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**Inside This Issue:**

- A Dangerous Hobby:  
The Radio Hoax
- Zaire: DXing Africa's Troubled  
Giant
- MT Reviews the AR900
- Radio for a Nuclear Age

MT's Guide to

**MONITORING  
THE MILITARY**

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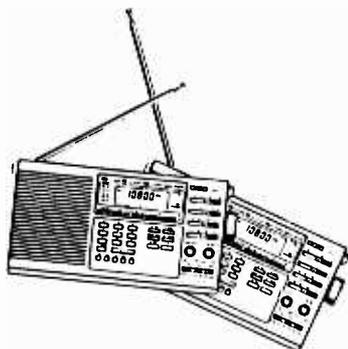
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# MONITORING TIMES



*Dueling radios - AM radio fights for its survival with some strange results - p.14*



*Remember the Stars and Strips catamaran? Scrambled communications are a must in this game - p.56*

*GWEN helps to ensure survival of communications following nuclear attack - p.40*

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## **Guide to Military Monitoring** by Larry Van Horn 6

*Who's got the lion's share of frequency allocations? The military, of course, and here's how to listen in to the world's largest user.*

## **The Radio Hoax** by Daniel Kagan 10

*Danger is the rescuer's reward when the community is mobilized for an emergency that never happened--except in someone's warped imagination.*

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*A kick-off feature for regular column American Bandscan, you'd be surprised at what's going on in AM today. It's sick but not dead!*

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*As Africa's troubled giant struggles to avoid total chaos, tuning it in on shortwave depends on if the station is managing to stay on the air or not.*

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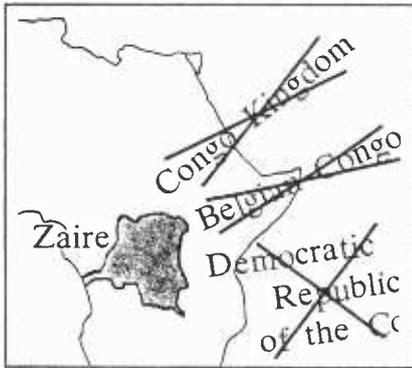
ON THE COVER: Monitoring the military can take you far afield -- even onto the high seas. *Department of Defense photo.*



**Inside this Issue** • A couple of weeks ago, Arlyn Berthier of Hessmer, Louisiana, wrote us a letter. "I'm *damne* happy I subscribed to *Monitoring Times*," he said. "When hurricane Gilbert came knocking at my door, I found all the information I needed to monitor the storm in the August issue. The frequencies were correct and helpful. "Usually my neighbors don't like the noise of my scanner," says Arlyn, "but this time, they were all happy that I had it." • That's the kind of information that sets *MT* apart from other publications. We try to provide information *you can use*. This month,

for example, we lead off with Larry Van Horn's introduction to monitoring the military. It's a basic guide, complete with frequencies, that'll give you the inside edge on what's going on, not only in your community, but around the world.

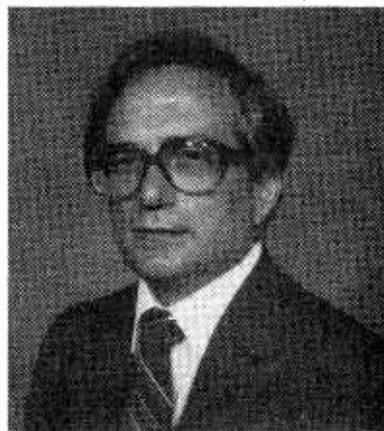
• We also offer a report on the state of AM radio. AM radio? Who cares? Well that's exactly the point. Few do. But surprisingly, the fact that AM is struggling so badly is the reason why it makes for such great listening. On what other band can you find an all-kids station? An all-finance station? An all-Elvis station? New Age and motivational programming? Check it out. • *MT* offers another shortwave DXers challenge, this time taking you into a part of the world that used to be called "deepest, darkest Africa" -- the former Belgian Congo. Today it's known as Zaire and it has continued its heritage of shortwave stations started by the Belgians so many years ago.



• Looking for a good, solid, basic radio at a reasonable price? Larry Magne says that he's uncovered 700 GE World Monitors at

EEB in Vienna, Virginia. Magne almost passed out with excitement. Be sure to read his review of this year's equipment "steal" -- Believe it or not, EEB's only asking \$129.00 for them! • And what if you found a way to steal a couple of thousand dollars and be virtually assured that you wouldn't get caught, would you do it? Bob Kay discovered just such an opportunity one night while listening to his scanner. A couple of thousand bucks waiting to be plucked, like candy from a baby. Did he take it? Read his column and find out!

• Clem Small checks in with another easy-to-make antenna project -- the no-antenna antenna. It's cheap, easy to build and can be the answer to your reception problems. • Dr. John Santosuosso, who, when he's not monitoring the ether, teaches political science in Florida, offers all the latest in the world of unusual radio transmissions, including an update on America's stubbornest pirate station, Al Weiner's Radio Newyork International. The boat is back; the broadcasts may be, too, by the time you get this.



*Dr. John Santosuosso*

• Of course, there's more. Much more than we can cram into this tiny space. And like exploring any part of the radio spectrum, all you have to do is poke around a bit. It's all there for you to discover and use. We hope you enjoy it. And thanks for making *Monitoring Times* the fastest-growing radio magazine in the world!

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## The Radio Man vs. the Police

An employee of La Mesa country music station KSON was convicted of jamming San Diego police radio and sentenced to six months in prison and fined \$5,000. James Earl Fike, 32, was accused of using station equipment to broadcast "feedback" over police frequencies. FCC investigators used direction finding devices to trace the source of the interference and arrested Fike at his home. Authorities found a KSON "broadcast radio and police scanner" in his pickup truck.

Assistant District Attorney Patrick Coughlan, in an unusual choice of words for such a case, said the sentence "sends a message" to others who interfere with police broadcasts.

One year earlier, Jerry Gastile of San Diego received a three-year suspended sentence and a \$1,000 fine for playing 1960s rock music over FBI frequencies.



## The Libyan Connection?

A number of *Monitoring Times* readers have written to ask the origin of the new *Voice of the Mediterranean* broadcasts listed in the frequency section. According to frequency manager Greg Jordan, the broadcasts appear to originate in Malta. What is a little more surprising is the station's backer: Libya's Colonel Khaddafi.

Jordan, who monitored a recent *Voice of the Mediterranean* newscast, caught the Maltese prime minister applauding the good relations between his country and Libya. Khaddafi responded affirmatively, pointing to "the new joint radio station" broadcasting from Malta. English transmission from the station are heard from 0600 to 0700 UTC on 9754 and from 1400 to 1500 on 11925 kHz.

## The People's Court

It was hardly typical of the huge cash settlements often handed out in the wake of an airplane crash. The plaintiff received only \$89. Then again, it wasn't a jumbo jet that crashed. It was a radio controlled model airplane.

On a recent edition of the TV show, *The People's Court*, one radio control (RC) airplane hobbyist sued another for causing his model plane to crash. According to testimony given before Judge Wapner, the plaintiff was using RC channel 50 (72.79 MHz) when the defendant, using the same type of plane and the same frequency, began to fly his craft at the field without first checking to see if anyone else was using the frequency.

The defendant's transmissions jammed the plaintiff's signals, causing the plaintiff's plane to crash. No one was injured. Film at eleven.



## BananaVision

"In addition to the annoying failure to start on time, the tendency to change programs at the last minute while ... airing the wildest assortment of bloopers and oversights," says Venezuela's *The Daily Journal*, the most exasperating experience related to Venezuelan television ... is the [press'] apparently impossible task of obtaining accurate schedules.

"The shortcomings listed above," continues the article, "are no small defects [and can be blamed on the unprofessionalism and sloppiness of the Caribbean television industry,

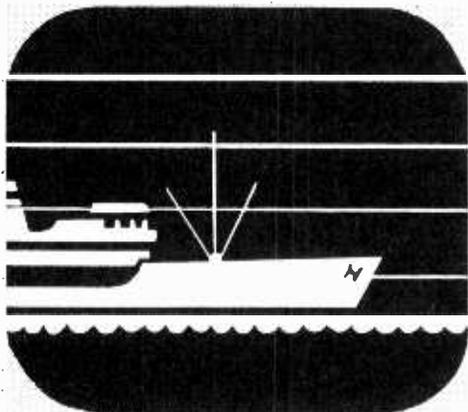
whose work has earned the nickname, 'bananavision'..."

## Radio Newyork International

According to reports out of New York, Sarah, the freighter that housed a short-lived pirate station off Long Island, is back. According to Radio Newyork International operations manager Randi Steele, "We are establishing our maritime right to be there.." The ship has passed Coast Guard inspection and is now properly insured. Sarah had been in Boston Harbor until it was towed back to Long Island's south shore where it anchored 4.5 miles south of Long Beach.

While the 170 foot ship has long and shortwave transmitters "ready to be fired up at a moment's notice," Steele says that this time they'll broadcast only on 1620 AM, "which no one has alleged causes interference to anyone."

Steele's comments and the move to 1620 are spooky in their similarity to those spoken some fifteen years ago by the Rev. Carl McIntire, owner of another boat-based radio station, Radio Free America. McIntire suffered similar legal problems, moved up the AM band past 1600 to avoid interfering, then signed off in less than a week. Radio

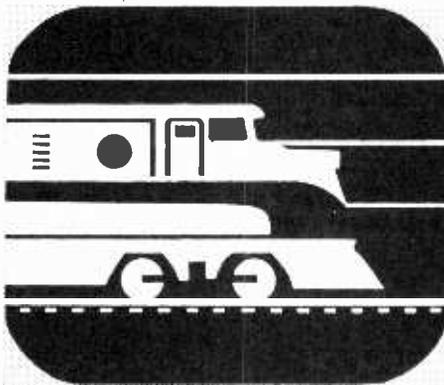


Newyork International, which was on the air for only four nights, will return to the air, say staffers, only when all legal hurdles are cleared. Stay tuned.

## Radio Shack May Restore Cellular Coverage

A high-level spokesman at Tandy headquarters told *MT* that the prospect of re-establishing cellular coverage in all future Radio Shack scanners was very likely, depending upon the outcome of the scanner labeling proposal by the FCC.

The implication is that the scanners will probably have cellular-restorable microprocessors even if cellular coverage was deleted at the factory; this way the factory may exercise either option.



## Singin' In the Rain

Officials of the MK & T Railroad Co. had been having trouble with two people who would sing and talk on their radio frequencies. The train engineers, they complained, couldn't hear their instructions. The police were called in to investigate.

The culprits, two brothers, were caught when Det. Bill Pierce asked one of them to sing, "Singin' in the

Rain." They complied and when police, using direction-finding equipment, traced the culprits to their apartment, one was still belting out his rendition of the movie classic. "I kind of hoped he would sing, 'I've Been Working on the Railroad,'" said Pierce. If convicted, their next tune could be, "Chain Gang." The two men were arrested on complaints of receiving and concealing stolen property.

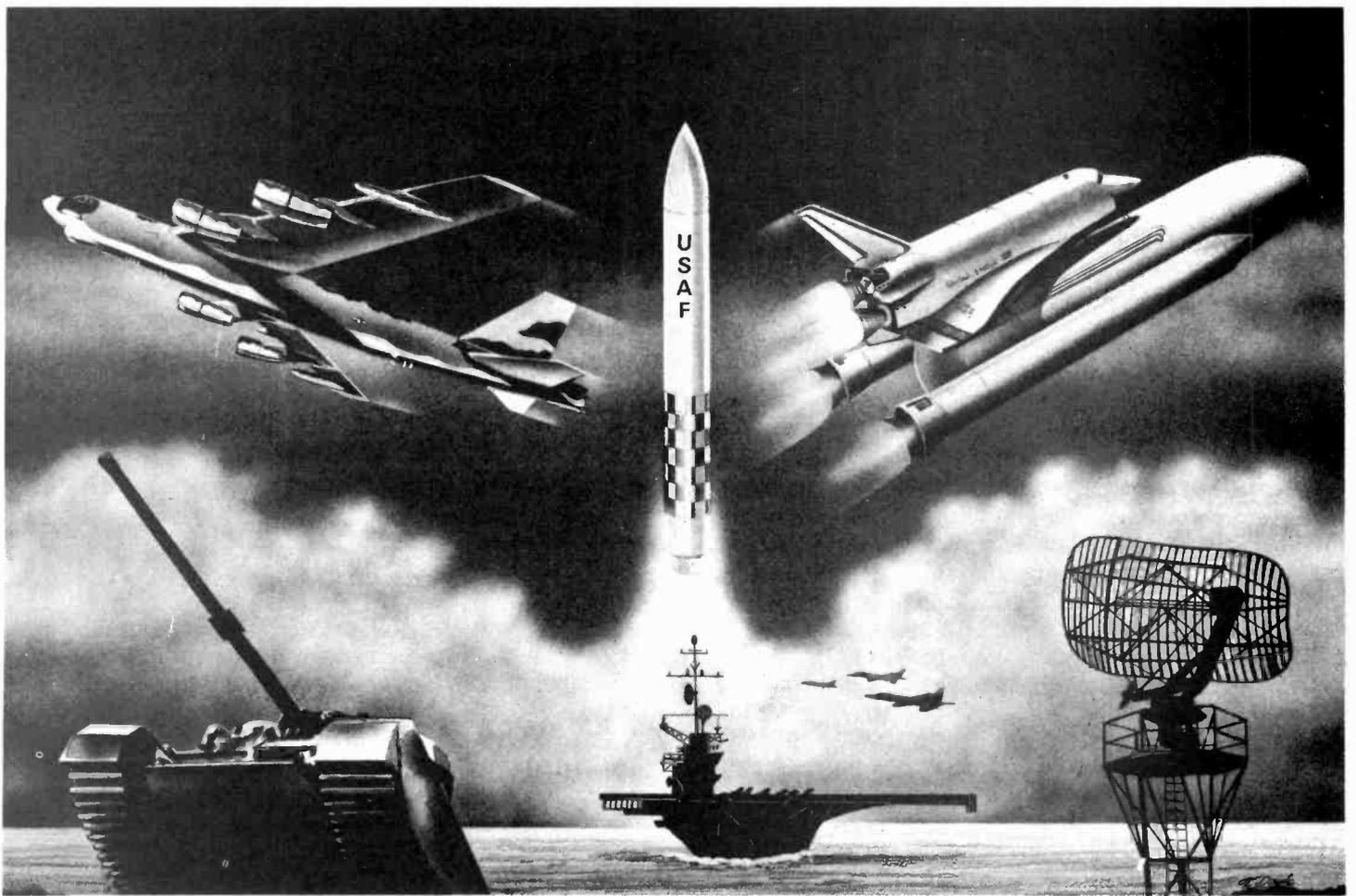
## Two Months to Rapture

Almost two years ago, someone placed an advertisement in *Religious Broadcasting* magazine, seeking someone to oversee the establishment of two shortwave stations. Various reports placed the transmitters in the Philippines, Sweden, and Guam. Programming was to consist solely of dictation-speed broadcasts of the Bible.

The man behind the proposed stations is 47 year old Norvell Olive. Olive is known for his recent book, *88 Reasons Why the Rapture Will Happen in 1988*. In that book, Olive predicted that the Jewish New Year would kick off seven years of plague, famine and nuclear war.

The book was successful in convincing many fundamentalists to prepare for the Second Coming but apparently not Olive. According to the Nashville *Banner*, at the same time he was preparing to publish the "End of the World" tract, he also went ahead with the purchase of a 3.13 acre lot for a new World Bible Society office.

Credits: Dave Alpert, *Insight* magazine, New York *Post*, Bob Parnass, San Diego *Union*.



# MT's Guide to MILITARY MONITORING

by Larry Van Horn

**A**s the USS Saratoga pokes her bow into the wind, a navy pilot taxis his E-2C Hawkeye off the ship's elevator in preparation for launch. From his privileged position, he scans the the flight deck. A crew of multi-colored jerseys scurry about below.

One blue jersey moves to within inches of the turning propellers and attaches the cable that will link his aircraft to the ship's #1 forward catapult.

The pilot throttles his engines for takeoff. Human senses reel at the explosion of noise as the twin turboprop engines pour out waves of thunder and searing heat. "Saratoga control, Alpha Foxtrot 801 ready for launch on Cat 1," screams the UHF radio in air operations. "The air boss gives 801 permission to launch."

Hand signals are passed. Deck crewmen scramble from the aircraft's path. And then it's off. The catapult slams forward, shooting the 52,000 pound aircraft from zero to 150 miles per hour in less than two seconds. AF-801 is on its way to its mission over the North Atlantic. It will spend the next six hours using complex electronic gear

to protect the carrier task force from possible enemy attack.

Shortly after take-off, the copilot, one of five crew members aboard the Hawkeye, dials up 8972 kHz on one of his HF radios. Using a navy tactical callsign, he checks into the North Atlantic Safety of Flight Net that will monitor his progress for the next six hours.

This is just one example of the many types of communication that can be monitored on U.S. military frequencies. Listeners who prowl these channels get a birdseye view of day-to-day military operations.

**Table 1**  
**THE MONITORING TIMES HOT-40 MILITARY FREQUENCIES**

*All frequencies listed use USB*

2261	Coast Guard	Air/ground channel
2348.5	Army	Army Corps of Engineers
2670	Coast Guard	Marine information broadcast
3023	Coast Guard	International Search and Rescue
3123	Coast Guard	Air/ground channel
4040	Navy	Fleet HICOM-Western Pacific
4416	Navy	Fleet HICOM-Eastern/Mid Pacific-primary
4725	Air Force	Strategic Air Command-refueling channel
4813.5	Navy	Fleet HICOM-Western Pacific
5011	Army	Army Corps of Engineers
5015	Army	Army Corps of Engineers
5327	Army	Army Corps of Engineers
5346	Army	Army Corps of Engineers
5400	Army	Army Corps of Engineers
5680	Coast Guard	International Search and Rescue
5696	Coast Guard	Air/ground channel
6697	Navy	Fleet HICOM-Atlantic/Caribbean
6720	Navy	Fleet HICOM-East/North Atlantic/Western Pacific-primary
6723	Navy	Universal air/ground channel
6761	Air Force	Strategic Air Command-primary night channel
7535	Navy	Fleet HICOM-Caribbean
8778	Navy	Fleet HICOM-Eastern/Mid Pacific-secondary
8972	Navy	Atlantic Safety of Flight channel
8984	Coast Guard	Air/ground channel
9027	Air Force	Strategic Air Command
11215	Air Force	Air Force "AWACS" aircraft
11243	Air Force	Strategic Air Command-primary daytime channel
11255	Navy	Fleet HICOM-East/North Atlantic/Western Pacific-secondary
11267	Navy	Fleet HICOM-Atlantic/Caribbean
12215	Navy	Fleet HICOM-Indian Ocean-secondary
12761	Navy	Fleet HICOM-Western Pacific
13181	Navy	Fleet HICOM-Eastern/Mid Pacific-tertiary
13241	Air Force	Strategic Air Command
15041	Air Force	Strategic Air Command
15522	Navy	Fleet HICOM-Caribbean
17975	Air Force	Strategic Air Command
18009	Navy	Fleet HICOM-Western Pacific-tertiary
20631	Air Force	Strategic Air Command
23287	Navy	Fleet HICOM-Atlantic/Caribbean
23315	Navy	Fleet HICOM-Indian Ocean-primary

## Monitoring the High Frequencies

Most military listeners start out listening to military communications on shortwave (HF). For those who are not close to a military base, HF offers one of the few ways to keep track of military activity. There are literally thousands of HF frequencies in use. Some of these are used for many years and carry a lot of traffic. Still others may only be activated only for a particular exercise and never used again.

Among my favorite navy channels to listen on are the navy HICOM (High Command) channels. These channels are monitored 24 hours a day by navy communication stations throughout the world. These frequencies were established so that navy units would have a communication frequency in case of emergency.

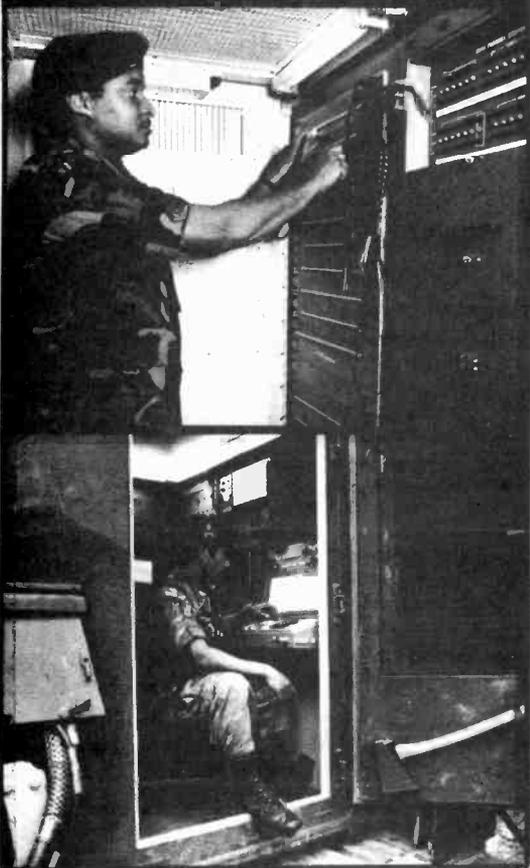
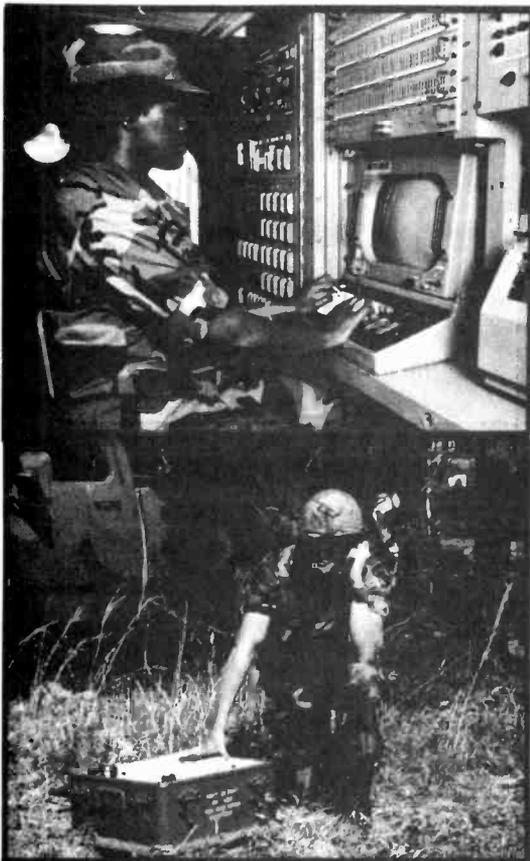
You will hear emergency action messages on these channels just like those transmitted on Strategic Air Command (SAC) channels. Occasionally encoded flash message traffic (the highest priority) are also passed on navy HICOM channels.

The best frequency reference available for military listeners is the *Shortwave Directory*. Published by Grove Enterprises, this book is loaded with some of the more active military frequencies in use. In addition, some background material such as call signs are listed within the book's pages.

Another fine reference book that no beginner should be without is the *Confidential Frequency List*. This "by



*Senses reel as the turboprop engines pour out waves of thunder and searing heat, and the UHF radio squawks permission to launch.*



MSE

frequency" reference lists over 30,000 frequencies being used in the HF spectrum from 4-28 MHz. The book is published by Gilfer Shortwave and is available from many of the advertisers in this issue of *MT*.

### Callsigns and Modes

U.S. military services use a wide variety of callsigns. Some can be easily figured out (i.e. MacDill is MacDill AFB in Florida) and some are strictly tactical in nature. Tactical callsigns are meant to keep those that might be listening from figuring out which station, aircraft, unit or ship is transmitting. There are no publications in the public domain that list these to solve the mystery of who it is he or she is actually hearing.

Military HF communications uses just about every mode of transmission ever invented. The services use primarily upper sideband for voice communications. There is one network that makes use of the lower sideband mode. This network is the government's Mystic Star network, used by government VIPs to communicate when they are aboard U.S. Air Force special air mission aircraft.

Most RTTY buffs will find that military RTTY stations utilize encryption of the signal to discourage interception by the enemy. The great majority of these signals on HF will be unreadable on your printer or screen due to this scrambling of the RTTY signal.

A digital mode that is not always scrambled is facsimile. Most military stations send weather charts and satellite photos in the clear. Since government stations are high powered, chances are good that

the first photos you copy on facsimile will come from a military station.

Table 1 lists some of the more active frequencies that the beginner should try first. These frequencies will give you a sample of listening to military communications. One point that needs to be made is that there are no schedules when monitoring the military. These communications occur as the need arises. Therefore, do not expect to hear constant chatter. Sit on the frequency for a while and sample the flavor of the transmissions.

### VHF/UHF Military Frequencies

If you are lucky enough to live close to a military base your listening enjoyment will double. Not only can you monitor the HF action, but you can now coordinate that with VHF/UHF frequencies you hear on your scanner. This will assist you in getting a more complete picture of what is happening around the base. There are many areas in the frequency range from 30 to 512 MHz that are allocated exclusively to the government and within those ranges you will find military channels.

A range of frequencies that is almost exclusively military falls in the 138-144 MHz range (right below the two meter ham band). This range has been divided amongst all the military services. For instance, 140.100 MHz is a favorite frequency for military buffs, around naval bases. This frequency is normally reserved for the base crash and fire department and can be just as exciting as any city fire department in times of emergency.

Table 2  
U.S. MILITARY ACTION BANDS

3025-3155 kHz	4700-4750 kHz	5680-5730 kHz
6685-6765 kHz	8965-9040 kHz	11175-11275 kHz
13200-13260 kHz	15010-15100 kHz	17970-18030 kHz
23200-23350 kHz	30.01-30.55 MHz	32.01-32.99 MHz
34.01-34.99 MHz	36.01-36.99 MHz	38.27-38.99 MHz
40.01-41.99 MHz	138.00-143.99 MHz	148.00-150.75 MHz
162.00-174.00 MHz	225.00-400.00 MHz	406.00-420.00 MHz

Unless you live real close to the target base you are trying to hear, plan on putting up a good, high antenna system. Most military frequencies are using low power simplex (single frequency) radios. I would even go as far as to suggest that a beam-type antenna be seriously considered to increase your chances of successfully hearing these communications. Contact your favorite radio store for the particulars.

There is hope in the future, however. I have noticed a trend that some bases are starting to use high powered repeaters, especially for their security departments, helping the monitor to hear these frequencies.

One of the newest discoveries in the 138-144 MHz range is the use of certain discrete channels by U.S. Air Force tactical aircraft for air-to-air and air-to-ground communications using AM. If you happen to be listening in this range and are close to an air force base or operating area, do not be surprised to hear a whole dog fight played out on one of these discrete channels.

When you speak of dog fighting and monitoring, the king of the mountain for monitoring still has to be the monstrous 225-400 MHz military aircraft band. This primarily AM mode range literally bursts at the seams with action. And you do not have to live close to a military base to hear some kind of military aircraft communication. Just about any place in the United States is within range of some sort of 225-400 MHz frequency being used by the military.

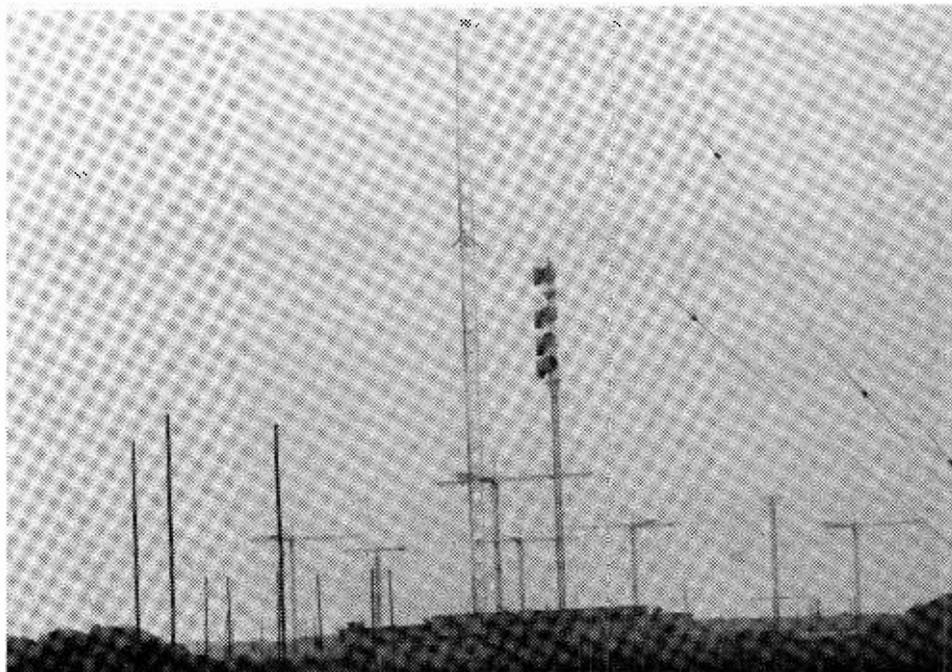
Speaking of 225 to 400 MHz, you cannot leave that range of frequencies without at least mentioning the 240 to 270 MHz satellite subband. This is the domain of the military geostationary communication satellite. Using primarily the FM mode for communications, it is possible to hear a wide range of very interesting military and government communications.

---

*The Washington technician would not believe we were fixing to invade Grenada, and hung up.*

---

Listening here can be just plain fun and surprising. A few years back, one monitor



*If you live near a base, your chances of overhearing military communications increase dramatically. Here, an array of antennas at the naval base in Driver, VA .*

scooped the world on the Grenada invasion. While listening on one of the navy's FLEETSATCOM wideband channels, our monitor overheard two technicians in the clear having a heated argument.

One army comm technician was off shore from Grenada attempting to set up a communication circuit to Washington for the impending invasion. The other army technician was in the Pentagon. The Grenada technician was trying to convince Washington of who he was and what he was doing. The Washington technician could not and would not believe that we were fixing to invade Grenada and basically hung up the phone, so to speak, and ended the conversation. This occurred a few days before the invasion and the rest of the story you already know.

An excellent reference book for those interested in monitoring satellite communications is *Communications Satellites*. You will find complete bandplans for many of the government's satellites as well as an exhaustive "by frequency" section covering just about every known satellite. There is even a beginner's section that talks about equipment, antennas, and monitoring techniques. It's also available from most radio stores.

Table 2 gives you the general frequency ranges HF/VHF/UHF to hear military

communications. While the military can basically pop up anywhere, the frequencies listed in Table 2 are known areas of heavier concentrations of military communications. This table combined with the references I have already mentioned should give the beginner a good starting point to hear our U.S. military services in action.

The world of military communication monitoring is filled with action, suspense, intrigue, and occasional surprises as a reporter in Israel found out several years ago. It's one of my favorite military monitoring stories involving long-time "ute" monitor Michael Gurdus, or Miki as he is known to his friends.

Miki was monitoring a Mystic Star frequency and listening to Air Force One carrying then-President Nixon to Saudi Arabia. This was just prior to his resignation. Miki heard the following astonishing conversation.

Upon learning that the Watergate special prosecutor was on his way to pick up the infamous tapes, Nixon said, "Don't let them at the safe." Nixon further instructed the aide, "Don't open the safe!"

The rest is history.

Why don't you try listening to a little history right now?



# Danger is Rescuers' Reward

by Daniel Kagan

False alarms, common enough, have taken a leap to a new, more dangerous level with well-planned, hoaxed crashes of medical evacuation helicopters and an airplane that sent rescue personnel from Texas to New Hampshire searching for the victims of the faked mishaps. Pure luck solved one case, but others were hampered by the inability of federal agencies to become involved in the investigations.

**P**ulling the handle of a fire call box to send in a false alarm or phoning 911 with a bogus emergency are bad enough. But what happens when someone decides to cleverly fake an aircraft crash and sends hundreds of police, emergency personnel and volunteer searchers scrambling over highways, through woods and back roads, sometimes in the dark or in bad weather, at great risk to life and limb and at a cost of tens of thousands of dollars?

The odds seem to be strongly against the culprit being caught and punished. And if he is, it seems that will depend on sheer luck. Two instances of such hoaxes make that point clear.

## Chopper Down!

One episode began early last December 9. In separate incidents hours apart, fire departments and police in Oklahoma City and Tulsa, Oklahoma, and northeastern Texas received emergency phone calls from a man who said he was the ground dispatcher for a medical evacuation helicopter heading to an area hospital.

The chopper, he reported, was in trouble. Relaying harrowing radio messages from the craft and using the proper aeronautical and medical jargon, he narrated the worsening plight of craft and crew, which he said included an injured patient, a pilot and emergency medical technicians or nurses. He said the pilot of the crippled craft was reckoning his position via local landmarks, which the emergency personnel immediately recognized.

Finally, he said the 'copter had crashed and he passed along the words of an injured survivor, who reported some of the crew dead and pinpointed the wreck by naming familiar nearby features such as truck stops and highways.

Rescue units scoured the areas. They found nothing. The carefully dramatized calls were all hoaxes.

## The Basic Hoax

Five days later, December 14, an almost identical phone report was made to authorities near Zanesville, Ohio. Again the caller named prominent local landmarks, and again scrambling rescuers found nothing.

On December 17, the Branford, Connecticut, fire and police departments received a virtually identical call that a medevac helicopter had crashed near a truck stop on Interstate 95. This, too, proved to be a hoax. And the following day, nearly identical, detailed, and convincing calls about crashed hospital helicopters triggered fruitless searches in central New Jersey; Frederick, Maryland; and Westmoreland County, Pennsylvania, near Pittsburgh. The last also involved West Virginia state police.

The chronology of these calls -- 1 p.m. in New Jersey, 4 p.m. in Maryland and 7:40 p.m. in Pennsylvania -- and their location along Interstates 95 and 70 indicated they might have been made by the same person or persons traveling south and west. The faked crashes a few days earlier had followed northeastward from Texas the routes of Interstates 35, 44, and 70, which also con-

nect. During the first week of January, there were three more false reports of medevac crashes, two in Dallas and one in Jackson, Mississippi. Both cities lie on Interstate 20, one long day's drive apart. Altogether, the incidents mobilized perhaps 1,000 or more searchers.

The faked reports stopped as suddenly as they had begun.

## Professional Drama

"The people are pretty sharp who were pulling this thing. They knew the technique, the terminology. They knew how to milk the most out of it," says Sgt. Don Cook of the West Virginia State Police, a former medevac pilot who investigated the reports in western Pennsylvania.

At the time, Cook speculated the hoaxers spent time laying the groundwork so their reports would appear real. He and others also theorized that among the culprits might be a medevac pilot, flight medic, or someone close to the field who knew how to mimic such operations and who held a grudge against the industry, perhaps for the loss of a relative in one of the dozen medevac helicopter crashes that had plagued the industry during the prior two years.

Such false alarms are dangerous: They mobilize hundreds of police, fire, rescue and volunteer searchers. Rescuers speed or fly around at great risk, often at night or in inclement weather. The searches are also expensive. Responding to a call for help can cost \$100,000 in fuel, supplies, and man-hours.

But above all, the false alarms are difficult to solve. Despite what seems to be a clear pattern, and a good deal of evidence left behind, these incidents have never been officially solved. At the time, press reports said that besides local and state police, federal authorities, including the FBI and the Federal Aviation Administration's Office of Civil Aviation Security, were coordinat-

## A lucky break led authorities to Blair, being brought into court for arraignment.



THAYER/LACONIA CITIZEN

ing an investigation that involved analyzing tape recordings of the calls.

Local law enforcement agencies that dealt with the incidents still believe this is so. Yet according to Dick Stafford, a spokesman for the FAA, those reports were wrong. While some regional offices kept informal tabs on some cases, the agency, he says, never mounted nor coordinated an investigation because the incidents did not involve actual aircraft, accidents, or threats to actual aircraft, or interference with FAA facilities such as airport control towers. "We don't have any authority or responsibility in this area," he says.

## FBI Not Involved

Despite many rumors to the contrary among local law enforcement agencies and across the medevac helicopter community, the FBI also did not investigate the incidents, according to bureau spokesman Bill Carter in Washington. The hoaxes would not have been classified as federal crimes. Some local FBI offices, such as the one in New Haven, Connecticut, were asked for assistance by police and made a few informal inquiries. But they stopped once they saw the incidents were outside their jurisdiction.

If federal capacity to investigate such hoaxes is virtually nil, even when they involve an interstate pattern and huge costs to local government, the capabilities of local and state police agencies are hardly a substitute. They too have jurisdictional boundaries, not to mention fewer resources than federal agencies.

Even so, the FBI -- and the local U.S. attorney -- did solve another air crash hoax case that occurred in Laconia, New Hampshire, at about the same time.

On the evening of January 8, during a blinding snowstorm, a commuter airliner en route to Portland, Maine, monitored an emergency radio call from a pilot who said his plane was going down over Laconia. By

7 p.m., a four-engine U.S. Navy P-3 Orion flying from Florida to the Brunswick Naval Air Station in Maine entered the area. The pilot, David Webster, and his 19 passengers and crew spent the next 3-1/2 hours risking their lives circling the area of low altitude in driving snow, monitoring what sounded like intermittent signals from a crash-actuated Emergency Locator Transmitter and talking with and trying to locate a man who identified himself as the pilot of the "downed" plane.

## Keep This Guy Alive!

The man, who sounded dazed or injured, told Webster the plane was a Hawker Siddeley private business jet en route to Laconia from Florida with himself and three others aboard. He said that at least one of them was dead and that he was injured, bleeding, cold, and fearful of losing consciousness.

Over the next 3-1/2 hours, Webster circled, pleading with the man to stay on the air. "It was a very dramatic deal to hear the Navy pilot going around and around trying to keep this guy awake and alive," says William E. Leber, head of administration and operations for the New Hampshire Department of Transportation Division of Aeronautics. Leber monitored the transmissions while on duty that night. "The guy was so good and had done his research so well, he had us all convinced," he says.

"The guy excited the situation to where people thought someone was dying right before them," says Dick Watson, the supervisory FBI agent for New Hampshire. The bureau investigated the case because, unlike the medevac hoaxes, which violated only state laws, it appeared to involve the breaking of federal laws.

Still circling, Webster told the purported pilot to listen while he revved up his engines. "I hear it, I hear it!" shouted the man. "People in my plane were screaming

and yelling . . . I got tears in my eyes thinking, 'We're going to get this guy out.' Webster later testified.

But by 10:30, the caller sounded weak and delirious. As Webster pleaded with him to keep talking, he slipped off the air. Webster begged him to at least click his microphone button. But there was silence. Within an hour, 75 searchers including volunteers and rescue dogs were out in the storm in snowmobiles, four-wheel drive vehicles and on foot, looking for the plane. The search was called off at 2 a.m. and resumed again at daybreak, with 100 persons who combed 40 square miles of snowy woods.

By the end of the day the search was canceled; officials were certain it was a hoax. They had called the airport in the Florida Keys where the downed man said the flight originated: There was no record of such a plane. No transmissions had been received from the plane en route. The identification number, WB 469, fit no U.S. aviation designation. And no one had reported friends or family missing or overdue on such a flight.

Leber had also noticed some parallels between this incident and a similar one in September 1987 in which someone had radioed that he was in an aircraft that was on fire off the coast of New Hampshire near Portsmouth. The caller subsequently reported he was crashing into the ocean about three miles off Seabrook. The Coast Guard had spent hours, and reportedly \$100,000, searching for that plane. The "pilot" had said his identification letters were 2 WB.

## Lucky Break

On January 14, Laconia police arrested Mark W. Blair of suburban Weirs Beach, a 28-year-old radio buff. From his apartment they removed quantities of radio equipment that, they said, was tuned to the same channels that had been used by the phony

plane crash victim. Blair was found through a stroke of luck.

Timothy Dinan, a resident of Blair's apartment building, was returning home the night of the calls. Standing on the hushed, snowy street outside the building, he heard through an open window in Blair's apartment the sound of a radio exchange, and someone inside shouting, "I'm in trouble, I'm losing blood," which is what the hoaxer had told Webster.

Thinking someone inside was hurt, Dinan called an ambulance, whose crew was met at the darkened apartment by Blair; he claimed to have been asleep. A few days later when Dinan read reports of the air crash incident in the newspaper, he told his story to police, who swore out a warrant for Blair's arrest. Along with the radio gear, in Blair's apartment they found printed material that contained the name "Dale," which the phony downed pilot had given as his name, and other material in which had been highlighted the emergency frequencies used that night, along with information about police emergency codes.

Police said that when Blair was arrested, he asked, "How much trouble am I in?" And it was noticed that the bogus identification numbers given in both New Hampshire hoaxes contained the letters "WB" -- Blair's last two initials.

Blair pleaded not guilty to misdemeanor charges of creating a false alarm and was released on bail. But weeks later, the local U.S. attorney, Richard Weibusch, indicted Blair on federal charges of providing false information to federal agencies, based in part on the fact that his radio transmissions were monitored and acted upon by FAA air traffic control facilities. The FBI had also looked into the case. Blair was tried in U.S.

#### SOLVED:

Mark W. Blair was convicted of using a radio to broadcast fake report of a business jet crash in Laconia during a blizzard in January. Authorities suspect that he may be responsible for a similar hoaxed crash into the sea off Portsmouth four months earlier.

Jan. 8, 1988      Laconia, NH  
Sept. 1987      Portsmouth, NH

#### STILL A MYSTERY:

This series of phone reports of faked hospital medevac helicopter crashes has not been solved, despite their chronological pattern along interstate highways.

Dec. 9, 1987      Northeast TX  
Dec. 9, 1987      Oklahoma City, I-40  
Dec. 9, 1987      Tulsa Ok, I-44  
Dec. 14, 1987      Zanesville, OH I-70  
Dec. 17, 1987      Branford, CT I-95  
Dec. 18, 1987      Central, NJ, I-95  
Dec. 18, 1987      Frederick, MD I-70  
Dec. 18, 1978      Westmoreland Co, PA I-70  
Jan. 1988          Dallas, TX I-20

District Court and on May 4 was found guilty. His attorney, Paul Twomey, filed a motion to appeal the verdict based on insufficient evidence.

On July 12, Blair was sentenced to one year in federal prison and two years' probation. The judge recommended he be sent to the Butner Correctional Institute in North Carolina, which has psychiatric facilities, and ordered Blair to undergo psychiatric counseling after his release.

With Blair's arrest, some law enforcement people involved with the wave of medevac helicopter crash hoaxes wondered if he might also have been responsible for those incidents. But this seems unlikely due to several discrepancies. The interstate spree of hoaxes all involved medevac helicopters; Blair's hoax involved a fixed-wing craft. The medevac hoaxes were done using the telephone. Blair's was done with a radio. Andrew Schneider, a reporter for The Pittsburgh Press who had written a series of articles about the problems facing the medevac helicopter business, compared tapes of the voice of the medevac hoaxer with tapes of Blair's hoax. "There are too

many dissimilarities in the voice to make a match," he says.

Moreover, Blair's whereabouts during at least two of the chopper hoax calls can be established, placing him elsewhere. "The case against Blair, as far as we are concerned, is closed," says Watson.

With Blair behind bars and the mysterious medevac copter hoaxer or hoaxers still lying low, things in the phony air crash business have been quiet the past eight months. But the Blair case was one in which everything fell neatly into place for authorities: There was a dumb-luck witness break, and a federal statute made it possible to bring in the U.S. attorney and the FBI and charge Blair with more than a misdemeanor.

What will happen if the medevac caller, or someone like him, decides to start up again is an open question.



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*A Navy pilot and his passengers spent hours risking their lives circling at low altitude in driving snow trying to locate the "downed" plane. Leber recalls, "The guy had us all convinced."*

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# AM Radio: Sick but not Dead

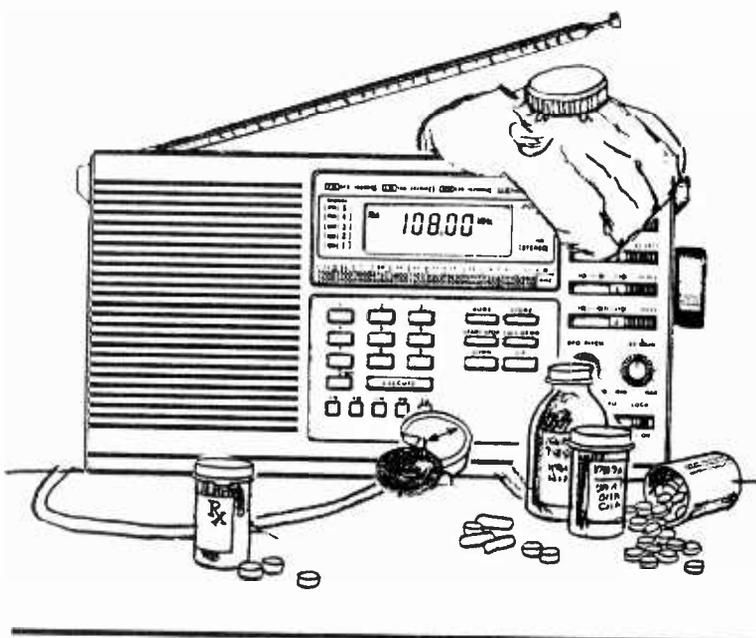
by Larry Miller

There are some 4,914 AM radio stations in the United States. And a lot of them are pretty sick. Some have even died of their illness.

The doctors, doing everything they can, are thinking about moving AM upstairs into intensive care. They run test after test and administer a wide variety of drugs. But so far, nothing's worked. Some feel that it's only a matter of time before the patient slips away entirely.

The list of those who have succumbed is growing. In this case, the victims have left the air for a variety of reasons and for various periods of time -- sometimes, forever. 860-WCKS, Cocoa, Florida, 1230 WNHX, Berlin, New Hampshire, 1350 WRNY, Rome, New York, 1400-KATI, Casper, Wyoming, 1430 Ashland, Virginia, 1440-KZAM, Helotes, Texas, and 1580 WBGs, Mt. Dora, Florida have all gone silent in recent months. 540-KNMx, Las Vegas, Nevada, was built only two years ago. It is already dark. And that is only a recent list.

This is not solely a small-market phenomenon, either. The staff at 680-WCBM in Baltimore walked out in May when their paychecks failed to materialize. The station went into receivership and stayed off the air throughout the summer (it's now back, playing oldies and hoping for a buyer). 900-WDVT in Philadelphia, once the proud relay for classical music WFLN-FM, failed in its bid as a talk station. It went silent during the summer and was sold to a religious organization. 1550-WAAY in Huntsville, Alabama has been silent.



Can something be done to stem the tide of dead and dying AM radio stations? Or will the list of stations that have closed their doors begin to resemble the obituary page in a county ravaged by plague? The odds are against AM. The bottom line is that it sounds bad -- so bad that the vast majority of young people today don't even know AM exists.

## Some Still on Top

Not all AM radio stations are candidates for the Last Rites. According to *Broadcasting* magazine's annual survey of the top 50 markets, many AMs are actually doing very well. That survey, based on the latest Arbitron (audience) ratings, shows that among the top 500 stations (comprised of the top ten in each of the top 50

markets), are 101 AMs.

AM stations even managed to grab the #1 slot in 11 of the top 50 markets. And if that doesn't surprise you, then consider that three of these #1 rated AMs -- WTJM (Milwaukee-Racine, Wisconsin), WDAF (Kansas City, Missouri) and WTIC (Hartford - New Britain - Middletown, Connecticut) -- got there by broadcasting music. In fact, consider that the most popular format among AM stations making it into the top ten in their market is a tie: 20 programmed news/talk and 20 ran adult contemporary (soft rock) music.

But Ron Frizzell of Auburn-Portland, Maine's WLAM points to just such figures as dangerously misleading and likens AM radio to the Titanic. "Even when the ship was down and awash at the bow, it still seemed safe at the warm, secure stern, towering 100 feet above the water. People believed the ship was too ... big and secure to sink ..." As a result, 1,500 people drowned while 600 empty seats on the lifeboats rowed away.

The Titanic is the right analogy. AM radio's loss of listeners has been dramatic -- from 54% to 25% in the last decade. "In case no one has noticed," says Frizzell, "at the current rate of decline, sometime during the 2000 AD fall [ratings], no one will be listening to AM radio. That's just twelve and a half years away..."

## Spitting in Death's Eye

Not everyone is shutting down the station

and turning off the lights without a fight. One staffer at 1050-WYBG in Massena, New York, told *FMedia!* that it "refuses to accept the stereotype that AM radio is dead. We know it can succeed through creativity, imagination, and innovation."

Wayne Vriesman, vice president of Tribune Broadcasting Co. radio group agrees. "AM is going to have to produce programming that is going to attract -- programming besides news and information and talk..." As a result, ideas for formats that once would have elicited a 20 dollar bill and a point in the direction of the nearest psychiatrist from fellow broadcasters are now getting serious consideration. And they can provide monitors with some of the best listening on the radio spectrum. There's nothing like the thought of foreclosure to get the creative juices flowing.

## Strategies and Strange Formats

Ever since August, for example, Miami, Florida, listeners have been able to tune in AM 980, "Your Motivation Station." It's a fast-moving format that sounds like Top 40 without the music. The station gives tips on courtesy, caring and achieving excellence, and pep talks from motivational specialists. It also airs health advice, news edited to stress the upbeat, and tales of products and people that weren't supposed to succeed but did. Features like "Energizer of the Day" and "the WNN Supercharger" round out the day. 1470-WMMW in Meriden, Connecticut, has dropped its adult contemporary music programming in favor of a similar format, mixing motivation with New Age music.

Although the concept of a one-artist station is not new (all-Beatles radio was hot about five years ago), Elvis radio has garnered a lot of press attention recently. At least two stations -- WCVG in Covington, Ohio, and KBIX in Muskogee, Oklahoma -- are trying it out. In the case WCVG, the idea seems to be working -- for now. It reports a 30% increase in the rates they get for advertising and a 500% increase in sales. But as Pete

Kemp says in *DX News*, "I wouldn't go out and mortgage the farm" on this one yet.

Interesting, too, is New York City's WFAN. As the call letters indicate, it specializes in round-the-clock sports. Scores from contests big and small are updated every fifteen minutes. Other airtime is filled with interviews, quizzes and trivia, and 3-minute features on subjects like sports surgery and workout routines. Los Angeles, California's KMNY offers continuous financial advice and Little Rock, Arkansas's two and a half



year old KPAL is a children's station. (It signs off at 10:00 p.m. because, according to general manager Bill Henslee, "our audience goes to bed.") Until recently, Winchester, Kentucky, had WHRS -- all-horse radio for the horsey set.

Format isn't the only way to win the game. Unusual strategies are another way that AMers are attempting to ward off the grim reaper. Tallahassee, Florida's 1450-WTAL is carried on cable and lists its dial position there before its AM frequency on its letterhead. 1370-KMAP in South St. Paul, Minnesota's 1370-KMAP, like a dog and pony circus, is moving its transmitter some 60 kilometers north to Center City, Minnesota, in hopes that they can try their luck in a whole new market. 640-WJFU, Zeeland, Michigan, is taking a 110 mile trek to Merrillville, Indiana, in search of their audience.

## AM Tent Revival

Unfortunately, if most recent efforts to resuscitate AM are any indication, then the medium is quite simply doomed. Radio broadcasters, meeting in Washington, D.C. last month for their annual convention, kicked off what was supposed to be an "AM Rally" -- a rally later described by *Radio World* editor Judith Gross as "calm."

"Things stayed pretty tame," too, says Gross, "with a lot of the same technical reviews of AM's problems we've heard in the past. There was no 'rah-rah' cheering, there weren't even hot dogs, pom poms or cheerleaders. At least there were balloons. Cheerful red, white, and blue ones proclaiming 'AM Alive.'"

It all went downhill from there. According to the National Association of Broadcasters (NAB), the sponsors of the convention, 180 receiver manufacturers were invited to attend and give their ideas about better quality radios for AM. Only seven showed up. One that did said his firm had absolutely no interest in making AM radios.

The NAB was prepared for such setbacks, however, planning to wow the attendees with a widely publicized receiver touted as "the ultimate radio." The unit, designed by Richard Sequerra of Bayside, New York, was said to incorporate all of the latest technological innovations -- FMX, continuous tuning from AM to FM, AM stereo (in three different models), and AM noise-blanking. Anticipation was heightened when the unveiling ceremony was delayed for a day.

But problems began to arise right from the start. Once scheduled, the entire event had to be moved when it was found that the radio couldn't pick up a good signal inside the meeting room. So the ceremony was moved to a hallway. And there, before a packed audience, NAB officials swept a gold lame cover from the receiver that was to be the salvation of AM.

Revealed was, not three prototypes, as promised, but one -- a slightly clunky-

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- The model DX-SWL is designed with specially coated 12 ga. solid copper wire elements which are 25% greater in diameter than the more commonly used 14 ga. wire. Engineers know that a larger diameter yields less resistance, and thus less loss per unit length. Even though 14 ga. wire is cheaper, it is not acceptable for use in any Alpha Delta antenna.

- Because DX-SWL antennas are used worldwide in less than ideal environments, only high quality stainless steel hardware is used. Even though it is more costly than plated hardware used in other cheaper brands, we know that you want to put an antenna up once, and forget it. Climbing great heights to replace rusted connections is no fun. Due to the direct sun, high heat environment of some DX-SWL installation sites, we use only specially selected white coil form material. Black forms used by other brands are not acceptable due to heat absorption and possible coil distortion.

- Before you buy any shortwave antenna, check out the design details and transmit capabilities thoroughly—even if you're not going to transmit. We don't want your investment to go up in smoke!

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looking table-top model with separate speakers. O.K., so the radio didn't look anything like what people expected. Listeners will forgive its esthetic problems if it *sounds* good.

No one will ever know. The switch was thrown and... the AM portion didn't work, done in by a faulty chip. Said Gross, "The whole fiasco had consumer reporters [who were attending the event] ... puzzled, skeptical or worse." The ultimate radio, the salvation of AM, took a 30 foot dive into a wet rag and landed squarely on its face.

### Going Down

AM's tail-spin towards obscurity started long before Mr. Sequerra's radio glitched out. Ironically, it was triggered by its own success. In the decade spanning the mid-1950 through mid '60s, AM radio sounded great. Spurred on by the exploding growth of rock music and coupled to the teening of the baby boom, the medium became firmly embedded in American culture. And station owners made money. Lots of money.

As a result, more and more stations came on the air. And as these stations came on the air, receiver manufacturers cut down on their radio's frequency response in order to eliminate interference from adjacent stations. Sound quality began to plummet at exactly the time when the public was looking for hi-fi[delity]. FM was there to fill the bill.

Ron Frizzell points one of many fingers at General Motors. "By 1978, GM and some foreign radio manufacturers had perfected an AM radio that sounded as if the entire station had been shoved through a telephone..." Tragically, he says, GM was the biggest producer of car radios.

Also guilty to some degree, even by their own admission, was the Federal Communications Commission. As part of the Reagan administration's overall policy of governmental deregulation, more and more stations were allowed on the air. Those eight years saw an increase of 20% in the number of commercial (AM and FM) stations on the air.

"I'd like to do a cartoon someday," says Frizzell. "I'd make a Mr. Magoo-type char-

acter standing on the deck of a ship. Near him would be a life preserver and an anchor. Magoo would represent the government and Congress. In the water would be tired swimmers representing AM radio stations.

"Magoo would be saying, 'Here's help, grab this, hold on tight.' Then, only as Magoo can do, he would accidentally throw the anchor. That's where we are right now. The anchor is in the air [and] we're beginning to reach for it in desperation."

### Another Blow

Another blow was the FCC's decision to allow simulcasting, whereby a company that owns both an AM and an FM station can simply rebroadcast the FM's programming on the AM. The result is a loss of diversity and potentially audience-increasing programming on the AM bands. In yet another bit of irony, it was the same FCC who, 25 years ago, ordered the then-dominant AM stations to stop simulcasting *their* programs over their fledgling FM outlets in an effort to get FM to catch on. The idea worked -- too well.

The litany of failures goes on and on. • Failure to establish a federally-mandated system of AM stereo and instead, letting the market decide. The market eventually did -- Motorola -- but the process took

too long and confused and discouraged manufacturers. • Failure to establish reasonable technical standards. AM radio stations traditionally transmit frequencies over 10 kHz -- sounds no radio can "hear." • Failure to allow flexibility in the rules. A station licensed for 1,000 watts in the mid-

west will cover 60 miles. In New Hampshire, those same 1,000 watts will cover only 30. And on and on it goes.

"It's guerrilla warfare" time for AM radio, says Bill Moyes of The Research Group. According to his research, listeners think of AM as the best provider of information but poor in signal. As a result, Moyes tells AM broadcasters that they should nurture and multiply established AM information formats -- in other words, create a niche and fight to keep it.

But if Frizzell's predictions are accurate,



Jim Rodio still enjoys being "on-the-air" every Saturday night when he hosts the "Original Saturday Night Bandstand Show."

it'll all have to happen fast. More broadcasters will have to take the lead of stations like the WPENs (Philadelphia's #5 rated Big Band station), the WLOKs (Memphis' #6 rated Gospel music station) and even the WCVGs. Surely, many of the new formats will fail -- few hold out much hope for the long-term success of Elvis radio, for example -- but some will succeed. And it's just this sort of thing that will bring the listeners in.

Still, left to its own devices, history does have a nasty habit of repeating itself. Back around the time of our fathers, this same sort of thing happened. Back then the dials also had two bands: one was AM, the other shortwave. And we all know what happened to shortwave.

The opportunities for monitors are many. It's a chance to hear radio during a critical period in its history. It's a chance to witness innovation and even some great radio. But time is growing short. Unless the industry acts to correct AM's problems, they will take it over like the fast-moving mold that covers cheese left too long in the refrigerator.

## Rodio Radio

Both AM radio and nostalgia programming have warm spots in the heart of one South Jersey man. During the 1950s, Jim Rodio was an on-air personality for a major Philadelphia station. He remembers working with some of the greats of local radio at Atlantic City's Steel Pier -- people like Ed Davis and Bob Weems. But what really

sticks in his mind is the music. "We worked with all of the really great Big Bands," reminisces Rodio. "I loved the music then and I still love it now."

By about 1965, Rodio had decided that he wanted a station of his own. Two years later he achieved his goal by purchasing WNJH, a 1,000 watt daytimer licensed to his home town of Hammonton, New Jersey. The facility did well, says a station press release, "from a listener and a financial standpoint."

How well, Rodio won't say. But the results were impressive enough for the broadcaster to open an FM outlet. And one September 23, 1971, 104.9 WRDR joined its sister station in broadcasting the unforgettable sounds of the classic big bands, the Swing Era and the popular singers of the 1940s and '50s -- a format it continues today.

Is Rodio crazy? Our elementary school textbooks promised us that we'd all be vacationing on the moon and taking flying saucers to work by the year 2000 and that's

only a little more than a decade away. Big Bands -- that was from World War II -- ancient history!

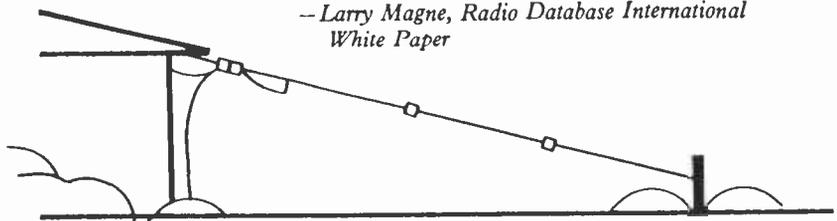
WMJS, FM 92.7 in Prince Frederick, Maryland, for example, dismisses the "crazy" theory. It just added a Big Band show every Saturday and Sunday night from 6 PM until midnight. Says station owner Melvin Gollub, "[It's true that] the most obvious listeners to this program are the people who grew up with this music in the Swing years. However, more and more younger people are discovering Big Band music because it's not only listenable but danceable. And the demographics," says Gollub, "are comparable to most adult programming."

"When you think about it," adds Rodio, "WRDR is a small station operating out of the [rural New Jersey] pinelands. And we still manage to get a good share of the listeners in South Jersey. I think our music is what makes us special." The facts don't lie.

*[Continued on page 50]*

## "The Best Results throughout the Shortwave Spectrum."

-- Larry Magne, Radio Database International White Paper



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105BAS	'Long John' 5 element 10 mtr
155BAS	'Long John' 5 element 15 mtr
204BAS	4 element, 20 meter
205BAS	'Long John' 5 element 20 mtr
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28DQS	trap doublet 40 and 80 meters
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A147-22	11 element 146-148 MHz beam
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220B	15 element 2 mtr. 'Boomer'
230WB	17 element FM 'Boomer'
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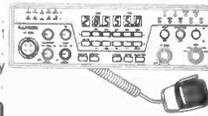
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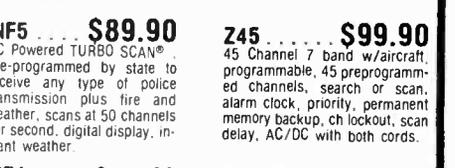
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# DX Challenge: ZAIRE

*Can you go seven for seven?*

by Charles Sorrell

**T**en years before Columbus discovered America, the Portuguese came upon a highly organized and advanced civilization centered around the estuary of the Congo River in what is now Zaire. The 400 years since then have, in many ways, been a slow ride downhill from the Congo Kingdom to the sad situation facing Zairians today.

For a dozen years or so the entire country was the personal property of King Leopold II of Belgium, until he gave it to the Belgian nation in 1907.

The Belgian Congo was (and is today as Zaire) a land of mountains, forests, grasslands and great potential wealth, not the least of which is in mineral riches. The Zaire (Congo) River is the third longest in all of Africa. The nation, which in physical size about matches all of western Europe, contains some 200 distinct tribes (and languages).

Independence came in 1960, and all hell broke loose. The Democratic Republic of the Congo quickly suffered from inter-tribal battles, exploding political hatreds and, in the central event of the period, saw the secession of Katanga Province and a long civil war fought to regain control.

A coup in 1965 -- which some say was supported by the CIA -- brought to power one Mobutu Sese Seku, who, at age 57, still holds leadership of the country. He changed the country's name again and proceeded to rename cities which carried European names (Leopoldville became Kinshasha and so on). If nothing else, Mobutu is generally credited with one major achievement during his 23 years in

power. He has managed to forge a nation out of the extremely diverse number of often feuding peoples. Beyond that, however, the record is shabby.

Zaire has built a large foreign debt. Corruption is rampant. One estimate figures that as much as 90 percent of the funds earmarked for a project end up as bribes to government officials. Grandiose projects which didn't have a foundation in careful thought, ill-considered economic strategies, high interest rates and lower prices for Zaire exports are all factors in a fearsome economic decline.

The basic unit of currency, the zaire, is now worth less than half a cent. A \$180 per capita income rates as the world's eighth lowest and, factoring inflation, the Zairian in the street now makes only one-tenth of a 1960 salary. The infrastructure is crumbling. What was once a two-day trip of some 1,100 miles from the Atlantic coast to the eastern border now requires three weeks because the roads are in such poor condition.

And yet, Mobutu's net worth is estimated at \$5 billion dollars. If he spent equal time in all of his homes he could only manage about three weeks in each per year. He is said to have eleven homes in Zaire, a castle in Spain, a palace in Switzerland plus palatial residences in Paris, the Ivory Coast, Belgium and the French Riviera.

He is accused of human rights abuses but nothing approaching the severity found in

some other countries. He has developed and encouraged a thick personality cult. There is a tough and efficient security force which maintains order. He has put down two past rebellions, both during the nineteen seventies.

U.S. aid, though it has gone down a bit in the last year or two, is still substantial. Current and previous administrations see total chaos as the only alternative to Mobutu who is friendly to the west. Angola accuses the U.S. of training UNITA rebels at secret bases in southern Zaire.

Over the last  
200 years,  
Zaire has  
been on a  
slow ride  
downhill

## *A Shaky Situation*

Considering the state of things in Zaire, it is therefore perhaps not very surprising that tuning in Zaire's shortwave broadcasts from the capital, Kinshasha, is as much a matter of whether the station is managing to get or stay on the air as anything else.

