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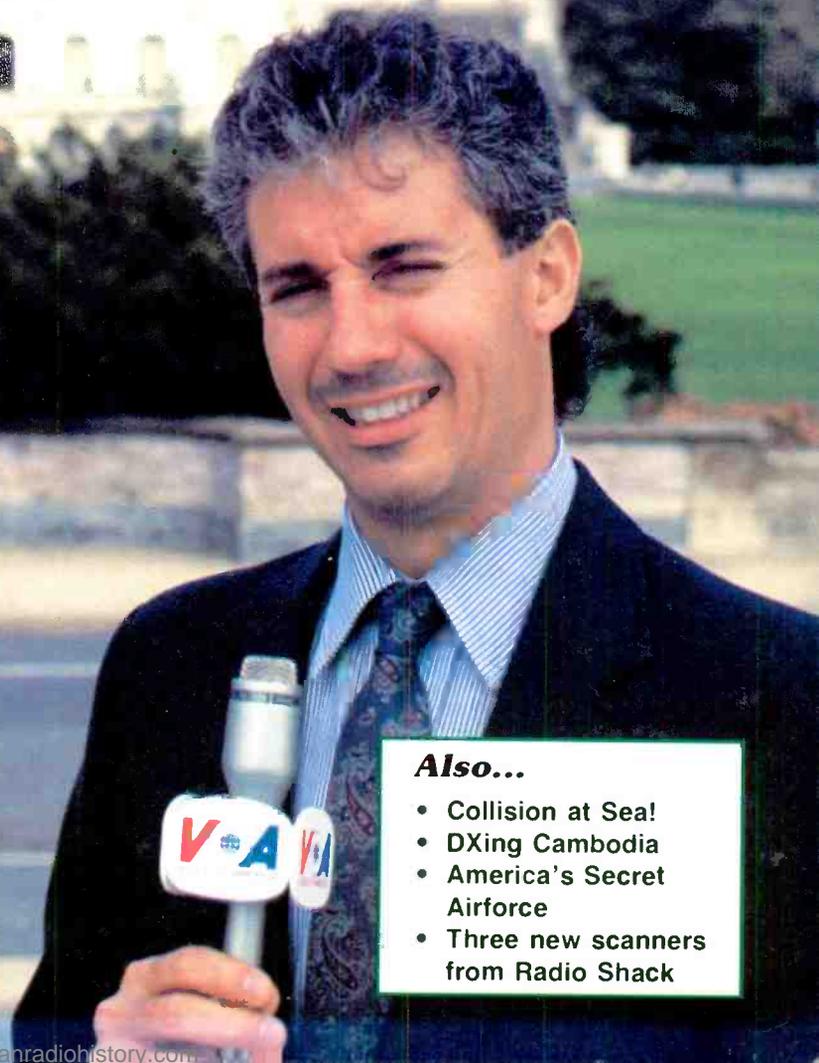
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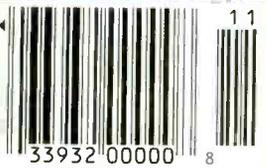
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The VOA Correspondents Corps Reporting the World



Also...

- Collision at Sea!
- DXing Cambodia
- America's Secret Airforce
- Three new scanners from Radio Shack



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MONITORING TIMES

America's Secret Air Force by Steve Douglass

18

During a ride through the White Sands Military Reservation, author Steve Douglas was astounded to find himself face to face with a mysterious plane. "The object descends lower than our position on the high road and hugs the canyon walls. It is some kind of aircraft. It makes little sound except for a high-pitched whine.



"Suddenly the scanner locks on a frequency and digitally scrambled speech spills into the car. As the plane gets closer, the radar detector springs to life, beeping persistently. Whatever it is, it is emitting a strong radar signal."

This month, one of *Monitoring Times*' most popular authors presents part one of a two part series on America's Secret Air Force. What you read will astound you. What you can *hear* may knock you down.

DXing Cambodia by Charles Sorell

14

Recent predictions on the future of Cambodia (nee Kampuchea) have been dire. This Asian nation, once the victim of ruthless genocide by the Khmer Rouge, has been, until recently, occupied by Vietnam. Now that the Vietnamese have gone, various factions have begun to fight for control of the country.

After experiencing the slaughter of millions of its people only a decade or so ago, how could the people of this beautiful, but somehow cursed, land survive yet another conflict? We look at how you can use your radio to tune in Cambodia. But do it soon. The situation is, at best, unpredictable.

Reporting the World by Jerry McKinney

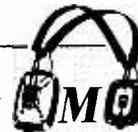
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Every day, a group of very brave men and women venture out into the world's "hot spots" in search of the news. These people are members of the VOA correspondents corp and every day they risk life and limb in an effort to present accurate, unbiased information to the world as part of the Voice of America.

It doesn't matter whether bombs are falling or people rioting. There is a job to be done. Yes, it can be exciting; the lifestyle romantic. But being a newsman for the VOA can also cost you your life.



*ON THE COVER: VOA reporters David Borgida and Robert Lodge on Capitol Hill:
Photo by Carmelo Ciancio.*



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COLLISION AT SEA! by Dave Garner

10

It all started out rather pleasantly for Dave Garner, a Monitoring Times subscriber from Knoxville, Tennessee. Chosen as a winner in his company's annual sales promotion, he and some fellow workers set out for an all-expense paid cruise to the Caribbean.

Little did they know that halfway through the voyage their ship would end up cutting a Cuban freighter in half and almost spark an international incident. Fortunately, Dave was smart enough to bring along his radio.

AND MORE ...

In the Scanning Report, Bob Kay talks about monitoring cordless telephones. It's easy to do and often sounds like a lot of fun. But, warns Kay, "Before you begin to monitor your neighbor's cordless phone, ask yourself if you really want to learn about his or her personal activities, sexual habits, and other intimate secrets. If you decide to unlock your neighbor's door with a scanner radio," he says, "there is no way of limiting the number of skeletons that may decide to fall out."

It is called the USS Eisenhower, a monstrous U.S. Navy aircraft carrier. On board are dozens of sailors and *Monitoring Times* utility expert Larry Van Horn. Here to experience the thrill of life on this floating city, he takes readers this month from the flight deck awash in the flames of giant F-14 Tomcats to the ship's MARS (Military Affiliate Radio System) station where he operated as N5FPW.

Antennas are so important to DXing. That's why each month, Antenna columnist Clem Small has a step-by-step project for you. This time, Clem explains how to build a dipole. No matter where you listen -- from the low frequencies on up to shortwave and UHF, the dipole is the durable old workhorse of the radio hobbyist. Best of all, it's effective and easy to make.

Christmas is not that far away and ham columnist Ike Kerschner has been preparing a list for Santa Claus. Gayle Van Horn features QSLs from Cameroon, India, Iran (including a Khomeini pennant!), Jordan, Panama, Syria and Tahiti. "Basic Beacons" is the title of Joe Woodlock's "Below 500 kHz" column this month. If you've never listened to beacons before, Joe points out three high-power beacons that carry voice weather broadcasts.

Own one of those old Radio Shack DX150/160 shortwave radios? Now going for between \$40 and \$70 dollars on the flea market circuit, Rich Arland says that when modified, they can be a decent back up receiver. Then he tells you how to do it.

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LETTERS

Fred Doyle of Bonnyville, Alberta, found a little surprise when dialing around on his Lowe HF-125 receiver. "Between 15.656 and 15.664 MHz, I hear three cordless telephones. The Lowe picks up the tone, dialing, pulses and conversations clearly. With USB and zero-beat, I even hear breathing between words and sentences."

It is, as Fred points out, a harmonic. What's a harmonic? An unintended transmission on another frequency that is a multiple of the intended frequency.

Let's check it out. Multiply 15.656 times 2. That's 31.312. Nope. That's nothing of note. Let's try three. 15.656 times 3 is 46.968 MHz. Bingo! A cordless phone frequency! (The actual US FCC cordless phone allocation is 46.970.)

You might also try running through the frequencies between 1.6 and 1.8 MHz as well. The bases on some of the older cordless phones transmitted in that range.

In the September edition of the American BandScan column, author Karl Zuk quotes Leonard Kahn as saying, "You need good receiver designs. Superior programming will not do it."

Jeff Chanowitz, Radio Service Coordinator for the National Republican Congressional Committee in Washington, D.C. writes to say that "I think that [Mr. Kahn's statement in your September issue] about AM programming is flat wrong. While the AM band has been in decline for years," Jeff continues, "as a medium for news and talk programming, the AM band is doing well (Arbitron ratings back my statement up).

"Also, as far as music programming goes, AM is a very successful medium for narrowcast type formats such as Spanish and All-Comedy. While I think AM will not attain the level of popularity without an increase in the band's quality, it is not about to go out of existence."

In a recent issue, Bob Kay wrote

Should MT publish a ham contest listing (open to SWL's, too, of course)? Let us know.

Nov 4-6	2100-0300	ARRL CW Sweepstakes
Nov 10-12	2300-2300	Japan International DX Contest
Nov 11-12	1200-2400	European RTTY Contest
Nov 18-20	2100-0300	ARRL SSB Sweepstakes
Nov 25-26	0000-2400	W DX CW Contest

in his Scanning column about haunted garage doors. We get reports about this all the time and from all over the country: doors with automatic openers suddenly go berserk and begin opening and/or shutting on their own.

This time there was a twist, however. Someone was jamming the garage door openers in Concord, Clayton, Orinda, E. Walnut Creek, Lafayette, Morago, Danville, San Ramon and Livermore, California, so they wouldn't work at all. According to the local paper, it was the Navy's fault.

"Not so!" cries Sam Taylor who resides in Orinda, one of the affected areas. "It is not the Navy but the Livermore Labs doing argon excitation with a Henry 20/K classic linear. They need to clean their coax connectors or ground the rig better," advises Sam.

Turns out that all of the garage doors that are jammed are Perma-Pax Geminis that operate on 27 MHz. The argon excitation runs between 26.980 and 27.255 MHz sweeps. As always, we remain in awe of our readers. We don't have to tell you that you're a very knowledgeable group!

Thomas Hart of Dedham, Massachusetts, suggests that we review mobile shortwave listening equipment. Thomas says that he uses an MFJ converter that allows his car radio to tune in the shortwave bands but gets only "fair" reception.

He also wants to know if we would be interested in a monthly report of upcoming ham radio events. Thomas isn't talking about *Monitoring Times'* existing 'convention Calendar.' He's talking about contests and offers an abbreviated sample for this month.

Future listings would include reporting requirements and so forth. Well, folks, what do you think? Any interest in ham contesting? (Short-

wave listeners can, of course, play along.) Drop us a note.

"When you answered the following question in the September 1989 issue of *Monitoring Times*, you really blew it." So says L. T. Atkinson of Tucson, Arizona. Here's the questions we "blew."

"Q: Why is it that when I listen to the BBC on 9590 kHz then switch to 9915 kHz, there is a 2.3 second delay in the program material?"

"A: While different signal paths and even satellite relays can provide some delay, they are fractional seconds in duration. Most likely, the taped program simply started 2.3 seconds later at one transmitter site."

"Oh you utility freaks!" says L. T. "You who content yourselves with listening to taped programs from waxy, yellow paper RTTY tapes hardly appreciate the BBC's policy of reading news live and providing one simultaneous satellite feed for the World Service.

"In fact, the reader probably made a mistake in the time measurement (or meant .2- .3) as he was hearing satellite delay. 9590 is from Sackville, New Brunswick from 2200 to 0030 UTC and is from Cincinnati, Ohio, from 0030 to 0230 UTC. 9915 is always direct from the UK from 2200 to 0430 UTC. My own estimate of the delay is about 0.5 seconds, measured by my ear.

"As you drink your beer while sitting in front of your Grove SR-1000, manually decoding piccolo, I believe I will have a cup of tea, a scone, and a lie-down, and enjoy a fine evening of BBC addiction, direct, if you so please, on 9915 or 12095, without that annoying delay."

[More Letters plus MT's reply on p.100]

Garbled Air Radio

It was a routine day for air traffic controllers at the Aurora, Illinois center. Directing high altitude flights over the Chicago area, they thought they had things well in hand until one controller noticed that three different planes were all following the same directions.

