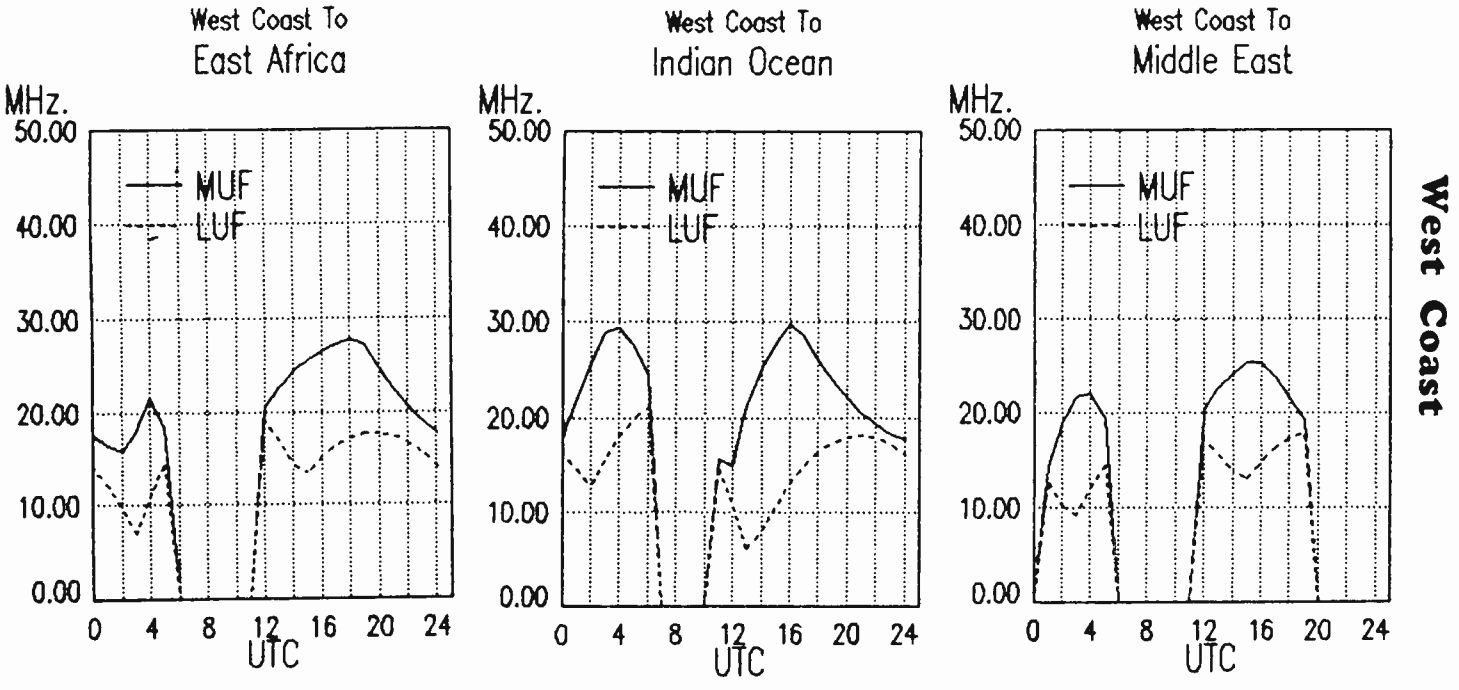
1700-1705		Radio Uganda, Kampala	4976	5026		
1700-1715		Kol Israel, Jerusalem	9385	11585	13750	
1700-1715	M-A	Voice of Namibia (Angola)	11955			
1700-1725		Radio Netherland, Hilversum	6020	15570		
1700-1730		Radio Australia, Melbourne	5995	6060	6080	7205
			9580	15140		
1700-1730		Radio Japan, Tokyo	9695	9535	11865	
1700-1730	S	Radio Norway Int'l, Oslo	17780	25730		
1700-1730		Radio Sweden Int'l, Stockholm	6065	9655		



1700-1730		SLBC, Colombo, Sri Lanka	11800			
1700-1745		BBC, London, England	9410	9740	11750	11775
			11940	12095	15070	15260
			15310	15400	17640	17695
			21470	25750		
1700-1750		Radio Pyongyang, North Korea	7290	9345	9640	9977
			11760			
1700-1755		Radio Beijing, China	9570	9750	11600	
1700-1800	F	ABC, Alice Springs, Australia	2310 [ML]			
1700-1800		ABC, Tennant Creek, Australia	2325 [ML]			
1700-1800		AWR Africa, Gabon	9625			
1700-1800		CBC Northern Quebec Service	9625	11720		
1700-1800		CBN, St. John's, Newfoundland	6160			
1700-1800		CBU, Vancouver, British Colombia	6160			
1700-1800		CFCF, Montreal, Quebec	6005			
1700-1800		CFCN, Calgary, Alberta	6030			
1700-1800		CHNS, Halifax, Nova Scotia	6130			
1700-1800		Christian Science World Service	21640			
1700-1800		CKWX, Vancouver, British Colombia	6080			
1700-1800		CFRB, Toronto, Ontario	6070			
1700-1800		Radio Havana Cuba	11920			
1700-1800		Radio Jordan, Amman	9560			
1700-1800		Radio Korea, Seoul, South Korea	5975	9870	15575	
1700-1800	M-F	Radio Malabo, Equatorial Guinea	9553 [ML]			
1700-1800		Radio Moscow, USSR	9540	9755	9795	9825
			9895	11730	11840	11995
			12030	12050	15135	15585
			15615	17570		
1700-1800		Radio for Peace, Costa Rica	21565	25945		
1700-1800		Radio Riyadh, Saudi Arabia	9705	9720		
1700-1800		Radio Tanzania, Dar es Salaam	9684			
1700-1800		Radio Zambia, Lusaka	9580			
1700-1800		RTM Morocco	17815			
1700-1800		SBC Radio One, Singapore	5052	11940		
1700-1800		Superpower KUSW, Utah	15650			
1700-1800	A,S	Swaziland Commercial Radio	6155			
1700-1800		Voice of Africa, Egypt	15255			
1700-1800		Voice of America, Washington	6110	9575	9645	9760
			11760	11920	15205	15410
			15445	15580	15600	17785
			17800	17870		
1700-1800		Voice of Kenya, Nairobi	6100			
1700-1800		Voice of Nigeria, Lagos	11770			
1700-1800		WHRI, Noblesville, Indiana	13760	15105		
1700-1800		WINB, Red Lion, Pennsylvania	15295			
1700-1800	S-F	WMLK, Bethel, Pennsylvania	9465			
1700-1800		WRNO, Louisiana	15420			
1700-1800		WYFR Satellite Net	13695	13770	15215	
1700-1800		WYFR, Okeechobee, Florida	15170	21615		
1715-1730	M-F	Radio Canada Int'l, Montreal	5995	7235	15325	17820
1715-1745		BBC, London, England*	3975	6185	7165	
1718-1800		Radio Pakistan, Islamabad	6210			
1725-1740		Radio Suriname Int'l, Paramibo	17835v			
1725-1800		Radio New Zealand, Wellington	11780	15150		
1730-1735		All India Radio, New Delhi	4840	4860	4920	6160
			7412	9950		
1730-1755		BRT, Brussels, Belgium	5915	11695		
1730-1755		Radio Austria Int'l, Vienna	5945	6155	12010	13730
1730-1755		Radio Bucharest, Romania	7105	9530	9685	11790
			11940	15270	15340	17745
1730-1800		Radio Australia, Melbourne	5995	6035	6060	6080
			7205	9580		
1730-1800		Radio Berlin Int'l, East Germany	9665	13610	15145	15255
1730-1800		Radio Polonia, Warsaw, Poland	6135	9540		
1730-1800		Radio Prague, Czechoslovakia	9605	11685	11990	13715
			15110	21505		
1730-1800		RAE, Buenos Aires, Argentina	15345			
1730-1800		Swiss Radio Int'l, Berne	3985	6165	9535	
1734-1800		FEBA, Mahe, Seychelles	11810			
1745-1800		BBC, London, England	9410	9740	11750	12095
			15070	15310	15400	17640
			17695	17885	21470	

1800 UTC [2:00 PM EDT/11:00 AM PDT]

1800-1805	A	SBC Radio One, Singapore	11940			
1800-1815		Radio Cameroon, Yaounde	3970	4750	4795	4850
			5010			
1800-1815		SLBC, Colombo, Sri Lanka	11800			
1800-1825	A,S	FEBA, Mahe, Seychelles	11760			
1800-1825		Radio Prague, Czechoslovakia	5930	7345	9605	11685
			11990	13715	15110	17840
			21505			
1800-1825		RAE, Buenos Aires, Argentina	15345			
1800-1830		BBC, London, England	7325	9410	9740	11750
			12095	15070	15310	15400
			15420	17640	17695	17880
			17885			
1800-1830	S	Radio Bamako, Mali	4835	5995		

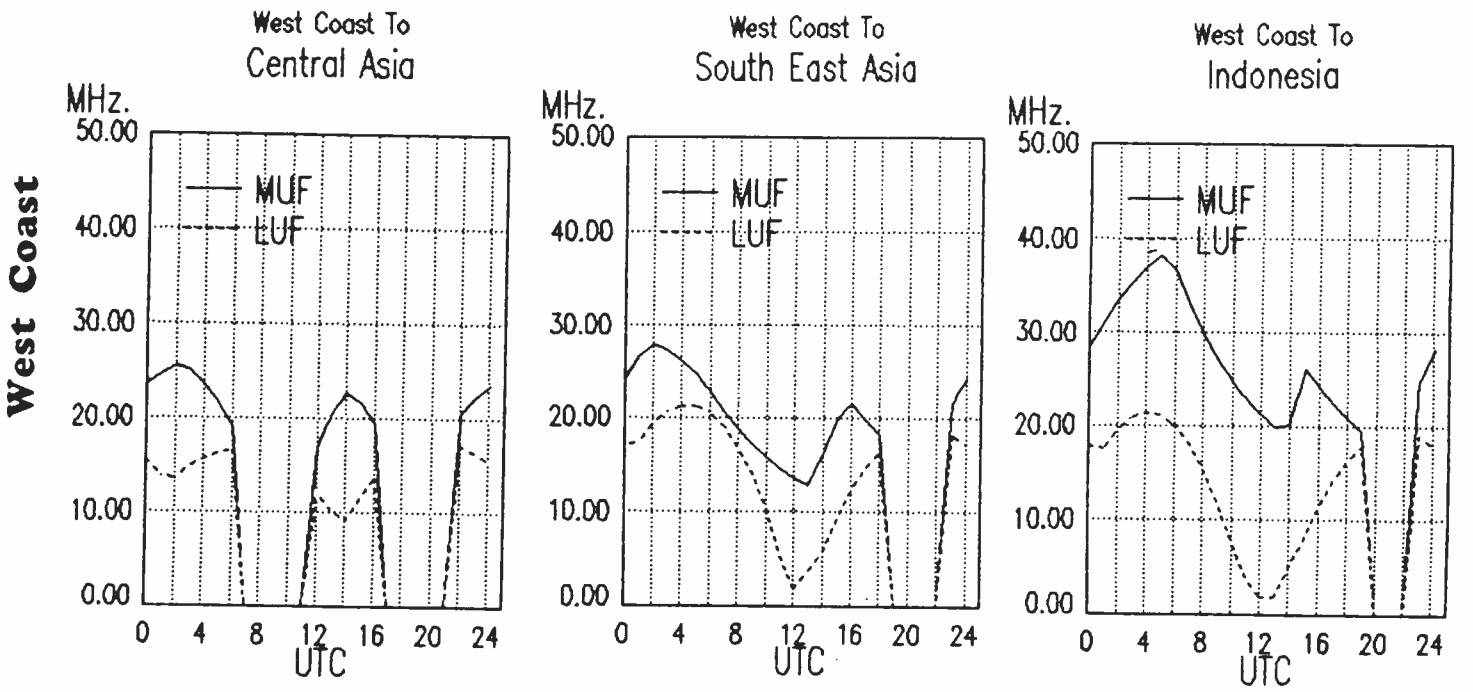


frequency section

1800-1830	M-F	Radio Canada Int'l, Montreal	15260	17820			
1800-1830		Radio Mozambique, Maputo	3265	4855	9618		
1800-1830	S	Radio Norway, Oslo	21730				
1800-1830		Voice of Africa, Egypt	15255				
1800-1830		Voice of Vietnam, Hanoi	12020	15010			
1800-1845		Radio Abidjan, Ivory Coast	11920				
1800-1845		Trans World Radio, Swaziland	9525				
1800-1850		Radio Bras, Brasilia, Brazil	15265				
1800-1856		Radio RSA, South Africa	17795	21535	21590		
1800-1900	F	ABC, Alice Springs, Australia	2310	[ML]			
1800-1900	F	ABC, Tennant Creek, Australia	2325	[ML]			
1800-1900		All India Radio, New Delhi	11935	15360			
1800-1900		CBC Northern Quebec Service	9625	11720			
1800-1900		CBN, St. John's, Newfoundland	6160				
1800-1900		CBU, Vancouver, British Colombia	6160				
1800-1900		CFCF, Montreal, Quebec	6005				
1800-1900		CFCN, Calgary, Alberta	6030				
1800-1900		CHNS, Halifax, Nova Scotia	6130				
1800-1900		Christian Science World Service	21640				
1800-1900		CKWX, Vancouver, British Colombia	6080				
1800-1900		CFRB, Toronto, Ontario	6070				
1800-1900		KNLS, Anchor Point, Alaska	11945				
1800-1900		Radio Australia, Melbourne	5995	6035	6060	6080	
			7205	7215	9580		
1800-1900	A,S	Radio Canada Int'l. Montreal	15260	17820			
1800-1900		Radio Jamahiriya, Libya	15450				
1800-1900		Radio Jordan, Amman	9560				
1800-1900		Radio Kuwait, Kuwait	11665				
1800-1900		Radio Malabo, Equatorial Guinea	9553v	[ML]			
1800-1900		Radio Moscow, USSR	9755	9825	9895	11730	
			11840	11990	12030	12050	
			15245	15295	15405	15425	
			15475	17570			
1800-1900		Radio New Zealand, Wellington	11780	15150			
1800-1900		Radio Riyadh, Saudi Arabia	9705	9720			
1800-1900		Radio Tanzania, Dar es Salaam	9684				
1800-1900		Radio Zambia, Lusaka	9580				
1800-1900		Superpower KUSW, Utah	15650				
1800-1900	A,S	Swaziland Commercial Radio	6155				
1800-1900		Voice of America, Washington	9575	9760	11760	11920	
			15205	15410	15445	15580	
			15600	17785	17800	17870	
1800-1900		Voice of Ethiopia	9662				
1800-1900		Voice of Kenya, Nairobi	6100				
1800-1900		Voice of Nigeria, Lagos	11770	15120			
1800-1900		WHRI, Noblesville, Indiana	13760	17830			
1800-1900		WINB, Red Lion, Pennsylvania	15295				
1800-1900	S-F	WMLK, Bethel, Pennsylvania	9465				
1800-1900		WRNO, New Orleans, Louisiana	15420				
1800-1900		WYFR, Oakland, California	11580	15215	15345		
1800-1900		WYFR Satellite Net, California	11830	13695			
1815-1900		Radio Bangladesh, Dhaka	6240	7505	11510	15510	
1800-1855		Radio Polonia, Warsaw, Poland	5995	6135	7125	7285	
			9525	11840			
1830-1855		BRT Brussels, Belgium	5915	11695			
1830-1900		BBC, London, England	7325	9410	9740	11750	
			12095	15070	15400	17885	
1830-1900		Radio Berlin Int'l, E. Germany	9665	13610	15145	15255	
1830-1900	M-F	Radio Canada Int'l, Montreal	9555	15325	17875	21675	
1830-1900		Radio Korea, Seoul, South Korea	9870	15575			
1830-1900	MWF	Radio Mozambique, Maputo	3265	4855	9618		
1830-1900		Radio Netherland, Hilversum	6020	15560	17605	21685	
1830-1900		Radio Sofia, Bulgaria	7245	9560	11735	15310	
1830-1900		Swiss Radio International, Berne	9885	11955			
1840-1850	M-A	Voice of Greece, Athens	11645	12045	15630		
1840-1900		Radio Senegal, Dakar	4950				
1845-1855		Radio Nacional, Conaky, Guinea	4833	4900	7125		
1845-1900		All India Radio, New Delhi	7412	11620			