La Voix du Zaire in Kinshasha is listed for operations on 6140 and 5245 in the 1988 *World Radio TV Handbook*. 6140, however, seems not to be active at this time and is not even listed in the 1989 *Passport to World Band Radio*. The "5245" in the *Handbook*, on the other hand, is a typo. The actual frequency is 15245 kHz. *Passport* shows the powerful, 100 kw transmitter as active and reasonably well equipped monitors have been able to hear it. Broadcasts are mostly in French and are scheduled from 0330 to 2300 UTC. On weekends, the station has been known to be on the air around the clock.

# The potential of hearing a station from Zaire is as illusive as solutions to Zaire's overwhelming difficulties.

The level of difficulty in hearing La Voix du Zaire is matched by the level of difficulty in obtaining one of the station's form letter QSLs. Reports should be in French, if possible, and sent to B.P. 3171, Kinshasha.

## The Real Test

Stanley had an easier time of it finding Livingston than the DXer will have tuning in all of the Zaire regional stations. To this writer's knowledge, no listener tuning from North America has ever been able to hear all of them. Indeed, Zairian regionals represent one of Africa's greatest shortwave DXing challenges.

Radio Bukavu, in the city of that name, is heard on 4839.5 kHz. The mini-powered 4 kw transmitter signs on at 0400 UTC, is off at 0700, on again at 1000, off again at 1245, back on again at 1530 and off again at just about 1820 or so. Also predominantly in French and also irregular, it too broadcasts straight through -- 0300 to 1820 UTC on Sundays. When active, it's widely heard in North America/ Reception reports go to B.P. 475, Bukavu.

Radio Mbandaka is easier to pronounce than it is to log. It's listed for 5995 with 10 kw, though some sources say only 4 kw. Broadcasts are scheduled from 0400 to 2200 but it isn't known if this station is currently active or not and, as far as can be ascertained, no loggings of this one have ever been made in North America. That may be due, at least in part, to the ever present signals from international broadcasters like the Voice of America, World Harvest Radio, Australia and Iran (among others) on the channel.

Another unreported station is Radio Kanaga, listed for 10 kw on 6125 and scheduled from 0400 to 2100 UTC. Programs would be largely in French. Again, heavy interference is always a problem and it's difficult to tell if it's even on the air.

Radio Lubumbashi from Lubumbashi

(formerly Elizabethville) has been tuned by a few DXers in recent months. Try 7204.5, plus or minus a bit (it varies) just before 0400 sign on. The bad news is that Lubumbashi's 10 kw signal is usually buried by Radio Tirana when it signs on at 0400. Lubumbashi is the capital of Shaba (formerly Katanga) Province. A second frequency is 4751, also signing on at 0400, though this transmitter seems to be in less reliable shape than the 41 meter band outlet as it's reported as being heard less frequently. Reports on this station can be sent to B.P. 7295, Lubumbashi.

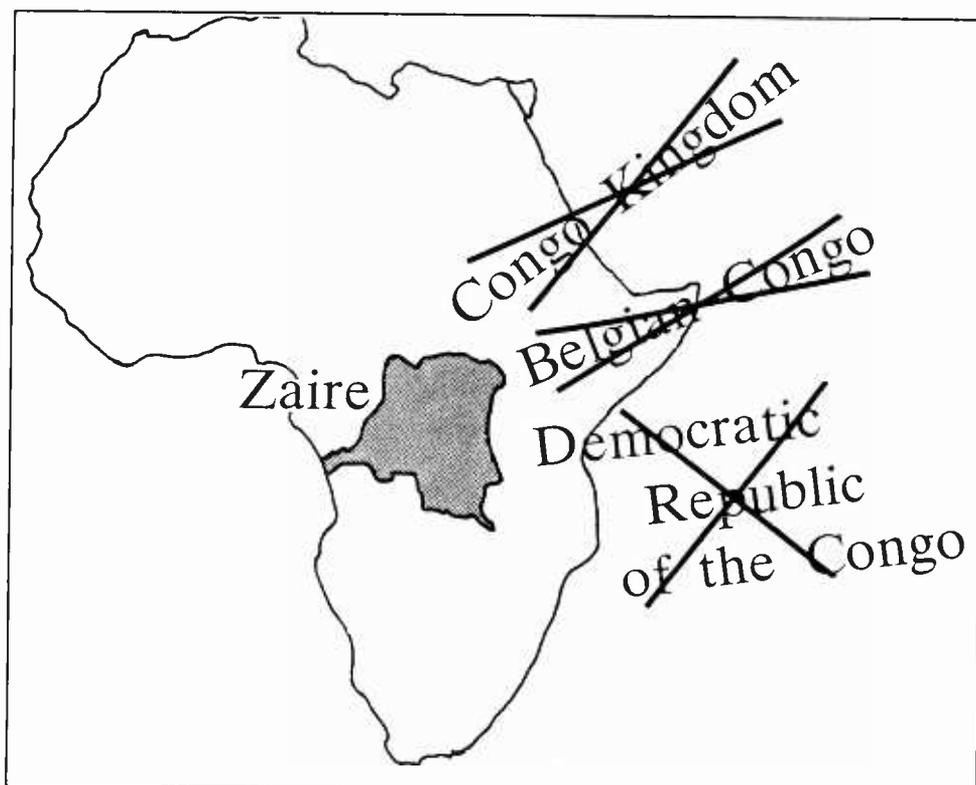
Radio Mbuji-Mayi, on a varying frequency of 7295 kHz, has also been heard in North America but not for some time. It runs 10 kw from 0300 to 2200 UTC continuously on weekends, shutting down at 0700 to 1000 and again from 1200 to 1500 UTC during the week.

A more likely log than the regular government regional stations is Radio Candip, located in Bunia and owned by the National

University of Zaire. The station came on the air in 1974 to provide an educational service to the region. It broadcasts programs on such topics as agriculture, health, rural development and so on -- aimed at both an in-school and nonstudent audience. It is scheduled on two frequencies: 3390 and 5066.

The latter (varying to slightly higher) is your best opportunity. The optimum time to hear it is from its 0330 sign-on to 0600 UTC close, mostly in French and other local languages. Radio Candip is a fairly good verifier and reports can be mailed to B.P. 373 in Bunia.

Of the seven Zairian shortwave stations only three figure to have any real chance of being heard by DXers in North America. The others remain well out of reach, just as do solutions to the many problems faced by this giant African nation.



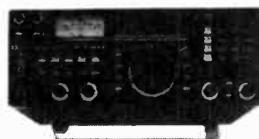


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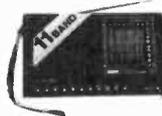
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# The Story of WYXI



by Ron Clayton

**M**ark Lefler was just a kid when he first listened to Athens, Tennessee's WLAR. In 1961, a childhood illness had confined him to bed. His parents had given him a crystal set to help while away the hours.

Mark listened to that radio a lot. And as the days passed, one announcer in particular, a guy by the name of Bob Ketchersid, began to intrigue him.

Thrilled by what he heard, the young boy soon convinced his father to drive him out to the station to meet Ketchersid. Before long, Mark was spending most of his spare time watching, visiting and listening to the announcers at WLAR. "I was a pesky kid," says Mark. "But I became friends with all of the announcers."

At the age of 14 Mark passed his Federal Communication Commission (FCC) test and was legally classified as a third class radio engineer. At the time, the license was required in order to broadcast. Still, he could not convince the station owner to allow him on the air. After all, his voice had't even changed yet.

## Changing Paths

Meanwhile, Bob Ketchersid graduated from Tennessee Wesleyan College and headed off to graduate school in Ohio. Armed with a master's degree in Broadcast Journalism, he later went on to work as a reporter for WSB radio in Atlanta. After that, Lefler lost track of Ketchersid.

Unknown to the youngster, Bob Ketchersid and his wife Judi became missionaries for the protestant Christian missionary radio organization Trans World Radio and were assigned to the Caribbean Island of Bonaire, Netherlands Antilles.

"We arrived in August and stayed until May of 1986," Bob said. "I hosted a popular late night radio program called 'Caribbean Night Call,' and Judi hosted a weekly program titled 'A Woman's View.'" Back in Athens, Mark Lefler continued as the WLAR pest.

## New Station, New Opportunities

In 1966, an Athens newspaper article stated a new radio station was coming to the area, and 15-year-old Lefler decided he would approach owner John Frew and obtain his first real job in radio. He convinced his sister to drive him to the studio and as he walked toward the door of the converted Depot Hill house, he picked up a newspaper from the porch, hoping to impress the new owner with his courtesy and professionalism.

Instead, Frew mistook him for the paperboy. Says Mark, "That was one of the most humbling experiences in my life." Mark did eventually convince Frew to hire him and in April of 1967 his broadcasting career was underway in earnest.

As is often the case, time passed and Mark left the station for a job at the Athens Stove Works. That was in 1973. Four years later, he left the foundry and opened an insurance agency in town. Meanwhile, Frew's station, WYXI, had become one of the most powerful in the area.

## A Station's Troubles

The station's success masked other problems, though. A split in ownership caused the station to be sold on contract to a Chattanooga man. Apparently, the new owner, W.L. Gerdes bought the station for his son. But the son lasted only a year and the station lost its lustre as manager after manager passed through the station doors. Eventually, Gerdes gave the station back to the Frews in December 1984. Frew called Mark Lefler about insurance for the station.

It was through this business relationship that Mark became aware that the station was once again for sale. But the price was more than Mark felt reasonable and he did not consider the possibility of buying the station, though he had wanted to return to radio.

## Reunion

In 1984 Mark and his wife, Mary, joined the Fairview Baptist Church in Athens. At about that time, a man named Marvin Heath visited the church to raise funds for a future missionary trip. He was planning to work for Trans World Radio.

After the meeting, Mark was talking to the speaker and noticed a brochure that Heath was using. On the front cover was a photograph of Bob Ketchersid. "A shiver went up my spine," Mark said. "I wrote Bob and he sent a cassette tape to me."

The two continued to correspond by sending tapes through the mail. Mark also bought a radio receiver that could pick up shortwave broadcasts. The first time he found the frequency of the island station, Bob was announcing for his "Caribbean Night Call" program. In order to learn more, Mark subscribed to a magazine on international radio.

An article about another broadcaster -- a Quito, Equador, missionary named John Beck -- caught his eye. The story stated Beck had a childhood illness and was confined to bed. He became interested in radio after being given a receiver while recuperating from his illness. The story brought a flashback to Mark, who wrote the man telling of his similar experience.

To thicken the plot, Mark owned a blue rocket radio as a child. To change frequencies on the radio, the nose cone was moved in and out. Amazingly, Beck told of having a similar radio when he was young.

In January 1986 the Frews' insurance policy on WYXI expired and Mark, being the conscientious agent, visited the station to renew the policy.

## The Right Time

The price of the station had dropped and Mark felt compelled to contact Bob about the possible purchase. The Ketchersid family was experiencing problems in the Dutch controlled school system on the

# THERE'S SOME FRESH AIR IN McMINN COUNTY

island of Bonaire. The system only enrolled students through the tenth grade, and one of the family's sons had relocated to Alabama so he could graduate from high school. Bob's assignment at the station was coming to an end and he wanted to move back to the States.

Bob expressed an interest in the proposal and during a May meeting, both families decided to take the plunge. Application was made with the FCC and a waiting period ensued.

Being convinced the sale would be consummated, the corporation, which consisted of the Ketchersids, the Leflers, Mark's mother, Bob's parents and Mark's sister and brother-in-law, began planning for the new operation.

## Moving and Improving

Over the years, the Depot Hill facilities of WYXI had fallen into disrepair and the equipment became outdated. The station had to be moved. The group chose a suite at the old Robert E. Lee Hotel in downtown Athens. New equipment was purchased and installed. Soon, everything was ready. The date was September 1. Adding to the tension, the FCC ruling did not arrive until the 11th.

Bob and Mark stayed up the entire night of the eleventh to prepare for the new station's opening day. "It was one of the most exciting days of my life," Mark said.

## A Dream Fulfilled

The station is a culmination of lifelong dreams for Mark and Bob. Both families are devoted Christians and have vowed to provide a positive influence on Athens and McMinn County. It was a step of faith, but one they say they have placed in the Lord's hands.

Coincidence, both men agree, is merely the time and place God chooses to reveal himself to man. And because of a "coincidence," an Athens, Tennessee, radio station was reborn and the dreams of a ten-year-old boy and his radio idol became a reality.



*If you have a story of how radio has played a part in your life or the life of your community, send it to Monitoring Times. If accepted for publication, we'll send you \$50.00. All stories should be true, real life events. Manuscripts should be approximately 1,000 words and must include at least one clear photograph.*



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Ketchersid

Mark  
Lefler

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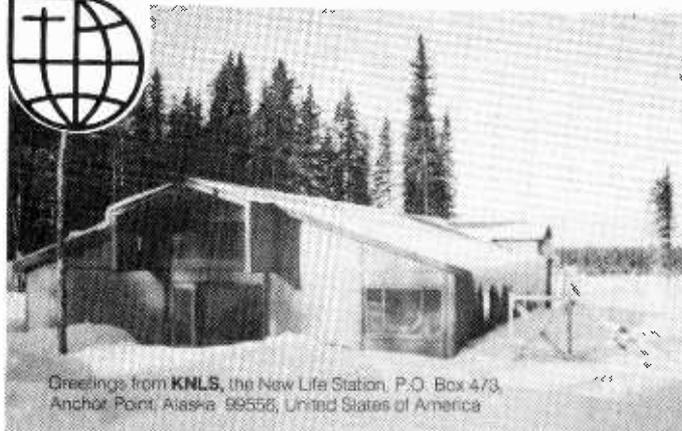
# Shortwave Broadcasting

Glenn Hauser

Box 1684 - MT

Enid, OK 73702

Anchor Point, Alaska  
**KNLS**  
The New Life Station



Greetings from **KNLS**, the New Life Station, P.O. Box 473,  
Anchor Point, Alaska 99556, United States of America

**ALASKA:** Always subject to change, but the KNLS, Anchor Point, Alaska, tentative schedule (valid until March 25) is: 0700 UTC Russian, 0800 English, 0900 Russian, 1000 Japanese, all on 6065; 1100 Mandarin on 7365; 1200 Russian on 6100; 1300 Japanese on 7355; 1400 Mandarin on 6100; 1500 English, 1700 Russian, 1800 English on 7355; 1900 Russian, 2000 Japanese on 11700; 2100 Mandarin on 9870.

English programs include music at 0830 and 1630: *Jazz "E"* on Monday and Thursday; *All That Jazz* on Tuesday and Friday; *Classical* on Wednesday; *American Music Spotlight* on Saturday and Sunday. Everyday at 1530 and 1830, *Swingin' Years*. Country Music at 0800 and 1600 Tuesday, Thursday, Saturday, and Sunday (via Russ Lay, GA; Kraig Krist, VA; and Rowland Archer, NC, *DX Listening Digest*).

**ANTARCTICA:** American Forces Antarctic Network is back on shortwave! Heard for the first time since 1983, between 1200 and 1220 fadeout on 6012 (Ernie Behr, Kenora, Ont, *DXLD*). Also discovered back on 6012 USB, best in the 0800-0845 period before Radio Los Andes, Venezuela, comes on 6010.5.

AFAN's signal is much stronger than before, but modulation is still low, with rock music and a live DJ. It had been off for a year since the antenna blew down. Now it seems the transmitter has also been renovated. (Artie Bigley, TX, *RCI SWL Digest*)

**AUSTRALIA:** Radio Australia came up on 21740 for special Olympic coverage in the 2200 to 0500 period (Bill Peek, NC, *World of Radio*) Let's hope they keep this good frequency going. For program previews of the week to come, catch *Boomerang*, Thursdays 2345, Fridays 1713, Saturdays 1430, Sundays 0113.

Some topics starting the last few days of October: *Along the Mighty Murray* explores one of the world's great red-gum forests, the Barmah, Friday 2030, Saturday 0530, Sunday

1830, Monday 0730, Wednesday 1530. *This Australia* aboard the Sunlander -- sights and sounds of the Sunshine State on the 1681 km rail journey from Cairns to Brisbane, Saturday 1530, Monday 0130, Thursday 0530, Friday 1830. *Southern Cross Sketches*, on the Oz Accent -- evolution of Aussie English and why Australians are no longer self-conscious about it! -- Saturday 2230, Sunday 0930, Monday 0530, Thursday 2030, Friday 1230 (via Rowland Archer, NC, *Review of International Broadcasting*).

**AUSTRIA:** The poll mentioned last month showing Radio Austria International the fourth most popular shortwave station among U.S. listeners, must be flawed. Geographic illiteracy among phone interviewers and their subjects probably accounts for confusion with Australia. And RCI beating BBC for first place is not credible either. (Kim Andrew Elliott, VOA Audience Research, *RIB*).

Ironically, RAI often jokes ruefully about listeners confusing their country with Australia, judging from the mail they get forwarded from Australia. We should make clear that the poll was paid for by BBC, and RAI was merely reporting the results.

**BAHREIN:** This strategic Persian Gulf country has lacked a shortwave service, but is now relayed via Kuwait daily at 1130-1230 in Arabic on 15505, says *Sweden Calling DXers*. But this may have been one-shot or irregular, since only "Huna Kuwait" IDs have been heard. (Ernie Behr, Ont., *DXLD*) This may have something to do with the Voice of the Gulf Cooperation Council, a service which rotates among different countries.

**COLOMBIA:** CARACOL network has a new outlet on 6150.15, heard from 0730 past 0900, parallel to 4945. (Ernie Behr, Ont., *RCI SWLD*) It's another frequency from Neiva. (Richard Stoller, CT, *SWLD* and Kirk Allen, OK, *DXLD*) The government has reportedly pressured each major network to activate at least one shortwave outlet (Henrik Klemetz, Sweden, *DSWCI SW News*).

**COSTA RICA:** Radio for Peace International now schedules Red Cross broadcasts every Thursday at 2300-2400 on 21555 in English, Spanish, Portuguese, and German; plus the usual repeats UTC Fridays at 0300, 0600, and 0900 on 13660; 2000 on 21555.

**CUBA:** Radio Havana has a new *DXers Unlimited* program on Saturdays and UTC Sundays at 0435 on 5965, 6035, 6140, 9655; 0635 on 11760. (Bill Peek, NC, *World of Radio*).

**CHILE:** Radio Nacional is renting airtime to KGEI, La

# Shortwave Broadcasting

Voz de la Amistad, San Francisco, at 2330 on 9550. (Gabriel Ivan Barrera, Chile) This was noted on 15139.55, from 0030 to 0330 UTC, announcing 15140 kHz only and also giving a Santiago address. (Ernie Behr, Ont., RCI SWLD) What an unholy alliance -- Pinochet and the preachers.

**FRANCE:** Add this country to Denmark and Norway in the exclusive 11-meter-band club this fall. Radio France International puts a big signal into Australia from 0915 on 25820 (Bob Padula, RCI SWLD).

**GUATEMALA:** It's odd that Radio Kekchi was assigned 4845, just 10 kHz away from Radio Tezulutlan on 4835. These stations are only a few km apart. Could be poor planning on the government's part but the Guatemalan frequency board is very concerned with frequency spacing, at least on mediumwave.

I wonder if some evangelists in the government arranged to have Kekchi put close to Tezulutlan so as to pull away listeners from the Catholic station. (Don Moore, OH, DXLD) Make that 4844.45 kHz, separable from Radio Fides, Bolivia on 4845.1. (Giuseppe Zella, Italy, Play-DX).

**INDIA:** Integrated North Eastern Service (INES) is to be aired from 50 KW transmitter at Shillong once the studio-transmitter link is completed. Initially, 4795 was allocated for this, but since Hyderabad is on 4800, Shillong will be on 4990 -- which also has the All India Radio Tamil External Service from Madras at times (Supratik Sanatani, India, OzDX).

**LAOS:** The Soviet Union has glasnost, so Laos has a new philosophy too, "Jintanakaran mai" which means new outlook. The external service in English sounds better than it did ten years ago, not the usual boring propaganda praising the ruling People's Revolutionary Party. It's at 1330 to 1400 on 7111-variable, with a heterodyne from Tibet on the low side (Sarath Weerakoon, Sri Lanka, OzDX).

**MALTA:** Voice of the Mediterranean is a new joint service with Libya, in English at 0600-0700 on 9765, 1400-1500 on 11925 (Andy Sennitt, RN Media Network). Very good signals on 9765 for sleepless nights (Vince Bartell, MN, WOR). Set up tape and timer and listened next day to super-strong signal, yawny program from the UN, and some better local history. Malta -- more than just a QSL maildrop for Khaddafi (Rowland Archer, NC, WOR).

Is a Libyan operation using Deutsche Welle transmitters? Is DW collaborating with the terrorist regime of Mad Dog Gaddafi? (Ernie Behr, Ont., WOR) Obviously.

**MEXICO:** Stamp collector's paradise: heavy envelope from Radio Mexico Internacional, A.P. 19-737, 03900 Mexico, DF, had 4,200 pesos postage affixed! (Paul Brouillette, IL, DXLD) Verification from XEUW, 6020, Veracruz, came in large envelope with no less than 70

stamps affixed. (John Wilkins, CO, and Kirk Allen, OK, Fine Tuning)

**NETHERLANDS:** Is DXing something other than shortwave listening? That's the November topic on the Saturday Radio Netherlands feature, *Over To You*. RN will tape your sesqui-minute thoughts on the subject if you phone 011-31-35-18700. (via Carl Mann and Dick Rush, RIB)

**PAPUA NEW GUINEA:** NBC, Port Moresby was off-frequency, 4889 at 1215. (Hans Sparreboom, Alberta, CIDX Messenger) That transmitter has been taken off the air; it is in very bad shape, being unstable, producing harmonic distortion, etc. Repairs are badly needed. This leaves 4890 open for DX signals. (Gordon Darling, PNG, OzDX)

That's nice for you, but a loss for the rest of us, since 4890 was the easiest PNG station to hear abroad. Keep this in mind when checking for all those new transmitters and frequencies elsewhere in the country: Dire Straits seems to be disproportionately popular on PNG provincial stations. (Rowland Archer, NC, DXLD)

**PERU:** Radio Punacarpa, from somewhere in Cuzco Dept., has been heard on 6429 from 2342 into; 2400. (Rogildo F. Aragao, Cochabamba, Bolivia, RCI SWLD) Radio San Antonio de Padua says it operates from 1000 to 0500 on 5235 kHz with 300 watts. (*World Radio-TV Handbook LA-Newsletter*)

Radio del Pacifico, Lima, widely heard abroad on 9950 kHz, denies it is using any frequencies but 4975 and 9675. (Pedro F. Arrunategui, Lima, RCI SWLD) Another item in the rather pointless discussion about whether 9950 is really a harmonic of 4975.

**USA:** The cessation of shortwave usage by AFRTS would seem to be premature even for its own purposes. The replacement INMARSAT service was not expected to be available in the Pacific until November 1, nor in the Atlantic until six months later. It may be two more years before the Indian Ocean is covered.

Many ships' seaworthiness would be adversely affected by installation of topside satellite dishes. Vessels with no more access to AFRTS are being supplied with VOA and BBC shortwave frequencies instead. (Brian Mitchell, *Navy Times*) AFRTS said shortwave was a "substandard service with a very limited audience."

Read much more from Glenn Hauser in *Review of International Broadcasting and/or DX Listening Digest*. Samples are \$2 each, 10-issue subscription \$21, or both for \$40 (rates to USA, Canada, Mexico; US funds on a US bank or postal money order), to Box 1684, Enid, OK 73702. Hear much more on WORLD OF RADIO via WRNO and Radio for Peace International, Costa Rica; Austrian Shortwave Panorama; Radio Enlace from Radio Nederland; and on SWL Digest from Radio Canada International.

# Shortwave Broadcasting

## Broadcast Loggings

*Let other readers know what you're enjoying.  
Send your loggings to Gayle Van Horn  
160 Lester Drive, Orange Park, FL 32073*

*English broadcast unless otherwise noted.*

### 0000 UTC on 12080

Israel: Kol Israel. Station ID with frequency schedule, followed by news on the PLO and Arab/Israeli clashes in the Gaza Strip. Fair signals on parallel 9435 and 11605 kHz. (Tom Sullivan, New Orleans, LA)

### 0000 UTC on 9730

German Democratic Republic: Radio Berlin International. Political discussion on cruise missile bases in Germany. Pop German music and news on South Africa. (Greg Humphries, Long Beach, CA)

### 0010 UTC on 11880

Spain: Spanish Foreign Radio. News in progress at tune-in covering Central America, USSR, China and terrorism in Ireland. 9630 kHz parallel frequency audible. (Rod Pearson, St. Augustine, FL)

### 0015 UTC on 9852.5

United States: WCSN-Boston. Tuesday's program feature, News Focus on the Tasmanian forest industry. (Leslie Edwards, Doylestown, PA)

### 0020 UTC on 9655

Cuba: Radio Havana. Cuban music and news bulletin at the half-hour. Topics from Central America, USSR, Africa, and the United States. (Greg Humphries, Long Beach, CA)

### 0030 UTC on 5030

Costa Rica: Radio Impacto. Spanish. U.S. and Spanish pop tunes. "Canned" Impacto promotional announcements and local evening time checks. (Joseph Johnson, Savannah, GA)

### 0033 UTC on 9775

United States: Voice of America. Studio One program interviewing musician Leo Copkey. (Lloyd Van Horn, Orange Park, FL) Also monitored at 2116 UTC on 15410 kHz with shortwave listener's show. (Lance Micklus, Essex Junction, VT)

### 0048 UTC on 6150

Vatican City: Vatican Radio. Melodic interval signal and station ID. Station feature Talking Point discusses symbolism in the Catholic faith. Parallel frequencies monitored on 11780 and 9605 kHz. (Tom Sullivan, New Orleans, LA)

### 0050 UTC on 15235

Libya: Radio Jamahiriya. Arabic. Lengthy political commentary blasting the United States. (Joseph Johnson, Savannah, GA)

### 0050 UTC on 11715

Main: Radio Beijing relay. Chinese language lesson and station IDs. (James Kline, Santa Monica, CA)

### 0100 UTC on 15160

Hungary: Radio Budapest. Sign-on ID and orchestral music. Station editorial on Solidarity and the trade unions. Also audible with good quality on 6110 and 9585 kHz. (Rod Pearson, St. Augustine, FL)

### 0105 UTC on 11800

Italy: RAI. News report on Australian Civil Aviation Control. Italian music and station ID. (Leslie Edwards, Doylestown, PA) and (Bob Fraser, Cohasset, MA)

### 0105 UTC on 11865

German Federal Republic: Deutsche Welle. World news report and Focus on Europe featuring a discussion on pollution problems in the North Sea. (Greg Humphries, Long Beach, CA)

### 0112 UTC on 9875

Austria: Radio Austria International. DX news tips, multi-lingual IDs and classical music. (Leslie Edwards, Doylestown, PA) Also audible at 1250 UTC on 15320 kHz. (Bob Fraser, Cohasset, MA)

### 0117 UTC on 5930

Czechoslovakia: Radio Prague. News and discussion on the Kampuchean Revolutionary Party. Station ID and Czech folk music of eastern Slovakia. Excellent signals monitored on 6055, 7345, 9540, 9740, and 11990 kHz. (Joseph Johnson, Savannah, GA)

### 0125 UTC on 15160

Ecuador: HCJB. Native Ecuadorian music, Bible scriptures and "Voice of the Andes" ID. Parallel programming heard on 9720 kHz. (Leslie Edwards, Doylestown, PA)

### 0130 UTC on 11645

Greece: Voice of Greece. National news of Greece and International headlines. Station ID in English and Spanish, followed by Greek folk music. (Lloyd Van Horn, Orange Park, FL) Parallel frequencies 9420 and 7430 kHz monitored. (Lance Micklus, Essex Junction, VT)

### 0148 UTC on 11670

French Guiana: Radio France International. English and French pop music with Portuguese programming to Brazil at 0200. (James Kline, Santa Monica, CA)

### 0200 UTC on 9615

South Africa: Radio RSA. International news and cultural programming. (Mark Neveux, Simi Valley, CA) Welcome, Marci-ed.

### 0205 UTC on 9570

Romania: Radio Bucharest. International news, easy listening music and editorial on Romanian economics. (Rod Pearson, St. Augustine, FL)

### 0210 UTC on 12035

Switzerland: Swiss Radio International. Interview and editorial on peace initiatives in the Middle East, and Swiss weather report. Heard also on 9885, 9725, and 6135 kHz. (James Kline, Santa Monica, CA)

### 0217 UTC on 9475

Egypt: Radio Cairo. International news in progress at tune-in with headlines of Europe, Middle East, and Africa. Parallel frequency of 9675 kHz poorer. (Joseph Johnson, Savannah, GA)

### 0231 UTC on 9600

Portugal: Radio Portugal. Dry presentation of news and weather for Portugal. Orchestral and Portuguese folk music. Parallel frequencies 6060, 9635, 9680, and 9705 kHz audible. (Joseph Johnson, Savannah, GA)

### 0240 UTC on 6120

Nicaragua: Radio Zinica. Spanish. Latin music of Nicaragua and "Radio Zinica" ID at 0244 UTC. (Jim Boehm, San Antonio, TX) Welcome, Jim!-ed.

### 0255 UTC on 3330

Rwanda: Radio Rwandaise. French/African vernaculars. Harp instrument interval signal, followed by national anthem, sign-on ID with multi-lingual announcements, and African highlife music.

### 0300 UTC on 4865

Colombia: La Voz del Cinaruco. Spanish. "Caracol" network ID at top of the hour, with local time check. Spanish music and promotionals monitored to 0400 UTC sign-off. (Tom Sullivan, New Orleans, LA)

### 0319 UTC on 15170

Tahiti: RFO Tahiti. French. Exotic Polynesian music and phone-in music request show. Announcer chat and station ID. Booming signal past 0400 UTC. Audible the next evening by 0040 UTC! Parallel frequency 11825 kHz suffered from interference.

### 0330 UTC on 9500

Albania: Radio Tirana. Newscast and Albanian music with fair reception. (Marc Neveux, Simi Valley, CA)

### 0330 UTC on 4790

Peru: Radio Atlantida. Spanish. Station announcements and Peruvian Spanish music to 0359 UTC. "Radio Atlantida" ID at 0400. (Frank Mierzwinski, Mt. Penn, PA)

### 0330 UTC on 6005

German Federal Republic: (West Berlin) RIAS Berlin. German. '60s pop music with German intros, and Big Band music of the 40s. Signal at times suffers interference from Radio Reloj, (Costa Rica) on 6006 kHz. BBC signs-off at 0330 UTC and signs-on at 0358 UTC, making this brief "window" a quick one! (Joseph Johnson, Savannah, GA)

### 0340 UTC on 4945

Bolivia: Radio Illimani. Spanish. Easy-listening, pop, and Spanish ballads. Frequency and ID at 0349 UTC as "Radio Illimani, la voz de Bolivia." (Guy Atkins, Issaquah, WA)

### 0340 UTC on 9045

Clandestine: Iran's Flag of Freedom Radio. Farsi. Presumed political speech followed by martial music. 15555 kHz parallel frequency fair with Arabic station interference. (Joseph Johnson, Savannah, GA)

### 0345 UTC on 7475

Tunisia: RDTV Tunisienne. Arabic. Tunisian music to 0359 UTC. Time tips, station ID and international news at 0400 UTC. (Greg Humphries, Long Beach, CA)

### 0355 UTC on 4885

Brazil: Radio Clube do Para. Portuguese. Brazilian pop and easy-listening tunes. Station ID and Portuguese music continuing past 0400 UTC listed sign-off schedule. (Greg Humphries, Long Beach, CA)

### 0400 UTC on 4880

South Africa: Radio Five. National news of South Africa in progress at tune-in, closing with ID. 60s music and reggae music from the late Bob Marley of Jamaica. (ed.)

### 0415 UTC on 4945

Colombia: Caracol Neiva. Spanish. Colombian music and "Caracol" ID. (Frank Mierzwinski, Mt. Penn, PA) Parallel frequency 4755 kHz also a good one to check-ed.

### 0446 UTC on 4970

Venezuela: Radio Rumbos. Spanish. South American Spanish music with comments and ID at 0500 UTC, and 0503 sign-off. (Frank Mierzwinski, Mt. Penn, PA)

# Shortwave Broadcasting

## 0455 UTC on 7255

Nigeria: Voice of Nigeria-Lagos. Rapid African drum signal and opening ID routine, followed by native African rhythms. (Tom Sullivan, New Orleans, LA)

## 0455 UTC on 5286

Chad: Radio Monoundou. French. Drum interval signal to orchestral national anthem at 0458 UTC, and choral music. Partial sign-on ID heard as, "ici Moundou," followed by native African music. (ed.)

## 0456 UTC on 7130

Clandestine: A Voz de Resistencia do Galo Negro. Portuguese. Interval signal and martial music. Station ID and conversations about Angola. Fair signal for parallel 9700 kHz.

## 0526 UTC on 5047

Togo: RDTV-Radio Togo. French. Melodic chime interval signal, national anthem and "Good morning" with sign-on ID. Choral hymn music and news bits. Signal lost by 0540 UTC amid excessive interference. (Joseph Johnson, Savannah, GA)

## 0545 UTC on 5020

Niger: La Voix du Sahel. French. Two announcers conversation, native African and French pop vocals. Station ID and news broadcast at 0600 UTC. (Tom Sullivan, New Orleans, LA)

## 0555 UTC on 14802 USB

Kiribati: Radio Kiribati. English/Gilbertese. Instrumental music at sign-on and multi-lingual IDs. (IDs pronounced as "KIHR ih bahs"). Local Sunday evening programming of U.S. pop tunes, "Magazine Show", and news coverage on New Zealand. Outstanding signal strength! BBC news relay and Pacific Report monitored on weeknights, with numerous clear IDs.

## 0605 UTC on 4915

Ghana: Ghana Broadcasting Corporation. (GBC) English news with high static on 4915 and 3366 kHz. (Lance Micklus, Essex Junction, VT)

## 0808 UTC on 11805

Guam: KTWR. Religious discussion and program insight for living. (James Kline, Santa Monica, CA)

## 0818 UTC on 1172

Australia: Radio Australia. International Report and Propagation Report with only fair signal. (James Kline, Santa Monica, CA) Also monitored from 0455-0500 UTC on 17795 kHz. (Lance Micklus, Essex Junction, VT)

## 0830 UTC on 6020

Brazil: Radio Gaucha. Portuguese. Station ID at tune-in, announcer's conversation and local time check for fair signal. (C.A. Clancy, Redding, CA)

## 0859 UTC on 4832

Costa Rica: Radio Reloj. Spanish. Newscast and Spanish music with heavy static. (Lance Micklus, Essex Junction, VT) Parallel frequency 6006 kHz might be quieter-ed.

## 0907 UTC on 4850

Venezuela: Radio Capital. Spanish. DJ announcers with American Top 40 music format. (Lance Micklus, Essex Junction, VT)

## 1003 UTC on 9735

Paraguay: Radio Nacional de Paraguay. Spanish. Paraguayan folk music with signal splatter from BBC on 9740 kHz. (James Kline, Santa Monica, CA)

## 1010 UTC on 3310

Bolivia: Radio San Miguel. Spanish. Clear station ID and beautiful Bolivian flute music, with only occasional announcement breaks. (Bill Traister, Covington, TN)

## 1035 UTC on 2310

Australia: VL8A (Alice Springs). ABC network programming and pop music from DJ. Parallel frequency 2325 kHz VL8T (Tennant Creek) was considerably stronger. VL8K (Katherine) 2485 kHz audible also, though programming was not parallel. (Guy Atkins, Wyoming DXpedition)

## 1044 UTC on 3205

Papua New Guinea: (New Guinea) Radio West Sepik. Local announcements and Melanesian vocal music. Radio Morobe (New Guinea) on 3220 kHz also heard with faint interference from Spanish station. (Guy Atkins, Wyoming DXpedition)

## 1057 UTC on 3235

Papua New Guinea: (New Britain) Radio West New Britain. Pidgin/English. Accordion music to 1058 UTC followed by time check. ID and conch shell interval signal. Newscast coverage on local city, Kimbe. Radio Madang (New Guinea) on 3260 kHz also audible. (Guy Atkins, Wyoming DXpedition)

## 1113 UTC on 3290

Papua New Guinea: (Papua) Radio Central. Pidgin/English. Pidgin announcements to "half past nine" time check, and station ID. Radio Manus (Admiralty Island) on 3315 kHz also audible. (Guy Atkins, Wyoming DXpedition)

## 1122 UTC on 3325

Papua New Guinea: (Bougainville) Radio North Solomons. Pidgin/English. Announcer chat in Pidgin, suffering from radio-teletype interference. Radio East Sepik (New Guinea) on 3335 kHz monitored, as well as Radio Northern (Papua) on 3345 kHz. (Guy Atkins, Wyoming DXpedition)

## 1125 UTC on 18080

United Kingdom: BBC. The Racing Game feature on the Darby Race. (Lance Micklus, Essex Junction, VT)

## 1130 UTC on 6020

Mexico: XEUW-Veracruz. Spanish. Station sign-on with music and ID given as "La U de Veracruz." Local time checks between Mexican music. (Jim Boehm, San Antonio, TX)

## 1135 UTC on 3375

Papua New Guinea: (New Guinea) Radio West Highlands. Pidgin. Station announcements and Melanesian music. Radio Eastern Highlands (New Guinea) on 3395 kHz audible. (Guy Atkins, Wyoming DXpedition)

## 1138 UTC on 3385

Papua New Guinea: (New Britain) Radio East New Britain. Pidgin/English. Super Melanesian vocals to "19 minutes until 10" time check. Rock music from Dire Straits and introduction to vocal group from Kieta. NBC network (Papua) on 4890 kHz also monitored with near perfect copy in English. (Guy Atkins, Wyoming DXpedition) Great going on the PNGs, Guy!-ed.

## 1154 UTC on 3215

Indonesia: (Celebes) Radio Republik Indonesia-Manado. Indonesian. Popular music to Jakarta news relay at 1159 UTC. Local programming began at 1209 UTC, continuing until 1231 sign-off. (Guy Atkins, Issaquah, WA)

## 1200 UTC on 6185

Mexico: Radio Educacion. Mexican national anthem at sign-on and station ID, followed by Spanish music program. (Jim Boehm, San Antonio, TX)

## 1236 UTC on 3325

Indonesia: (Kalimantan) Radio Republik Indonesia-Palangka Raya. Indonesian. Lagu popular music to local ID at 1246 UTC. Jakarta network relaying interview, which suffered from poor audio. Parallel frequency 3345 kHz (RRI Ternate-Maluku) also suffered poor audio. (Guy Atkins, Issaquah, WA)

## 1241 UTC on 4927

Indonesia: (Sumatera) Radio Republik Indonesia-Jambi. Indonesian. Presumed Koran readings to 1243 UTC. Station ID, xylophone music and numerous mentions of Indonesian cities. (Guy Atkins, Issaquah, WA)

## 1313 UTC on 3915

Singapore: BBC relay. Tentative logging with Mozart music and mentions of London. (Guy Atkins, Issaquah, WA)

## 1345 UTC on 15010

Vietnam: Voice of Vietnam. Excellent reception of programming on laboratory animals for research purposes. (Marc Neveux, Simi Valley, CA)

## 1430 UTC on 15240

Yugoslavia: Radio Yugoslavia. Sign-on with station ID and news coverage of the Middle East. Monitored to 1435 UTC with severe signal interference from unidentified French station. Parallel frequencies 15415 and 7240 kHz not heard. (Guy Atkins, Issaquah, WA) Special thanks to Guy for his valuable help this month!-ed.

## 1500 UTC on 9505

Japan: NHK-Radio Japan. World and national news of Japan. Excellent reception. (Marc Neveux, Simi Valley, CA) Also heard at 0130 on 5960 kHz in English. (Leslie Edwards, Doylestown, PA)

## 2020 UTC on 9022

Iran: Voice of Islamic Republic of Iran. (V.O.I.R.I.) Political commentary on Iran's views of harassment under President Reagan's administration, the USSR, and the Third World. (Bob Fraser, Cohasset, MA)

## 2130 UTC on 15230

Iraq: Radio Baghdad. Musical variety of 60s pop, contemporary, and Arabic. News broadcast, frequency schedule and 2152 UTC sign-off. (Mark Selden, Coral Gables, FL) Welcome, Mark-ed. Also audible from 0000 and 0200 UTC on 11775 and 11810 kHz. (Pete Wahlquist, Reseda, CA)

## 2325 UTC on 4890

Senegal: ORTV-Senegal. French. Lively DJ presents American jazz, French pops and rhythm and blues. Closing news headlines, station ID, national anthem and 0000 sign-off. (ed.)

## 2345 UTC on 4835

Mali: RCTV-Malienne. French. African highlife and U.S. pops from Madonna. Station ID, martial national anthem and 0001 sign-off. Audible with only a fair signal on parallel frequency 4783 kHz.

## 2340 UTC on 9925

Belgium: BRT. Brussels Calling show in progress at tune-in. Interviews with European rock musicians and listener's letters from Canada, Europe, and the U.S.A. (Bill Traister, Covington, TN)

## 2350 UTC on 4845

Mauritania: ORTM Mauritanie. Arabic. Islamic prayers to 0000 UTC. Closing ID and martial national anthem to 0001 sign-off. (Rod Pearson, St. Augustine, FL)

Larry Van Horn  
160 Lester Drive  
Orange Park, FL 32073

**"Blackbird"** The pilot slowly brings the engines to idle. As the aircraft taxis in front of you, 100-foot long streams of shimmering heat blast from its twin turbojet engines. A long, sinister black dagger, this craft looks like it belongs in a science fiction movie. Indeed, both pilot and navigator are wearing spacesuits.

The pilot heads his aircraft to the end of the runway and runs up the engines for takeoff. Heat is replaced by a belch of greenish-blue flames as the aircraft blasts down the runway, then suddenly skyward. A crack of thunder shakes the ground.

This isn't one of those "looks at the future" but a description of the U.S. Air Force, Strategic Air Command's SR-71 reconnaissance jet, nicknamed "Blackbird." Japanese locals, near one of the Blackbird's forward bases at Kadena AFB, Okinawa, call it "Habu."

"Blackbird" is the Air Force's original stealth jet that rockets at 2100 mph to the edge of space as it spies on global hot spots. While its top capabilities remain secret, the Air Force says it flies to more than 85,000 feet at over three times the speed of sound. That's roughly 33 miles a minute and literally "faster than a speeding bullet." In fact, the Blackbird can make the trip from San Francisco to New York in 1 hour, 45 minutes.

While on their photographic missions, crew members have reported that they have been the target of attacks by adversaries numerous times. Missiles fired from ground forces or jet fighters try futilely to cut the Blackbird aircraft missions short but fail. SR-71s do not return fire. They are unarmed.

Despite the fact that the plane's design is over 25 years old, it continues to hold world records for speed and altitude. For this reason, it is able to evade attack.

**The 9th Strategic Reconnaissance Wing** The sole SR-71 squadron assigned to the Strategic Air Command is stationed at Beale Air Force Base 110 miles northeast of San Francisco, California. Known as the 9th Strategic Reconnaissance Wing, pilots attached to the 9th also fly the U-2 and TR-1 spy planes.

In addition to Kadena AFB, the Recon Squadron utilizes Mildenhall, a Royal Air Force Base in England. From these forward bases, SR-71s provide global recon coverage to U.S. government agencies and military services.

Recent missions reportedly have included flights over the Persian Gulf and the Arabian Sea. These have provided valuable intelligence data to U.S. warships operating in the area. According to one Air Force official, the SR-71 can photograph 100,000 square miles an hour, revealing the terrain in enough detail to, say, make out a license plate.

One of the biggest prizes for any military utility monitor is to hear a Blackbird aircraft. If you live in California, you can hear SR-71s operating out of Beale AFB on UHF. 269.7 MHz is a channel they are commonly heard on working Oakland Center. It's believed that this is a common channel nationwide for SAC air route traffic control purposes. Listeners in the HF spectrum should monitor the following SAC channels for SR-71, U-2, and TR-1 aircraft: 4495, 4725, 5110, 6761, 6838, 7330, 9023, 9027, 11243, 13241, 15041, 17975, 20631

**Callsign ASPEN** SR-71 aircraft working out of Beale AFB have been heard using the callsign ASPEN followed by a two digit sortie number. U-2 aircraft also from the 9th Strategic Recon Squadron have been using the callsign PINON followed by a two digit number. SR-71s operating from Mildenhall have recently used QUID-XX. Tankers refueling these aircraft also have used the QUID-XX callsigns. These Blackbird aircraft used DOBBY prior to the QUID callsign.

I would like to thank Mark Holmes in Atlanta, Georgia, E.R.

Flynn in San Rafael, California, and Mr. U.K. in England for their contributions to this story on the SAC's Blackbird aircraft.

**Fighter Pilot Chit-chat Frequencies** Most civilian aero scanner buffs know that the VHF-AM frequency 123.450 is used by charter pilots on commercial aircraft for casual conversations in flight. But did you know that airborne military fighter pilots also have their secret HF-SSB network?

An anonymous California monitor reader sent us a list of unassigned frequencies and identifiers which are routinely occupied by A-10 and F-14, 15, 16, 18, and 111 fighter pilots for personal conversations while on training missions across the United States. These frequencies and identifiers are (freq in kHz):

2995	"Cheap Sue"
3030	"Winchester"
6740	"Sixty-seven Forty"
15757	Unknown

The first two identifiers are mnemonics for easy recall (low-priced hooker and the frontier rifle), pronounced "twenty-nine ninety-five" and "thirty-thirty."

**SAC and Numbers in Europe** A gentleman in the U.K. who also wishes to remain anonymous has passed on the following information concerning SAC monitoring in Europe. This will update the features done in the June and July columns. Mr. U.K. writes:

SAC aircraft callsigns: All callsigns used in connection with air traffic control consist of a maximum of seven characters. Therefore USAF callsigns using a word plus number are restricted to usually a word of three to five letters plus two figures.

As well as having an air traffic control callsign (general air traffic or operational air traffic) SAC aircraft may use a tactical daily callsign consisting of one or two words. The callsigns using five letters or more are usually airborne command post, SAC ground stations and other U.S. ground units. For example, a typical EC-135H command post aircraft operating from RAF Mildenhall, U.K. would use air traffic callsign AXE 10 and a tactical callsign BOW LEGGED. This Mr. U.K. has logged over 2,000 of these tactical callsigns which are used over and over again. He rarely hears one that he doesn't already have on the list, so it is his estimate that there are about 2,500 odd callsigns which are assigned daily at random to all necessary units.

The four-letter callsigns are a bit more of a mystery but he thinks the article was probably correct in assuming they are bombers or reconnaissance aircraft.

The SR-71 aircraft which operate out of Mildenhall currently use the same word callsign as the tankers: QUID (it used to be DOBBY). As such an SR-71 mission would use QUID 91, 92, 93 for the KC-135Qs and QUID 95 for the SR-71.

TR-1 recon aircraft operating in Europe use completely different callsigns daily except when they are training. Interestingly enough, they use HIFI and two numbers (same as the Pease tankers).

With reference to the frequency list published in the June issue, all SAC broadcasts in Europe transmit on frequencies Victor, Quebec, Alpha, Romeo, Sierra, and Tango.

Mr. U.K. also makes some interesting observations concerning number station reception in Europe. He says, "It is very interesting to note what people hear in the U.S. compared with Europe." All the number stations heard in the U.K. are mainly German speaking. The others consist of English with a U.S. accent, Polish and Russian. Actual English number stations spoken with British accents are very rare! Phonetic alphabet

stations (that is, "SYN2") are also very common. These are run by the Israeli Mossad (Israeli Intelligence). Spanish speaking stations are rarely heard.

Many frequencies that have not been used for a long while often are used again exactly one year later. Many English stations (U.S. accent) are heard on the same frequencies as German number stations and the format of the messages is often identical. Mr. U.K. suspects these stations are probably run by the same organization. So far he has not located any number station originating from the U.K., but he is still looking.

Thanks for the information, Mr. U.K., and hope to hear more from England and other parts of the world in the future.

**DEA and Customs Networks** Dan M. of New York has been monitoring for the last 25 years on and off, but got pretty serious during the last five. He monitors in earnest the DEA/Customs HF frequencies and provides the following look at their HF frequencies (freq in kHz and USB).

#### DEA

- 7657.0 Designated Foxtrot and is used as a night channel
- 11076.0 Designated Echo and is used between daylight and night time. Also when 14 MHz drops out.
- 14686.0 Designated Papa and is a day channel, used almost daily.
- 18666.0 Designated Hotel alternate day channel, used for units at further locations during daylight.
- 23402.5 Designated Romeo and used when conditions permit

#### CUSTOMS

- 5571.0 Designated Yankee Bravo used as a short range channel in daytime
- 8912.0 Designated Yankee Charlie is used as a backup daylight channel and when conditions cause 11 MHz to drop out
- 11288.0 Designated Yankee Delta used to track aircraft and ships

Some of the callsigns usually heard include Atlas, Panther, Shark ###, Marlin ##, and Flint units. Thanks for the info, Dan; we will be looking forward to future reports.

**British Isles Listening** Duncan Hawkins has passed on some military and civilian aero channels in use around the British Isles. "Our equivalent of your U.S. SAC is Strike Command" Duncan said. Callsign is ARCHITECT. Duncan reports the following frequencies in use:

- 24 hour channels: 4742, 5729, 6738, 9032, 11204, 11234.
- U.K. Daylight hours: 6730, 8990, 13257, 15031, 18018, 23226 Note: 4742 and 6730 most used (0800-1800 UTC).
- U.K. Air Traffic Control (at West Drayton near London): 4722 and 11200 Volmet 24 hours a day.

#### CALLSIGNS:

- Kittyhawk -- Her Majesty the Queen
- Kitty -- Royal family, any member
- Unicorn -- Prince Charles

The three above would be known as the Queen's Flight. 4742 is most common frequency for hearing the above callsigns. They use it virtually on a daily basis! Try listening first for the Volmet and then try keeping an ear open for Kitty.

#### U.K. CIVILIAN AERO CHANNELS

- Shannon (Ireland) Aero Volmet 24 hours a day: 3413, 5640, 8957, 13264
- London LDOC Airlines Radio 24 hour air-to-ground: 5535, 8921, 10072, 13333, 17922, 21946

#### U.K. SAR CHANNELS

- |                |                       |                                     |
|----------------|-----------------------|-------------------------------------|
| Culdrose       | (Western England)     | 3885                                |
| Plymouth       | (Western England)     | 5680, 5695 day and 3023, 3085 night |
| Yeovilton      | (Western England)     | 8977 (mostly training flights)      |
| Portland       | (Western England)     | 8994.5, 8993 (English Channel)      |
| Great Yarmouth | (East England)        | 3453, 5645 (North Sea)              |
| Prestwick      | (North Sea)           | 5690                                |
| Edinburgh      | (Scotland, North Sea) | 3023, 3085, 5680, 5695              |

A big Utility World thanks to Duncan Hawkins in Milton Keynes for sharing this information with UW readers.

**USIA Update** John Vodenik, a technician at the VOA's Bethany, Ohio, relay station recently wrote to update some loggings that appeared in the July issue. John says, "Mr. Lance Micklus shows USIA, Bethany relay station with RTTY on 10380, 10382.2 and 10380.8. I am a technician at Bethany and can say that we haven't had RTTY here in over 15 years."

What Lance found was the Wireless File Feeds from Greenville. The 10233 frequency is in fact 10235, with RTTY on both the upper and lower sidebands. The 10380 kHz is also from Greenville.

John also reports that Bethany has the capability of RTTY, "if AFSK tones are fed to us on phone lines. We have carried it as an emergency feed when one of the Greenville transmitters was down, but it is not a scheduled feed for us." The 10380 kHz feed comes up at 0730 UTC and runs through 1100, going to 1500 max. The 10235 KHz feed comes up at 2200 UTC and runs until 0200, going through 0730 max.

Bethany runs ISB feeds in the 10 and 19 MHz bands, with 19 MHz coming up at 1400z and 1600z. The 10 MHz feed comes up at 0300z. John reports those frequencies as 19480, 19261.5, and 10869 kHz.

**Soviet Ship Hot Spots** Sam Ricks has found several hot spots for Soviet space tracking vessels. In addition to the Sable Island, Nova Scotia area, tracking ships are positioned off the coast of Montevideo, Uruguay, and Port Lome, Togo.

"I picked up 'Look-up Angles,'" said Sam Ricks. "These are the coordinates for aiming each tracking ship's dish antennas at orbiting objects. These were being transmitted by the Kosmonaut Pavel Belyayev, off the coast of Togo. These were being transmitted to UAT-Radio Moscow. The data was transmitted via RTTY using the following code system: QWERTYUIOP = 1234567890"

This is an almost universal shorthand method for sending tabular data. The data was apparently being sent to the tracking ship Kegostrov, off Montevideo.

Utility World readers that are also Compuserve subscribers will be interested in an associated file that Sam has uploaded to data library 1 in the Hamnet forum. The text file is called CCCP.TTY and it describes how Soviet ships report their latitude/longitude positions in RTTY messages.

Also of interest to communist bloc ship monitors is the book, *Jane's Warsaw Pact Merchant Ships Recognition Handbook* (ISBN 0-7106-0455-6) which can be ordered through most bookstores for \$16.95.

"This book is the best source for identifying vessels," says Ricks. Although *Jane's* does not include callsigns, vessel names are cross referenced with ship drawings and specifications.

Sam says that although he has come across Soviet and East German ships not included in *Jane's Handbook*, it is still quite accurate. Many other sources misidentify ship types. For example, many sources cite MB-0364 as a sea-going tug when in fact, it is a stern trawler. The MB designators are pendant numbers used to identify small vessels, many with names. SMB pendant numbers are the actual salvage tugs. Many vessels listed in all sources as small tankers are actually fleet replenishment tankers which refuel Soviet fishing trawlers at sea.

He also notes that even the ITU lists of Soviet ship callsigns are inaccurate. Many callsigns are missing or assigned to different ships.

Thanks, Sam, for the valuable insight into the Soviet merchant ships and their shore stations.

**I would like to take this opportunity** to thank all those *Monitoring Times* readers who have supported this column since its beginning in March. You have helped make Utility World one of the most popular columns in *MT*. Your continued support is deeply appreciated and I look forward to continuing serving you, our readers, in the months to come.

## 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		

- 2716.0 NSBR-USS Samuel B. Roberts making radio checks with USS Aylwin and USS Lake Champlain plus working Newport Port Control at 0915-1030 in USB. (Andrew Gordon, West Hartford, CT) (Roberts was the ship hit by a mine in the Persian Gulf)
- NOTC-USS Caron calling Norfolk Port Control in USB at 0955. (Gordon)
- NOAL-USS Affray radio check with Newport Port Control at 1200 in USB. (Gordon)
- NEBG-USS Compte De Grasse working Little Creek Tug Control at 1010 in USB. (Gordon)
- NJPX-USS Nassau working Norfolk Port Control at 0845 in USB. (Gordon)
- NACI-USS Cook working San Diego Tug Control at 0935 in USB. (Gordon)
- NFEN-USS Glover working Navy Bermuda Control at 1015 in USB. (Gordon)
- 4066.1 NHLT-USS Conyingham working Norfolk ICSB at 0500 in USB. (Andrew Gordon, West Hartford, CT) This is a full duplex channel with ICSB operating on 4360.0-ed.
- NHKG-USS Ranger working San Diego CSS-1 at 0625 in USB. (Gordon)
- 4217.0 Spanish female five digit number station at 0612. (Kerry Webster, Los Angeles, CA)
- 4235.5 EDF-Aranjuez Radio, Spain, heard with a DE CW marker at 0245. (Lance Micklus, Essex Junction, VT)
- 4271.0 CFH-Canadian Forces, Halifax, Nova Scotia, with a RTTY bulletin listing stations down for maintenance at 0217. 850/75N (Mel Smith, Crisfield, MD)
- 4307.5 CTV/CTU#4/37-Monsanto Portuguese Naval Radio in CW with a CW multi-marker at 0140. (Jim Boehm, San Antonio, TX)
- 4317.0 ZSC33-Capetown Radio, South Africa, at 0117 with a CQ CW marker. (Jim Boehm, San Antonio, TX)
- 4376.0 NMF-CG COMSTA Boston working USCGC Escanaba responding to the aid of the cargo ship Capital. The Capital had a mentally distraught crewman. The Escanaba sent a corpsman over to the Capital and decided to wait until first light to remove the crewman. Transmissions in USB between 0200-0400. Also heard CG RADSTA Sandy Hook. (H.R. Kieffer, Lancaster, PA)
- 4865.0 CFW-BC Telecom Vancouver, British Columbia, heard at 0535 and 0600 in USB with phone patches to remote camps in British Columbia. (Kerry Webster, Los Angeles, CA)
- 5080.0 PLEAD Control-NAS Pt. Mugu, California, working various units on the Pacific missile range at 0603 in USB. 5180 is shore channel, 5080 is the ship channel. (Kerry Webster, Los Angeles, CA)
- 5421.4 NMG-USCG COMSTA New Orleans, Louisiana, heard at 0558 with ship units, drug enforcement channel, very active. (Kerry Webster, Los Angeles, CA)
- 5543.0 Spanish female five digit number station heard at 0312 (Tuesday UTC). (Jack Dix, Yonkers, NY)
- 5589.0 Stockholm Aeroradio working aircraft #505 with USB phone patch to a wife at 0318. (Jack Dix, Yonkers, NY) This is a LDOC channel.-ed.
- 5761.0 F29 (Mexico?) working F22, F26, F28, etc. Possible meteo net, F29 was net control at 0500 in CW. (Kerry Webster, Los Angeles, CA)
- 6020.0 UNID U.S. military stations heard while monitoring SWBC XEUW-Vera Cruz, Mexico. Sent "Red house, red house, red house this is Razzle, razzle, razzle. How copy this station." Was heard over programming at 1201. At 1203 heard "Red house, red house, this is Razzle. Razzle QSY to transmit on Echo". Why transmit on an active SWBC channel in the first place? Not a receiver problem -- using a Drake R-7. (Jim Boehm, San Antonio, TX) It's a good place to hide, Jim. My money is on a couple of SAC units.-ed.
- 6470.5 6YI-Kingston Radio, Jamaica, with a CQ CW marker at 0224. (Jack Dix, Yonkers, NY)
- 6526.0 UNID airline working Kingston, Jamaica, at 0502 in USB, IDed as Kingston Dispatch, also heard Toronto. (Kerry Webster, Los Angeles, CA) LDOC channel.-ed.
- 6679.0 Tokyo Volmet here at 1343 in USB. Honolulu Volmet heard at 0602 and at the following times past the hour: H+5/25/30/35/55. (Kerry Webster, Los Angeles, CA)
- 6925.4 KKN50-Department of State Radio, Remington, Virginia, with a CW QRA marker heard at 0554. (Ron Seymour, St. Louis, MO)
- 7312.0 U.S. Army MARS RTTY channel, various stations noted at 0213 using 170/50N. (Kerry Webster, Los Angeles, CA)
- 7365.0 NNNOCED working NNNOCGP with RTTY MARS messages at 1951. (Ron Seymour, St. Louis, MO)
- 7378.0 English female five digit number station heard at 0005 (Monday UTC). Had a heavy Spanish accent.
- 7522.0 KRH51-U.S. Department of State-London, England, with "Foxes" test at 0450. Transmitted RTTY at 850/75. (Sam Ricks, Philadelphia, PA)
- 7652.0 KKN44-U.S. State Department Radio-Monrovia, Liberia, heard at 0458 with QRA CW marker beacon. (Kerry Webster, Los Angeles, CA)
- 7679.4 GXQ-British Army Headquarters-London, with "Quick brown foxes" and RYIs at 0248 in RTTY 750/50. (Sam Ricks, Philadelphia, PA)
- 7705.0 NMN/NAM-NAVCOMSTA Portsmouth, Virginia, in CW with five figure coded traffic at 0516. "BT II RR II, GR 11, GR 00, and BT UNCLAS" headings. Often cited in various listings as UNID numbers station. (Sam Ricks, Philadelphia, PA)
- 7772.0 UNID feeder station carrying rhythm and blues music with a close at 0028. Male announcer said "This has been a test" in USB. (Bob Doyle, Shelton, CT) Nothing on my list, Bob.-ed.
- 7911.0 EV49-A CW station calling CQ QTC1 followed by informal (varying length) code groups with both figures and letters at 0525-0535. UNID station with high speed CW. (Sam Ricks, Philadelphia, PA) Interesting, Sam, the allocation falls within Byelorussia and propagation would lean in that direction. This is also a listed KKN33 channel.-ed.
- 8262.0 Goodlife working an UNID station in USB at 0100. Goodlife mentioned frequency "Bravo." (Jack Dix, Yonkers, NY)
- 8298.5 UKKI-Soviet Fisheries Research Ship Geolog Fersman, with traffic for URD-Leningrad Radio at 0234. Enroute Dakar, Senegal. Transmitting RTTY in Russian 170/50. (Sam Ricks, Philadelphia, PA)
- 8299.0 UKFI-Soviet Space Tracking Ship Kosmonaut Yuri Gagarin with three Kriptogrammas to the tracking ship Akademik Sergei Korolev (UISZ) via UAT-Moscow Radio, 2334-2347 UTC. Transmitting RTTY in Russian 170/50. (Sam Ricks, Philadelphia, PA)
- 8299.5 UIAX-Soviet Replenishment Tanker, Abava, pendant number RN-0427 with position and operations report to UDH-Riga Radio at 0018. Refueling Zapryba fishing fleet off Western Sahara. Transmitting RTTY in Russian 170/50. (Sam Ricks, Philadelphia, PA)
- 8344.0 UWQK-T/KH ANAPA working Odessa at 0324 in RTTY. 170/50 (Tom Roach, San Jose, CA)
- 8445.0 KFS-San Francisco Radio, California, heard at 0530 in CW offering AMVERS service on a trial basis. (Clint Gilliland, Menlo Park, CA)
- 8469.0 D4A-Sao Vicente Radio, Cape Verde Islands, with a CQ CW marker at 0147. (Jack Dix, Yonkers, NY)
- 8511.0 XSW2-Taichung Radio, Taiwan, heard with a DE CW marker at 1424. (Tom Roach, San Jose, CA)
- 8514.0 WLO-Mobile Radio, AL at 0650 in CW sending North Atlantic weather. (Clint Gilliland, Menlo Park, CA)
- 8516.3 5AT-Tripoli Radio, Libya, heard at 0056 with a V/CQ CW marker. QRM from GKC. (Jack Dix, Yonkers, NY)
- 8523.4 JOR-Nagasaki Radio, Japan, at 1421 with a DE CW marker. (Tom Roach, San Jose, CA)
- 8574.0 HKC-Buenaventura Radio, Colombia, heard at 0653 with a CQ CW marker. (Clint Gilliland, Menlo Park, CA.) At 0606 (Kerry Webster, Los Angeles, CA)
- 8578.0 SUH3-Alexandria Radio, Egypt, with a V CW marker at 0316. (Jack Dix, Yonkers, NY)
- 8582.5 KLB-Seattle Radio, Washington, at 0657 with QSX information in CW. (Clint Gilliland, Menlo Park, CA)
- 8589.0 HPP-Panama Intelmar Radio, Panama, with CW QSX information at 0703. (Clint Gilliland, Menlo Park, CA) At 0232 (Ron Seymour, St. Louis, MO) At 0406 (Kerry Webster, Los Angeles, CA)
- 8618.0 EDZ-Aranjuez Radio, Spain, at 0242 in CW with a DE marker. (Ron Seymour, St. Louis, MO) At 0410 (Kerry Webster, Los Angeles, CA)
- 8633.9 NMG-CG COMSTA New Orleans, Louisiana, heard with a military school message for selected CG units and personnel. in RTTY at 0507 170/100R. (Ron Seymour, St. Louis, MO)
- 8688.0 WNU-Slidell Radio, Louisiana, with CW message for UNID ship at 1911. (Ron Seymour, St. Louis, MO)
- 8778.0 Alpha One Alpha type callsigns heard around 0630 and 1306 with radio checks in USB. One female op heard under several callsigns. (Kerry Webster, Los Angeles, CA)
- 8825.0 Iberia 922 working New York Aero, giving a position report at 0445 in USB. (Tom Roach, San Jose, CA) This is NAT-A aero channel.-ed.
- 8861.0 Khabarovsk Volmet Radio heard in USB with Russian aviation weather reports at 1348. (Tom Roach, San Jose, CA)
- 8866.0 Fishing boats out of San Pedro, California, use this frequency as a pirate simplex channel. They call it "66." (Kerry Webster, LA, CA)
- 8942.0 Hong Kong, Singapore, and Manila Radio working various aircraft in USB at 0932. Real hot conditions. (Mark Springer, Hooper Bay, AK) This is the SEA-2 ICAO HF net channel.-ed.
- 9006.0 Canadian Forces Stations Trenton Military, Edmonton Military and Thunder Bay Search heard at 0448 and 1555 in USB. (Kerry Webster, Los Angeles, CA)
- 9007.0 Andrews AFB, Maryland, working Sam 86972 in the area of S.E. Asia using USB at 0935. (Mark Springer, Hooper Bay, AK)