As a result of the confused radio communications, a Trans World Airlines Boeing 767 carrying 151 passengers from St. Louis to Paris narrowly missed a large Air Force jet. The two planes, which were flying at some 35,000 feet, reportedly came within 100 feet of one another. There was no indication how the radio communications could have become so confused.



American Voice Unknown at Home

Philomena Jurey has finished writing her memoirs but can't find anyone who will publish them. Jurey, who recently ended a 37-year career with the Voice of America, is virtually unknown in her native America. To people who live in hamlets in Albania and huts in Borneo, however, she is a megastar.

Jurey's boss, Sid Davis, relishes telling about an incident that illustrates the upside-down life of a VOA broadcaster. When President Gerald Ford went to China in 1975, a huge press corp accompanied him.

"You had some of the titans of the broadcasting industry making the trip -- Barbara Walters, all the top anchor people," says Davis. "When we arrived in China and you had all these Chinese people lining the streets ignoring the television stars and asking, 'Where is Philomena? Where

is Philomena?'" (*The Patriot Ledge* via Bob Fraser, Cohasset, MA)

Hams Come Through During Hurricane

As Hurricane Hugo was devastating the Caribbean and virtually all normal communications installations were wiped out by the wind and water, amateur radio operators, using gasoline generators and even solar power, continued to provide a vital link with the outside world.

Several 20-meter-band, upper-sideband frequencies were used for emergency messages, weather bulletins, reports of damage and casualties, and health and welfare messages between stricken residents and their friends and relatives in surrounding countries.

The most active of these frequencies during Hugo were: 14.325 MHz (primary disaster reporting), 14.283 (Caribbean island intercommunication), 14.275 (health and welfare), 14.290 (health and welfare), 14.303 (health and welfare), and 14.316 (health and welfare). These frequencies will be used again when storms ravage the warm waters of the Caribbean.

The task was arduous and *MT* commends those stalwart radio hams who provided a laudable a public service, often without thanks and always without pay, for a job well done.

Monitor Hears 'Copter Crash

A wounded Canadian fugitive being airlifted by a medical helicopter apparently tried to commandeer the aircraft in flight, causing it to crash. The bodies of Robert L. Adams, the fugitive, and the crew of a Heartlife helicopter were found on Larch Mountain, 25 miles northeast of Spokane, Washington.

A local scanner listener, monitoring the flight, provided the local media with details of the incident. Bob Zinkgraf, who was listening to his radio at his Colbert, Washington, home, heard the crew report that "they were scuffling with the suspect."

The pilot's last transmission, said Zinkgraf, "was frantic."

Adams was being returned to Canada after overpowering agents at a Customs station in Eastport, Idaho, and later breaking into a nearby home where he shot a 71 year old man.

Illegal Scanning May Be Charged

April Lorraine Giliham, who was arrested and charged with several drug-related offenses by the sheriff in Wewoka, Ohio, may face the additional charge that she monitored the FBI on her scanner during the commission of a felony.

and although local reports are not clear, it appears that other local law enforcement officials may also attempt to charge Giliham with violation of the Electronic Communication Privacy Act (ECPA) because she was allegedly "tapping" cellular mobile telephones.

Giliham, 33, was charged with possession of, and the delivery of, a controlled dangerous substance, possession of drug paraphernalia, and operating a drug house. (Stu Philips, Seminole, Ohio)

Drivers Tune Out AM-Only Radios

AM-only radios are not very popular in automobiles. According to an item in the AAA Newsletter, only 91,000 cars were requested with AM-only radios in all of 1988. That compares with nearly 3.5 million orders for AM/FM stereo combos during that same period.

Aging Radios

The Federal Communications Commission is considering whether to allow about 93,000 aging aircraft communications radios not meeting international frequency stability standards to be used beyond January 1, 1990.

General aviation groups have petitioned the agency to exempt avionics

without a frequency stability tolerance of 0.003%. These radios, which feature 50 MHz spacing, have 0.005% tolerance. (*Aviation Week & Space Technology*)

Ship Radio Cutback

A number of shipping firms, in a move spearheaded by Exxon Shipping, Co., will soon eliminate shipboard radio electronics officers and in most cases, pass their duties on to captains -- a move that even some captains say raises questions about the safe operation of their vessels.

Many of the captains say they simply do not have the time nor the expertise to take on vital radio duties which range from communications functions to below-decks repairs work.

The move would reportedly affect about 50 US-flagged tankers that operate on both coasts, from Alaska to Panama and from Texas to New York, Boston and Portland. Included are all 18 Exxon tankers, and, sources say, ships run by Texaco, Mobile, Sunoco, Chevron, Waters Marine, Overseas Maritime and Keystone Tanker, Co.

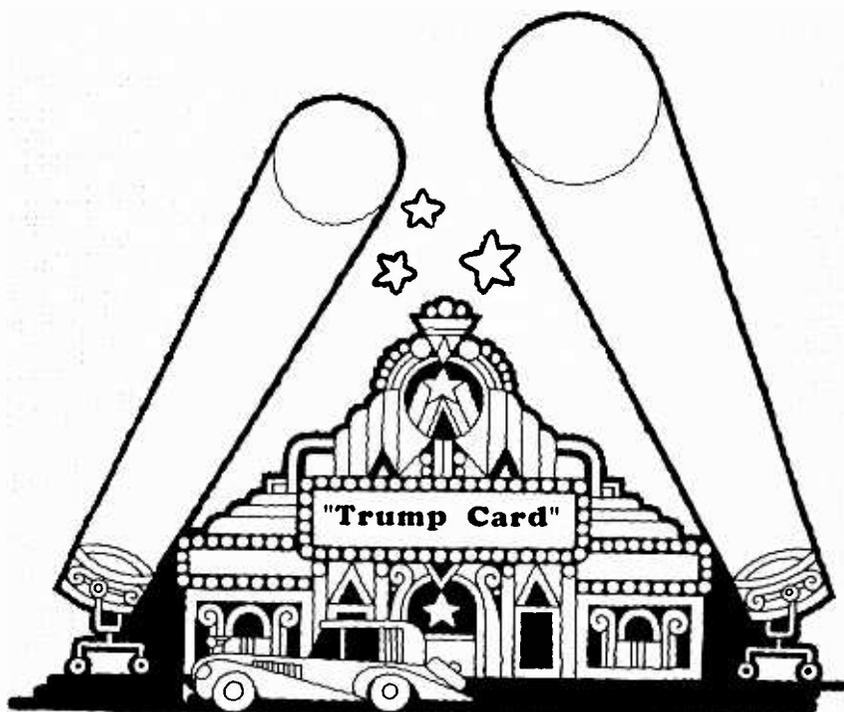
Some other major companies, including Arco Marine, SeaLand Services and American Presidential Lines, will keep radio officers primarily because of their ability to repair and maintain electronics equipment during emergencies at sea. (*New York Times*)

Listening to Cosmonauts

Russian Cosmonauts have once again occupied the mothballed MIR space station. The two, Alexander Viktoenko and Alexander Serebrov, are expected to remain aboard MIR until early March.

Cosmonauts on previous missions used 145.550 and occasionally 145.650. QSLs were available through Boris Stepanov, UW3AX, P.O. Box 679, Moscow, 107207, USSR.

MIR was abandoned last April over disputes concerning the cost and effectiveness of the Russian space program. At least one of the problems



appears to have been solved, however. This launch featured a booster rocket emblazoned with a 150 foot high advertisement for an Italian insurance company. (*With New York Times*)

TV Trump

Having bestowed his name on an airline, a casino, a yacht and a tower, Donald Trump now plans to extend it into a new territory: Trump, the television game show. According to newspaper reports, the real estate developer and Lorimar Television have agreed to develop a syndicated game show to be called, "Trump Card."

Trump will not appear on the show; however, he will share in the ownership of the show, which will be taped at Trump Castle, Mr. Trump's casino in Atlantic City, New Jersey.

Now that TV airwaves are taken care of, look for a small Albanian firm to begin production of a shortwave game show called "Grove of Fortune." (*With New York Times*)

Deep Space Downey (or, Alienating Aliens)

Many people are aware that various earth-bound organizations send communications into space with

the hope that someone, somewhere will hear them. The largest telescope in the world, at Arecibo, Puerto Rico, for example, was used for such a purpose back in the mid 1970s, sending a short message toward globular cluster M13. Traveling at 186,000 miles a second, the message will arrive 25,000 years from now.

At about the same time -- give or take a handful of years, other signals from earth will also be arriving at globular cluster M13. It's a frightening thought, but according to one writer, extraterrestrials with a sophisticated decoding device called a "television" may one day pick up "Hee Haw" and the Morton Downey Show.

The truth is that every television signal ever broadcast is escaping terrestrial boundaries and traveling into space at 186,000 miles a second.

But don't fear an alien retaliation. Assuming the nearest "intelligent" life form capable of decoding Morton Downey Jr. lies between earth and the galactic center, the fastest possible response time would be 30,000 years -- 15,000 for the show to reach them and 15,000 for the "thumbs down" to come back to earth.

"THE WHINE of a bullet is a nasty sound, especially if it's passing over your shoulder while you're running full speed down an unfamiliar street."

That is how VOA correspondent Greg Flakus began a report on the November 1987 violence in Haiti. One of a group of journalists attacked in Port-au-Prince by a roving band of gunmen, Flakus escaped by taking refuge in the home of a friendly Haitian family. One journalist was killed, and several others were wounded in Haiti that night.

In Islamabad this past March, VOA correspondent John Schulz became the target of an angry crowd demonstrating against publication of Salmon Rushdie's book *Satanic Verses*. As Schulz recalls: "I thought it would be a routine story. Instead, I walked into a full scale, rock-throwing riot. For 45 minutes, I moved from one cluster of spectators to the next -- staying out of sight as much as possible while coughing and wiping away a constant

flow of tears caused by the tear gas."

A veteran correspondent who has covered war and rioting in Vietnam, Laos, the Philippines, and South Korea, Schulz thought he knew how to stay out of harm's way. "This time, however, I got too engrossed in what was going on. I didn't notice that I had drifted into an open spot where a group of demonstrators saw me.

"They grabbed more rocks and came after me. Many of the rocks they were throwing were lethal -- the size of small bricks. One meant for me hit a nearby Pakistani, flattening him instantly. I managed to get away. Later, I learned that the local Associated Press bureau chief had been caught and beaten by demonstrators."

Schulz now remembers the incident with some chagrin, "I was there to cover the story, not to become part of it. From a professional standpoint, it was not my finest hour."



Correspondent Greg Flakus in Miami.

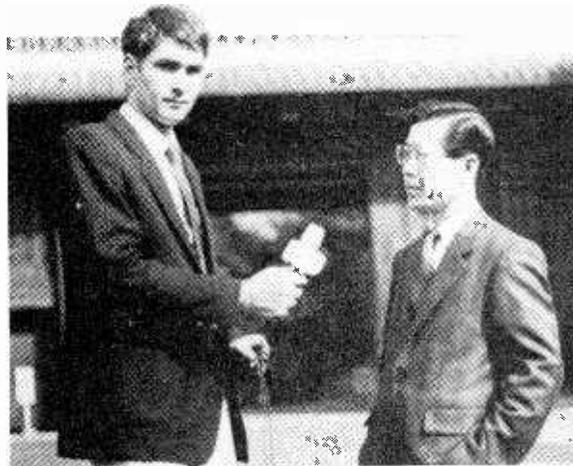
by Jerry McKinney

THE VOA CORRESPONDENTS CORPS

REPORTING
THE WORLD



Correspondent John Schulz in Islamabad.



Tokyo correspondent Phil Kurata (left) interviewing Japanese press analyst Masaji Ichikawa.



White House correspondents Alex Belida and Paula Wolfson.



Beijing correspondent Al Pessin talking with Chinese student demonstrators (faces blurred) as they march toward Tiananmen Square.

VOA correspondents neither seek nor avoid such dangerous situations. As professional journalists, they go where the news takes them. Acting as surrogate "eyes and ears" for millions of radio listeners, VOA correspondents provide eyewitness accounts of wars, earthquakes, floods, and other manmade and natural disasters as well as political, economic, and social developments that make news.

Like all foreign newsmen, VOA correspondents base their reports on eyewitness accounts of news events. They

also conduct interviews with key personalities, attend news conferences, and review the local media.