1900 UTC [3:00 PM EDT/12:00 PM PDT]

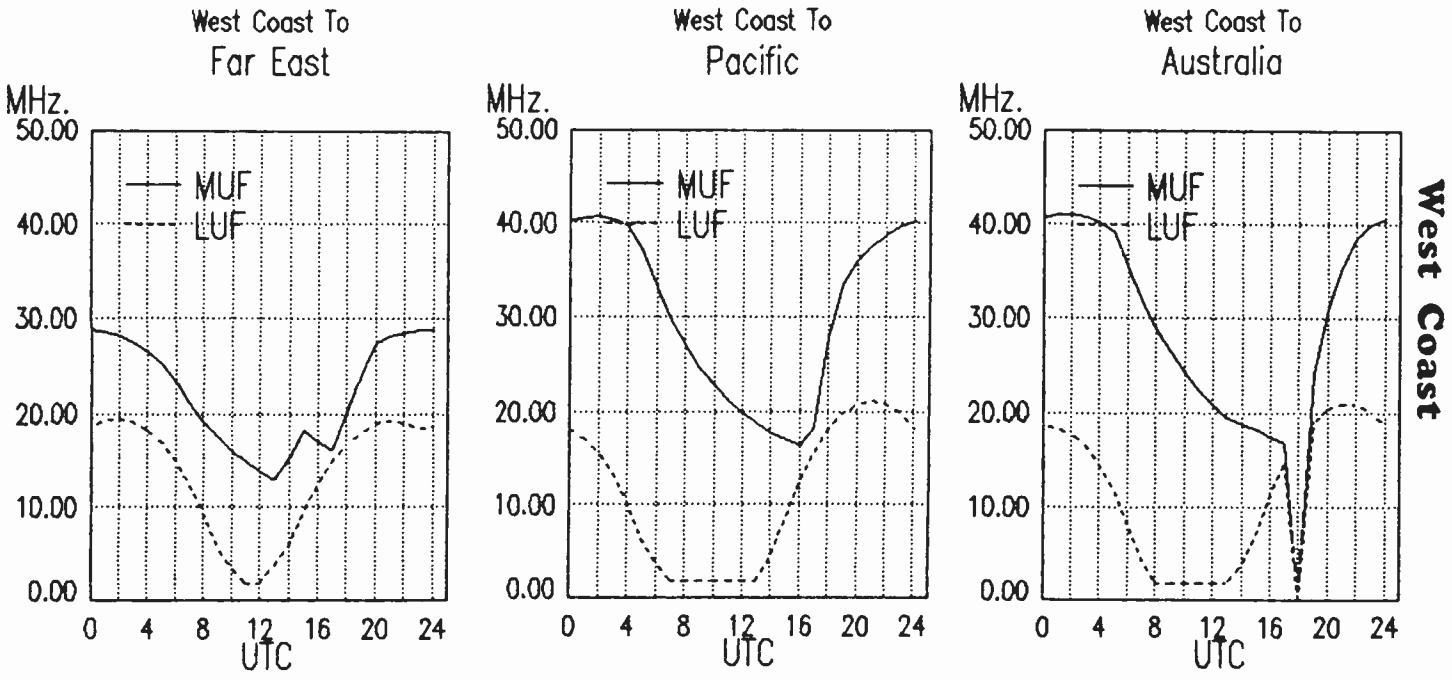
1900-1903		Africa No. 1, Gabon	15475				
1900-1905	M-A	Vatican Radio, Vatican City	6190	6248	7250	9645	
1900-1915		Radio Bangladesh, Dhaka	6240	7505	11510		
1900-1915		Radio Tanzania, Dar es Salaam	9684				
1900-1925		Radio Netherland, Hilversum	6020	15560	17605	21685	
1900-1925		Voice of Islamic Republic Iran	9695				
1900-1930	F	ABC, Alice Springs, Australia	2310	[ML]			
1900-1930	F	ABC, Tennant Creek, Australia	2325	[ML]			
1900-1930		Kol Israel, Jerusalem	11605	15640	17575	17590	
			17630				
1900-1930		Radio Afghanistan, Kabul	7160	7310	9640		
1900-1930		Radio Berlin Int'l, East Germany	9665	11920	15255		
1900-1930		Radio Japan, Tokyo	11865	15270			
1900-1930	S	Radio Norway Int'l, Oslo	15220	21705			
1900-1930	M-F	Radio Portugal, Lisbon	11740	11870	15250		
1900-1930		Radio Sofia, Bulgaria	7245	9560	11735	15310	
1900-1930		Voice of Vietnam, Hanol	9840	12020	15010		
1900-1950		Deutsche Welle, Koln, W. Germany	9745	11810	13790	15390	



1900-1955		Radio Beijing, China	6860	9470		
1900-2000		All India Radio, New Delhi	7412	11620	11935	15360
1900-2000		BBC, London, England	9410	9740	12095	15070
			15400	17695		
1900-2000		CBC Northern Quebec Service	9625	11720		
1900-2000		CBN, St. John's, Newfoundland	6160			
1900-2000		CBU, Vancouver, British Colombia	6160			
1900-2000		CFCF, Montreal, Quebec	6005			
1900-2000		CFCN, Calgary, Alberta	6030			
1900-2000		CHNS, Halifax, Nova Scotia	6130			
1900-2000		Christian Science World Service	21640			
1900-2000		CKWX, Vancouver, British Colombia	6080			
1900-2000		CFRB, Toronto, Ontario	6070			
1900-2000		HCJB, Quito, Ecuador	15270	17790	21470	
1900-2000		KYOI, Saipan	9455			
1900-2000		Radio Algiers, Algeria	9509	9685	15215	17745
1900-2000		Radio Australia, Melbourne	6035	6060	6080	7205
			7215	9580	15140	
1900-2000		Radio Ghana, Accra	6130			
1900-2000		Radio Havana Cuba	11800			
1900-2000		Radio Jordan, Amman	9560			
1900-2000		Radio Korea, Seoul, South Korea	9870	15575		
1900-2000		Radio Kuwait, Kuwait	11665			
1900-2000	M-A	Radio Malabo, Equatorial Guinea	9553	[ML]		
1900-2000		Radio Moscow, USSR	11730	11840	12030	12050
			13605	15135	15245	15425
			17570			
1900-2000		Radio Moscow British Service	7240	7350	9450	9695
1900-2000		Radio New Zealand, Wellington	11780	15150		
1900-2000		Radio Prague, Czechoslovakia	5930	7345	11855	
1900-2000		Radio Riyadh, Saudi Arabia	9705	9720		
1900-2000		Radio RSA, South Africa	7270	11900	15365	
1900-2000		Radio Zambia, Lusaka	9580			
1900-2000		Spanish Foreign Radio, Madrid	15280	15375	15395	
1900-2000		Superpower KUSW, Utah	15650			
1900-2000	A,S	Swaziland Commercial Radio	6155			
1900-2000		Trans World Radio Swaziland	3205			
1900-2000		Voice of America, Washington	9700	9760	11760	15205
			15410	15445	15580	15600
			17740	17785	17800	17870
1900-2000		Voice of Ethiopia, Addis Ababa	9595			
1900-2000		Voice of Kenya, Nairobi	6100			
1900-2000		Voice of Nigeria, Lagos	7255	11770		
1900-2000		WHRI, Noblesville, Indiana	13760	17830		
1900-2000		WINB, Red Lion, Pennsylvania	15295			
1900-2000	S-F	WMLK, Bethel, Pennsylvania	9465			
1900-2000		WRNO, New Orleans, Louisiana	15420			
1900-2000	IRR	WWCR, Nashville, Tennessee	15690			
1900-2000		WYFR, Oakland, California	11580	15215	15566	21615
1900-2000		WYFR Satellite Net, California	11830	13695	15170	
1910-1920		Radio Botswana, Gaborone	3356	4820		
1915-2000		Radio Berlin Int'l, East Germany	9665	13610	15255	
1920-1930	M-A	Voice of Greece, Athens	7430	9395	9425	
1930-1940		Radio Togo, Lome	5047			
1930-2000		ABC, Katherine, Australia	2485			
1930-2000		Radio Beijing, China	6955	7480	9440	
1930-2000		Radio Austria Int'l, Vienna	5945	6155	12010	13730
1930-2000		Radio Bucharest, Romania	7145	9690	9750	11940
1930-2000		Voice of Republic of Iran	6080	9022		
1930-2000		WINB, Red Lion, Pennsylvania	15185			
1935-1955		RAI, Rome, Italy	7275	7290	9575	
1940-2000	M-A	Radio Ulan Bator, Mongolia	9575	11870		
1945-2000		All India Radio, New Delhi	9755	11860		
1950-2000		Vatican Radio, Vatican City	6190	7250	9645	

2000 UTC [4:00 PM EDT/1:00 PM PDT]

2000-2005		Radio Zambia, Lusaka	3345	6165		
2000-2010	A	Radio Zambia, Lusaka	3345	6165		
2000-2010		Voice of Kenya, Nairobi	6100			
2000-2015		Radio Togo, Lome	3220	5047		
2000-2015	M-A	Radio Ulan Bator, Mongolia	9575	11870		
2000-2015		Trans World Radio, Swaziland	3205			
2000-2025		Radio Beijing, China	6955	7480	9440	9745
			11715			
2000-2025		Radio Bucharest, Romania	5990	6105	7145	7195
			9570	9690	11940	
2000-2030		Radio Australia, Melbourne	6035	7205	7215	9580
			9620			
2000-2030		Radio Berlin Int'l, East Germany	6115			
2000-2030		Radio Budapest, Hungary	6110	7220	9585	9835
			11910	15160		
2000-2030		Radio Ghana, Nairobi	3366	4915		
2000-2030		Radio Polonia, Warsaw, Poland	7125	7145	9525	
2000-2030		Swaziland Commercial Radio	6155			
2000-2030		Voice of Nigeria, Lagos	7255			
2000-2030		Voice of Republic of Iran	6080	9022		
2000-2045		All India Radio, New Delhi	7412	9755	9910	11620
			11860			