# Utility World

- 9075.0 Spanish female four digit number station heard at 0120 and 0326. (Kerry Webster, Los Angeles, CA)
- 9221.3 UNID out of band fish boats heard here at 0340 in USB. Boats around Manzanitas, Mexico. (Kerry Webster, Los Angeles, CA)
- 10255.0 KWS78-Department of State Radio, Athens, Greece, heard at 0149 with a CW QRA marker. (Jack Dix, Yonkers, NY)
- 10296.0 NMG-CG COMSTA New Orleans, Louisiana, working USCGC Maninicus (WPB1315) in reference to the stopping and boarding a lobster boat and issuing a warning citation. I did not hear the shipside of the contact possibly due to signals or split frequency operation. At 0055 NMG told NDIS to QSY to 13411.0 and make contact with NMG on that frequency. I followed and was able to hear NMG but not NDIS. Both of these frequencies are not listed in any source that I have on USCG frequencies. RTTY at 170/75. (Mr. Anonymous via Grove Headquarters)
- 10536.0 CFH-Canadian Forces Halifax, Nova Scotia, with RTTY RYs ID then coded weather at 1435. 850/75R (Lance Micklus, Essex Junction, VT)
- 10538.6 U.S. Military aircraft heard on this frequency at 1919 in USB. "Iron Leader to Lima Charlie 2." (Kerry Webster, Los Angeles, CA)
- 10740.0 German female five digit numbers station heard at 2040 (Saturday UTC9. (Bob Doyle, Shelton, CT)
- 10972.0 USIA/VOA Tangiers, Morocco, with RTTY transmission. 425/75N at 0023. (Ron Seymour, St. Louis, MO) At 0116 (Mr. Anonymous via Grove Headquarters) ITU list 2 lists circuit Tangier to Rhodes, Addis Ababa and Tehran. News in English 2215-0530 (Kerry Webster, Los Angeles, CA) USIA European file-ed.
- 11271.0 Lajes AB, Azores working Otis 10 with phone patch to Otis Base at 2020 in USB. (Bob Doyle, Shelton, CT)
- 11288.0 Slingshot working Maverick, Barrier Control, Predator, and Hollywood talking about tracking an aircraft landing at the western tip of Haiti. Mode was USB at 2342 (Bob Doyle, Shelton, CT) This is customs channel Yankee Delta-ed.
- 11453.2 HDN-Ecuadorian Naval Radio, Quito, heard at 0350 with RTTY SG/RV test tape and Spanish messages. (Ron Seymour, St. Louis, MO)
- 12065.0 EPD-Tehran Aeroradio, Iran, with flight plans for Vietnamese TU-143 enroute to Moscow for repairs at 0020. Transmitting RTTY 425/50. (Sam Ricks, Philadelphia, PA)
- 12496.4 UTGG-Soviet Research Ship Antares with traffic for UFB-Odessa Radio at 2122. Transmitting RTTY in Russian 170/50. (Sam Ricks, Philadelphia, PA)
- 12497.9 ULEL-Soviet salvage tug (SMB) Murmanryba with traffic for UDK-Murmansk Radio at 2350. Was at Setubal, Portugal. Transmitting RTTY in Russian 170/50. (Sam Ricks, Philadelphia, PA)
- 12521.4 UVSP-Soviet salvage tug Neotrazimyy with traffic for UJY-Kalliningrad Radio at 0202. Transmitting RTTY in Russian 170/50. (Sam Ricks, Philadelphia, PA)
- 12522.4 UVAU-Soviet spaceflight tracking ship Borovich with traffic to URD-Leningrad Radio at 0125. Enroute to Vera Cruz, Mexico. Transmitting RTTY in Russian 170/50. (Sam Ricks, Philadelphia, PA)
- 12523.4 UQIY-Soviet cargo ship Kapitán Leontiy Borisenko with traffic for UFB-Odessa Radio at 0056. Enroute to Odessa. Transmitting RTTY in Russian 170/50. (Sam Ricks, Philadelphia, PA)
- 12524.0 UDVA-Fish Factory Vasily Chernyshev working Vladivostok at 0402 in RTTY. 170/50 (Tom Roach, San Jose, CA)
- 12524.9 UINN-Soviet Fish Carrier Molodaya Gvardiya with position and operation report to URL-Sevastopol Radio at 2340. Was 224 miles east of Boston. Transmitting RTTY in Russian 170/50. (Sam Ricks, Philadelphia, PA)
- 12711.0 HCG-Guayaquil Radio, Ecuador, heard at 1231 with a DE CW marker. (Jack Dix, Yonkers, NY)
- 12719.8 ZLO-Royal New Zealand Naval radio Irirangi with CW DE marker at 0429. (Tom Roach, San Jose, CA) At 0500 (Kerry Webster, Los Angeles, CA)
- 12721.0 PH61-Gdnyia Radio, Poland, in CW with a traffic list of Polish ships at 0411. (Sam Ricks, Philadelphia, PA)
- 12736.4 TAH-Istanbul Radio, Turkey, in CW calling CQ with English service announcement at 0413. (Sam Ricks, Phila, PA)
- 12825.0 UFH-Petropavlovsk Radio, USSR, working an UNID ship with traffic at 0500 in CW. (Tom Roach, San Jose, CA)
- 12912.6 FFL6-St. Lys Radio, France, with a CW CQ marker at 1947. (Mark Springer, Hooper Bay, AK)
- 12916.5 KLB-Seattle Radio, Washington, at 0615 with a CW CQ marker. (Mark Springer, Hooper Bay, AK)
- 12942.0 SVG-Athens Radio, Greece, with a CW DE marker at 1945. (Mark Springer, Hooper Bay, AK)
- 12949.9 UFB-Odessa Radio, USSR, with TASS news in Russian to Soviet ships at sea at 0235. Transmitting RTTY 170/50. (Sam Ricks, Philadelphia, PA)
- 12961.5 LGW-Rogaland Radio, Norway, heard at 1950 with a CQ CW marker. (Mark Springer, Hooper Bay, AK) At 0321 (Kerry Webster, Los Angeles, CA)
- 12984.0 4XZ-Haifa Naval Radio, Israel, heard at 0555 with a V CW marker. (Mark Springer, Hooper Bay, AK)
- 12995.0 ROT-Moscow Naval Radio, USSR, with a CQ CW marker at 1729. (Jack Dix, Yonkers, NY)
- 12996.2 IAR33-Rome Pt, Italy, ANSA news in Italian to ships at sea in CW at 2244. (Sam Ricks, Philadelphia, PA)
- 13011.0 ADP2-Karachi Radio, Pakistan, heard at 0103 with CW V marker. (Jack Dix, Yonkers, NY)
- 13043.4 W72F-UNID station with test tpe "Naws de W72F BCST control" and RYs at 2155. Transmitting RTTY 850/75R. (Sam Ricks, Phila, PA)
- 13086.0 UKA-Vladivostok Radio, USSR, working ULPH-Pavel Postyshev at 0020 and UYUF-Sergel Lazo at 0103 using RTTY. 170/50 (Tom Roach, San Jose, CA) At 0754 (Kerry Webster, Los Angeles, CA)
- 13204.0 Andrews AFB, Maryland, working SAM 60203 in USB at 2232. Probably had the Secretary of the Army aboard. (Mark Springer, Hooper Bay, AK)
- 13235.5 HWN-French Naval Radio, Paris, (Houilles), France, heard with a DE CW marker at 2035. (Mark Springer, Hooper Bay, AK)
- 13752.0 HZJ-Jeddah Aeroradio, Saudi Arabia, with request for overflights and coded ICAO-TAF weather forecasts at 0456. Transmitting RTTY at 425/50. (Sam Ricks, Philadelphia, PA) Heard at 0338 and 1835 (Kerry Webster, Los Angeles, CA)
- 14441.5 NNNOCBE-USS Leyte Gulf calling any stateside MARS station at 1400 in USB. (Andrew Gordon, West Hartford, CT)
- 14467.0 NNNOCWA-USS Prairie working NNNOOTW at 0200 in USB. (Andrew Gordon, West Hartford, CT)
- 14470.0 NNNOCUF-USS McCandless working NNNONIG at 0100 in USB. (Andrew Gordon, West Hartford, CT)
- 14477.0 NNNOCUJ-USS Vulcan working NNNOXEN at 2330 in USB. (Andrew Gordon, West Hartford, CT)
- NNN0NZK-USS Vreeland working NNN0KRQ at 0030 in USB. (Gordon)
- 15024.0 COL-Aeroflot Havana, Cuba, working several Aeroflot aircraft in CW around 0018. (Kerry Webster, Los Angeles, CA)
- 15044.0 IS1A- In CW heard at 0602. "MKOM MKOM DE IS1A" preceded by hand keyed VVV repeated for 10 minutes. (Kerry Webster, Los Angeles, CA)
- 15076.0 FUM-French Naval Radio Papeete, Tahiti, heard at 1732, 1910 with French language traffic, five letter and figure groups then news at 20 WPM in CW. "FM Carthagene to Securite//FM Proces to Advaises." (Kerry Webster, Los Angeles, CA)
- 16348.0 CLN530-Prensa Latina Havana, Cuba, with TASS English news service by RTTY from 1600-1800. 425/50R. (Clint Gilliland, Menlo Park, CA) English news from 1800-2200 // 14901.0. 1800-1830 Nonaligned Countries News Agency pool. (Kerry Webster, Los Angeles, CA)
- 16696.6 MG calling WZ, UNID Spanish language naval air unit with traffic to Esqmar at 0319. Transmitting RTTY in Spanish at 170/50. (Sam Ricks, Philadelphia, PA)
- 16701.9 UOUN-Soviet Cargo Ship Vladimir Korolenko with aviation weather report to Vladivostok weather, via Vladivostok Radio-UKA at 0227. Transmitting RTTY at 170/50. (Sam Ricks, Philadelphia, PA)
- 16703.9 UUPB-Soviet Weather Research Ship Akademik Shokalskiy with traffic for hydromet-Vladivostok via UFB-Provlennyia Radio at 0250. Enroute to Manzanillo, Mexico. Transmitting RTTY in Russian at 170/50. (Sam Ricks, Philadelphia, PA)
- 16882.9 5BA-Nicosia Radio, Cyprus, with CQ CW marker at 2102. (Jack Dix, Yonkers, NY)
- 16066.5 9VG58-Singapore Radio, Singapore, heard at 0119 with a CQ CW marker. (Jack Dix, Yonkers, NY) At 1947 (Kerry Webster, LA, CA)
- 16977.0 OMP-Prague Radio, Czechoslovakia, with CW DE marker at 1845. (Jack Dix, Yonkers, NY)
- 17060.0 4XO-Haifa Radio, Israel, with CW DE marker at 2126. (Mel Smith, Crisfield, MD) At 0418 and 1509 (Kerry Webster, Los Angeles, CA)
- 17117.6 PBC317-Goeree Island Naval Radio, Netherlands, with RTTY RY test tape at 2235. (Mel Smith, Crisfield, MD)
- 17239.1 5BA62-Cyprus Telephone Maritime Service with an English and Greek voice marker in USB at 2241. (Jack Dix, Yonkers, NY) Marine radio-telephone channel 1603, Ship side on 16466.2-ed.
- 17940.0 Houston Aeroradio, Texas, working Clipper 107 with a position report. Poor comms and suggested 21964.0 at 1822 in USB. (Bob Doyle, Shelton, CT) This is an ARINC LDOC channel-ed.
- 18019.0 USAF GCCS Albrook AFB, Panama, working MAC 50272 for phone patch traffic at 1925 in USB.
- 18193.0 CLN603-Prensa Latina, Havana, Cuba, with a RTTY news bulletin for Latin America. 425/50 (Mel Smith, Crisfield, MD) At 2220 with English news; ITU list 2 (1979) Lists circuit to Buenos Aires, Santiago, Lima, and Montevideo (Kerry Webster, Los Angeles, CA)
- 18250.0 Spanish male transmitting groups of numbers such as 20 3 67. All middle digits less than 10. Could not hear other party. At 1940 in USB.
- 18697.7 DFS70/L3-Hamburg, West Germany, JIJI News Service with English news bulletin transmitting RTTY at 0914 using 425/50. (Lance Micklus, Essex Junction, VT)
- 18985.0 OLD2-Prague, Czechoslovakia CTL News Service with English RTTY news bulletin at 0905. (Lance Micklus, Essex Junction, VT)
- 19390.0 Y7A76-ADN Berlin, East Germany, at 1957 and 0531 with RTTY news in German to Mideast, Africa to Nicosia, Aden, Baghdad, Brazzaville, Conakry, Khartoum and Maputo. (Kerry Webster, Los Angeles, CA)
- 20430.0 IRS24-ANSA Rome, Italy, News service with English RTTY news at 1447 using 425/50. (Lance Micklus, Essex Junction, VT)
- 20436.0 RMP-Rostov Radio, USSR, with ID in CW and traffic such as T176T, T8653, 52895, 14998. Good signal. (Bob Doyle, Shelton, CT)
- 22376.0 IAR62-Rome Radio, Italy, with CW traffic at 1736 and 1907. (Kerry Webster, Los Angeles, CA)
- 25199.0 LSA3-Boca Radio, Argentina, sending CW Spanish text and V marker at 2037. (Bob Doyle, Shelton, CT)

# The Scanning Report

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## Crossing the Line

It was about this same time, two years ago. Football season was in full swing. A cold, steady rain was being forced against the windows by a blustery November wind. Sitting at my desk, I punched up the cordless frequencies on my scanner and began opening the daily mail.

At first, the intercepted conversation seemed like any other. Two guys were talking about the miserable weather and about their day at work. As the conversation continued, I went back to crumbling and tossing the junk mail into the fireplace.

"So, what have you got this week?" I heard the one guy ask.

"Pretty good," the younger voice answered. "Hopefully, I'll be out of the hole in a few more weeks."

"How deep are you in?" the older gentleman asked.

"About five thousand bucks."

"Heck, don't worry about it. The season is just beginning. By the time the super bowl rolls around, you'll be way on top. So how much have you got this time?"

"I don't really know," the younger voice began. "I haven't had time to count it. Tell you what, I'll give you the bets and then we can tally them up together."

"Wait a minute, let me get a pencil." The older voice trailed off. "Okay, I'm back. Go ahead and give them to me."

What followed was a long list of football teams, followed by cash bets. I was monitoring the cordless conversation between two "bookies"!

"I got three thousand, four hundred eighty dollars," the older voice stated.

The younger voice was still silent. Apparently a little slower in addition. "Okay, that's what I got too."

"Not a bad haul," the older voice said in a reassuring manner.

"Yea, that's what I thought. Things are getting better."

"Sure, and they should continue to get better," the older voice began. "It's that darn basketball season that sets everyone back."

"Well, where can I meet you to get rid of this money?"

After thinking the matter over for a few moments, the older voice finally answered. "I'd rather that we didn't meet personally."

"Okay, that's no problem. How about if you pick up the money from Mr. T's Bar?" the younger voice suggested.

"Sure. I can do that. What time?"

"Wait until about 7:30 and then walk in and ask the bartender for the envelope from Joe."

"Fine, what is the bartender's name?" the older voice asked.

"His name is Mike. He's a big, heavysset guy. But listen, do it casual. Go in, have a drink, ask for the envelope and then leave."

"No problem," the mature voice replied. "Remember, kid, you're talking to an old pro at this sort of thing."

For a moment, both men laughed. Then, the younger voice returned to the business at hand.

"I'll probably get there around 6:30 and I'll leave about 6:45. If you wait until 7:30, that will be real good. There will be less chance of us bumping into one another."

Nearly four thousand dollars was waiting to be picked up at a bar that was no more than three miles from my home. It would be simple. Arrive by 7:00, ask for the envelope and then disappear into the cold rainswept night - with four thousand bucks.

Not many people will admit it, but every serious scanner enthusiast, at one time or another has been tempted to "cross the line." Scanning is probably one of the few hobbies that allows the listener to flirt with danger and return unscathed.

I would say that I didn't "cross the line" because of my strong moral values, because of my wife and kids, because it was mob money and I didn't want to be killed. But that would only be half of the reasons. The truth is, I simply have too much fun scanning to take a risk with it.

The ability to instantly, silently, and invisibly invade the neighborhood from the safety, warmth, and security of my home is simply awesome.

To me, scanning is like walking a high wire, without the fear of falling. Scanning is like playing a video game and never losing. It's high speed driving without the fear of crashing.

Scanning is as near as one can get to Star Trek and the phrase, "Beam me up, Scotty." By merely pushing a button, the scanning enthusiast can place himself in a police car, ambulance, plane, or boat. Scanning is a "tractor beam" that can lock onto our neighbor's cordless phone conversations and then bring them right to our waiting ears.

We, the people that scan, are the real life "Captain Kirks." We decide what button to push and what frequency to invade. We know everything that there is to know -- yet we constantly strive to hear and learn more.

However, the moment that we "cross the line" the thrill of scanning is threatened by the agony of defeat. We are no longer protected from falling, losing, or crashing.

# The Scanning Report

"Crossing the line" could place us in a tactical situation that even the famed Kirk himself could not escape.

"Cross the line?" It would be akin to lowering one's shields during a Clingon attack. And as everyone realizes, if the Clingons capture you, that's the end of your scanning days -- Remember that, the next time you're tempted to "cross the line."

## San Antonio Police Are Found

In the August issue, we asked for information on the San Antonio police. Robert Barker of Houston, Texas, says that the police, fire, and EMS operate there on the following trunked frequencies:

856.2625, 856.4875, 856.7375, 856.7875  
 857.2625, 857.4875, 857.7375, 857.7875  
 858.2625, 858.4875, 858.7375, 858.7875  
 859.2625, 859.4875, 859.7375, 859.7875  
 860.2625, 860.4875, 860.7375, 860.7875

Robert also points out that the city has experienced many problems with the new 800 MHz system. One of the more serious concerns was a large amount of "dead spots." To correct this problem, Motorola has agreed to install additional repeaters at no extra cost to the city.

## The Boston Trade Party

A reader from Boston, who has asked for anonymity, would like to trade his federal and military frequencies for army helicopter frequencies for Fort Devens/Moore Air Base. The frequencies that are being offered for trade fill two pages and include military air frequencies for the Boston area. Interested parties should send their Fort Devens helo frequencies to me at the address at the top of this column. As soon as I receive them, I'll send you the two page list from Mr. Anonymous.

## Scanning Live Theatre

Mark Swarbrick, of Thorndale, Pennsylvania, recently took his scanner to a live theatre performance and discovered that he could hear the actors' cordless microphones. Using an earphone, Mark listened to all the back stage gossip including the actors' dressing room!

Cordless microphones operate in the following ranges: 88 to 108 MHz (FM broadcast band), 174 to 216 MHz, 72 to 76 MHz and 455 MHz.

## Everyone Reads MT

The letter from Astorp, Sweden, currently holds my distance record. Sven Ohlsson checked in with three pages of information that he wanted to share with MT readers.

Sven would like everyone to know that approximately 13,000 people live in Astorp. The two largest employers are a door manufacturer and a food processing plant.

Well, that's real nice. But what about scanning in Sweden? Sven never mentioned it in his letter.

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### RADIO SCANNERS

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Sitting at home glued to your Bearcat? It could be your voice at the other end of the radio. The Chester County Department of Emergency Services has immediate openings for full/part time staff to serve as police, fire and emergency medical service dispatchers.

Candidates must have high school/equivalent diploma; be able to accurately receive, process and relay information; maintain records; learn 10-code, computer. Knowledge of the County area roads helpful. Schedule must be flexible to include nights, weekends and holidays.

Training and uniforms are provided. Full time employees receive comprehensive benefits incl. H.M.O. option. Call or write now for application, to schedule interview and preemployment test. Evening appointments ARE available. 10-4...What are you waiting for?

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EOE M/F/H

### READING SPECIALIST

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*Chester Co. (PA) is recruiting dispatchers from the ranks of scanner listeners. An interesting, albeit unusual, approach!*

## Seeking a Club

Robert Baetke, of Portland, Oregon, would like to join a club in his area. Sorry, Bob, I don't know of any clubs in Portland. Can anyone help? In the meantime, here's an example of Bob's frequency list for Portland:

Oregon State Police  
 42.820 42.860 42.880 42.940 154.665 154.680

Washington County Sheriff  
 460.375 460.150

# The Scanning Report

## Washington County Fire

154.205 Channel 2  
154.280 Channel 5  
154.340 Channel 4  
154.400 Channel 1  
154.445 Channel 3

## Metro West Ambulance

47.500 155.355

## Washington Square Mall Security

464.475 469.475

## News and Traffic Helicopter

450.250 450.350 450.488 450.550 450.650 450.750  
455.510 455.800

## Press Remote

450.050 450.113 450.288 450.450 450.613

## Metro Toronto Police

From Susan Moll's column in *American Scannergram*, comes these frequencies for the Metro Toronto Police Department: 148.850, 148.490, 156.240, 155.550, 155.400. Metro Toronto Fire is heard on 411.9875 (operations), 414.7625 (dispatch 1) and 415.3125 (dispatch 2).

## Football Freaks

Our good friend Les Mattson, editor of the *North East Scanning News*, digs up some interesting football frequencies from his "Fairly Frequently Faulty File." Here they are, fans, along with some extras from Jay Rosen of Fresh Meadows, New York. Remember, even if your favorite team is not listed here, the next time your at the stadium, punch

in some of these frequencies. You may be surprised.

153.020 NFL Films  
154.600 Buffalo Bills  
467.850 Buffalo Bills  
467.900 Buffalo Bills  
151.685 Cleveland Browns  
151.625 New England Patriots  
154.570 New England Patriots  
154.540 New York Giants  
151.625 New York Jets  
151.835 New York Jets  
151.775 Philadelphia Eagles  
151.625 Pittsburgh Steelers  
467.750 Pittsburgh Steelers  
154.570 San Diego Chargers  
151.775 San Francisco 49ers

## Florida File

Running just ahead of the cold weather on the way down to Florida? We have just what the doctor ordered. From the pages of All Ohio Scanner Club and a gentleman identified only as "Don," come these Daytona Beach, Florida area frequencies:

### Daytona Beach

160.095 Police (?)  
154.175 Fire  
154.410 Rescue  
154.785 Police Mobile  
155.070 Police Base  
155.520 Fire  
155.670 Fire  
508.4125 Police private

### South Daytona Beach

154.250 Fire  
154.950 Police  
155.790 Police  
156.090 Police

### Holly Hill

154.115 Police  
154.220 Fire

### Ormond Beach

154.370 Fire  
155.010 Police  
155.310 Police  
155.655 Police

### Port Orange

154.385 Fire  
154.950 Police  
155.790 Police  
156.090 Police

That's it for this month. Be sure to drop us a note if you've got anything to contribute -- frequencies, clippings, or observations on the world of scanning. And Scotty? You can beam me up now....

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# Z60

## 60 Channel Automatic Programmable Scanner

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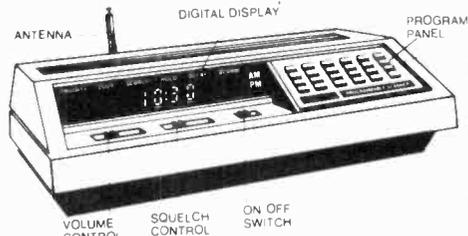
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The Regency Z-60 is a compact programmable 60 channel, multi band FM monitor receiver for use at home or on the road. It is double conversion, super heterodyne used to receive the narrow band FM communications in the amateur, public safety and business bands. 30-50, 118-136, 144-174, and 440-512 MHz. Size 10 1/2" W x 2 7/8" H x 8 3/8" D

Sophisticated microprocess-controlled circuitry eliminates the need for crystals, instead, the frequency for each channel is programmed through the numbered keyboard similar to the one used on a telephone. A "beep" acknowledges contact each time a key is touched. The Z60 scans approximately 15 channels per second.

Any combination of channels can be scanned automatically, or the unit can be set on manual for continuous monitoring of any one channel. In addition, the search function locates unknown frequencies within a band.

Other features include scan delay, priority and a bright/dim switch to control the brightness of the 9-digit Vacuum-Fluorescent display. The Z60 can be operated on either 120VAC or 12 VDC. Includes one year warranty from Regency Electronics (optional 3 yr extended warranty only \$39.99, gives you a total of 4 yrs complete warranty or 2 yr extended warranty only \$29.99, gives you a total of 3 yrs complete warranty.)



### UNIDEN Bearcat BC-600 XLT

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#### Digital Programmable 100 Channel Scanner

BC 600 XLT covers the following frequencies: 29-54 MHz, 118-174 MHz, 406-512 MHz. Features compact size of 6.5" x 1.6" W x 1.5" H x 7.3" D. scan delay, priority memory backup, channel lockout, bank scanning, key lock, AC/DC power cords, telescopic antenna, mounting bracket. Supplied one year factory warranty search direct channel access, track tuning, service search, including pre-programmed frequencies by pushing a single button for police, fire, emergency, aircraft, weather, and marine services. Plus exclusive optional features never available on any scanner before. First is an RF receive amplifier for boosting weak signals for only \$24.99 plus a CTCSS tone board is available for only \$59.99 to make this the number one scanner, available in the USA. Optional cigarette lighter plug #600MPC \$4.99

### BEARCAT BC-950XLT

Same features as BC-600XLT but also receives 800-954mhz.

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#### 20 CHANNEL HAND-HELD SCANNER

Small size 6 1/2" H x 1 1/2" D x 2 3/4" W. full digital readout, priority, search, channel lockout, scan delay, key lock. Covers following frequencies: 29-54mhz, 136-174mhz, 406-512mhz. Package includes rubber antenna, rechargeable Ni-Cad battery pack, AC adapter/charger, and carry case.

**SPECIAL \$169.99** (\$6.00 shipping each)

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Digital programmable, 16 channel, AC/DC mobile/base with raised button keyboard for easy programming of the following frequency ranges: 29-54mhz, 118-174mhz, 406-512mhz. Covering aircraft, marine, police, fire, weather, trains, public service, plus much more. Features include: digital display, priority, scan delay, weather button, channel lockout, search, scan speed, automatic squelch, memory backup, one year factory warranty, external speaker jack. (Extended warranty 2 years extra \$29.99, 3 years extra \$39.99.)

#### ORDERING INFORMATION

Call (518) 436-9606 to place orders by phone or mail orders to **Scanner World**, 10 New Scotland Ave., Albany, NY 12208. Orders will be shipped same day received by United Parcel Service. **Scanner World** accepts VISA, MasterCard (COD shipments by United Parcel will be for cash or certified checks only). Mail orders with personal or business checks will be held 4 weeks for bank clearance. Orders with cashiers checks or money orders shipped same day received. Prices, specifications and terms subject to change without prior notice. If items are out of stock we will backorder and notify you of delivery date. All shipments are F.O.B. **Scanner World** warehouse in Albany, NY. We are not responsible for typographical errors. All merchandise carries full manufacturer's warranty. Bid Proposals and Purchase orders accepted from Government agencies. Free full line catalogue available upon request. No minimum order. New York State Residents add 7% sales tax. Any claims must be made within 7 days of merchandise receipt.

#### SHIPPING CHARGES

(\* Add \$) per scanner, and \$3.00\* for all accessories ordered at same time. C.O.D. shipments will be charged an additional \$3.50 per package. Full insurance is included in shipping charges. All orders are shipped by United Parcel Service. Shipping charges are for continental USA only. Outside of continental USA, ask for shipping charge per scanner.

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## Starting and Operating Your Own FM Radio Station

by Peter Hunn

WKJN in Baton Rouge, Louisiana, recently sold for \$6,600,000. KEZA-FM in Fayetteville/Fort Smith, Arkansas, brought in \$2,600,000; KLTE, Oklahoma City, Oklahoma, over 4 million.

Price tags like those are enough to scare all but the most wealthy away from the prospect of owning an FM broadcast station. There are, of course, a few bargains available in some smaller locales but still, the cost of buying a facility remains high.

Peter Hunn, a former announcer at Philadelphia's WMGK-FM, beat the system by building his own station from scratch. Total cost: about \$40,000 dollars.

But the title of Hunn's book, *Starting and Operating Your Own FM Radio Station*, only tells half the story. It is a "how to" book and a very good one at that. What the title doesn't tell you is that the book is also a great read -- the absorbing, well-written story of Hunn's successful efforts to put WHRC-FM on the air in Port Henry, New York. And Hunn is as good a writer as he is a broadcaster -- 1976 winner of *Billboard* magazine's Air Personality of the Year Award.

The story is well-told, drawing the reader into his trials and triumphs with fascinating personal anecdotes sprinkled with well-researched but never overbearing facts and bits of history. In the end, you'll probably, like us, come to like Hunn and share his sadness at the eventual decision to sell his station (at a profit of some \$160,000). So strong is this feeling that one leaves the book pondering its only unanswered question -- what is Hunn doing now?

*Starting and Operating Your Own FM Radio Station* is one of the year's best radio books; a delightful story, honestly written, that will make all but the most uninterested at least think about the possibility of starting their own FM station. It's available from Tab Books, Blue Ridge Summit, PA 17294-0850 for \$12.95.

## Skills for Radio Broadcasters

by Curtis R. Holsopple

In describing the reaction to an earlier version of *Skills for Radio Broadcasters*, author Curtis Holsopple quotes one person as saying, "At last! This is a book that tells you how things really are!" We couldn't agree more.

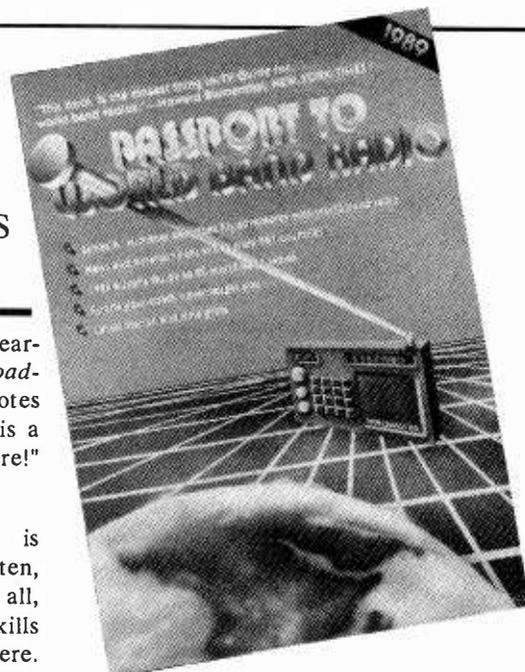
*Skills for Radio Broadcasters* is exceptionally well done. It is well-written, thoroughly knowledgeable and best of all, probably the only truly practical basic skills book for broadcasters available anywhere.

This isn't another of those deathly dry, academically-inspired, textbooks written by a college professor who hasn't been inside a radio station since 1941. Holsopple knows what he's talking about and imparts his considerable knowledge in an easy-to-read, well-illustrated way. The book never talks down to the reader, but takes him from point "A" to point "Z" without missing a beat or a single piece of pertinent information.

In fact, so good is *Skills for Radio Broadcasting* that it virtually guarantees the reader of entry-level competence. Broadcasting schools just became obsolete. My only regret is that the book wasn't around when I got into radio in 1969. If it had been, I wouldn't have had to spend so much time "learning the ropes" at WEEZ.

In recent years, radio-related titles by Tab Books have been disappointing. Their allegedly "updated" Third Edition of *The Complete Shortwave Listener's Handbook* (1986), for example, is *embarrassingly* bad. With the release of *Skills* and *Starting and Operating Your Own FM Radio Station*, they have turned the tide with two of the best radio books of the year.

*Skills for Radio Broadcasters* is available from Tab Books, Blue Ridge Summit, PA 17294-0850 for \$14.95.



## 1989 Passport to World Band Radio

*International Broadcasting Services*

"The new *Passport* is here! The new *Passport* is here!" To DXers around the world, the announcement has become known as the harbinger of the new DX season. And in what has become the *Passport* tradition, this year's edition is even better than last.

There are some 263 pages of frequency information alone, covering broadcast stations from 2260 kHz (Radio Republik Indonesia in Purwokerto, Jawa) to 25730 (Radio Norway International, Fredrikstad) with literally thousands and thousands of channels in between. It's all in "by frequency" order for quick identification of virtually anything you hear on the air. Computer-generated graphs show at-a-glance the station's name, location, power and language. There's also a "by-country" (which, unfortunately, contains listings by frequency, as opposed to the more convenient, "by-time") and a "by-time" listing of selected programs.

Even the articles -- this year's feature section covers an amazing 116 pages -- are improved, ranging from regular *Monitoring Times* contributor Dave Rosenthal's account of his incredible escape from Iran (thanks, in part, to a shortwave radio) to an interview/feature on mega-selling author and shortwave listener James Michener and an interesting article on the "Top 10"

shortwave programs, among others. All of this is capped off with Larry Magne's indispensable receiver reviews, this year trimmed to more punchy, easier-to-understand capsules.

This year, *Passport* proves once again that it is the ultimate DX book. And one that well deserves a place on your shelf. *Passport* is \$14.95 and available at book stores and radio equipment dealers worldwide.

## Coming Soon from Radio Shack

Sources close to Tandy advise us that a follow-on scanner to the extraordinarily popular PRO2004 is due soon. Early reports indicate that the soon-to-be-announced PRO2005 will have a flat front, plastic cabinet, rerouted circuitry with less open wiring, and rubber keypad buttons.

Lighter weight than the PRO2004, the unit will boast 400 memory channels, internal AC/DC power, a few other bells and whistles and the same frequency coverage as the 2004 which is apparently scheduled to remain in production.

The logic board behind the front panel will include the same diodes and microprocessor familiar to PRO2004 owners. Installation/removal of the diodes will enable/disable portions of the 806-960 MHz band (cellular deletion) as well as 136-144 MHz (forbidden in Europe).

There is some talk about General Radio and Electronics (GRE), the Japanese manufacturer of the PRO2004, retaining that product in their own line. A decision should be forthcoming.

Time will tell whether the PRO2005 will be able to compete with the legend PRO2004 or simply be a cheapened production version. We will let you know.

## Zonaltime

One day, Neil Norris was watching TV. Someone asked a question about time in another country. And no one could answer it. That set Neil to work.

Using his computer, he designed "Zonaltime," a quick-reference world time calculator.

Thinking that it might be useful for school children, he soon realized that it had potential for businessmen who communicate internationally. And then there's radio freaks like us.

"Zonaltime" is a colorful, laminated piece of card that features a rotating "clock" at its center. By simply looking up the time zone in which you are interested and calibrating it to your own, the user is able to accurately predict local time in some 174 countries

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

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"Zonaltime" is available for \$US \$5.50 from "Zonaltime," 37 Parkway, Knott-End-on-Sea, Nr. Blackpool FY6 0DB, England.

## Scanner Sneak Preview

Two new products are forthcoming from Uniden, manufacturer of Bearcat and Regency scanners. The recently-discontinued Informant concept will be re-introduced in April 1989 (tentative) and will offer extended UHF coverage (470-512 MHz, not on previous Informant models) as well as 27 megahertz AM CB reception -- but no AM aircraft band.

Even bigger news is the slated release of the high-end BC1000, kept under wraps for years. Sporting continuous, wide-coverage frequency range and a boggling array of features, this scanner may be seen as early as June 1989.

**Tell the world**

**you saw it in Monitoring Times !**

## IN THE BEGINNING!

Remember when you were in the fourth grade and you got the opportunity to take music lessons? You wanted to play the trumpet but your mom talked you into the clarinet. If your parents were cautious, they rented that licorice stick for a couple of months, just in case you became bored or failed to demonstrate the skill of Benny Goodman. If they were too optimistic you probably still have an old clarinet collecting dust in the attic.

*Get to the point Skip!!!*

Kids today grow up with many activities and gadgets to occupy their time. How can you get a young person to become interested in the radio hobby in a world that includes *Teenage Ninja Turtles*? And further, once you drag them kicking and screaming from in front of the television set, how do you get them rolling without "buying the clarinet" so to speak? This looks like a job for...

### Uncle Skip's Children's Guide to AM DXing

Okay, so right off the jump I have alienated the other aspects of the hobby. Sorry folks, before you go writing Larry Miller consider the fact that AM radio listening remains the easiest, cheapest, and "quickest to learn" of the radio hobbies. Remember that television has patterned kids into about a three minute attention span.

AM broadcast listening can be learned on almost any inexpensive radio. Initially the young person will be dealing with 10 kHz frequency splits so you can live with limited selectivity for a while. The 10 kHz split, coupled with mandatory regular station identification makes getting around the dial easy enough that you can use analog readout.

You are probably wondering why I am not recommending that you let your newcomer to the hobby play with your communications receiver. The fact is that all those buttons and the more advanced signal capturing and processing capabilities might overload the novice's noggin. We want to



*The Radio Shack long distance AM portable is a very popular medium wave receiver*

hook the youngster on the idea of listening, not just hardware.

If you want to go out and buy a specific radio you might poke around any Radio Shack affiliated stores for their recently discontinued "long distance AM portable." Sold under model numbers 12-655 and 12-656, this low cost receiver has an FEI tuned RF stage that makes it ideal for fairly serious listening. You will note that I stated the affiliated stores specifically because they tend to keep some of the older stuff on their shelves.

You might check out your local discount store for the General Electric SUPERADIO -- also discontinued but available. But don't get too hung up on the box, Bunkey! Any good quality portable with AM will be all you need to get a kid going.

### The Hook

Some evening after dinner, take the radio and the kid to the corner of your house that is as far away from the television set as you can get. This not only does wonders for the child's attention span, it cuts down on interference from the TV's innards that can be heard within the AM broadcast spectrum.

Start poking around the band. Look specifically between the known locals. In a minute or two you will probably run across a 50 KW station from several states away. This is the critical moment.

When this distant station IDs, you will see the kid's eyes start to twinkle. They will say something like, "How can you hear Chicago in New Jersey?"

Don't push into a deep conversation on propagation anomalies. Just smile and say, "Let's see what else we can hear."

That's it! They are hooked! After two or three more clear channel powerhouses you might recommend making a list of the stations you are hearing. After about a half hour you should be able to leave the room and let the young'un start browsing for himself.

Stay close though, because sooner or later the kid will come looking for you with about a hundred questions. Be patient. After you answer all the questions you might want to point out that this is a hobby and begin to explain how to listen and keep track of your listening.

Hook the youngster on the  
idea of listening,  
not just hardware . . .

### Beginner's Strategy

Now that your beginner actually wants to listen, you can begin to demonstrate how to listen smart. A good start for a budding broadcast band DXer is to develop *bandscans*. These are lists of commonly heard stations.

The first and easiest bandscan would be of all stations heard during normal daylight hours. Next you'll want to generate bandscans for after dark. Ideally you will want scans for before and after midnight but some parents might frown on letting their kids stay up that late. Don't worry, once the kid is hooked he or she will be sneaking a few listens after bedtime.

In developing the bandscans you will have already logged a good chunk of stations. You will now know what is normally out there in the air. Now the fun really begins.

The kid can now begin to look over, under, and around the regulars for other stuff. If the child has not already figured it out, demonstrate how to null out some stations by reorienting the receiver's internal ferrite rod antenna (in simple terms, turn the radio around). Now you can hear more than one station on any given frequency just by moving the radio around on the table top.

With all these stations to keep track of, it is important to help your beginner with record keeping. Teach them to log time, frequency, local conditions, and program content in addition to the call letters of the station.

If your kid is going to go after QSLs, the most useful data to help a station verify reception remains the time and nature of any commercials broadcast. Station logs vary quite a bit from station to station since the FCC deregulated the practice but you can bet every station keeps track of the commercials they air so they can charge the customer.

The QSL game can be a little tricky in BCBlund. If you write an accurate and complete report of what you have heard and include return postage (an SASE is even better) you will usually get some acknowledgment of reception. Many stations will even have QSL cards.

Wouldn't a map of the United States surrounded by QSL cards from across the nation make an interesting school project? Stations will sometimes send along coverage maps or promotional items and young people seem to enjoy collecting these items as much as the veries. Be sure to teach your young person the value of courteous reception reports.

Within the hobby there are a few stations that are notorious for not answering reception reports even if you send along a preprinted confirmation card. Such stations can only be logged and verified by



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taping. You won't have to prove anything to anybody because these stations don't verify for anyone else either.

Keep up to date on what's happening in the industry. A good place to find out this sort of information is *Monitoring Times'* domestic radio column, "American BandScan." It's an easy-going two pages and author Larry Miller welcomes your comments, questions and observations. The column will also help the new hobbyist learn about the more advanced aspects of BCB DXing such as Graveyard spotting, Pre-sunrise authority, antenna systems, station tests, and foreign DX.

### Moving On

Now your budding DXer is on a roll. Loggings are piling up. The first thing checked when coming in from school is the mail. A little of the allowance is getting set aside to buy a better receiver. Maybe it's time for you to start letting on that there is such a thing as the shortwave spectrum. It might be time to check with local amateur radio operators about novice license classes in your area. After all, you have helped to open the door to an exciting new world.

Start your youngster on a steady diet of *Monitoring Times* and it won't be long until he or she is helping you with your listening habits. The child becomes father to the man.



## The Lowdown on GWEN

The Ground Wave Emergency Network (GWEN) is a low frequency, packet-switched, emergency communications system for U.S. strategic forces. It is designed to survive the effects of electromagnetic pulses (EMP) produced by high-altitude nuclear explosions.

The effects of the high-altitude EMP (HEMP) energy could affect strategic communications in two manners. First, the HEMP could produce a sudden power surge that would overload unprotected electronic equipment, rendering it inoperable. Second, HEMP would disrupt radio communications that utilize the ionosphere as part of the communication path.

Victims that would probably fall prey to HEMP include, but are not limited to, telephone and landline communications, most radio communication systems and satellite links. Electronic equipment would likely suffer extensive damage through power line surges.

The purpose of GWEN is to provide surviving personnel with adequate Command, Control, and Communication (CCC) capabilities. GWEN has the ability to survive the effects of high-altitude nuclear detonations and provide that communications link.

GWEN frequency selections were based on several factors. First and foremost, the communications system selected had to be hardened against the effects of EMP. It could not be adversely affected by ionospheric disturbances. Commercial telephone systems and normal RF communications systems are hence removed from consideration.

Possible alternatives were either line-of-sight communications or ground wave communications. The line-of-sight communications alternative would require in excess of 10,000 installations to achieve satisfactory communications in the continental United States using either UHF or microwave frequencies. The overall cost, projected schedule and environmental impact precluded its implementation. Ground wave alternatives then were examined as a means to achieve the goal.

Ground wave propagated signals are readable at a distance of 200 to 400 miles in most atmospheric noise environments. The range may be achieved by using a 300-foot antenna radiating only two kilowatts of power.

The wavelengths associated with very-low frequency (VLF) signals are such that

terrain features do not appreciably affect it. Thus, the frequency range chosen for GWEN is between 150 to 175 kHz. Few people use this range of frequencies and the number of installations needed to cover the U.S. drops from over 10,000 using line-of-sight communications to less than 100.

### The GWEN Network

The GWEN network consists of three types of communications stations. These are input/output stations, receive-only stations and relay nodes.

Input/output (I/O) stations are used to inject information into the network as well as receive data from it. UHF radio equipment is utilized and is co-located with other communication terminals at military command centers. The receive only (RO) stations are radio receivers capable of receiving GWEN transmissions and are co-located with other government communications equipment at existing military installations.

The relay nodes are unmanned facilities that relay information and data throughout the system. The relay nodes can handle traffic received on the VLF link or traffic from an I/O station on UHF.

### Site Details

The GWEN relay node stations are or will be located either on government land, on private land leased or purchased by the government, or on land presently utilized by commercial television broadcast stations. The other two types of stations, the I/O and RO stations, are located at existing military facilities and do not require special sites and preparation as do the relay node stations.

The overall site area for a relay node is illustrated in Figure 1. It measures 700 by 700 feet or approximately 11 acres. Located at the center of the site is a 299-foot VLF transmitter tower with a tower insulator and lightning rods and an antenna tuning unit (ATU) housed in an 8 x 14 x 8 foot shelter.

A ground plane consisting of approximately 100 eight inch copper wires, installed 12 inches below the ground, extends 330 feet from the center of the tower in a radial fashion. The tower employs 12 top-loaded elements which also help provide with the support of the tower in addition to 15 guy wires. The ATU/Tower is enclosed by an eight foot high chain link fence topped with barbed

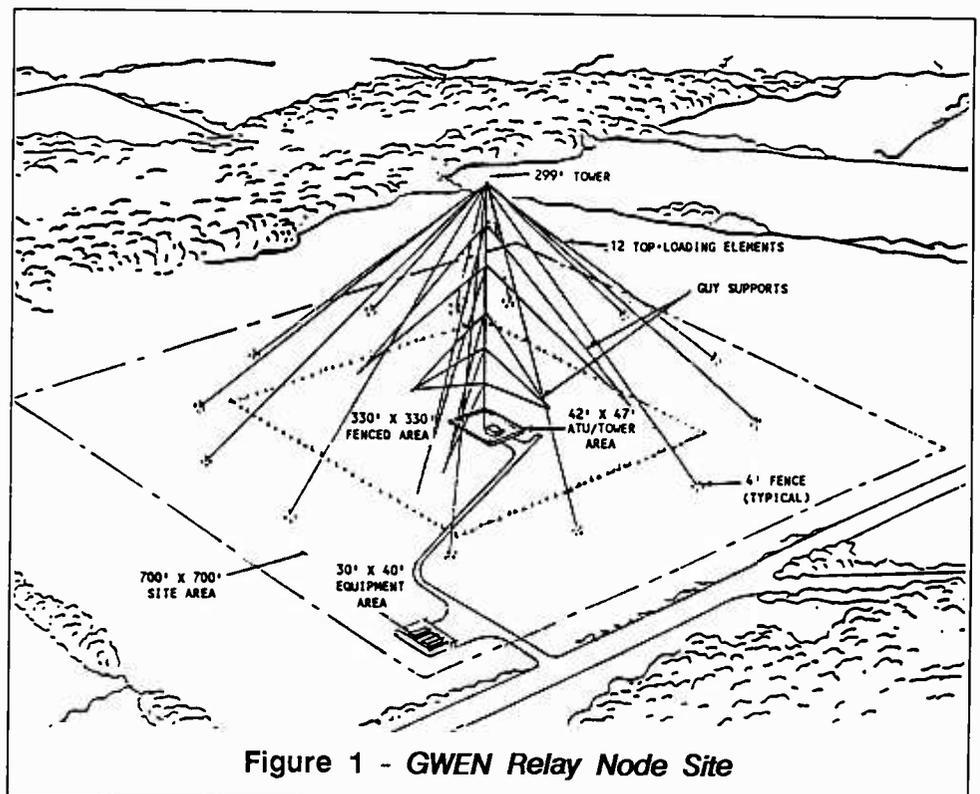


Figure 1 - GWEN Relay Node Site

Table 1

Station Location	Operating Freq (kHz)
Ainsworth, NE	177.0
Amherst, MA	
Aurora, CO	169.0
Bakersfield, CA	
Belen, NM	183.0
Canton, OK	164.0
Chico, CA	
Clark, SD	167.0
Colby, KS	166.0
Columbus, MS	
Fayetteville, AR	180.0
Flagstaff, AZ	
Gettysburg, PA	
Harbor Creek, PA	
Hereford, TX	
Johnstown, PA	
Kirtland AFB, NM	168.0
Klamath Falls, OR	
Manhattan, KS	173.0
Mechanicsville, IA	
Mequon, WI	
Pueblo, CO	170.0
Remsen, NY	
Wenatchee, WA	

ten foot pole. The equipment area is enclosed by an eight foot chain link fence topped with barbed wire.

### Technical Specifications

The GWEN network, when complete, will operate on a fixed number of channels using a crypto-encoded packet switching system. Data can not only be transmitted from one location to another but sites can be activated or deactivated, as needed, on a regional or nationwide basis. Messages can also be routed through a specific chain of sites, ignoring or specifying certain stations and/or frequencies. Instructions can be addressed to specific sites to alter such parameters as modulation mode and frequency.

The packet switching system is believed to operate at 75 baud using 1000 bits/packet. Other baud rates have been stated in various publications as well as the number of bits per packet. An article in the *Hereford Brand* (a newspaper from Hereford, Texas) stated that each transmission lasts for only six seconds and that there is only one per hour.

Baud rates generally imply the rate at which data is transferred in terms of bits per second. A baud rate of 75 implies generally that 75 bits per second are transferred over the given link, in this case being an RF link. Six seconds at 75 baud equates then to 450 bits being transmitted whereas 1000 bits would take approximately 13 seconds.

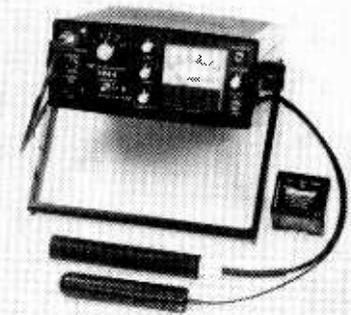
The effected radiated power (ERP) of the VLF transmitter and antenna is between 2000 and 3000 kilowatts. A bandwidth of not greater than 350 Hz has been reported as well as the ability to utilize different modulation techniques. The UHF radio equipment will operate in the 225 to 400 MHz range. The UHF radio equipment is protected from HEMP with an in-line device between the antenna and the radio. The UHF transmitter generates 50 watts RF power; however, only 20 watts reach the antenna to be radiated. The remainder of the power is lost in the in-line HEMP protection device.

Table 1 lists several sites and known frequencies of the GWEN network. The data in the table, as well as material utilized elsewhere in this article was submitted by Harold Peach, Jr. Additional material used in preparation was received from James Roggentine and from *Monitoring Times* publisher Bob Grove, who supplied data from a GWEN environmental impact study.

### Future Expansion

An expansion of the GWEN network is planned with the addition of another 71

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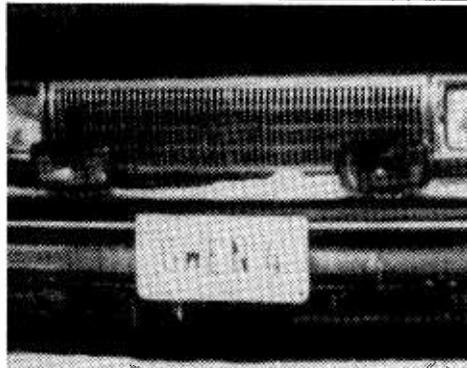


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Feelings about GWEN run strong on both sides. Here, a GWEN license plate on an Air Force personnel vehicle in Maine.

wire.

An equipment area is located in two buildings at the site. One building contains the VLF transmitter and receiver, UHF radio equipment and control systems necessary for transmitting and receiving data. The second building contains a diesel generator and above-ground diesel fuel storage tanks. Standard commercial three phase power will be utilized under normal operation conditions with the generator used during power failures and during periodic testing.

Also located in the equipment area is a UHF antenna mounted on a 30 foot pole and a VLF receive antenna mounted on a

relay nodes and 100 ground, mobile, and airborne radio terminals to the system. It is estimated to cost around 500 million dollars. The expansion will place relay node stations in the continental United States with the possibility of only two states (Idaho and Minnesota) not having a relay node.

### Political Aspects

The political aspects of the GWEN system center mainly around the issue of nuclear war. Proponents of GWEN state that the very existence of such a system indicates that the United States and the Pentagon are planning to fight a nuclear war. Another major concern is that residents living near GWEN sites fear that the facilities would draw a nuclear strike to their area.

Site installations have been hindered in some areas by law suits based on environmental issues. The environmental issues, however, are stated to be a smoke screen for the issue of nuclear war. One law suit which was dismissed in Oregon challenged the Air Force for failing to assess the environmental impact of nuclear war. While such questions have no easy answers, one thing is certain: the last of the GWEN-related news has yet to occur.



## AMVER Decoded

The Automated Mutual Assistance Vessel Rescue System (AMVER) maintains computer updated position predictions for over 15,000 voyages each month. The system, which is coordinated by the United States Coast Guard at Governor's Island, New York, can provide some interesting messages -- messages that can easily confuse the listener unless he knows how to decode them.

There are four basic types of AMVER messages: Sailing Plan (SP), Deviation Report (DR), Position Report (PR), and Arrival Report (FR). Each part of the report is preceded by a letter which indicates the information following. The letter identifiers translate as follows:

- A/ Name of vessel/callsign
- B/ Date and time of departure or report (as applicable)
- C/ Present lat/long
- E/ Course
- F/ Speed
- G/ Port of departure/lat/long
- I/ Port of destination/lat/long/ETA
- K/ Port of arrival/lat/long/date and time of arrival
- L/ Navigation method/lat/long/ of intermediate point (RL = Rhumb Line, GC = Great Circle)
- M/ Current radio station guarded/next radio station guarded (in position reports this would be the current station monitored only)
- V/ Medical personnel carried
- X/ Time of next report
- Z/ Comments

To separate the various pieces of information, at the end of each line a break signal will often be inserted. Practice varies and this will either be represented by an equal sign (=) or a double oblique stroke (/).

To show what these reports would be like, we'll look at a simulated voyage from Halifax, Nova Scotia, to London, England. First would come the sailing plan.

AMVER/SP =  
A/MV Jean Lykes/WLAH =  
B/150100Z =  
E/124 =  
F/100 =  
G/Halifax/443N/06324W =  
I/London/5130N/00075E/270612Z =  
L/RL/100/4300N/06000W/151830Z =  
L/RL/100/4200N/05000W/171606Z =  
L/GC/100/4940N/00634W/261100Z =  
M/VCS/GKB =  
V/No Medic  
X/Next rpt on departure

The Sailing Plan may be sent before or after the ship actually leaves. If the Sailing Plan is sent significantly before the ship's actual departure, it may be followed up with an actual Position Report upon departure, as soon as adequate communications can be established. This report would look something like the following:

AMVER/PR =  
A/MV Jean Lykes/WLAH =  
B/150030Z =  
C/4430N/06326W =  
E/124 =

F/100 =  
M/VCS =  
X/Next rpt 161200Z =

During the voyage a position report is given at least once every 36 hours.

AMVER/PR =  
A/MV Jean Lykes/WLAH =  
B/161200Z =  
C/4230N/05402W =  
E/097 =  
F/100 =  
G/VCS =  
X/Next rpt 180000Z =  
Z/mf-ssb not operating.

Should it be necessary during the voyage to alter the sailing plan, either because of a change in destination, route, or anything which might cause the vessel to be more than 25 nautical miles from her projected position at any time, a Deviation Report is sent, which is essentially a new Sailing Plan. The difference between a Sailing Plan and a Deviation Report is that in the latter only the changed details need be reported.

Now let's assume that the AMVER Center, in response to a request by a Rescue Coordination Center (RCC), provides information on vessels which might be in the vicinity of a distress situation. For the purposes of this simulated voyage we'll assume that at 1400Z on the 16th the Jean Lykes has been asked to proceed to the position of a transatlantic sailor in distress at lat. 41 deg. 00 min. north and long. 52 deg. 50 min. west, this position being 160 miles from her projected position and 10 hours and 40 minutes away at 15 knots.

Once arriving on the scene, the Jean Lykes finds that the distressed vessel, the Happy Wanderer, has sunk and her crew is picked up from a life raft. Once this situation is taken care of the Jean Lykes is ready to continue on her voyage to London. Since, however, her previous Sailing Plan cannot be used for accurate course projection, a Deviation Report will be sent.

AMVER/DR =  
A/MV Jean Lykes/WLAH =  
B/170040Z  
E/060  
F/100  
G/distress scene/4100N/05250W =  
I/London/5130N/00075E/271048Z =  
L/RL/100/4200N/05000W/172040Z =  
L/GC/100/4940N/00634W/261536Z =  
M/VCS/GKB =  
X/Next rpt 181200Z  
Z/mf-ssb operational

Finally, once the vessel has arrived at its destination it sends an arrival report.

AMVER/FR =  
A/MV Jean Lykes/WLAH =  
K/London/5130N/00075E/171130Z  
Z/Happy Wanderer crew disembarked at London

Certain conventions are followed when making AMVER reports, namely that latitude and longitude are given in degrees and

minutes -- latitude as a four digit group (DDMM) and longitude as a five figure group (DDDMM). Time is also given as a six figure group (DDHHHH) and is usually Greenwich Mean Time (or UTC) which is abbreviated as Z. Unless stated otherwise, it is assumed that the month is the current month or following month as appropriate. Courses are given in degrees as a three figure group.

Now that you know what these messages mean, here are a few suggestions as to where you might find AMVER traffic.

Halifax Coast Guard Radio (VCS) can be found on the following frequencies:

CW	COAST	SSB	SHIP
446	2514		2118
484	2852		2206
4285	4410.1		4115.7
6491.5	6518.8		6212.4
8440	8787.1		8263.2
12874	13138.0		12367.2
16948.5	17242.2		16469.2
22387			

Usually the particular frequency which the coast station is monitoring on CW is given in a marker transmission which is broadcast on its frequency, therefore, I have not listed the ship frequency for CW.

On CW Portishead Radio can be found on the following frequencies:

<u>GKA</u>	<u>GKB</u>	<u>GKC</u>	<u>GKD</u>
4286.0	4274.0	4251.5	4256.0
6368.9	6379.5	6407.5	6428.5
8545.9	8557.9	8516.0	8569.0
12822.0	12835.4	13019.8	12788.5
17098.4	17113.0	16954.4	16974.6
22467.0	22448.7	22407.3	22432.0
<u>GKE</u>	<u>GKF</u>	<u>GKG</u>	<u>GKH</u>
4350.5	12815.0	4267.9	4314.5
6495.0		6469.3	6470.8
8705.5		8591.5	8604.0
13072.0		12790.0	12791.5
17198.0		17072.0	17092.0
22562.0		22503.0	22525.5
<u>GKI</u>	<u>GKJ</u>	<u>GKK</u>	<u>GKM</u>
4317.5	4326.5	4336.0	4316.0
6472.3	6477.5	6342.0	6397.0
8606.0	8684.0	8552.0	8581.6
12858.0	12871.5	13006.5	12714.0
17151.2	16918.8	17167.5	17136.8
22528.5	22545.0	22494.0	22527.0
<u>GKN</u>	<u>GKO</u>	<u>GQP</u>	<u>GQS</u>
4314.9	4316.9	4356.5	4344.5
6395.9	6397.9	6505.0	6402.0
8580.5	8582.5	8718.0	8496.0
12712.9	12714.9	13099.0	12770.0
17135.7	17137.7	17231.0	16882.5
22525.9	22527.9	22594.0	22387.5

On Single Sideband, Portishead Radio can be found on the following frequencies:

<u>GKT</u>	<u>GKU</u>	<u>GKV</u>	<u>GKW</u>
4374.3	8766.8	4436.3	8813.3
4361.9	8776.1	8785.4	13198.3
4386.7	17265.3	8797.8	17330.4
8723.4	17277.7	13173.5	17345.9
13102.2	17287.0	13192.1	17355.2

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13105.3	22656.3	22684.2	
17237.4	22637.7	22678.0	<u>GKX</u>
17249.8			
22612.9			22718.3

Portsmouth Radio (NMN) can be found on 466, 8465, 12718.5, and 16976 kHz CW on the following SSB frequencies:

COAST	SHIP
4428.7 kHz	4134.4 kHz
6506.4	6200.0
8765.4	8241.5
13113.2	12342.4

Boston (NMF) can be found on 472 kHz CW and 6506.4 (6200.0 ship) kHz SSB. Honolulu (NMO) is to found on 440, 8650, and 12889.5 kHz CW and these SSB frequencies:

COAST	SHIP
4428.7 kHz	4134.3 kHz
6506.4	6200.0
8675.4	8241.5

Have a try at these frequencies, or any of the frequencies for any other stations handling AMVER traffic and see what you might learn. With over 15,000 voyages plotted each month there is ample opportunity to hear these messages and learn something of the shipping routes being followed today.

Credit is due to Dr. D. H. Hay for his assistance in calculation and plotting the simulation which was worked out for this month's column. As always, your comments and suggestions are welcome. Good listening until next time.



## Cut Rate Hamming

Getting into ham radio is expensive. It's a common concern -- especially of newcomers -- and one that surely has kept more than one prospective ham-to-be from ever getting his ticket.

The truth is that if you're going to buy new equipment, spending two thousand dollars or more is not impossible. You could stick to something like Heath's little HW-9 QRP (low power) rig. But while I like QRP, it is not what I advocate for the new ham.

In fact, if you just got your ticket and are anxious to get on the air, you'll want at least 50 to 100 watts of power. That'll ensure that you'll at least be heard by other hams. You could choose to go the low power route. It's just that using low power requires skills the average new comer is not endowed with. So what to do?

Last month we reviewed the Uniden HR-2510 and it is a good choice if you are interested in only 10 meters. And there are other single band units available at prices around \$300.00. Many newcomers only want to work phone and opt for an FM 220 MHz rig to talk to local amateurs. This is fine and prices on 220 gear start at about \$300.00 for something decent. But the problem is that you will be restricted to just one band.

The rub comes when the new ham decides he would like to get in on the fun on *all* the other bands available to him. Once that happens, watch out!

I do not know of any new multi-band HF rigs on the market for less than \$700.00. Add to that the price of a power supply, decent antenna, microphone and key or keyer and the price is well into the \$1000.00 range. Where do we go from here?

The first thing to do is to sort out exactly what we need! Too often new hams feel they must get on SSB and run the maximum power limit as soon as the new call arrives. This is indeed unfortunate as plain old Morse code is still a neat method of communication. Using CW will allow the average ham with low power (100 watts or less) to converse with fellow hams all over the world. Consequently if we can dispel the notion that SSB or digital modes are the only way to go it is possible to have a lot of fun in ham radio for just a few dollars (100 or less). There are several avenues open to us to achieve this goal of lots of fun for a hundred bucks or less.

### A Hundred Bucks or Less

The first way to get in under \$100.00 is to build a rig. To be sure, if you buy all of your parts new, a homebuilt rig can cost as much as

one off the shelf. However, by careful shopping for surplus parts and using junk box parts (parts taken from old TV and radio sets) it is possible to build a nice rig at a very reasonable cost. What most of us will do is to use a commercial receiver and build a simple transmitter for our first rig. If you don't have experience building, then the help of a seasoned amateur should be sought. A usable rig can be built by anyone who has full use of his hands and the ability to follow instructions.

Circuits for homebuilt rigs can be found in magazines (especially older issues) and the *ARRL Handbook* (Handbooks from the 60's and 70's contain many excellent receivers and transmitters for beginners).

You do not need to be an engineer to build equipment, but you must have some understanding of how circuits work and how to use simple test gear. In this magazine there is a column called "*DeMaw's Workbench*" wherein columnist Doug DeMaw guides you through theory and building techniques with various projects. It's a good place to start! If you choose to follow this route then you must prepare yourself for some of the greatest satisfaction you will ever know -- there is no thrill like talking to someone half a world away on a rig you built yourself!

Akin to building your own is modifying surplus equipment. There are many surplus military radios out there that can be put into use on the ham bands with very little work. Coupled with the fact that most of these radios are of high quality is their low price.

Again, some understanding of how circuits work is required unless you luck out and pick up one of the many surplus units that needs only power to get on the ham bands. A look through any of the ham magazines will produce ads for surplus gear and addresses where you can obtain catalogs. Again check things out with a seasoned amateur before picking up what appears to be a bargain.