VOA expects correspondents to file reports that are accurate, balanced, and complete. Editors in the Washington Newsroom are quick to challenge any hint of a correspondent's personal opinion or bias. Correspondents are also expected to make every effort to get and report all important sides of an issue.

VOA correspondents travel on regular -



Correspondent David Dyere (right) interviewing students who returned to Burma after fleeing the military coup d'état in September 1988.

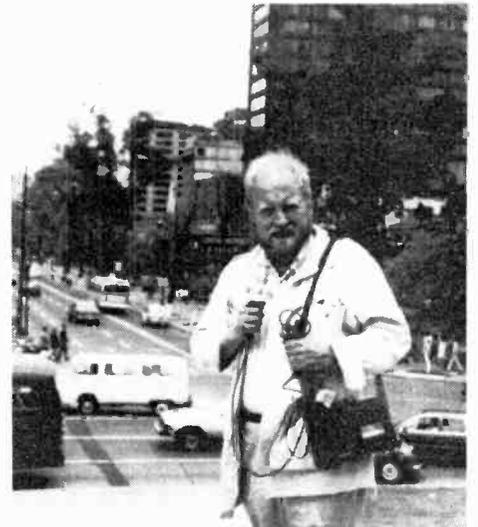
- not diplomatic or official -- passports. They have the same status in the countries where they work and travel as have any other American journalists.

In contrast to most of their commercial colleagues, however, VOA correspondents must deliver both voiced and written reportage. Usually commercial radio or television newsmen worry only about filing a voiced report, while newspaper and wire service journalists are concerned only with dispatching a written text.

When possible, correspondents prepare their reportage on computers. Most use the portable computers that have become standard equipment for the modern journalist. By connecting these computers to a normal telephone, VOA correspondents can send their texts to the VOA Newsroom.

There someone on the Assignments Desk reviews the report, which is circulated to printers throughout VOA on one of the two teletype networks that feed news and reportage to VOA's 43 language services. When a story requires little or no editing, the whole process takes only a few minutes.

Correspondents must write quickly and well. They routinely condense complicated events into one-to-three-minute reports. They must also be prepared to respond "on-the-air" to probing questions from VOA newscasters. During longer news programs, newscasters often ask



Correspondent Gary Tredway in Mexico City.



Johannesburg correspondent Mallory Saleson interviewing South African anti-apartheid activist Vumi Vilakazi.

them the sort of questions they think intelligent listeners would want answered about a story.

Given the importance the Voice of America places on the reliability of its news, VOA correspondents are less concerned than some of their fellow journalists with being first to "break" a story.



Middle East correspondent Mohamed Ghuneim interviewing a young Shi'ite voter in Basra, Iraq.

Still, there have been some noteworthy VOA "scoops" -- such as Jolyon Naegele's exclusive interview with Alexander Dubcek. It was the first interview the former Czechoslovak leader had granted since he was removed from power in 1969. The *New York Times* called the interview "a journalistic coup for the Voice of America."

Some VOA correspondents are selected for their special knowledge about a field -- such as economics or science. Others are chosen for their expertise in a particular region of the world, as in the case of Mohamed Ghuneim who has been reporting on the Arab World for more than 30 years. Most have years of experience in the VOA Newsroom as writers or editors.

A number have advanced degrees. London Bureau chief Edie Smith has an M.A. from Harvard. John Schulz holds a Ph.D. from Oxford. Mark Hopkins was an exchange scholar at the University of Leningrad in the early 1960s.

Regardless of their background, all VOA correspondents must be able to observe and assess a situation or event quickly, to collect and distill the important facts, and to report what has happened clearly and objectively.

Although they report in English, most VOA correspondents, like Phil Kurata in Tokyo and David Dyar in Bangkok, speak

the languages of the countries they cover. Many know several languages. VOA's Naegele, who reports from Bonn these days, commands a half-dozen European languages, including Czech, German, Polish, and Russian.

Moscow Bureau Chief Andre de Nesnera files in English, Russian, and French. Scott Bobb is fluent in French and Lingala (spoken in Zaire) as well as Portuguese and Spanish. Mark Hopkins can work in Russian, Chinese, Serbo-Croatian, and German, while Laurie Kassman of the Paris Bureau is fluent in Spanish, Portuguese, French, and Italian.

Correspondents assigned to an unfamiliar area usually take language and area studies at the State Department's Foreign Service Institute or at one of the major universities in the Washington area.

In all, VOA has more than 50 correspondents in major cities around the world. Outside the United States, correspondents are based in Abidjan, Amman, Bangkok, Beijing, Bonn, Cairo, Geneva, Islamabad, Jerusalem, Johannesburg, London, Mexico City, Moscow, Nairobi, New Delhi, Paris, Rio de Janeiro, San Jose, Tokyo, and Vienna.

The London office is headquarters for several correspondents and editors who coordinate coverage of events in Europe, Asia, and Africa.

In the United States, VOA maintains a large news bureau in New York, somewhat smaller ones in Los Angeles and Miami, and single-correspondent offices in Boston, Chicago, and Houston.

In Washington, two VOA correspondents cover the White House. They also take turns covering the President on his domestic and overseas trips. Two others are assigned to report on the U.S. Congress. Two correspondents regularly cover foreign relations from an office in the State Department. One reports from the Defense Department. Other Washington-based correspondents report on science, economics, labor, sports, and other subjects.

Often correspondents work far from their offices. It was not unusual, for example, to hear former VOA Cairo correspondent Doug Roberts reporting from Tangier or Baghdad -- or from any city in



Left: Correspondent Laurie Kassman in Paris. Right: Islamabad correspondent Gary Thomas interviewing Afghan mujahedin leader Haji Din Mohammed on the situation in his war-torn homeland.



between. As chief of the Rio de Janeiro Bureau, Scott Bobb travels up and down the more than 8,000-kilometer length of South America -- with an occasional news-gathering visit to Antarctica.

Transportation and communications can complicate a correspondent's life. John Roberts, who now covers national affairs in Washington, recalls once having to fly from Sudan to Rome to get a flight to the Ivory Coast. Mallory Saleson has covered stories in parts of southern Africa where telecommunications are nonexistent. On such occasions she must wait until she returns to her Johannesburg office to file her reports.

Even where communications and transport are readily available, the work can be exhausting. While covering the final phase of Democratic Candidate Michael Dukakis' 1988 presidential campaign, I went three days without sleep as the campaign plane flew more than 14,000 kilometers back and forth across the nation. In the final 48 hours, we visited 11 cities in nine states.

At each stop, I wrote, recorded, and telephoned fresh news reports back to the VOA Newsroom in Washington. After the last stop in Mr. Dukakis's hometown of Boston, I caught a flight back to Washington, rested a few hours, and went into the office to help cover the election returns that night.

Exhausted or not, correspondents are expected to voice their reports with clarity and enthusiasm. The reports themselves must be written succinctly, but with enough information so that an audience half-a-world away can grasp the significance of the story.

Philomen Jurey, who was VOA'S White House correspondent for 14 years and is now editor-in-chief of News and English Broadcasts, recently summed up the role of the correspondents with these words: "Day in and day out, our correspondents do a superior job of reporting developments around the world. I think they provide more substantive reporting than those of any other

news organization, domestic or international.

"They have a thorough knowledge of the regions and the people they cover and reflect that knowledge in their reports. Many are multi-lingual, which enhances their 'in-depth' reporting. They not only cover hard news, they provide background reports and features and keep our Newsroom informed through advisories. We rely on them for accurate, timely, and comprehensive coverage. They are -- in many respects -- the link between millions of VOA listeners and the world."

(Reprinted from Voice Magazine)

mt

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COLLISION! AT SEA!

by Dave Garner



When Dave Garner boarded the Celebration on February 4, 1989, little did he know the adventure in store for him! Lucky he packed that shortwave receiver!

A great shock and grinding noise shook the HMS *Celebration*, awaking me from a deep sleep. My cabin partner, Sam Williams, WD4GOQ, awoke at the same time and asked, "What was that"?

"That was the biggest wave we ever hit, or something else," I replied while still trying to wake up.

Sam raised up and looked out the large port window. "My God, we've struck a ship and cut it in half."

I ran to the window and saw the aft section of a large freighter going by the window with the bow section sticking straight up in the choppy sea. Looking at my watch, I saw that it was 0547 in the morning. I shouted to Sam, "We need to get to top side now, we may be sinking!"

The HMS *Celebration* of the Carnival Cruise Lines was returning from her regularly scheduled Caribbean cruise on the morning of February 10, 1989. I was part of a contingent of 50 fellow workers who had won a sales promotional contest for the large national computer store chain that I work for.

The huge liner, HMS *Celebration*, had left the port of Miami on the afternoon of February 4 and sailed to Puerto Rico, the island of St. Thomas, and finally the island of St. Maarten. We sailed out of the port of St. Maarten on Thursday afternoon with our arrival scheduled back in Miami on Saturday, February 11. The cruise had been uneventful and lots of fun.

The HMS *Celebration* was commissioned in 1987, and is one of the largest cruise ships in the world. It's 732 feet long and 104 feet wide. The height of the mast above the keel is 185 feet. The ship holds 1,600 passengers and a crew of 600.

The navigation and radio equipment consists of an echo sounder, rate of turn

indicator, maneuvering recorder, magnetic compass, gyro compass, direction finder, doppler sonar speed log, Loran C, and three radars. The radars consist of two Raytheons on the 10 cm band, and a Raytheon 3 cm band radar. The radar has an "ARPA" Collision Avoidance System, which is a sophisticated computer and control panel with a fully automatic tracking system of up to 20 targets simultaneously, operating on a 3/4 to 24 nautical mile range.

The collision avoidance system was turned off, as is the usual situation at open sea.

The *Celebration's* radios consist of HF, S.P. Radio T1127, a telephone watch receiver, S.P. Radio 2182 R-501, and a Facsimile receiver, Raytheon Model Rayfax 1000. The *Celebration* has a full VHF Marine system. She also has a satellite navigator system, SAT/NAV, and a Satellite Communications Terminal.

As Sam and I ran up the steps of four decks to top-side, several other passengers were running up the stairs. A few passengers were running down the stairs into the lower decks of the ship. Everyone we saw had that sleepy look along with a tinge of fear.

Upon reaching the top deck, we ran out onto the sun deck at the back of the ship. About two dozen passengers and some crew members arrived upon the deck at the same time we reached it. The sky was just beginning to show first light in the east Atlantic.

The crippled freighter was clearly in two halves at a range of about 1000 yards off the starboard (right) side of the ship. The bow of the freighter was vertical with trapped air preventing it from sinking. The aft section was listing at an increasing angle. The lights and engine were still operating on this section. Spot lights from our ship were focused on both sections of the freighter.



At 0600, the lights and engines of the aft section of the increasingly listing freighter went out. Crew members were abandoning ship into life rafts and a single life boat.

More passengers from our ship were arriving on top deck as the word spread. Many passengers had put on their life vests. There was great confusion.

At 0610, the first 28 foot emergency life boat was launched from the Celebration. The life boat covered the 1,000 yard distance between the Celebration and the crippled freighter and began to rescue crew members from the sinking aft section. The early morning light was just at the point that we could see some of the activity.

A second ship was launched from the Celebration at 0625. The aft section of the freighter was just about under the surface and was completely covered by 0635. Our two rescue boats continued to search the area around the site and out to the remaining bow section for crew members in the water.

The bow sank at 0650.

At 0700, the first announcement was made to the passengers of the Celebration on our public address system. The cruise director, Bob Hamill, made the somber announcement. "The Celebration had struck a Cuban freighter at 0547 and had cut it in two. The Celebration had suffered only minor damage and would be back on its route to Miami in a few hours. The Celebration was now conducting search and rescue operations. The Celebration had rescued 41 crew members and was searching for three remaining crew members."

This was the first information for most of the passengers that we had any problems. Most passengers actually slept through the whole happening and were awakened by the announcement at 0700.

I remembered that I had my shortwave receiver in my cabin and thought that it might be interesting to see if I could pick up the communications from our ship.

Back in my cabin I turned the Radio Shack "Voice of the World" receiver (DX 400, Model 20-207) to the 8 MHz band and put it into search mode. After a few seconds, it scanned to 8.102 MHz and 8.217 MHz and locked into active ship-to-shore upper sideband communication from the Celebration.