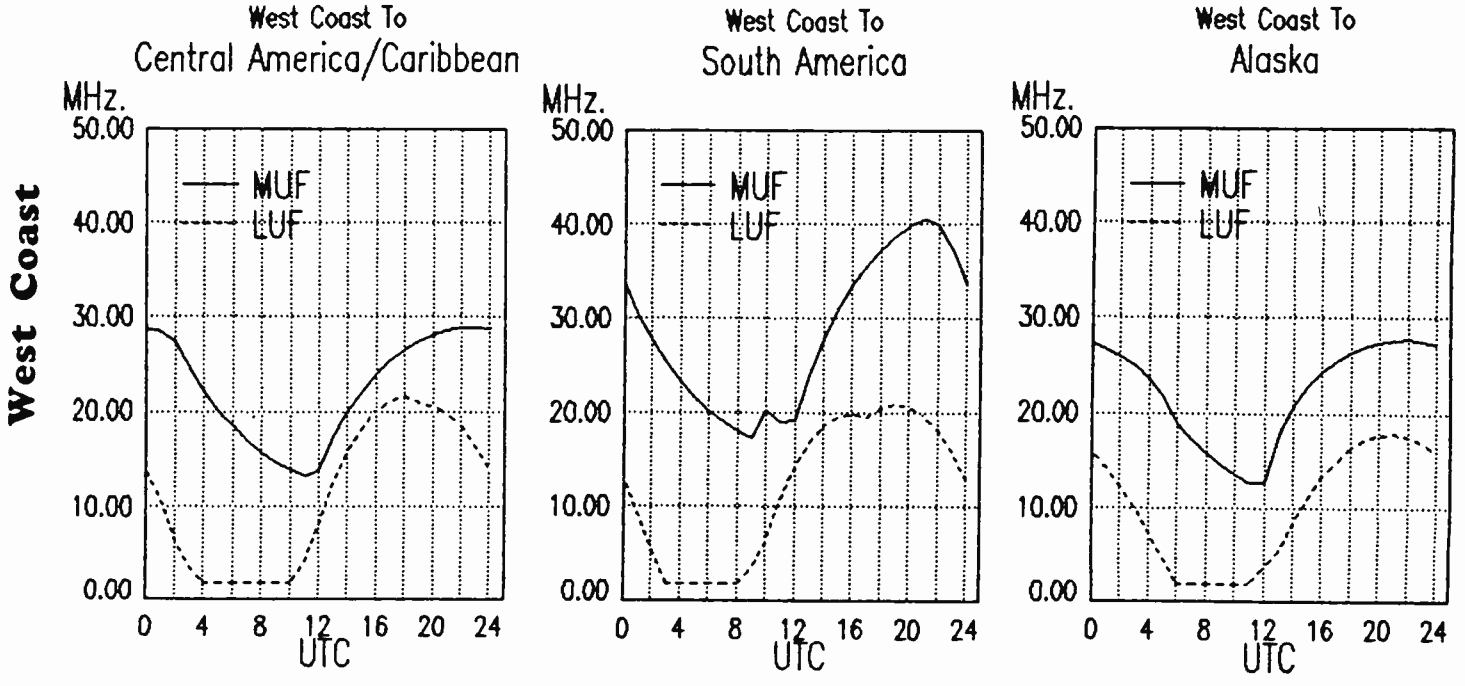


frequency section

2000-2050		Radio Pyongyang, North Korea	6576	9345	9640	9977
2000-2050		Voice of Turkey, Ankara	9825			
2000-2100	M-A	ABC, Alice Springs, Australia	2310	[ML]		
2000-2100		ABC, Katherine, Australia	2485			
2000-2100	M-A	ABC, Tennant Creek, Australia	2325	[ML]		
2000-2030		BBC, London, England	11820	12095	15070	15260
			15400	17695	17760	17755
			17880			
2000-2100		CBC Northern Quebec Service	9625	11720		
2000-2100		CBN, St. John's, Newfoundland	6160			
2000-2100		CBU, Vancouver, British Colombia	6160			
2000-2100		CFCF, Montreal, Quebec	6005			
2000-2100		CFCN, Calgary, Alberta	6030			
2000-2100		CHNS, Halifax, Nova Scotia	6130			
2000-2100		Christian Science World Service	15390	17555	21640	
2000-2100		CKWX, Vancouver, British Colombia	6080			
2000-2100		CFRB, Toronto, Ontario	6070			
2000-2100		King of Hope, Southern Lebanon	6280			
2000-2100		KVOH, Rancho Simi, California	17775			
2000-2100		Radio Baghdad, Iraq	13660			
2000-2100		Radio Havana Cuba	11800			
2000-2100		Radio Jordan, Amman	9560			
2000-2100		Radio Kuwait, Kuwait	11665			
2000-2100		Radio Malabo, Equatorial Guinea	9553v			
2000-2100		Radio Moscow, USSR	11675	11730	11820	11840
			12030	12050	13605	15295
			15535	21630		
2000-2100		Radio New Zealand, Wellington	12050	15150		
2000-2100	A,S	Radio for Peace, Costa Rica	21565	25945		
2000-2100		Radio Riyadh, Saudi Arabia	9705	9720		
2000-2100		Radio Tonga, Tonga	5050			
2000-2100		Radio Zambia, Lusaka	9580			
2000-2100		Superpower KUSW, Utah	15650			
2000-2100		Voice of America, Washington	9700	9760	11760	15205
			15410	15445	15580	15600
			17785	17800	17870	
2000-2100		Voice of Nigeria, Lagos	11770			
2000-2100		WHRI, Noblesville, Indiana	13760	17830		
2000-2100		WINB, Red Lion, Pennsylvania	15185			
2000-2100	S-F	WMLK, Bethel, Pennsylvania	9465			
2000-2100		WRNO, New Orleans, Louisiana	15420			
2000-2100	IRR	WWCR, Nashville, Tennesee	15690			
2000-2100		WYFR, Oakland, California	11580	15215	15566	17845
			21525	21615		
2000-2100	M-A	WYFR Satellite Net, California	13695	15170		
2005-2100		Radio Damascus, Syria	15095	17710		
2010-2100	A,S	Voice of Kenya, Nairobi	6100			
2015-2100		ELWA, Monrovia, Liberia	11830			
2025-2045		RAI, Rome, Italy	6165	9575		
2030-2055		Radio Polonia, Warsaw, Poland	6095	7285		
2030-2100		BBC, London, England	5975	7325	9410	11750
			11920	12095	15070	15140
			15260	15400	17695	17755
			17760			
2030-2100		Radio Australia, Melbourne	9580	9620		
2030-2100		Radio Beijing, China	6955	7480	9440	9745
			11790			
2030-2100		Radio Korea, Seoul, South Korea	6480	7550	15575	
2030-2100		Radio Netherland, Hilversum	9860	13700	15560	
2030-2100		Radio Sofia, Bulgaria	7115	7155	9700	11720
			15290	15330		
2030-2100	M	Radio Tallin, Estonian SSR	5925			
2030-2100		Radio Tirana, Albania	9480	11835		
2030-2100		Voice of Africa, Cairo, Egypt	15375			
2030-2100		Voice of Vietnam, Hanoi	9840	12020	15010	
2045-2100		All India Radio, New Delhi	7412	9550	9910	11620
			11715			
2045-2100		IBRA Radio, Malta	7110			
2045-2100		Vatican Radio, Vatican City	9625	11700	11695	15120

2100 UTC [5:00 PM EDT/2:00 PM PDT]

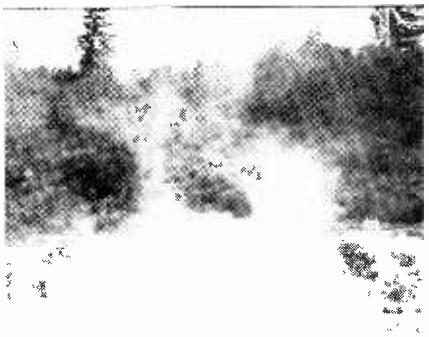
2100-2105		Radio Damascus, Syria	15095	17710		
2100-2105		Radio Zambia, Lusaka	3345	6165		
2100-2110		Vatican Radio, Vatican City	6190	7250	9645	
2100-2110	A,S	Voice of Kenya, Nairobi	6100			
2100-2115		IBRA Radio, Malta	7110			
2100-2125		BRT, Brussels, Belgium	5915	9925		
2100-2125		Radio Beijing, China	6955	7480	9440	9745
			11790			
2100-2125		Radio Bucharest, Romania	5990	6105	7145	7195
			9690	11940		
2100-2125		Radio Finland, Helsinki	6120	11755	11845	
2100-2125		Radio Netherland, Hilversum	9860	13700	15560	
2100-2130	S	Radio Austria Int'l, Vienna	5945	6155	9585	9870
2100-2130		Radio Japan, Tokyo	11800	11945	15230	17810
			17890			
2100-2130		Radio Korea, Seoul, South Korea	6480	7550	15575	

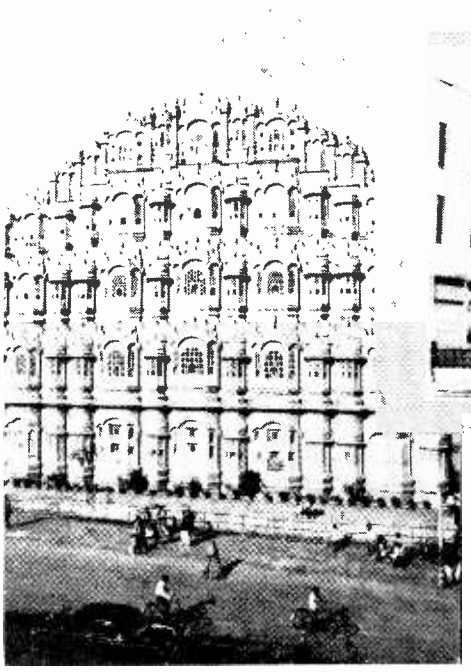


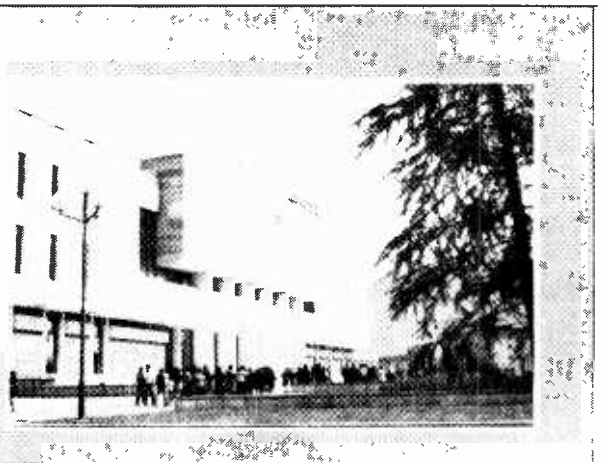
2100-2130		Radio Peace & Progress, USSR	7340	7420	9550	9820
			11980	15240		
2100-2130		Radio Sweden, Stockholm	9655	11705		
2100-2130		Swiss Radio Int'l, Berne	9885	13635	15570	
2100-2135		ELWA, Monrovia, Liberia	11830			
2100-2145		Radio Berlin Int'l, East Germany	9730			
2100-2145		Radio Yugoslavia, Belgrade	7215	9620	11735	15105
2100-2150		Radio Baghdad, Iraq	13660			
2100-2200	IRR	WWCR, Nashville, Tennesee	15390			
2100-2200		WYFR, Oakland, California	11580	13695	15170	15215
			15430	15566	17845	21525
			21615			
2100-2150		Deutsche Welle, West Germany	9765	15435		
2100-2155		Radio Beijing, China	9860	11500		
2100-2200	M-A	ABC, Alice Springs, Australia	2310	[ML]		
2100-2200		ABC, Katherine, Australia	2485			
2100-2200	M-A	ABC, Tennant Creek, Australia	2325	[ML]		
2100-2200		All India Radio, New Delhi	7412	9910	11620	11715
2100-2200		BBC, London, England	3995	5975	6005	6175
			6180	7325	9410	11750
			12095	15070	15140	15260
			15400	17755	17760	
2100-2200	M-F	CBC Northern Quebec Service	9625	11720		
2100-2200		CBN, St. John's, Newfoundland	6160			
2100-2200		CBU, Vancouver, British Colombia	6160			
2100-2200		CFCF, Montreal, Quebec	6005			
2100-2200		CFCN, Calgary, Alberta	6030			
2100-2200		CHNS, Halifax, Nova Scotia	6130			
2100-2200		Christian Science World Service	15390	17555	21640	
2100-2200		CKWX, Vancouver, British Colombia	6080			
2100-2200		CFRB, Toronto, Ontario	6070			
2100-2200		King of Hope, Southern Lebanon	6280			
2100-2200		KSDA, Agat, Guam	7365	15125		
2100-2200		KVOH, Rancho Simi, California	17775			
2100-2200		Radio Australia, Melbourne	15160	15240	15395	17795
2100-2200	A,S	Radio Canada Int'l, Montreal	13660	15325	17875	
2100-2200		Radio Jordan, Amman	9560			
2100-2200		Radio Moscow, USSR	9665	11675	11730	11820
			11940	11980	12055	13605
			15295	15535	15560	
2100-2200	A,S	Radio Malabo, Equatorial Guinea	9552.5			
2100-2200		Radio Tonga, Tonga	5050			
2100-2200		Radio for Peace, Costa Rica	21565	25945		
2100-2200	A,S	Radio Zambia, Lusaka	9580			
2100-2200		Spanish Foreign Radio, Madrid	11790	15280		
2100-2200	M-A	Superpower KUSW, Utah	15650			
2100-2200		Voice of Africa, Cairo, Egypt	15280			
2100-2200		Voice of America, Washington	9700	9760	11760	15205
			15410	15445	15580	15600
			17785	17800	17870	
2100-2200		Voice of Nigeria, Lagos	15120			
2100-2200		WHRI, Noblesville, Indiana	13760	17830		
2100-2200		WRNO, New Orleans, Louisiana	13720			
2103-2200		WINB, Red Lion, Pennsylvania	15185			
2110-2200		Radio Damascus, Syria	15095	17710	17910	
2110-2200		VOA Pacific Service	9525	11965	15185	
2115-2200		Radio Cairo, Egypt	9900			
2125-2155	S	Radio Austria Int'l, Vienna	9870			
2130-2145		BBC, London, England*	5965	7160		
2130-2200		BBC, London, England*	6030	7230	9635	
2130-2200		HCJB, Quito, Ecuador	15270	17790	21470	
2130-2200		Kol Israel, Jerusalem	11605	15640	17630	
2130-2200	A,S	Radio Canada Int'l, Montreal	11880	15150	17820	
2130-2200	M-F	Radio Canada Int'l, Montreal	13660	15325	17875	
2130-2200		Radio Sofia, Bulgaria	11660	15330		
2130-2200		Radio Vilnius, Lithuanian SSR	6100			
2130-2200		Swiss Radio Int'l, Berne	6190			
2135-2150	S-F	ELWA, Monrovia, Liberia	11830			
2145-2200		Radio Berlin Int'l, East Germany	5965	9730		
2150-2200	M-F	ELWA, Monrovia, Liberia	11830			

2200 UTC [6:00 PM EDT/3:00 PM PDT]

2200-2205	M-F	ELWA, Monrovia, Liberia	3993	11830		
2200-2205		Radio Damascus, Syria	15095	17710		
2200-2210		Radio Sierra Leone, Freetown	5980			
2200-2215	M-A	ABC, Alice Springs, Australia	2310	[ML]		
2200-2215	M-A	ABC, Tennant Creek, Australia	2325	[ML]		
2200-2215		BBC, London, England*	5965	7160		
2200-2215	M-F	Voice of America, Washington	9640	11740	15120	
2200-2225		RAI, Rome, Italy	5990	9710		
2200-2225		Vatican Radio, Vatican City	9615	11830	15105	
2200-2230		ABC, Katherine, Australia	2485			
2200-2230		All India Radio, New Delhi	7412	9550	9910	11620
			11715			
2200-2230		CBC Northern Quebec Service	9625	11720		
2200-2230	S	KGEI, San Francisco, California	15280			
2200-2230		Radio Beijing, China	3985	6165		



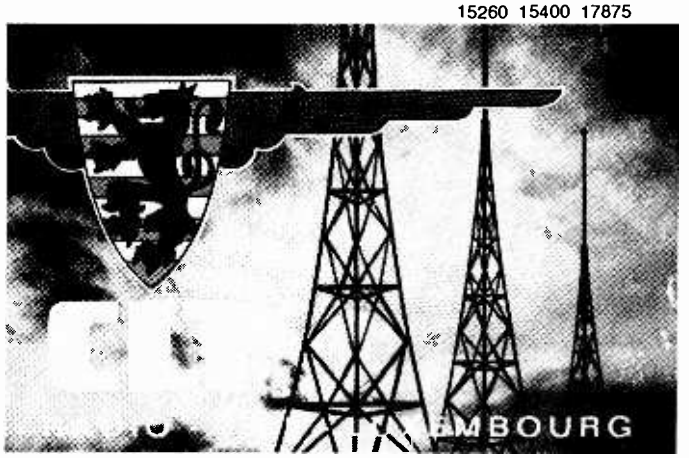




A nice collection of QSLs provided by Don Mumma of Houston, Texas. He's obviously monitored all corners of the globe, from New Zealand to All India Radio (left) to Albania (see article on Balkan stations, this issue) to Luxembourg!