### The Used Gear Circuit

Our third route is the used ham gear market. Asking around of the local ham population will always turn up a piece of used gear at a reasonable price. It's best for the newcomer to deal with someone he knows and trusts for this first purchase. Hamfests often turn up true bargains, but it is risky for the novice to grab the first thing he sees at a hamfest. By all means go with someone who knows his way around and ask the seller if there is any warranty at all on the gear. My personal experience is that about 90% of the sellers at a hamfest are honest and will tell

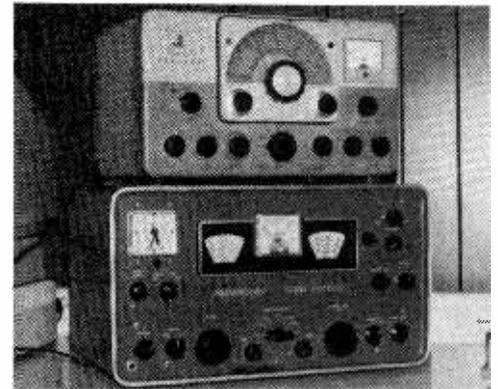


Photo 1: Ranger transmitter and HQ-170 receiver = CW/AM operation from 160 to 6 meters with 65 watts of power.



Photo 2: W3AZR spent \$75 on this Elmac AF-67 transmitter and Heath HR-10B receiver. 160 to 10 meters CW/AM and NBFM; and take a look at those dandy DX QSL cards on the wall!



Photo 3: Heath HW-101, SSB/CW on 80 through 10. This type of rig is available at hamfests for prices ranging from \$150 to \$200.

you if there is any problem with a rig.

There is always a chance that the gear purchased at a hamfest has one or more problems. If you are experienced and can repair or rebuild radios there is no problem, but we are talking about beginners here. Cut your chances by asking for a demonstration, war-

ranty (money back if it doesn't work or there is a serious problem!). If a seller is reluctant to give that warranty move along to the next "buy of a lifetime.

Since we are talking about spending one hundred bucks or less, chances are that you will wind up with a tube type rig. Expect to purchase a separate receiver and transmitter (take a look at photo one). This is a combination Viking Ranger II and Hammarlund HQ-170A. It will operate 160 through 6 meters on CW and AM (no SSB) and will allow you to work amateurs all over the world with ease.

A similar rig will cost between \$100.00 and \$125.00 complete. This particular unit cost \$30.00 for the transmitter and \$75.00 for the receiver. Add ten bucks for a simple antenna change-over relay (you do not need a coax relay at a cost of 50+ bucks) and a key (mine is a vibroplex bug) or keyer and your cost will be about \$170.00 total.

Photo two is another rig that will allow you to work amateurs around the world with ease. It is a Heath HR-10B receiver and Elmac AF-67 transmitter. Total cost for this rig was \$20.00 for the receiver (needed alignment) and \$5.00 for the transmitter. The power supply was homebuilt at a cost of \$15.00. The same ten dollar relay and key brings total to \$75.00 for this 80 to ten meter CW/AM rig.

Ok. So you insist you must work SSB. Take a gander at photo number three. This is the famous Heath HW-101. It will give you 100 watts CW or SSB on 80 through ten meters and should cost no more than \$200.00 for a unit in excellent condition (with a power supply).

There are several less expensive SSB transceivers and transmitters on the used market at prices under \$75.00. Units like the Heath monoband transceivers (available for 160 - 80 - 40 - and 20 meters). Swan also made some dandy monobanders which were all solid state. Look for units like the Hallicrafters HT-30 and HT-32 (80 to 10 meter SSB/CW transmitters) and their companion receivers SX-101 and 101A.

If you can't find matching receiver/transmitter from same manufacturer, consider an HT-32 and National NC-300 or 303 or one of the Hammarlund receivers. The combinations are endless and any amateur who has been around since the 70's or earlier can help you choose a setup that will do the job.

### The Next Step

Next step is to buy an *ARRL Handbook* or *Antenna Handbook* and choose the antenna that suits your space and desires -- and build it! Antennas are easy to make and every amateur should build at least a dozen or so before going gung ho over the commercial super beams and the like - (you may be surprised!)

If you can pick up an older *ARRL Handbook*, say from the 60's, it will give you a wealth of information on operating with separate units (that is non-transceivers). Now go and work the world!

### Uniden 2510 CW Operating Tip

A friend who purchased a 2510 as described in last month's column called me to complain about not being able to work many stations on CW! After taking a look at his setup and watching him call a station, I realized that the instruction manual does not tell you how to tune the unit properly. Here is the method that must be used.

First, be sure the RIT control is centered and the span switch is at 100 Hz. When calling a station on CW, first tune the receiver to zero beat. Do this by tuning across the signal in 100 Hz steps until the note (about 1000 Hz) disappears. If you tune 100 Hz up or down it will again be audible; now the transceiver is zero beat. With the unit at zero beat use the RIT control to obtain a tone from the station you want to call. That's all there is to it!

Normally if you set the unit a few hundred Hz above or below zero beat everything will be ok. The problem comes in because the filter in the 2510 is wide (for SSB) operation and it is possible to hear CW signals up to 2.5 kHz above the center frequency. Consequently when calling a station that far off frequency, he may not hear you due to his receiver having a sharper filter.

### DXathon

*Worldradio* magazine has announced a "DXathon" that will start Jan 1, 1989, and end December 31, 1989. Use 80, 40, 20, 15, 10 meters plus satellite/moonbounce. And all modes. The objective is to contact as many nations on as many modes as possible. There will be several awards given. For full details write to *Worldradio*, 2120 - 28th Street, Sacramento, CA 95818.

### DX News (via ARRL DX service)

D68JL Comoros is active on 80 through 10 CW, SSB and RTTY.

VP8BUB will be active from South Georgia for the next year. Watch 14236 KHz at 2230Z, 21260 at 1500Z and 21363 at 1800Z.

A possible new country, 3D2XX Rotuma, will be active thru November 5 CW/SSB all bands. Rotuma is in the Fiji Island Chain and application for new country status has been requested.

Jim, K6JRK, will be operating from Tuvalu signing T2BRK through November 1 for the SSB contest. QSL to his home address.

Seychelles, Dick, S79D is active on all bands. Try 28544 KHz at 1710Z and 21341 KHz at 1830Z. 40 CW activity is anticipated soon. QSL via WB4YZU

OH1RY Peter, and OH2BAZ Vili, will be operating from



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the Pacific during November. Itinerary includes Fiji islands, Wallis Island, Vanuatu, The Fiji Islands Reprised, New Zealand, Niue and Japan. Check following frequencies: 1832, 1824, 1910, 3795, 3501, 7073, 7001, 10110, 14160, 14005, 21300, 21005, 28500 and 28005 KHz.

JA2EZD will operate from Japan, Taiwan, Hong Kong, Macao, Singapore, Thailand and Indonesia in November. No frequencies were given.

WB3FFV Multiuser Ham Radio Telephone BBS

The WB3FFV Ham Radio Telephone BBS is on line 24 hours a day 365 days a year. You can obtain such items as Morse code tutors, The Net software, modifications for many ham rigs and scanners, digital signal processing software, ARRL Newsletters, the W5YI Report electronic edition and much more.

Access is possible with 1200, 2400, 9600 or 19200 baud. The phone number is (301)-335-0858. The only cost for this service is the phone call. The sysop encourages everyone to upload and download to your heart's content. Pass the word on this machine! Get everyone into the act!

Software: XBBS (UNIX/Xenix Multiuser BBS).

WB3FFV address is - Howard Leadmon, Fast Computer Service, Inc., P.O. Box 171, Chase, MD 21027-0171.

### The Well-rounded Amateur

Recently, an east coast ham was ejected from a well known amusement park for carrying an transceiver onto the park grounds. Guards at the park told him operation was forbidden in the park because ham rigs caused interference. The amateur complied with park requests since he had paid over \$50.00 to get into the park. However, he is now attempting to get other hams to boycott the park because of their policies.

Granted, the ham was only pursuing a harmless hobby and most likely would not have caused any interference to the park's communication system. But, is it really necessary to carry a HT every place we go? Can't we be balanced enough to simply enjoy a day at the park with our family -- without the interference of our hobby? Give the wife and kids a break!

What are your thoughts on the subject?





**LA VOZ DEL CID**  
Cuba Independiente y Democrática

**certificado de sintonía**

A JOHN SANTOSUSSO  
QUIEN NOS SINTONIZO EL DIA 23 de septiembre de 1982  
DE LAS 01:02 GMT, A LAS 01:29 EMISORA: Frank Paia  
EN LAS BANDAS DE 40 MTS. FRECUENCIA 7,400 Khz

**Angola:**

Emisora Regional de Cabinda, 4970 kHz. Full data multi-lingual card and personal letter from verification signer, Carlos Ferreira, O Chefe de Departamento. Received in 80 days for a Portuguese reception report. Station address: Emissor de Cabinda, Cabinda, People's Republic of Angola. (Rod Pearson, St. Augustine, FL)

**Argentina:**

LOL Time Station, 15000 kHz. Full data station form letter and schedule from verification signer, Ernesto Emilio Faccini. Received in 31 days for an English reception report. Station address: Servicio de Hidrografia Naval, Observatorio Naval, Avenida Esana 2099, 1107 Buenos Aires, Argentina. (Stanley D. Mayo, Westbrook, ME)

**Australia:**

Naval Communications Station, Canberra, 12982 kHz. Full data QSL on station letterhead. Verification signer, N.R. Torrens, Lt. Cmdr.-RAN Officer in Charge. Received in 70 days for one IRC and an English reception report. Station address: HMAS Harman, Canberra ACT 2600, Australia.

**Radio Australia:**

9770 kHz via Carnavon. Full data "koala bears" card, station stickers and schedules, without verification signer. Received in 37 days for an English reception report. Station address: P.O. Box 4288, G.P.O. Melbourne, 3001 Australia. (Joseph A. Johnson, Savannah, GA)

**Brazil:**

Emissora Rural Santarem, 4755 kHz. Partial data QSL on station letterhead. Verification signer, Ailton Guerra-Gerente. Received in 60 days for mint stamps and a Portuguese reception report. Station address: Caixa Postal 134, 68101 Santarem, Para, Brazil. (Bill Traister, Covington, TN)

**Radio Bare:**

4895 kHz. Full data station card, without verification signer. Received in 32 days for mint stamps and a Portuguese reception report. Station address: Avenida Santa Cruz Machado, 170-Japium-69000 Amazonas, Manaus, Brazil. (ed.)

**Cape Verde:**

Radio Nacional De Cabo Verde, 3931 kHz. Full data QSL on station letterhead. Received in 125 days for mint stamps and three Portuguese reception reports. Total time report was outstanding was 19 months. Station address: Caixa Postal 26, Praia, Republic De Cabo Verde. (Rod Pearson, St. Augustine, FL)

**Canary Islands:**

Radio Nacional de Espana en Canaries, 15365 kHz. Full data scenery card, and station stickers. Verification signer, Carmen Baez. Received in 91 days for two IRCs and a Spanish reception report. Station address: Apartado 1233, 38080 Santa Cruz de Tenerife. (Rod Pearson, St. Augustine, FL)

**Clandestine:**

La Voz del CID, 11635 kHz. Full data station logo card, without verification signer. Received in 40 days for one IRC and a Spanish reception report. Mailing address: Apartado 8130, San Jose 1000, Costa Rica

(Greg Humphries, Long Beach, CA)

**Ecuador:**

La Voz de Los Caras, 4795 kHz. Full data QSL on station letterhead. Verification signer, Marcelo A. Nevarez F. Received in 74 days for mint stamps and a Spanish reception report. Station address: Casilla 608, Bahía de Caraquez, Manabí, Ecuador. (C.A. Clancy, Redding, CA)

**Ecuador:**

Escuelas Radiofonicaas Populares, 5015 kHz. Personal QSL letter from verification signer, Patricio Munoz Jacome. Received in 30 days for mint stamps and a Spanish reception report. Station address: Apartado 4755, Riobamba, Chimborazo, Ecuador. (C.A. Clancy, Redding, CA)

**Falkland Islands:**

Falkland Island Broadcasting Station (FIBS), 3958 kHz. Full data QSL on BFBS station letterhead and prepared QSL card. Also received BFBS sticker and blue station logo patch. Verification signer, Mike Robertson-Station Manager. Received in 27 days for 2 IRCs (returned with QSL) and an English reception report. Station address: Bridge House, North Wharf Road, London W2 1LA, U.K. (Joseph A. Johnson, Savannah, GA)

**Finland:**

Radio Finland, 11945 kHz. No data Finish scenery card, without verification signer. Received in 40 days for an English reception report. Station address: Box 95, 00251 Helsinki, Finland. (Greg Humphries, Long Beach CA)

**German Federal Republic:**

Sudwestfunk, 7265 kHz. Full data "earth" card. Verification signer, Dr. Krank-Technical Director. Received in 36 days for two IRCs and an English reception report. Station address: 7570 Baden-Baden, Postfach 820, Hans-Bredow Strasse, West Germany. (Tom Sullivan, New Orleans, LA)

**German Federal Republic:**

Deutsche Welle, 9545 kHz. No data color "globe" card, without verification signer. Received in 45 days for 1 IRCs and an English utility report. Station address: Postfach 1004444, D-5000 Koln 1, West Germany. (Tom Sullivan, New Orleans, LA)

**Greece:**

Hellenic Marine Costal Station, 12720 kHz. Full data large blue station card. Verification signer, G. Hatzopoulos, Head of Radio Division. Received in 45 days for 1 IRCs and an English utility report. Station address: Hellenic Telecommunications Organization S.A., 15 Stadiou St., Gr- 102 46 Athens, Greece. (Larry Van Horn, Orange Park, FL)

**Guatemala:**

Radio Mam, 4825 kHz. Full data QSL on station letterhead. Verification signer, Jose Benito Escalante Ramos-Director. Received in 43 days for mint stamps and a Spanish reception report. Station address: Municipio de Cabrican, Dept. Quezaltenango, Guatemala. (Bill Traister, Covington, TN)

**Indonesia:**

(Maluku) Radio Republik Indonesia-Ternate, 3345 kHz. Full data prepared QSL card. Verification

signer, Rusdy Bachmid. Received in 40 days for mint stamps and an Indonesian reception report. Station address: Jln. Kedaton, Ternate, Maluku, Indonesia. (Rod Pearson, St. Augustine, FL)

**Indonesia:**

(Kalimantan) Radio Republik Indonesia-Pontianak, 3995 kHz. Full data personal letter from verification signer, Magrub Suparman. Received in 52 days for mint stamps and one Indonesian follow-up reception report. Total time report outstanding was fourteen months. Station address: Jln. Jendral Sudirman 7, Pontianak, Kalimantan Barat, Indonesia. (Rod Pearson, St. Augustine, FL)

**Mali:**

Radio Beijing relay, 11715 kHz. Full data China doll card, souvenir magazines and schedules. Verification signer, Nadia. Received in 37 days for an English reception report. Station address: Radio Beijing, Beijing, People's Republic of China.

**New Caledonia:**

Marine Nationale Francaise, 2246 kHz. Full data QSL on station letterhead, with signature initials. Received in 115 days for two IRCs and a French utility report. Station address: Commandement De La Marine En, Nouvelle Caldonie Et Dependances. (Larry Van Horn, Orange Park, FL)

**New Zealand:**

Auckland Radio-ZKAK, 8828 kHz. Full data QSL on station letterhead. Verification signer N. Mushet, Station Communications Officer. Received in 90 days for two IRCs and an English utility report. Station address: Auckland International Airport, Auckland, New Zealand (Larry Van Horn, Orange Park, FL)

**Papua New Guinea:**

(New Guinea) Radio Simbu, 3355 kHz. Full data "map-logo" card. Verification signer, Timothy Dickson, Engineering Division. Received in 102 days for mint stamps and an English reception report. Station address: P.O. Box 228, Kindiawa, Papua New Guinea. (Bill Traister, Covington, TN)

**Sicily:**

RAI via Radio Due-Caltanisseta, 7175 kHz. Full data station card without verification signer. Received in 34 days for one IRC and an English reception report. Station address: RAI Radiotelevision Italiana, Viale Mazzini 14, 00195 Roma, Italy. (Joseph A. Johnson, Savannah, GA)

**Space:**

CHICOM 1, 20009.215 kHz. Full data letter verifying orbiting earth satellite from 1970. Received in 18 years, following numerous follow-up reports. Station address: Radio Beijing, Beijing, People's Republic of China. (Stanley D. Mayo, Westbrook, ME) (Congratulations, Stan, that's what I call persistence-led.)

**Switzerland:**

Swiss Radio International, 9885 kHz. Full data studio card without verification signer. Received in 50 days for an English reception report. Station address: Giacomettistr 1, 3000 Bern 15, Switzerland. (Greg Humphries, Long Beach, CA)

**United Kingdom:**

BBC, 9915 kHz. No data color studio card, without verification signer. Received in 126 days for an English reception report. Station address: Bush House, Stand, London WC2B 4PH, U.K. (Loyd Van Horn, Orange Park, FL)

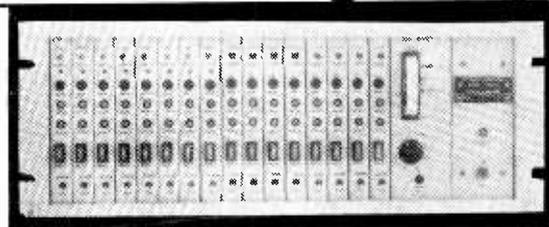
**United States:**

KNLS-Alaska, 9870 kHz. Full data QSL on station letterhead, color studio postcard and schedule. Verification signer, Director of Engineering. Received in 110 days for mint stamps and an English reception report. Station address: P.O. Box 473, Anchor Point, Alaska 99556 (C.A. Clancy, Redding, CA)

**United States:**

Sheriff's Dept., Topeka, Kansas, 39.68 kHz. Full data department letter and business card from Mike L. Hambin, Deputy Dispatcher, for an English utility report. Deputy also stated in his letter that they have received letters from California, Nevada, and Tennessee. (Mel Smith, Crisfield, MD) (Let's hear it for skip, Mel!-ed.)

# A Nose for News



↑ Model 1290LS, Frederick Electronics

With the winter months upon us there's more time to sit at our listening post and copy that rare DX. So far, this winter has been a good one for reading RTTY.

There's a special mystique about this facet of radio monitoring -- the strange beeping sound of RTTY, the buzzing of FDM or the chirping of a SITOR station, all of which will produce a print on a teletype or computer monitor.

My love of RTTY dates back to the mid-sixties when I belonged to a high school "Ham Radio" club. I was introduced to the hobby by a good friend named Riley Crate. He showed me how to tune RTTY and where the press frequencies were.

In the late sixties, when I was serving my country, I was stationed in South Korea as a "field radio repairman" maintaining RTTY gear. Even back then, RTTY was exciting. The Vietnam War was in full swing, racial problems cramped the U.S. and anti-war protesters filled the streets. The RTTY airwaves were filled with World Press News! I spent many hours in the radio room (while the other soldiers were partying at the Enlisted Men's Club) receiving these breaking stories.

One day I copied an "URGENT BULLETIN" that was, for me, most tragic. It was the shooting of Senator Robert Kennedy on June 6, 1968. I copied it on a UPI frequency which at that time was just above the 40 meter band. (That service was terminated in the early seventies.) Another "URGENT" news item was the shooting of Martin Luther King.

Just like in the movie "Good Morning Vietnam," the news on AFRTN (Armed Forces Radio and Television Network) was censored. Our only sources were the UPI and AP's RTTY transmissions I received over the shortwave. As a result, when I received the bulletins, I would post them on the wall for everyone to see. In many cases, we got the news several hours before it was announced on the air.

Nowadays, it is harder to find the World Press transmissions, but not impossible. Even in the eighties, the military uses AP and UPI services for the AFRTN. These transmissions are uncensored and are normally found on military FDM circuits. The most popular frequency can be found on 6.993 MHz (during the winter months).

FDM is a mode whereby several teletype printers are connected to a special "VFT System" (Voice Frequency Telegraph) like the Frederick 1290LS. (See the photo.) The VFT system is then connected to a single SSB transmitter. FDM improves channel efficiency because 12, 16, or 24 RTTY channels can send data simultaneously on a single radio link. When you encounter an FDM signal, it will have a buzzing sound which is similar to an old World War II B-52 bomber when your receiver is in AM mode. But when you switch to SSB mode, it sounds more like a buzzsaw!

In order to copy these transmissions, you will need a very good receiver like the Icom R70 or R71 and special equipment like the Universal M-608 (which is discontinued), the Universal SW M-7000 radio modem or surplus commercial gear like the Fredricks R1202R which is available from Electrovalue Industrial Inc., P.O. Box 376-FB, Morris Plains, NJ 07950. The phone number is (201) 267-1117. They have a limited quantity.

There's another way to copy FDM which requires a good receiver, a RTTY TU and a computer or a radio modem like the Info-Tech M6000. This method involves using a narrow CW filter in the receiver and an audio filter. An article entitled "Monitoring Buzzsaws" appeared in the December 1986 issue of *Monitoring Times* which explains this technique. A copy is available by sending \$2.00 (to cover

the shipping cost) to my address which is at the top of this column.

This month's loggings are devoted to FDM. Some of these frequencies may not be in use at the moment but like any other utility transmissions, it's not unlikely that that they'll pop up again. Like any other utility transmission, signals may come and go. That's why I recheck my loggings often. For example, 6.990 MHz is very active in the winter (and is very strong in the midwest) but I don't usually hear that "Buzzer" in the summer months.



## FDM LOGGINGS

Time	Freq (UTC)	Shift (MHz)	Speed (Hz)	Remarks (WPM)
0006	14.4071	165	50	DE MKD "Foxes" All channels
0014	13.5665	158	50	DE MKD "Foxes" All channels
0139	11.097	170	67	"Foxes"
0205	10.8577	170	67	RURY All channels
0220	7.923	170	100	UPI
0249	11.0486	170	67	UPI News
0313	8.0323	170	100	"Foxes"
0315	13.7397	45	-	Test signal
0319	9.317	75	67	RYS DE LGAT
0335	7.8709	75	100	AP News
0345	10.281	170	67	"Foxes"
0357	6.9926	75	100	Weather
0400	6.9939	170	67	AP News perfect copy 59 signal
0400	7.5869	170	67	6VU41/6VU73 179 CQ RYs
0400	12.1490	170	67	"Foxes" DE MKD Testing
0403	13.6452	65	75	Weather data
0414	11.4249	170	67	DE SHD Testing RURY
0415	10.8623	75	100	Weather data
0415	16.2807	140	75	DE MKD "Foxes" All channels
0430	10.8628	75	75	News AP or UPI?
0430	11.0071	75	670	AP News
0433	11.0068	75	100	Weather KWBC (call letters?)
0435	16.1861	65	75	RURY DE 4VZ UN bulletins
0436	11.4833	170	100	RURY
0455	9.9907	75	80	AP News
0501	4.0439	85	100	AP News
0513	4.620	85	100	AP News off at 0513
0515	9.2141	170	67	AP
0517	8.062	85R	75	RURY
0525	6.993	170	67	AP (AFRTN)
0530	10.206	75	75	UPI News
0540	7.9234	65	100	AP News
0548	2.1476	75	100	UPI News
0551	3.1914	75	100	AP News
0600	11.0071	85	67	AP parallel with 10.316
0629	5.0731	170	45	UPI
0630	10.316	85	100	AP parallel with 11.0071
0631	5.3729	75	50	UPI News
0635	12.5259	170	67	UPI
0636	6.432	100	68	UPI Nonstandard speed
0640	5.3879	80	50	UPI News
0704	6.803	170	75	INDEX 003 Foxes DE ZLO (All channels)
0732	7.871	75	77	UPI
1030	14.6032	170	67	DE MKD "Foxes" All channels
1054	10.206	75	100	AP News
1331	10.588	65	67	RURY and "Foxes" DE MKD All channels
1336	9.961	75	55(Baud)	AP or UPI News
1357	10.6095	30	54	UPI (AFRTN)
1420	9.9607	65	67	UPI (Ch. 24?)
1642	10.2588	65	100	AP News
1252	10.3172	30	80	Narrow Shift Odd Speed
1703	10.3174	65	100	AP in German?
1800	11.5395	170	67	UPI
2337	16.1502	175	50(Baud)	DE MKD "Foxes" All channels

# C-SPAN and the \$1,300 Baseball Season

If you're like most people, you've spent more than your fair share of time restlessly flipping through the satellite or cable guide, looking for something to watch. Your eyes pause, then pass, such unstimulating fare as "Geraldo" or "Home Shopping Network."

Firmly planted in that same sleepy category are listings for C-Span -- things like, "10:00 C-SPAN -- House Subcommittee on Transportation." It sounds almost as inviting as watching last week's weather reports.

Maybe you've even come across C-Span as you're flipping from one channel to another. The scene is always the same: One congressman droning on to a totally empty House chamber in what has to be the country's longest running unpaid political announcement. You can't get to HBO fast enough!

## *In the Beginning...*

It all started when Congress authorized live transmission of House of Representative proceedings. No commercial network would dream of airing such unending hilarity so it fell to the cable industry if it was to be broadcast at all. As it turns out, the cable industry was deep in the throes of a guilty conscience from raking in huge profits not seen in this country since the 1849 Gold Rush.

What better way to ward off potentially damaging regulation by Congress than by giving Congress its own channel for free?!

The idea was that while Congress was in session, the floor proceedings would be telecast. In between daily sessions the channel would broadcast hearings by the various House committees. The entire cost, including transponder space and production facilities, would be underwritten by a consortium of cable related companies. Thus was born the Cable-Satellite Public Affairs Network (G3,24).

## *Not So Bad After All*

Since then C-SPAN has evolved to become one of the brightest stars in cable's sky. Still

commercial-free and unscrambled, it maintains a nonpartisan balance which is equaled only by PBS in broadcast TV.

While much of its broadcast day is still given up to House floor proceedings, the rest is spent in timely coverage of committee hearings: public policy speeches, journalist roundtables, call-in talk shows with members of Congress, and live special events coverage broadcast without comment or analysis.

Recently I watched hearings on the status of magnetic levitation vehicles and High Definition Television (HDTV). Both had testimony from the scientists directly involved and was an unusual and fascinating glimpse into the future.

Programming on C-SPAN is apt to change without notice so you'll have to pay attention to program announcements early in the day to find what you're interested in and when it's on.

## *But Wait! There's More!*

Still not enough hot air from Washington for you? Try C-SPAN II (G3,14)! Overcome by pangs of professional jealousy, the U.S. Senate wasted no time in establishing their own channel which the same cable consortium was obliged to carry.

One would think these exemplary channels enjoy a wide public following but one would be wrong. Most cable companies don't even carry C-SPAN I, let alone II. According to *Broadcasting* magazine's 1988 Yearbook, a mere 2,600 cable systems carry C-SPAN I (this compares with the 15,393 systems carrying the ESPN sports network). The distribution of C-SPAN II is even more dismal -- only 400 systems.

Actually there's no mystery why this is so. The average cable system in America has room for only 36 channels. When many of these are devoted to local and nearby city off-air rebroadcast, the remaining channels become valuable. Much too valuable to give up to the zero-profit-producing



*Billboard for RFD-TV during its test period in Aug.'88. RD-TV is now operational serving America's Farmland with programming designed for rural Americans.*

C-SPANs. Of course dish owners are not subject to the whimsey of cable operators.

## RFD-TV

On the air September 1 after several weeks of testing is RFD-TV. The new network, targeted to rural American farm families, is a 24 hour a day programming service. With emphasis on agricultural topics it features live call-in shows and frequent newscasts covering news, sports, and extensive farming-oriented weather coverage.

At night RFD-TV presents old TV shows and movies with a tendency toward westerns. Catch RFD-TV on Spacenet 1,2,3.

## This is a Test

Seen on Anik 2,15: a billboard for Vision TV using 5.96 and 5.94 audio for left and right channels and no mono. There is a lot of activity on this bird of late. Canadians will soon be enjoying their own weather channel, called Metromedia Weather (Xpnder 11) as well as three channels for CTV-TV (Xpnders 12, 16, 24) in addition to CBC News on 17 and TV-5 on Xpnder 23 (in French). They join First Choice Superstation which is a Canadian HBO. As with First Choice, the additions will likely be scrambled using the VideoCypher II and unavailable to the U.S. market.

## The Future of Sports

As of this summer, most satellite backhauls of major league baseball were scrambled via the VideoCypher I system. VideoCypher I is incompatible with the VC II system used for home dishowners.

This signaled the first time an entire sport was rendered unavailable to dishowners. Major League Baseball (MLB), the governing body which controls the sport, does plan to launch its own channel next year to show baseball games to the TVRO market using the VC II on a subscription basis. Of course, which games are to be shown, when and at what price are unknown at this time.

There is a glimpse of what it may be like. This year the World Champion Minnesota Twins offered games to Minnesota cable companies via satellite on a pay-per-view basis. Price: 7.99/game. Hooked on baseball? Be prepared to shell out \$1,300 for the 162 games in 1989 under similar schemes if this type of plan takes hold.

## BEST BETS FOR SCPC

(Single Channel Per Carrier)

Satellite	Transponder	Services
F2	14	Radio Marti, numerous Voice of America
G2	3	Many including KUSC, KMPC, CNN Radio, WJR, WGN, WBAL, SUN RADIO Network, Infonet
S3	3	AP, UPI Radio News
W4	1	Numerous religious
	3	Many including APR, NPR
	4	TARN (The Agriculture Radio Network) UN Radio

## Tightening Up

Let's say you installed your dish in May. Now, six months later, funny things are happening. The dish doesn't seem to stop at the place that it's programmed to. Could be a defective component in the actuator memory. Most likely not.

Now that the colder weather has set in and you've spent the last six months running the dish from horizon to horizon a lot of things have had a chance to work loose.

The first thing to do is go out to the dish and inspect every nut and bolt. Try lifting the dish slightly from the bottom; there should be no more than 1/4 inch play. Do the same with the actuator motor. Look for gaps where there shouldn't be any. It doesn't take much to be off target.

This is also a good time to check to see that your feed horn is still in the center of the dish. Measure from the rim of the dish to the rim of the feed horn in three equidistant places. The measurements should all be within 1/4 inch. Check the mounting pole to be certain it is plumb. If the mounting pole is even slightly out of plumb you will never get the dish to track properly. Get out the oil can and lube anything that moves.

Now is also a good time to put on an actuator arm cover. It is a piece of accordioned rubber tubing which fits over the part of the actuator that extends and retracts as it is commanded. It seals the exposed arm and prevents rain from leaking into the motor or ice from building up on the arm. A lot of dish owners swear by these devices though I've never had such a problem.

You might want to further winterize your dish by putting coax seal on any exposed coaxial connections. Moisture in a coax

connection can cause severe signal loss.

## From the Press

My thanks to Debby Stark, a *Monitoring Times* subscriber in Albuquerque, New Mexico. She relayed an amusing story from the Albuquerque *Journal*.

It seems several college students spending the summer working at the Very Large Array (VLA), a system of 28 82 foot radio astronomy dishes in Socorro, New Mexico, ran an unauthorized classified ad in the *Journal* under the heading "Television." It read: "Must Go! 28 used 82 foot satellite dishes, HBO-you bet! \$25 million new, must leave state." The ad gave the phone numbers of National Radio Astronomy Observatory officials to call.

The observatory was not amused and the students were reprimanded. Interestingly, there was an inquiry from someone who wanted to reserve five of the dishes.

Also, thanks to a reader in Providence, Rhode Island, for sending a clipping from the Providence *Sunday Journal*. A Connecticut man allegedly went into a neighbor's yard with a chain saw and cut down an old oak tree some 50 feet tall and two feet thick. The tree had been blocking his reception of Galaxy I and apparently he could stand it no longer and ran amuck. Of course, we at *Monitoring Times* would not recommend such a thing. Chain saws are far too dangerous...

*Congratulations to MT's Ken Reitz. Both he and his 12 year old daughter, Jensen, are now licensed ham radio operators (KC4GQA and KC4GPZ, respectively)! Says Ken, "After a few months of studying, we both passed the test and guess what? It's isn't that hard! Now we're both racking up the QSOs! Hope to hear you on the air!"*

## AM Radio: Sick but not Dead

[Continued from page 17]

Rodio's station is rated #6 out of 29 stations in the very competitive South Jersey market.

So what's next for this "local boy made good"? While his music may be part of a romantic past, Jim Rodio's vision is focused sharply on the future. "Class A stations [such as WRDR] are allowed an operating power of only 3,000 watts," he explains. "And that makes it hard to compete with some of the bigger stations. So we are currently working on a proposal that would make us and other Class A's to increase our power. That would automatically make us more competitive."

**Gooooo Bye,  
Deeeee Jay**

According to *Insight* magazine, the era of the fast talking, disc-slinging, combination personality - newsman - weatherman - salesman DJ may be on the way out. The piece of new technology behind this dire prediction is New England Digital Corporation's new tapeless (as opposed to topless, in the case of KOY-FM Phoenix's new centerfold-turned DJ, Jessica Hahn) studio.

Paul W. Donohue, director of engineering at 102.7 KIIS-FM in Los Angeles, says that the system "lets the deejay edit audio like a word processor edits words." The \$450,000 system cuts production time for a show some 25 to 35 percent by converting music, voice-overs, jingles and anything else the station wants to broadcast into digital impulses. The information is stored in the system's hard disk and the DJ uses a keyboard or mouse to tell the computer what to broadcast. A \$125,000 version of the system went into operation at Chicago's WGCI-FM 107.5 over the summer.

### The Boat is Back

The freighter Sarah, the boat that housed the short-lived pirate station Radio Newyork International, is back anchored off Long Island, New York. "We're establishing our maritime right to be here," says operations manager Randi Steele. The 170-foot ship, which has now passed Coast Guard inspection and is properly insured, is equipped with transmitters that "are ready to be fired up at a moment's notice."

Although the ship last broadcast over short-

wave, FM, AM and reportedly, longwave, this time it will restrict itself to AM only. Look for it on 1620 AM, where, according to Steele, "it won't interfere with anyone." RNI was widely heard over most of the eastern half of North America during its initial transmission two summers ago.

### The Breeze and New Age

Florissant (St. Louis), Missouri's KLTH-FM 97.1 is now running "The Breeze" 24 hours a day. "The Breeze" is a satellite-delivered New Age/soft jazz program service now carried by 28 full-time and 25 part-time stations nationwide. It first became available to broadcasters in September of 1987.

In a letter to media buyers, the Satellite Music Network said that a "New Age" station was coming to

Philadelphia, Pennsylvania. As of press time, the New Age has yet to arrive. And no one in Philly is owning up to being the carrier.

One station in the City of Brotherly Love is definitely changing format: WDVTV-900 was bought by a religious organization.

One of the biggest stations using Kahn Communication's single-sideband system of AM stereo, WNBC, New York, New York, will convert over to rival C-Quam. That's expected to take place shortly after Emmis Broadcasting takes over the station and moves its WFAN call letters and all-sports format to WNBC's facilities.

### Personalities

For teeny-boppers the world over, not to mention those of us in the older generation who enjoy a mix of hit music, star gossip and outright cornball sentimentality, the loss of Casey Kasem was unbearable. Kasem was replaced as host of the widely-syndicated "American Top-40" a couple of months ago.

But now for the good news. He's coming back. Starting in January, "Casey's Top-40" will be syndicated by Westwood One. "American Top-40" was heard over 1,015 stations in 40 countries; no word on how many have picked up the new show. Meanwhile, Westwood's syndicated radio psychologist, Dr. Toni Grant, has left the network. The split, described as amicable, leaves Grant broadcasting only on KFI, Los Angeles.

Larry Glick, Beantown's most popular radio personality, came back to Boston, Massachusetts, over the summer. Now on WHDH, he was forced to remain out of circulation for one year due to his contract.

Pete Stover, general Manager of Spotsylvania, Virginia's 90-Joy (WJYJ 90.5 FM) is leaving the station for the Far East Broadcasting Company's (FEBC) Manila operation. Stover, who has been GM at 90-Joy since it signed on the air in May of 1983, is being replaced by his father, Joe.

Jim Slade, a reporter for the Mutual Broadcasting System, has joined ABC News as their space, science and technology reporter. Freddy Mertz, talk show host at KOA-Denver, Colorado and WFLA-Tampa, Florida, is doing the 3:00 p.m. to 6:00 p.m. airshift at KING-AM in Seattle, Washington. Jodi Adler of Pomona, California's KMNY-AM will be the host of the new program, "Of Consuming Interest."

When Lee Shoblom decided to up the power at his Lake Havasu City, Arizona KBBC-FM from 3,000 to 20,000 watts, he probably never dreamed what would happen. When Shoblom threw the switch on his new transmitter, long distance telephone service in the county and five nearby towns went out. Also down were 70 special telephone circuits, one of which was for the Arizona Lottery -- three days before a big \$3 million drawing. Said Shoblom, "[The lottery people] were not happy."

In an effort to correct the problem, he is now spending \$40,000 to shield a nearby telephone company microwave tower against interference from his tower -- and running at 3,000 watts.

According to *FMedia!*, the new owner of Pagosa Springs, Colorado's, KRQS-FM 106.3/KPAG-AM came in to the station one evening, loaded station equipment and office furniture into a U-Haul truck and "blew town." He had owned the station for only 90 days. No word on what plans are for what's left of the station.

### I Beg Your Pardon!

Cleveland, Ohio's classical music station conducted a survey, asking listeners what they'd like to see changed at the station. The answer: more music, less talk. So WCLV-FM 95.5 dropped several lifestyle features, cut the number of contests and muzzled the announcers to 45(!) second record introductions. An accompanying ad campaign tells listeners, "You told us to shut up! That's what we're doing."

The switch is on. New York City's WYNY-FM 97.1 ("Country 97") and Lake

Success/New York City's WQHT-FM 103.5 (Urban, "Hot 103.5") traded frequencies. Both are conducting heavy campaigns to tell listeners of the change.

It wasn't too long ago that residents of Luling, Texas, were startled by KAPT-FM 100.9's choice of programming. For two days they played nothing but sound effects records. The purpose was either to draw attention to the station or drive off its former audience in preparation for a format change. Such tricks are not unusual. When one of the stations mentioned earlier went all-Elvis, a competitor reportedly went all-Wayne Newton for an afternoon as a joke.

A bandscan of the southeastern Pennsylvania, New Jersey, Delaware and northern Maryland FM band shows a surprising number of Family Radio (WYFR-SW) outlets: WFME 94.9 Newark, New Jersey, WKDN 106.9 Camden, New Jersey, and WFSI 107.9 Annapolis, Maryland. The broadcast group is also stocking up on translators (low-power transmitters used to increase coverage) as well.

Says Dr. Bruce Elving, "Family Station translators evade mention of actual city of translator service or site by listing applications under obscure places, probably so as not to alert affected parties as to the real locations of such translators." Dr. Elving gives the example of one Family Radio translator on 89.5, which is listed under the small towns of Badger, Manson and Callender, Iowa, and not the bigger city, Fort Dodge, Iowa.

The Criswell Institute for Biblical Studies is selling their FM, 89.5 KADE. Criswell also owns KCBI, the struggling, more-off-than-on shortwave station in Dallas, Texas. Taken together, do these two items point toward the sale of the shortwave outlet as well. Despite a lot of promise, KCBI-SW never really got off the ground and it could bring in a good price, especially if the FCC's rumored moratorium on new U.S. shortwave stations comes to pass.

## New Stations

Look for the following new stations: 104.3 Eutaw, AL; 100.5 East Porterville, CA; 720 and 1060 Templeton, CA; 104.1 Woodlake, CA; 105.5 Metropolis, IL; 1420 La Porte, IN (rebroadcasts WIMS); 98.9 Jefferson, IA; 101.3 Selbyville, KY; 105.9 Opelousas, LA; 107.1

Fairhaven, MA; 98.1 Glen Arbor, MI; 102.3 Port Huron, MI; 92.5 Richmond, MO; 101.5 Meredith, NH; 100.5 Roswell, NM; 95.9 Santa Rosa, NM; 93.9 Dansville, NY; 98.5 Waterloo, NT; 94.1 Whitehall, NY; 100.3 Taft, OK; 1040 Tgard, OR; 88.1 Erie, PA; 107.9 Williamsport, PA; 105.3 Humbolt, TN; 760 Knoxville, TN; 95.7 Danville, VT; 750 Reston, VA; 99.9 Rocky Mount, VA; 720 Long Beach, WA; 95.3 Medical Lake, WA and 104.1 Bridgeport, WV; 1570 Elk Hills, WV. All courtesy of Bruce Elving's *FMedia!* and NRC's *DX News*.

## For Sale

AM station in small north Florida market, \$165,000 (Hadden & Associates 407-365-7832). Salt Lake City, Utah AM, 10 kw day, 1 kw night on 1120 kHz. New facility with 46 acres of land, \$1.5 million (Jack French, 702-731-5452). AM/FM combo in northern Alabama, \$710,000. AM/FM in northwest Idaho, \$520,000. AM/FM, Colorado, \$1.5 million (Business Broker Associates 615-75607635). 5,000 watt KPHD-AM, Conroe, Texas, via sealed bid (Norman Fischer & Associates 512-476-9457).

Best FM DX catch of the month: WEBE-FM 107.9 in Westport, Connecticut. The editor received this "Hits of a Whole Generation" station in Thorndale, Pennsylvania, for a distance of about 175 miles. WEBE-FM serves southern Connecticut's New Haven and Fairfield counties with 50,000 watts of power, power.

Remember, next month (usually around December 21) is the secondary peak for long-distance FM reception. We'll have a special, easy-to-do, under-\$35.00 project to help you get ready in the December issue.

## International Bandscan

Hot Flash! The NRC's Chuck Hutton reports a new station on Nevis Island (Caribbean). It's on 895 with 10 kw of power but no reports of reception as of yet. Call letters are VON. Cuba's Radio Taino, which IDs as "Tour[ist] Radio," has added 830 kHz to its 1040 and 1160 kHz lineup. U.S. stations sharing the 830 frequency, like WADU in Norco, Louisiana, KABN, Long Island, Alaska and WCCO in Minneapolis, Minnesota have all complained of interference. Taino programs

some English, like the *Havana Jody* program and *Treasure Island*, calling itself "Havana's one and only vacation station."

AM radio triumphs in Ottawa, Canada. According to the *Ottawa Citizen*, the hottest station in the capital is "Energy 1200" (CFGO), beating CHEZ-FM for the teen market. The secret of their success? Few songs from before 1984 played in a hot enough rotation to attract and hold the boppers. Meanwhile in the Great White North, the Toronto Blue Jays have extended their contract with CJFL, Toronto, ending speculation that the baseball games would end up on CFRB after the 1989 season.

Latin American changes: 1580 Radio Payaqui (TGPY), Esquipulas, Guatemala, moves to 1250 kHz. In the Dominican Republic, Radio Rutas Musical (HIMG), La Romana, drops ten kHz from 1360 to 1350 and 1560 Radio Maiba (HIJZ) in Santiago goes to 1430. More musical chairs: In Bolivia, 1110 Radio Fides (CP29), Fides, takes over 760 AM and 920 Radio Esperanza (CP192), Aiquile, is now broadcasting on 990 kHz.

Richard Wood in Hawaii heard 774 Fiji, Suva, this summer on his new 2,000 foot Beverage antenna. English news is at 0700 UTC. Don't try to do this one at home. Dr. Wood is a trained professional.

The Satellite Music Network is now feeding four U.S. music formats to China. They'll be carried by the Shanghai People's Broadcasting Station.

Tokyo, Japan now has a second commercial FM station. Programming on new "FM Japan" will come from the U.S. and will blend new age and contemporary jazz, the latter quite popular in Japan. FM Japan's only other competitor on the nation's abbreviated FM band (76-89 MHz) is block-programmed JOAU, 80.0. Tokyo is also served by a non-commercial government (NHK) FMer, JOAK on 82.5 MHz.

Credits: Much of the information contained in this report was drawn from a number of excellent publications and people. Special thanks go to *Broadcasting*, *CIDX Messenger* (Alain Pepin), *Ottawa Citizen*, *NRC's DX News* (Chuck Hutton, Jerry Starr), *FMedia!* (Dr. Bruce Elving), Sam Horton, *Insight*, MARE (Harold Frodge), Ken Minnis, *New York Post*, *Washington Post*, *Radio World* (Lee Frizzell, Judith Gross), Scott Tawl, and *WRTH LA-NL* (T.H. Ekblom) for making it possible. For information on how to subscribe to any of these publications, send an SASE and an additional mint 25 cent stamp to American BandScan, c/o this publication.

**NEWSROOM**



## While They Were Sleeping

The typical DXer may think he may never come across a newsworthy event before the professionals do. That is not always the case. You could discover one day that you scooped both the FCC and a paper as prestigious as the *Miami Herald*. That is what happened to John Demmitt, a frequent contributor to this column.

In past columns we have reported on the "radio war" between Cuba and the United States. During the summer months, Cuba fired up its powerful -- up to 500 kilowatts -- medium wave transmitters on a number of occasions. Since this had occurred before, no one was too surprised to hear the Cubans on their usual frequencies of 1040 and 1160 kiloHertz. And apparently most looked no further than there.

However, Demmitt did, and found the Cubans on 830 kHz at 1150 p.m. EDT, with their Radio Taino (Tour Radio) programming in both Spanish and English. The FCC eventually did come across this, but not until a week later! In fact, they requested information from Demmitt on his loggings! Reception of Radio Taino on 830 was also reported by Florida's Terry Krueger in the bulletin of DX South Florida, but the *Miami Herald* in its report on Cuban radio interference never got around to mentioning the situation on 830.

Incidentally, a friend of Demmitt's who also logged some of the transmissions on 830 stated they were being received very strongly in northern Ohio. So, much of the North American continent might find it interesting to keep an ear tuned to the Cubans these days. You may be surprised at what you hear and where you hear it. And you might even hear it before the FCC!

### Down to the Sea in Ships

We are grateful to our old friend Havana Moon for another item in the Cuban-American "broadcasting war." It appears that Cuban exile groups grown weary of the delays in putting TV Marti on the air decided to make their own television transmission to Cuba. A fishing boat was fitted with a transmitter, and channel 12 selected for the telecasts. The boat was anchored just outside Cuban territorial waters. It appears the project was entirely or primarily the effort of Cuba Independiente y Democratica, which in recent years has been the most successful of the anti-Castro radio broadcasters.

Those who followed the adventures of Radio Newyork International are well aware that the federal authorities do not take kindly to offshore broadcasting even if in international waters. The FCC protested, and the Coast Guard, which had assisted the FCC in the shutting down of RNI, sent a ship to shadow the exile boat. The would-be-telecasters were warned their boat would be seized the minute they began to transmit. Apparently in the face of this threat no telecasts were ever made, but we have to applaud the folks at CID for their creativity! And if you just happen to be anywhere near Cuba, it might not hurt to monitor channel 12, at least occasionally!

But that is not all the action at sea in recent months. We are deeply indebted to an anonymous reader who was kind enough to send us a detailed report on the Radio Newyork International situation by William Coughlin of the *Boston Globe*.

According to Coughlin's article, the Coast

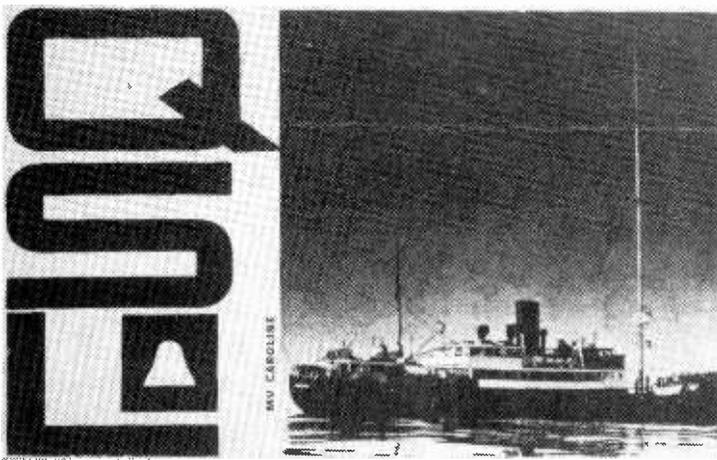
Guard blocked Alan Weiner's attempt to take RNI's ship, the Sarah, out of Boston harbor. Although it is impossible to say with certainty, it is possible that had she made it, RNI may have been able to make good on Weiner's promise to return to the air. The Coast Guard admitted the ship had undergone extensive renovation and that even its transmitting tower "appeared in decent shape."

The Coast Guard blocked the Sarah's departure by claiming she did not comply with federal regulations on pollution control and financial responsibility. Her Honduran registry has also expired.

But if you will forgive a bit of editorializing at this point, Weiner, the Sarah, and RNI may be down. They are not out. In the area of unlicensed broadcasting there are few who have ever been able to show the ingenuity, creativity, and perseverance of Al Weiner. It seems reasonably safe to say that somehow, somewhere, someday, RNI will return. Stay tuned to 6240, 1620, and maybe a few other places as well. Again thanks to our anonymous contributor for this very helpful information.

And before returning to dry land, we have one more nautical tale to tell. When European commercial offshore pirate Radio Caroline began shortwave transmissions on 6210 and 6215 earlier this year many North American listeners discovered that hearing Caroline is far easier than verifying her, at least directly anyway. It is true that some of the religious organizations that lease time on Caroline will verify.

However, there was a time when Caroline did have her own QSL card. Robert Moore,



	
<p>We wish to confirm your listening report of our transmission on <u>18</u> / <u>June</u> 1964 <u>1230</u> hrs G.M.T.</p>	
<p><b>Location:</b> International Waters. off Harwich, North Sea.</p>	
<p><b>Transmitter Output:</b> 2x10 K.W.</p>	
<p><b>Frequency:</b> 1520 Kc/s. 197.5 metres Medium Wave Band</p>	
<p><b>Aerial:</b> Vertical folded unipole 168 feet high (180 feet above sea level) Best 73s</p>	
<p><i>J. Conway</i> QSL Manager</p>	
<p><u>A2C Robert L. Moore,</u> <u>81st Camron F.M.,</u> <u>Box 246</u> <u>Bentwater</u> <u>Nr Woodbridge, Suffolk</u></p>	

now of Colorado, but once a member of the American military stationed in Britain, has sent along a vintage 1964 QSL for a 1520 kHz logging. Since this is such a rarity, we are reproducing both sides of it. Well done, Bob! We will have an update on doings at Caroline next month.

## Those Landlubbing Pirates

Meanwhile, back on terra firma, pirates are being heard, and perhaps with a bit more frequency than in past months. With the heart of the DX season now just about upon us, this should inspire all of us to get busy. We may be well rewarded.

From Connecticut, Bob Doyle bagged an unidentified pirate on 3200 from 0102 to 0145 UTC with an old radio drama. This could be a sign of the times. Some pirates appear to be shifting to the lower frequencies.

Cathy Turner of New York continues to have great success in monitoring pirates. She heard WYMN on 7425 at 2344 UTC. This station is entirely staffed by women. It uses the P.O. Box 5074, Hilo, Hawaii 96720, mail drop, and is a good verifier. While on this subject, we might note that a highly reliable source has informed us the Hilo drop is now under new management. There could be some delays in forwarding your reports, but they will definitely be sent on their way, so don't worry.

Cathy also came across KNBS "the station with your mind in mind." It was on 7415 at 0256 and announces Box 982, Battlecreek, Michigan 49016, as its address. KNBS might be considered one of the more unusual pirates around these days. Log it, and you will discover for yourself what we mean.

Secret Mountain Laboratory made it into Cathy's receiver at 0335 UTC on 7410 as did an unidentified pirate with possible transmitter problems on 7420 at 0000 UTC. As you can see from Cathy's success, there is plenty to be heard. Let us know what you are hearing!

## Radio Dublin

By way of Connecticut's Gregg Bares we have heard of an unusual appeal from Radio Dublin. Many readers will know that Radio Dublin has been around for over two decades, 22 years to be exact. During much of that time it has been on shortwave (6910, 6930, 6950 kHz) and has often been received on the east coast of North America. On some occasions it has even made it all the way to the west coast.

In an appeal to shortwave listeners, Director Eamon Cooke notes that soon the Irish authorities will be issuing licenses to the many stations such as Radio Dublin which have been operating for years without one by virtue of a legal loophole. These will be only for medium wave and FM broadcasting. Radio Dublin, which has made far greater use of shortwave than any Irish station, licensed or unlicensed, plans a court battle to seek a shortwave license. It would also like to increase its power on shortwave so that it could be better heard in both Europe and North America.

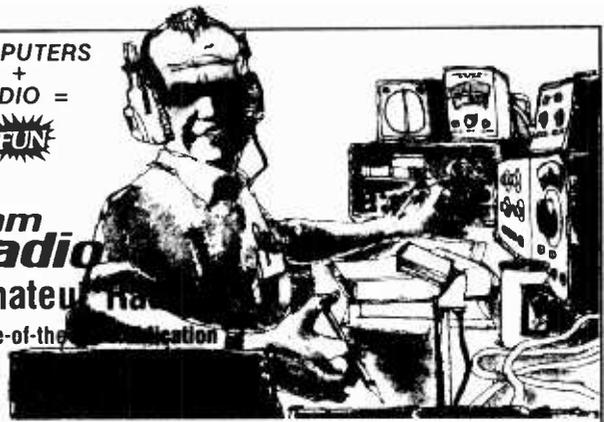
The station is soliciting funds from listeners to assist it with the above efforts. Such appeals have been very rare from shortwave broadcasters, but perhaps Radio Dublin feels its situation is a very unusual and important one. If you wish to contact them, the address is Radio Dublin Limited, P.O. Box 2077, Dublin 8, Ireland.

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## The Continuing Saga of KKN39

A name known to many readers is that of well-known author and radio expert Harry Helms. Harry writes from California to give us some additional insight on alleged State Department CW station KKN39. We previously reported that KKN39 had been involved in round-the-clock (since terminated) transmissions on 4956.

Helms reports that last year he caught them on 4957.2 with a raspy signal sounding much like an old spark telegraphy system. A few days later he heard them on 4956.7 with an even worse signal, much like "keying an unfiltered AC power supply." The next night they were on the same frequency but with a "smooth, pure DC note." He has also caught them on 13388.6 with marathon transmissions.

One might wonder why a government station would put out signals with the above characteristics. Unfortunately, the folks at KKN39 are not talking. They declined to reply to Harry's reception report.

You might find it quite fascinating to monitor the various State Department stations located in the Washington area, various embassies, and also at other locations we are not supposed to know or inquire about. They use the "KKN" prefix and will be in CW, often with frequent IDs. Let us know what you hear. Finally we might mention that John Demmitt states that these shortwave stations are a backup for the State Department's satellite communications system.

Pirates, clandestines, and all sorts of other "things that go bump in the night." There is something out there for everyone. In this new DX season, tell us what your interests are and what you are hearing. Good luck, and good hunting.

## Marine Beacons

There are two kinds of beacons in the low frequency band, aeronautical and marine. This month we are going to discuss the marine beacons.

Most of the marine beacons are concentrated between 285 and 325 kilohertz. A number of aeronautical beacons are also located on these frequencies, but care has been taken to minimize conflict between the two types.

In some instances, a marine beacon may also be used as an aeronautical beacon. What this means is that the same beacon will appear on both marine lists and aeronautical lists as they are shown in official publications for mariners or pilots.

Marine beacons are further divided into two types, continuous and sequenced. The continuous beacon operates similarly to the aeronautical beacon. It sends its ID repeatedly over and over. The sequenced beacon operates for one minute and then goes silent. This permits another sequenced beacon from another location to operate on that same frequency in the next minute.

The cycle for sequenced beacons is six minutes, permitting up to six different beacons to operate on the same frequency. On some frequencies, three sequenced beacons have operated by transmitting twice in every six minute period. The first beacon is on during minutes one and four; the second transmits during minutes two and five, and the third during minutes three and six.

Both the continuous beacons and the sequenced beacons transmit a steady tone during the final ten seconds of each minute they transmit. The purpose of this constant tone is to permit the mariner to sharpen his bearing using his loop antenna.

The sequenced marine beacon is slowly becoming an endangered species. Originally, the marine beacons were intended for commercial shipping. The professional sailor was experienced at taking multiple visual bearings to determine his precise location. The sequenced beacons enabled him to "see" several beacons from one setting of his radio. This was a familiar method of working and quite acceptable.

Today, the commercial ships have much more sophisticated equipment such as Loran and radar. Thus, the marine beacons are becoming a tool for the pleasure boater. The sequenced beacon may be a little complex for the occasional sailor. Just when he thinks he has identified the beacon, it sends a long tone and changes to something else. Thus, Coast Guard operations in both the U.S. and Canada are phasing out the sequenced beacons in favor of continuous marine beacons.

Most Great Lakes marine beacons shut down during the height of winter. The navigation season comes to a halt until spring. However, when they closed down last year, many did not return. A few of the others remained on the same frequencies, but operated continuously when they returned to the air in the spring.

Too, most of the survivors had switched to new frequencies. This did cause some bunching up on frequencies. This was generally handled by putting beacons from widely spread areas on

the same frequency. For example, Racine, Wisconsin, and the northern edge of Lake Superior. Or Toledo with Georgian Bay.

Ocean beacons operate throughout the year. Thus, there wasn't any convenient time to make changes there. The Canadian sequenced beacons began moving to new

frequencies and continuous operation early in the summer. Because of the close cooperation between the Canadian and U.S. Coast Guard operation, it followed that the U.S. beacons did likewise. The table presents new frequencies for marine beacons in this area.

Table 1  
New Frequencies

296 B	Quatsino BC
299 P	Cape Flattery WA
305 P	Pine Island LT BC
Q	Pont Wilson WA
307 G	Sand Heads LS BC
309 J	Race Rocks LS BC
312 CB	Cape Beal BC
313 G	Smith Island WA Atkinson BC
314 H	Langara Point BC
315 M	Sisters Island LS BC
317 K	Ediz Hook WA
319 TC	Ethelda Bay BC
320 V	Pt. Atkinson BC
323 U	New Dungeness WA
329 D	Carmanah BC

Note that Carmanah is just outside of the normal marine beacon frequencies.

Sequenced beacons in the Canadian maritime provinces are also apparently scheduled for either conversion to continuous or elimination in 1988. At least 18 are known to be scheduled for total elimination. If you live within range of these beacons, it might be worth a special effort to log them before they fade away into memory.

Although no plans are known for the sequenced beacons along the south Atlantic coast or in California, it also seems likely that all sequenced beacons will disappear in the not too distant future.

Weather broadcasts have been eliminated from many aeronautical beacons, but the beacons remain on the air. Sequenced beacons are giving way to continuous marine beacons. The total number of beacons is steady to showing a slight increase, but the nature of the beacons is changing to reflect today's needs.

*The sequenced beacons may be a little complex for the occasional sailor. Thus, they are being phased out.*



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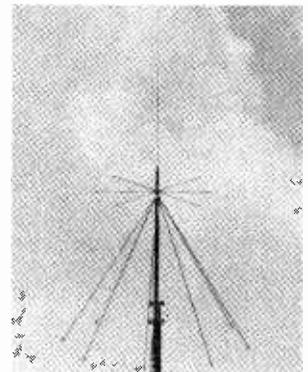
Designed for use with the ICOM R7000 receiver (25-2000 MHz continuous coverage), the AH7000 discone consists of 16 rugged, stainless steel elements and is capable of transmitting up to 200 watts in the amateur 50, 144, 220, 432, 900, and 1200 MHz bands.

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## Talk to Your House

The Electronics Industries Association's Consumer Electronics Group has announced that a new technology -- HPL or Home Products Link -- will be unveiled at the Winter Consumer Electronics Show in Las Vegas (otherwise known as Lost Wages) January 7-10.

HPL is a communications standard for home automation, and it includes the media, a control language, and an application language. The media are the physical carriers of the message, including power lines, telephone wiring, coaxial cable, and infrared remote control. Carried by the media, the control language will "contact" the system to be controlled -- home entertainment equipment, major appliances, heating and air conditioning, and so forth -- and the application language will tell it what to do: for example, turn the dishwasher on at 8:00 p.m.

The ultimate goal of this development: to allow folks like you and I to automate our homes in small steps without obsoleting any previously purchased appliances. As a full time computer user, this concept sounds both intriguing and spooky to me. It might offer a lot of capabilities, but at the same time, I'd want to make sure there was a graceful way to back out of the system in case something went wrong. You know what they say: To err is human, but to really screw things up, you need a computer. To find out more about HPL, contact the Consumer Electronics Group at 20001 Eye Street N.W., Washington, DC 20006 or phone (202) 457-4919.

## Beam Me Up!

Recently, Conference Express inaugurated a world-wide public video teleconferencing service with opening of an always-open videoconferencing room on the ground floor of New York's Park Avenue Atrium. Similar videoconference rooms -- in Los Angeles, San Francisco, Chicago, and Toronto -- are planned to open this fall.

Conference Express clients will be able to conduct two-way face-to-face meetings all over the world via The Meeting Channel, a state-of-the-art digital communications network linking over 350 similar videoconference rooms in the U.S., Canada, and 23 other countries. The network is owned and operated by U.S. Sprint.

An obvious possible application would be to get DXers from all over the world together without having to transport their physical selves from one place to another. A sort of long distance ANARC-Y, if you will forgive the pun. Forget the plane ticket, just send me your video electrons!

The cost of all this high-tech slickery is not cheap: a one-hour two-way videoconference between New York and Chicago is \$750; New York to Tokyo is \$3,000 per hour, but if enough people were participating, it might be worthwhile. For more information, contact FP Model & Company, a PR firm at 37 Riverside Drive, New York, NY 10023 or call (212) 362-5141.



Motorola SPECTRA  
conventional mobile  
radio with encryption  
capability

## Signs of the Times

This next is not strictly a consumer electronics story, but it sure could have an impact on MT readers.

Motorola has announced that its SPECTRA mobile radio is now available for conventional VHF (136-174 MHz) and UHF (450-512 MHz) broadband operation. The SPECTRA is available as a dash or remote mount in three configurations, each with a set of standard features.

The SPECTRA A3 is available with a hand-held control head/microphone, 99 channel capacity, and a gadget that allows the dispatcher to identify a specific mobile operator at the beginning of each transmission. The SPECTRA A5 has an alphanumeric display for easy identification of channel name, 128 channel capacity, and telephone interconnect capability.

The SPECTRA A7 includes a "Call Alert" feature that allows the dispatcher to page an individual mobile unit without disturbing any others. Power output is 50 watts VHF, 40 watts UHF. There are lots of other goodies, too. Since these radios cost \$1300 to \$1800 retail, they ought to be loaded with features, and they are.

Mike Loveland, Product Planning Manager for Motorola, tells me SPECTRA has been available for higher frequencies for about a year and has already been installed in the 900 MHz range in Los Angeles, Chicago, and New York. It seems these cities have run out of 800 MHz spectrum!

So what makes this news? I'm glad you asked. Here it is: the SPECTRA radio is available with SECURENET digital voice encryption. The user just flips a switch, and the \$500 digital coding option makes sure that, while others may overhear the transmissions, they sure won't be able to make sense out of it.

At the heart of SECURENET is numerical encryption scheme. Motorola loads part of it into each radio for a particular city, and the people in charge of the radio system load another 12-digit code they select into each radio. When the radio is keyed up, the voice is digitized, scrambled according to the code, transmitted, received, sent into a digital descrambler at the receiving end, and descrambled. It finally comes out of the loudspeaker in a recognizable way.

Without the SECURENET descrambler, there is no practical way to decypher the message. Chuck Sackley, manager of Motorola's Secure Communications Strategic Business Unit, said "There are 2.36 times 10 to the 21st power combinations. If each possible combination were represented by a grain of sand, it would fill Cook County (Illinois) to the height of the Sears Building."

He reckoned it would take about one full year of dedicated processing time with a Cray computer (like the NSA uses) to break the code just once. And many federal agencies, Sackley says, electronically change the code before each mission.

SECURENET has been available with various Motorola radios for about ten years, but the availability of this sophisticated encryption system with yet another new radio points out a trend that MT readers will have to deal with -- encryption is on the rise.

What shall we do? What can we do? I think we should applaud encryption and educate our law enforcement officials.