The only problem was that most of the communication was being conducted in Italian. Most of the senior officers of the Celebration are Italian. The crew is a mix of many nations.

Every few minutes some English would be used. After monitoring for an hour or so, I

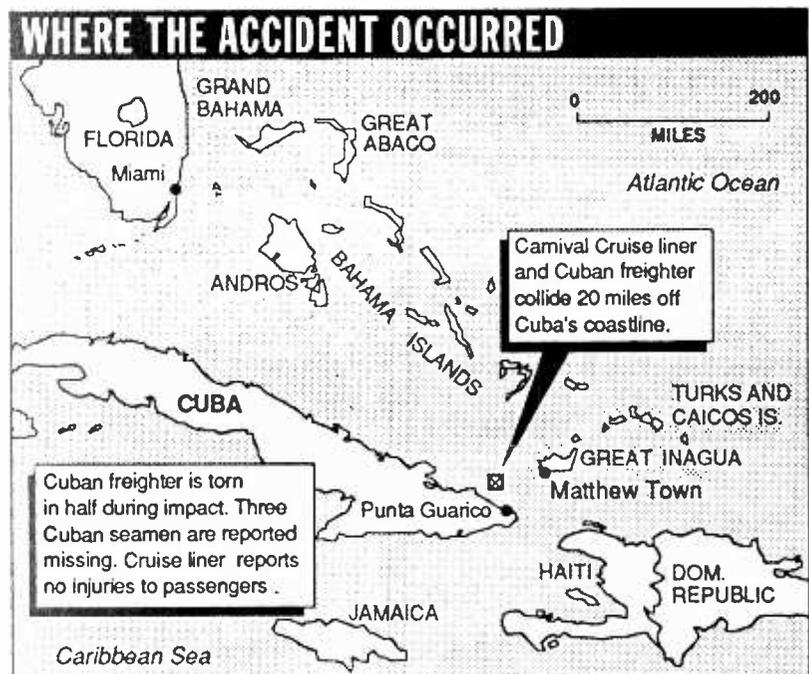
overheard enough conversation to I gather information about the collision, the rescue, and continuing operations in the area.

Captain Raffaele Gavino, of the Celebration, was in communication with the U.S. Coast Guard in Miami, and his Carnival Cruise offices in Miami. The Captain explained that the Cuban freighter, Capitan San Luis, a cement hauler, was running without lights which the rescued crew from the bridge admitted. The Cubans admitted that their attention was on their electrical problems and that they did not realize that they were on a collision course with the on-coming Celebration.

The Captain explained that the Celebration crew did not see the Cuban freighter until it was only about 200 feet from the collision. The Celebration officer of the bridge put the engines in full reverse and tried to steer away but was unable to prevent the collision. He explained that we were staying in the area as per international rules until the Cuban Coast Guard could arrive to conduct their investigation.

At 0900, the first aircraft overflew the site. The aircraft was a jet. I could not identify the type or nationality. At 0945, two helicopters bearing the markings of the Cuban Air Force arrived and began to search the area for the missing three crew members of the Cuban freighter Capitan San Luis.

At 10:30 a.m. the first of three Cuban Navy patrol boats arrived. The first Cuban Navy vessel came along side of the Celebration and off loaded the most severely injured crew members. The Cuban Navy patrol boat left for the nearest Cuban port with the injured Cuban crew. Two other Cuban



Rick Brownlee/Miami Herald

DEAR PASSENGER,

RECAPPING THE DAY'S EVENTS, THE CELEBRATION WAS INVOLVED IN A COLLISION WITH A SMALL CUBAN FREIGHTER ABOUT 30 MILES OFF THE EAST COAST OF CUBA AT APPROXIMATELY 5:47AM EST. THE CUBAN FREIGHTER SUNK AND ITS CREW WERE PICKED UP BY OUR CREW. THREE OF THE CUBAN FREIGHTER'S CREW ARE MISSING AND ALL THE OTHERS HAVE BEEN RETURNED TO CUBA. FORTUNATELY, THERE WERE NO INJURIES ONBOARD OUR SHIP, AND ONLY VERY MINOR DAMAGE TO THE SHIP.

THE SECOND OFFICER FROM THE CUBAN FREIGHTER REPORTED THAT THE CUBAN VESSEL HAD BEEN EXPERIENCING ELECTRICAL PROBLEMS. THE ELECTRICAL PROBLEM LEFT THE CUBAN VESSEL WITHOUT EITHER NAVIGATIONAL LIGHTS OR STEERING.

WE REMAINED IN THE AREA FOR EIGHT HOURS ASSISTING IN THE SEARCH EFFORT. THE CELEBRATION WILL ARRIVE BACK IN MIAMI ON SATURDAY AT 9:30AM. SHE WILL SAIL HER REGULAR SEVEN-DAY CARIBBEAN ITINERARY AT 4:00PM, ITS NORMALLY SCHEDULED DEPARTURE TIME.

WE REGRET THIS MOST UNFORTUNATE INCIDENT AND PRAY THAT THE MISSING CREWMEN ARE FOUND UNHARMED. I'D LIKE TO PERSONALLY THANK EACH OF YOU FOR YOUR UNDERSTANDING AND FINE COOPERATION.

RAFFAELE GAVINO
MASTER



patrol boats arrived. Cuban Navy officers boarded our ship for an investigation.

By this time, I was back topside watching the Cuban patrol boats. I had my shortwave receiver tuned to the communications channel at 8.217 MHz when a chilling communication was received.

Captain Raffaele Gavino, of the Celebration, was in communication with the headquarters of the Carnival Cruise Lines in Miami, when he informed the company officers that the Cuban Navy was demanding that we sail to Cuba and make port for a full investigation by the Cuban government.

The Carnival company official told Captain Gavino that under no circumstances was he to allow his ship to be forced to Cuba. The Captain explained that he had told the Cubans that this was out of the question, that he had a tight schedule to arrive back in Miami, and that there were over 1,500 American citizens aboard the Celebration.

The standoff between the Cuban Navy and our ship continued on into the early afternoon. Additional reception of communications showed that negotiations were now going on at diplomatic levels between the U.S. State Department and the Cuban government. Meanwhile, we floated in the

Atlantic, 30 miles off the coast of Cuba, with two Cuban gunboats and now two Cuban tug boats along side of the Celebration.

No announcement was made about the situation with the Cubans. I kept the information about the standoff and the Cuban demand a secret from other passengers so as not to alarm anyone.

At 1430, the communication came over the radio that we were free to resume our course to Miami. The Cuban Navy vessels departed from the area and we continued our voyage to Miami.

We arrived in Miami the next morning at 10:00 a.m., just two hours later than our normal docking time. We were greeted by local news helicopters over-flying the Celebration and news crews at the dock waiting to interview the passengers and crew.

No mention of the standoff with the Cuban Navy has been made public to my knowledge. The news media were not aware of it, or chose not to report it.

My reactions, at the time I am writing this article (about a week after arriving back home in Tennessee), is one of relief that the Cuban freighter did not ram our ship in the

The account given by the cruise line to the passengers put the best face on the entire incident; Some details regarding the Cuban standoff were never reported by the media -- but Dave knows ...

side causing the possible sinking of the Celebration.

I believe that the crew of the Celebration did everything it could to rescue the crew of the Cuban freighter. It was tragic that the Captain of the Cuban freighter, identified by the Miami Herald Newspaper as Captain Manuel Valazquez Morales, 34, and supervisors Antonio Campos, and Ivan Freyre, were lost at sea.

Damage to Celebration was minimal. The Celebration reported an 18 inch gash in the steel hull above the waterline. The Celebration put back to sea that very afternoon for the next week's cruise.

I believe that the crew should have mustered the passengers to their life boat standby stations during the first 15 minutes after the collision, until they determined that the Celebration was in no danger of sinking. This was not done. The first announcement about the collision was not made to the ship's passengers for one hour and 15 minutes after the collision.

There has been no explanation as to why the Cuban freighter was not spotted long before the collision on our ship's radar. The radar not only gives a constant readout of up to 20 different ships, but tracks each with a computer readout of the distance and vectors to each object. The collision avoidance alarm had been turned off according to reports.

Would I take another cruise on the Celebration or any other cruise ship?

You bet!

mt

Dave Garner, WA4YRK, has been an amateur radio operator for 25 years. He is active in ham radio, monitoring activities, Civil Air Patrol, and is a reserve officer for the Knox County Sheriff's department. He and his family live in Knoxville, Tennessee.



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DXing CAMBODIA

by Charles Sorrell

No one will ever really know what the death meter finally read when it was all over in Cambodia. The best estimates put the toll at at least a million people dead as a direct result of the policies of the Khmer Rouge who ruled between 1975 and 1979.

It was, surely, one of the twentieth century's worst human horrors. And it may not really be over -- those responsible are still around, plotting their return to power!

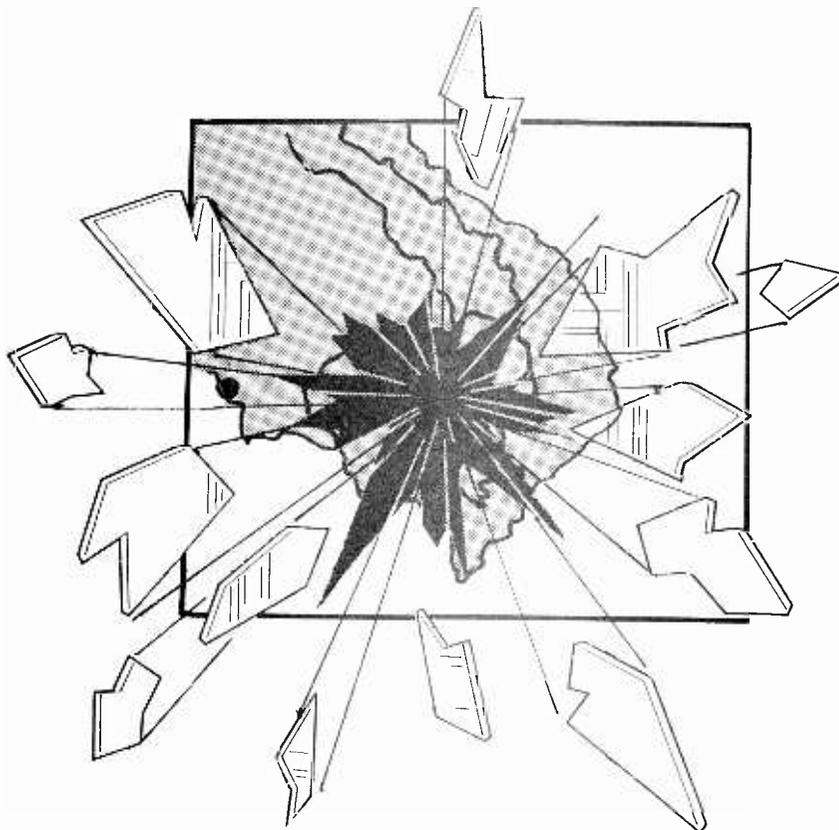
They are not alone. Others are jockeying and fighting to grab the number one spot in Phnom Penh and shortwave radio is one element being used by each on the propaganda side of things. To understand who is who on the air, it is necessary to take a look at who is who in Cambodia. It's no easy task so hold on to your boarding passes.

Cambodia, of course, sits on centuries of civilization. Its modern history traces back to 1863 when it became a French protectorate and later, in 1887, a part of French-ruled Indochina.

Cambodia was occupied by the Japanese during World War II. A year after the war it became a self-governing state and gained full independence in 1953 as The Kingdom of Cambodia, ruled by Prince Norodom Sihanouk, said to be a descendent of Cambodia's ancient god-kings.

Sihanouk was ousted by a military coup in 1970. He retreated to Beijing to form a government-in-exile. His successor, Lon Nol, renamed the country The Khmer Republic.

The Vietnam war soon intruded as the U.S. invaded Cambodia, chasing the Viet Cong who were using Cambodia as a safe haven. The Khmer Rouge overthrew Lon



Nol in 1975 and the country was renamed as Democratic Kampuchea.

Sihanouk briefly led a "neutral" government but was soon replaced by Kheim Samphan who gave the prime minister's post to Pol Pot. And soon the madness began.