frequency section

2200-2230		Radio Berlin Int'l, East Germany	5965	9730		
2200-2230		Radio Canada Int'l, Montreal	5960	9755	11905	
2200-2230		Radio Jordan, Amman	9560			
2200-2230	S	Radio Norway Int'l, Oslo	25730			
2200-2230		Radio Prague, Czechoslovakia	6055			
2200-2230		Radio Sofia, Bulgaria	11660	15330		
2200-2230		Radio Vilnius, Lithuanian SSR	6100	7400	11675	11790
			11875	12000	15180	15455
			17665			
2200-2245		BBC, London, England	3955	5975	6005	6175
			7325	9410	9590	9915
			11920	12095	15070	15260
			15400	17755	17785	
2200-2245		Radio Cairo, Egypt	9900			
2200-2250		Voice of Turkey, Ankara	9445	9685	17760	
2200-2255		RAE, Buenos Aires, Argnetina	11710	15345		
2200-2300		CBN, St. John's, Newfoundland	6160			
2200-2300		CBU, Vancouver, British Colombia	6160			
2200-2300		CFCF, Montreal, Quebec	6005			
2200-2300		CFCN, Calgary, Alberta	6030			
2200-2300		CHNS, Halifax, Nova Scotia	6130			
2200-2300		Christian Science World Service	9465	15300	17555	
2200-2300		CKWX, Vancouver, British Colombia	6080			
2200-2300		CFRB, Toronto, Ontario	6070			
2200-2300		King of Hope, Southern Lebanon	6280			
2200-2300		KVOH, Rancho Simi, California	17775			
2200-2300		Radio Australia, Melbourne	15160	15240	15320	15395
			17795	21740		
2200-2300		Radio for Peace, Costa Rica	21565	25945		
2200-2300		Radio Havana Cuba	7140			
2200-2300		Radio Moscow, USSR	12055	15560	17570	17605
			17655	17850		
2200-2300		Radio Moscow North American Svc	9530	9765	11710	11730
			11750	15245	15290	
2200-2300		Radio Tonga, Tonga	5050			
2200-2300		SBC Radio One, Singapore	5010	5052	11940	
2200-2300	M-A	Superpower KUSW, Utah	15580			
2200-2300		Voice of America, Washington	11760	15185	15290	15305
			15320	17735	17740	17820
			18157	USB		
2200-2300		Voice of Free China, Taiwan	9955	15370	15440	17845
2200-2300		Voice of the UAE, Abu Dhabi	9595	11985	13605	
2200-2300		WHRI, Noblesville, Indiana	13760	17830		
2200-2300		WINB, Red Lion, Pennsylvania	15185			
2200-2300		WRNO, New Orleans, Louisiana	13720			
2200-2300		WYFR, Oakland, California	11580	13695	15170	15215
			21525			
2215-2230		BBC, London, England*	11820	15390		
2230-2300	A,S	CBC Northern Quebec Service	9625	11720		
2230-2300		Radio Mediterran, Malta	6110			
2230-2300		Radio Polonia, Warsaw, Poland	5995	6135	7125	7270
2230-2300		Radio Tirana, Albania	7215	9480		
2245-2300		All India Radio, New Delhi	6055	7215	9535	9910
			11715	11745		
2245-2300		BBC, London, England	3955	5975	6005	6175
			7325	9410	9570	9590
			9915	11785	11945	12095
			15260	15400	17875	



2300 UTC [7:00 PM EDT/4:00 PM PDT]

2300-2330		Kol Israel, Jerusalem	11605	15615	15640	
2300-2330		Radio Canada Int'l, Montreal	9755	11730		
2300-2330		Radio Mediterran, Malta	6110			
2300-2330		Radio Norway, Oslo	15190			
2300-2330		Radio Prague, Czechoslovakia	13715			
2300-2345		WINB, Red Lion, Pennsylvania	15145			
2300-2345		WYFR, Oakland, California	5985	11580	15170	
2300-2350		Radio Pyongyang, North Korea	13650			
2300-0000		All India Radio, New Delhi	6055	7215	9535	9910
			11715	11745		
2300-0000		BBC, London, England	3955	5975	6005	6175
			7325	9410	9590	9915
			11945	12095	15260	17875
2300-0000	M-F	CBC Northern Quebec Service	6195	9625		
2300-0000		CBN, St. John's, Newfoundland	6160			
2300-0000		CBU, Vancouver, British Colombia	6160			
2300-0000		CFCF, Montreal, Quebec	6005			
2300-0000		CFCN, Calgary, Alberta	6030			
2300-0000		CHNS, Halifax, Nova Scotia	6130			
2300-0000		Christian Science World Service	9465	15300	17555	
2300-0000		CKWX, Vancouver, British Colombia	6080			
2300-0000		CFRB, Toronto, Ontario	6070			
2300-0000		KVOH, Rancho Simi, California	17775			
2300-0000		Radio Australia, Melbourne	15160	15240	15320	15395
			17795	21740		
2300-0000		Radio for Peace, Costa Rica	21555			
2300-0000		Radio Japan, Tokyo	11800	17765	21610	
2300-0000		Radio Luxembourg	6090			
2300-0000		Radio Moscow	11845	12025	12055	17620
			17850	21690	21790	
2300-0000		Radio Moscow, (N. American Srvc)	9530	9765	11710	11730
			11750	15290		
2300-0000		Radio Polonia, Warsaw	5995	6135	7125	7270
2300-0000		Radio Sofia, Bulgaria	11660	15330		
2300-0000		Radio Thailand, Bangkok	9655	11905		
2300-0000		Radio Tonga, Tonga	5050			
2300-0000		SBC Radio One, Singapore	5010	5052	11940	
2300-0000		Superpower KUSW, Utah	15580			
2300-0000		Voice of America, Washington, DC	15290	17735	17820	18157
			USB			
2300-0000		Voice of the UAE	6170	9595	11985	13605
2300-0000		WHRI, Noblesville, Indiana	13760	17830		
2300-0000		WRNO, New Orleans, Louisiana	13720			
2315-2330		BBC, London, England*	11820	15390		
2330-0000	M-A	Radio Budapest, Hungary	6110	9520	9585	9835
			11910	15160		
2330-0000		Radio Canada Int'l, Montreal	9955	15370	15440	17845
2330-0000		Radio Kiev, Ukrainian SSR	11675	11790	11875	12000
			13645	15180		
2330-0000		Radio Korea, Seoul, South Korea	15575			
2330-0000		Radio Tirana, Albania	9760v			
2330-0000		Voice of Vietnam, Hanoi	9840	15010		
2330-2355	M-A	BRT, Brussels, Belgium	9925			
2335-2345	M-A	Voice of Greece, Athens	9395	9420	11645	
2345-0000		BBC, London, England*	3915	6080	7180	9580
2345-0000		Radio Berlin Int'l, Eaast Germany	6080	11890		
2348-0000		WINB, Red Lion, Pennsylvania	15145			

DID WE MISS SOMETHING?

Let us know your corrections and additions by sending them to frequency manager Greg Jordan at 7009-I Brandemere Lane, Winston-Salem, NC 27106.

Send your special QSLs or good photocopies to share with other monitors as we have space. We'll copy the QSLs and return them to you within the month. Send to QSL, P.O. Box 98, Brasstown, NC 28902.

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But the features don't stop here. Optional accessories include the RC-12 remote controller, ACC 67 extendable whip antenna, a voice synthesizer to announce frequency settings, and even an access port for external computer control!

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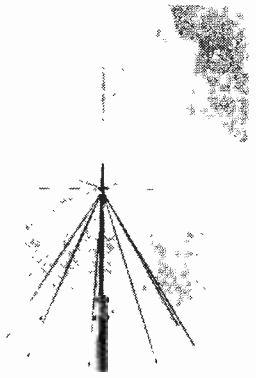
Designed for use with the ICOM R7000 receiver (25-2000 MHz continuous coverage), the AH7000 discone consists of 16 rugged, stainless steel elements and is capable of transmitting up to 200 watts in the amateur 50, 144, 220, 432, 900, and 1200 MHz bands.

As a receiving antenna the AH7000 is superb, outperforming any omnidirectional antenna we have ever used for continuous 25-1000 MHz (and above) coverage. A base-loaded, vertical top element is used as a low band (30-50 MHz) frequency extender.

The elements are arranged on a 24-inch support pipe equipped with two strong mounting brackets to accommodate any standard mast-pipe (1" to 2⅛" diameter). Included is approximately 50 feet of low loss 50 ohm coaxial cable with N connectors factory installed. Receiver adaptors available at additional cost at time of order: **Order ANT-3**



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What's the best programmable scanner for you?

One of the most difficult questions we get asked here at *MT* headquarters is, "What is the best scanner"? Since different listeners have different applications and expectations, there is no simple answer.

For example, if you are in a crowded metropolitan area and strong signals come bursting through with ease, you need a scanner with high intermod rejection and plenty of memory channel capacity for all those frequencies. Try the Realistic PRO2005, AOR AR2002 or 2515 -- all three are noted for high signal level tolerance as well as ample memory space.

Out in the boonies where signals are hard to hear even with an outside antenna? Try a Bearcat BC800XLT or BC760XLT. If you don't have 800 MHz systems in your area and don't anticipate any or care to listen for them, the BC 580XLT should fill the bill.

Base or Mobile?

All base scanners on the market operate from 12 volts DC, allowing for mobile applications. This doesn't mean, however, that they are all suitably equipped for mobile installation. If you wish to mount your scanner under the dash, better check to make sure it will fit -- and that a mobile mount kit is available for it.

Even if the scanner of your dreams doesn't come with a mobile kit you can still purchase a universal mobile mount from autosound specialty shops, department chain electronics departments and even CB vendors.

Besides Uniden, AOR is the only other manufacturer with a strong presence in the scanning market.

What do handhelds sacrifice?

Audio quality. Other than that, they are just as sensitive, selective and "powerful" as their grown-up cousins. For this reason they are popular choices for those monitors on the go who want handheld readiness, but mobile or base performance. Their BNC connectors allow them to be attached to rooftop or mobile antennas with ease and they may even be powered from the car battery -- with an appropriate adaptor if necessary.

Crystal versus programmable

We generally don't recommend replaceable-crystal scanners. Even manufacturers are gradually phasing them out of production. Unless you never plan to change frequencies, the programmables are the way to go. You never have to order crystals, they have equal (or better) performance, and introductory-level programmables are as affordable as the crystal types.

What about those entry level scanners?

Consumer electronics is a tightly competitive marketplace and you usually get what you pay for. With scanners, the compromise is usually in quality of packaging (lots of plastic, slide controls instead of quality rotary controls); functional options like channel -- but not frequency -- readout, no search capability, small memory capacity; and signal handling ability (image and intermod rejection,

If you're in the boonies and don't need 800 MHz, the BC 580XLT should fill the bill.

adjacent-channel interference mediocre signal handling capacity (intermod, images and desensitization from strong signal overload).

Oddly enough, sensitivity, which seems to be everyone's primary concern (although it shouldn't be) in a scanner's performance, is virtually identical at all pricing levels.

How many scanner manufacturers are out there?

Uniden and AOR -- that's about it. Even other labels like Regency, Cobra and some Realistic models from Radio Shack are Uniden products. It has been estimated that the Uniden Corporation now controls about 80 percent of the American scanner market.

AOR is imported from Japan by Ace Communications and their products are available factory-direct as well as from several MT advertisers.

How do I choose a reputable dealer?

There are two ways to shop: by price and by reputation for service. If you're lucky, you may get both.

There are dealers who play the numbers game, offering enticing prices and operating on a small margin, profiting in volume. They are not interested in answering questions. If you know what you want and price is the most important consideration, you may wish to buy from them.

If you want a friendly dealer who will take the time to answer your questions and provide post-sale support in case of difficulty, then shop by reputation. If you're a newcomer, ask other scanner owners. It's amazing how often the same names come up!

What's in store for Scannies?

While it is always dangerous to make long-term predictions in an industry as volatile as consumer electronics, we venture: wider frequency coverage, more modes, more memory channels, faster scan speeds, return of cellular frequencies, smaller size, better dynamic range, better adjacent-channel selectivity, signal strength indicators and computer controllability.

Some of these features are already found on some scanners; the path has been set by product acceptance and, if the manufacturers are willing to listen to us, will be implemented in scanners of the future.

mt

consumer electronics

This summer's Consumer Electronics show in Chicago experienced a rather light turnout this year. But CES officials claim exhibitors were satisfied with the traffic. Some 94 percent of top industry retailers reportedly attended the show.

Casio Inc. president John McDonald responded "excellent" when asked how the show went for his company. "We had nothing but quality buyers," he said. "As long as they were here, that's fine."

Toshiba's Richard Meidenbauer found a high level of interest in larger screen television and sets with upgraded sound. "We also found a lot of interest in our car audio products."

Overall, said Wayne Jacobs, president of the marketing and research firm of Jacobs, Jenner and Kent, "the mood was optimistic."

"YOUR RADAR DETECTOR JUST BECAME OBSOLETE."

So reads an ad for the Trident System radar detector currently running in a number of magazines around the country.

According to the manufacturer, the Trident is based around a "hypersensitive" X, K and instant-on band radar detector.

Of course, there are times when that isn't enough. "In typical situations," says the ad, "radar detectors are not effective beyond three-quarters of a mile."

So the people at Trident have built a police scanner into their radar detector "and pre-programmed it with every state, county and city police frequency for all 50 states."

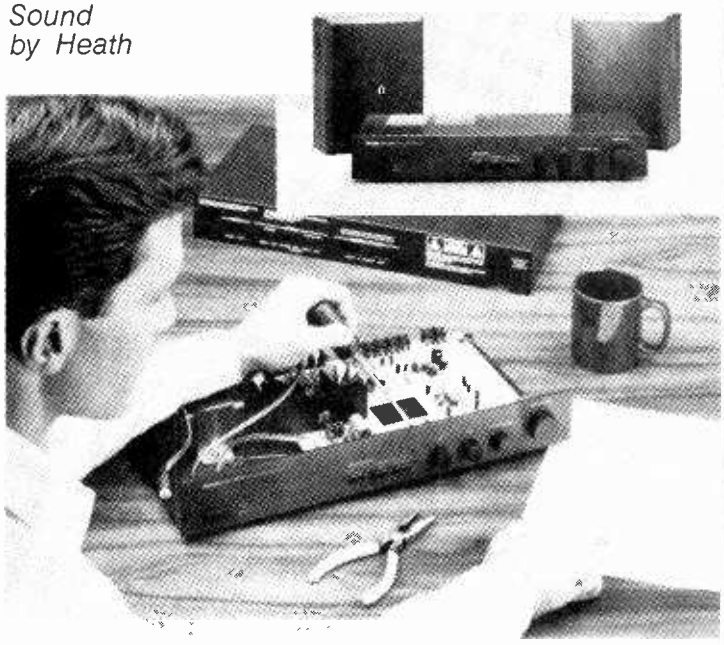
You press a button to tell the unit what state you're in and then "when you hear any police communications (For example: 'Blue Chevy two door clocked at 70'), you know there's probably a speed trap within the next seven miles."

There is also a CB that lets you "hear about speed traps from other drivers in the area."

The Trident is a compact 5-5/8 inches wide, 4-7/8 inches deep and 1-3/4 inches high. It is offered on a 30-day, no hassle, money back guarantee plus a full 3-year limited warranty on parts and service. It retails for $364.00. To order, call 1-800-874-3468.

Azimuth's "Weather Star"

Surround Sound by Heath



The quality of movie theatre audio can now be recreated in your home with a Heath Surround Sound Processor unit. When combined with two speakers placed in the rear of the room, the processor transforms any home stereo audio/video installation into a surround sound system.

"Surround sound" puts the viewer/listener into the center of the action, lending a three-dimensional feel to surround encoded video tapes, laser discs and MTS stereo broadcasts.