Here's why. From time to time on TV you will see law enforcement personnel complaining that scanners allow the bad guys to stay one step ahead of them. And it's true. The availability of scanners to just anyone is something of a problem that can reduce the effectiveness of law enforcement.

But the matter doesn't end there. Laws like the Electronic Communications Privacy Act are stupid; they put the burden of secure communications on the listener, rather than the person sending the

message. This is contrary to our fundamental right to listen to the airwaves.

As a result, rather than take away my scanner or design it so that it can't receive certain frequencies, I favor the sparing use of encryption when it makes sense to law enforcement agencies for tactical reasons.

At the same time, it also makes sense that communications should be "in the clear" the rest of the time. The success of some neighborhood watch groups has shown that a public with access to police communications can be a positive force for good. For the sake of our neighborhoods and our hobby, shouldn't we communications monitors point this out to our law enforcement officials?

When it comes to big time sports, though, all bets are off. Recently when Dennis Conner and the catamaran *Stars and Stripes* beat the *New Zealand*, Motorola radios equipped with SECURENET helped make sure the Kiwis couldn't electronically eavesdrop on the U.S. team's efforts. Conner was similarly equipped when he recaptured the Americas Cup off Freemantle, Australia.

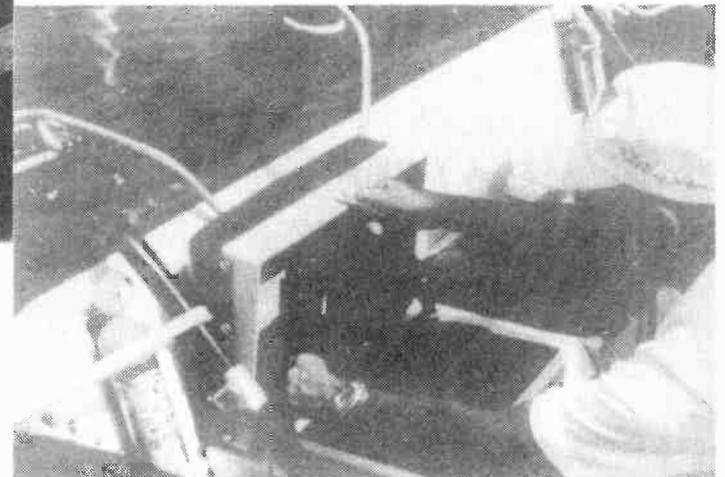
Until next time, if you want to share your favorite discovery or pet peeve in the world of consumer electronics, write to me c/o Monitoring Times.



Portable radio communications were vital to skipper Dennis Conner when important instructions had to be relayed to his crew members. Motorola's Securenet system was used to transmit information that could jeopardize the outcome of a race if overheard by a competitor.



By using a 4800 bit-per-second modem, the "Stars and Stripes" crew were able to monitor boat speed, headings, window angle, mass rotation, position, hull stress and other data, which was sent from the boat to an on-shore computer.



# Program Review

## The Musical Week

### MULTITRACK 1: TOP TWENTY \*\*\*\*

If you feel visceral pangs whenever you run across pop or rock music on shortwave, then read the next review. But if you are one of the apparently few shortwave listeners who enjoy the stuff, then you will undoubtedly also enjoy the BBC's "Multitrack 1."

The program is really a reincarnation of the popular "Top Twenty" show, which has been on the air in one form or another for a long time.

"Multitrack 1," though, has some welcome added features. One is the "Chartbuster." This is a newly released song which the producers hope will hit the charts soon. An example? Steve Winwood's "Roll With It," which was played fully two months before the song hit #1 in the United States! Another feature is the playing of small bits of all top five singles. This helps the regular listener remember how the songs sound!

Paul Burnett, the host, is a seasoned disc jockey (ten years with the BBC World Service alone), who avoids the major D.J. sin of talking too



Paul Burnett presents the BBC's Multitrack 1: Top 20 program

much! This in itself is a major plus.

Indeed, Burnett once had a chart hit himself - with fellow World Service presenter Dave Lee Travis, of "A Jolly Good Show" fame, under the wonderful name of "Laurie Lingo and the Dipsticks." The record reached #4 in the U.K..

Overall, "Multitrack One" is top-notch stuff and highly recommended to pop music fans.

(BBC World Service, weekly; Mondays 1830, repeated at 2330; Tuesdays 1215.)

### HAPPY STATION \*\*\*\*\*

"Happy Station" is, quite simply, probably the most entertaining program on the air today. No other program can quite match the combination of music, letters, and banter of the "Happy Station."

"Happy Station" claims to be the oldest shortwave program in the world, a claim that's probably true. Originated in 1928 (it is celebrating its 60th anniversary this year), it has been hosted by only one person other than the current host: Eddie Startz. He held the reins for an incredible 42 years before yielding to Tom Meyer. Meyer himself is no "flash in the pan," having hosted the show for the last 18 years. In addition, he hosts the Spanish version, "La Estacion de la Alegria," which is equally delightful.

The program covers about everything, but shies away from political subjects and the like. Rather timid, perhaps, but shrewd, nevertheless.

Meyer's style is the real highlight of the show, though. It is hard to describe, but Meyer conveys a sense of extreme friendliness and warmth which is certainly gratifying to listeners, and perhaps the main attraction that keeps listeners tuning in each week.

No more need be said: listen to "Happy Station"!

(Radio Netherlands, weekly; Sundays 0730, repeated 0830, 1030, 1130, 1430, 1630, 1830, 2030; Mondays 0230, 0530. Also, "La Estacion de la Alegria," weekly; Sundays 0600, 1230, repeated 2030, 2230, 2330; Mondays 0130, 0330)

### SUNDAY CONCERT (Not Rated)

Sunday concert is a selection of classical music, usually tied together by some thematic chord. That "chord" might be pieces played by the Slovak Chamber Music Orchestra, pieces played at a Czechoslovak music festival or works by Czech composers or performers. As you might guess, "Sunday Concert" is broadcast by Radio Prague.

(Radio Prague, weekly; Sundays 0135 and 0335.)

### OUR MUSICAL PAGE

(Not Rated)

This weekly program features works by Albanian composers, singers or musicians, including folk music. Not surprisingly, most of the more modern tunes have a patriotic theme. Consider that Radio Tirana's interval signal is the patriotic march, *With Pickaxe and Rifle*.

(Radio Tirana, Wednesdays 0240-0250 on 7065 and 7500)

The last two program reviews were taken from Alex Batman's column in FRENDEX. If you have comments on a particular program which you've heard on shortwave, we invite you to send them to the program reviewer at the address on page 59. Full reviews are welcome and should be approximately 200 words in length.

# Your Guide to Shortwave Listening in November

## How to Use This Section

This is your daily guide to the programs being broadcast on the international bands. Wherever possible, actual advance program details for the listed stations are included. To use this section, simply look up the day on which you are listening, check the time, and decide which program interests you. Then go to the frequency section in order to locate the frequency of the station/program on the dial.

All days are in UTC. Keep in mind that the new UTC day begins at 0000 UTC. Therefore, if you are listening to the shortwave at 7:01 PM [EST] on your local Thursday night, that's equal to 0001 UTC and therefore *Friday* UTC.

We invite readers to submit information and reviews about their favorite programs. These must be in UTC day and time and can be sent to program manager Kannon Shanmugam.

We also invite broadcast stations to submit advance program details for publication in *Monitoring Times*. Copy deadline is the 1st of the month preceding publication [i.e. details for programs to be broadcast in December must be received by Kannon Shanmugam by November 1st. Information can be FAXed via 1-704-837-2216 and should indicate clearly that it is to be submitted to the *Monitoring Times* program guide.

**Program Manager:**  
Kannon Shanmugam  
4412 Turnberry Drive  
Lawrence, KS 66046

### Key to Program Ratings:

\*\*\*\*\* - outstanding  
\*\*\*\* - excellent  
\*\*\* - good  
\*\* - fair  
\* - a waste of your time

Revisions are in store for the BBC World Service schedule this month, but were not available at press time, so BBC schedules below are subject to change.

BBC - BBC, London, England  
KI - Kol Israel, Jerusalem  
KYOI - KYOI, Saipan  
RAI - Radio Austria Int'l, Vienna  
RCI - Radio Canada Int'l, Montreal  
RJL - Radio Jamahiriya, Tripoli, Libya  
RP - Radio Portugal, Lisbon  
VOFC - Voice of Free China, Taipei  
WCSN - WCSN, Boston, Massachusetts

## Sunday

6th, 13th, 20th, 27th

0000 BBC: World News  
0009 BBC: News about Britain  
0010 KI: Spotlight  
0015 BBC: Radio Newsreel  
0030 BBC: Music Series  
0030 RAI: Report from Austria  
0100 BBC: News Summary  
0100 RAI: Shortwave Panorama (SW radio)  
0101 BBC: Play of the Week  
0108 RCI: SWL Digest - \*\*\*\* - Experienced listeners may find this a bit basic; Glenn Hauser's DX news a plus.  
0110 KI: Spotlight  
0115 RAI: Music for You  
0130 RAI: Austrian Coffeetable  
0200 BBC: World News  
0209 BBC: British Press Review  
0215 BBC: A Choice of Verse  
0230 BBC: The Ken Bruce Show (music mix and entertainment news)  
0300 BBC: World News  
0309 BBC: News about Britain  
0315 BBC: From Our Own Correspondent - \*\*\*\* - Good in-depth news stories.  
0330 BBC: Just a Minute (quiz show)  
0400 BBC: Newsdesk  
0400 RAI: Austrian Coffeetable  
0430 BBC: Classical Music  
0430 RAI: Report from Austria  
0445 BBC: Film/Light Music  
0500 BBC: World News  
0509 BBC: Twenty-Four Hours (news magazine)  
0530 BBC: Financial Review  
0540 BBC: Reflections (religion)  
0545 BBC: Letter from America - \*\*\*\*\* - Alistair Cooke's distinctly British view of America.  
0600 BBC: Newsdesk  
0630 BBC: Jazz for the Asking  
0700 BBC: World News  
0709 BBC: Twenty-Four Hours (news magazine)  
0730 BBC: From Our Own Correspondent - \*\*\*\* (see Sun 0315)  
0745 BBC: Words  
0750 BBC: Waveguide - \*\* - DX program geared toward neophyte listeners.  
0800 BBC: World News  
0809 BBC: Reflections (religion)  
0815 BBC: The Pleasure's Yours (classical music requests)  
0900 BBC: World News  
0909 BBC: British Press Review  
0915 BBC: Science in Action  
0945 BBC: Talks  
1000 BBC: News Summary  
1001 BBC: Short Story  
1010 KI: Mainstream  
1015 BBC: Classical Record Review  
1030 BBC: Religious Service

1100 BBC: World News  
1109 BBC: News about Britain  
1115 BBC: From Our Own Correspondent - \*\*\*\* (see Sun 0315)  
1130 BBC: Music Series  
1130 RAI: Sunday Special  
1200 BBC: News Summary  
1200 RAI: Austrian Coffeetable  
1201 BBC: Play of the Week  
1300 BBC: World News  
1309 BBC: Twenty-Four Hours (news magazine)  
1330 BBC: Sports Roundup  
1345 BBC: The Tony Myatt Request Show (pop music)  
1400 BBC: News Summary  
1401 BBC: The Tony Myatt Request Show, continued (pop music)  
1430 BBC: Just a Minute (quiz show)  
1500 BBC: Radio Newsreel  
1515 BBC: Concert Hall  
1600 BBC: World News  
1609 BBC: News about Britain  
1615 BBC: Feature  
1645 BBC: Letter From America - \*\*\*\*\* (see Sun 0545)  
1700 BBC: World News  
1709 BBC: Commentary  
1715 BBC: Jazz for the Asking  
1745 BBC: Sports Roundup  
1800 BBC: Newsdesk  
1830 BBC: Music Series  
1900 BBC: News Summary  
1901 BBC: Classical Record Review  
1920 KI: Calling All Listeners  
1925 KI: DX Corner - \* - a dreadfully boring rehash of old or irrelevant SW news. Try instead RCI's "SWL Digest" at 2308 UTC!  
2000 BBC: World News  
2009 BBC: Twenty-Four Hours (news magazine)  
2030 BBC: Sunday Half-Hour (religious feature)  
2100 BBC: News Summary  
2101 BBC: Short Story  
2115 BBC: The Pleasure's Yours (classical music requests)  
2140 KI: The Week in Review  
2155 KI: DX Corner - \* (see Sun 1925)  
2200 BBC: World News  
2209 BBC: A Choice of Verse  
2225 BBC: Book Choice  
2230 BBC: Financial Review  
2240 BBC: Reflections (religion)  
2245 BBC: Sports Roundup  
2300 BBC: World News  
2308 RCI: SWL Digest - \*\*\*\* (see Sun 0108)  
2309 BBC: Commentary  
2310 KI: Calling All Listeners  
2315 BBC: Letter From America - \*\*\*\*\* (see Sun 0545)  
2325 KI: DX Corner  
2330 BBC: Feature

# Your Guide to Shortwave Listening in November

## Monday

7th, 14th, 21st, 28th

0000 BBC: World News  
 0009 BBC: News about Britain  
 0015 BBC: Radio Newsreel  
 0030 BBC: Religious Service  
 0030 RAI: Report from Austria  
 0040 KI: The Week in Review  
 0100 BBC: News Summary  
 0101 BBC: Drama/Feature  
 0110 KI: Calling All Listeners  
 0145 BBC: Music Series  
 0200 BBC: World News  
 0209 BBC: British Press Review  
 0215 BBC: Peebles' Choice (music)  
 0230 BBC: Science in Action  
 0300 BBC: World News  
 0309 BBC: News about Britain  
 0315 BBC: Good Books - \*\*\*\* - Detailed opinions on specific books.  
 0330 BBC: Anything Goes (odd recordings)  
 0400 BBC: Newsdesk  
 0400 RAI: Music for You  
 0405 RAI: Shortwave Panorama (SW radio)  
 0430 BBC: Reading  
 0430 RAI: Report from Austria  
 0445 BBC: Nature Notebook  
 0500 BBC: World News  
 0509 BBC: Twenty-Four Hours (news magazine)  
 0530 BBC: Waveguide - \*\* (see Sun 0750)  
 0540 BBC: Reflections (religion)  
 0545 BBC: Recording of the Week  
 0600 BBC: Newsdesk  
 0630 BBC: Feature  
 0700 BBC: World News  
 0709 BBC: Twenty-Four Hours (news magazine)  
 0730 BBC: Feature  
 0800 BBC: World News  
 0809 BBC: Reflections (religion)  
 0815 BBC: Reading  
 0830 BBC: Anything Goes (odd recordings)  
 0900 BBC: World News  
 0909 BBC: British Press Review  
 0915 BBC: Good Books - \*\*\*\* (see Mon 0315)  
 0930 BBC: Financial News  
 0940 BBC: Sports Roundup  
 0945 BBC: Peebles' Choice (music)  
 1000 BBC: News Summary  
 1001 BBC: Feature  
 1010 KI: Spectrum  
 1030 BBC: The Vintage Chart Show  
 1100 BBC: World News  
 1109 BBC: News about Britain  
 1115 BBC: Health Matters  
 1130 BBC: The Ken Bruce Show (music mix with entertainment news)  
 1130 RAI: Report from Austria  
 1200 BBC: Radio Newsreel  
 1215 BBC: Quiz

1245 BBC: Sports Roundup  
 1300 BBC: World News  
 1309 BBC: Twenty-Four Hours (news magazine)  
 1330 BBC: Anything Goes (odd recordings)  
 1400 BBC: World News  
 1405 BBC: Outlook - \*\*\*\* - A very good magazine-format program.  
 1500 BBC: Radio Newsreel  
 1515 BBC: Feature  
 1545 BBC: Classical Music  
 1600 BBC: World News  
 1609 BBC: News about Britain  
 1615 BBC: Talks  
 1630 BBC: Film/Light Music  
 1645 BBC: The World Today (news feature)  
 1700 BBC: World News  
 1709 BBC: Commentary  
 1715 BBC: Classical Music Feature  
 1745 BBC: Sports Roundup  
 1800 BBC: Newsdesk  
 1802 RJL: Koran  
 1803 RJL: Headlines  
 1808 RJL: The Fate of Lebanon  
 1821 RJL: Happy Music  
 1830 BBC: Multitrack 1: Top 20 - \*\*\*\* - Interesting British pop trends here.  
 1832 RJL: Perspectives  
 1837 RJL: U.S. Intervention in Central America  
 1847 RJL: News  
 1900 BBC: News Summary  
 1901 BBC: Outlook - \*\*\*\* (see Mon 1405)  
 1910 KI: Spectrum  
 1939 BBC: Stock Market Report  
 1945 BBC: Peebles' Choice (music)  
 2000 BBC: World News  
 2009 BBC: Twenty-Four Hours (news magazine)  
 2030 BBC: Sports International (feature)  
 2100 BBC: News Summary  
 2101 BBC: Network UK (feature)  
 2115 BBC: Turning Point  
 2130 BBC: The Vintage Chart Show  
 2140 KI: Feature of the Month (a weekly program no less!)  
 2200 BBC: World News  
 2209 BBC: The World Today (news feature)  
 2230 BBC: Financial News  
 2232 RJL: Koran  
 2233 RJL: Headlines  
 2239 RJL: Images for a Revolution  
 2240 BBC: Reflections (religion)  
 2245 BBC: Sports Roundup  
 2253 RJL: Perspective  
 2258 RJL: Revolutionary Thought  
 2300 BBC: World News  
 2309 BBC: Commentary  
 2310 KI: Spectrum  
 2310 RJL: Spanning the Globe  
 2314 RJL: Happy Music  
 2315 BBC: Talks

2330 BBC: Multitrack 1: Top 20 - \*\*\*\* (see Mon 1830)  
 2330 RJL: News

## Tuesday

1st, 8th, 15th, 22nd, 29th

0000 BBC: World News  
 0009 BBC: News about Britain  
 0015 BBC: Radio Newsreel  
 0030 BBC: Classical Music Feature  
 0030 RAI: Report from Austria  
 0040 KI: Feature of the Month (a weekly program no less!)  
 0100 BBC: News Summary  
 0101 BBC: Outlook - \*\*\*\* (see Mon 1405)  
 0110 KI: Spectrum  
 0130 BBC: Short Story  
 0145 BBC: Turning Point  
 0200 BBC: World News  
 0209 BBC: British Press Review  
 0215 BBC: Network UK (feature)  
 0230 BBC: Sports International (feature)  
 0230 RP: News  
 0240 RP: Tourism in Portugal  
 0300 BBC: World News  
 0309 BBC: News about Britain  
 0315 BBC: The World Today (news feature)  
 0330 BBC: John Peel (progressive rock music)  
 0400 BBC: Newsdesk  
 0430 BBC: Music Series  
 0430 RAI: Report from Austria  
 0445 BBC: New Ideas  
 0455 BBC: Book Choice  
 0500 BBC: World News  
 0509 BBC: Twenty-Four Hours (news magazine)  
 0530 BBC: Financial News  
 0540 BBC: Reflections (religion)  
 0545 BBC: The World Today (news feature)  
 0600 BBC: Newsdesk  
 0601 WCSN: News  
 0606 WCSN: News Focus  
 0630 BBC: Feature  
 0630 WCSN: News  
 0633 WCSN: Young Ideas (program for teenagers)  
 0645 WCSN: Music Program  
 0700 BBC: World News  
 0701 WCSN: News  
 0706 WCSN: Kaleidoscope (news features)  
 0709 BBC: Twenty-Four Hours (news magazine)  
 0730 BBC: Turning Point  
 0730 WCSN: News  
 0740 WCSN: Letterbox  
 0745 BBC: Network UK (feature)  
 0800 BBC: World News  
 0809 BBC: Reflections (religion)  
 0815 BBC: Talks  
 0830 BBC: Classical Music Feature  
 0900 BBC: World News

# Your Guide to Shortwave Listening in November

- 0909 BBC: British Press Review  
 0915 BBC: The World Today (news feature)  
 0930 BBC: Financial News  
 0940 BBC: Sports Roundup  
 0945 BBC: Classical Music  
 1000 BBC: News Summary  
 1001 BBC: Discovery (science)  
 1001 KYOI: News  
 1006 KYOI: News Focus  
 1010 KI: With Me in the Studio  
 1030 BBC: Sports International (feature)  
 1030 KYOI: News  
 1033 KYOI: Young Ideas (program for teenagers)  
 1045 KYOI: Music Program  
 1100 BBC: World News  
 1101 KYOI: News  
 1106 KYOI: Kaleidoscope (news features)  
 1109 BBC: News about Britain  
 1115 BBC: Waveguide - \*\* (see Sun 0750)  
 1125 BBC: Book Choice  
 1130 BBC: Citizens - \*\*\*\* - innovative serial with travails of five fictional Britons.  
 1130 KYOI: News  
 1140 KYOI: Letterbox  
 1200 BBC: Radio Newsreel  
 1201 KYOI: News  
 1206 KYOI: News Focus  
 1215 BBC: Multitrack 1: Top 20 - \*\*\*\* (see Mon 1830)  
 1230 KYOI: News  
 1233 KYOI: Young Ideas (program for teenagers)  
 1245 BBC: Sports Roundup  
 1245 KYOI: Music Program  
 1300 BBC: World News  
 1301 KYOI: News  
 1306 KYOI: Kaleidoscope (news features)  
 1309 BBC: Twenty-Four Hours (news magazine)  
 1330 BBC: Network UK (feature)  
 1330 KYOI: News  
 1340 KYOI: Letterbox  
 1345 BBC: Recording of the Week  
 1400 BBC: World News  
 1405 BBC: Outlook - \*\*\*\* (see Mon 1405)  
 1445 BBC: Music Series  
 1500 BBC: Radio Newsreel  
 1515 BBC: A Jolly Good Show (rock music)  
 1600 BBC: World News  
 1601 WCSN: News  
 1606 WCSN: News Focus  
 1609 BBC: News about Britain  
 1615 BBC: Omnibus (topical feature)  
 1630 WCSN: News  
 1633 WCSN: Young Ideas (program for teenagers)  
 1645 BBC: The World Today (news feature)  
 1645 WCSN: Music Program  
 1700 BBC: World News  
 1701 WCSN: News  
 1706 WCSN: Kaleidoscope (news features)  
 1709 BBC: Commentary  
 1715 BBC: Citizens - \*\*\*\* (see Tue 1130)  
 1730 WCSN: News  
 1740 WCSN: Letterbox  
 1745 BBC: Sports Roundup  
 1800 BBC: Newsdesk  
 1801 WCSN: News  
 1802 RJJ: Koran  
 1803 RJJ: Headlines  
 1806 WCSN: News Focus  
 1808 RJJ: Arming for War  
 1819 RJJ: Happy Music  
 1830 BBC: Development '88  
 1830 WCSN: News  
 1833 RJJ: Revolutionary Thought  
 1833 WCSN: Young Ideas (program for teenagers)  
 1845 WCSN: Music Program  
 1847 RJJ: News  
 1900 BBC: News Summary  
 1901 BBC: Outlook - \*\*\*\* (see Mon 1405)  
 1901 WCSN: News  
 1906 WCSN: Kaleidoscope (news features)  
 1910 KI: Faith to Faith  
 1930 WCSN: News  
 1939 BBC: Stock Market Report  
 1940 WCSN: Letterbox  
 1945 BBC: Report On Religion - \*\*\*\* - News on both modern and traditional views of many religions.  
 2000 BBC: World News  
 2001 KYOI and WCSN: News  
 2006 KYOI and WCSN: News Focus  
 2009 BBC: Twenty-Four Hours (news magazine)  
 2030 BBC: Meridian (arts feature)  
 2030 KYOI and WCSN: News  
 2033 KYOI and WCSN: Young Ideas (program for teenagers)  
 2045 KYOI and WCSN: Music Program  
 2100 BBC: News Summary  
 2101 BBC: Talks  
 2101 KYOI and WCSN: News  
 2106 KYOI and WCSN: Kaleidoscope (news features)  
 2115 BBC: Music Series  
 2130 BBC: Feature  
 2130 KYOI and WCSN: News  
 2140 KI: Faith to Faith  
 2140 KYOI and WCSN: Letterbox  
 2150 KI: Israel Sound  
 2200 BBC: World News  
 2201 KYOI and WCSN: News  
 2206 KYOI and WCSN: News Focus  
 2209 BBC: The World Today (news feature)  
 2225 BBC: Book Choice  
 2230 BBC: Financial News  
 2230 KYOI and WCSN: News  
 2232 RJJ: Koran  
 2233 KYOI and WCSN: Young Ideas (program for teenagers)  
 2233 RJJ: Headlines  
 2238 RJJ: Focus  
 2240 BBC: Reflections (religion)  
 2245 BBC: Sports Roundup  
 2245 KYOI and WCSN: Music Program  
 2250 RJJ: Poverty and Politics  
 2300 BBC: World News  
 2301 KYOI and WCSN: News  
 2302 RJJ: Monopoly and Exploitation  
 2306 KYOI and WCSN: Kaleidoscope (news features)  
 2309 BBC: Commentary  
 2310 KI: With Me in the Studio  
 2313 RJJ: Happy Music  
 2315 BBC: Concert Hall  
 2320 KI: Faith to Faith  
 2330 KYOI and WCSN: News  
 2330 RJJ: News  
 2340 KYOI and WCSN: Letterbox  
 2340 RJJ: Analysis

## Wednesday

2nd, 9th, 16th, 23rd, 30th

- 0000 BBC: World News  
 0009 BBC: News about Britain  
 0010 KI: Israel Sound  
 0015 BBC: Radio Newsreel  
 0030 BBC: Omnibus (topical feature)  
 0030 RAI: Report from Austria  
 0100 BBC: News Summary  
 0101 BBC: Outlook - \*\*\*\* (see Mon 1405)  
 0110 KI: With Me in the Studio  
 0130 BBC: Report On Religion - \*\*\*\* (see Tue 1945)  
 0145 BBC: Country Style - \*\* - British country music?  
 0200 BBC: World News  
 0209 BBC: British Press Review  
 0215 BBC: Film/Light Music  
 0230 BBC: Citizens - \*\*\*\* (see Tue 1130)  
 0230 RP: News  
 0240 RP: Our Choice of Music  
 0300 BBC: World News  
 0309 BBC: News about Britain  
 0315 BBC: The World Today (news feature)  
 0330 BBC: Discovery (science)  
 0400 BBC: Newsdesk  
 0430 BBC: Talks  
 0430 RAI: Report from Austria  
 0445 BBC: Report On Religion - \*\*\*\* (see Tue 1945)  
 0500 BBC: World News  
 0509 BBC: Twenty-Four Hours (news magazine)  
 0530 BBC: Financial News  
 0540 BBC: Reflections (religion)  
 0545 BBC: The World Today (news feature)  
 0600 BBC: Newsdesk  
 0630 BBC: Meridian (arts feature)

# Your Guide to Shortwave Listening in November

- 0700 BBC: World News  
0709 BBC: Twenty-Four Hours (news magazine)  
0730 BBC: Development '88  
0800 BBC: World News  
0809 BBC: Reflections (religion)  
0815 BBC: Classical Record Review  
0830 BBC: Quiz  
0900 BBC: World News  
0909 BBC: British Press Review  
0915 BBC: The World Today (news feature)  
0930 BBC: Financial News  
0940 BBC: Sports Roundup  
0945 BBC: Jazz Scene UK [2nd, 16th, 30th]; Folk in Britain [9th, 23rd]  
1000 BBC: News Summary  
1001 BBC: Omnibus (topical feature)  
1010 KI: Israel Mosaic  
1030 BBC: Just a Minute  
1100 BBC: World News  
1109 BBC: News about Britain  
1115 BBC: Talks  
1130 BBC: Meridian (arts feature)  
1130 RAI: Report from Austria  
1200 BBC: Radio Newsreel  
1215 BBC: Talks  
1225 BBC: The Farming World  
1245 BBC: Sports Roundup  
1300 BBC: World News  
1309 BBC: Twenty-Four Hours (news magazine)  
1330 BBC: Development '88  
1400 BBC: World News  
1405 BBC: Outlook - \*\*\*\* (see Mon 1405)  
1445 BBC: Report On Religion - \*\*\*\* (see Tue 1945)  
1500 BBC: Radio Newsreel  
1515 BBC: Talks  
1530 BBC: The Million Pound Radio Show (comedy)  
1600 BBC: World News  
1609 BBC: News about Britain  
1615 BBC: Feature  
1645 BBC: The World Today (news feature)  
1700 BBC: World News  
1709 BBC: Commentary  
1715 BBC: Society Today  
1730 BBC: New Ideas  
1740 BBC: Book Choice  
1745 BBC: Sports Roundup  
1800 BBC: Newsdesk  
1830 BBC: Multitrack 2 - \*\*\* - Pop music and news.  
1900 BBC: News Summary  
1901 BBC: Outlook - \*\*\*\* (see Mon 1405)  
1910 KI: Living Here  
1920 KI: News from the Jewish World  
1939 BBC: Stock Market Report  
1945 BBC: Good Books - \*\*\*\* (see Mon 0315)  
2000 BBC: World News  
2009 BBC: Twenty-Four Hours (news magazine)  
2030 BBC: Assignment  
2100 BBC: News Summary  
2101 BBC: Network UK (feature)  
2115 BBC: Feature  
2140 KI: Israel Mosaic  
2145 BBC: Recording Of The Week  
2150 KI: News from the Jewish World  
2200 BBC: World News  
2209 BBC: The World Today (news feature)  
2230 BBC: Financial News  
2240 BBC: Reflections (religion)  
2245 BBC: Sports Roundup  
2300 BBC: World News  
2309 BBC: Commentary  
2310 KI: Living Here  
2315 BBC: Write On... (letters)  
2320 KI: News from the Jewish World  
2330 BBC: Multitrack 2 - \*\*\* (see Wed 1830)
- ## Thursday
- 3rd, 10th, 17th, 24th
- 0000 BBC: World News  
0009 BBC: News about Britain  
0010 KI: Israel Mosaic  
0015 BBC: Radio Newsreel  
0030 BBC: The Million Pound Radio Show (comedy)  
0030 RAI: Report from Austria  
0100 BBC: News Summary  
0101 BBC: Outlook - \*\*\*\* (see Mon 1405)  
0110 KI: Living Here  
0130 BBC: Waveguide - \*\* (see Sun 0750)  
0140 BBC: Book Choice  
0145 BBC: Society Today  
0200 BBC: World News  
0209 BBC: British Press Review  
0215 BBC: Network UK (feature)  
0230 BBC: Assignment  
0230 RP: News  
0240 RP: History and Culture  
0300 BBC: World News  
0309 BBC: News about Britain  
0315 BBC: The World Today (news feature)  
0330 BBC: Feature  
0400 BBC: Newsdesk  
0430 BBC: Classical Record Review  
0430 RAI: Report from Austria  
0445 BBC: Peebles' Choice (music)  
0500 BBC: World News  
0509 BBC: Twenty-Four Hours (news magazine)  
0530 BBC: Financial News  
0540 BBC: Reflections (religion)  
0545 BBC: The World Today (news feature)  
0600 BBC: Newsdesk  
0630 BBC: Talks  
0640 BBC: The Farming World  
0700 BBC: World News  
0700 VOFC: News and Commentary  
0709 BBC: Twenty-Four Hours (news magazine)  
0710 VOFC: Horizons  
0730 BBC: Pop Music  
0730 VOFC: Countdown  
0745 BBC: Network UK (feature)  
0750 VOFC: Let's Learn Chinese  
0800 BBC: World News  
0809 BBC: Reflections (religion)  
0815 BBC: Country Style - \*\* (see Wed 0145)  
0830 BBC: John Peel (progressive rock music)  
0900 BBC: World News  
0909 BBC: British Press Review  
0915 BBC: The World Today (news feature)  
0930 BBC: Financial News  
0940 BBC: Sports Roundup  
0945 BBC: Society Today  
1000 BBC: News Summary  
1001 BBC: Assignment  
1010 KI: Studio Three  
1030 BBC: The Million Pound Radio Show (comedy)  
1100 BBC: World News  
1109 BBC: News about Britain  
1115 BBC: New Ideas  
1125 BBC: Book Choice  
1130 BBC: Citizens - \*\*\*\* (see Tue 1130)  
1130 RAI: Report from Austria  
1200 BBC: Radio Newsreel  
1215 BBC: Multitrack 2 - \*\*\* (see Wed 1830)  
1245 BBC: Sports Roundup  
1300 BBC: World News  
1309 BBC: Twenty-Four Hours (news magazine)  
1330 BBC: Network UK (feature)  
1345 BBC: Jazz Scene UK [3rd, 17th]; Folk in Britain [10th, 24th]  
1400 BBC: World News  
1405 BBC: Outlook - \*\*\*\* (see Mon 1405)  
1445 BBC: Write On... (letters)  
1500 BBC: Radio Newsreel  
1515 BBC: The Pleasure's Yours (classical music requests)  
1600 BBC: World News  
1609 BBC: News about Britain  
1615 BBC: Assignment  
1645 BBC: The World Today (news feature)  
1700 BBC: World News  
1709 BBC: Commentary  
1715 BBC: Citizens - \*\*\*\* (see Tue 1130)  
1745 BBC: Sports Roundup  
1800 BBC: Newsdesk  
1900 BBC: News Summary  
1901 BBC: Outlook - \*\*\*\* (see Mon 1405)  
1910 KI: Documentary Series  
1945 BBC: Here's Humph!  
2000 BBC: World News  
2009 BBC: Twenty-Four Hours (news magazine)

# Your Guide to Shortwave Listening in November

- 2030 BBC: Meridian  
 2100 BBC: News Summary  
 2101 BBC: Talking from... (Northern Ireland, Scotland, Wales)  
 2115 BBC: A Jolly Good Show (rock music)  
 2140 KI: Studio Three  
 2200 BBC: World News  
 2200 VOFC: News and Commentary  
 2209 BBC: The World Today (news feature)  
 2210 VOFC: Journey into Chinese Culture  
 2225 BBC: Book Choice  
 2230 BBC: Financial News  
 2230 VOFC: The Weekly  
 2240 BBC: Reflections (religion)  
 2245 BBC: Sports Roundup  
 2250 VOFC: Let's Learn Chinese  
 2300 BBC: World News  
 2309 BBC: Commentary  
 2310 KI: Documentary Series  
 2315 BBC: Seven Seas  
 2330 BBC: Talks  
 2340 BBC: The Farming World
- Friday**  
 4th, 11th, 18th, 25th
- 0000 BBC: World News  
 0009 BBC: News about Britain  
 0010 KI: Studio Three  
 0015 BBC: Radio Newsreel  
 0030 BBC: Music Now (modern classical music)  
 0030 RAI: Report from Austria  
 0100 BBC: News Summary  
 0101 BBC: Outlook - \*\*\*\* (see Mon 1405)  
 0110 KI: Documentary Series  
 0130 BBC: Jazz Scene UK [4th, 18th]; Folk in Britain [11th, 25th]  
 0145 BBC: Talking from... (Northern Ireland, Scotland, Wales)  
 0200 BBC: World News  
 0200 VOFC: News and Commentary  
 0209 BBC: British Press Review  
 0210 VOFC: Journey into Chinese Culture  
 0215 BBC: Talks  
 0230 BBC: Citizens - \*\*\*\* (see Tue 1130)  
 0230 RP: News  
 0230 VOFC: New Record Time  
 0240 RP: Report from Portugal  
 0250 VOFC: Let's Learn Chinese  
 0300 BBC: World News  
 0300 VOFC: News and Commentary  
 0309 BBC: News about Britain  
 0310 VOFC: Horizons  
 0315 BBC: The World Today (news feature)  
 0330 BBC: The Vintage Chart Show  
 0330 VOFC: Countdown  
 0350 VOFC: Let's Learn Chinese  
 0400 BBC: Newsdesk  
 0401 WCSN: News
- 0406 WCSN: News Focus  
 0430 BBC: Country Style - \*\* (see Wed 0145)  
 0430 WCSN: News  
 0433 WCSN: Conversations  
 0445 BBC: Talks  
 0445 WCSN: Music Program  
 0500 BBC: World News  
 0501 WCSN: News  
 0506 WCSN: Kaleidoscope (news features)  
 0509 BBC: Twenty-Four Hours (news magazine)  
 0530 BBC: Financial News  
 0530 WCSN: News  
 0540 BBC: Reflections (religion)  
 0540 WCSN: Letterbox  
 0545 BBC: The World Today (news feature)  
 0600 BBC: Newsdesk  
 0601 WCSN: News  
 0606 WCSN: News Focus  
 0630 BBC: Meridian (arts feature)  
 0630 WCSN: News  
 0633 WCSN: Conversations  
 0645 WCSN: Music Program  
 0700 BBC: World News  
 0700 VOFC: News and Commentary  
 0701 WCSN: News  
 0706 WCSN: Kaleidoscope (news features)  
 0709 BBC: Twenty-Four Hours (news magazine)  
 0710 VOFC: Journey into Chinese Culture  
 0730 BBC: Write On... (letters)  
 0730 VOFC: New Record Time  
 0730 WCSN: News  
 0740 WCSN: Letterbox  
 0745 BBC: Seven Seas  
 0750 VOFC: Let's Learn Chinese  
 0800 BBC: World News  
 0809 BBC: Reflections (religion)  
 0815 BBC: Music Series  
 0830 BBC: Music Now (modern classical music)  
 0900 BBC: World News  
 0909 BBC: British Press Review  
 0915 BBC: The World Today (news feature)  
 0930 BBC: Financial News  
 0940 BBC: Sports Roundup  
 0945 BBC: A Choice of Verse  
 1000 BBC: News Summary  
 1001 BBC: Pop Music  
 1001 KYOI: News  
 1006 KYOI: News Focus  
 1010 KI: Thank Goodness It's Friday  
 1030 BBC: Jazz for the Asking  
 1030 KYOI: News  
 1033 KYOI: Conversations  
 1045 KYOI: Music Program  
 1100 BBC: World News  
 1101 KYOI: News  
 1106 KYOI: Kaleidoscope (news features)  
 1109 BBC: News about Britain
- 1115 BBC: Talking from... (Northern Ireland, Scotland, Wales)  
 1130 BBC: Meridian (arts feature)  
 1130 KYOI: News  
 1130 RAI: Report from Austria  
 1140 KYOI: Letterbox  
 1200 BBC: Radio Newsreel  
 1201 KYOI: News  
 1206 KYOI: News Focus  
 1215 BBC: Europe's World  
 1230 BBC: Business Matters  
 1230 KYOI: News  
 1233 KYOI: Conversations  
 1245 BBC: Sports Roundup  
 1245 KYOI: Music Program  
 1300 BBC: World News  
 1301 KYOI: News  
 1306 KYOI: Kaleidoscope (news features)  
 1309 BBC: Twenty-Four Hours (news magazine)  
 1330 BBC: John Peel (progressive rock music)  
 1330 KYOI: News  
 1340 KYOI: Letterbox  
 1400 BBC: World News  
 1405 BBC: Outlook - \*\*\*\* (see Mon 1405)  
 1445 BBC: Nature Notebook  
 1500 BBC: Radio Newsreel  
 1515 BBC: Feature/Drama  
 1600 BBC: World News  
 1601 WCSN: News  
 1606 WCSN: News Focus  
 1609 BBC: News about Britain  
 1615 BBC: Science in Action  
 1630 WCSN: News  
 1633 WCSN: Conversations  
 1645 BBC: The World Today (news feature)  
 1645 WCSN: Music Program  
 1700 BBC: World News  
 1701 WCSN: News  
 1706 WCSN: Kaleidoscope (news features)  
 1709 BBC: Commentary  
 1715 BBC: Music Now (modern classical music)  
 1730 WCSN: News  
 1740 WCSN: Letterbox  
 1745 BBC: Sports Roundup  
 1800 BBC: Newsdesk  
 1801 WCSN: News  
 1806 WCSN: News Focus  
 1830 BBC: Multitrack 3 - \*\*\*\* - Sarah Ward presents innovative rock music.  
 1830 WCSN: News  
 1833 WCSN: Conversations  
 1845 WCSN: Music Program  
 1900 BBC: News Summary  
 1901 BBC: Outlook - \*\*\*\* (see Mon 1405)  
 1901 WCSN: News  
 1906 WCSN: Kaleidoscope (news features)  
 1910 KI: Thank Goodness It's Friday

# Your Guide to Shortwave Listening in November

- 1920 **KI**: Letter from Jerusalem  
 1930 **WCSN**: News  
 1939 **BBC**: Stock Market Report  
 1940 **WCSN**: Letterbox  
 1945 **BBC**: Personal View (topics in British life)  
 2000 **BBC**: World News  
 2001 **WCSN**: News  
 2006 **WCSN**: News Focus  
 2009 **BBC**: Twenty-Four Hours (news magazine)  
 2030 **BBC**: Science in Action  
 2030 **WCSN**: News  
 2033 **WCSN**: Conversations  
 2045 **WCSN**: Music Program  
 2100 **BBC**: News Summary  
 2101 **BBC**: Network UK (feature)  
 2101 **WCSN**: News  
 2106 **WCSN**: Kaleidoscope (news features)  
 2115 **BBC**: Europe's World  
 2130 **BBC**: Business Matters  
 2130 **WCSN**: News  
 2140 **KI**: Shabbat Shalom  
 2140 **WCSN**: Letterbox  
 2145 **BBC**: Reading  
 2150 **KI**: Letter from Jerusalem  
 2200 **BBC**: World News  
 2200 **VOFC**: News and Commentary  
 2201 **WCSN**: News  
 2206 **WCSN**: News Focus  
 2209 **BBC**: The World Today (news feature)  
 2210 **VOFC**: Horizons  
 2230 **BBC**: Financial News  
 2230 **VOFC**: Countdown  
 2230 **WCSN**: News  
 2233 **WCSN**: Conversations  
 2240 **BBC**: Reflections (religion)  
 2245 **BBC**: Sports Roundup  
 2245 **WCSN**: Music Program  
 2250 **VOFC**: Let's Learn Chinese  
 2300 **BBC**: World News  
 2301 **WCSN**: News  
 2306 **WCSN**: Kaleidoscope (news features)  
 2309 **BBC**: Commentary  
 2310 **KI**: Thank Goodness It's Friday  
 2315 **BBC**: From The Weeklies (press review)  
 2320 **KI**: Letter from Jerusalem  
 2330 **BBC**: Multitrack 3 - \*\*\*\* (see Fri 1830)  
 2330 **WCSN**: News  
 2340 **WCSN**: Letterbox
- Saturday**  
**6th, 13th, 20th, 27th**
- 0000 **BBC**: World News  
 0009 **BBC**: News about Britain  
 0010 **KI**: Shabbat Shalom  
 0015 **BBC**: Radio Newsreel  
 0030 **BBC**: Personal View (topics in British life)  
 0030 **RAI**: Report from Austria  
 0045 **BBC**: Recording of the Week  
 0100 **BBC**: News Summary  
 0101 **BBC**: Outlook - \*\*\*\* (see Mon 1405)  
 0105 **RAI**: Made in Austria  
 0110 **KI**: Thank Goodness It's Friday  
 0130 **BBC**: Pop Music  
 0145 **BBC**: Nature Notebook  
 0200 **BBC**: World News  
 0200 **VOFC**: News and Commentary  
 0209 **BBC**: British Press Review  
 0210 **VOFC**: Republic of China Today  
 0215 **BBC**: Network UK (feature)  
 0230 **BBC**: People and Politics  
 0230 **RP**: News  
 0230 **VOFC**: Chinese Old Songs  
 0240 **RP**: Mailbag  
 0250 **VOFC**: Let's Learn Chinese  
 0300 **BBC**: World News  
 0300 **VOFC**: News and Commentary  
 0309 **BBC**: News about Britain  
 0310 **VOFC**: Journey into Chinese Culture  
 0315 **BBC**: The World Today (news feature)  
 0330 **BBC**: Europe's World  
 0330 **VOFC**: New Record Time  
 0345 **BBC**: Business Matters  
 0350 **VOFC**: Let's Learn Chinese  
 0400 **BBC**: Newsdesk  
 0405 **RAI**: Made in Austria  
 0430 **BBC**: Here's Humph!  
 0430 **RAI**: Report from Austria  
 0445 **BBC**: Personal View (topics in British life)  
 0500 **BBC**: World News  
 0509 **BBC**: Twenty-Four Hours (news magazine)  
 0530 **BBC**: Financial News  
 0540 **BBC**: Reflections  
 0545 **BBC**: The World Today (news feature)  
 0600 **BBC**: Newsdesk  
 0630 **BBC**: Meridian (arts feature)  
 0700 **BBC**: World News  
 0700 **VOFC**: News and Commentary  
 0709 **BBC**: Twenty-Four Hours (news magazine)  
 0710 **VOFC**: Republic of China Today  
 0730 **BBC**: From The Weeklies (press review)  
 0730 **VOFC**: Chinese Old Songs  
 0745 **BBC**: Network UK (feature)  
 0750 **VOFC**: Let's Learn Chinese  
 0800 **BBC**: World News  
 0809 **BBC**: Reflections (religion)  
 0815 **BBC**: A Jolly Good Show (rock music)  
 0900 **BBC**: World News  
 0909 **BBC**: British Press Review  
 0915 **BBC**: The World Today (news feature)  
 0930 **BBC**: Financial News  
 0940 **BBC**: Sports Roundup  
 0945 **BBC**: Personal View (topics in British life)  
 1000 **BBC**: News Summary  
 1001 **BBC**: Here's Humph!  
 1010 **KI**: Spotlight  
 1015 **BBC**: Letter from America - \*\*\*\*\* (see Sun 0545)  
 1030 **BBC**: People and Politics  
 1100 **BBC**: World News  
 1109 **BBC**: News about Britain  
 1115 **BBC**: Film/Light Music  
 1130 **BBC**: Meridian (arts feature)  
 1130 **RAI**: Report from Austria  
 1200 **BBC**: Radio Newsreel  
 1205 **RAI**: Made in Austria  
 1215 **BBC**: Multitrack 3 - \*\*\*\* (see Fri 1830)  
 1245 **BBC**: Sports Roundup  
 1300 **BBC**: World News  
 1309 **BBC**: Twenty-Four Hours (news magazine)  
 1330 **BBC**: Network UK (feature)  
 1345 **BBC**: Sportsworld  
 1400 **BBC**: News Summary  
 1401 **BBC**: Sportsworld  
 1500 **BBC**: Radio Newsreel  
 1515 **BBC**: Sportsworld  
 1600 **BBC**: World News  
 1609 **BBC**: News about Britain  
 1615 **BBC**: Sportsworld  
 1700 **BBC**: World News  
 1709 **BBC**: Words  
 1715 **BBC**: The Ken Bruce Show (music mix with entertainment news)  
 1745 **BBC**: Sports Roundup  
 1800 **BBC**: Newsdesk  
 1830 **BBC**: Music Series  
 1900 **BBC**: News Summary  
 1901 **BBC**: Play of the Week  
 1910 **KI**: Spotlight  
 2000 **BBC**: World News  
 2009 **BBC**: Twenty-Four Hours (news magazine)  
 2030 **BBC**: Meridian (arts feature)  
 2100 **BBC**: News Summary  
 2101 **BBC**: Talks  
 2115 **BBC**: Classical Music  
 2130 **BBC**: People and Politics  
 2138 **RCI**: SWL Digest - \*\*\*\* (see Sun 0108)  
 2140 **KI**: Spotlight  
 2200 **BBC**: World News  
 2200 **VOFC**: News and Commentary  
 2208 **RCI**: SWL Digest - \*\*\*\* (see Sun 0108)  
 2209 **BBC**: From Our Own Correspondent - \*\*\*\* (see Sun 0315)  
 2210 **VOFC**: Journey into Chinese Culture  
 2225 **BBC**: Nature Notebook  
 2230 **VOFC**: New Record Time  
 2240 **BBC**: Reflections (religion)  
 2245 **BBC**: Sports Roundup  
 2250 **VOFC**: Let's Learn Chinese  
 2300 **BBC**: World News  
 2309 **BBC**: Words  
 2310 **KI**: Spotlight  
 2315 **BBC**: The Tony Myatt Request Show (pop music)

# frequency SECTION

## MT Monitoring Team

### EAST COAST:

**Greg Jordan,**  
Frequency Manager

1855-I Franciscan Terrace  
Winston-Salem, NC 27127

**Joe Hanlon, PA**

### WEST COAST:

**Bill Brinkley, CA**

**Dave Kammler, CA**

0000 UTC [6:00 PM EST/3:00 PM PST]

0000-0015	Voice of Kampuchea, Phnom-Penh	9693	11938		
0000-0030	BBC, London, England	5975	6005	6175	7325
		9515	9580	9590	9915
		11955	12095	15260	17875
0000-0030	Kol Israel, Jerusalem	7460	9435	9855	
0000-0030	Radio Canada Int'l, Montreal	9755	11730		
0000-0030	Radio Korea, Seoul, South Korea	15575			
0000-0030	M Radio Norway Int'l, Oslo	9620	11850		
0000-0030	Radio Sofia, Bulgaria	9700	11950		
0000-0045	WINB, Red Lion, Pennsylvania	15145			
0000-0050	Radio Pyongyang, North Korea	15115	15160		
0000-0055	Radio Beijing, PR China	9665	9770	11715	
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 Columbia	6160			
0000-0100	CFCF, Montreal, Quebec	6005			
0000-0100	CFCN, Calgary, Alberta	6030			
0000-0100	CHNS, Halifax, Nova Scotia	6130			
0000-0100	CKWX, Vancouver, British Columbia	6080			
0000-0100	CFRB, Toronto, Ontario	6070			
0000-0100	FEBC, Manila, Philippines	15445			
0000-0100	(US) Far East Network, Tokyo	3910			
0000-0100	KSDA, Guam	15125			
0000-0100	KVOH, Rancho Simi, California	17775			
0000-0100	KYOI, Saipan	15405			
0000-0100	Radio Australia, Melbourne	15140	15160	15240	15320
		15395	17750	17795	21740
0000-0100	Radio Baghdad, Iraq	9515	11810		
0000-0100	Radio Havana Cuba	9655			
0000-0100	Radio Luxembourg	6090			
0000-0100	Radio Moscow, USSR	6000	6170	7115	7165
		7195	9530	9720	9765
		9890	12050	13605	15245
		15405	15426	17700	
0000-0100	Radio Moscow World Service	11690	17675	17850	17860
		17880			
0000-0100	Radio New Zealand, Wellington	15150	17705		

0000-0100	Radio for Peace, Costa Rica	21555			
0000-0100	Radio Thailand, Bangkok	9655	11905		
0000-0100	SBC Radio One, Singapore	5010	5052	11940	
0000-0100	Spanish Foreign Radio, Madrid	9630	11880		
0000-0100	T-A Superpower KUSW, Utah	15580			
0000-0100	Voice of America, Washington	5995	6130	7170	7200
		7280	9455	9775	9815
		11580	11695	11740	15205
		17735	17820		
0000-0100	T-A Voice of Nicaragua, Managua	6100			
0000-0100	WCSN, Boston, Massachusetts	9850			
0000-0100	WHRI, Noblesville, Indiana	9770	17830		
0000-0100	WRNO, New Orleans, Louisiana	13760			
0000-0100	WYFR, Oakland, California	5950	5985	9505	13695
		15440			
0030-0045	BBC, London, England*	6195	7235	9570	11820
		15435			
0030-0055	M-A BRT, Brussels, Belgium	9675	9925		
0030-0100	BBC, London, England	5975	6005	6175	7325
		9515	9580	9915	9590
		12095	15260	17710	
0030-0100	HCJB, Quito, Ecuador	9720	11775	11910	15155
0030-0100	Radio Austria Int'l, Vienna	9875			
0030-0100	M-A Radio Budapest, Hungary	6110	9520	9585	9835
		11910	15160		
0030-0100	Radio Canada Int'l, Montreal	5960	9755		
0030-0100	Radio Kiev, Ukrainian SSR	7205	7400	9640	
		9800			
		13645	15180	15455	
0030-0100	SLBC, Colombo, Sri Lanka	6005	9720		
0035-0040	All India Radio, New Delhi	3925	4860		
0045-0100	Radio Berlin Int'l, E. Germany	6080	9730		
0045-0100	A Radio New Zealand, Wellington	15150	17705		

## 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

0048-0100 WINB, Red Lion, Pennsylvania 15145  
 0050-0100 Vatican Radio, Vatican City 6150 9605 11780

## 0100 UTC [7:00 PM EST/4:00 PM PST]

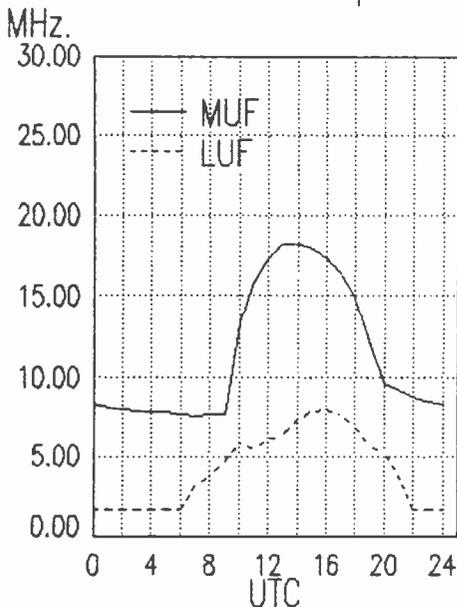
0100-0103	S	Port Moresby, Papua New Guinea	3295	4890	5960	5985
			6020	6040	6080	6140
			9520			
0100-0110		Vatican Radio, Vatican City	6150	9605	11780	
0100-0115		All India Radio, New Delhi	6055	7215	9535	9910
			11715	11745	15110	
0100-0120		RAI, Rome, Italy	9575	11800		
0100-0130		Kol Israel, Jerusalem	7460	9435	9855	
0100-0130		Radio Berlin Int'l, East Germany	6080	9730		
0100-0130		Radio Canada Int'l, Montreal	5960	9755		
0100-0130		Radio Japan, Tokyo	15280	17810	17835	17845
0100-0130		Laotian National Radio	7113v			
0100-0130	S,M	WINB, Red Lion, Pennsylvania	15145			
0100-0145		Radio Yugoslavia, Belgrade	5980	9620	9660	
0100-0150		Deutsche Welle, West Germany	6040	6085	6145	9565
			9735	11865		
0100-0150		Radio Baghdad, Iraq	9515	11810		
0100-0155	S	Radio Austria Int'l, Vienna	9875			
0100-0200		BBC, London, England	5975	6005	6175	7325
			9410	9515	9590	9915
			12095	15260		
0100-0200		CBC Northern Quebec Service	6195	9625		
0100-0200		CBN, St. John's, Newfoundland	6160			
0100-0200		CBU, Vancouver, British Columbia	6160			
0100-0200		CFCF, Montreal, Quebec	6005			
0100-0200		CFCN, Calgary, Alberta	6030			
0100-0200		CHNS, Halifax, Nova Scotia	6130			
0100-0200		CKWX, Vancouver, British Columbia	6080			
0100-0200		CFRB, Toronto, Ontario	6070			
0100-0200		(US) Far East Network, Tokyo	3910			
0100-0200		FEBC, Manila, Philippines	15445			
0100-0200		HCJB, Quito, Ecuador	9720	11775	11910	15155
0100-0200	T-A	KVOH, Rancho Simi, California	13695			
0100-0200		KYOI, Saipan	15405			
0100-0200		Radio Australia, Melbourne	15160	15180	15240	15320
			15395	17715	17795	

0100-0200		Radio Havana Cuba	17750	21740		
0100-0200		Radio Japan, Tokyo	9655			
0100-0200		Radio Luxembourg	11815	17810		
0100-0200		Radio Moscow, USSR	6090			
			6000	6170	7115	7165
			7195	9720	9765	9890
			12050	13605	15245	15405
			15425	17700		
0100-0200		Radio Moscow World Service	11845	17570	17675	17850
			17860	17880		
0100-0200		Radio New Zealand, Wellington	15150	17705		
0100-0200		Radio for Peace, Costa Rica	13660			
0100-0200		Radio Prague, Czechoslovakia	5930	6055	7345	9540
			9630	9740	11990	
0100-0200		Radio Thailand, Bangkok	9655	11905		
0100-0200		SBC Radio One, Singapore	5010	5052	11940	
0100-0200		SLBC, Colombo, Sri Lanka	6005	9720	15425	
0100-0200		Spanish Foreign Radio, Madrid	9630	11880		
0100-0200	T-S	Superpower KUSW, Utah	15580			
0100-0200		Voice of America, Washington	5995	6130	7205	9455
			9775	9815	11580	11740
			15205			
0100-0200		Voice of Indonesia, Jakarta	9680	11790		
0100-0200		WCSN, Boston, Massachusetts	9850			
0100-0200		WHRI, Noblesville, Indiana	9495	17830		
0100-0200		WRNO New Orleans, Louisiana	7355			
0100-0200		WYFR, Oakland, California	5950			
0100-0200	S-F	WYFR, Oakland, California	5950	9505	15440	
0130-0140	T-S	Voice of Greece, Athens	7430	9420	11645	
0130-0200		Radio Budapest, Hungary	6110	9520	9835	9883
			11910	15160		
0130-0200	S,M	Radio Canada Int'l, Montreal	5960	9755		
0130-0200		Radio Veritas Asia, Philippines	15330	15365		
0130-0200		WINB, Red Lion, Pennsylvania	15145			

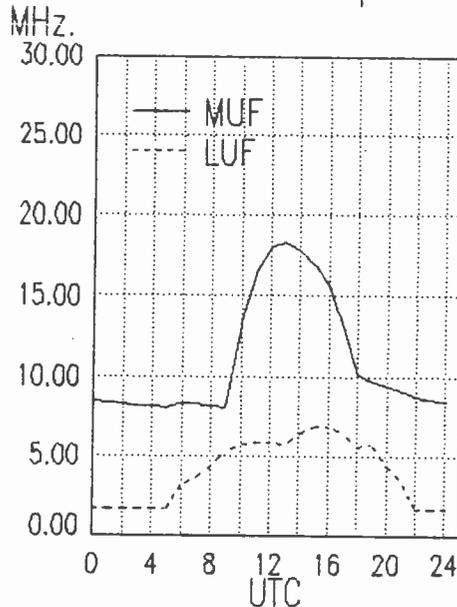
## 0200 UTC [8:00 PM EST/5:00 PM PST]

0200-0215		Vatican Radio, Vatican City	6145	7125	9650
0200-0225		Kol Israel, Jerusalem	7460	9435	9855

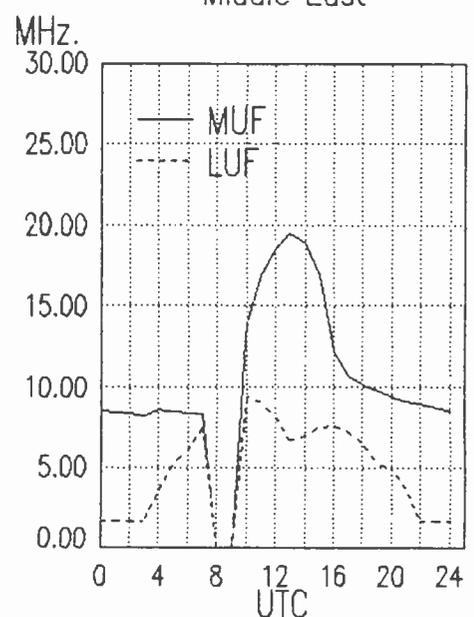
East Coast To  
Western Europe



East Coast To  
Eastern Europe



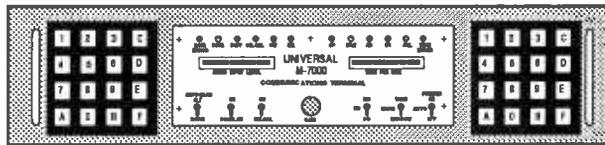
East Coast To  
Middle East



## Sophisticated Monitoring Equipment From Universal

### Universal M-7000 Multi-Mode Converter

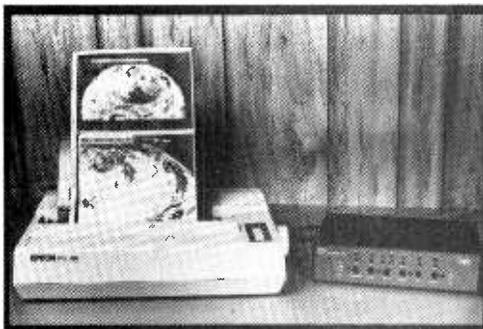
The new M-7000 decodes Morse code, many forms of RTTY, FAX and FDM. It has many automatic features such as speed readout, auto filter tune and full auto tune. Simple connections to your shortwave receiver and video monitor will enable you to monitor with the most sophisticated surveillance decoder available. Parallel and serial ports provided. No computer required. 115/230 VAC 50/60 HZ.



**Universal M-7000 Introductory Pricing:**  
 Standard M-7000 ..... \$ 999.00  
 With Real Time Clock Option ..... \$1059.00  
 With Video FAX Option ..... \$1089.00  
 With Clock & Video FAX Option .... \$1129.00  
 Shipping/Handling (USA) ..... \$ 11.00

Too many features to list here! Please write for full M-7000 information. Prices and specifications are subject to change.

- ◆ Morse Code
- ◆ Baudot RTTY
- ◆ Variable Baudot
- ◆ Bit Inverted Baudot
- ◆ ASCII Lo/Hi/Var
- ◆ Sitor Mode A & B
- ◆ ARQ 2&4 (TDM)
- ◆ VFT Modes (FDM)
- ◆ Packet AX.25
- ◆ FAX AM/FM
- ◆ Russian 3S Cyrillic
- ◆ Literal Mode
- ◆ Databit Mode
- ◆ Low & High Tone
- ◆ Diversity Reception
- ◆ Automatic Tuning
- ◆ Video+Print Squelch
- ◆ MSI, UOS, ATC
- ◆ Self Diagnostics
- ◆ Remote Terminal
- ◆ User Prgm. Sel-Cals



### Info-Tech M-800 FAX Unit

The Info-Tech M-800 is the affordable solution for listeners desiring high resolution facsimile. This compact device converts audio from your shortwave or satellite receiver and prints it to your compatible dot matrix printer. Handles all standard speeds and IOCs. Performs AM or FM detection, positive, or negative, L-R or R-L. Auto or Manual. Now features logging line and operation from 110 VAC 60 Hz or 12 VDC. On sale only! \$299.00 (+\$7 UPS)

#### FULL CATALOG AVAILABLE

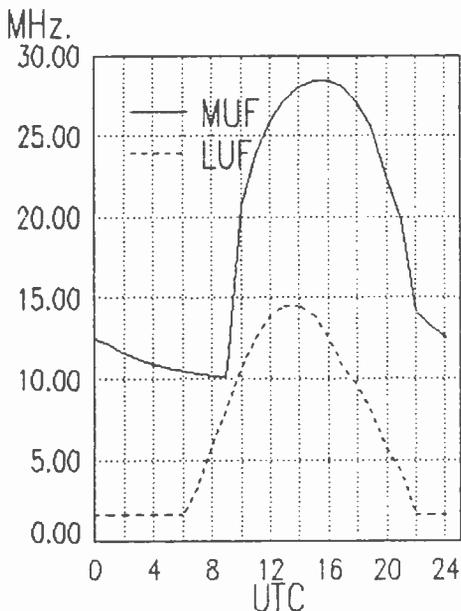
Universal offers a big shortwave catalog covering all types of sw equipment including receivers, antennas, RTTY & FAX equipment plus books and accessories. Send \$1 or 3 IRC's.