The Pol Pot regime was also involved in a number of border clashes with Vietnam, eventually prompting the Vietnamese to invade and oust the Khmer Rouge regime in 1979. The new puppet government was led by Heng Samrin. All this, of course, required another name change. Cambodia now became The People's Republic of Kampuchea.

The coming of the Vietnamese created a split in the Khmer Rouge. Some elected to go with the flow and supported the

Vietnamese-installed government, even becoming part of it. Pol Pot and his followers headed for the hills to wage guerilla war.

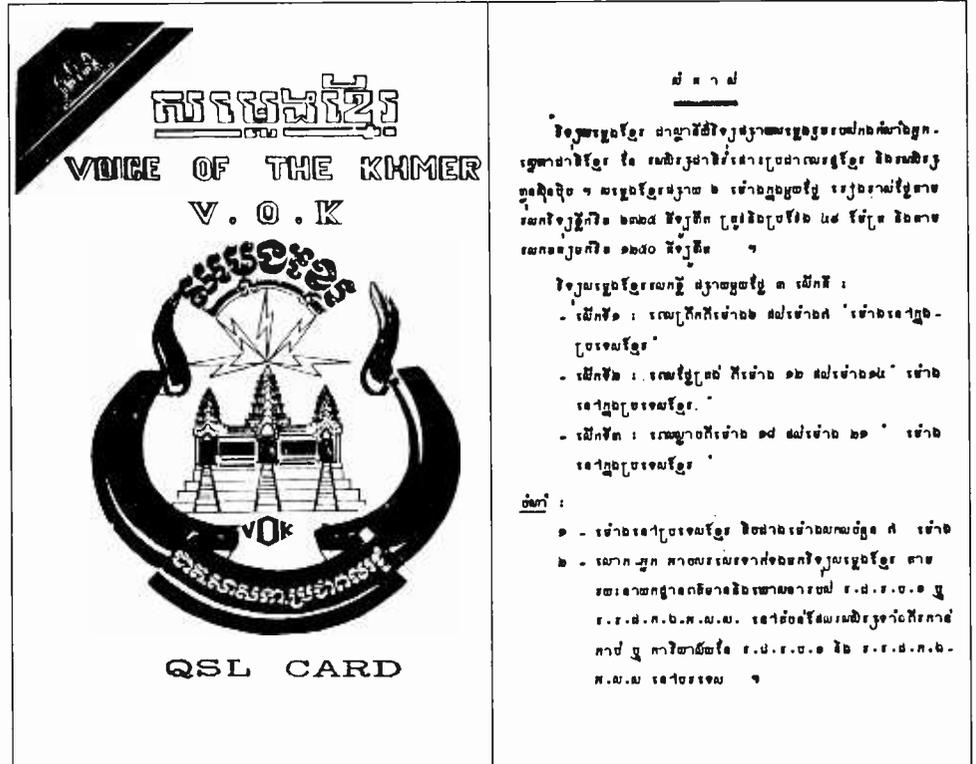
Pol Pot is said to be ill and has been in hiding all this time. Former leader Kheim Samphan represents the Pol Pot faction which is backed by the Chinese. This group holds Cambodia's seat at the United Nations. Its guerilla army numbers somewhere between 30,000 and 40,000 fighters, mostly based in camps along the border.

The Khmer Rouge effectively control the 70,000 refugees in these camps, too; and there are another 300,000 refugees in camps inside Thailand. The Khmer Rouge would have us believe this is a reformed group which has disavowed the sinister Pol Pot. We cannot know if this is true.

By the time this is read, we should know -- What has been Cambodia's fate in this latest turn-over?

Cambodia has changed its name four times in the past 19 years, and has suffered take-overs from numerous external and internal factions. Can it survive more?

The QSL from the Voice of the Khmer, the resistance station of the Sihanouk and Son Sann factions.



The Khmer Rouge faction is the strongest of a three part coalition led by Sihanouk. His group, the National United Front for an Independent, Neutral, Peaceful and Cooperative Cambodia (FUNCINPEC) has about 18,000 in its Sihanouk National Army. Son Sann leads the third segment, the Khmer People's National Liberation Front (KPNLF) with a force of around 12,000.

The Khmer Rouge have lately been accused of letting the other two bear most of the fighting, even retreating while the other forces take on the enemy. This is seen as a deliberate attempt to weaken the opposition and clear the path to Phnom Penh for the Khmer Rouge alone.

The government is believed to have an army of 40,000-45,000, which must more and more stand on its own as the

Vietnamese pull their forces out. Indeed, the 1990 target date by which the Vietnamese said they would be gone from the country was recently moved up to 30 September, 1989. By the time this is read, we will know if the Vietnamese made the date. We could well be seeing increased chaos in Cambodia as a result.

The parties have been holding on and off talks on the future of Cambodia and the formation of a post-Vietnam government, but no progress is being made. The U.S., which backs Sihanouk and Son Sann, wants to freeze the Khmer Rouge out of the picture. The Chinese, who back the Khmer Rouge, see that faction's participation in a future government as inevitable if such a government is to be at all successful.

As was noted above, each of these

factions has its own shortwave voice and each can be received in North America, albeit with some struggle. Here's the radio rundown on the Cambodian situation:

The government station is the Voice of the Kampuchean People. It airs programming in Khmer, Vietnamese, Laotian, French, Thai, and English. The home service is scheduled at 2300-0130, 0600-0730, and 1100-1530 on 4909, 6090, and 6143. 4909 is sometimes heard around dawn in North America and you can consider it a first rate DX catch if you log it.

The External Service features 15 minutes of English at 0000 and 1200 on 9695 and 11938. Reception is sometimes possible on both of these frequencies during the 1200 segment. English is

followed by 15 minutes each of French, Lao, Thai, and Vietnamese in that order.

During the worst of the Khmer Rouge reign, the country was closed off and it was impossible to get mail into the country, much less a QSL out. That has changed and the station has been good about replying, though quite slow. The address is English Service, Voice of the People of Kampuchea, 28 Av. Sandech Chioun Nath, Phnon Penh, via Hanoi, Vietnam.

The Khmer Rouge has its name tag on two clandestine stations, both believed to emanate from transmitters in southern China. The Voice of Democratic Kampuchea is scheduled from 0400-0500 on 15110 and 17860; 0900-1000 on 8345, 11780, and 11870; 1300-1400 on 6025, 6810, and 9440 and 2330-0030 on 7350, 8345, and 9440, all in Khmer.

This station was off the air during the Tienanmen crisis, citing technical difficulties. Observers, however, think it more likely that China needed the transmitters to use as jammers. In most North American locations, the 1300-1400 time period provides the best chance at

The China-backed station was off the air during the Tienanmen crisis. Observers think it likely the transmitters were used for jamming.

reception.

The second station is the Voice of the National Army of Democratic Kampuchea which broadcasts in Vietnamese at 0100-0130, 0430-0500, and 1400-1430; and in Khmer from 0500-0630, 1000-1400, and 2315-0000, all on 5410. Best reception is between 1000-1400.

Both of these stations can be QSLed by writing to the Permanent Mission of Democratic Kampuchea to the United Nations, 12 East 47th Street, #24G, New York, New York 10017; or at 747 3rd Avenue, 8th Floor, New York, New York 10017. A prepared form QSL is recommended.

The Sihanouk and Son Sann factions

share in the operation of the Voice of the Khmer, believed to be operated from somewhere just inside the Thailand border. The station operates from 0500-0700, 1100-1400, and 2300-0000, all on 6325. In replies to reception reports, the station states that it wants to be the voice of all the Kampuchean peoples and offers to try to locate information on relatives or friends of Cambodians living abroad. Best reception is during the 1100-1400 period.

The Voice of the Khmer issues its own QSL card and reports can go to the Voice of the Khmer, c/o KPRLF, P.O. Box 22-25 Ramindera Post Office, Bangkok; or c/o FUNCINPEC, P.O. Box 12-1014, Suan Phule, Bangkok, Thailand.

As the Vietnamese pack their bags, they are leaving still more changes behind. The People's Republic of Kampuchea no longer exists. It's been renamed again (the fourth time in 19 years) and is now the State of Cambodia, complete with a new flag and new national anthem. The transition march continues. But the question remains -- to what?



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By unveiling the Stealth bomber and the Stealth fighter is the U.S. government hiding something even more secret? Military monitoring leads an MT reporter into the top secret world of intrigue, coverups and Black Stealth projects.

AMERICA'S Secret AIR FORCE

by Steve Douglass

The highway that winds through the isolated mountains of New Mexico is breathtaking. The peaks of the surrounding mountains disappear into a mass of boiling thunderheads, yet the valley between the mountains is sunny and quiet. Below, a mountain stream meanders through a rocky canyon. The road is almost empty. Occasionally a truck will pass by with a load of fruit or firewood destined for a market down the road.

A sign brings me to the realization that my fiancée and I are driving through the White Sands military reservation. On a hill a white radar dome glints in the sun. The no-nonsense looking trespassing signs lining the highway only peaking my interests, I set my PRO2004 scanner sitting on the dash to search through the UHF military band.

Who knows what one might catch out here? I set the cruise control on 65 and just in case I turn on the fuzzbuster. With the scanner scanning and radar detector detecting I settle back for a nice, uneventful drive, or so I thought!

Cresting the top of a high pass, I look below to see the rugged canyon winding like a snake into the distance. The distant rumbling of thunder echoes across the valley yet the sun shines brightly. I squint to see if the thunderstorm ahead is in our path. Against the clouds

and near the horizon I see a dark object moving toward us, flying through the canyon.

The object descends lower than our position on the high road and hugs the canyon walls. It is some kind of aircraft. Below us it is gracefully navigating its way through the canyon. As it gets closer, I point it out to my fiancée. "What kind is it?" she asks puzzled. I cannot say, for the aircraft looks stranger than anything I've seen.

I consider myself kind of amateur expert on aircraft. For three years I have traveled to Air Force bases all over the southwest photographing aircraft for a book I am producing. It seems I have shot pictures of every type of flying machine in the sky, from low tech hot air balloons to super high tech Stealth bombers. If it flies I have photographed it. In researching my book, I memorized the specifications and history of hundreds of aircraft and yet I cannot identify what it is I see.

My camera is on the seat. I hastily grab it, glance at the film counter and see to my dismay that it is out of film. I curse myself for not reloading it. I am reminded of line from a Gary Larson, Far Side cartoon, "Stanley walking out into the clearing to find Bigfoot, the Loch Ness Monster and Jackie Onassis together, only to have his camera jam!" Just my luck.

The scanner suddenly locks on a frequency, 324.3 MHz, and digitally scrambled speech spills out into the car. As it grows closer the fuzzbuster comes to life beeping persistently. Whatever it is, is emitting a strong radar signal. Its affect on the fuzzbuster indicates it is very powerful. It could be a type of terrain following radar.

The aircraft is very close and almost level with us now and I can see it in good detail. It is a large plane, about as big as a C-141 Starlifter. The wings are swept back and down. The tail looks like that of a Beechcraft, V shaped, angular. The color is dull black and grey and there are what look like cruise missiles on pylons hanging under the delta-shaped wings.

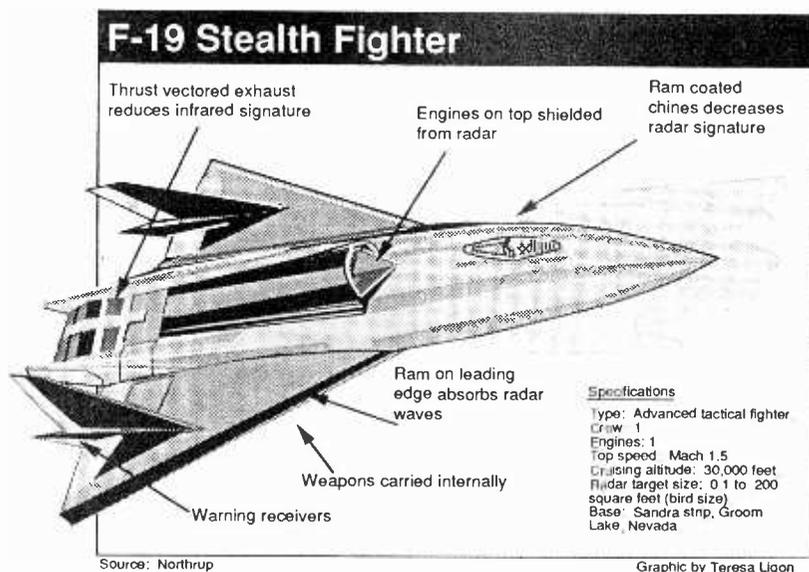
The aircraft makes little sound except for a high-pitched whine. It is an awesome sight. Looking for the world like a large swallow, the aircraft flies along the contours of the canyon, effortlessly between the narrow walls. The mysterious jet banks off to the right around the mountains and disappears.