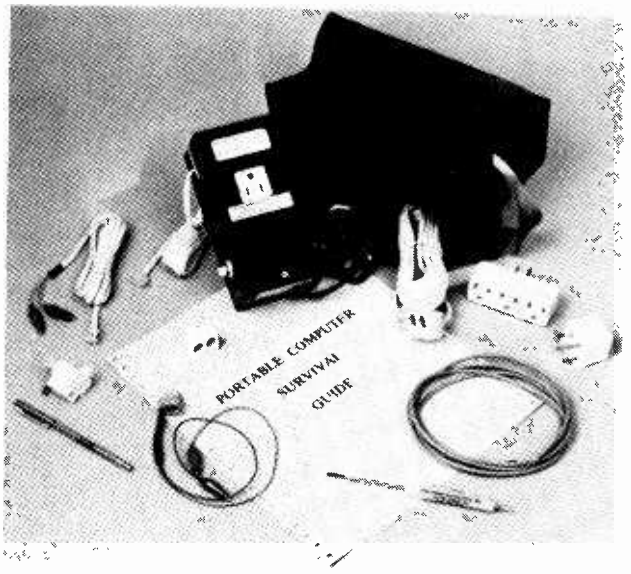
But sakes alive! This thing comes in kit form! Yep. But don't worry. Says Heath product manager Paul Gehlbach, "This is not a difficult kit. You need only minimal kit building experience, basic soldering tools and two to three free evenings to experience the excitement of surround sound."

The Dolby Surround Sound Processor kit, model AD-2550, measures 2-3/4" high x 17" wide x 8-1/2 " deep and sells for $199.95. For more information or to order Heath's free catalogue, call toll-free 1-800-44-HEATH or write to 350-043, Benton Harbor, MI 49022.

Voice and data communications are becoming more and more susceptible to interception. Confidential information falls into the hands of competitors. Foreign governments tap into your technology. And information is "leaked" to the general public.

The Secureline 440 encryption system insures the confidentiality of your telephone calls and data transmissions. It transforms voice signals into a stream of digits which are then encrypted by a three-level, randomly generated key system. It is virtually impossible, say the manufacturers, to unscramble.

Electronic Specialists' Computer Survival Kit



On-the-go computers will appreciate the Portable Computer Survival Kit from Electronic Specialists, Inc. of Natick, Massachusetts. Included in this kit are often-needed adapters, tools and cables for the traveling computer.

Along with a portable AC power and modem security unit are screwdrivers, clip-lead modular phone taps, RJ-11 "tee" adapter to expand a work site phone jack into two phone jacks, 25 foot modular-type phone extension cord, AC power 2 prong to 3 prong adapter plug and an AC power triple tap outlet adapter.

The price tag on the Portable Computer Survival Kit is $228.95 from Electronics Specialists, 171 S. Main St., Natick, Massachusetts 01760. For more information call 1-800-225-4876.

For more information on Secureline 440, write CS Communications Control, Inc., 160-A Midland Ave., Port Chester, NY 10573.

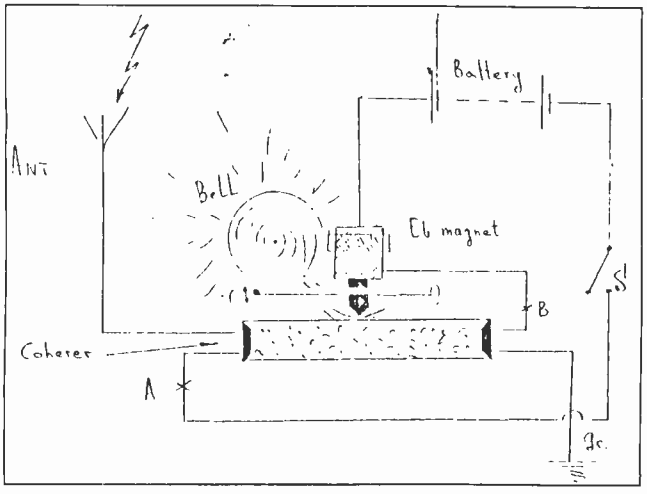
And it's designed to fit into any office decor.

It's more expensive than wetting your finger and holding it up to the wind. Then again, it'll tell you a lot more than your finger will.

Whether you'd just like to keep up with what's going on outside or if you're involved in public safety communications, the computerized Azimuth TWR-3 weather station allows you to monitor local weather conditions from inside your radio room.

The TWR-3's 5/8 inch LCD readout gives you wind direction (2 or 10 degree increments), wind speed (MPH or KPH), records high wind gusts, external temperature, wind chill, low and high temperatures, plus daily and yearly rainfall with optional self-dumping rain collector.

For more information on the TWR-3, call Azimuth Communications Corporation at 1-800-882-7388.



Alexander Popov's "lightning detector" (early wireless) - from Radio Moscow 1979

Mailbag

Reader Bob Fraser of Cohasset, Massachusetts, writes to say that he noticed a similarity between Alexander Popov's radio receiver of the 1870s and the Storm Alert mentioned in this column back in June.

Surprisingly, Popov's unit was called a "lightning detector." Bob had tried to find out more about the receiver some ten years ago, even writing to (and receiving a reply from) Radio Moscow's Paul Kuznetsov.

⇨ If you see a gadget that catches your attention, we'd like to hear about it. Send it to Larry Miller, Consumer Electronics, P.O. Box 98, Brasstown, NC 28902. Our thanks this month to Bob Fraser and Sly Kapchinski.

Doug DeMaw
P.O. Box 98
Brasstown, NC 28902

Listening below the BC band

Simplicity is often the byword for experimenters. I agree with that thought. It's more fun to build a simple project because it takes less time and the cash outlay is minimal. I'm sure you will find this project easy to build and get working. It can be tacked together in a few hours and ready to use.

The circuit is for a low-frequency converter that you can use with an existing receiver if that receiver tunes from 1600 to 2000 kHz. Many WW II surplus receivers cover that range. New general coverage receivers are suitable also as the tunable intermediate frequency (IF) for this converter.

It's fun to explore the frequencies below 550 kHz. There are all manner of aircraft and marine beacons, plus signals from experimenters who operate 1-watt transmitters between 160 and 190 kHz. Many of them operate their transmitters as beacons with a CW identifier. This is permitted by unlicensed experimenters under Part 15 of the FCC rules. Maximum antenna length is 50 feet for those frequencies.

The Circuit

Figure 1 shows a two-transistor converter that will allow you to tune your main receiver from 1600 to 2000 kHz for coverage of the 100-500 kHz LF range. C1A/C1B of Figure 1 is the converter front end peaking control (preselector). It is tuned for maximum received signal at the frequency of interest. The converter IF output is broadly resonant at 1800 kHz.

A dual-gate MOSFET (Q1) functions as the mixer. This is the simplest mixer we can use to obtain good performance and 10-15 dB of conversion gain. L1 is a 1-mH RF choke. It is easier to use it for L1 than trying to wind a massive 1000 uH coil!

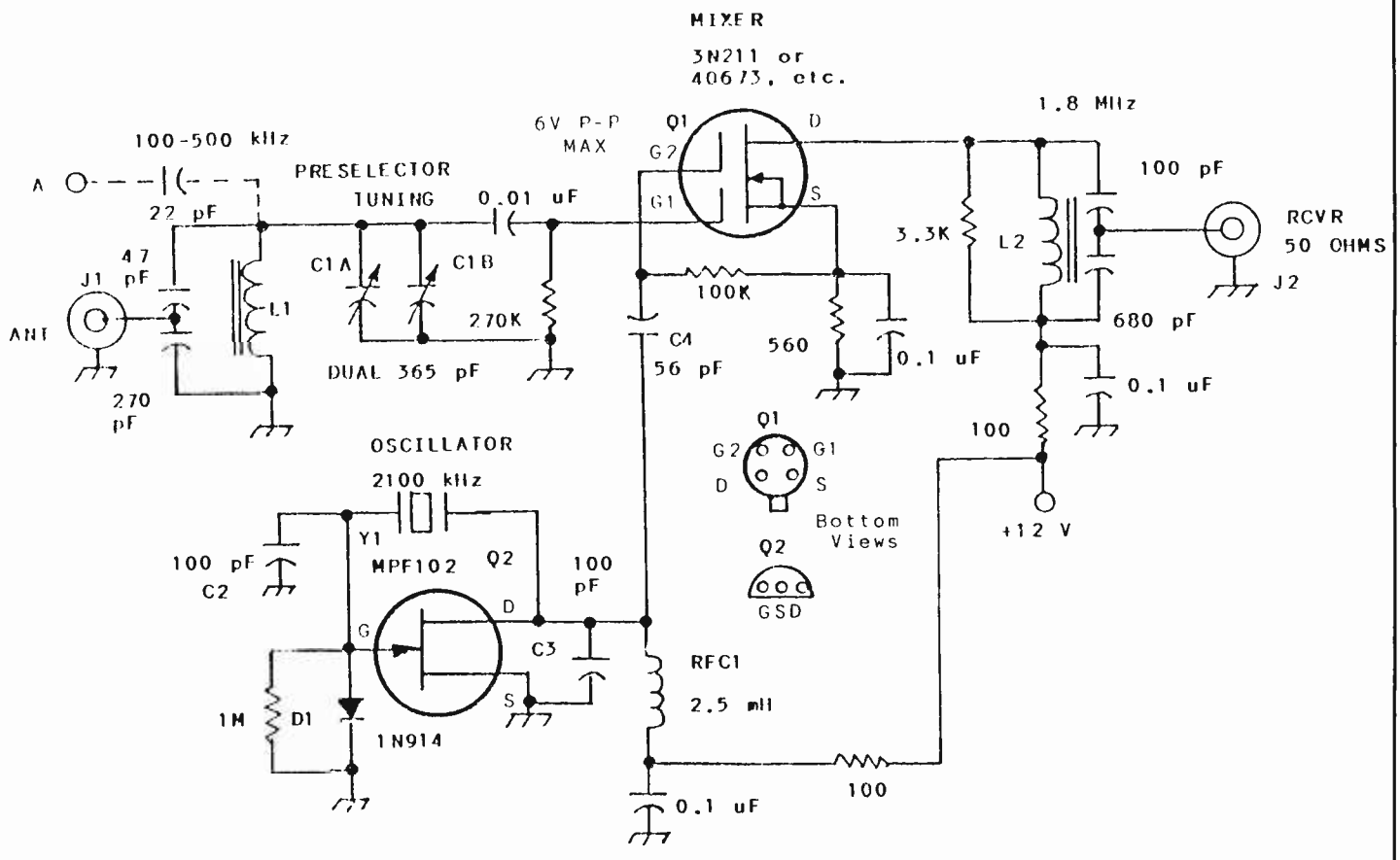


Figure 1 -- Schematic diagram of a practical LF/VLF converter that can be used with a general-coverage receiver. Resistors are 1/4-W carbon composition. Fixed-value capacitors are disc ceramic, 50 V rating or greater.

C1 -- Dual section broadcast-radio capacitor, 365 pF per section.
C2, C3 -- See text.
D1 -- Small signal silicon diode, type 1N914.
J1, J2 -- Chassis-mount coaxial jack of builder's choice.
L1 -- Miniature 1-mH RF choke (see text).
L2 -- Miniature 100 microhenry RF choke.
Q1 -- Dual-gate MOSFET. Type 3N211, 3N212, or 40673.
Q2 -- VHF JFET. Type MPF102 or 2N4416.
RFC1-- Miniature 2.5-mH RF choke.
Y1 -- 2.1 MHz crystal. Check surplus dealers for low cost unit.

C1 tunes L1 to resonance at the desired receive frequency. The 47- and 270-pF input capacitors form a divider for a low-impedance antenna input to the converter (50-100 ohms). Terminal A, shown with dashed lines, is an optional antenna input for use with a random length of wire. Anything from 50 to several hundred feet of wire will suffice. The longer the wire the stronger the received signals.

Junction field-effect transistor (JFET) Q2 operates as a crystal-controlled Pierce oscillator. Y1 sets the frequency at 2100 kHz. C2 and C3 are feedback capacitors that ensure crystal oscillation. These values may be experimented with if your crystal is sluggish and does not oscillate reliably (slow starting or no starting).

Q1 should not have more than 6 volts peak-to-peak at gate 2. Should you have excessive RF injection voltage at that point in the circuit, simply reduce the size of C4 until the P-P voltage is less than 6 at gate 2 of Q1. Do not use less than 4 volts P-P, because the converter gain will be reduced at the lower injection voltage levels.

Diode D1 in Figure 1 acts as a bias clamp. This helps to ensure a cleaner waveform from the oscillator by reducing harmonic currents. Excessive harmonic energy, when fed to a mixer, can cause unwanted responses from signals that aren't in the band of interest.

Practical Considerations

L1 and L2 of Figure 1 can be miniature RF chokes with powdered-iron or ferrite cores. The Q will be quite acceptable from 100 to 500 kHz. The older pi-wound RF chokes (larger) may offer even better Q, which will improve the front-end selectivity. You may wish to experiment along these lines.

Both sections of a two-gang broadcast radio tuning capacitor (C1) are used in parallel to obtain a capacitor range of 50 to 730 pF. This tunes the desired LF range in combination with L1. There are a number of multisection surplus tuning capacitors that may be adapted for use in this circuit.

This converter can be wired on a piece of perforated board if you keep the leads short and direct. You may also use a home made PC breadboard for the foundation. Simply use a hacksaw to cut through the copper on one side of a blank PC board to form numerous small, isolated copper islands. It is easy to form a grid of squares in this manner.

If you do not have a 12-V dc power supply, you may power this converter with a 9-V transistor-radio battery. The converter gain will be less at 9 V. Battery life should be good, since this circuit draws only 5 mA at 9 V.

You should be aware that this frequency scheme results in "backwards" tuning of the LF band. Specifically, 100 kHz will appear at 2000 kHz on the main receiver dial and 500 kHz will be heard at 1600 kHz. You may listen below 100 kHz if your receiver is capable of tuning up to 2100 kHz. However, you will hear the oscillator (2100 kHz) at that frequency. It should cause you no problems, since 2100 kHz represents 0 kHz in the VLF band!

Final Comments

You can use other tunable IF ranges by changing the frequency of Y1 accordingly. For example, Y1 needs to be on 5500 kHz if you use a tuning range of 5000 to 5400 kHz on your main receiver. C2 and C3 of Figure 1 would then be reduced to 47 pF. L2 would need to be reduced to 12 microhenries. No other changes would be necessary.

This converter represents simplicity and low cost. It is not the world's best converter in terms of being able to reject strong signals without overloading and IMD (intermodulation distortion) products. But for casual LF and VLF listening, you will find it adequate.

Rich Arland, K7YHA

25 Amherst
Wilkes-Barre, PA 18702

Getting Good and Grounded!

One of the neat things about doing this column is the access I have to all sorts of information that seldom sees wide distribution. Such is the article by C.F. Rockey, W9SCH, which appeared in *The Five Watter* (T5W), quarterly publication of the Michigan QRP Club, regarding the "Terragator."

I've known "The Rock" for about 20 years. He has written many fine articles on QRP (low power operating) projects in *The Milliwatt, QRP Journal* (now defunct), *QRP ARCI Quarterly* newsletter, and other publications including *T5W*. Rock's involvement with the radio hobby goes back quite a ways (note the call sign!) and his grassroots approach to the hobby is refreshing. When I saw his article on the Terragator, I just had to pass it along to the readers of *MT*.