## Universal Radio

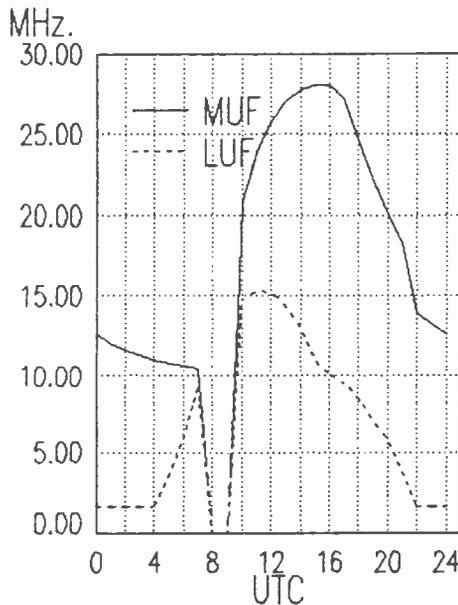
1280 Aida Drive Dept. MT  
 Reynoldsburg, Ohio 43068  
 USA Phone: 614 866-4267  
 FAX: 614 866-2339

Universal...Serving Radio Enthusiasts Since 1942

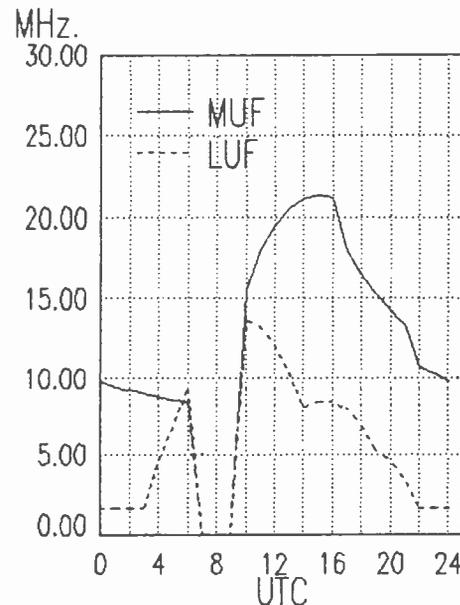
East Coast To  
West Africa



East Coast To  
Central Africa



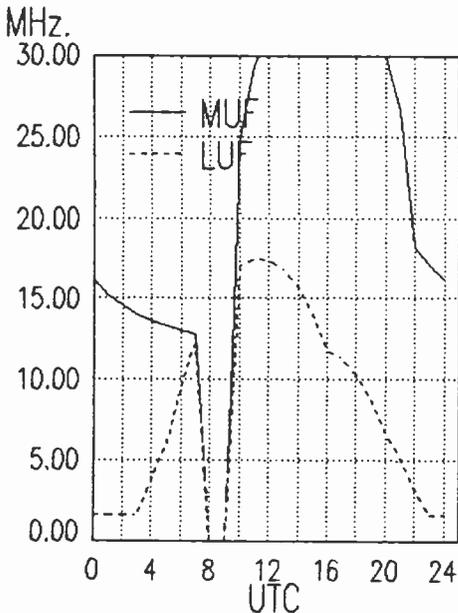
East Coast To  
East Africa



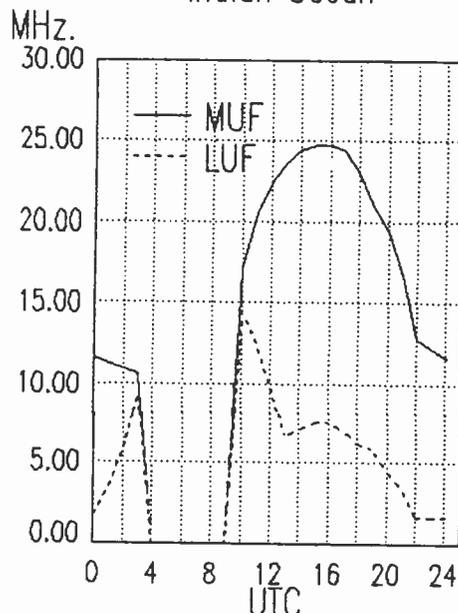
# frequency SECTION

0200-0230	BBC, London, England	5975 6005 6175 7325 9410 9515 9590 9915 12095 15260		0200-0300 A	Radio New Zealand, Wellington	15150 17705	
0200-0230	Burma Bcating Service, Rangoon	7185		0200-0300	Radio RSA, South Africa	9580 9615 11760	
0200-0230 W,A	Radio Budapest, Hungary	6110 9520 9585 9835 9883 11910 15160		0200-0300	Radio Thailand, Bangkok	9655 11905	
0200-0230	Swiss Radio Int'l, Berne	6095 6135 9725 9885 12035 17730		0200-0300	SBC Radio One, Singapore	5010 5052 11940	
0200-0230	WINB, Red Lion, Pennsylvania	15145		0200-0300	SLBC, Colombo, Sri Lanka	6005 9720 15425	
0200-0245	Radio Berlin Int'l, E. Germany	6080 9730		0200-0300 T-S	Superpower KUSW, Utah	11695	
0200-0250	Deutsche Welle, West Germany	6035 7285 9690 11945		0200-0300	Voice of America, Washington	5995 6130 7205 9775 15205	
0200-0250	Radio Bras, Brasilia, Brazil	11745v		0200-0300	Voice of Asia, Taiwan	7285	
0200-0255	Radio Bucharest, Romania	5990 6155 9510 9570 11830 11940		0200-0300	Voice of Free China, Taiwan	5985 9680 11740	
0200-0255	RAE, Buenos Aires, Argentina	9690 11710		0200-0300	Voice of Kenya, Nairobi	6045	
0200-0300	CBC Northern Quebec Service	6195 9625		0200-0300	WCSN, Boston, Massachusetts	9850	
0200-0300	CBN, St. John's, Newfoundland	6160		0200-0300	WINB, Red Lion, Pennsylvania	15145	
0200-0300	CBU, Vancouver, British Columbia	6160		0200-0300	WHRI, Noblesville, Indiana	7365 9495	
0200-0300	CFCF, Montreal, Quebec	6005		0200-0300	WRNO, New Orleans, Louisiana	7355	
0200-0300	CFCN, Calgary, Alberta	6030		0200-0300	WYFR, Oakland, California	15440	
0200-0300	CFRB, Toronto, Ontario	6070		0200-0300 T-S	WYFR Satellite Net, California	5950 9505	
0200-0300	CHNS, Halifax, Nova Scotia	6130		0215-0220	Radio Nepal, Kathmandu	5005 7165	
0200-0300	CKWX, Vancouver, British Columbia	6080		0230-0240	Port Moresby, Papua New Guinea	3925 4890 5960 5985 6020 6040 6080 6140 9520	
0200-0300	(US) Far East Network, Tokyo	3910		0230-0245 TWFS	Radio Budapest, Hungary	6110 9520 9835 11910 15160	
0200-0300	HCJB, Quito, Ecuador	9720 11775 15155		0230-0245	Radio Pakistan, Islamabad	7010 11570 15115 15580 17660	
0200-0300	KSDA, Guam	17865		0230-0300	BBC, London, England	5975 6005 6175 7325 9410 9515 9915 12095 15260	
0200-0300 T-A	KVOH, Rancho Simi, California	13695		0230-0300	Radio Netherland, Hilversum	6020 6165 9590 9895	
0200-0300	KYOI, Saipan	17780		0230-0300 T-A	Radio Portugal, Lisbon	6060 9600 9635 9680 9705 11840	
0200-0300	Radio Australia, Melbourne	15240 15320 17795 21740		0230-0300	Radio Sweden, Stockholm	9695 11705 17840 SSB	
0200-0300	Radio Cairo, Egypt	9475 9675		0230-0300	Radio Tirana, Albania	7065 9760	
0200-0300 S,M	Radio Canada Int'l, Montreal	9755 11845 11940		0240-0250	All India Radio, New Delhi	3905 4860 4880 4895 5960 5990 6110 6120 7195 7295 9550 9610 11830 11870 15305	
0200-0300	Radio Havana Cuba	6140 9655		0245-0300	Radio Berlin Int'l, E. Germany	6080 9620 9730 11785	
0200-0300	Radio Japan, Tokyo	5960		0245-0300	Radio Korea, Seoul, South Korea	7275 15375	
0200-0300	Radio Luxembourg	6090					
0200-0300	Radio Moscow, USSR	6000 6170 7115 7165 7195 9765 9890 12050 13605 15405 15245 15425 15425 17700					
0200-0300	Radio Moscow World Service	11845 12010 17675 17850 17570 17860 17880					
0200-0300	Radio Orion, South Africa	3955					
0200-0300	Radio for Peace, Costa Rica	13660					

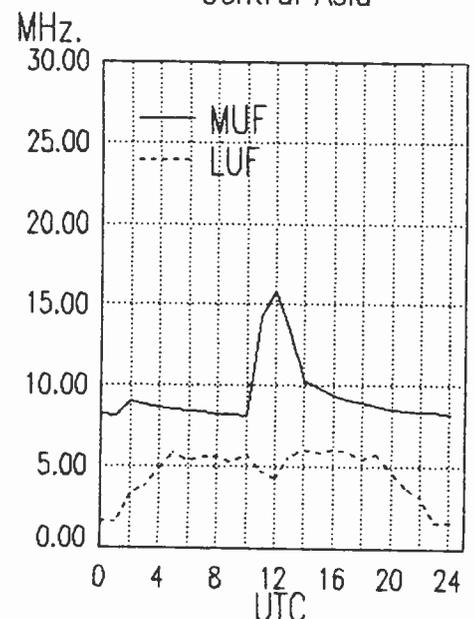
East Coast To  
South Africa



East Coast To  
Indian Ocean



East Coast To  
Central Asia

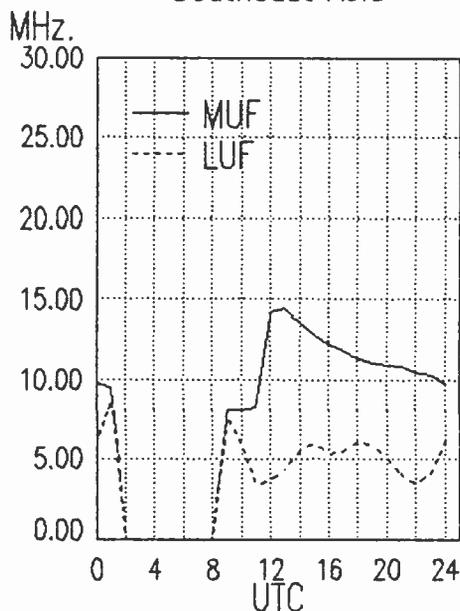


# frequency SECTION

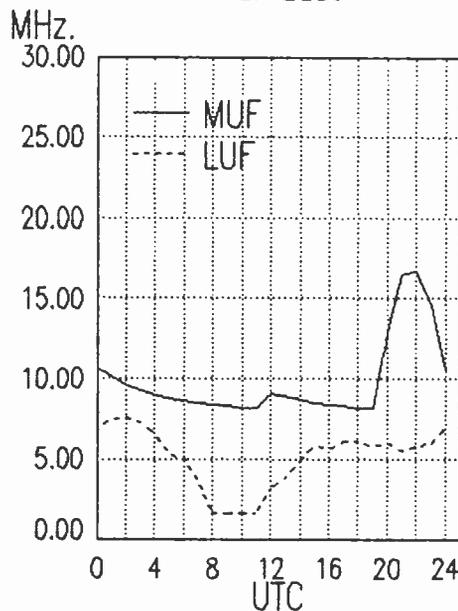
## 0300 UTC [9:00 PM EST/6:00 PM PST]

0300-0330	Radio Berlin Int'l, E. Germany	6080	9620	9730	11785
0300-0330	Radio Kiev, Ukrainian SSR	7150	7205	7400	13645
		15180	15455		
0300-0330	WINB, Red Lion, Pennsylvania	15145			
0300-0400 T-A	KVOH, Rancho Simi, California	13695			
0300-0400	Radio Korea (South), Seoul	7275	15575		
0300-0400	Radio Moscow, USSR	6000	6170	7115	7165
		7195	7290	9600	9700
		9890	13605	15405	15425
		17700			
0300-0400	Radio Moscow World Service, USSR	11845	17570	17675	17850
		17860	17880		
0300-0400 T-S	Superpower KUSW, Utah	11695			
0300-0400	WHRI, Noblesville, Indiana	7405	9495		
0300-0400	WRNO, New Orleans, Louisiana	7355			
0300-0400	WYFR, Oakland, California	15440			
0300-0400	WYFR Satellite Net, California	5950	9505		
0330-0400	Radio Berlin Int'l, E. Germany	6125	6165	11750	
0330-0400	Radio Finland, Helsinki	9635	11755		
0330-0400 S,M	WINB, Red Lion, Pennsylvania	15145			
0350-0400	Radio Yerevan, Armenian SSR	11790	13645	15180	
0300-0307	Radio Pakistan, Islamabad	5090	5930	7095	
0300-0310	CBC Northern Quebec Service	6195	9625		
0300-0325	Radio Netherland, Hilversum	6020	6165	9590	9895
0300-0330	BBC, London, England	3955	5975	6005	6155
		6175	6195	7210	7325
		9410	9515	9915	12095
		15260			
0300-0330	Radio Cairo, Egypt	9475	9675		
0300-0330	Radio Japan, Tokyo	11870	15195	17810	17825
		21610			
0300-0345 A	Radio New Zealand, Wellington	15150	17705		
0300-0350	Deutsche Welle, West Germany	6010	6085	6130	9545
		9605	9700		
0300-0355	Radio Beijing, PR China	9770	11715	11860	15180
		15290	15455		
0300-0356	Radio RSA, South Africa	9580	9615	11730	
0300-0400	CBN, St. John's, Newfoundland	6160			
0300-0400	CBU, Vancouver, British Columbia	6160			
0300-0400	CFCF, Montreal, Quebec	6005			
0300-0400	CFCN, Calgary, Alberta	6030			
0300-0400	CHNS, Halifax, Nova Scotia	6130			
0300-0400	CKWX, Vancouver, British Columbia	6080			
0300-0400	CFRB, Toronto, Ontario	6070			
0300-0400	(US) Far East Network, Tokyo	3910			
0300-0400	HCJB, Quito, Ecuador	9720	11775	15155	
0300-0400 T-A	KVOH, Rancho Simi, California	13695			
0300-0400	KYOI, Saipan	17780			
0300-0400	La Voz Evangelica, Honduras	4820			
0300-0400	Radio Australia, Melbourne	11945	15160	15240	15320
		15395	17715	17795	21740
		9755	11845	11940	
0300-0400 T-A	Radio Canada Int'l, Montreal	13660			
0300-0400	Radio for Peace, Costa Rica	9655	6140	9770	
0300-0400	Radio Havana Cuba	5930	6055	7345	9540
0300-0400	Radio Prague, Czechoslovakia	9630	9740	11990	
		9655	11905		
0300-0400	Radio Thailand, Bangkok	5010	5052	11940	
0300-0400	SBC Radio One, Singapore	6005	9720	15425	
0300-0400	SLBC, Colombo, Sri Lanka	9535			
0300-0400	Trans World Radio, Bonaire	6035	7200	7280	9525
0300-0400	Voice of America, Washington	9550	11835		
		5985	9680		
0300-0400	Voice of Free China, Taiwan	6045			
0300-0400	Voice of Kenya, Nairobi	6100			
0300-0400	Voice of Nicaragua, Managua	9850			
0300-0400	WCSN, Boston, Massachusetts	6150			
0310-0330	Valican Radio, Vatican City	3965	7135	7175	
0313-0400	Radio France Int'l, Paris	9550	9790	9800	11670
		11700	11995		
0330-0340 S-F	Port Moresby, Papua New Guinea	3925	4890	5960	5985
		6020	6040	6080	6140
		9520			
0330-0400	BBC, London, England	3955	5975	6005	6155
		6175	6195	9410	9915
		12095			
0335-0400	Radio New Zealand, Wellington	15150	17705		
0330-0400	Radio Tanzania, Dar es Salaam	9684			
0330-0400	Radio Tirana, Albania	7065	9500		
0330-0400	Radio Sweden, Stockholm	11705			

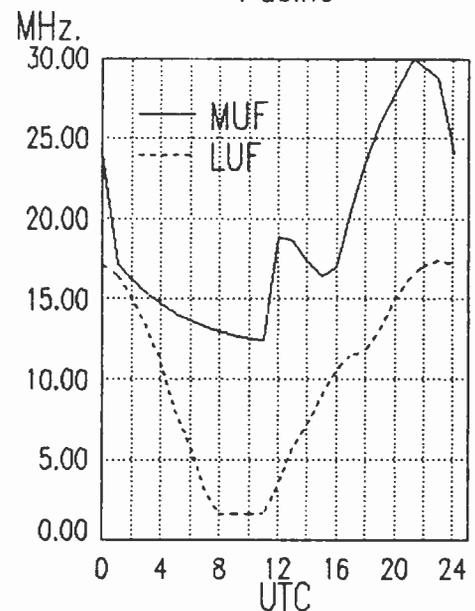
East Coast To  
Southeast Asia



East Coast To  
Far East



East Coast To  
Pacific



# frequency SECTION

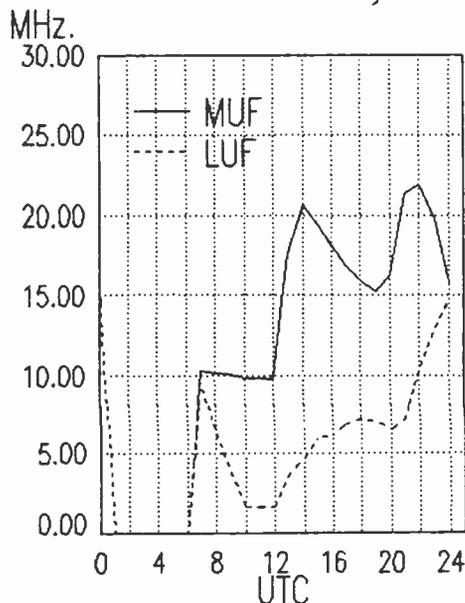
0330-0400	United Arab Emirates Radio	11940	15435	17890	21700
0335-0340	All India Radio, New Delhi	3905	4860	9610	11830
		11870	11890	15305	
0340-0350 T-S	Voice of Greece, Athens	7430	9395	9420	
0350-0400	RAI, Rome, Italy	9710	11905	15330	
0355-0400	Radio Yerevan, Armenian SSR	13645	15180	15455	

## 0400 UTC [10:00 AM EST/7:00 PM PST]

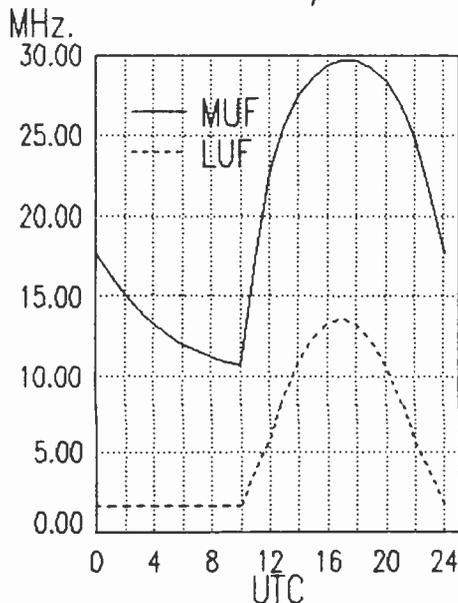
0400-0405	Radio Uganda, Kampala	4976	5026		
0400-0410	Radio Thailand, Bangkok	9655	11905		
0400-0410	RAI, Rome, Italy	9710	11905	15330	
0400-0415	Radio Berlin Int'l, E. Germany	6125	6165	11750	
0400-0420	Radio Botswana, Gaborone	4820			
0400-0420 T-S	Radio Zambia, Lusaka	3345	6165		
0400-0425	Radio Bucharest, Romania	6155	9510	9570	11830
		11940			
0400-0425	Radio Netherland, Hilversum	7210	9850		
0400-0426	Radio RSA, South Africa	9585	11730		
0400-0430	BBC, London, England	3955	5975	6005	6155
		6275	6195	7120	7160
		7185	7260	9410	9510
		9580	9600	9915	12095
		15070	15420	17815	
0400-0430	La Voz Evangelica, Honduras	4820			
0400-0430 M	Radio Norway Int'l, Oslo	9650	11760		
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			
0400-0430 S,M	WINB, Red Lion, Pennsylvania	15145			
0400-0445	Radio Berlin Int'l, E. Germany	9620	11785		
0400-0450	Deutsche Welle, West Germany	7150	7225	9565	9765
		11765			
0400-0450	Radio Pyongyang, North Korea	15160	15180		
0400-0450	Voice of Turkey, Ankara	9445	17760		
0400-0455	Radio Beijing, PR China	9645	11980		
0400-0455	RAE, Buenos Aires, Argentina	9690	11710		
0400-0500	CBC Northern Quebec Service	6195	9625		
0400-0500	CBN, St. John's, Newfoundland	6160			

0400-0500	CBU, Vancouver, British Columbia	6160			
0400-0500	CFCF, Montreal, Quebec	6005			
0400-0500	CFCN, Calgary, Alberta	6030			
0400-0500	CHNS, Halifax, Nova Scotia	6130			
0400-0500	CKWX, Vancouver, British Columbia	6080			
0400-0500	CFRB, Toronto, Ontario	6070			
0400-0500	(US) Far East Network, Tokyo	3910			
0400-0500	FEBC, Manila, Philippines	11850			
0400-0500	HCJB, Quito, Ecuador	9720	11775	15155	
0400-0500	KYOI, Saipan	17780			
0400-0500	Radio Australia, Melbourne	11910	11945	15160	15240
		15320	17715	17795	21740
0400-0500	Radio for Peace, Costa Rica	13660			
0400-0500	Radio Havana Cuba	5965	6035	6140	9655
		9770			
0400-0500	Radio Moscow, USSR	6000	7150	7165	7390
		9580	9890	11845	12050
		12070	13645	13765	15180
		15405	15415	15425	15455
		17675	17740	17860	17880
		15150	17705		
0400-0500	Radio New Zealand, Wellington	7115			
0400-0500	Radio Sofia, Bulgaria	5010	5052	11940	
0400-0500	SBC Radio One, Singapore	11695			
0400-0500 T-S	Superpower KUSW, Utah	3980	5995	6035	7170
0400-0500	Voice of America, Washington	7200	7280	9525	9575
		11835	11925	15205	
0400-0500	Voice of Kenya, Nairobi	6045			
0400-0500	WCSN, Boston, Massachusetts	9870			
0400-0500	WHRI, Noblesville, Indiana	7355	7400		
0400-0500	WRNO, New Orleans, Louisiana	6185			
0400-0500	WYFR Satellite Net, California	5950	9505		
0425-0440	RAI, Rome, Italy	5980	7275	15330	
0430-0455	Radio Austria Int'l, Vienna	6015	6155	9875	15410
0430-0500	BBC, London, England	3955	5975	6005	6015
		6155	6195	7120	7185
		9410	9510	9580	11945
		12095	15070	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			
0430-0500	Trans World Radio, Swaziland	3205	7205		

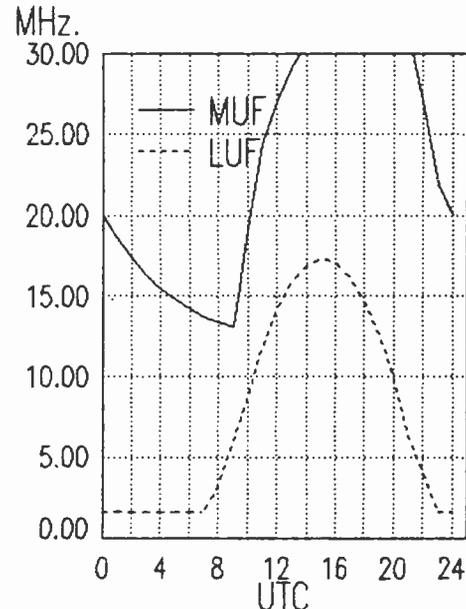
East Coast To  
Australia & Malaysia



East Coast To  
Central America/Caribbean



East Coast To  
South America



# frequency SECTION

0432-0500 A,M FEBA, Seychelles 15325 17820 (irr)  
 0445-0500 Radio Berlin Int'l, East Germany 9620 11785

## 0500 UTC [12:00 AM EST/9:00 PM PST]

0500-0510 CBC Northern Quebec Service 6195 9625  
 0500-0510 Radio Lesotho, Maseru 4800  
 0500-0510 M-A Radio Zambia, Lusaka 3345 6165  
 0500-0515 Deutsche Welle, West Germany 7150 7225 9565 9765  
 11765  
 0500-0515 GBC, Accra, Ghana 4915  
 0500-0515 Vatican Radio, Vatican City 9645 15190  
 0500-0530 A FEBA, Seychelles 15325 17820 (irr)  
 0500-0530 Radio Berlin Int'l, East Germany 5965 9620 11785  
 0500-0530 M Radio Norway Int'l, Oslo 11735 15310  
 0500-0530 S,M Trans World Radio, Bonaire 9535  
 0500-0530 Trans World Radio, Swaziland 3205 5055 7210  
 0500-0550 Deutsche Welle, West Germany 5960 6120 6130 9635  
 9700  
 0500-0555 Radio Beijing, China 9690  
 0500-0600 BBC, London, England 5975 6175 6195 7105  
 7120 7160 7185 9410  
 9510 9580 12095 15070  
 15420 17120 17815 17885

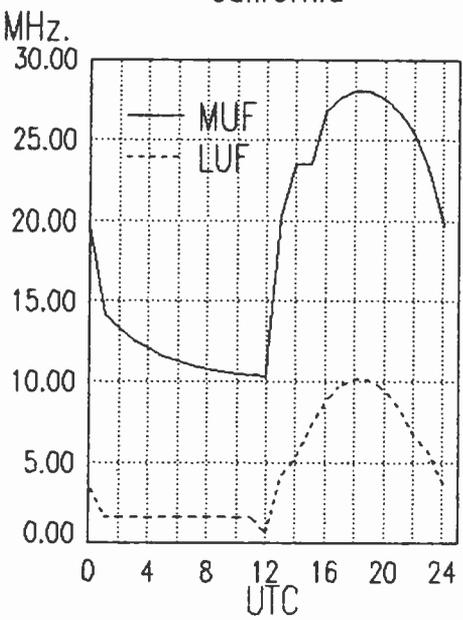
0500-0600 CBC Northern Quebec Service 6195 9625  
 0500-0600 CBU, Vancouver, British Columbia 6160  
 0500-0600 CFCF, Montreal, Quebec 6005  
 0500-0600 CFCN, Calgary, Alberta 6030  
 0500-0600 CHNS, Halifax, Nova Scotia 6130  
 0500-0600 CKWX, Vancouver, British Columbia 6080  
 0500-0600 CFRB, Toronto, Ontario 6070  
 0500-0600 (US) Far East Network, Tokyo 3910  
 0500-0600 FEBC, Manila, Philippines 11850  
 0500-0600 HCJB, Quito, Ecuador 6230 9720 11775  
 17780  
 0500-0600 KYOI, Saipan 17780  
 0500-0600 Radio Australia, Melbourne 11910 15160 15240 17795  
 0500-0600 Radio for Peace, Cost Rica 13660  
 0500-0600 Radio Havana Cuba 5965 6035 9655 9770  
 0500-0600 Radio Japan, Tokyo 11870 17810  
 0500-0600 Radio Kuwait 15345

0500-0600 Radio Moscow, USSR 7150 7165 7390 9890  
 11845 12070 13605 13645  
 15260 15320 15465 15500  
 15540 17600 17880  
 15150 17705  
 0500-0600 Radio New Zealand, Wellington 9655 11905  
 0500-0600 Radio Thailand, Bangkok 11880  
 0500-0600 S Radio Zambia, Lusaka 5010 5052 11940  
 0500-0600 SBC Radio One, Singapore 9630  
 0500-0600 Spanish Foreign Radio, Madrid 6155  
 0500-0600 S Superpower KUSW, Utah 6155 9705  
 0500-0600 S Swaziland Commercial Radio 3980 5995 6035 7170  
 0500-0600 Voice of America, Washington 7280 9575 15205  
 6045  
 0500-0600 Voice of Kenya, Nairobi 9765 ML  
 0500-0600 Voice of the Mediteranean 6100  
 0500-0600 IRR Voice of Nicaragua, Managua 7255 15120 15185  
 0500-0600 Voice of Nigeria, Lagos 9870  
 0500-0600 WCSN, Boston, Massachusetts 15145  
 0500-0600 WINB, Red Lion, Pennsylvania 7405 9495  
 0500-0600 WHRI, Noblesville, Indiana 9455  
 0500-0600 M-A WMLK, Bethel, Pennsylvania 6185  
 0500-0600 WRNO, New Orleans, Louisiana 6185  
 0500-0600 WYFR Satellite Net, California 3356 4820 7255  
 0510-0520 Radio Botswana, Gaborone 17820  
 0527-0600 F FEBA, Seychelles 3990 6050 6140 7210  
 0530-0545 BBC, London, England\* 9750  
 0530-0555 Radio Bucharest, Romania 9640 11840 11940 15340  
 15380 17720  
 0530-0600 Radio Finland, Helsinki 6120 9635 11715 15185  
 0530-0600 Radio Netherland, Hilversum 6165 9715  
 0530-0600 Radio Tirana, Albania 7300  
 0530-0600 Trans World Radio, Swaziland 5055 7210  
 0530-0600 UAE RADIO, United Arab Emirates 15435 17775 21700  
 0555-0600 Ghana Broadcasting Corp., Accra 4915  
 0555-0600 Voice of Malaysia, Kuala Lumpur 6175 9750 15295

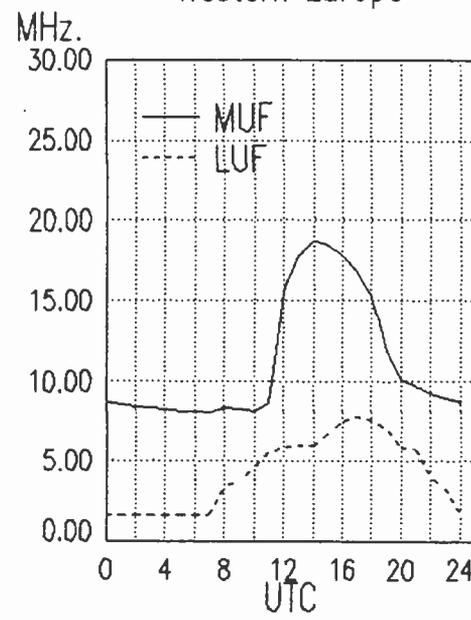
## 0600 UTC [1:00 AM EST/10:00 PM PST]

0600-0615 Kol Israel, Jerusalem 9435 11605 12080  
 0600-0615 Radio Ghana, Accra 3366 4915  
 0600-0615 M-A Radio Zambia, Lusaka 6165 7235

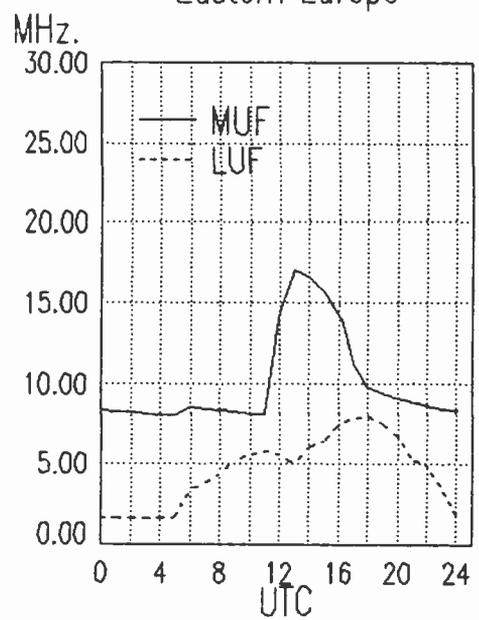
East Coast To California



Midwest To Western Europe



Midwest To Eastern Europe





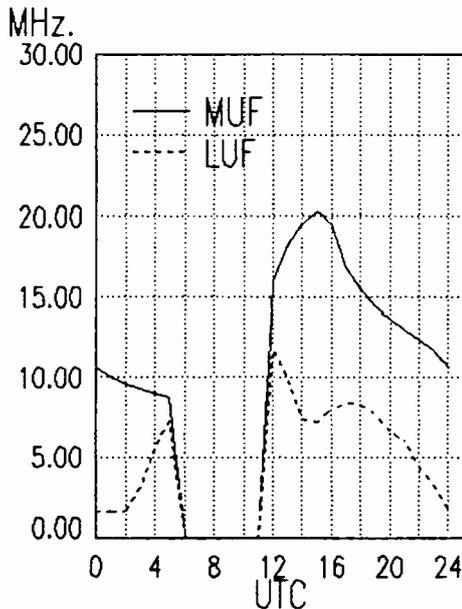
# frequency SECTION

## 0700 UTC [2:00 AM EST/11:00 PM PST]

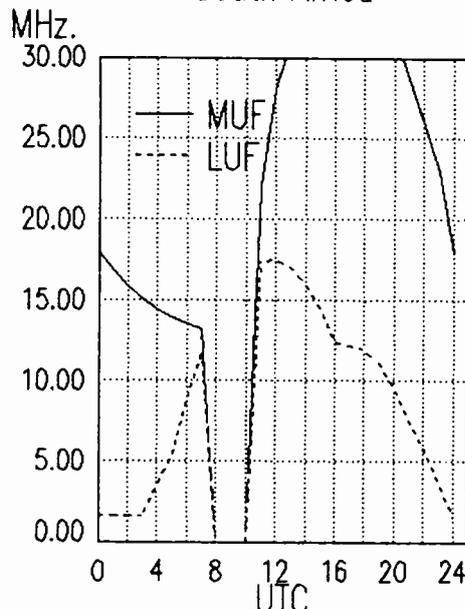
0700-0703	Port Moresby, Papua New Guinea	3925	4890	5960	5985
		6020	6040	6080	6140
		9520			
0700-0710	Radio Bucharest, Romania	11940	15250	15335	17790
		17805	21665		
0700-0710	Radio Sierra Leone, Freetown	5980			
0700-0715	Radio Ghana (HS), Accra	3366	4915		
0700-0730	BBC, London, England	3955	5975	6195	7150
		9410	9600	9640	11860
		12095	15070	15105	15400
0700-0730	Burma Bcasting Service, Rangoon	9730			
0700-0730	Radio Australia, Melbourne	5995	9655	15160	15240
		15395	17715	17750	
0700-0730	Radio Berlin Int'l, East Germany	15240	17880	21540	21645
0700-0730	Radio Bucharest, Romania	21600			
0700-0730	Radio New Zealand, Wellington	12045	15150		
0700-0730	S Radio Zambia, Lusaka	11880			
0700-0745	Radio Berlin Int'l, East Germany	5965	11810		
0700-0750	Radio Pyongyang, North Korea	15340	17795		
0700-0800	ABC, Perth, Australia	15425			
0700-0800	AWR, Forli, Italy	7257			
0700-0800	CBU, Vancouver, British Columbia	6160			
0700-0800	CFCF, Montreal, Quebec	6005			
0700-0800	CFCN, Calgary, Alberta	6030			
0700-0800	CHNS, Halifax, Nova Scotia	6130			
0700-0800	CKWX, Vancouver, British Columbia	6080			
0700-0800	CFRB, Toronto, Ontario	6070			
0700-0800	ELWA, Monrovia, Liberia	11830			
0700-0800	(US) Far East Network, Tokyo	3910			
0700-0800	HCJB, Quito, Ecuador	6130	9745	11925	
0700-0800	King of Hope, South Lebanon	6215			
0700-0800	KYOI, Saipan	17780			
0700-0800	Radio Ghana, Accra	6130			
0700-0800	Radio Japan, Tokyo	5990	15195	15270	15325
		17810	21695		
0700-0800	Radio Korea, Seoul, South Korea	6060	7275	9570	
0700-0800	Radio Kuwait	15345			
0700-0800	Radio Moscow, USSR	7270	7290	7300	7310
		9505	9580	9685	12010
		12050	13710	15135	15260

0700-0800	Radio Moscow World Service	7150	11710	11845	15320
		15460	15470	15500	17860
0700-0800	A,S Radio Thailand, Bangkok	9655	11905		
0700-0800	SBC-1, Singapore	11940			
0700-0800	Soloman Islands Broadcasting Corp	9545			
0700-0800	S Superpower KUSW, Utah	6155			
0700-0800	Trans World Radio, Monte Carlo	7105			
0700-0800	Trans World Radio, Swaziland	6070	9725		
0700-0800	Voice of Free China, Taiwan	5985			
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	WCSN, Boston, Massachusetts	7365			
0700-0800	WHRI, Noblesville, Indiana	7405			
0700-0800	M-A WMLK, Bethel, Pennsylvania	9455			
0700-0800	WYFR, Oakland, California	6065	7355	9680	
0700-0800	WYFR Satellite Network	5950			
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		
0720-0730	M-A Vatican Radio, Vatican City	6248	9645	11740	
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	5955	9655	11720	15240
0730-0800	Radio Finland, Helsinki	6120	9560	11755	15270
0730-0735	All India Radio, New Delhi	5990	6010	6020	7110
		7205	9610	9675	11850
		11935	15235	15250	17705
0730-0745	BBC, London, England*	3975	6010	7230	9915
0730-0800	BBC, London, England	3955	5975	7150	9410
		9600	9640	12095	15070
		15400			
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 Prague, Czechoslovakia	6055	7345	9505	

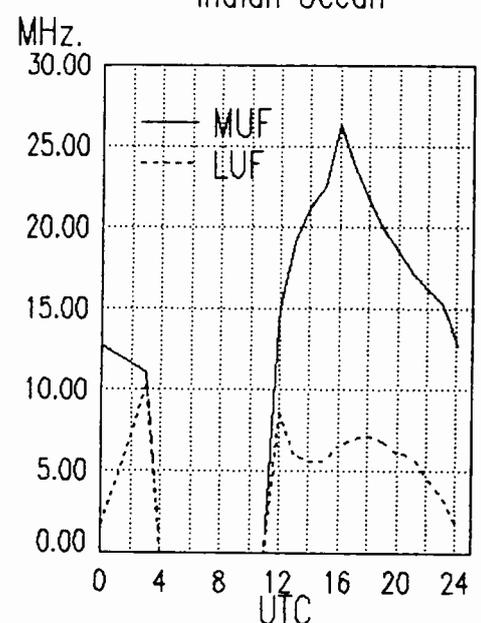
Midwest To  
East Africa



Midwest To  
South Africa



Midwest To  
Indian Ocean



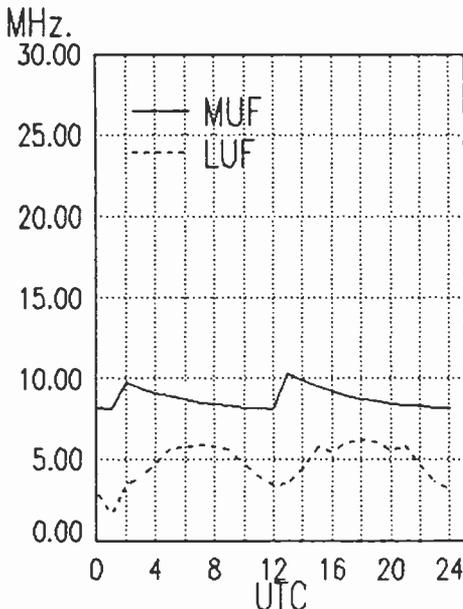
# frequency SECTION

0800 UTC [3:00 AM EST/12:00 AM PST]

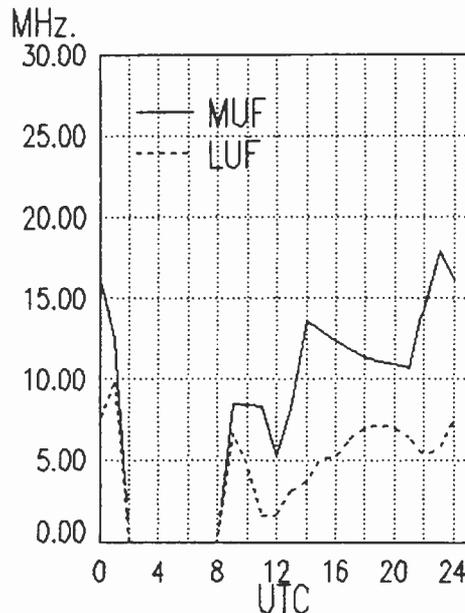
0800-0805	M-F	Port Moresby, Papua New Guinea	3925	4890	5960	5985
			6020	6040	6080	6140
			9520			
0800-0805		Soloman Islands Broadcasting Corp	9545			
0800-0815	M-A	Radio Zambia, Lusaka	6165	7235		
0800-0825	M-F	BRT, Brussels, Belgium	11695	21815		
0800-0825		Radio Netherland, Hilversum	9630	9715		
0800-0825		Voice of Malaysia, Kuala Lumpur	6175	9750	15295	
0800-0830		HCJB, Quito, Ecuador	6130	9655	9745	11925
0800-0830		Radio Bangladesh, Dhaka	12030	15525		
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	9480			
0800-0850		Radio Pyongyang, North Korea	9530	11830	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		BBC, London, England	9410	7150	9600	11860
			12095	15070	15360	15400
0800-0900		CBN, St. John's, Newfoundland	6160			
0800-0900		CBU, Vancouver, British Columbia	6160			
0800-0900		CFCF, Montreal, Quebec	6005			
0800-0900		CFCN, Calgary, Alberta	6030			
0800-0900		CHNS, Halifax, Nova Scotia	6130			
0800-0900		CKWX, Vancouver, British Columbia	6080			
0800-0900		CFRB, Toronto, Ontario	6070			
0800-0900		(US) Far East Network, Tokyo	3910			
0800-0900		King of Hope, South Lebanon	6215			
0800-0900		KNLS, Anchor Point, Alaska	9850			
0800-0900		KTWR, Guam	11805			
0800-0900		KYOI, Saipan	11900			
0800-0900		Radio Australia, Melbourne	5995	6080	9580	9655
			9710	11720	15285	15395
0800-0900		Radio Moscow, USSR	7290	11845	13680	13710

0800-0900		Radio for Peace, Costa Rica	15135	15155	15260	15460
0800-0900		SBC Radio One, Singapore	15530	17860		
0800-0900	S	Superpower KUSW, Utah	12030			
0800-0900		Voice of Indonesia, Jakarta	5010	5052	11940	
0800-0900	A,S	Voice of Kenya, Nairobi	6135			
0800-0900		WHRI, Noblesville, Indiana	11790	15105		
0800-0900		WYFR, Oakland, California	7270			
0800-0900		FR Satellite Network	9495			
0815-0830	S	Radio Austria Int'l, Vienna	7355	9680	11580	
			6065			
			6155	11915	15410	15415
			17870			
0815-0845	M-F	Voice of America, Washington DC	7175	9575	9750	11710
			11915	15600	17715	21500
			[ML]			
0815-0900	A,S	Radio Berlin Int'l, East Germany	6040	7185	9730	21465
			21540			
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	
0830-0855		Radio Austria Int'l, Vienna	6155	11915	15410	15415
0830-0900	S	Bhutan Bcating 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	6120	9560	11755	
0830-0900		Radio Prague, Czechoslovakia	11685	17840	21705	
0830-0900		Radio Sofia, Bulgaria	9700	11720		
0830-0900		Swiss Radio Int'l, Berne	9560	9885	13685	17830
			21695			
0830-0900		Voice of Nigeria, Lagos	15120			
0840-0850	M-A	Voice of Greece, Athens	9855	15630		
0840-0900	S-F	Trans World Radio, Monte Carlo	9480			
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

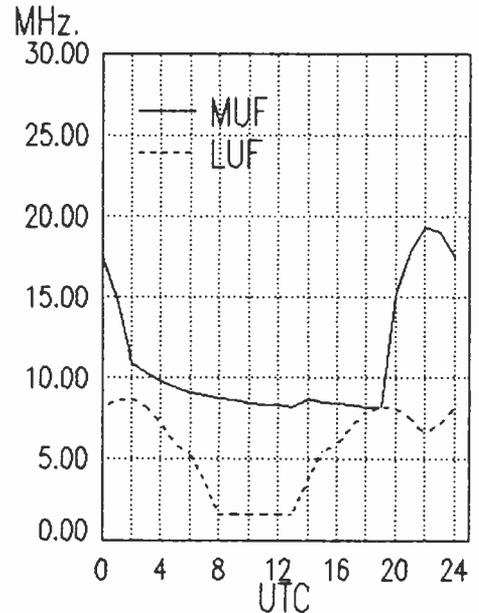
Midwest To  
Central Asia



Midwest To  
Southeast Asia



Midwest To  
Far East





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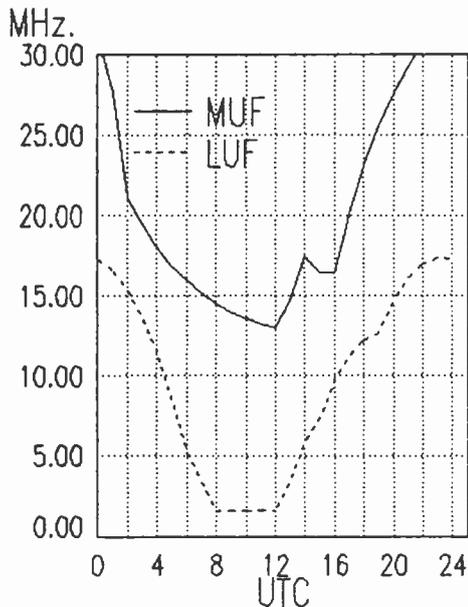
Signature \_\_\_\_\_  
(Signature required on all charge orders)

Mail to: CQ Communications, Inc.

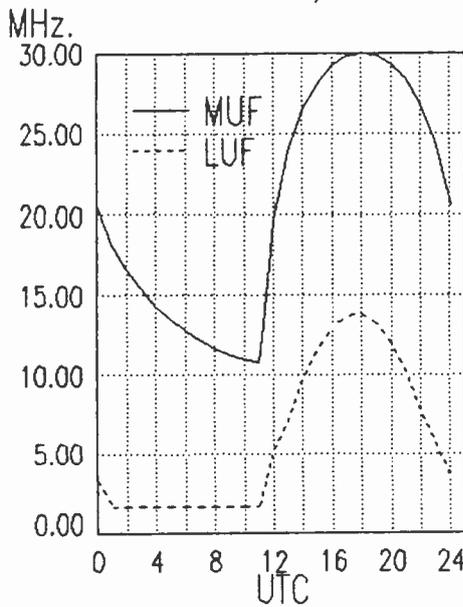
76 North Broadway, Hicksville, NY 11801

MT

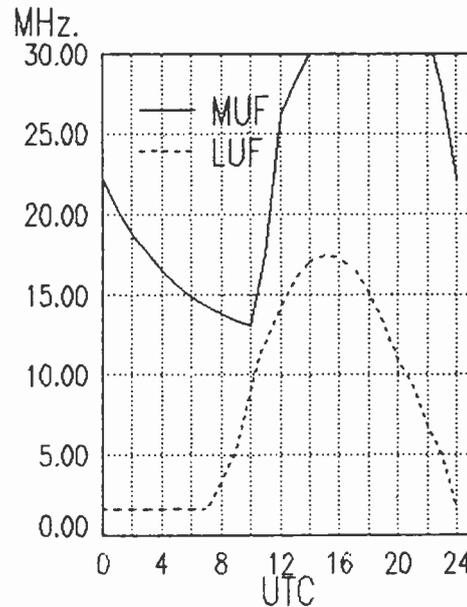
Midwest To Pacific



Midwest To Central America/Caribbean



Midwest To South America



# frequency SECTION

## 0900 UTC [4:00 AM EST/1:00 AM PST]

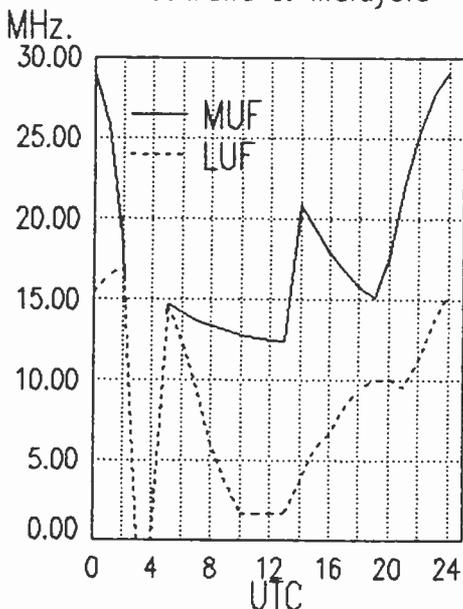
0900-0905	Africa No. 1, Gabon	7200	15200		
0900-0910	All India Radio, New Delhi	5960	5990	6010	6020
		6050	6065	6100	6140
		7110	7140	7150	7160
		7250	7280	7295	9610
		11850	15235	15250	17705
0900-0910	Port Moresby, Papua New Guinea	3295	4890	5960	5985
		6020	6040	6080	6140
		9520			
0900-0910	Trans World Radio, Monte Carlo	9480			
0900-0910	Voice of Lebanon, Beirut	6548			
0900-0925	Radio Finland, Helsinki	17795	21550		
0900-0930	FEBC, Manila, Philippines	11850	15350		
0900-0930	Nippon Broadcasting Corp.	3925			
0900-0930	Radio Beijing, China	9700	11755	15440	
0900-0930 A,S	Radio Prague, Czechoslovakia	11685	17840	21705	
0900-0950	Deutsche Welle, West Germany	6160	17765	17780	17875
		21500	21600	21680	
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
		11860	11955	12095	15070
		15400	15360	17790	18080
0900-1000	CFCF, Montreal, Quebec	6005			
0900-1000	CFCN, Calgary, Alberta	6030			
0900-1000	CHNS, Halifax, Nova Scotia	6130			
0900-1000	CKWX, Vancouver, British Columbia	6080			
0900-1000	CFRB, Toronto, Ontario	6070			
0900-1000	(US) Far East Network, Tokyo	3910			
0900-1000	HCJB, Quito, Ecuador	6130	9745	11925	
0900-1000	King of Hope, South Lebanon	6215			
0900-1000	KTWR, Agana, Guam	11805			
0900-1000	KYOI, Saipan	11900			
0900-1000	Radio Afghanistan, Kabul	4450	6085	15435	17720
0900-1000	Radio Australia, Melbourne	5995	6080	9580	9655
		9760	11720	15415	
0900-1000	Radio Japan, Tokyo	11840	11885	15270	17810

0900-1000	Radio Korea, Seoul, South Korea	7550	13670		
0900-1000	Radio Moscow, USSR	12055	13710	15135	15295
		15460	17880		
0900-1000	Radio for Peace, Costa Rica	135660			
0900-1000 S	Radio Prague, Czechoslovakia	6055	7345	9505	[ML]
0900-1000	Radio Tanzania, Dar es Salaam	7165			
0900-1000	SBC Radio One, Singapore	5010	5052	11940	
0900-1000 S	Superpower KUSW, Utah	6135			
0900-1000	Voice of Kenya, Nairobi	7270			
0900-1000	Voice of Nigeria, Lagos	7255	15120	15185	
0900-1000	WHRI, Noblesville, Indiana	7355			
0900-1000	WYFR, Oakland, California	11580			
0915-0930	Radio Korea, Seoul, South Korea	9570			
0915-0950 M-A	Radio Ulan Bator, Mongolia	9615	12015		
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	
		9725	11955		
0930-0945	BBC, London, England*	6160			
0930-1000	CBN, St. John's, Newfoundland	9700	11755	15440	
0930-1000	Radio Beijing, China	11855	15245		
0930-1000	Radio Finland, Helsinki	15390			
0930-1000	Radio Sweden Int'l, Stockholm	5995	7180	9725	11955
0945-1000	BBC, London, England*	6055	7345	9505	
0945-1000 M-A	Radio Prague, Czechoslovakia				

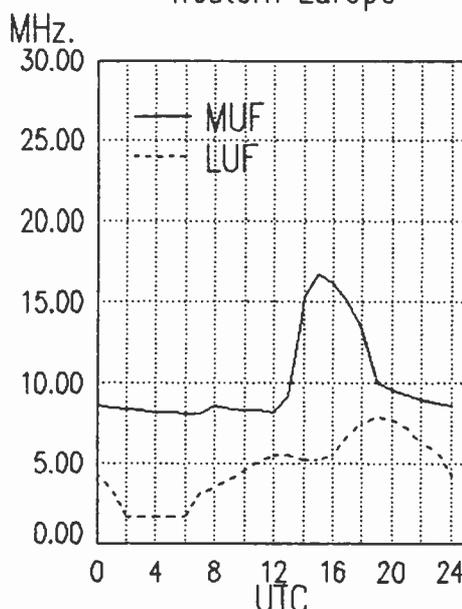
## 1000 UTC [5:00 AM EST/2:00 AM PST]

1000-1025	BRT, Brussels, Belgium	17595	21810		
1000-1030	Deutsche Welle, West Germany	9735	11785	17765	21600
1000-1030	HCJB, Quito, Ecuador	6130	9745	11925	
1000-1030	Radio Afghanistan, Kabul	4450	6085	15435	17720
1000-1030	Radio Beijing, China	9700	11755	15440	
1000-1030 S	Radio Norway Int'l, Oslo	21705			
1000-1030	Radio Tanzania, Dar es Salaam	7165			
1000-1030	Swiss Radio Int'l, Berne	9560	9885	13685	17830
		21695			
1000-1030	Voice of Ethiopia, Addis Ababa	9560			
1000-1030	Voice of Vietnam, Hanoi	9840	15010		
1000-1045	Radio Berlin Int'l, East Germany	21465(A,S)	21540		

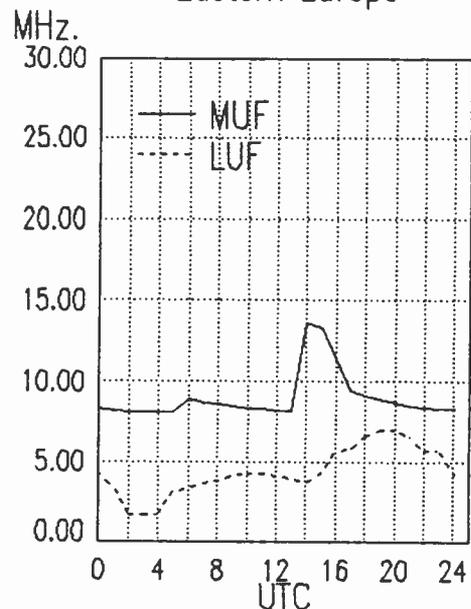
Midwest To  
Australia & Malaysia



West Coast To  
Western Europe



West Coast To  
Eastern Europe



# frequency SECTION

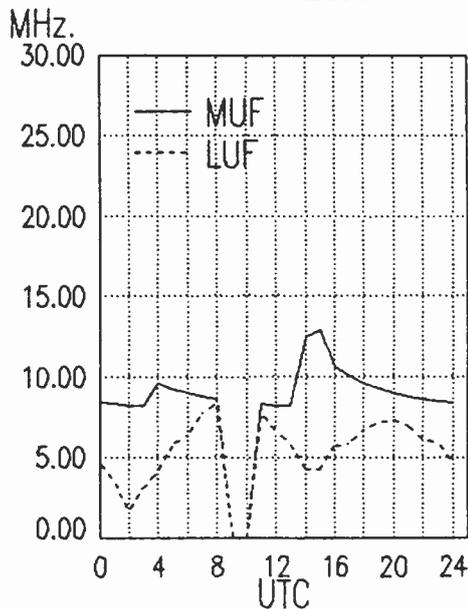
1000-1055	A	Trans World Radlo, Monte Carlo	7105			
1000-1100		ABC, Alice Springs, Australia	2310 [ML]			
1000-1100		ABC, Katherine, Australia	2485			
1000-1100		ABC, Perth, Australia	9610			
1000-1100		ABC, Tennant Creek, Australia	2325 [ML]			
1000-1100		All India Radio, New Delhi	11860 11915 15130 15335			
			17387 11785			
1000-1100		BBC, London, England	6185 9740 9750 11750			
			12095 15070 15400 17705			
			17790 18080			
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		CKWX, Vancouver, British Columbia	6080			
1000-1100		CFRB, Toronto, Ontario	6070			
1000-1100		(US) Far East Network, Tokyo	3910			
1000-1100		KTWR, Agana, Guam	11805			
1000-1100		KYOI, Saipan	11900			
1000-1100		Radio Afghanistan, Kabul	15435 17720			
1000-1100		Radio Australia, Melbourne	9580 9770 15415			
1000-1100		Radio Moscow, USSR	9600 13680 15135 15460			
			15475 17595 17645			
1000-1100		Radio New Zealand, Wellington	6100 9850			
1000-1100	S	Radio Prague, Czechoslovakia	6055 7345 9505 [ML]			
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 9590			
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			
1005-1010		Radio Pakistan, Islamabad	15606 17660			
1030-1040		Voice of Asia, Taiwan	5980			
1030-1100		BBC, London, England*	7180 9660 9725			
1030-1100		HCJB, Quito, Ecuador	6130 11925			
1030-1100		Radio Netherlands, Hilversum	6020 9505			
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	15435 17865 21605			
1030-1100		Voice of America, Washington*	11965			
1040-1050	H	Radio Free Europe, Munich*	5985 7115 9695 9725			

1040-1050	M-A	Voice of Greece, Athens	11895 15355			
1045-1100	S	Radio Budapest, Hungary	11645 15630			
			7220 9585 9835 11910			
			15160 15220			
1045-1100	M-A	Radio Prague, Czechoslovakia	6055 7345 9505			
1055-1100	S	Trans World Radio, Monte Carlo	7105			

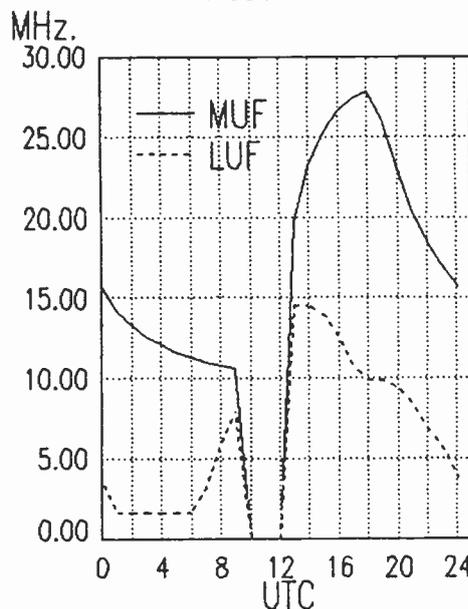
## 1100 UTC [6:00 AM EST/3:00 AM PST]

1100-1105		Radio Pakistan, Islamabad	6090 7290			
1100-1105	A	Port Moresby, Papua New Guinea	3295 4890 5960 5985			
			6020 6040 6080 6140			
			9520			
1100-1110	S	Port Moresby, Papua New Guinea	3295 4890 5960 5985			
			6020 6040 6080 6140			
			9520			
1100-1115		Radio New Zealand, Wellington	6100 9850			
1100-1120		Radio Pakistan, Islamabad	15606 17760			
1100-1125		Radio Netherland, Hilversum	6020 9505			
1100-1130		BBC, London, England*	7120			
1100-1130		HCJB, Quito, Ecuador	6130 11925			
1100-1130		Kol Israel, Jerusalem	9385 11700 15485 15640			
			15650 17635 17685 21625			
1100-1130		KTWR, Guam*	9820 11665			
1100-1130		Radio Japan, Tokyo	6120 11815			
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	13685 15570 17830			
1100-1130		Voice of Vietnam, Hanoi	7430 9732			
1100-1150		Deutsche Welle, West Germany	15410 17765 17800 21600			
1100-1150		Radio Pyongyang, North Korea	6576 9600 11735			
1100-1155		Radio Beijing, China	9665 15110 17715			
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 9510 9740			
			11750 11775 12095 15070			
			15360 17705 17790 18080			
			21710 21470 25750			
1100-1200		CBC Northern Quebec Service	6195 11720			

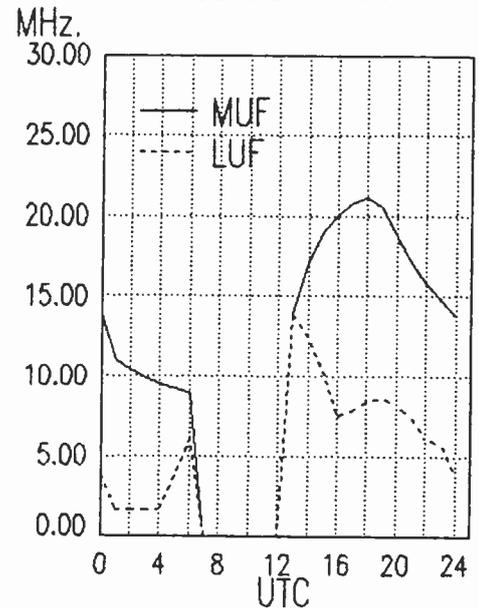
West Coast To Middle East



West Coast To West Africa



West Coast To Central Africa



# frequency SECTION

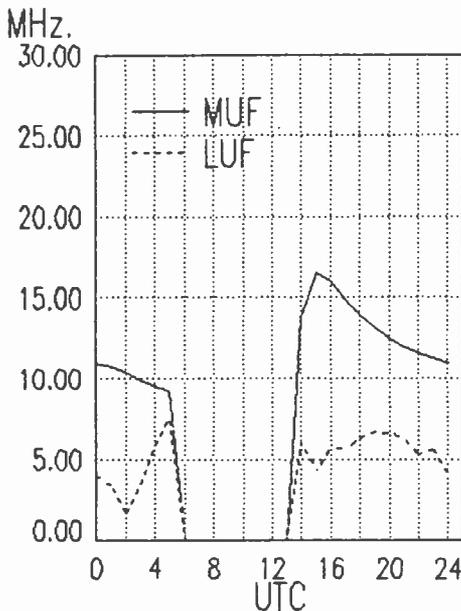
1100-1200	CBN, St. John's, Newfoundland	6160
1100-1200	CFCF, Montreal, Quebec	6005
1100-1200	CFCN, Calgary, Alberta	6030
1100-1200	CHNS, Halifax, Nova Scotia	6130
1100-1200	CKWX, Vancouver, British Columbia	6080
1100-1200	CFRB, Toronto, Ontario	6070
1100-1200	(US) Far East Network, Tokyo	3910
1100-1200	KYOI, Saipan	11900
1100-1200	Radio Australia, Melbourne	5995 7215 9580 9645
		9710 9770 11705 11800
1100-1200	Radio Moscow, USSR	9600 13680 13710 15460
		15335 15475 15490 15500
		15550 17595 17645 17820
		21590
1100-1200	Radio RSA, South Africa	7165
1100-1200 A,S	Radio Tanzania, Dar es Salaam	11880 [IRR]
1100-1200 S	Radio Zambia, Lusaka	6135
1100-1200 S	Superpower KUSW, Utah	6030 5985 6165 9590
1100-1200	Voice of America, Washington	9760 11715 15160 15425
		5980 7445
1100-1200	Voice of Asia, Taiwan	7270
1100-1200	Voice of Kenya, Nairobi	7255 15120
1100-1200	Voice of Nigeria, Lagos	7355 9510
1100-1200	WHRI, Noblesville, Indiana	5950 7355 9600
1100-1200	WYFR, Oakland, California	4820 5955 7255
1110-1120 M-F	Radio Botswana, Gaborone	11740
1115-1130	Radio Korea, Seoul, South Korea	17840 21485
1115-1130	Vatican Radio, Vatican City	5005
1115-1145	Radio Nepal, Kathmandu	11815 15345
1115-1200	Trans World Radio, Bonaire	7220 9585 9835 11910
1130-1145 A	Radio Budapest, Hungary	15160 15220
		11740
1130-1200	HCJB, Quito, Ecuador	6120 11815
1130-1200	Radio Japan, Tokyo	5995 9715 15560 17575
1130-1200	Radio Netherland, Hilversum	17605 21480
		9655 11905
1130-1200	Radio Thailand, Bangkok	9480 11855
1130-1200	Radio Tirana, Albania	11790
1130-1200	Voice of Islamic Republic Iran	6065 7110 9610 9675
1135-1140	All India Radio, New Delhi	11850 15320
		6248 9645 11740
1140-1145 M-A	Vatican Radio, Vatican City	5995 7180
1145-1200	BBC, London, England*	

1145-1200	Radio Bangladesh, Dakha	15255 17740
1145-1200	Radio Prague, Czechoslovakia	6055 7345 9505