The fuzzbuster and the scanner go dead as if turned off by a switch. Silence fills the car and my fiancée and I stare incredulously at each other in disbelief. She says to me breaking the silence "I don't think we were supposed to see that."

When we returned home I attempted to discover exactly what we saw. I was surprised to hear that a military experimental aircraft had crashed near Vaughn, New Mexico the same day of our sighting. Was this connected somehow? My curiosity was aroused. I had to know what the aircraft was. Somewhere there had to be information on it. A snip here, a short article there; research would be the key.

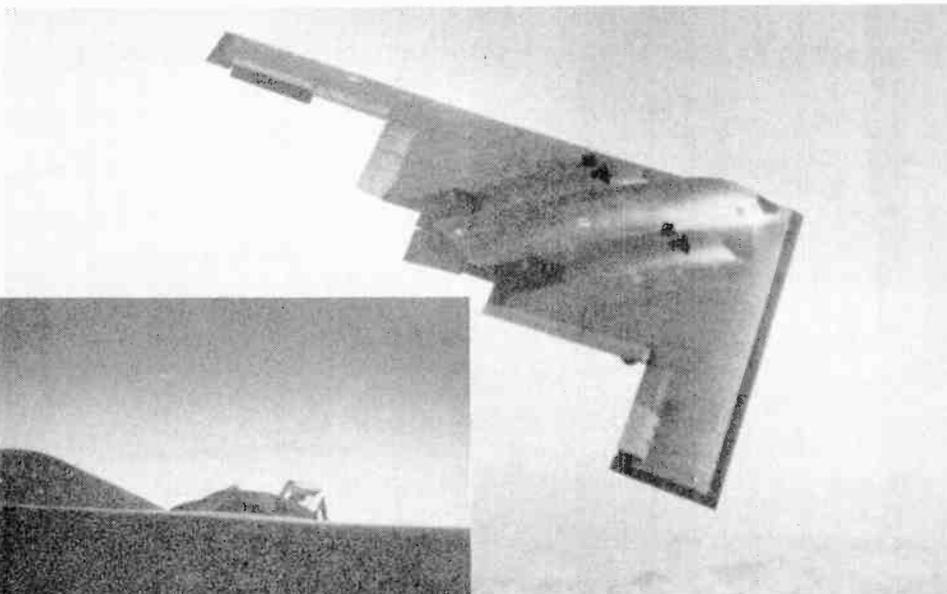
Luckily I work for a newspaper and newspapers have great files to dig through. Prying through clippings, journals and books, I pursued the facts. I was amazed at what I found.

Just what was it we saw? An experimental military prototype? A top secret unknown Stealth aircraft? There is evidence to support this. In November of 1988, the Pentagon decided to reveal to the public the existence of two top secret Stealth aircraft. Strange aircraft



B-2 Stealth bomber on its maiden flight over the California desert. The bomber is now undergoing test flights from Edwards AFB in California.

Photos by
Steve Douglass



FREQUENCIES

NELLIS AFB

372.2	Air to Ground
270.1	ATIS
124.95	Approach Control
279.7	Approach Control
126.2	Tower
324.3	Tower
121.8	Ground Control
275.8	Ground Control
134.1	Departure Control
353.6	Departure Control
120.9	Clearance Delivery
289.4	Clearance Delivery
381.3	TAC Command Post
320.0	TAC Command Post
257.35	MAC
259.95	MAC
134.1	Las Vegas Terminal Control
124.95	Las Vegas Terminal Control
279.7	Las Vegas Terminal Control

SHEMYA AFB, AK

372.2	Dispatch	128.2	Anchorage
134.8	Dispatch		App/Dep Control
343.8	Anchorage	255.6	Tower
	App/Dep Control	126.2	Tower
		118.1	Tower

ELMENDORF AFB, AK

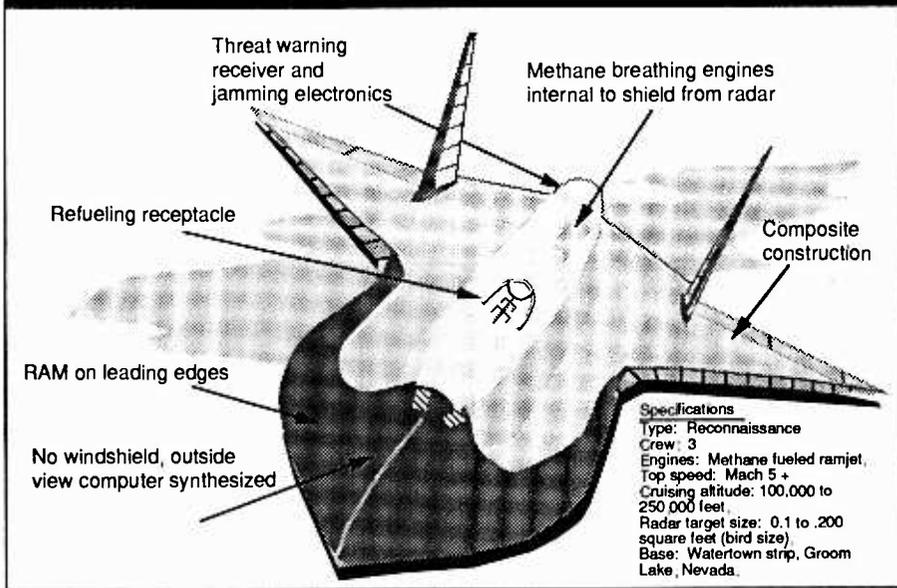
372.2	Dispatch	275.8	Ground Control
134.8	Dispatch	121.8	Ground Control
273.5	ATIS	275.8	Clearance Delivery
124.3	ATIS	121.8	Clearance Delivery
290.9	Anchorage	349.4	MAC ALCC
	App/Dep Control	128.0	MAC ALCC
118.6	Anchorage	381.0	Command Center
	App/Dep Control	282.8	Air REScue
255.6	Tower	123.1	Air Rescue
126.2	Tower	11480	kHz USB - MAC



B-1b bomber from Ellsworth AFB South Dakota. The B-1b was designed with Stealth characteristics in mind but depends on a sophisticated electronic spoofing package to survive.

Photo by
Steve Douglass

Aurora Hypersonic Stealth Spy Aircraft



Source: Lockheed

Graphic by Teresa Ligon

had been reported flying near military bases in the west. Crashes of top secret aircraft also made the news and Congressional leaks and public documents hinted at something stealthy going on.

The B-2 bomber and F-117 were officially acknowledged after years of denials and secrecy. The press was surprised to discover that the Stealth fighter, the F-117 Nighthawk, has been flying from a secret airbase near Tonopah Nevada since 1981. The B-2 Stealth bomber was rolled out by Northrop on Nov 22, 1988, for the press and all to see.

Last April, the Air Force announced the Stealth fighter was indeed based at the secret Tonopah base in remote Nevada. The Air Force stated that the F-117 Nighthawk had been piloted by a new unit, the 4450th Tactical fighter group since October 1983. They released a fuzzy photo of the fighter to the world's press agencies.

The reason for the disclosures, the Air Force said, was that the secret fighters soon would be involved in daylight training missions and because of its unique design the fighter would be hard to hide from the public and press.

Reporters staked out the Tonopah base and photos and video tapes of the fighter buzzing around the desert in full view soon appeared in major publications and on television. They even invited the press out to photograph the maiden flight of the B-2 Stealth bomber exposing this previously black project to light.

What was the reasoning behind the sudden revelations concerning to two top secret programs? As a senior Pentagon official once stated, "the Stealth fighter is over a decade old and represents first generation technology. We're now well into the development of second and perhaps third generation Stealth technology." So if the B-2 and F-117a are considered not so top secret anymore, what is?

When the Air Force released the details of the F-117 in November a chorus rose up from

the investigative press as if to say "See, I told you something was going on." Through Congressional records and leaks the press had discovered that a Stealth aircraft had been developed under a project code named "Have Blue." With the Pentagon's admission of the fighter's existence, the press surmised its discovery of the "Have Blue" was the F-117 project. They were wrong.

The F-117 was not developed under the "Have Blue" project. When the Nighthawk was unveiled by the Pentagon the press didn't notice that the F-117 was developed under the project heading code named "Senior Trend." Nor was the B-2 Stealth bomber developed under "Have Blue." The bomber project was code named "Elegant Lady." So just what was the "Have Blue" aircraft?

The F-19

When the F-117 was revealed, many thought the aircraft designation number was the real number for a Stealth fighter called the F-19. When a Stealth aircraft crashed in California, An Air Force official remarked that it was "definitely not an F-19." The press thought that this was a cute way of denying the plane's existence by giving it a different designation, but evidence now reveals there may well be a different Stealth aircraft called the F-19 Stealth fighter.

The F-117 Stealth fighter is not really a fighter at all. The aircraft is an attack vehicle. The F-117 does not engage in dogfights; it is used only to attack targets on the ground. The jet is not supersonic, not agile and not even armed with guns or air-to-air missiles.

The Nighthawk's primary mission is to attack missile, command and radar installations, not other aircraft. Another mission envisioned for the Nighthawk is that of an anti-terrorist attack plane. The F-117 was considered for the attack on Libya in 1987 but was considered too risky to lose.

The F-117 is a Stealth replacement for the

F-111 Aardvark. To qualify to fly the F-117 you must be an experienced Aardvark pilot. The F-117 is reported to be based at the Tonopah Base in Mud Dry Lake, Nevada.

The F-19 is reported to be a true air-to-air fighter. It is thought to be supersonic and highly maneuverable. It is a single engine, single seat Stealth replacement for the F-15 Eagle. There have been reports of the F-10 seen flying at the Groom Dry Lake facility on the Nellis AFB range in Nevada.

The F-19 is also supposedly based in England and at Elmendorf AFB and Shemya AFB, both in Alaska. The F-19s from Shemya have been reported to have overflown Soviet territory undetected as close as 20 miles to radar installations and returned home.

Aurora Supersonic Stealth Spy Aircraft

An Air Force project code named "Aurora" has been recently confirmed by an Air Force official. At first the Aurora project was thought to be that of the B-2 bomber but later disclosures showed that this was not the case.

The existence of the Aurora aircraft project came to light in 1985 when the DOD accident revealed it in its defense budget proposal. \$2.3 billion were allocated for the projects funding. Then in 1987 during congressional hearings a few scant details of the Aurora project were leaked.

The Aurora is the long-sought-after Stealth replacement for the SR 71 Blackbird super-sonic reconnaissance aircraft. The famed Lockheed Skunkworks that developed the SR-71 is the main contractor of the Aurora. The Aurora is thought to be a methane fueled, Mach 5.8 Stealth spy plane.

This superfast aircraft reportedly can cross the Pacific Ocean in just over two hours. With a crew of three the Aurora's top speed is thought to be 3800 mph or more and its cruise range is over 6000 miles. The operational altitude is higher than 150,00 feet. With specifications like that the SR 71 would definitely be rendered obsolete.

A statement by a retired DOD official sums up the Aurora's performance best. "With the SR 71 the Soviets know were there but can't touch us. With the Aurora they won't even know we are there."