"Tuning" Your Ground System

You've got a ground rod pounded into the sod and you're "grounded" ...right? Wrong! Depending on whether you are talking about RF or DC ground, you could have a solid DC ground path but be well "above" ground when it comes to RF applications.

"True ground" on an antenna system is about as easy to find as the Holy Grail. Those of us who have a second story ham shack are hard pressed to have a good RF ground at all HF operating frequencies. At last, there is a solution, a tunable ground system called "The Terragator."

The Terragator will tune your ground system and alleviate RF "hot spots" and "tingles" that occur when the radio equipment is isolated above RF ground. While I seldom run more than five watts RF output power in my shack now, there have been times in the past that K7YHA had been known to run 500 watts.

It only takes a couple of good RF burns due to an inefficient RF grounding system to convince one that things need to be changed! Basically, all the Terragator does is act as an antenna tuning unit for the ground path. Instead of tuning the antenna, the Terragator tunes the ground system.

Well-grounded Theories

In order to fully understand how and why the Terragator works, let's review some basic principles about RF current and associated ground systems. For those of us who have second or third floor ham shacks, the following information will not be a surprise.

When you try to establish a ground system by grounding to a cold water pipe or running coax braid out the window to a ground rod (or two) several stories below, the RF current generated by your transmitter may follow a random path on its way to earth (that point of minimum RF potential that constitutes "true ground").

If this path is close to a quarter-wavelength (or odd multiple thereof), your transmitter may be *insulated* from ground at certain frequencies. If, on the other hand, this path length is approximately close to a half wavelength (or even multiple thereof) you may find that you have a very good ground at the equipment end of the ground cable and no RF "floating" around the shack.

For most of us, these two situations won't exist. Actually, we will have something between the two extremes. Since it would be physically impossible to shorten most ground systems to overcome the quarter wavelength scenario, the only option left is for us to *electrically* lengthen that ground run to approximate a half wavelength ground run.

We can add an "extra" quarter wavelength (1/4 + 1/4 = 1/2 wavelength) electrically by placing a coil/capacitor arrangement in the ground lead next to the antenna tuner. (You don't use an antenna tuner? For shame!).

If we make this coil/capacitor arrangement tuneable (tapped coil and variable capacitor) we can then tune the ground system to resonance at various frequencies of operation, assuring an adequate RF ground anywhere on the bands that we operate.

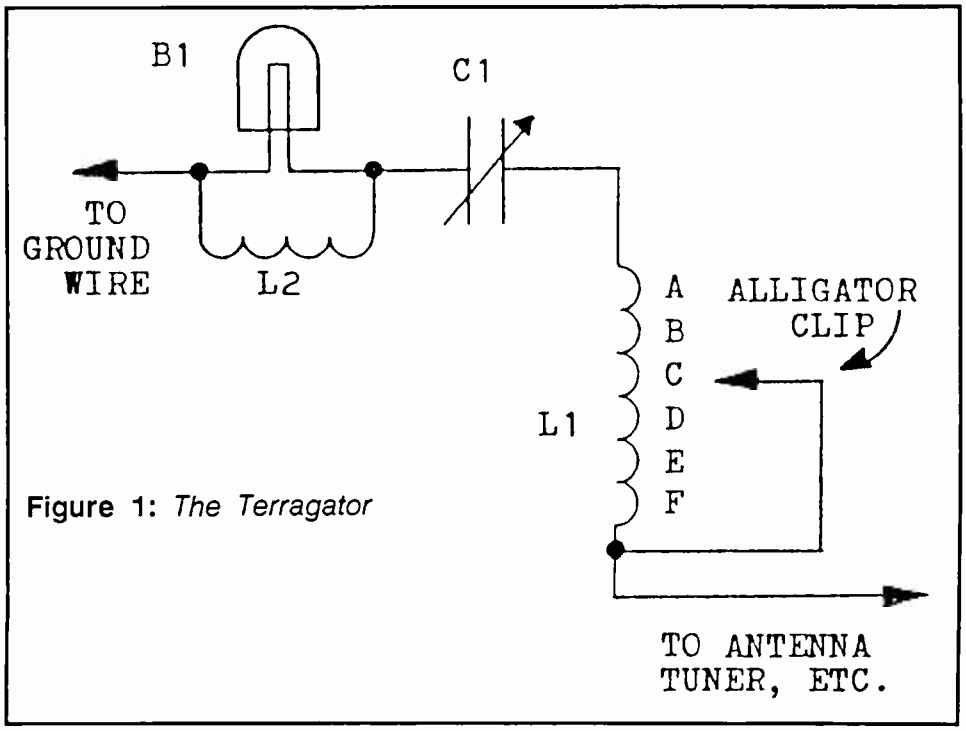


Figure 1: *The Terragator*

Using the Terragator

The Terragator connects between the ground lug of the antenna tuner and the ground wire. A #48 bulb is connected in series with the ground wire. Power is applied to the antenna and the Terragator is tuned for maximum RF current indicated by maximum glow in the lamp. (REMEMBER: maximum RF current = minimum RF voltage or "true ground").

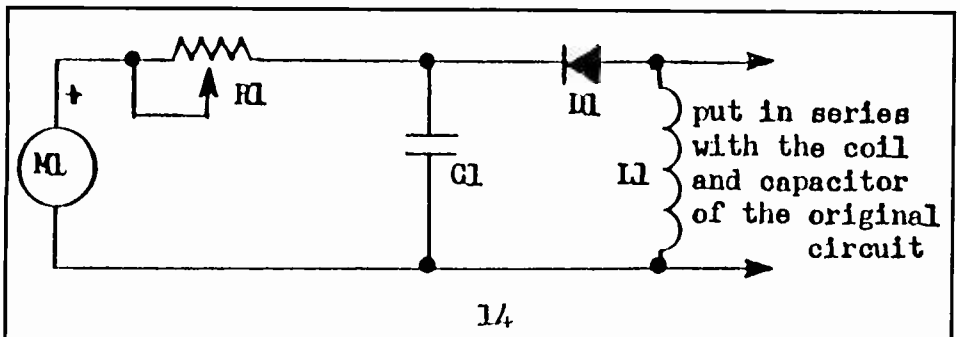


Figure 2: *A more sensitive circuit*

Adjust C1 and L1 (see Figure 1 for max brightness).

Figure 1 shows what the Terragator looks like in schematic form. Note that there are only two parts to the unit: a variable capacitor (C1) salvaged from an old BC radio and a hand wound coil (L1). If you want to get fancy, add a switch to select the coil taps in place of using an alligator clip.

The RF indicator is B1, a #48 bulb with a shunt coil (L2) across the leads. Coil data: L1: 1.5 inch OD PVC pipe with turns as shown on Figure 2. L2: 10 turns of #22 wire on 1/4 inch OD coil form (BIC pen body or similar).

Construction is straight forward and basically noncritical. Any form of layout can be utilized, just remember to insulate the capacitor frame from ground and keep L1 its own diameter away from any metal sides or chassis bottom.

If you use a switch, make it a NONshorting type, with at least 6-8 poles. Chassis can be a piece of stained and finished wood, old metal chassis, or you can buy an enclosure.

Cost of the entire project (if you scrounge everything) will be minimal. If you bought everything new, the cost should be no more than $20. Hamfest flea markets are great places to find high quality ceramic capacitors, rotary inductors (yes, you can use a rotary inductor in place of a tapped coil), B&W coil stock, chassis, etc. Look around and be creative. After all, this is a fun project and half the fun is scrounging the parts necessary to build the project.

Operation of the Terragator goes like this. Set up the coil tap for the frequency that you are going to operate (Tap A or B = 10 and 15 meters, Tap C for 40, 30, and 20 meters, Taps D, E, and F for 80 meters), adjust the coil taps and capacitor for max brilliance of the bulb when the transmitter is key down.

That's all there is to it. Once you have maximum brilliance on the bulb, you have tuned the ground to an even multiple of a half wavelength and your equipment is now at "true" ground.

NOTE: the RF path to earth must be a low resistance path. The Terragator cannot correct for resistive losses in the ground system. An interesting exception exists when the ground system you are connecting to is well insulated: the Terragator can tune the insulated ground as a counterpoise instead of a conductive ground.

Figure 2 shows a more sensitive circuit which replaces the bulb and shunt coil. M1 is a 0-1 ma meter movement, R1 is a 10 K pot (sensitivity control), C1 is a .01 mf bypass cap, D1 is a 1N34 diode (for RF rectification) and L1 is 10 turns on a 1/4 inch OD form (BIC pen barrel or equivalent).

This new circuit goes in series with the coil and capacitor of the original circuit. The new circuit will provide a much more sensitive indicator as to when the maximum RF current has been reached.

Monitoring Times invites you to submit your favorite projects for publication. For more information, contact Rich Arland, 25 Amherst, Wilkes-Barre, PA 18702

A Word of Caution

A couple of things that the Terragator is NOT: the Terragator will not act as any form of lightning protection, nor will it eliminate an AC induced hum problem currently encountered in your station. Both these applications require a solid, low resistive ground path. It will not take the place of a truly effective ground radial system or effective counterpoise.

Well, that's it for this time. Hope you enjoyed this look at the Terragator. My thanks to C.F. Rockey, W9SCH, for doing the groundwork on the Terragator, and Jerry Totten, K8JRO, of the Michigan QRP Club for allowing me to reproduce the contents of Rock's article.

Remember, I need to hear from you readers out there to be sure that this column is providing the kind of information that *you* find usable. Whether you're a scanner freak, a shortwave listener/DXer or ham fanatic, Tech Topics is *your* column, so I want to hear from you. 73s es Gud DX.

W. Clem Small, KR6A, CET

Rt. 1 Box 64A
Weybridge, VT 05753

The Discone: *A Wideband Omnidirectional Antenna*

"The discone and its variants are the most commonly used low-gain wide-band base-station antennas." This quotation comes from possibly the most comprehensive antenna engineering manual ever written.[1] So, if you've never tried a discone antenna, such a statement in such an impressive manual might just make you wonder what you're missing!

First, don't let the term "low-gain" scare you off. "Low-gain" means that the discone has somewhat less gain than our standard-of-reference, the half-wave dipole. However, the discone has gain comparable to the respected and popular groundplane antenna.

And, also like the groundplane, the discone has a nondirectional response to signals in the horizontal plane. Thus it gives good all-around coverage so desirable at a base station.

Why would we choose the discone over a groundplane antenna at times?

Well, whereas the groundplane is a resonant one-band antenna in its basic design, the construction of the discone gives it one of the widest bandwidths of any antenna: up to a 10 to 1 frequency spread. This means that a discone can be designed to cover a chunk of RF spectrum such as 100 MHz to 1000 MHz. We're talking real bandwidth here!

So, if you want a base-station antenna with good all-around coverage and a super bandwidth, maybe you should consider building this month's antenna: a discone designed to cover from just above the FM broadcast band (110 MHz) well on up into the UHF band.

Just how high in frequency this antenna will function effectively depends on the care you use in making it. I suspect that most readers will be able to construct this antenna to function to at least 500 MHz, and possibly higher.

For the hams among us, that means that it should also give good service on the 2 meter, 220 MHz, and 440 MHz ham bands.

Let's make a super-wide-band antenna ...

To construct this antenna, we need a ten foot length of three foot wide, small mesh (1/2 inch mesh or smaller) hardware cloth. Hardware cloth is a type of screening wire, and yes, you get it at the hardware store! You also need a tin can lid three or more inches in diameter (make sure it is bright tin, so that you can easily solder to it), and an SO-239 coaxial cable female socket.

To begin, lay out and cut the parts of the antenna from the hardware cloth as shown in Figure 1. Be prepared to use patience on this job, it is tedious. A magic marker on a length of string makes a good compass for drawing the curves.

Next, join the small piece-of-pie-shaped wedge to the half-circle piece to make the completed cone-piece as shown in Figure 1. The cut wire ends of the hardware cloth are sharp, and the help of a friend to handle the wire would be nice.

The overlapped junction of the two pieces overlaps two inches. You may bolt, tie, or solder these pieces together, as the electrical conductivity important to the cone is down the cone, not across it.

Next, shape the completed cone-piece into a cone shape. Overlap the joining edges two inches and then bolt, tie, or solder this joint together permanently.

You are now ready to mount the coax socket in the tip of the cone. Cut the tip of the cone off so that the flange of the socket just fits snugly inside and can be soldered in place. Mount this connector with its threaded portion downward into the cone, and the axis of the connector-body vertical.

The connection between the socket-skirt and the cone-tip should be soldered well at as many places around the connector skirt as possible.

Now take the tin-can lid and put a small hole in its center. Make the hole so that the center-connector of the socket fits snugly in it. Solder up (fill with solder) the hole in the lid, and "tin" the coax center-connector (cover it with solder preparatory to mounting the disc on it).

This gets these two parts ready for soldering them together. Solder the lid in place, being careful that it is in a horizontal position.

Take care to make the height of the disc above the cone tip (socket base) correct. I know we can't judge .44 inch accurately, but make sure that the height is

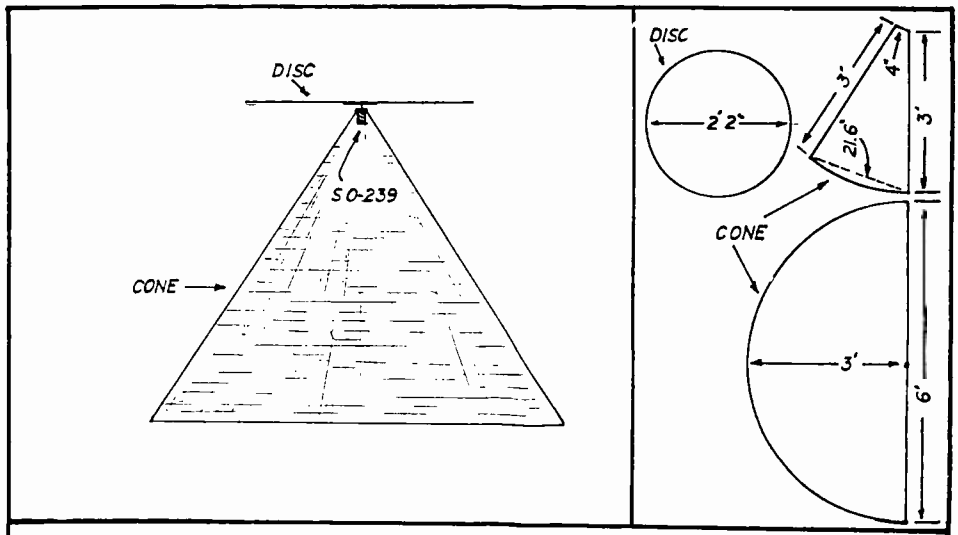


FIG. 1. DISCONE ANTENNA AND ITS COMPONENT PARTS.

just a wee bit less than .5 inch. To get the proper spacing on mine, I had to mount the lid out on the end of the socket center-connector.

Now lay the disc on the lid with the disc-center directly over the hole in the lid. Solder the disc to the lid in as many places as is practical around the edge of the lid. This soldering is for both electrical conductivity and for mechanical strength.

Your antenna is now ready to use!