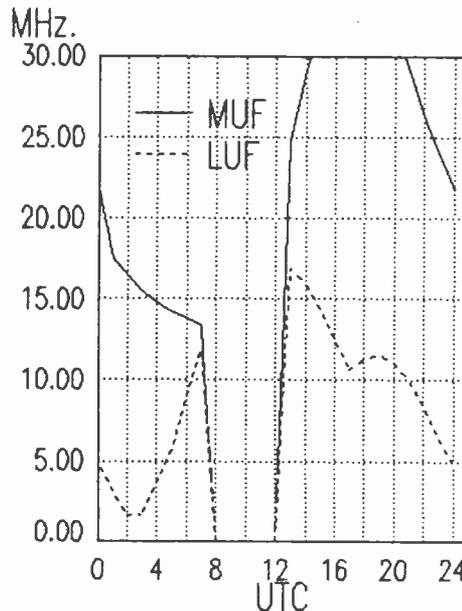
## 1200 UTC [7:00 AM EST/4:00 AM PST]

1200-1205 M-A	Port Moresby, Papua New Guinea	3295 4890 5960 6020
		6040 6080 6140 9520
1200-1215	BBC, London, England*	3915 6065 7275
1200-1215	Radio New Zealand, Wellington	6100 9540 9850
1200-1215	Vatican Radio, Vatican City	15190 17865
1200-1215	Voice of Kampuchea, Phnom-Penh	9693 11938
1200-1220	Radio Bucharest, Romania	17720 21665
1200-1225	Radio Polonia, Warsaw, Poland	6095 7285
1200-1230 S	Radio Austria Int'l, Vienna	6155 9685 11915 13730
		15450
1200-1230	Radio Finland	11945 15400
1200-1230	Radio Netherland, Hilversum	9715 15560 17575 17605
		21480
1200-1230	Radio Somalia, Mogadishu	6095
1200-1230	Radio Tashkent, Uzbek, USSR	7275 9540 9600 15470
		11785
1200-1230	Radio Thailand, Bangkok	9655 11905
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
1200-1236	HCJB, Quito, Ecuador	6075
1200-1255	Radio Beijing, China	7335 9530 9635 9665
		9770 11600 11715 15455
1200-1300	ABC, Alice Springs, Australia	2310 [ML]
1200-1300	ABC, Katherine, Australia	2485
1200-1300	ABC, Tennant Creek, Australia	2325 [ML]
1200-1300 S	Adventist World Radio, Africa	17890
1200-1300	BBC, London, England	7180 9510 11705 11775
		12095 15070 17705 17790
		18080 15750 21470 21710
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	CKWX, Vancouver, British Columbia	6080
1200-1300	CFRB, Toronto, Ontario	6070

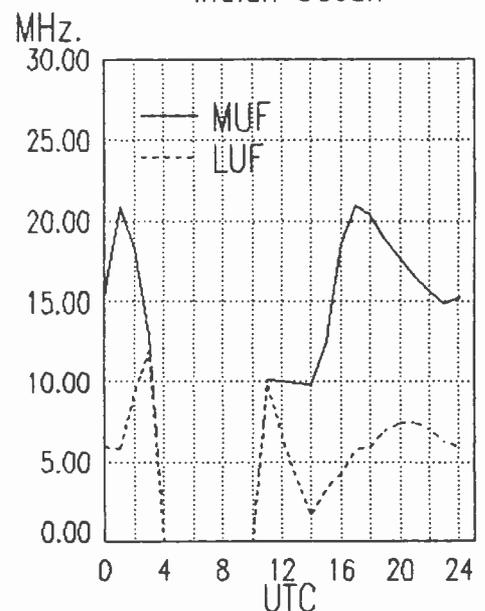
West Coast To East Africa



West Coast To South Africa



West Coast To Indian Ocean



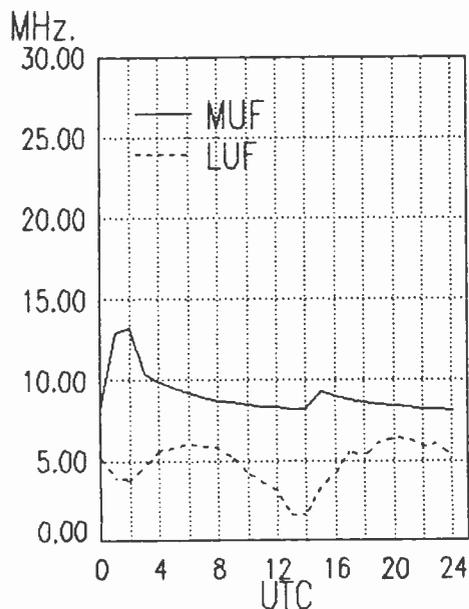
# frequency SECTION

1200-1300	(US) Far East Network, Tokyo	3910				1300-1315	Radio Berlin Int'l, E. Germany	15440	17880	21465	21540
1200-1300	HCJB, Quito, Ecuador	11740	15115	17890		1300-1325	Radio Bucharest, Romania	9690	11940	15405	17720
1200-1300	KYOI, Saipan	11900				1300-1325	M-F Radio Finland, Helsinki	11945	15400		
1200-1300	Radio Australia, Melbourne	6060	6080	7205	7215	1300-1330	BBC, London, England	9410	9510	11775	12095
		9580	9710	9770	11800			15070	15420	17790	18080
1200-1300	Radio Moscow, USSR	13680	13710	15135	15460			21710	25750		
		15490	15500	17595	17680	1300-1330	Radio Cairo, Egypt	17595			
		17820	17860			1300-1330	Radio Ghana, Accra	4915	7295		
1200-1300	A,S Radio Tanzania, Dar es Salaam	7165				1300-1330	Radio Moscow, USSR	6050	7175	9600	9795
1200-1300	SBC Radio One, Singapore	5010	5052	11940				13680	13710	15320	15460
1200-1300	S Superpower KUSW, Utah	9850						15490	15530	15500	17595
1200-1300	Trans World Radio, Bonaire	11815	15345					17645	17860	21630	
1200-1300	Trans World Radio, Sri Lanka	11920				1300-1330	S Radio Norway Int'l, Oslo	15310	21705		
1200-1300	Voice of America, Washington	9760	11715	15160	15425	1300-1330	Radio Yugoslavia, Belgrade	11735	15325	15380	
1200-1300	Voice of Kenya, Nairobi	7270				1300-1330	Swiss Radio Int'l, Berne	12030			
1200-1300	Voice of Nigeria, Lagos	7255	15120			1300-1330	Trans World Radio, Sri Lanka	11920			
1200-1300	WCSN, Boston, Massachusetts	5980				1300-1330	Voice of Kenya, Nairobi	7270			
1200-1300	WHRI, Noblesville, Indiana	5995	11790			1300-1332	A,S Trans World Radio, Bonaire	11815	15345		
1200-1300	WYFR, Oakland, California	5950	7355	9600		1300-1350	Radio Pyongyang, North Korea	9325	9345	9555	9600
1215-1245	Radio Korea, Seoul, South Korea	7275	11740					11735			
1215-1300	Radio Cairo, Egypt	17595	17675			1300-1355	Radio Beijing, China	11600	11755	15280	15455
1230-1235	All India Radio, New Delhi	3905	4800	4920	7280	1300-1400	ABC, Alice Springs, Australia	2310	[ML]		
		9565	9615	11620	11735	1300-1400	ABC, Katherine, Australia	2485			
		15120				1300-1400	ABC, Tennant Creek, Australia	2325	[ML]		
1230-1255	Radio Austria Int'l, Vienna	13730	15450			1300-1400	CBC Northern Quebec Service	9625	11720		
1230-1300	BBC, London, England*	6125	7255	6195	9635	1300-1400	CBN, St. John's, Newfoundland	6160			
		9660	11780	12040	15270	1300-1400	CBU, Vancouver, British Columbia	6160			
		15390	15435	17695		1300-1400	CFCF, Montreal, Quebec	6005			
1230-1300	Radio Bangladesh, Dhaka	15195	17710			1300-1400	CFCN, Calgary, Alberta	6030			
1230-1300	Radio Berlin Int'l, E. Germany	15440	17880	21465	21540	1300-1400	CHNS, Halifax, Nova Scotia	6130			
1230-1300	Radio Sweden, Stockholm	9565	15430	17780		1300-1400	CKWX, Vancouver, British Columbia	6080			
1240-1250	M Radio Free Europe, Munich*	5985	7115	9695	9725	1300-1400	CFRB, Toronto, Ontario	6070			
		11895	15355			1300-1400	S ELWA, Monrovia, Liberia	11830			
1245-1300	Radio France Int'l, Paris	11670	17720	21645		1300-1400	(US) Far East Network, Tokyo	3910			
						1300-1400	FEBC, Manila, Philippines	11850			
						1300-1400	HCJB, Quito, Ecuador	11740	15115	17890	
						1300-1400	M-A KYOI, Saipan	11900			
						1300-1400	Radio Australia, Melbourne	5995	6060	6080	7205
								9580			
						1300-1400	M-F Radio Canada Int'l, Montreal	9625	11855	17820	
						1300-1400	Radio Jordan, Amman	9560			
						1300-1400	Radio Korea, Seoul, South Korea	9750	15575		

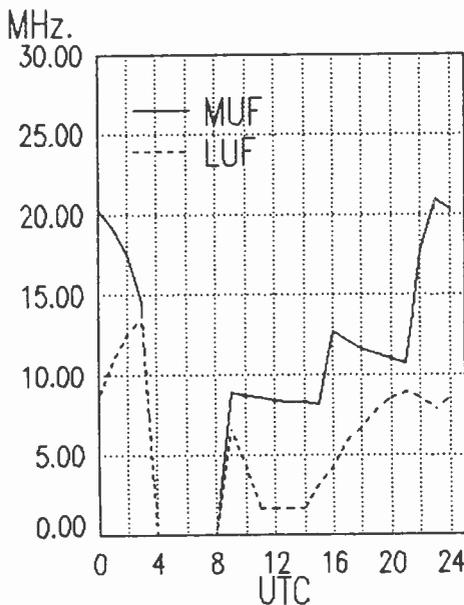
1300 UTC [8:00 AM EST/5:00 AM PST]

1300-1305	Port Moresby, Papua New Guinea	3295	4890	5960	5980
		6020	6040	6080	6140
		9520			
1300-1310	Radio France Int'l, Paris	11670	17720	21645	

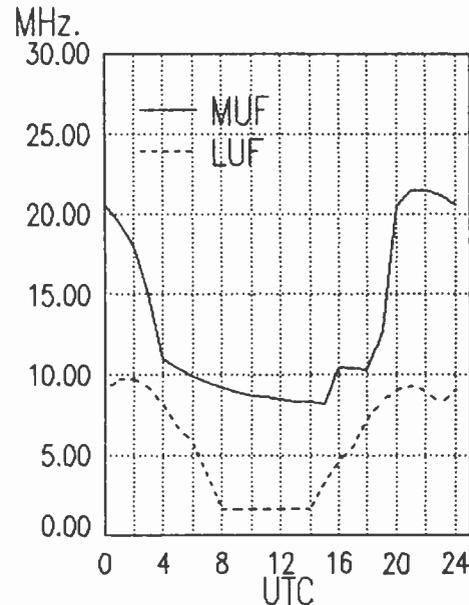
West Coast To  
Central Asia



West Coast To  
Southeast Asia



West Coast To  
Far East



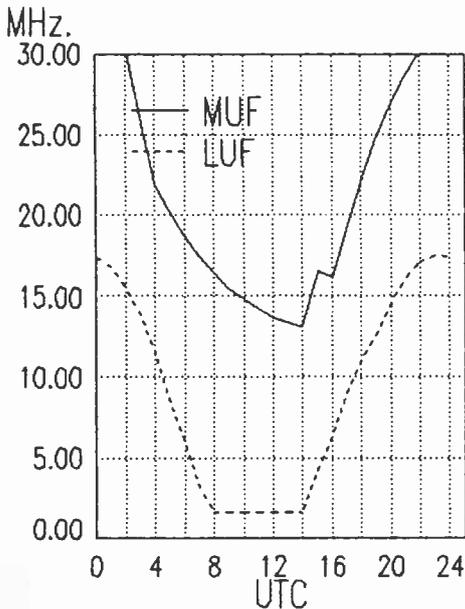
# frequency SECTION

1300-1400	A,S	Radio Tanzania, Dar es Salaam	7165
1300-1400		SBC Radio One, Singapore	5010 5052 11940
1300-1400	S	Superpower KUSW, Utah	9850
1300-1400		Voice of America, Washington	6110 9760 15160 15425
1300-1400		Voice of Malaysia	7295
1300-1400		Voice of Nigeria, Lagos	7255 15120
1300-1400		WCSN, Boston, Massachusetts	5980
1300-1400		WHRI, Noblesville, Indiana	5995 11790
1300-1400		WYFR, Oakland, California	5950 7355 9565 9600
			11550 15055 15375
1305-1315		Radio France Int'l, Paris	6175 9790 9805 11670
			11845 15155 15195 15300
			15315 15365 17620 17720
			17850 21645
1315-1400		Radio Berlin Int'l, E. Germany	15240
1330-1345		Radio Korea, Seoul, South Korea	7275 11740
1330-1355	M-A	BRT, Brussels, Belgium	17555 21815
1330-1355		Radio Austria Int'l, Vienna	15320
1330-1400		BBC, London, England	9410 15070 15420 11750
			17790 17885 18080 21470
			21710 25750
1330-1400		All India Radio, New Delhi	9545 10330 11810 15335
1330-1400	M-A	Bhutan Bcating Service, Thimpu	6035
1330-1400		Laotian National Radio	7113
1330-1400		Radio Moscow, USSR	11840 13680 13710 15320
			15460 15490 15500 15530
			17595 17645 17860 21630
1330-1400		Radio Tashkent, Uzbek, USSR	5945 7275 9540 9600
			11785
1330-1400		Swiss Radio Int'l, Berne	11695 13685 15135 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 Turkey, Ankara	15255
1330-1400		Voice of Vietnam, Hanoi	9840 15010
1332-1400	A	Trans World Radio, Bonaire	11815 15345
1345-1400		Radio Berlin Int'l, E. Germany	15440 17880 21465 21540

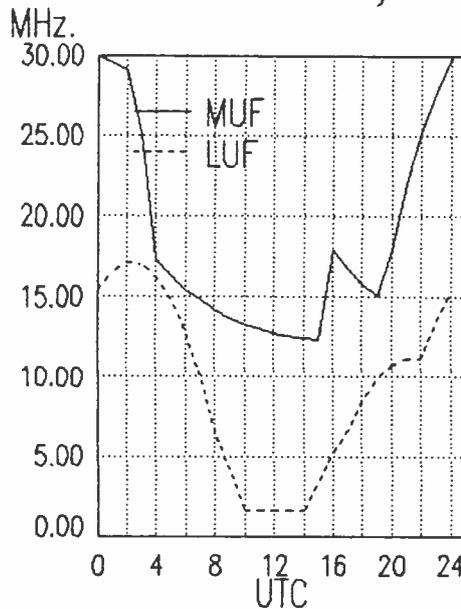
## 1400 UTC [9:00 AM EST/5:00 AM PST]

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 Berlin Int'l, E. Germany	15440 17880 21465 21540
1400-1430		Radio Finland, Helsinki	11945 15400
1400-1430	S	Radio Norway Int'l, Oslo	15190 15310 21705
1400-1430		Radio Peace and Progress, USSR	17645 17765
1400-1430		Radio Polonia, Warsaw, Poland	6095 7285
1400-1430		Radio Sweden, Stockholm	15345 17860
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	11600 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
			15260 17705 17790 18080
			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 Columbia	6160
1400-1500		CFCF, Montreal, Quebec	6005
1400-1500		CFCN, Calgary, Alberta	6030
1400-1500		CHNS, Halifax, Nova Scotia	6130
1400-1500		CKWX, Vancouver, British Columbia	6080
1400-1500		CFRB, Toronto, Ontario	6070
1400-1500	S	ELWA, Monrovia, Liberia	11830
1400-1500		(US) Far East Network, Tokyo	3910
1400-1500		FEB, Manila, Philippines	9670 11850
1400-1500		HCJB, Quito, Ecuador	11740 15115 17890
1400-1500		KNLS, Anchor Point, Alaska	9750
1400-1500		KYOI, Saipan	11900
1400-1500		Radio Australia, Melbourne	5995 6035 6060 6080
			7205 9580

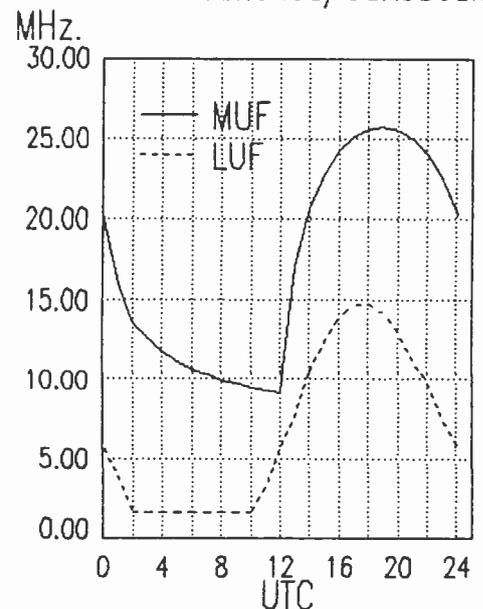
West Coast To Pacific



West Coast To Australia & Malaysia



West Coast To Central America/Caribbean



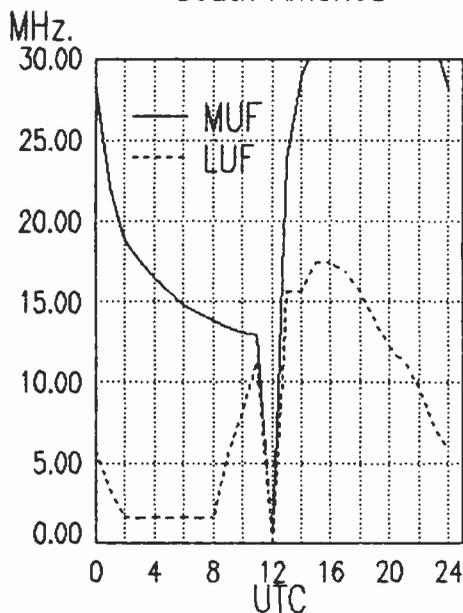
# frequency SECTION

1400-1500	S	Radio Canada Int'l, Montreal	9625	11720	11955	15440
			17820			
1400-1500		Radio Japan, Tokyo	9695	11780	11815	
1400-1500		Radio Jordan, Amman	9560			
1400-1500		Radio Korea, Seoul	9570	9750	15575	
1400-1500		Radio Moscow, USSR	11840	13680	13710	15135
			15460	15480	15500	15530
			17595	17645	17860	21630
1400-1500		Radio RSA, South Africa	21590			
1400-1500	A,S	Radio Tanzania, Dar es Salaam	7165			
1400-1500		SBC Radio One, Singapore	5010	5052	11940	
1400-1500	S	Superpower KUSW, Utah	9850			
1400-1500		Voice of America, Washington	9645	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		WCSN, Boston, Massachusetts	13760			
1400-1500		WHRI, Noblesville, Indiana	9455	11790		
1400-1500		WYFR, Oakland, California	5950	9600	11550	15055
			17612.5			
1400-1500		WYFR Satellite Net, California	13695	15375		
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 Australia, Melbourne	6060	9580		
1430-1500		Radio Netherland, Hilversum	11735	13770	15560	17575
1430-1500		Radio Prague, Czechoslovakia	9605	11685	13715	15110
			15155	17705	21505	
1430-1500		Voice of Turkey, Ankara	15255			
1445-1500	M-A	Radio Ulan Bator, Mongolia	9575	15305		

## 1500 UTC [10:00 AM EST/6:00 AM PST]

1500-1505		Africa No. 1, Gabon	7200	15200		
1500-1510		Vatican Radio, Vatican City	11960	15090	17870	
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	11735	13770	15560	17575
1500-1530		Radio Finland, Heisink	9560	11715	15185	
1500-1530	A,S	Radio Tanzania, Dar es Salaam	7165			
1500-1530		Radio Veritas Asia, Philippines	9770	15215		
1500-1550		Deutsche Welle, West Germany	9735	11965	17810	21600
1500-1550		KTWR, Agana, Guam	9820			
1500-1550		Radio Pyongyang, North Korea	6576	9325	9345	9640
			9977			
1500-1555		Radio Beijing, China	11600	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			
1500-1515		BBC, London, England	5995	6195	7180	9410
			9740	11750	11775	12095
			15070	15260	15400	17885
			18080	21470	21710	25750
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 Columbia	6160			
1500-1600		CFCF, Montreal, Quebec	6005			
1500-1600		CFCN, Calgary, Alberta	6030			
1500-1600		CHNS, Halifax, Nova Scotia	6130			
1500-1600		CKWX, Vancouver, British Columbia	6080			
1500-1600		CFRB, Toronto, Ontario	6070			
1500-1600	S	ELWA, Monrovia, Liberia	11830			
1500-1600		(US) Far East Network, Tokyo	3910			
1500-1600		FEBC, Manila, Philippines	11850			
1500-1600		HCJB, Quito, Ecuador	11740	11810	15115	17890
1500-1600		King of Hope, Southern Lebanon	6280			
1500-1600		KNLS, Anchor Point, Alaska	9750			
1500-1600		KSDA, Agat, Guam	11810			
1500-1600		KYOI, Saipan	11900			
1500-1600		Radio Australia, Melbourne	5995	6035	6060	6080
			7205	7215	9580	
1500-1600	S	Radio Canada Int'l, Montreal	11955	17820		
1500-1600		Radio Japan, Tokyo	9505	9695	11815	21700
1500-1600		Radio Jordan, Amman	9560			
1500-1600		Radio Moscow, USSR	5905	6050	7160	7265
			7345	9875	11840	12030
			13680	13710	15135	15480
			15460			
1500-1600		Radio RSA, South Africa	9655	15125	17755	21590
1500-1600		SBC Radio One, Singapore	5010	5052	11940	
1500-1600	S	Superpower KUSW, Utah	9850			
1500-1600		Voice of America, Washington	6110	9575	9700	9760
			15205			
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		WCSN, Boston, Massachusetts	13760			
1500-1600		WHRI, Noblesville, Indiana	9455	11790		
1500-1600	S	WRNO, New Orleans, Louisiana	11965			
1500-1600		WYFR, Oakland, California	5950	7355	9600	
			17612.5			
1500-1600		WYFR Satellite Net	11830	13695	15375	
1515-1600		BBC, London, England	5995	6195	7180	9410
			9740	11750	11775	11750
			12095	15070	15260	15400
			17885	18080	21470	21710
1515-1600		FEBA, Mahe, Seychelles	11865	15325		

West Coast To South America



# frequency SECTION

1530-1545	All India Radio, New Delhi	3905 3925 4860 6160 7160 7412 9545 9950
1530-1600	Radio Berlin Int'l, E. Germany	15430 17780
1530-1600	Radio Prague, Czechoslovakia	6055 9605 11665 11990 13715 15110 15155 15165 17730 21505
1530-1600	Radio Sofia, Bulgaria	7245 9740 11735
1530-1600	Radio Tanzania, Dar es Salaam	9684
1530-1600	Radio Tirana, Albania	9480 11835
1530-1600	Swiss Radio Int'l, Berne	17830 13685 21630
1530-1600	Voice of Asia, Taiwan	5980 7445
1530-1600	Voice of Nigeria, Lagos	15120
1540-1550 M-A	Voice of Greece, Athens	9855 11645 15630
1545-1600	Radio Berlin Int'l, East Germany	15240 17880
1545-1600	Radio Canada Int'l, Montreal	9555 11915 11935 15315 15325 15305 17820
1545-1600	Vatican Radio, Vatican City	11810 15120 17730
1550-1600 H-S	KTWR, Agana, Guam	9780

1600-1700	Radio Riyadh, Saudi Arabia	9705 9720
1600-1700	Radio Tanzania, Dar es Salaam	9684
1600-1700 S	Superpower KUSW, Utah	15650
1600-1700	Voice of America, Washington, DC	9575 9645 9760 11920 15410 15445 15205 15580 17785 17800 17870
1600-1700	WCSN, Boston, MA	21640
1600-1700	WHRI, Noblesville, Indiana	15105 21655
1600-1700	WRNO, New Orleans, Louisiana	11965
1600-1700	WYFR, Oakland, California	5950 7355 9600 17612.5
1600-1700	WYFR Satellite Network	11830 13695 15375
1600-1700	Radio Zambia, Lusaka	9580
1615-1630 M,H	Radio Budapest, Hungary	7220 9585 9835 11910 15160 15220
1615-1630	Voice of Vietnam, Hanoi	10011
1615-1700	Radio Berlin Int'l, East Germany	6115 7295 9730
1630-1655 M-A	RT, Brussels, Belgium	17585 21810
1630-1700	Radio Netherlands, Hilversum	6020 9540
1630-1700	RTM Morocco	17595 17815
1645-1700	Radio Korea, Seoul, South Korea	7275 9870

## 1600 UTC [11:00 AM EST/8:00 AM PST]

1600-1610	FEBA, Mahe, Seychelles	11865 15325
1600-1610	Radio Lesotho, Maseru	4800
1600-1610	SBC Radio One, Singapore	5010 5052 11940
1600-1625	Radio Prague, Czechoslovakia	6055 9605 11665 11990 13715 15110 15155 15165 17730 21505
1600-1630	ELWA, Monrovia, Liberia	11830
1600-1630	Radio Berlin Int'l, E. Germany	15240 17880
1600-1630 S	Radio Norway Int'l, Oslo	15310 21705
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	15245
1600-1630	Radio Sofia Bulgaria	7245 9560 11735 15310
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	9840 15010
1600-1645 H-A	KTWR, Agana, Guam	9820
1600-1645	Radio Nacional Angola, Luanda	7245 9535 11955
1600-1645	UAE Radio, United Arab Emirates	11955 15435 17775
1600-1650	Deutsche Welle, Koin, W. Germany	6170 7200 13790 15105 15595 17825 21680
1600-1655	Radio Beijing, China	9570 11600 11715
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	9410 9740 11750 11775 12095 15070 15260 15400 17885 18080 21470
1600-1700	CBC Northern Quebec Service	9625 11720
1600-1700	CBN, St. John's, Newfoundland	6160
1600-1700	CBU, Vancouver, British Columbia	6160
1600-1700	CFCF, Montreal, Quebec	6005
1600-1700	CFCN, Calgary, Alberta	6030
1600-1700	CHNS, Halifax, Nova Scotia	6130
1600-1700	CKWX, Vancouver, British Columbia	6080
1600-1700	CFRB, Toronto, Ontario	6070
1600-1700	(US) Far East Network, Tokyo	3910
1600-1700	HCJB, Quito, Ecuador	17890
1600-1700	Radio Australia, Melbourne	5995 6035 6060 6080 7205 7215 9580
1600-1700	Radio Beijing, China	15130
1600-1700 S	Radio Canada Int'l, Montreal	11955 17820
1600-1700	Radio France Int'l, Paris	11705 15360 17620
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	7160 7265 7345 9640 9875 11840 12010 13680 15135 15460 15550

## 1700 UTC [12:00 PM EST/9:00 AM PST]

1700-1705	Radio Uganda, Kampala	4976 5026
1700-1715 M-A	Voice of Namibia (Angola) -	11955
1700-1725	Radio Budapest, Hungary	6110 9585 9835 11910 15160
1700-1725	Radio Netherland, Hilversum	6020 9590
1700-1730	Radio Australia, Melbourne	5995 6060 6080 7205 9580
1700-1730	Radio Japan, Tokyo	9505 11705 11815
1700-1730 S	Radio Norway Int'l, Oslo	15220 15310 21700
1700-1730	Swiss Radio int'l, Berne	3985 6165 9535
1700-1745	BBC, London, England	9410 9740 11750 11775 12095 15070 15260 15400 17885 18080 21470
1700-1750	Radio Pyongyang, North Korea	7290 9325 9640 9977
1700-1755	Radio Beijing, China	9570 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 Columbia	6160
1700-1800	CFCF, Montreal, Quebec	6005
1700-1800	CFCN, Calgary, Alberta	6030
1700-1800	CHNS, Halifax, Nova Scotia	6130
1700-1800	CKWX, Vancouver, British Columbia	6080
1700-1800	CFRB, Toronto, Ontario	6070
1700-1800	(US) Far East Network, Tokyo	3910
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	7265 7345 7365 9640 11840 12015 13680 15135 15460 15550
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	9575 11760 15205 15410 15445 15580 15600 17785 17800 17870
1700-1800	Voice of Kenya, Nairobi	6100
1700-1800	Voice of Nigeria, Lagos	11770
1700-1800	WCSN, Boston, Massachusetts	21640
1700-1800	WHRI, Noblesville, Indiana	15105 21655
1700-1800	WINB, Red Lion, Pennsylvania	15295

# frequency SECTION

1700-1800	S	WRNO, Louisiana	11965				
1700-1800		WYFR Satellite Net	13695				
1700-1800		WYFR, Okeechobee, Florida	11870	15170	15440	21525	
			21615				
1715-1745		Radio Canada Int'l, Montreal	5995	7235	15325	17820	
1715-1745		BBC, London, England*	3975	6185	7165		
1718-1800		Radio Pakistan, Islamabad	6210	7835			
1725-1740		Radio Suriname Int'l, Paramibo	7835v				
1725-1800		Radio New Zealand, Wellington	11780	15150			
1730-1735		All India Radio, New Delhi	4840	4860	4920	6160	
			7412	9950			
1730-1800		KNLS, Anchor Point, Alaska	7355				
1730-1755		Radio Bucharest, Romania	7105	9530	9685	11790	
			11940				
1730-1800		Radio Australia, Melbourne	5995	6035	6060	6080	
			7205	9580			
1730-1800		Radio Polonia, Warsaw, Poland	6135	9540			
1730-1800		Radio Prague, Czechoslovakia	9605	11685	11990	13715	
			15110	15165	21505		
1730-1800		RAE, Buenos Aires, Argentina	15345				
1734-1800		FEBA, Mahe, Seychelles	11760				
1745-1800		BBC, London, England	9410	9740	12095	15070	
			17885	21470			
1745-1800		SLBC, Colombo, Sri Lanka	11800				

## 1800 UTC [1:00 PM EST/10:00 AM PST]

1800-1805	A	SBC Radio One, Singapore	11940				
1800-1815		Kol Israel, Jerusalem	9385	9640	9925	11588	
			13750	LSB			
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	9605	11685	11990	13715	
			15110	15165	21505		
1800-1825		RAE, Buenos Aires, Argentina	15345				
1800-1830		BBC, London, England	9740	11750	12095	15070	
			15400	15420	17885		
1800-1830	S	Radio Bamako, Mali	4835	5995			
1800-1830		Radio Berlin Int'l, East Germany	6115	7260	9730	13610	
1800-1830	M-F	Radio Canada Int'l, Montreal	15260	17820			
1800-1830		Radio Mozambique, Maputo	3265	4855	9618		
1800-1830		Radio Prague, Czechoslovakia	5930	7345	13715		
1800-1830		Radio Sweden, Stockholm	6065	11845			
1800-1830		Voice of Africa, Egypt	15255				
1800-1830		Voice of Vietnam, Hanoi	9840	15010			
1800-1845		Radio Abidjan, Ivory Coast	7215				
1800-1845		Trans World Radio, Swaziland	9525				
1800-1850		Radio Bras, Brasilia, Brazil	15265				
1800-1856		Radio RSA, South Africa	17880	21535			
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 Columbia	6160				
1800-1900		CFCF, Montreal, Quebec	6005				
1800-1900		CFCN, Calgary, Alberta	6030				
1800-1900		CHNS, Halifax, Nova Scotia	6130				
1800-1900		CKWX, Vancouver, British Columbia	6080				
1800-1900		CFRB, Toronto, Ontario	6070				
1800-1900		(US) Far East Network, Tokyo	3910				
1800-1900		KNLS, Anchor Point, Alaska	11650				
1800-1900		KYOI, Saipan	9670				
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 Kuwait, Kuwait	11665				
1800-1900		Radio Malabo, Equatorial Guinea	9553v	[ML]			
1800-1900		Radio Moscow, USSR	7265	9560	9890	11840	
			12010	15460			
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	M-A	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	
			21485				
1800-1900		Voice of Ethiopia	9662				
1800-1900		Voice of Kenya, Nairobi	6100				
1800-1900		Voice of Nigeria, Lagos	11770	15120			
1800-1900		WCSN, Boston, Massachusetts	21640				
1800-1900		WHRI, Noblesville, Indiana	15105	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	11855	13760	15170		
1800-1900		WYFR Satellite Net, California	11830	13695	15375		
1815-1900		Radio Bangladesh, Dhaka	6240	7505	11510		
1830-1855		Radio Austria Int'l, Vienna	5945	6155	12015	15175	
1800-1855		Radio Polonia, Warsaw, Poland	5995	6135	7125	7285	
			9525	11840			
			9870	15575			
1815-1830		Radio Korea, Seoul, South Korea	5915	11695			
1830-1855		BRT Brussels, Belgium	12095	15070	15400	17885	
1830-1900		BBC, London, England	9665	13610	15145	15255	
1830-1900		Radio Berlin Int'l, E. Germany	3265	4855	9618		
1830-1900	MWF	Radio Mozambique, Maputo	6020	15175	17605	21685	
1830-1900		Radio Netherland, Hilversum	7245	9560	11735	15310	
1830-1900		Radio Sofia, Bulgaria	11645	12045	15630		
1840-1850	M-A	Voice of Greece, Athens	4950				
1840-1900		Radio Senegal, Dakar	4833	4900	7125		
1845-1855		Radio Nacional, Conaky, Guinea	7412	11620			
1845-1900		All India Radio, New Delhi					

## 1900 UTC [2:00 PM EST/11:00 AM PST]

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 Berlin Int'l, E. Germany	9665	13610	15145	15255	
1900-1915		Radio Tanzania, Dar es Salaam	9684				
1900-1925		Radio Netherland, Hilversum	6020	15175	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		Radio Afghanistan, Kabul	7160	9640			
1900-1930		Radio Japan, Tokyo	9505	11705			
1900-1930		Radio Kiev, Ukrainian SSR	5915	7205	7240	9600	
1900-1930	S	Radio Norway Int'l, Oslo	9590	15220	15310		
1900-1930	M-F	Radio Portugal, Lisbon	11870	15250			
1900-1930		Radio Sofia Bulgaria	7245	7155	9700		
1900-1930		Voice of Vietnam, Hanoi	12020	15010			
1900-1950		Deutsche Welle, Koin, W. Germany	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	15400	12095	15070	
1900-2000		CBC Northern Quebec Service	9625	11720			
1900-2000		CBN, St. John's, Newfoundland	6160				
1900-2000		CBU, Vancouver, British Columbia	6160				
1900-2000		CFCF, Montreal, Quebec	6005				
1900-2000		CFCN, Calgary, Alberta	6030				
1900-2000		CHNS, Halifax, Nova Scotia	6130				
1900-2000		CKWX, Vancouver, British Columbia	6080				
1900-2000		CFRB, Toronto, Ontario	6070				
1900-2000		(US) Far East Network, Tokyo	3910				
1900-2000		HCJB, Quito, Ecuador	11790	15270	17590	17790	
1900-2000		KNLS, Anchor Point, Alaska	11650				
1900-2000		KYOI, Saipan	9670				
1900-2000		Radio Algiers, Algeria	9509	9685	15215	17745	
1900-2000		Radio Australia, Melbourne	6035	6060	6080	7205	
			7215	9580			
1900-2000		Radio Ghana, Accra	6130				
1900-2000		Radio Havana Cuba	11800	11950			

# frequency SECTION

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	9560	9640	9825	9875
		9890	11840	12010	
1900-2000	Radio New Zealand, Wellington	11780	15150		
1900-2000	Radio Prague, Czechoslovakia	5930	7345		
1900-2000	Radio Riyadh, Saudi Arabia	9705	9720		
1900-2000	Radio RSA, South Africa	7215	15320	15365	
1900-2000	Radio Zambia, Lusaka	9580			
1900-2000	Spanish Foreign Radio, Madrid	11790	15375	15395	
1900-2000	M-A 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	9760	11760	15205	15410
		15445	15580	15600	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	WCSN, Boston, Massachusetts	21640			
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	WYFR, Oakland, California	11855	15170		
1900-2000	WYFR Satellite Net, California	11830	13695	15375	
1910-1920	Radio Botswana, Gaborone	3356	4820		
1920-1930	M-A Voice of Greece, Athens	7430	9395	9425	
1930-1940	Radio Togo, Lome	5047			
1930-1945	Radio Finland, Helsinki	6120	9530	11755	
1930-2000	ABC, Katherine, Australia	2485			
1930-2000	Radio Beijing, China	6955	7480	9440	
1930-2000	Radio Bucharest, Romania	7145	9690	9750	11940
1930-2000	Radio Budapest, Hungary	6110	7220	9585	9835
		11910	15160		
1930-2000	M-F Radio Canada Int'l, Montreal	9555	11945	15325	17875
1930-2000	Radio Finland, Helsinki	6120	9550	11755	15185
1930-2000	Radio Sofia Bulgaria	9700	11720		
1930-2000	Radio Yugoslavia, Belgrade	5980	9620	9660	
1930-2000	Voice of Republic of Iran	9022	9770		
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 [3:00 PM EST/12:00 PM PST]

2000-2005	S-F Port Moresby, Papua New Guinea	3295	4890	5960	5985
		6020	6040	6080	6140
		9520			
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	
2000-2025	Radio Bucharest, Romania	5990	6105	7145	7195
		9570	9690	11940	
2000-2030	KNLS, Anchor Point, Alaska	11650			
2000-2030	Kol Israel, Jerusalem	9435	9855	11605	11650
2000-2030	Radio Australia, Melbourne	6035	7205	7215	9580
		9620			
2000-2030	Radio Berlin Int'l, East Germany	9665	11920	15255	
2000-2030	Radio Ghana, Nairobi	3366	4915		
2000-2030	Radio Norway International, Oslo	9590	15310		
2000-2030	Radio Polonia, Warsaw, Poland	7125	7145	9525	
2000-2030	Radio Sofia, Bulgaria	7245	9560	11735	15310
2000-2030	Swaziland Commercial Radio	6155			
2000-2030	Voice of Nigeria, Lagos	7255			
2000-2030	Voice of Republic of Iran	9022			

2000-2045	All India Radio, New Delhi	7412	9755	9910	11620
		11860			
2000-2050	Radio Pyongyang, North Korea	6576	9345	9640	9977
2000-2056	Radio RSA, South Africa	7215	15320	15365	
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	5975	6005	6175	6180
		9410	9515	11785	11820
		12095	15070	15260	15400
		17760			
2000-2100	CBC Northern Quebec Service	9625	11720		
2000-2100	CBN, St. John's, Newfoundland	6160			
2000-2100	CBU, Vancouver, British Columbia	6160			
2000-2100	CFCF, Montreal, Quebec	6005			
2000-2100	CFCN, Calgary, Alberta	6030			
2000-2100	CHNS, Halifax, Nova Scotia	6130			
2000-2100	CKWX, Vancouver, British Columbia	6080			
2000-2100	CFRB, Toronto, Ontario	6070			
2000-2100	(US) Far East Network, Tokyo	3910			
2000-2100	King of Hope, Southern Lebanon	6280			
2000-2100	KYOI, Saipan	9670			
2000-2100	Radio Baghdad, Iraq	9770	15230		
2000-2100	Radio Havana Cuba	11800	11950		
2000-2100	Radio Kuwait, Kuwait	11665			
2000-2100	Radio Malabo, Equatorial Guinea	9553v			
2000-2100	Radio Moscow, USSR	7165	9560	9825	9890
		11840	12010	13605	15245
		15425			
2000-2100	Radio New Zealand, Wellington	12050	15150		
2000-2100	Radio for Peace, Costa Rica	21555			
2000-2100	Radio Riyadh, Saudi Arabia	9705	9720		
2000-2100	Radio Zambia, Lusaka	9580			
2000-2100	M-A Superpower KUSW, Utah	15650			
2000-2100	Voice of America, Washington	9760	11760	15205	15410
		15445	15580	15600	17785
		17800	17870		
2000-2100	Voice of Nigeria, Lagos	11770			
2000-2100	WCSN, Boston, Massachusetts	9495			
2000-2100	WHRI, Noblesville, Indiana	13760	17830		
2000-2100	WINB, Red Lion, Pennsylvania	15295			
2000-2100	S-F WMLK, Bethel, Pennsylvania	9465			
2000-2100	WRNO, New Orleans, Louisiana	15420			
2000-2100	WYFR, Oakland, California	11855	15170	15566	
2000-2100	M-A WYFR Satellite Net, California	11830	13695	15375	
2005-2100	Radio Damascus, Syria	12085	15095		
2010-2100	A,S Voice of Kenya, Nairobi	6100			
2015-2100	ELWA, Monrovia, Liberia	11830			
2015-2000	Radio Berlin Int'l, E. Germany	9665	13610	15255	
2015-2100	Radio Cairo, Egypt	9900			
2025-2045	RAI, Rome, Italy	7235	9575	9710	
2030-2055	Radio Polonia, Warsaw, Poland	6095	7285		
2030-2100	BBC, London, England	6005	6175	11785	12095
		15070	15400	15260	17760
		9580	9620		
2030-2100	Radio Australia, Melbourne	6955	7480	9440	9745
2030-2100	Radio Beijing, China	11790			
2030-2100	Radio Korea, Seoul, South Korea	6480	7550	15575	
2030-2100	Radio Netherland, Hilversum	9540	9895	11740	15560
2030-2100	M-F Radio Portugal, Lisbon	7155	9740		
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 [4:00 PM EST/1:00 PM PST]

2100-2105	Radio Damascus, Syria	12085	15095
2100-2105	Radio Zambia, Lusaka	3345	6165
2100-2110	Vatican Radio, Vatican City	6190	7250
		9645	

# frequency SECTION

2100-2110	A,S	Voice of Kenya, Nairobi	6100			
2100-2115		IBRA Radio, Malta	7110			
2100-2125		Radio Beijing, China	6955	7480	9440	9745
			11790			
2100-2125		Radio Bucharest, Romania	5990	6105	7145	7195
2100-2125		Radio Netherland, Hilversum	9540	9895	11740	15560
2100-2130	S	Radio Austria Int'l, Vienna	5945	6155	9585	9870
2100-2130		Radio Budapest, Hungary	6110	7220	9585	9835
			11910	15160		
2100-2130		Radio Japan, Tokyo	5965	7140	7280	17835
2100-2130		Radio Korea, Seoul, South Korea	6480	7550	15575	
2100-2130		Radio Sweden, Stockholm	9655	11845		
2100-2130		Swiss Radio Int'l, Berne	9885	12035	15570	
2100-2135		ELWA, Monrovia, Liberia	11830			
2100-2145		Radio Cairo, Egypt	9670			
2100-2145		WYFR, Oakland, California	9852.5	11855	15170	15175
			15566	21525		
2100-2200		WYFR Satellite Net	11830	13695	15375	
2100-2150		Deutsche Welle, West Germany	7130	9765		
2100-2150		Voice of Turkey, Ankara	9825			
2100-2155		Radio Beijing, China	6860	9470	9860	
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	9550	9910	11620	11715
2100-2200		BBC, London, England	3995	5975	6005	6175
			6180	7325	9410	11785
			12095	15070	15260	15400
			17760	17885		
2100-2200		CBC Northern Quebec Service	9625	11720		
2100-2200		CBN, St. John's, Newfoundland	6160			
2100-2200		CBU, Vancouver, British Columbia	6160			
2100-2200		CFCF, Montreal, Quebec	6005			
2100-2200		CFCN, Calgary, Alberta	6030			
2100-2200		CHNS, Halifax, Nova Scotia	6130			
2100-2200		CKWX, Vancouver, British Columbia	6080			
2100-2200		CFRB, Toronto, Ontario	6070			
2100-2200		(US) Far East Network, Tokyo	3910			
2100-2200		King of Hope, Southern Lebanon	6280			
2100-2200		KSDA, Agat, Guam	9465			
2100-2200		KVOH, Rancho Simi, California	17775			
2100-2200		KYOI, Saipan	9670			
2100-2200		Radio Baghdad, Iraq	9770			
2100-2200		Radio Moscow, USSR	7105	7160	7240	7340
			7360	7380	9530	9630
			9735	9825	9875	9890
			11840	11980	11950	12050
			13605	15405	15425	15475
			15535	15560		
2100-2200		Radio for Peace, Costa Rica	21555			
2100-2200	A,S	Radio Malabo, Equatorial Guinea	9552.5			
2100-2200	A,S	Radio Zambia, Lusaka	9580			
2100-2200		Spanish Foreign Radio, Madrid	9765	11790		
2100-2200	M-A	Superpower KUSW, Utah	15650			
2100-2200		Voice of Africa, Cairo, Egypt	15375			
2100-2200		Voice of America, Washington	9760	11760	15205	15410
			15445	15580	15600	17785
			17800	17870		
2100-2200		Voice of Nigeria, Lagos	15120			
2100-2200		WCSN, Boston, Massachusetts	9495			
2100-2200		WHRI, Noblesville, Indiana	13760	17830		
2100-2200		WRNO, New Orleans, Louisiana	15420			
2103-2200		WINB, Red Lion, Pennsylvania	15295			
2110-2200		Radio Damascus, Syria	12085	15095		
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	11790	17790	
2130-2200	A,S	Radio Canada Int'l, Montreal	11880	15150	17820	
2130-2200		Radio Sofia Bulgaria	7115	7155	9700	11720
2130-2200		Swiss Radio Int'l, Berne	6190			
2135-2150	S-F	ELWA, Monrovia, Liberia	11830			
2150-2200	M-F	ELWA, Monrovia, Liberia	11830			

2200 UTC [5:00 PM EST/2:00 PM PST]

2200-2205	M-F	ELWA, Monrovia, Liberia	3993	11830		
2200-2205		Radio Damascus, Syria	12085	15095		
2200-2210	M-H	Port Moresby, Papua New Guinea	3925	4890	5960	5985
			6020	6040	6080	6140
			9520			
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		BRT Brussels, Belgium	5915	9675		
2200-2225		Radio Finland, Helsinki	6120	9670	11755	
2200-2225		RAI, Rome, Italy	5990	9710	11800	
2200-2225		Vatican Radio, Vatican City	6015	9615	11830	
2200-2230		ABC, Katherine, Australia	2485			
2200-2230		All India Radio, New Delhi	9550	9910	11620	11715
2200-2230		CBC Northern Quebec Service	9625	11720		

NO DEMOCRACY WITHOUT PEOPLE'S CONGRESSES



**RADIO JAMAHERIYA**

Voice of the Socialist People's Libyan Arab Jamaheriya

Mr. Steven Mindy  
E. Amherst NY 14051  
USA

18th. May, 1988

Dear Sir,

Thank you for your letter dated April 24, 1988 in which you report reception of our Arabic broadcast on frequency 15235 KHz at 21.00 hrs. Please consider this letter as verification to your report.

For your information, here is a list of our other Arabic language broadcasts:

Mediumwave Band	Shortwave Bands
(4.30 - 2.30 GHT)	
1. 648 KHz	1. 17895 KHz
2. 711 KHz	2. 15235 KHz
3. 829 KHz	3. 14425 KHz
4. 1251 KHz	4. 15415 KHz
5. 1449 KHz	

We also have the following English language broadcasts (schedule attached):

- 7245 KHz/41 metre Shortwave Band from 22.30 hrs - 24.00 hrs GHT
- 15450 KHz/19 metre Shortwave Band from 18.00 hrs - 19.00 hrs GHT

\*This used to be transmitted on 11815 KHz/25 metre Shortwave Band.

We would be pleased to hear from you once again if you manage to tune in to any of the above broadcasts. Should you have any questions or suggestions regarding our broadcasts, we would be happy to answer you. Meanwhile, we hope you will have many hours of listening with RADIO JAMAHIRIYA, and on behalf of all the staff at this Station, I send my best regards.

Yours sincerely,

*[Signature]*  
Mohamed Sweidan  
Director

encls.

HEAD OFFICE  
P.O. Box 1000

11 616 5042/88 route 5 W

EUROPEAN BRANCH OFFICE  
P.O. Box 17

Steve Mindy of E. Amherst, NY, sent this QSL letter to our Radio Jamaheriya.

# frequency SECTION

2200-2230	F	Radio Budapest, Hungary	6110	9585	9835	11910
			15160			
2200-2230		Radio Moscow, USSR	5905	6170	7105	7115
			7160	7240	7260	7330
			7360	9450	9630	9735
			9830	11675	11690	11790
			11840	11980	12050	12060
			13605	13645	15405	15425
			15560	17700		
2200-2230	S	Radio Norway Int'l, Oslo	11850	15180		
2200-2230		Radio for Peace, Costa Rica	6130	7340	7360	
2200-2230		Radio Prague, Czechoslovakia	6055			
2200-2245		Radio Berlin Int'l, East Germany	6125			
2200-2245		Radio Cairo, Egypt	7710	9900		
2200-2245		Radio Yugoslavia, Belgrade	5980	7130	9620	9660
2200-2250		Radio Baghdad, Iraq	15230			
2200-2255		RAE, Buenos Aires, Argentina	11710	15345		
2200-2300		(US) Armed Forces Radio and TV	6030	11790	15345	15430
2200-2300		BBC, London, England	5975	6005	6175	6180
			7325	9410	9590	9915
			12095	15070	15260	
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		CKWX, Vancouver, British Colombia	6080			
2200-2300		CFRB, Toronto, Ontario	6070			
2200-2300		(US) Far East Network, Tokyo	3910			
2200-2300		King of Hope, Southern Lebanon	6280			
2200-2300		KVOH, Rancho Simi, California	17775			
2200-2300		KYOI, Saipan	15405			
2200-2300		Radio Australia, Melbourne	15160	15240	15320	15395
			17795	21740		
2200-2300		Radio for Peace, Costa Rica	21555			
2200-2300		Radio Havana Cuba	7140			
2200-2300		SBC Radio One, Singapore	5010	5052	11940	
2200-2300	M-A	Superpower KUSW, Utah	15580			
2200-2300		Voice of America, Washington	15120	15185	15290	15305
			15320	17735	17740	17820
2200-2300		Voice of Free China, Taiwan	9455	11905		
2200-2300		WCSN, Boston, Massachusetts	9495			
2200-2300		WHRI, Noblesville, Indiana	9770	17830		
2200-2300		WINB, Red Lion, Pennsylvania	15185			
2200-2300		WRNO, New Orleans, Louisiana	13760			
2200-2300		WYFR, Oakland, California	9852.5	11830	11855	13695
			15170	15375	15566	
			11820	15390		
2215-2230		BBC, London, England*	9625	11720		
2230-2300	A,S	CBC Northern Quebec Service	9625	11720		
2230-2300		Kol Israel, Jerusalem	9435	9010	11605	
2230-2300		Radio Austria Int'l, Vienna	9870	11780		
2230-2300		Radio Beijing, China	3985	6165		
2230-2300		Radio Mediterran, Malta	6110			
2230-2300		Radio Moscow, USSR	5905	6170	7105	7115
			7160	7195	7240	7260
			7330	9450	9630	9735
			9830	11690	11980	13605
			13645	15560	17700	
			9870	11780		
2230-2300		Radio Moscow World Service	5995	6135	7125	7270
2230-2300		Radio Polonia, Warsaw, Poland	9700	11950		
2230-2300		Radio Sofia, Bulgaria	11925	SSB		
2230-2300		Radio Sweden, Stockholm	7215	9480		
2230-2300		Radio Tirana, Albania	6100			
2230-2300		Radio Vilnius, Lithuanian SSR	6055	7215	9535	9910
2245-2300		All India Radio, New Delhi	11715	11745		
2245-2300		BBC, London, England	5975	6005	6175	7325
			9410	9590	9915	11785
			12095	15260	15400	17875
2245-2300		Radio Berlin Int'l, E. Germany	6125			

## 2300 UTC [6:00 PM EST/3:00 PM PST]

2300-2315		BBC, London, England	5975	6005	6175	6195
			7325	9410	9515	9590
			9915	12095	15070	15260
			15435	17875		
2300-2325		Radio Prague, Czechoslovakia	6055	9630		
2300-2330	S	KGEI, San Francisco, California	15280			
2300-2330		Radio Berlin Int'l, E. Germany	6125			
2300-2330		Radio Canada Int'l, Montreal	5960	9755		
2300-0000		Radio Luxembourg	6090			
2300-2330		Radio Mediterran, Malta	6110			
2300-2330		Radio Moscow World Service	11690	15560	17675	17880
2300-2330		Radio Sofia, Bulgaria	9700	11950		
2300-2330		Radio Vilnius, Lithuanian SSR	7105	7400	9640	9800
			13645	15180	15455	
2300-2330	M-A	Superpower KUSW, Utah	15580			
2300-2345		WINB, Red Lion, Pennsylvania	15185			
2300-2345		WYFR, Oakland, California	9505	11830	11855	13695
			15175	15375	21525	
2300-2350		Voice of Turkey, Ankara	7160	9445	9685	17760
2300-0000		All India Radio, New Delhi	6055	7215	9535	9910
			11715	11745		
2300-0000		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		CKWX, Vancouver, British Colombia	6080			
2300-0000		CFRB, Toronto, Ontario	6070			
2300-0000		(US) Far East Network, Tokyo	3910			
2300-0000		KVOH, Rancho Simi, California	17775			
2300-0000		KYOI, Saipan	15405			
2300-0000		Radio Australia, Melbourne	15160	15240	15320	15395
			17795	21740		
2300-0000		Radio Canada Int'l, Montreal	9760	11945		
2300-0000		Radio for Peace, Costa Rica	21555			
2300-0000		Radio Japan, Tokyo	11800	15195	17810	
2300-0000		Radio Moscow, USSR	6170	7115	7165	7195
			9530	9720	9765	9890
			12050	13605	15405	15245
			15425	17700		
2300-0000		Radio Polonia, Warsaw	5995	6135	7125	7270
2300-0000		Radio Thailand, Bangkok	9655	11905		
2300-0000		Voice of America, Washington, DC	17735	17820		
2300-0000		WCSN, Boston, Massachusetts	9495			
2300-0000		WHRI, Noblesville, Indiana	9770	17830		
2300-0000		WRNO, New Orleans, Louisiana	13760			
2315-2330		BBC, London, England*	11820	15390		
2315-0000		BBC, London, England	5975	6005	6175	6195
			7325	9515	9590	9915
			12095	15260	15435	17875
2330-0000		Radio Korea, Seoul, South Korea	15575			
2330-0000		Radio Tirana, Albania	7065	9760v		
2330-0000		Voice of Vietnam, Hanoi	9840	12020	15010	
2335-2345	M-A	Voice of Greece, Athens	7430	9395		
2345-0000		BBC, London, England*	3915	6080	7180	9580
2348-0000		WINB, Red Lion, Pennsylvania	15145			

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## The Venturer/Rhapsody Multiband and GE World Monitor Portables



If you're a reader of *The Christian Science Monitor*, *The New Yorker*, or *Smithsonian* magazine, you've almost certainly seen a radio advertised called the "Venturer Multiband." It covers not only AM, FM and shortwave, but also TV audio, aeronautical transmissions and local US weather forecasts. As if all this weren't enough, it also can be used as a public-address system and direction finder of sorts.

### Baubles, Bangles and Beads

It looks pretty snazzy, too, what with a large black plastic and stitched-leatherette cabinet, big shiny knobs, a chrome plated speaker dome, chrome plated rack-type handles and a real signal-strength meter. All this, and it operates off either batteries or 117V ac, too.

But what makes this set especially inter-

esting is its price, usually between \$79.85 and \$99.95 in the US. If you want it with a built-in cassette recorder, the price becomes \$129.95. If you also add stereo audio and a digital clock, it rises to \$150.00. We confined our tests to the basic model.

### Low Price, Low Coverage

Alas, these Yugo-low prices don't get you much in the way of shortwave performance. To begin with, the Venturer doesn't cover 11, 13, 16, 19, 21, 90 or 120 meters used for world band broadcasts. Instead, it tunes continuously from about 4-12 MHz, and there's no accurate readout to tell you what frequency you're on. The needle on the dial merely gives you a very rough idea of where you're tuning, so you have to play Knob of Fortune to find the station you're looking for. The little fine-tuning control hardly helps, either.

The Venturer is promoted as being able to receive, among other things, ham radio transmissions. However, as there's not even so much as a BFO to help demodulate single-sideband and CW signals, the hapless buyer can make sense of precious few ham signals, indeed. Too, it doesn't even receive 10, 15 or 20 meters.

### "Multiband": One Band That Isn't

The Venturer's dial has ten separate frequency scales, or so-called "bands" -- most of which are for non-shortwave functions. Two are for shortwave, and are labeled "SW1" for 4-6 MHz and "SW2" for 7-12 MHz.

But...what's this? There's only one switch setting, not two, for shortwave. How can there be two "bands" -- "SW1" and "SW2" -- on the dial if there's no way to switch between them?

The answer: There is, in fact, only one shortwave "band;" the dial is simply gimmicked up to make it appear as two. The "SW1" frequency scale displays 4-6 MHz on the left side of the dial, with the right side being unnumbered. Just below is "SW2," which reads 7-12 MHz on the right side of the dial, with the left side being unnumbered. This is sort of like drawing a line through a bag of groceries, then calling the upper half "Bag 1" and the lower half "Bag 2."

### Generally Dismal Performance

As to how well the Venturer performs on shortwave, sensitivity with its built-in antenna is mediocre, but not truly awful. Selectivity is quite broad, to the point where you sometimes get interference from stations two channels away. Of course, with this kind of selectivity the set isn't up to separating stations on adjacent channels. Your ears simply have to endure any resulting mishmash.

This low-cost radio uses a single-conversion design, so spurious signal rejection is poor. This means that not only do you hear howls and whooshes from whatever stations might be on nearby frequencies, but also you may very well be forced to endure a battery of whistles and Morse-code-type sounds that make listening even more distressing. A half hour of this, and you may well be adding your own moans to the cacophony.

The Venturer's performance isn't all bad, though. Its audio quality is quite reasonable, and there's even a continuous tone control. What this means is that if you find a station "out in the clear" that's also free from spurious signal interference, reception can be quite pleasant. That's a lot of "if's," but at night there are usually a dozen or so such signals to be found in English within the world band spectrum.

## Ghost of Christmases Past

In all, this is a shortwave portable right out of the 1960's, with hyperinflated promotion to match. (SYNC's catalog: "If it's on the airwaves, Venturer can tune it in!") If you play with it for a few minutes, you can see why it's only in the Eighties, thanks to advanced technology found in better radios, that shortwave listening has become popular. These old-technology sets just don't perform well enough to listen to with pleasure day after day. Indeed, for listening to world band broadcasts or ham transmissions in 1988, the Venturer borders on being an overpriced toy.

The Venturer Multiband, which is also sold as the Rhapsody Multiband, is available from a variety of American mail-order firms, such as Haverhills, Blair Shoppe and SYNC. SYNC, which sells the stereo version, has a money-back period of at least one year; Haverhills' money back period is 30 days; whereas lowest-priced Blair Shoppe allows only seven days. Since the radio is made by a Hong Kong firm, it is probably also available outside the US under these or other names.

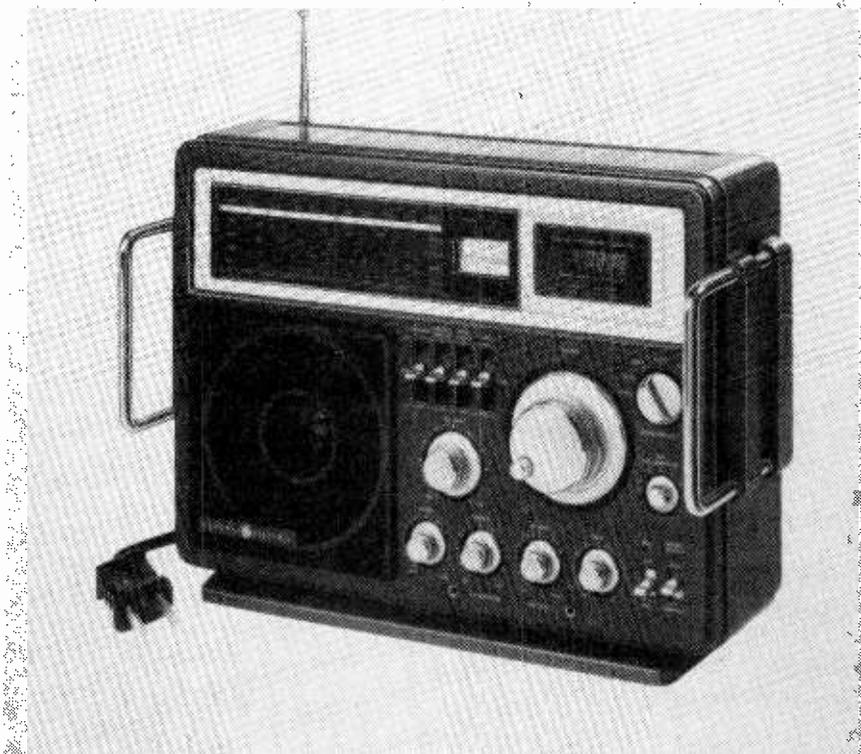
Of course, for \$80-150 you don't expect the Mona Lisa, or even a week at the Brasstown Hilton. Perhaps, if you just like to dabble in a wide variety of things electronic, the Venturer's "doer of all, master of none" approach is just what you've been looking for.

Still, the Philips D1835, sold in the US as the Magnavox D1835, sells for considerably less than the Venturer or Rhapsody Multiband, and is a better performer. In fact, that Philips design is also available with a built-in cassette recorder...although, this version -- the D7476 -- isn't yet available in North America.

## Steal of the year: GE World Monitor

So much for the disappointing news. Here's some good news -- really good news -- which you should soak up quickly before it becomes radio history.

Electronic Equipment Bank is scheduled to obtain some 700 General Electric World Monitor world band radios that were recently discontinued when GE sold its consumer



audio line to a French firm. These are new radios, made in Japan for GE by Panasonic, that were returned for one reason or another and have been remanufactured at the factory.

## Compares to \$200-300 Models

The World Monitor, unlike the Venturer, is a serious set that's very similar to the \$300 Panasonic RF-B300 reviewed in last month's *Monitoring Times*. In the 1989 *Passport to World Band Radio*, the GE model received the same rating as two currently available portables: the Sony ICF-7700, which lists for \$259.95, and the Panasonic RF-B40, which lists for \$219.95. The GE, unlike the Venturer and many other portables, does receive many ham signals, but it's too unstable to be considered a stellar performer in this regard.

Instead, what makes the General Electric so exciting is that it is to be sold by EEB -- starting around early November -- for only \$129.95. I've been testing and reporting on world band radios for over a decade, now, and this is only the second time I've come across a bargain like this. (The other was when a number of Uniden CR-2021's were being sold for around a hundred dollars; they were snapped up almost immediately.)

## Fairly Good Performer by Any Measure

Now, *this* is a bargain...and just in time for the gift-giving season. The World Monitor has full coverage of the shortwave spectrum; uses digital frequency readout; operates worldwide off either 110 or 220 volts ac, in addition to

batteries; has two -- yes, two! -- bandwidths; is sensitive; and, perhaps best of all, has really pleasant audio quality, which is aided by the presence of separate bass and treble controls. The only thing that's quite comparable among currently available models is the Philips/Magnavox D2935, which is somewhat more modern -- it has keypad tuning, programmable channel memories and the like -- but sells for 40% more and has only one bandwidth.

Overall, the GE World Monitor is a fairly good performer by any measure. The problem, of course, is that there are only 700 to be had. So, if you're interested, you can reach EEB at 516 Mill Street N.E., Vienna, Virginia 22180, and they do export worldwide.



PASSPORT'S "RDI White Paper" equipment reports contain everything -- laboratory measurements, "hands-on" panel findings and user comments -- found during PASSPORT'S tests of communications receivers and advanced portables. RDI White Papers are available in the US from EEB and Universal Shortwave; in Canada from PIF Book-by-Mail, C.P. 232, L.d.R., Laval PQ H7N 4Z9; and in Europe from Interbooks, Stanley, Perth PH1 4QQ, Scotland, and the Swedish DX Federation.