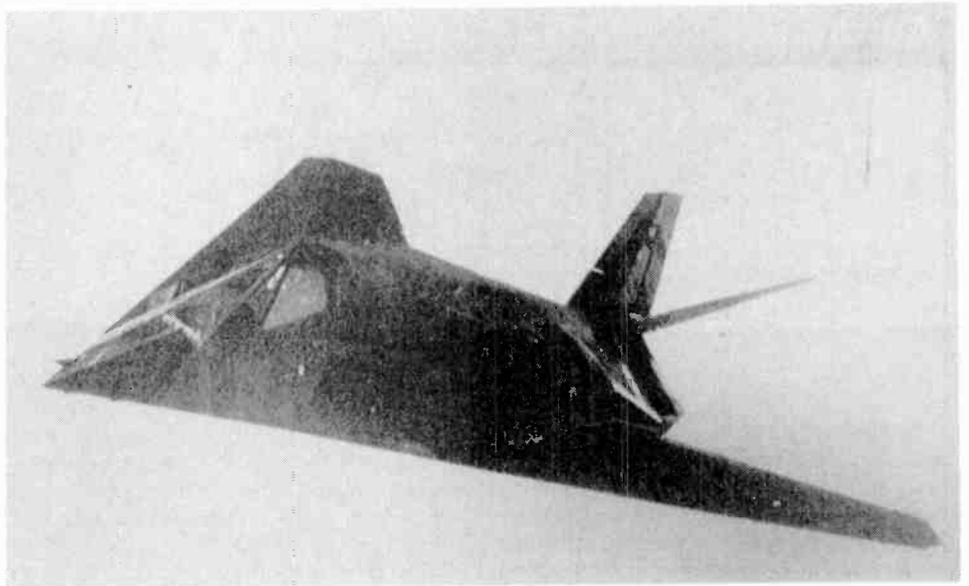
There are reports of at least 25 of the secret planes already operational at Base Area 30 at Nellis AFB in Nevada and there have been reports of Auroras flying from the Watertown Strip in Groom Dry Lake, Nevada.

I still don't know what type of aircraft we saw, but the aircraft we saw flying near White Sands is remarkably similar to a drawing released by the Boeing Corporation portraying a Stealth aircraft (see sketch).

Next month, in part 2, we will look at some other top secret aircraft operated by U.S. Air Force including a squadron of real Soviet fighter based in the U.S. and the secret air base in Nevada where they are stationed. We will also look into how to monitor these secret aircraft on Hf and UHF frequencies.

F-117a Nighthawk - Stealth attack aircraft flying from the secret base established near Tonopah Nevada.

Photo courtesy U.S. Air Force

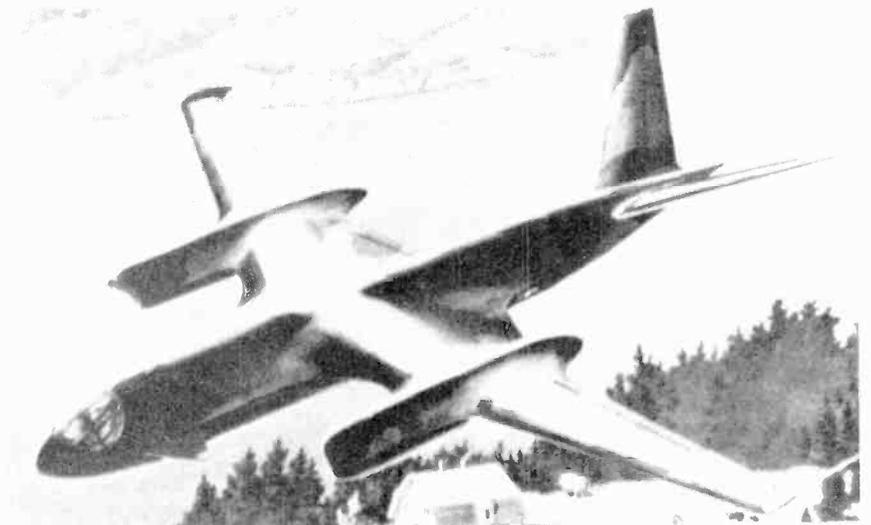


This Advanced Technology In-Flight Simulator is operated by the USAF Flight Dynamics Laboratory at Wright Patterson AFB Ohio. Fitted with two cockpits, the top cockpit is the regular flight deck for controlling the plane. In the nose is another cockpit where the student trains. Normally the lower cockpit is fitted with a transparent canopy so the trainee can see, but recent modifications suggest that the aircraft is being used to train pilots for a new generation of warplane. The training cockpit has been enclosed and the addition of a terrain scanner (small blister under the nose) that reads the obstacles below and displays it on an electronic screen inside implies that the aircraft might be used to simulate the mysterious Aurora aircraft.

Photo by Steve Douglas

Stealth aircraft concept proposed by Boeing. This artist rendering is very close to the type of aircraft the author saw flying over the White Sands missile range in New Mexico.

Drawing courtesy Boeing



Howling at the Moon

by Bob Kay

Every serious scanner buff realizes that late night scanning can be very exciting. On some nights, the action doesn't even begin until after the clock has passed the midnight hour. But even then there's little guarantee that the wee hours will be packed with excitement. Pick the wrong night to stay awake and you may hear nothing more than routine calls.

Scanning late at night is further complicated by our life styles. When both husband and wife hold full-time jobs, evenings at home are usually spent performing routine chores around the home. There's no need to tell you that by 11 p.m., most working families are ready for a peaceful night of sleep. Staying up late to scan is probably the last thing on our minds.

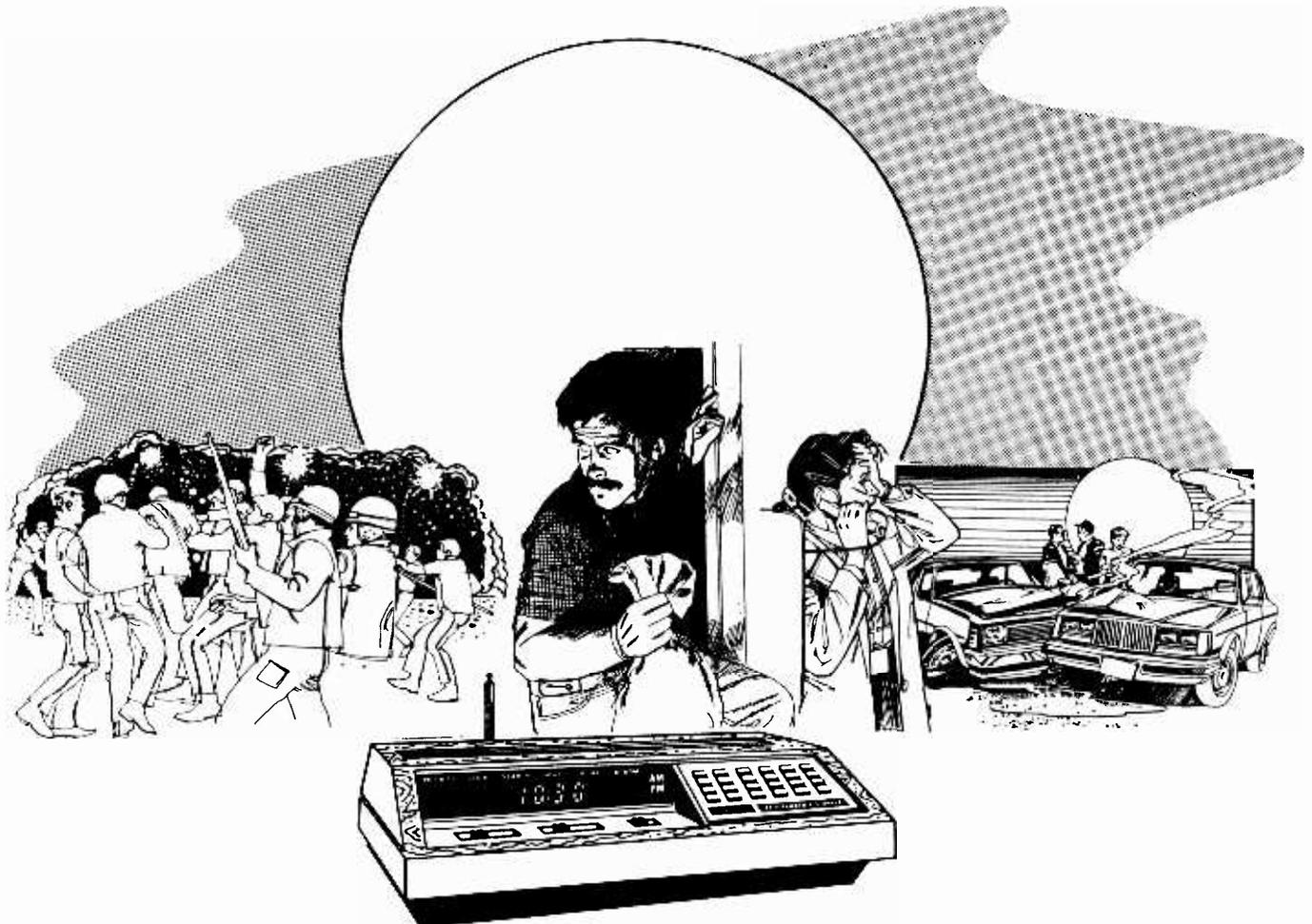
Take a moment to imagine, if you will, all the fun we could have if it were possible to accurately predict which overnight will be packed with the kind of high-energy listening we scanner listeners lust after. We could plan to take the following day off, sleep a few hours, and still have plenty of time to work around the house. Sound impossible? It's not. All you have to do is plan.

Effective scanning begins by organizing your listening post. During the afternoon or early evening hours, check your equipment and perform a general "clean up" of the listening area. In doing so, you provide a clean professional-looking area from which to begin your scanning adventure.

Unless you plan to scan from a standing position, a comfortable chair is a necessity. A secretarial chair with arms would be a good choice. Some hobbyists prefer recliner chairs, but don't get too comfortable -- you don't want to fall asleep during any of those unavoidable lulls.

Night illumination of your listening area should be soft, directional, and practical. A small dimmer controlled desk lamp would be ideal. Since red light does not interfere with our night vision, it is often the first choice of hobbyists who operate in dark surroundings.

If your shack is small, give some thought to installing a screw-in "Y" connector that holds two bulbs: one red and one white. When installed in a ceiling fixture, a simple twist of either bulb provides the desired light for any occasion.



To guarantee a hot scanning night, simply plan your next scanning expedition during the full moon.

Scanner buffs who enjoy a good cup of coffee should have a pot brewing during the scanning session. And if your diet doesn't object, treat yourself to a few doughnuts as well.

Prior to the big night, consider taking an afternoon nap. Although your actions may seem odd to your nonscanning friends, tell them not to worry. It's all part of the fun, excitement, and intrigue of scanning.

But wait! Why should you go to all this trouble to make preparations and stay up all night only to spend eight hours listening to the local police make license checks? Isn't there some way to guarantee scanning success? There is: to find the hottest scanning night in your area, simply plan your next scanning expedition during the full moon.

For reasons beyond the scope of this article, the moon seems to have an adverse affect on our society. Ask any police officer, nurse, or emergency room physician about working during a full moon, and most will agree that the full moon produces an action packed night.

As one Philadelphia police officer put it, "People seem to do crazy things during the full moon. It seems like the entire city goes crazy."

Although Philadelphia is the fifth largest city in the nation, small town scanning will be as equally influenced by the effects of a full moon. The FBI, DEA, Federal Marshals, and hundreds of additional federal state, and local agencies often become very active during nights that are accompanied by a full moon.

Scanning during the full moon does not require special equipment or accessories. A regular coverage scanner radio and a good quality antenna are all that is needed. Some hobbyists prefer to use wide coverage receivers like the PRO-2004 or PRO-2005, but that is simply a matter of personal choice. The regular scanning bands should provide plenty of action and new frequencies for your log book.

In addition to the excitement of scanning your regular scanner frequencies, the full moon will also add excitement to the business frequencies as well. Since most business

establishments are closed at night, it is relatively easy to locate the private security frequencies that are scattered throughout the business bands.

After midnight, the cordless telephone bands will become silent. However, don't ignore them completely. Although the intercepted calls will be few in number, the nature of calls that are monitored will be quite interesting.

Another popular, but often overlooked area of late night interest, are the baby monitor frequencies. Most people turn them on before going to bed and do not turn them off until late the following morning. To discover if one or more of these devices are active in your area, simply search between 49.0 and 50.0 megahertz.

Scanner buffs specializing in satellite monitoring will enjoy the reduced noise and added signal quality of late night scanning. Low band skip enthusiasts will also discover that scanning the full moon is an ideal time to capture long distance signals.

Yes, late night scanning during the full moon can become very hectic, especially when new frequencies are found that cannot be easily identified. To make matters worse, a fast-paced night of scanning -- even without the full moon -- usually results in numerous scraps of paper that contain frequencies and various notations. Oftentimes, these notes are lost or discarded and never become part of our permanent records.