Using the antenna:

Although you can mount this antenna outside, it will need to be protected from the weather in some way if you do. Mounting it indoors is the preferred mode. It can be put in an attic, crawl-space, or even in your operating room.

An enclosure of fiberglass or box frame covered with sheet plastic should be OK for outdoor mounting. Commercial models are sometimes covered with a fiberglass or plastic dome.

As always, if your building has a lot of metal in its construction, you may find that indoor mounting is not too effective. And the old antenna rule of "the higher the better" should be kept in mind. I used mine sitting on the floor of my second-story operating room with good results, but better results were had with it in the attic.

RADIO RIDDLES

Last month we discussed a rabbit-ear antenna, and then I asked if you had ". . . ever heard of the 'big ear' antenna? What is it, and who made it famous?"

Well, the "big ear" was the work of John Kraus, who is responsible for so many other antenna designs which we now happily enjoy. The "big ear" was a radiotelescope antenna which Kraus used in much of his early work in radio astronomy.

"The Big Ear"[2] is also the name of Kraus's autobiography, which makes very interesting reading for anyone interested in the development of radio or radioastronomy, antennas in particular.

Kraus is also the author of perhaps the most widely-read engineering antenna text published.[3] Coincidentally, most of the equations used in designing this month's discone came from this very useful book.

This month's riddle: What is a "volcano smoke" antenna, and how does an antenna get such a name?

Find the answer to this month's riddle, and much more, next month in your copy of *Monitoring Times*. Till then, Peace, DX, and 73.

mt

REFERENCES

1. *Antenna Engineering Handbook*, Richard C. Johnson and Henry Jasik. 1984, McGraw-Hill Book Company, New York, Pp 27-13.
2. *The Big Ear*. John Kraus, Cygnus-Quasar Books, 1976, Powell, Ohio.
3. *Antennas*. John Kraus, 1950, McGraw-Hill Book Company, New York.

INPUT and FEEDBACK

When it comes from our readers, it's our favorite terminology. Send us your QSLs, pics of your monitoring post, your letters to the editor; let the columnists know your tips, experiences, and opinions! *MT* will be all the better for it.

ask bob

Bob Grove, WA4PYQ

P.O. Box 98
Brasstown, NC 28902

Q. Since I live in a major metropolitan area, my scanner suffers considerably from overload intermodulation. Is there any relief that doesn't require major surgery? (Gary Hanney, Vancouver, BC)

A. Yes. When I served as a consultant to the old Electra Bearcat organization, I asked the chief engineer about preamps for scanners. His reply was, "Scanner listeners don't need preamps, they need attenuators"!

A number of consumer electronics outlets (including Radio Shack) offer TV attenuators in an F style package. If you are besieged with intermod, purchase one of these, equip it with appropriate adaptors to fit your antenna cable and scanner and enjoy better reception!

The fix usually works well in the city where signal levels are all high to begin with. A minor reduction (6 dB for most attenuators) won't be noticed, but each decibel of signal reduction will reduce intermod by 2-3 dB!

Q. I often see listings in the utilities section of MT for voice transmissions in the HF (shortwave) spectrum. If the mode is not given, how do I know if these are AM, FM, USB, LSB, or what? (Francis Reignier, Waterbury, CT)

A. Excellent question. Let's try to establish some ground rules. First, AM is virtually abandoned as a mode of two-way communications except in the CB band (26.965-27.405 MHz and illegal freeband above and below that range), ten meter amateur band (usually near 29 MHz) and, of course, in the VHF and UHF aeronautical services (118-136, 225-400 MHz).

AM is still allowed on the amateur radio bands but, except for a few venerable operators late at night in the 160 and 75 meter ham bands, it is rarely encountered. Even though AM is the mode for international broadcasting at the moment, there is a strong move toward single sideband broadcasting in the near future.

SSB is the exclusive voice mode between 2 and 25 MHz, with upper sideband (USB) dominating. Lower sideband (LSB) will be found in ham bands under 10 MHz, some Military Affiliate Radio Systems (MARS) networks below 10 MHz, and on the US Air Force Mystic Star network (VIP flights).

FM (narrowband mode) may be occasionally heard near 25-26 MHz (petroleum exploration and remote broadcast links), from 29-29.7 MHz (amateur ten meter band) and above 29.7 MHz (land mobile services). FM is not allowed below 25 MHz.

Q. Are any manufacturers planning to release a continuous coverage, hand-held scanner in the near future? (Joe Rotman, Arlington Hts, IL)

A. No.

Q. What portion of the 108-136 MHz civilian aircraft band is assigned to commercial airlines? (Dal Watson, Lubbock, TX)

A. 128.225-132.000 MHz; these air-to-ground links are maintained by Aeronautical Radio Incorporated (ARINC) on a worldwide basis.

Q. How can I measure the signal voltage of TV stations at my location? (Reijo Siivonen, Rauma, Finland)

A. While you can use any receiver with a signal strength meter, several manufacturers provide test sets for the TV industry. These field strength meters are nothing more than tuneable, battery operated receivers with calibrated S-meters. They continuously tune wide frequency ranges, showing both aural and video carrier strengths for each VHF and UHF channel. They usually have FM detectors as well for monitoring the sound channel.

Such companies include Blonder-Tongue Labs (1 Jake Brown Rd., Old Bridge, NJ 08857) and Sencore (3200 Sencore Dr., Sioux Falls, SD 57107).

Q. Does anyone make subsidiary carrier authorization (SCA) radio receivers? (Alfred DiCostanzo, Brooklyn, NY)

Bob's Tip of the Month

The PRO2004/2005 as a UHF Signal Generator

Scanner hobbyists have long noted that when their scanners are set on certain frequencies, their radiating oscillators may cause "lockup" on other nearby scanners. This may be annoying, but in some instances provide a useful, predictable source of signals for test purposes.

Recently, Edward Taylor, KA4VMP, of Palmyra, Virginia, noticed that his Realistic PRO2004 scanner would sometimes cause interference on his UHF-TV screen. A series of experiments revealed a predictable pattern based upon the scanner's first intermediate frequency (IF), 610 MHz.

By adding any frequency being received by the scanner to 610 MHz, that sum frequency will radiate. For example, programming in 119.250 MHz will result in interference to the video of UHF channel 57, 729.25 MHz (119.250 + 610 = 729.250).

What do the Diodes Do on the PRO2005?

Ever since the release of the Radio Shack PRO2004, scanner enthusiasts have become understandably suspicious about the mysterious diodes which surround the microprocessor. They could enable cellular reception, change frequency ranges, increase scan/search speed and add memory capacity.

Now, with the release of the PRO2005, the same questions are being asked. Lester Jernigan of LESCOM recently did some experimenting and here is what he discovered.

Diode D501 increases scan speed to 20 channels per second; D502 deletes cellular telephone reception; D504 deletes 66-88 MHz reception (unlawful in Europe); D503 remains a mystery -- any challengers?

For those stalwart enthusiasts who believe that happiness is a hot soldering iron, other improvements revolve around tighter squelch (change R152); delete the key-press "beep" tone (R221 or R222) and add an S-meter (AGC voltage on collector of Q8).

Remember, however, that any modifications to your radio will void your one-year warranty!

A. Certainly they are available for subscribers to SCA services which are transmitted as a subcarrier by FM broadcasting stations in large metropolitan areas. You may wish to contact several local stations to see if they offer the service; if they do, they can tell you whom to contact for receivers.

Keep in mind, however, that most of these transmissions are subscriber services and the receivers offered may be limited to the particular use intended by the vendor (stock market quotations, background music, paging, etc.).

For a catalog of hobby monitoring accessories for SCA, send an SASE to Bruce Elving, *FM Atlas*, Adolph, MN 55701-0024.

Q. Why can't a graphic equalizer be connected between a shortwave receiver and an external speaker to improve sound? (Harry Simpson, Jr., Kansas City, KS).

A. It can, as discussed in the February 1989 issue of *MT*. Be sure to match the impedances properly, since an equalizer designed to be placed in the high impedance (low level) circuit will not perform properly (and could be destroyed) if placed in the speaker output line.

Some listeners simply buy a low-cost amp or receiver with a built-in equalizer and connect it to the record output jack on the shortwave receiver.

Q. My Kenwood R5000 gets quite hot after several hours; is this condition healthy for the receiver? (Robert Gallardo, San Jose, CA)

A. No, but it is common. Commercial equipment is often given an "MTBF" (mean time before failure) rating. Heat is recognized as a primary cause of equipment failure, although we are not aware of it being a problem with the comparitively recent R5000.

Any heat-generating electronic equipment should be well ventilated. One way to accomplish this is to mount the radio away from snug walls or enclosure corners and don't stack them with other equipment. Lift the unit off the table an inch or so to encourage air circulation; a small muffin fan is recommended for additional forced air cooling.

Q. Even when squelched, there is a prominent hiss heard from my BC200XLT hand-held when listening with an earphone plugged in. Can it be cured? (Gary Hanney, Vancouver, BC)

A. The hiss, present on several model scanners, is barely noticeable except when in a quiet room or using an earphone. The distraction has a simple cure. Cut one wire (not both!) of the earphone lead and insert a tiny (1/4 watt or less) resistor of 10-100 ohms in series.

The resistance is chosen experimentally, using the lowest resistance which reduces the hiss to a satisfactory level. Solder it in place and wrap it tightly with several turns of plastic tape (or, if available, heat shrink tubing).

The fix is simple, effective and doesn't void the warranty.

Questions or suggestions sent to Bob Grove are printed in this column as space permits. If you prefer a reply by return mail, you must include a self-addressed, stamped envelope.

LETTERS

continued from page 3

Thank you for the compliment. One warning, though. The Thunderbird's main frequency, 141.85 MHz, can often be tricky. The problem is that they are in the AM mode and most scanners automatically switch to the FM mode when listening outside the 118 to 136 MHz AM civilian aircraft band.

Reader Mike Bumford has an answer, though. When you attend a Thunderbirds demonstration, enter the lower image frequency (either 120.15, 120.25 or 120.45 MHz depending on your make and model scanner). The image will be heard in the AM mode and since you'll be sitting right in the thick of the action, the signal should come in loud and clear.

One of the members of Tom Pailloz's group, the World Radio Listener's League, was able to obtain a copy of a Lithuanian DX Club bulletin. "One of our members managed to secure a pen-friend in Lithuania. The pen friend turned out to be an avid shortwave listener and he sent along a copy of the club's newsletter. I understand that the [print] quality isn't all that good; however, it should be readable. I thought that you might be interested."

You bet! We've reproduced a reduced version of the front page for you to see. And thanks, Tom!

Readers living in the Cincinnati, Ohio, area, have probably seen a fellow DXer on TV and not even known it. Not only does WLWT-TV (Channel 5) reporter Steve Forest enjoy DXing in his spare tine, he also uses shortwave in his work. Like much of the domestic media, Steve has been known to use shortwave audio to illustrate stories. And that's great publicity for the hobby.

"You might mention to your readers the advantages of taping SW broadcasts and relaying them to local radio stations," suggests Steve. "Many stations are more than happy to take the tape, assuming, of course, it's decent quality."

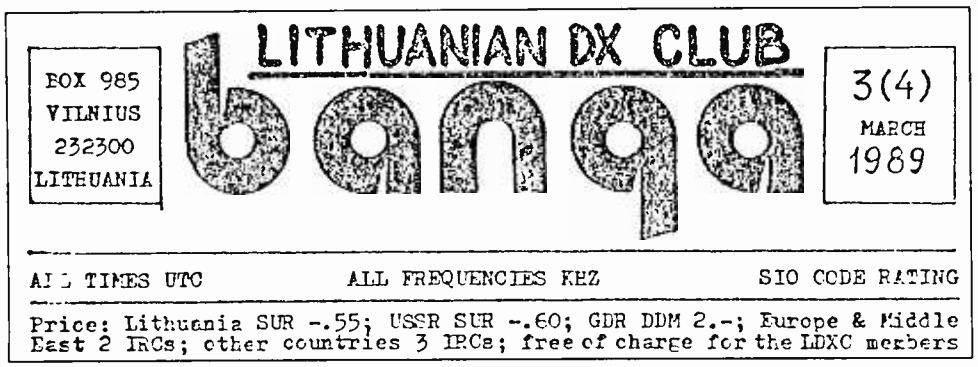
"I read your article on KKN39 in the May issue," says a reader in Warwickshire, England, "and thoroughly enjoyed it."

"In the article, the author asked about the location of KRH50 which is listed as London. As you correctly surmised, the signals with this call sign do not originate from the capital city. Because of their signal strength at my location, I began to suspect that they were actually transmitted from RAF Barford St. John near Banbury in Oxfordshire. The signals were constant on all frequencies from 4589 to 16458 MHz at any time of the day or night. A visit to the facility with my Sony ICF-7600D confirmed my suspicions.

"Recently, I was lucky enough to visit the receive site for this facility some 7 miles to the east of RAF Croughton. It proved to be a fascinating 2 hours. Unfortunately, all of the hundred or so receivers in use at the facility had small rectangles of yellow Paper covering the frequency readouts! They were aware I was coming!

The British reader concludes by asking, "Isn't it time we utility buffs got organized and did some serious work to verify the locations of those stations on which we do not have precise information? I'm sure that we could even find the exact transmitter sites of some of those elusive number stations if we really tried. Do you have any idea on how we could encourage some co-operation in this area?"

We sure do. Anyone interested in doing serious DF work should drop a line to utility columnist Larry Van Horn. Van horn has already uncovered two numbers sites for *Monitoring Times* readers. And he'd love to hear from you.



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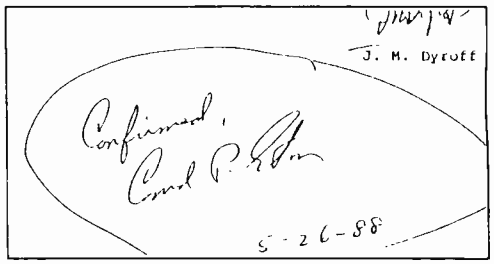


J.M. Dyroff of Berlin, Massachusetts, also checks in with an interesting bit of information on KKN39. I've never seen anyone mention getting a QSL from them. I did. It's signed by Conrad P. Eton. Interesting." Sure is.

Ham radio operators were, at one time, known for their generosity. Not necessarily with their money, but with their time and willingness to share their hobby. And just about every current radio enthusiast had an "Elmer," a friendly neighbor or relative who helped them and nurtured their interest in radio.

Mine was a neighbor in Wallingford, Pennsylvania, named Peters. I don't know his first name; in those days it was "Mr." Despite this formality, I remember some wonderful times in Mr. Peter's basement, surrounded by Hammarlunds and home-built Heath kits.

A lot of people say that one of ham's big problems is that all of the Elmers are gone.

Reader Tony Goldish is one such person.

"Hams don't want to help young people get into 'their' hobby. I've talked with a number of hams, either around the shack at college, or at electronics stores, and they all give brief answers to my questions or refuse to talk. I even got a couple of phone numbers but only one returned my call. Is it too much to expect a ham to let me come to his shack and watch him operate for a night?"