A free catalogue of the latest editions of these reports may be obtained by sending a self-addressed stamped envelope to these firms or to Publications Manager, International Broadcasting Services, Ltd., Box 300, Penn's Park, PA 18943 USA.

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 International's award-winning SWL DIGEST. For North America, SWL DIGEST is heard at 8:10 PM EST on 5960, 9535, 9755, 11845 and 11940 kHz, with a repeat the following Tuesday at 8:30 AM EST on 9625, 11855 and 17820 kHz.

## The AOR Model AR-900 100 Channel Handheld Programmable

If you could design your own handheld programmable scanner, what would you incorporate in its design to make it best fit your needs? Perhaps make it very small and compact for ease of portability? Or, how about including "uncensored" 800 MHz band coverage with the correct channel spacing for the various band segments? Or, would you add an LCD display and frequency readout which could be seen from all angles and visible in all lighting conditions?

Maybe you'd want a flexible channel banking system which allows instant access of any of its 100 frequencies by merely touching a bank switch and the channel number desired? And how about five different search ranges which can be programmed into the five memory banks?

Well, if your dream receiver has any of these features, check out the new AR-900 handheld programmable scanner being



marketed by Ace Communications, 10707 East 106th Street, Indianapolis, Indiana 46256. (1-800-445-7717).

While this little scanner deserves praise for its progressive design, it is our policy to be objective. We must examine it thoroughly, warts and all, and there are a few warts.

Probably the major drawback is the presence of "wandering birdies" -- unstable, internally-generated oscillations which gradually shift frequencies, interfering first with one channel, then another as they drift unpredictably.

An identical problem surfaced a few years ago with Regency's HX1500 hand-held scanner. Like Regency, ACE will repair the problem if the customer complains; unlike Regency, the factory does not intend to do anything about it.

### A Lot in a Little Package

The AR-900 is a tiny 2" x 5 3/4" x 1 1/2" and weighs a scant 12 ounces. It covers the following frequency ranges: 27-54 MHz low VHF, 108-174 VHF aircraft and public ser-

vice bands, and 406-512 MHz UHF band. The microwave ("cellular") band is incomplete -- 830-950 MHz, omitting the first 24 and last 10 megahertz of this frequency range.

The AR900 comes complete with a rechargeable NiCad battery pack (installed in the radio when you get it), a wall-mounted battery charger/adaptor, a chrome belt clip, two antennas (one for VHF lo/high bands and one for UHF and 800 MHz bands), plus a set of operating instructions.

Characteristic of many Japanese instruction manuals, this one has typographical and procedural errors as well as omissions.

### 100 Channels

The AR-900 offers the user 100 programmable channels in five banks of 20 each, along with the ability to search between frequency limits. Too, you can select AM or FM mode and your own choice of search increments -- 5, 10, 12.5, 25, even 30 kHz steps for cellular phone (this is the only current handheld scanner having the proper channel spacing!).

You can also lockout individual channels and there's an all-channel delay on both banked channel scanning as well as band searching.

Scan delay, however, is unusually long -- six seconds -- meaning that there will be a lot of missed transmissions during busy traffic conditions. The user may select a "hold" function on the search to stop the search on newfound or unknown frequencies.

### Some Specs

Although advertised at 15 increments per second, scan/search speed is only ten per second, the slowest presently on the market and infernally sluggish for a 100-channel scanner. Of course, you can also manually step through the search process. Mistakes or improper entries can be cleared with a stroke of the "clear" button on the keypad as well.

Although audio specs were not available as this is written, output is disappointingly low, like its lower cost cousin, the AR800, but is just as crisp and clear. In a quiet environment an annoying residual hiss will be heard through the speaker -- and especially through the earphone -- while the radio is squelched.

The scanner's memory is permanent, and requires no memory backup batteries. Frequencies entered into the scanner's remain there until changed or deleted by the user -- no more loss of 100 channels when the battery gives out.

Memory banks you choose to monitor or delete are not remembered at shut-off; when you switch the radio on, all memory banks are enabled and you must once again lock out those you don't wish to monitor.

A wall adaptor is included to provide the required 6 volts, 200 ma to power the unit and charge/recharge the radio's batteries. Very little power is required to light the LCD's backlighting, allowing it to be switched on and used for long periods without heavy battery drain.

With a low band IF of 54 MHz (as well as the 800 MHz range), and wide dynamic range, intermod and images are substantially lower than those found on competitive hand-held scanners, a distinct advantage for metropolitan users. Adjacent channel rejection is very good. Squelch action is a bit sloppy (loose hysteresis); all controls operate with ease. A keypad lock, LCD light switch, and BNC antenna connector are all situated on the top of the radio for user convenience.

According to the manufacturer, "a wide variety of accessories, such as leather carry cases, external speakers, and earphones, plus antennas, are available for (your) unit" as well. Contacting Ace Communications will yield more information on such accessories, should you be interested.

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### Overall Impressions

This scanner's tiny size (due to extensive use of Surface Mount Components, which are nearly microscopic duplicates of electrical components found in most present electronic devices), features and wide frequency coverage make it unique in terms of size and performance.

Programming the AR900 is different from most competing models, and the sequence for search programming is awkward.

Probably the most amazing thing about the AR900 is the fact that so much can be engineered into something so small. All parts and components are of the highest quality, and everything fits together well. The LCD display contains a wealth of operating information, showing everything short of how long it'll take to brew a pot of coffee in your "shack"!

The '900 is as sensitive as any scanner we've tried and pulls in distant traffic with incredible ease. 800 MHz band signals come in stronger with the little "duck" antenna than on a Pro-2004 with an outdoor antenna!

All in all, the AOR-900 offers a lot of performance for \$299.00.



## Improving AM Transistor Radio Performance

Inexpensive AM transistor radios are dismal performers. They lack sensitivity and are prone to overloading in the presence of strong local signals. Many have beat notes on the signals of interest because of inferior design. If you have attempted to use an external antenna with these radios -- well, I'm sure you were disappointed with the results! The overload problem simply increased. By coupling or connecting an outside antenna to the built-in ferrite loop you probably heard all manner of unwanted shortwave signals across the tuning range. We will discuss a cure for this problem later.

The advantage of an outdoor wire antenna is observed by our ability to copy weak, distant AM-band signals. You may be an AM-band SWL, or you may want to develop a sensitive AM receiver to use with the AM transmitter described earlier for use under Part 15 of the FCC Rules.<sup>1</sup> In any event, this article should provide some useful information.

### The Basic Problem

Fig. 1 shows the circuit for a typical AM pocket radio. Q1 plays a dual role, functioning as both a mixer and an oscillator. Owing to cost-saving measures, the mixer part of the circuit is injected with not only the desired frequency (1 to 2.055 MHz), but high level of undesirable harmonic currents.

Normally, the high Q of the tuned loop antenna at the mixer input will discriminate against unwanted signals above and below the standard AM broadcast band. The reception of shortwave signals (caused by the oscillator harmonics) is nullified by the high-Q input circuit (selectivity). But, when we attempt to connect a wire antenna to the loop, the loop becomes mistuned and no longer prevents shortwave signal response. I'll show you how to remedy this problem in a minute.

The remainder of the circuit of Fig. 1 is fairly standard. Output from the mixer is at 455 kHz (IF or intermediate frequency). Transformers T2, T3, and T4 provide a selective set of tuned circuits, and this helps to separate the desired AM-band signals.

D1 plays a dual role. It detects the AM signals and converts them to pulsating dc. This energy is amplified by Q4, Q5 and Q6 to provide speaker-level audio output. D1 is also an AGC (automatic gain control) rectifier. The

resultant negative voltage is fed back to the base circuit of Q2. The greater the AM-signal strength the higher the negative AGC voltage, and hence the lower the gain of Q2. You can see that the essentials are present for a reasonable good AM radio, and at very low cost.

Although NPN transistors are shown in Fig. 1, some imported radios use PNP transistors. The latter radios require a positive ground, whereas NPN transistors have the more common negative ground. New, unmodified AM radio modules, minus case, knobs and speaker, are available. They use NPN transistors and are easily modified for improved performance (see photo).<sup>2</sup>

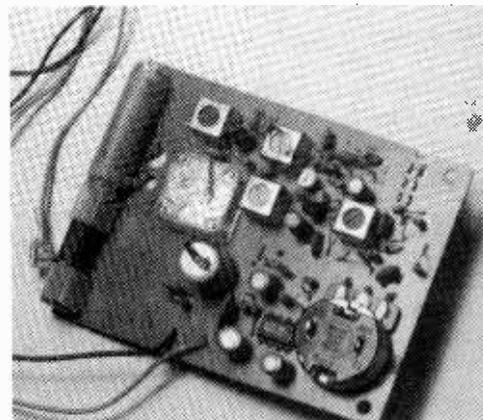
Fig. 2 shows how I modified several AM transistor radios to permit clean reception with an outdoor antenna. Compare this circuit with that of Q1 in Fig. 1. The dashed lines in Fig. 2 enclose the new mixer circuit. No longer are the oscillator and mixer on one piece of silicon, inside one transistor case. This helps to prevent unwanted oscillator harmonics from overwhelming the mixer. Instead, we now have a dual-gate MOSFET mixer. This device is a better mixer than a bipolar-transistor one, and can outperform bipolar transistors in mixer circuits, respective to handling strong signals (reduced potential for overloading).

Q1 of Fig. 2 is a modified version of the same device shown in Fig. 1. Note that the base of Q1 is now bypassed with a 0.01-uf capacitor. Oscillator injection for the new mixer, Q7 is taken from the top of the T1 secondary winding. The resistor values for Q1 are those that are used in the radio I modified. Different parts values may be found in other radios. The new mixer has its drain connected to the top of the T2 primary winding. L2 is left floating in the new circuit. It was originally connected to the base of Q1, Fig. 1.

I added a three-turn link (L3 of Fig. 2) to the ferrite-rod loop antenna. It is wound over or near the L2 part of the loop. This permits the use of an external wire antenna.

### Construction Tips

The new mixer, Q7, can be built on a scrap of PC-board stock (small). I use a 3/4 X 1/2 inch piece of single sided stock for my mixer. I cut the copper with a hacksaw (Moto tool and



cutter bit also suitable) to form a grid of 3/16 inch isolated square pads. The transistor and components are soldered to these pads. The tiny module is mounted atop the radio PC board near the loop antenna.

L3 may be wound with no. 26 or 28 enamel wire. Light gauge insulated hookup wire is suitable also. Melt some wax over L3 to help affix it to the loop rod.

C1A/C1B is a dual variable capacitor that you will find in your AM radio. The pf values listed in Fig. 2 are typical. I replaced the miniature variable capacitor in my modified radio with a two gang air variable that has a built in vernier action. I pulled rotor plates from each section until I had the values shown in Fig. 2. This made it more convenient to tune the radio and use a big homemade dial plate.

I installed the modified receiver in a homemade wooden cabinet. The speaker is also mounted in the cabinet (a 5 inch midrange unit). I added a 250K-ohm, audio-taper volume control on the front panel of my cabinet, thereby eliminating the tiny thumbwheel control on the radio PC board. The new gain control has an on-off switch, which is wired in series with the dc supply voltage.

### Adjustment and Use

You may find it necessary to readjust the trimmers on C1A and C1B after you complete the modifications. Tune in a BC band station of known frequency. Adjust the C1B (osc) trimmer so that the station appears at the correct place on the tuning dial. Next, find a weak broadcast signal near 1400 kHz. Adjust the trimmer on C1A for maximum signal response. You may want to take this oppor-

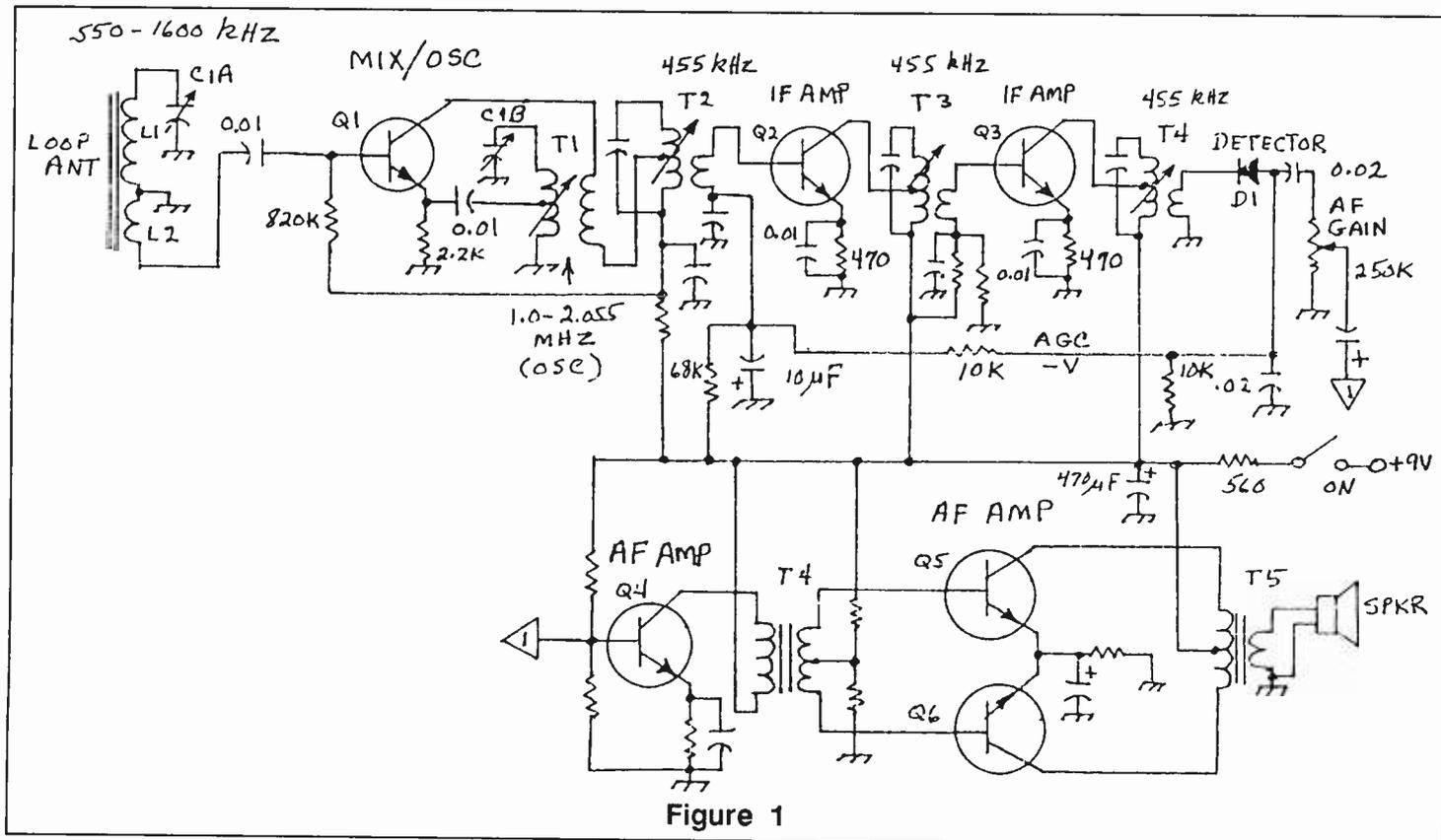


Figure 1

tunity to touch up the slugs in T2, T3 and T4 of Fig. 1. Adjust them for maximum audio output in the speaker while listening to a weak station.

Your wire antenna should be erected out of doors for best results. I suggest a length between 50 and 150 feet. Keep this antenna away from phone and power lines (preferably at a right angle to these conductors) in order to minimize QRN (noise) pickup. If you cannot erect an outdoor antenna, try routing the wire across the attic or basement ceiling. It need not be in a straight line if you lack room for a straight run of wire. You may use insulated hookup wire, no. 14 stranded copper or even no. 18 magnet wire. The size and type is not critical.

### Final Comments

I live some 200 miles from Detroit, and 300 miles from Chicago. Despite these distances, I copy stations in both cities solidly during the day with my modified radio. And the wire antenna is only 50 feet long! At night I can often hear Florida and California stations from Michigan as they fade (QSB) in and out.

Use care when soldering Q7 into its circuit. MOSFETs are subject to damage from static electricity on gates 1 and 2. Use minimum soldering iron heat and ground the tip of your iron to an earth ground or cold water pipe when soldering the transistor to the PC board.

### References and Notes

- 1 - *Monitoring Times*, October 88, page 93
- 2 - The AM radio module seen in the photo may be obtained from Oak Hills Research, P.O. Box 250, Luther, MI 49656 or Marlin P. Jones & Assoc., P.O. Box 12685, Lake Park, FL 33403-0685

Fig. 1—Typical AM-radio schematic diagram. Parts values vary with the brand and model. Some typical component values are listed. This diagram should enable you to trace the circuit of your radio when making the modifications described in this article.

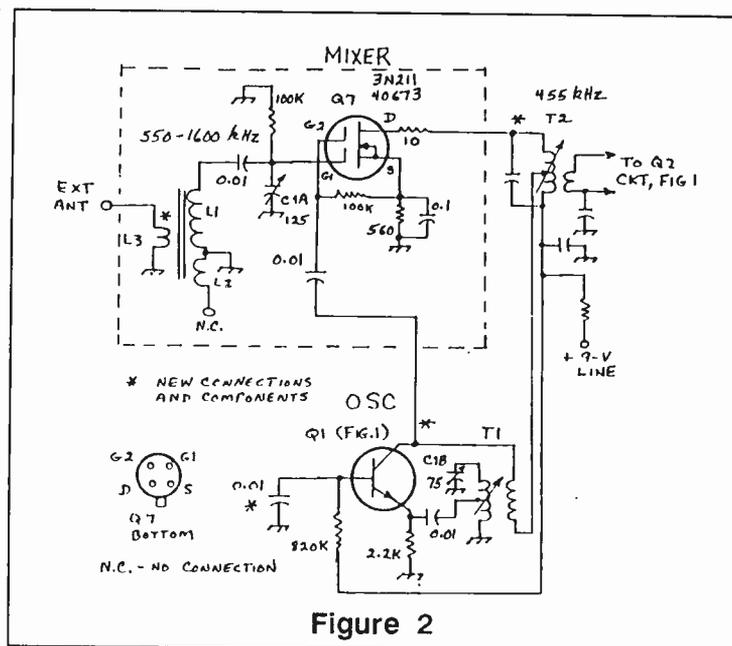


Figure 2

Fig. 2—Schematic diagram of the changes needed to improve the performance of a typical AM transistor radio. Q7 is a new transistor that is used as a mixer. Q1 has been altered to function only as an oscillator, rather than as a mixer/oscillator (see text). P-P oscillator voltage to G2 of Q7 should be 4 to 6 volts for proper performance. Increase the supply voltage to Q1 if the injection voltage to Q7 is low.



## Converting Surplus Aircraft Receivers for SWL Use

by Mark Starin KB1KJ

The following article is a circuit description and conversion scheme for the R-648/ARR-41 receiver. The information is typical of most surplus aircraft radios available today. All, for example, use 28 volts for power and operate in a similar manner. Consequently the information contained in this article is a good guideline for understanding the operation and conversion of any of this class of radio.

Generally speaking, any of these units will provide an excellent receiver for the shortwave listener or radio amateur. In many cases, they'll also outperform most new receivers costing twice the price. The effort required to make the necessary conversion is time and money well spent.

The R-648/ARR-41 is designed and manufactured by Collins Radio. It tunes from 190 to 550 kHz and 2 to 25 MHz in one kilohertz increments over five frequency ranges. The receiver consists of eight plug in assemblies which are easily removed for troubleshooting. It also features 1.4 kHz and 6.0 kHz mechanical filters. Power required is +28 volts at 4 amps. All you need then to operate this receiver is a +28 volt supply, headphones or speaker and antenna.

### Theory of Operation

Figure one shows a block diagram of the receiver. Incoming signals are received by the antenna and applied to one of five tuned circuits, depending upon the band of reception. The signals are then applied to the grid of the first RF amplifier (V701) for amplification. After first RF amplification, frequencies within the range of bands 1, 3, 4 and 5 are applied through tuned circuits to the second RF amplifier and then through additional tuned circuits to the first mixer (V703).

The function of the first mixer and RF oscillator (V601) is to heterodyne the incoming RF and produce a variable IF of 2.0 to 4.0 MHz. Band 2 frequencies are 2.0 to 4.0 MHz without heterodyning and are therefore switched around the second RF amplifier and first mixer circuits. All bands of frequencies are then within the range of 2.0 to 4.0 MHz and are applied through the variable intermediate frequency-tuned circuits to the variable frequency oscillator converter (VFOC).

The VFOC heterodynes the incoming 2

to 4 MHz signals with a locally-generated 2.5 to 3.5 MHz signal, producing an output of 500 kHz (the second IF). This signal is then applied to the grid of V501 for amplification. Output of V501 passes through either a 6 or 1.4 kHz mechanical filter, depending upon the setting of the emission switch and through one of two second IF amplifiers.

The IF signal is then applied through another tuned circuit to the grid of the third IF amplifier (V504). Tuned circuit Z504 couples the output of the third IF amplifier to the detector (V505) which recovers the

modulation component of the IF signal and produces a negative voltage proportional to the carrier level for automatic volume control.

BFO output can be routed to the detector input by setting the emission switch to either CW or CW SHP positions. A beat note is then produced with the 500 kHz IF signal to allow CW reception. Output from the detector is then applied to the limiter/AVC gate (V506).

One half of a dual diode V506 functions as an AVC gate control and prevents application of IAVC voltage to the various

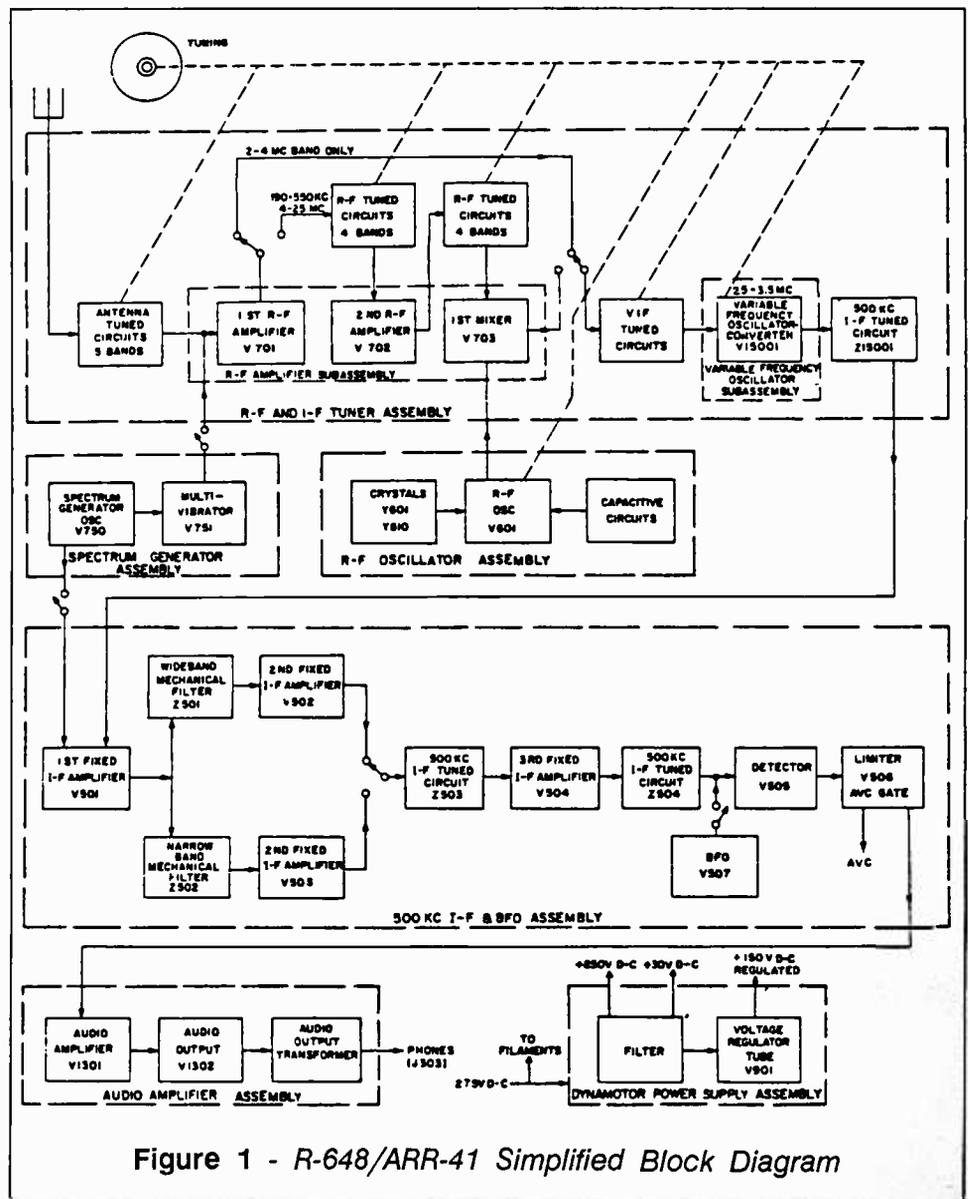


Figure 1 - R-648/ARR-41 Simplified Block Diagram

amplifiers until full receiver sensitivity is achieved. The other half of IV-506 is a noise limiter which suppresses undesired noise pulses.

Output of V506 is an audio voltage proportional to the modulation of the incoming RF signal. Audio amplifier V1302 and

**Monitoring Times** invites you to submit your favorite projects for publication. For more information, contact technical editor Ike Kerschner at RD 1, Box 181A, Kunkletown, PA 18085.

audio output V1302 amplify the audio signal. Phone jack J303 is connected to audio output transformer T1301 and is located on the front panel of the receiver. The spectrum generator consists of a crystal-controlled oscillator and a multivibrator/divider circuit.

The crystal controlled oscillator (V750) produces a 500 kHz calibration signal. This signal is then applied to the grid of the first IF amplifier (V501) and to one plate and grid of multivibrator/divider V751. The multivibrator fires on every fifth input pulse and produces an output to the first RF

rich in harmonics and allows the IRF circuits to tune to a particular harmonic, depending upon the resonant frequency of the tuned circuits. A beat note is produced as a result of heterodyning the 500 kHz signal applied to the first IF amplifier with the selected harmonic of the multivibrator.

This beat note is heard when the receiver frequency is varied around the selected multivibrator harmonic and the correct receiver frequency is verified via the counter indication on the front panel. The counter can then be set to the exact 100 kHz multiple using the DIAL ZERO control and calibration is complete.

The dynamotor power supply normally converts the +28 source voltage into a usable output for the screens and plates of the receiver tubes. The necessary filter and divider circuits are employed to produce +250V, +150V regulated, and +30 V for AVC delay bias.

### Conversion Information

While the dynamotor supply normally mounted inside the receiver can be used for initial checkout of the unit, it should be noted that dynamotors are not very efficient DC to DC converters. In addition, dynamotors typically draw up to 20 amps of surge current at startup (not every ham or SWL shack has a +28V 20 amp supply on hand). It is much easier to use the old

dynamotor supply components as a foundation for a replacement transistorized DC to DC converter and obtain a +28V 6 amp power supply as a primary power source. A suggested circuit is shown in figure three.

It might also be possible to plug in a AC powered supply in place of the dynamotor but I recommend sticking with a DC to DC converter. The reason is that AC on the filaments of the receiver tubes could produce an annoying hum in your headphones or speaker, not to mention design changes in the filament circuits. Using +28 volts for the filaments eliminates that problem and provides a convenient source for your DC to DC converter.

### Operating the Receiver

Operation of the receiver is straightforward. Connect the receiver power cable from your DC power source to the receiver front panel (J301). Connect an antenna to J302 and a pair of 600 ohm headphones or loudspeaker to J303. Set POWER OFF-ON switch to ON. The dynamotor should start up right away or there should be a faint whine from the replacement inverter if it is installed. Allow the receiver to warm up for 15 minutes.

Set the BANDSWITCH control to the range of interest. Set the EMISSION switch to CAL and set TUNING control to a 100 kHz point nearest the desired frequency (example 3580 kHz = 3600 kHz checkpoint frequency). Slowly rock the TUNING control through checkpoint frequency and set to Zero-beat. Press DIAL ZERO control and rotate until indication on MEGACYCLES window corresponds to nearest checkpoint frequency.

Set EMISSION switch to VOICE, VOICE-SHP, CW or CW-SHP as desired. Adjust TUNING control to desired frequency and GAIN and SLENS ADJ controls for appropriate listening levels. To copy CW or SSB, adjust the BFO control for desired CW tone or best voice intelligibility.

648/ARR-41 receivers and accessories are currently available from Fair Radio Sales Co., PO Box 1105, 1016 E. Eureka Street, Lima OH 45802 (write for current prices).

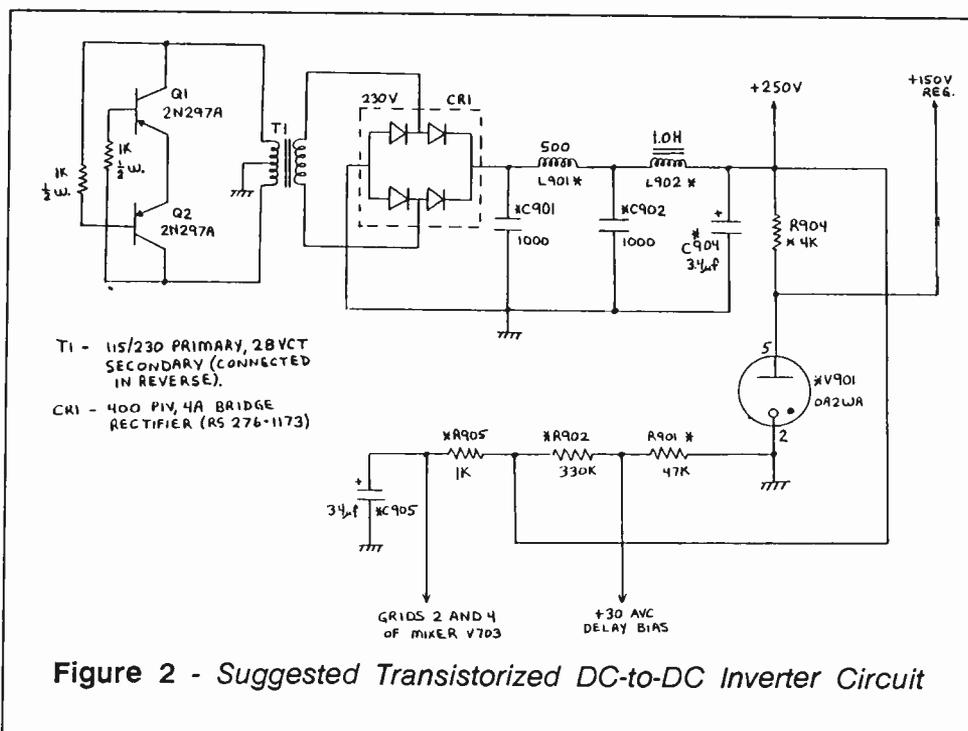


Figure 2 - Suggested Transistorized DC-to-DC Inverter Circuit

Projects for *Experimenter's Workshop*, while reviewed by our Technical Editor, are submitted by readers and remain experimental.

## Antennas, Antennas, Antennas ...

I have always cherished the hope that my involvement with antennas would someday pay off. Well, that day came last week. A local weekly newspaper, *The Valley Voice*, ran their weekly "guess what this picture is" contest. My wife happened to be looking through the paper and said, "Here's something you'd probably know. You're always looking at antennas."

I checked it out and lo and behold, there was a picture of the HF and VHF beams above the roof of my friend N1FS, Frank Somers. I called the paper and was the first to correctly identify the picture of those antennas. I won the "Weekly Monobuck Prize" and am now anxiously awaiting the arrival of my dollar in the mail -- gloating over the fact that my knowledge of antennas is finally paying off.

### A Great Antenna Applications Book

A while back Stanley Mayo, WDX1B, sent me a book to review called *Antenna Applications Reference Guide*, published by McGraw-Hill. It was originally published as part three of Johnson and Jasiks' *Antenna Engineering Handbook*. It is a really valuable sourcebook of information on antenna applications, from low-frequency through microwave.

Although this guide was taken from an engineering-level text, it is an applications book rather than a design book, and presents mainly practical information at a level which readers of this column should be able to handle. Some math is presented, but the bulk of the information is applications discussion and most of it can be covered without dealing with the math. I've seen no better applications book anywhere.

The *Antenna Applications Reference Guide* has whole chapters devoted to such topics as low frequency antennas, medium frequency antennas, high frequency antennas, VHF and UHF communications antennas, microwave-relay antennas, tracking antennas, satellite antennas, earth station antennas, aircraft antennas, direction-finding antennas, radio-telescope antennas, and more.

While definitely not a build-it-yourself

guide, reading through it will give you a tremendous amount of information about which antenna designs are most useful for what applications and how various communications problems are solved by appropriate antenna designs. Unless you are an antenna design engineer, I guarantee that you'll see quite a few antennas in this book which you've never seen before.

If you're looking for a good coverage of the multitude of antenna applications which the communications field has produced thus far, this book is hard to beat.

### World's Simplest Antennas?

Some people who like to monitor short-wave, scanners, and other sorts of radio have the problem that they cannot erect an outdoor antenna. Their solutions are many: under the rug antennas, attic antennas, along the wall antennas and using a balcony railing or metal window frame as an antenna. Many other solutions have been tried with varying degrees of success. This month let's add one more solution to the problem with the "no-antenna" antenna.

### When Is An Antenna Not an Antenna?

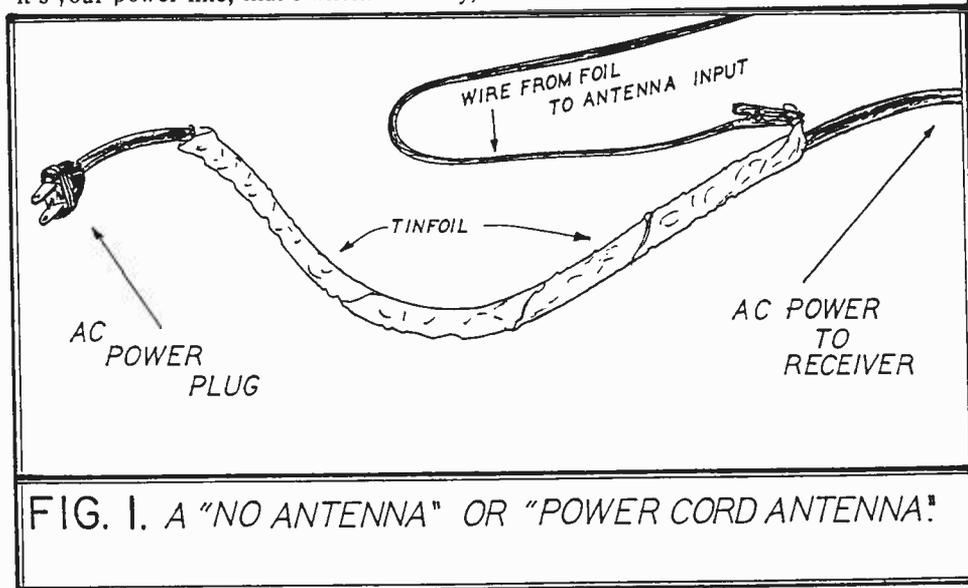
When is an antenna not an antenna? When it's your power line, that's when. Actually,

that's just a play on words to say that you can use the power line which brings electricity into your home as an antenna. Think of it, that power line is suspended from poles at a reasonable height, and spans quite a distance. It should intercept some radio signals somewhere along the way, right? Well, it does, and so our job is to remove those signals and apply them to the antenna input connector of your receiver, without bringing the power line's 120 volt alternating current in along with the signals!

The means of doing this is simplicity itself. We take a length of aluminum foil and wrap it tightly around the AC power cord of our radio. (Do not remove the insulation off the power cord, fellah!) To this foil, attach a wire and run it to the antenna input of our receiver. An alligator clip will help attach the wire to the foil.

The electrical capacity between the foil and the power line conductors allows the passage of the rf signals on the power line through the insulation of the power cord, and into the antenna wire. I have seen FM broadcast receivers which came equipped with a similar no-antenna antenna, made of a strip of metal, rather than foil.

In building your no-antenna, for UHF and VHF a short piece of foil, perhaps six inches or so long, may suffice. For





**Q.** When I attempt to use an extension speaker plugged into my Sony ICF2010 the volume drops off; how come? (Frank Fahey, Seaford, DE)

**A.** We confirmed Frank's finding by connecting the new Grove SP-100 Sound Enhancer speaker to an ICF-2010. Apparently the small internal audio amplifier in the 2010 simply can't handle the power requirements of an external speaker when plugged into the earphone jack.

**Q.** Why does my Sony ICF2010 cover 76-108 MHz when the FM band begins at 88 MHz? Why do I hear repeats of FM broadcasters (like 106.3 at 84.9 MHz) in that range? (Jeff Gilbert, Vaughnsville, OH)

**A.** In some areas of the world, FM broadcasting is allocated below 88 MHz. The repeat signal is called an image, a common complaint when using low- and medium-priced receivers under strong signal conditions, and will be heard in the FM band 21.4 MHz below the assigned frequency.

**Q.** I recently heard the DEA on 440.55 MHz; isn't that a ham band? Rodney Sargent, Lubbock, TX)

**A.** Yes, it is, but they weren't transmitting there. What you heard was an image of their 418.950 channel 6 repeater. I'll bet you have a Bearcat!

**Q.** I use a Radio Shack DX-440 receiver and a 50 foot indoor wire antenna, yet I cannot seem to hear anything but the strongest signals even though frequency directories show activity on dial settings on which I get nothing. How come? (Martin Blaise, Houston, TX)

**A.** There are several possibilities. The signal may be too weak to be heard with an indoor antenna; the schedule for the target stations may have changed since the books were printed (that's why serious listeners rely on *MT* monthly updates); your receiver could be suffering from front-end overload -- strong signals overpower the receiver so that the weak ones can't be heard. Use a passive

(unamplified) tunable preselector like the Grove TUN-3 MiniTuner between the antenna and receiver.

Is it possible for you to run the antenna outside to a tree? Indoor antennas frequently endure shielding by wiring, ducting and other metallic obstructions. A tunable active antenna located near a window might help.

Finally, keep in mind that the DX440 is a low-cost, entry-level radio; if you are serious about monitoring shortwave, you will probably want to step up to Kenwood, ICOM, Yaesu or JRC.

**Q.** I have an old Teaberry (now out of business) pocket scanner with a permanent whip. How can I attach an accessory antenna or preamp? (James Ryan, Rahway, NJ)

**A.** You can't -- at least the way it is. Let's face it; some scanners just don't adapt well to accessories. You can, however, modify the unit with a little surgery. Disassemble the case and see what sort of job it would be to install a BNC female antenna connector like the Radio Shack 278-105. You would have to replace the whip or outfit it with a BNC base.

**Q.** On my inexpensive Sears Roebuck AM/FM radio which I have connected to a cassette recorder, I sometimes hear what sounds like a single side-band transmission out of tune, but it won't change as I turn the dial. What could it be and how can I eliminate it? (John Visser, Riverside, CA)

**A.** It sounds as though your receiver is experiencing either front-end overload or audio rectification of signals transmitted by a nearby hobbyist, quite possibly a local CBer with an illegal power amplifier (linear) or even a licensed ham operating perfectly legally.

First, you will need to determine the source and signal frequency by observing antennas in the neighborhood or attempting to match the transmissions on a receiver tuned to the offender's frequency. If it is a CBer, advise him of the problem and, if the interference continues, report him to the FCC.

Fixes could include installing a filter on your antenna line adjusted to the offending fre-

## MEMORY LOSS ON THE BC200XLT

As mentioned in a previous issue, a limited number of Bearcat 200s have exhibited loss of memory when the battery runs down. This has been traced to small voltage transients (surges) which occur when the charger is plugged into or unplugged from the scanner.

The fix is quite simple: a 100 microfarad filter capacitor is installed inside the battery compartment across the output terminals which go to the scanner. While a field retrofit is possible, it is recommended that customers who are experiencing the problem return the scanner to Uniden's Indianapolis customer service center for the repair. All BC200XLTs presently being manufactured include the new part.

Ron Roth of Hamilton, Ontario, called to tell us of another memory loss situation encountered when his BC200XLT is charged from an automotive cigarette lighter adaptor. Ron cured the problem by simply placing a small RF choke in series with the positive battery lead to the scanner. We would recommend a choke with an

inductance of at least 100 microhenries.

**No, the BC200XLT has not been cancelled!**

An interview with Uniden spokesman Paul Davis in our September issue apparently left some readers with the impression that the highly successful BC200XLT is being discontinued. While all scanners eventually are replaced by subsequent models, that fate is not expected for the popular 200 until some time next year.

Quite to the contrary, demand for the new BC200XLT has been so great that all production on accessories (such as the replacement battery pack) has been suspended so that the manufacturing plant can operate at full capacity on the scanner! Accessories (including the battery pack) are not expected until November at the earliest.

quency; grounding the chassis of your radio; placing an RFI (radio frequency interference) choke on the audio cables connecting the radio to the recorder; enclosing the receiver in metal screening which is grounded; or replacing your receiver with another model less susceptible to the overload.

Techniques for overcoming RFI are covered in *Radio Frequency Interference*, \$3 from the ARRL, 225 Main St., Newington, CT 06111; *Interference Handbook* by William R. Nelson (\$9.95 plus \$1 shipping from Radio Publications, Inc., Box 149, Wilton, CT 06897); *Interference Handbook* from the FCC (available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402); and *Interference Handbook* from Consumer Electronics Group (Electronic Industries Association, 2001 Eye St., NW, Washington, DC 20006).

**Q.** I am getting a strong carrier signal on 00.000.10 kHz. What is it? (J. D. Harris, Mountain Home, AR)

**A.** If you tune any receiver down to zero, it will hear its own oscillator. The fact that it is not an external signal is confirmed by disconnecting the antenna; a received signal will disappear while the receiver's oscillator signal will remain.

**Q.** What can be done to the bottom of a magnetic mount antenna to keep it from scratching the car paint? (Blake Haskell, Guilford, CT)

**A.** One reader suggested cutting a piece of thin (1/8" or less) foam rubber the same diameter as that of the base, and placing between the magnet and the mounting surface. It works!

**Q.** How can I get a 800-1000 MHz microprocessor to extend the frequency coverage on my scanner? Where can I get instructions to build a 1.7 kHz-2000 MHz scanner? (Rodney Sargent, Lubbock, TX)

**A.** Sorry, but neither exists. No microprocessor can allow a scanner not suitably equipped to cover an additional frequency range. The oscillator and RF stages can't handle it.

Similarly, a scanner to cover the wide frequency range you suggest would be incredibly complex because components act differently at different frequency ranges -- it's not a simple matter of switching coils and capacitors.

Not only that, but there are several modes, requiring separate filters and detectors, at various parts of the spectrum. It's not a weekend project.

Grove Enterprises will have spent about \$100,000 and four years of research getting their new SR1000 into production, and it "only" covers 100 kHz through 1000 MHz!

**Q.** I need to place two beam antennas side by side. What is the minimum separation between them which will avoid interaction? (Kevin Regenhard, Pearl River, NY)

**A.** A good rule of thumb is 1/2 wavelength at the lowest frequency of interest.

**Q.** My BC800XL scanner requires two separate antennas, one for 30-512 MHz, the other for the 800 MHz band. Is there a Y-connector available so that one antenna can be used on both ranges?

**A.** There sure is. Get a hybrid TV splitter from Radio Shack (part number 15-1141) or any electronics department. Make sure that it is capable of UHF reception (through 900 MHz).

Next, cut off the Motorola plug on your antenna cable (female Motorola adaptors don't exist) and install an F connector. This screws onto the antenna input side of the splitter.

You will also need two short coax cables with F connectors on one end and Motorola plugs on the other for your scanner (Radio Shack #15-1528). They attach to the remaining output connectors of the splitter. That's it.

**Q.** I would like to record from my scanner and shortwave radio, but how do I find a long play tape recorder? How do I activate it automatically?

#### INTRODUCING HIGH PERFORMANCE MONITOR, AMATEUR & CB RADIO PRODUCTS

LUNAR INDUSTRIES, INC., is a manufacturer of amateur, commercial and Hobby Radio products which include solid-state linear power amplifiers and super low noise GaAs FET preamplifiers for 50 MHz, 144 MHz, 220 MHz, 440 MHz and 800-1200 MHz. Commercial models of the power amps and preamps are available for the Public Service and Land Mobile bands. Our GaAs FET preamplifiers are great for Scanner Enthusiasts! We also offer a HDT 10-dB Gain, 1-dB NF, JFET "in-line" preamplifier for Citizens Band transceivers. For more detailed information, please contact:



8353 ACTMITY RD. STE. 11 ■ SAN DIEGO, CA 92128  
TELEPHONE (619) 548-8555 ■ TELEX 181747

**A.** Years ago, some scanner models had an "auxiliary" jack which would activate the remote circuit of a cassette recorder when a signal was detected. Unfortunately, these have disappeared. Such a mechanism has never been on shortwave radios because there is always some background noise (interference, other users) which would be activating the device.

AMC Sales (PO Box 928, Downey, CA 90241; phone 213-869-8519) sells a Panasonic cassette recorder which has been modified for extra slow speed. It offers 12 hours (6 hours per side) continuous taping when used with a TDK C-120 cassette tape. The model 2712 sells for \$105 plus \$4 shipping.

If you would like the recorder to be automatically activated by an audio signal (such as when the radio squelch breaks) to avoid wasting tape during long inactive periods, the AMC model 250 voice activated control switch (\$24.95 plus \$1.50 shipping) would be a recommended option.

#### BEARCAT PARTS

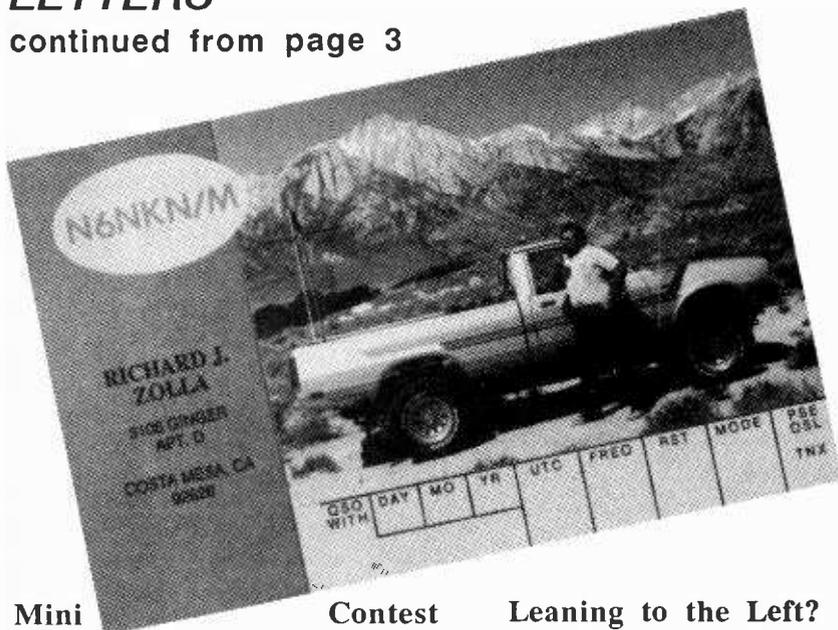
Need parts for your discontinued Bearcat scanner? Some may be available from an Ohio liquidation firm. Hosfelt Electronics (2700 Sunset Blvd., Steubenville, OH 43952) publishes a catalog (send \$1) of electronic component bargains.

In their most recent catalog we found the 8-digit fluorescent frequency display from the BC350 (\$2, part no. FIP8A5), the channel display (\$2, part no. FIP4F8), 6 volt wall charger for portables (\$1.25, part no. B318-1), 21" telescoping whip for all Bearcat tabletop scanners (\$1.99, part no. BCT), and several replacement ICs (\$1.50-\$2.50).

*Questions or suggestions sent to MT 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



### Mini Contest Leaning to the Left?

Another ham is Rick Zolla, N6NKN, of Costa Mesa, California. "Having spent many years sharpening my listening skills as a shortwave listener before getting my ham license, I often sent reception reports to hams -- with nearly 100% success. Now that I'm licensed, I wonder why I haven't received any reception reports from SWLs. 'Uncle Skip's Corner' gave me the answer. Not everyone has a ham radio *Callbook* [a list of ham call signs, names and addresses]."

Rick is willing to give you his. "I'll send my 1988 *Callbook*," says Rick, "to the first person who sends me an accurate reception report. The second report gets my 1987 edition and the third, the 1986 issue. All reports will receive my full-color QSL."

Listen for Rick on weekends signing as N6NKN/Mobile on 15 meters -- 21.2 to 21.4 MHz. And let us know how you do.

Don Schmidt, director of the Southern California Area DXers (SCADS) drops us a line and asks that we tell you about their 1989 meeting schedule. It's yours for a large, self addressed and stamped #10 size envelope. Send your request to Don at 3809 Rose Avenue, Long Beach, California 90807-4334 and plan to stop by one of their great get-togethers.

"I have a criticism of *Monitoring Times*," says Jay Bryant of Cleveland, Georgia. "I hope you will understand," he says.

"In my opinion, some of your writers show a distinct lean to the left. The latest example is the story on Nicaragua [September, 1988, p. 12]. Any Swedish journalist," says Jay, "that is allowed free access to the people and rulers of Nicaragua is of necessity a Communist -- no question.

"Almost the entire article is a compendium of the Communist party line and the approved government propaganda. It would certainly be a happy event if you can locate a writer to tell 'the other side of the story!'"

*Monitoring Times'* philosophy is this: Unlike most magazines, we deeply believe in the intelligence of our readers. The very fact that you are exploring the shortwave bands shows an intellectual curiosity that's close to unparalleled in the annals of publishing.

Knowing what we do about our readers, we do not hesitate to, from time to time, present radio subjects from non-traditional points of view. And, often, as in the case with the Nicaragua article, we'll mention this in the issue. For example, I draw your attention to the commentary on page 2 of the September issue: "You may not agree with [the author's] views, but we're certain that you'll find it one of

the best pieces of writing we've ever had the opportunity to present to you."

A few months earlier, too, we published an article on DXing in the Soviet Union -- the first of its kind in any North American publication. As with other articles of this kind, we offer them for your consideration, not as instructional.

Incidentally, Tonny Soerensen of Hinnerup, Denmark, writes to say that he'll be visiting the author of the Soviet DXing article, Igor Sannikov, later this month. Says Tonny, "Despite the fact that there aren't a lot of DXers in the USSR, those that do are quite experienced. Many are regarded as among the best in the world!"

In the September issue, reader Harry Simpson asks about the availability of a World Time calculator. A call from another reader, Chris Schon, says that a firm called "B.N. Genius" has just such a device. It's \$39.95 and it's called the Sharp "Jet Set." B. N. Genius' phone number is 1-800-468-4410.

### Old DX

"Was there ever a station broadcasting on shortwave from Cape May, New Jersey in 1968?" asks reader Robert Pietraszek of Turners Falls, Massachusetts. No, not that we know of. There was a Voice of America 50 kw transmitter in Boundbrook, New Jersey, that signed off the air in about 1965. And, several years later, the town became rather well known as the base for Rev. Carl McIntire's off-shore Radio Free America station. But, although there were plans for shortwave, the boat reportedly caught fire before they could be implemented.

An anonymous reader sent in a copy of Roddy Stinson's column in the San Antonio, Texas *Express News*. A reader wrote to Roddy saying, "While listening to my TV at 4:00 pm, there was a person talking and his voice intefered with the program. At first I thought it was a police radio, but the profanity was awful. Please tell me

what is going on." Mr. Stinson's stupefying response: "No problem. Somebody in your neighborhood has a shortwave radio."  
Phew.

### The Listening Post

We all have to boast a bit about our private sanctum, the radio shack. But Nicholas Chedville of Port Sulpher, Louisiana, boasts he's the youngest SWL'er ever. He says, "You may not remember me. I sent you a photo of myself and my Spectrum-Shack and you printed it in the November 1986 issue of *Monitoring Times*. I would like you to see an updated photo since I am now two years old."

See if you can figure out what's unique about this tower ... It's not the Omni mounted half way up the tower, although the Scanner Beam on top was modified by Nicholas' dad, Kevin, according to specs found in an issue of *MT* a while back. The usual TV antennas are beneath the beam with dual rotors.

He says, "Why dual rotors? Well, I live next to the Mississippi River. I can't see the river itself unless I go to the top of the river levee. So, I put up a monitor camera on top of my tower and to keep costs low I use dual TV rotors (one horizontal and one vertically mounted) with the camera attached to the horizontal one. Now while I'm sitting in my shack I can view the river, or the bayou on the other side or everywhere in between, while listening to my scanners.

"My beam antenna points in the direction of the camera, so I can see

the direction that I am listening to." Sounds like the next thing will be slow scan TV.

Dad, I've heard of molding your kids, but too many hours of those earphones and ... !

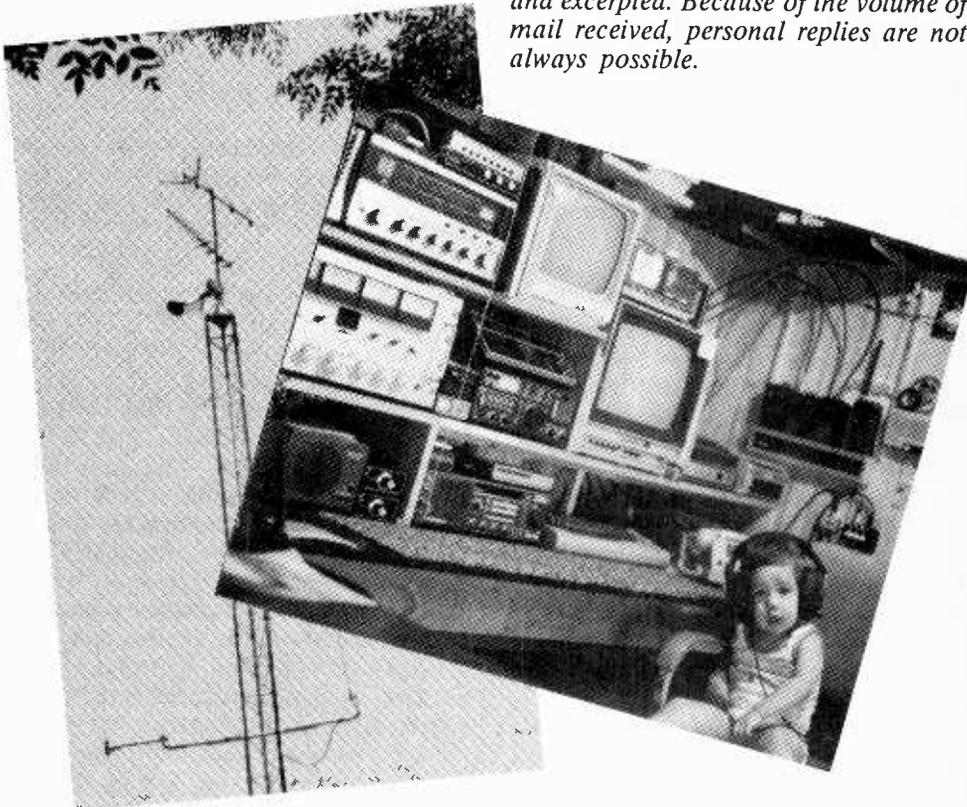
### Dedicated to Service

Finally, Mrs. Leslie Edwards, a reader in Doylestown, Pennsylvania, writes in to say that she enjoys the "Letters" column. "The informative notes are expressed with humor and are a delight. Thanks, too," she adds,

"for the new schedule for WCSN. The advance information is deeply appreciated and most welcome. That's *Monitoring Times* -- dedicated to service!"

That's George Jacobs, who is kind enough to provide such information to us!

*Letters should be addressed to Letters to the Editor, Monitoring Times, P.O. Box 98, Brasstown, NC 28902 and should include the sender's 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.*



### CONVENTION CALENDAR

Date	Location	Club/Contact Person
Nov 5	W. Monroe, LA	Twin City Ham Club/ Benson Scott AE5V 107 Contempo, West Monroe, LA 71291
Nov 5-6	Lawrenceville, GA	Alford Memorial RC/ Hugh Manning Jr. WB4DEB 3785 Snapfinger Rd, Lithonia, GA 30038
Nov 5-6	Pompano Bch, FL	Boward ARC/ David DeBear WA1RXB 1870 NW 42 Ter, C106, Lauderhill, FL 33313

Nov 18-20 Tampa, FL	SE Div Conv/ Frank Zeigler K4EUK 8316 Stillbrook, Tampa, FL 33615
Dec 3-4 Apache Jct, AZ	Superstition ARC/ Bill Glaze KA7SUF 7809 E. Javalina, Mesa, AZ 85208

*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.

COMMERCIAL RATES: \$1.00 per word payable with ad

1-3/4" SQUARE DISPLAY AD: \$35 per issue, payable in advance.

1 PRO-2004 RADIO SHACK scanner, mint condition with manual and antenna \$325.00. Unit is six months old. Cashier's Check or Money Order. Stephen Powers, 41 Elsie Road, Brockton, Mass 02402.

For Sale: ICOM R-70. Like new, manual, box. \$450.00. Karsten Smedal [515] 232-7173 evenings.

KENWOOD R600, 0-30 MHz receiver with 3.9 MHz Collins mechanical filter installed by Radio West. Manual. Excellent condition \$340. RADIO WEST ferrite rod AM band antenna with preamp \$45. Manual. Will ship UPS. Jim McGloin, 919 State #2, Lemont, IL 60439. [312] 257-6180 before 9am or after 8:30pm Central.

For Sale: ICOM R71A receiver with SP-3 external speaker \$650. AOR model AR-2002 25-550 MHz and 800-1300 MHz receiver with RC-Pack, \$400. AEA PK-232 CW/RTTY/AMTOR/ASCII/Packet/Fax Interface \$250. All in excellent condition and will ship pre-paid via UPS. Call Allen [615] 859-3978 (days) or [615] 822-5851

(evenings).

KAM Terminal for C-64. Send/Receive CW-RTTY-FAX-PACKET. Asking \$290. Call [904] 728-5602 after 1:00 pm.

MOTOROLA Base Station power supply suitable for 50 watt base or mobile converted to base, clean, filtered, regulated mint condition, free UPS \$125.00 [803] 723-5061

REGENCY Programmable scanner as new plus new base antenna, will provide free frequency search for your area including business, aircraft, utility, railroad, taxi, industrial, public safety \$135.00 [803] 723-5061.

SCANNER Crystals for trade or sale (\$2.00), Frequency research, mobile mounting instructions and equipment for scanners. Write Box 1239, Charleston, SC 29402.

WANTED: Working Regency M-400 and Bearcat Model 15 (crystal type) [803] 723-5061.

WILSON WH-2516 VHF Mobile, 16 channel, 25-W. New in box, \$325.00. BC-950XLT scanner \$250.00. INFOTECH M-600 excellent shape \$350.00. John Miller [907] 248-4456 AK time.

Wanted - Active filter, AUTEK Model QF-1A. Also wanted - Manual for transistor version of USN O-Scope, Mdl. OS-8 E/V, 3-inch CRT. Hank Middendorf, 3930 Eiler, St. Louis, MO 63116. Phone [314] 481-4609. I'll pay shipping & ins.

SONY ICF-SW1S, 2 weeks old, all accessories included, original box, excellent condition, \$250. Marc A. Snyder, 48 Hilldale Road, Cheltenham, PA 19012-1427 [215] 635-6909 after 5 pm.

For Sale: REALISTIC PRO-2021 / 200 Ch scanner like new in box - \$200. Will ship. Dennis Wolfe [404] 951-2914.

DRAKE SPR4 with 5NB noise blanker, AL4 VLF loop antenna & preamp, AC & DC power cords, 24 extra xtals and all manuals \$400. R71A, FM, CW & DC options, ext. speaker \$700. LAFAYETTE FM monitor receiver 29 to 50 mc and 146 to 174 mc, all solid state with manual \$35.

WANTED: 6C10 tubes, MFJ CWF-2 CW filters, any Kenwood or ICOM speakers. David, Box 6463, Mobile, AL 36660 [205] 478-8823.

Wanted: SONY "Earth Orbiter" model S100 - Good working condition. Call Les Clarke [212] 354-0136 evenings.

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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.*

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## *An Epitaph to the Crystal Scanner*

Sitting tucked-away in the back of my closet are several old crystal-type scanners awaiting a fate as yet unknown. They show the signs of age and use common to things old and outdated by modern technology, yet have memories dating back to days of monitoring long before the advent of digital marvels that look like something Captain Kirk would have on the starship Enterprise.

Crystal scanners did not succumb to multitudes of power line surges and could survive a fall off a three foot tall table onto a hard wooden floor with nothing more than a loud "thud." Power outages did not wipe-out their memories, nor was a degree in nuclear physics required to operate them. Once "programmed," no further maintenance above and beyond an occasional wipe with a dust cloth was needed, and they seldom required more than a volume adjustment when left on by the bedside on a cold winter's night.

True, versatility was not the word of the day, but dependability was. Today's integrated circuits are subject to destruction by everything from nearby lightning strikes to static build-up created by the human body.

The plastic cases on these devices invite intermodulation as well as the ability to shatter into billions of microscopic pieces at the first hard jolt --

not to mention poor warranty service with return time going into months just to have a new I.C. installed or even a new speaker put in. And, if a part needs to be ordered, it may also take "megamonths" to get from the factory!

Though it is a fact of life that soon crystal scanners will be a part of history like the Edsel automobile and the DC-3 aircraft, they will always be a part of some listening post somewhere in the world. Even at this point in time, crystals for these radios are getting harder and harder to find.

It is clear that microprocessor-operated scanners are the successors to these "soon-to-be dinosaurs," and that a new programmable scanner can be bought for the same price (and even less) than some of the remaining crystal units. So why not do away with crystal radios altogether?

Next time the power goes out and your memory backup battery is dead on your wideband 100-channel digital marvel, let me know how much fun it was to reprogram.

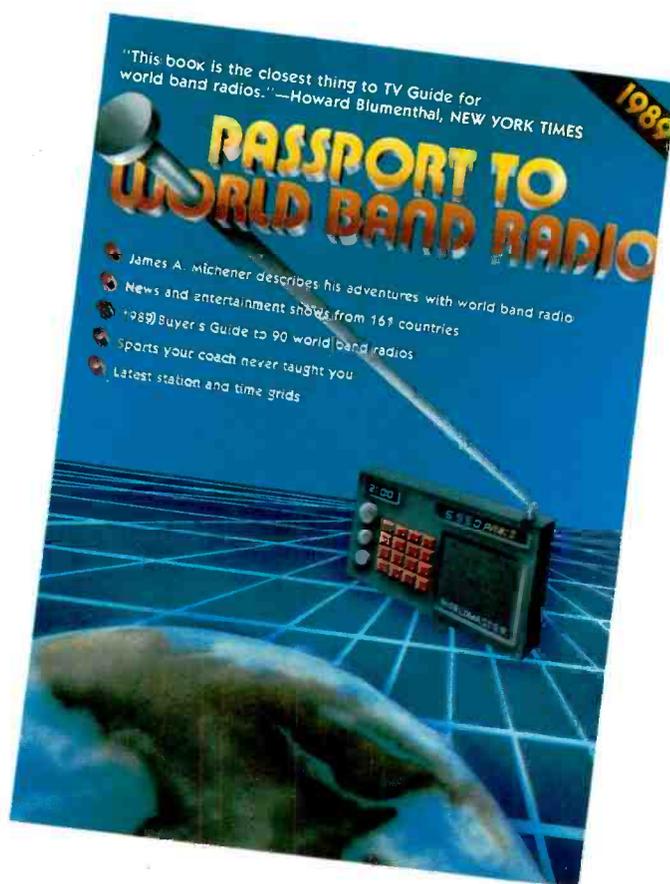
Well, guess the ol' crystal radios still have a home here!! Let's see ... a little paint ... some new knobs ...

*Larry Wiland  
MT Columnist*



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