Tony raises other points but let's take care of first things first. Do we have any ham readers in the Skokie, Illinois, area that'll give Tony a hand? C'mon, folks. We have an intelligent, interested young man with quite a bit of computer knowledge to share. And he wants to be a ham. Let's not let him get away.

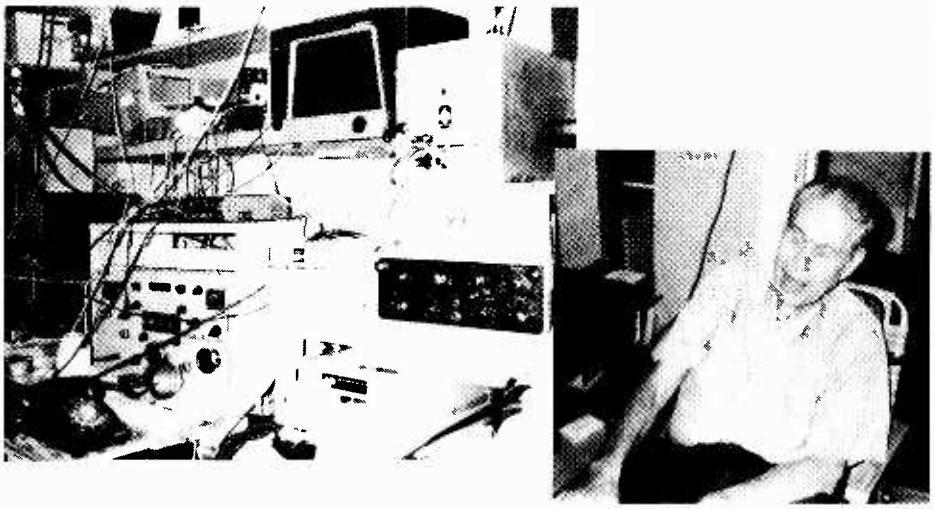
As Tony says, "I have always been told how much the young can learn from their elders. Please give me a chance and I might be able to teach you something in the bargain!" Hams? Drop us a line at *MT*, Box 98, Brasstown, NC 28902 and we'll hook you up.

Finally, a note from County Cork, Ireland. William R. Kiely writes to say that, as a subscriber to *Monitoring Times* for almost a year, "that I think your magazine is the best that I have ever read. As my subs 'run out' on other radio magazines, I will not be renewing them as *MT* gives me everything I need. Keep up the good work!"

Thanks to William R. Kiely and to everyone who wrote in this month. As always we welcome your thoughtful comments on any aspect of the radio listening hobby. Address your letters to ***"Letters to the Editor"***, *Monitoring Times, P.O. Box 98, Brasstown, NC 28902.*

Please include your address and telephone number. Not all letters can be used. Those that are will often be edited and excerpted. Because of the volume of mail received, personal replies are not always possible.

Monitoring Post Pin-Ups



These are just some of Dave Ronecker's radios. He also possesses, for example, an old Schaublorenz complete with the names of cities on the dial. In case his shack looks a little different than yours, it could be because Dave is a blind DXer. Dave belongs to a newly-formed monitoring club called the San Antonio (Texas) Knobtwisters.

Proud of your post? Send us a pic of you and your radios to MT Monitoring Post, P.O. Box 98, Brasstown, NC 28902, and we'll do the rest!

CONVENTION CALENDAR

Date	Location	Club/Contact Person
Aug 5-6	Jacksonville,FL	Jacksonville Hamfest Assn/ Billy Williams N4UF P.O. Box 9673, Jacksonville, FL 32208 Talk-in W4IZ 146.76 rptr
Aug 5-6	Cedar Rapids, IA	Cedar Rapids ARC/ Clifford Goldsberry 2926 Schaeffer Dr SW, Cedar Rapids, IA 52404
Aug 6	Randolph, OH	Portage ARC/ Joanne Solak KJ3O 9971 Diagonal Rd, Mantua, OH 44255
Aug 6	Berryville, VA	Shenandoah ARC/ John Kandoe N4MM RFD 1 Box 73A, Boyce, VA 22620
Aug 11-13	Milwaukee, WI	10-10 Intl Net/ Joseph F. Williams WA9TSG PO Box 93181, Milwaukee, WI
Aug 12	Springfield,MO	SW Missouri ARC/ Linda Baxter KA0NXI 2616 W Woodlawn, Springfield, MO 65803
Aug 13	Lexington, KY	Bluegrass ARS Ctr KY/ Bill DeVore N4DIT 112 Brigadoon Pkwy, Lexington, KY 40503
Aug 19-20	Huntsville, AL	SE Div Conv/ Jim Brashear WB4EKJ 3002 Boswell Dr, Huntsville, AL 35811
Aug 19-20	Tacoma, WA	NW Div Conv/ Jerry Seligman W7BUN 12306 80th Ave E, Puyallup, WA 98373
Aug 19-20	High Point, NC	High Point ARC/ Mark McMahan KB4MFP 122 Avondale Dr, High Point, NC 27260
Aug 20	Dover, DE	Kent Co ARC/ Carl Shulak NS3G 32 Loockerman SQ, Suite 302, Dover, DE 19901
Aug 25-27	Los Angeles,CA	SW Div Conv/ Sandi Heyn WA6WZN 962 Cheyenne, Costa Mesa, CA 92626
Aug 25-27	Madison, GA	Confederate Signal Corps/ Roy Jordan WB4ILR 1146 Shoreham Dr, College Park, GA 30349
Aug 26-27	Saginaw, MI	MI State Conv/ Bob Granstra WB8DLO 413 Wilson Dr, Midland, MI 48640
Aug 27	Marysville, OH	Union CO ARC/ Gene Kirby W8BJN Marysville, OH 43040
Aug 27	St. Charles,MO	St. Charles ARC/ Eric Koch NF0Q 2805 Westminster, St. Charles, MO 63301
Aug 27	Danville, IL	Vermillion ARC/ Chris Stonecipher KA9VMN RR 3 Box 117, Danville, IL 61832
Sep 2-3	Shelby, NC	Shelby ARC/ Dale Mauney WA4BBN 1158 E. Marion St, Shelby, NC 28150
Sep 9	Windsor, ME	Augusta ARA/ Joseph Kozak WA2CJO 17 Carlisle Ave, Augusta, ME 04330
Sep 10	Harrisburg, IL	Shawnee ARC/ Mike Hoshiko W9CJW 707 S James, Carbondale, IL 62901
Sep 10	Butler, PA	Butler Co. ARA/ John Varljen K3HJH 174 Oak Hills Heights, Butler, PA 16001
Sep 10	Findlay, OH	Findlay ARC/ Pat Tendam KB8CXC 2534 Greenacre Dr, Findlay, OH 45840
Sep 10	Monett, MO	Ozarks ARS/ Charles M. Young WB0YIU Route 1 Box 29D, Republic, MO 65738
Sep 16	Wichita, TX	Wichita ARC/ Edward Fernandez WB5ONB 2415 Elmwood Cr. N, Wichita Falls, TX 76308
Sep 16-17	Va Bch, VA	VA State Conv/ Art Thiemens AA4AT 2836 Greenwood Rd., Chesapeake, VA 23321
Sep 17	Mt Clemens, MI	L'Anse Creuse ARC/ Ralph Wilcox KA8YOJ 39610 Chart, Mt Clemens, MI 48045
Sep 17	Canfield, OH	20/9 ARC/ Don Carlson N8GJZ 7448 Glenwood Ave, Boardman, OH 44512
Sep 17-18	Cincinnati, OH	Gtr Cincinnati ARA/ John Haungs WA8STX 10615 Thornview Dr, Cincinnati, OH 45241
Sep 23-24	Grayslake, IL	Chicago FM Club/ Richard Hersh K9FFY 6614 N Francisco Ave, Chicago, IL 60645
Sep 23-24	Milton-Freewater, OR	Walla Walla Valley ARC/ Jack Babbitt WA5ZAY 1401 Pleasant, Walla Walla, WA 99362
Sep 24	Gainesville,GA	Lanierland ARC/ Eddie Keith KK4IG 3137 Lake Ranch Circle, Gainesville, GA 30506
Sep 24	Willimatic, CT	Natchaug ARA/ Ken Carvell KC1EW P.O. Box 19, Coventry, CT 06238
Sep 24	Berea, OH	Cleveland ARA/ Glenn Williams AF8C 513 Kenilworth Rd, Bay Village, OH 44140

Monitoring Times is happy to run announcements of radio events open to our readers. Send your announcement at least 60 days before the event to: Monitoring Times Convention Calendar, P.O. Box 98, Brasstown, NC 28902.

STOCK EXCHANGE

Ads for Stock Exchange must be received 45 days prior to the publication date.

NON-COMMERCIAL SUBSCRIBER RATES: $.25 per word - *Subscribers only.* All ads must be paid in advance to *Monitoring Times*. All merchandise must be personal and radio-related.

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1-3/4" SQUARE DISPLAY AD: $35 per issue, payable in advance.

Monitoring Times assumes no responsibility for misrepresented merchandise.

VIDEOCIPHER II CHIPS, Send S.A.S.E. for Info. 3715 Murdoch Ave. 109, Parkersburg, WV 26102.

For Sale: COMMODORE 64, MFJ-1225 RTTY/ASCII/AMTOR/CW Interface, MFJ software, SWL Text cartridge, $199.00 talkes it all. J. Metcalfe [606] 365-9042.

When readers are in the market, they look here to find your ad ... Will it be here?

For Sale: HAM RADIO, TEMPO 2020, Excellent Condition, has 11 meters and new D104 microphone - $400 plus shipping. Also brand new COBRA 2000 completely modified with roger beep - $425 plus shipping. Gary [207] 778-2646.

For Sale: J.I.L. SX-400 scanner, with power supply, no manual - $100 + UPS. Walt Joyce, 20145 Morgan Lane, Gulfport, MS 39503 [601] 832-6420.

Wanted: Copy of instruction manual for AUTEK RESEARCH QF-1A SSB/CW/AM active audio filter. Will pay associated costs. Fraser Bonnett, 3033-H Brickwell Drive, Kettering, OH 45420.

For Sale: BEARCAT COMPUSCAN-2100 with software/interface for Commodore. See Scan Magazine Dec.83 for review. I have three new units for sale. Will ship UPS. Call Dennis [404] 429-1703 for a chance to own one of these rare collector items.

ICOM R7000 SCANNER w/Speech + Fast Scan - Like new - $799. KENWOOD R5000 SW Receiver w/VHF - Like new - $750. REALISTIC PRO-2004 w/Fast Scan + Cellular + 400 Ch. - $299. YAESU FT-727R H/H 2-way w/dop-in charger + X-battery + speaker mike + headset/mike - $475. LORAD XR-70 - All Ch. VHF Marine 2-way - $199. HAMTRONICS 406/425 MHx converter - $35. DSI Hand-Held Frequency Counter - Needs work - $45. DSI -- Thru 800 MHz preamplifier - $40. Bruce Gustafson, 10294 Atwood Road, Roscoe, IL 61073.

PRO-2004 Excellent condition - $295 plus shipping. Fred [203] 349-1242 evenings or weekends.

GRUNDIG SATELLIT 500, 2 hrs. old. Full warranty - $399, shipping included. Mark Gorden [415] 752-2013.

For Sale: AOR 800 Scanner, 20 Ch. Hand-held, GC, $150 (S&H incl). Melvin Conover, 778 Anthony lane, Mason, OH 45040 [513] 398-6942.

Man, in fifties, unable to work due to back injury, cannot afford to buy scanner or shortwave. Please donate any working scanner or shortwave. Anything will be appreciated. John Pierce, 309 So. Singleton Ave, Titusville, FL 32796.

For Sale: BACK ISSUES - MONITORING TIMES, complete set, 1982-88, $125; RCMA NEWSLETTER, complete set, 1975-88, $125; WRTVH, 1979-87, $35 set or $5 each; POPULAR COMMUNICATIONS, 9/86-12/88, $22.50. Shipping included. Ralph Stern, Box 1295, El Granada, CA 94018 [415] 728-5204.

For Sale: ICOM R-71A mint condition, manual, original carton - $650 includes UPS. No calls after 8:00 PM E.S.T. [614] 633-5960.

ICOM R7000 - Has scan delay and speed modifications, high performance package, service manual. Excellent condition - $800. Tom Ernst, P.O. Box 938, Springfield, NJ 07081 [201] 378-2028.

Utility monitors, also from Europe, are invited to contact me by letter. Would like to discuss monitoring problems, identity of signals and stations, technical matters, etc. Henri Walser, HB9DBW, P.O. Boxs 213, 4009 BASEL, Switzerland.

I would like to contact anyone who has one of the following receivers: Radio Shack DX440, Sangean ATS803A, Grundig Satellit 5000, Grundig Satellite 6000. Kevin Neal HCR 62-22Z, Flippin, Arkansas 72634 [501] 453-8412.

Closing Comments

A Look Foreward . . . and a Glance Back

We've had to expand again. As *Monitoring Times* continues to grow and Grove Enterprises prepares for production of our new SR1000 super receiver, we've had to double our work area.

During the move, I discovered a yellowing pile of newsprint: the early editions of *Monitoring Times*. Many of you remember them -- a few thin pages of scanner and shortwave information set in type by our country newspaper and run off on their presses.

The first couple of issues were free, sent in appreciation to Grove clients who trusted us, knowing that we were trying hard to provide the best service at the lowest prices we -- and you -- could afford.

Reader input was vital, and you never disappointed us. You told us what we were doing right, and what we were doing wrong -- in no uncertain terms! As a result, *MT* has become your magazine, sculpted and honed by the guiding forces of our specialized industry: our readers.

As we grow we continue to keep in mind that trust. *MT* retains its integrity, a commitment to responsible journalism, presenting the issues and the information as accurately and as timely as possible. To do this we retain a nucleus of highly regarded authors whose names have become synonymous with authority.

The upper office, formerly housing both Grove Enterprises and Monitoring Times, has been dedicated to manufacturing in anticipation of the SR1000. The lower house, joined to it by a covered walkway, has now become the main office building.

The Challenges

It may be fun, but it isn't easy. Making sure that each issue contains a balance between scanner and shortwave, technical and tutorial, frequencies and profiles, advertising and text.

Another challenge is, of course, to maintain the editorial insulation between *MT* and its owner, Grove Enterprises. Grove's commercial products necessarily appear, but they don't dominate the other fine firms whose merchandise also appears in every issue. Grove also pays the same advertising rates as everyone else!

So how about reviews? Won't every Grove product get a glowing report in the pages of *MT*? Yes and no. If a new product deserves release from Grove, it has been thoroughly tested and does the job well. This part of the review is bound to be positive. If it has a few warts, our readers will know that, too. After five years of development, we hope that the imminent SR1000 won't have too many warts!

Reading back over what we've discussed so far, the bottom line appears to be this: *MT* will continue to grow in response to your needs. We love to hear from you and know that you feel you are just as much part of the team as our staff. After all, *MT* has always been, and will continue to be, your magazine.

-- Bob Grove, WA4PYQ
Publisher

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