To solve the problem of maintaining your hastily written frequencies, try using a white vinyl table mat. To record your loggings on the table mat, use a water soluble fin-tipped marker. The color of the mat makes it easy to see in low-light conditions and the overall size prevents it from being lost or misplaced.

After the new frequencies have been identified and permanently recorded, simply erase the mat by wiping with a moist paper towel. Vinyl table mats come in a variety of colors and can be permanently mounted on a wall in your shack. By attaching a string to your marker, the mat becomes an attractive and very practical place to quickly jot down a new frequency.

Top Ten Federal Scanner Frequencies and other interesting monitoring

At night the federal bands can be quite active if you know where to look. Here are the top ten federal scanner frequencies.

34.83	Fish and Wildlife
122.9	Government Aircraft
163.200	U.S. Marshal
165.2875	ATF
165.375	Secret Service
165.950	IRS
167.050	FCC
167.5625	FBI
415.700	Air Force One
417.200	Federal Protection Service

If the "top ten" doesn't bring in any action, try searching through any of the following exclusive federal government frequency ranges.

29.9	-	30.55
40.01	-	41.99
162.025	-	173.2
173.4125	-	173.9875
406.125	-	419.99375

During a full moon, don't forget to scan the business bands. Many security agencies can be found hidden within the following frequency ranges.

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

Late night conversations on the cordless bands can also be quite interesting. Here are the cordless frequencies.

46.61	46.63
46.67	46.71
46.73	46.77
46.83	46.87
46.93	46.97

Looking for some real scanning excitement? Follow our advice. Wait for the full moon. And listen all night.



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.

Shortwave Broadcasting

Glenn Hauser

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Enid, OK 73702

Due to the amount of DX news this month, let's jump straight into it:

ANGOLA By coincidence? VOA was using 9700 kHz until 0500 UTC, after which the CIA-financed UNITA clandestine station Voice of the Resistance of the Black Cockerel promptly took over. Another near-overlap in the evening occurred at 1800 on 7130 and 7135 kHz. On one occasion VORBC came on early obliterating VOA reception in Angola. By coincidence? that occasion was when VOA happened to be broadcasting a speech by UNITA'S enemy, Angolan President Jose Eduardo dos Santos.

This prompted VOA to monitor such conflicts to try to ascertain if they are deliberate. UNITA officials say VORBC is based in southeastern Angola, but Angolan government officials believe it also has a transmitter in Zaire's Shaba province. (David B. Ottaway, *Washington Post*)

ARGENTINA The independent sideband transmitter on 15780 is now carrying Radio Mitre on LSB, instead of Radio Rivadavia, which now uses satellite facilities only (Juan Carlos Codina, Switzerland, *Play-DX*)

Radio Aurora is a pirate in Moreno, Buenos Aires province, heard at 1600-1700 on 7500, varying to 7475, but announcing 7520 (Ricardo L. Biselli, Rosario, *Pampas DXing via Radio Nuevo Mundo*)

AUSTRIA *Shortwave Panorama* on Radio Austria International now airs only twice: Sundays at 1130 on 21475, 15430, 13730, 6155; and at 1430 on 21490, 13730, 11780, 6155. 21475 is for eastern North America, but further west 21490 or even 13730 may come in better.

BANGLADESH Radio Bangladesh seems to have problems keeping its 17-MHz-band transmitter on one frequency. English as 1230 was heard on unstable 17853 instead of 17710 parallel to 15195 (Craig Seager, Radio Australia Japanese *DX Time*) Also unstable at 1815, heard on 17714 (*Sweden Calling DXers*)

BELGIUM *Brussels Calling* is a half-hour English broadcast as follows until March 24: Mon-Fri 0800 on 6035, beamed 293 degrees to Europe, 11695 225 to Australia, 21815 84 to Asia; Mon-Fri 1000 on 21810 157 and 26050 167 both to Africa; Mon-Fri 1330 on 21815 84 to Asia, and Mon-Sat 1330 on 21810 293 to North America; Mon-Sat 1630 17580 152 and 21810 157 both to Africa; daily 1830 on 5910 163 and 11695 197 both to Europe; daily 2200 on 5910 163 Europe, 9925 293 North America; daily 0030 on 9925 293 to North America, 9925 225 to South America.

BOLIVIA The "new" station on 3280 last month is actually Radio Chaco de Yacuiba, Tarija dept., reported since 1978 (Ernie Behr, Ont.) Well, it was missing from the 1989 *WRTVH* and *PWBR*.

Radio Horizonte, Riberalta, is on new 5160.4 kHz, replacing 4518.4, heard with a live show of messages and Latin music at 0157-0301; a few days later on 5159.5 at 0100 (Gabriel Ivan Barrera, Argentina).

BRAZIL Radio Difusora Caceres, Mato Grosso is on 5055 instead of 3275 (Barrera) For the first time in a sesquidecade, I got a definite log from Radio Caiari on 4785, around 0100 (Don Moore, MI, *RCI SWL Digest*)

CANADA But now RCI has replaced *The House* with two comedy shows "for Canadians abroad" in the USA--retimed Oct. 29 to 0000-0100 UTC Mondays on 9755, 5960--*Royal Canadian Air Farce*, and *Double Exposure*.

Check 21545, 17820, 15325 at 1700-1730 to hear if German has been replaced by Russian as planned. During the non-DST period, *SWL Digest* is scheduled: Sat 0337, 2137 2207, Sun 0107, 0137 2307, Tue 1333, 1907, Wed 0407.

CHINA Radio Beijing's playing "Whatever Lola Wants, Lola Gets" may indeed be significant. Remembering my childhood Cantonese, "Lo La" could mean "the tough old ones" (Deter Ho, Toronto, *World of Radio*)

The relay of France was heard on 8425 until 1658, and also at 1550 on 16840 (Ed LaCrosse, CA, *RCI SWLD*)

Radio Democracy is a new clandestine in Standard Chinese, on 7125.7, active the latter half of the week in 8-10 minute segments ranging between 0920 and 1500 (Tetsuya Kondo, Radio Japan *DX Corner*) Thursday-Monday only, one day noted at 1142, 1335, 1442, 1515 (BBC Monitoring)

COLOMBIA Thirty-watt standby FM studio-transmitter links heard in Europe by Max van Arnhem are at Cerro Oriente in Santander on 45.7 MHz, and Cerro Tukia, Valle del Cauca on 41.65 (Hernan Medina, Radio Cadena Nacional, via *Play-DX*)

The country's fourth largest radio net, Grupo Radial Colombiano, has been purchased by Cruzada Estudiantil y Profesional, an evangelical group promoting "god-therapy" run by Ecuadorian psychologist Nestor Chamorro. *Latin America Weekly Report* says the net was formerly owned by the Rodrigueuez Orejuela family, prominent in the Cali cocaine cartel. They sold it because the Medellin cartel was bombing too many of their stations!

COSTA RICA Radio for Peace International has been carrying out successful SSB transmissions on 7374 or 7375, sometimes USB without carrier, sometimes DSB with reduced carrier. These are beamed northwest, toward Seattle, unlike AM frequencies 13660, 21565 and 25945 which go northeast. Sideband schedule is UTC Tuesday-Saturday 0030-0400, Saturday 0430 as late as 1200, Sunday 0030 all night as well, and sometimes UTC Monday overnight, or after 0430 elsewhere. The weekend broadcasts are automated repeats with a cycle of about three hours and 15 minutes. RFPI also carries a timely news feed from UN Radio around 2215 and 0245 weekdays.

La Voz del Indio is a new 5 kW station being set up to serve indigenous groups in Costa Rica and Panama on the 6 and 11 MHz bands (James Latham, RFPI, *DX Listening Digest*)

Radio Lira, AWR is very strong, maybe 100 kW on both 11869.8 and 9725.1 from 2300 in English, 0100-0457 in Spanish (Ernie Behr, W.O.R.)

Radio Impacto, 5044.0, until 0610 sign-off with hets from three nearby transmitters (Bob Palmer, WA, *DX Spread*) Perhaps Panamanian jamming.

CHILE (non) Radio Moscow aired a special program for Chilean military and police, *La Voz de la Patria*, one UTC Monday at 0230 on 15510, 15520, best on 15475, 15585; other days, Magallanes Musical instead (Ernie Behr, *SWL Digest*)

DENMARK Relays via Norway are to start November 5 (Allen Dean, *WDXC Contact*) So time is running out to hear Denmark direct; try 15165, 25850 at various hours.

ECUADOR Radio Centro, Ambato is new on shortwave, heard on 3289.7 varying to 3289.9, between 0908 and fade at 1100, mostly talk with frequent time checks; listed on 1130 kHz, the address in the *WRTVH* 1988 but not 1989 (Kevin Atkins, AL, *SWL Digest*)

Another new one on 4860.5 at 1110 past 1200, name and location uncertain but call seems to be HC7FK, and mentioning Macas (Peter Bunn and Geoff Cosier, Australia, *OzDX*)

HCJB's DX Party Line is cut to one show a week, on Mondays (John Norfolk, OK)

ETHIOPIA Clandestines from Sudan: Voice of Oromo

Liberation at 1530-1600 on 9435, 0330-0400 on 9445; Radio Voice of Ethiopian Unity at 0400-0500 and 1800-2000 on 9435 (BBC Monitoring via RCI SWL Digest)

HONDURAS Radio San Isidro, La Ceiba, plans shortwave on 4845 (WRTH LA-News)

HUNGARY Radio Budapest's *Hungarian History* series, unpublicized in its English schedules, is now heard Tuesdays and Fridays at 2230-2300 on 15220, 15160, 11910, 9835, 9585, 6110; and UTC Wednesdays and Saturdays at 0200-0230 on 15160, 11910, 9835, 9585, 9520, 6110.

ICELAND Rikisutvarpid's offbeat schedule: 1215-1245 on 13745, 13790, 15767, 15780; 1410-1440 on 13790, 13855, 15767; 1855-1930 on 9268, 13830, 13855, 15767, 15780; 1935-2010 on 15767, 15780, 17440; 2300-2335 on 13855, 15767, 15780 (Bernd Trutenau, W. Germany, Sweden Calling DXers)

IRAN The September-October schedule of English from IRIB: 1130-1225 on 7190, 7215, 7230, 9695, 11790; 1930-2030 on 9022, 11895 (SWL Digest)

IVORY COTE Found on 7208.5 instead of 7215 from 2300 to sign-off 0004 (Kirk Allen, OK) Varying 7208.2 to 7209.4 at 0615-0701, 2050-0003, not to be confused with Zaire (Alexander, K. Atkins, Hosmer, Valko, Fine Tuning)

JAPAN Kaz Matsuda has opted for a new life in Australia. Replacing him as producer and host of *DX Corner* on Radio Japan is Rika Kobayashi; presumably rescheduled for the winter as usual to 0325 UTC Mondays on 5960 via Canada.

KASHMIR AZAD (non) Azad Kashmir Radio via Rawalpindi, Pakistan, signed on at 1215 on new 7268 (Craig Seager, Radio Australia DX Times)

KAZAKHSTAN Additional frequencies monitored from Alma Ata, at 2300 sign on: 5930, 5945, 6075, 6125, 7235, 9550, 9705, 17730 (Olle Alm, Sweden, WRTVH Downlink) Probably now opening at 0000 UTC, original frequency 11950. Shalkar, the second program uses 15270 from 0100 to 1800 (BBC Monitoring)

KIRIBATI Radio Kiribati soon returned to 14918, the carrier continuing after closing at 0935 (Ed LaCrosse, CA, RCI SWLD)

KURDISTAN (non) Voice of the Struggle of Iranian Kordestan was heard at 1530-1620 on 5080 and 4185, saying this was a repeat of 0330 and 0800, when not yet traced (BBC Monitoring via RCI SWLD)

KUWAIT English from Radio Kuwait at 1830 heard on 11665 and new 21675 (Sweden Calling DXers)

LIBYA One of three transmitters on the 15-MHz band wanders around, sometimes even interfering with one of the others. Between 2100 and 0200 in Arabic, 15235 and 15435 are stable, but 15415 varied one day around 15427; another from 15431 to 15433. The clandestine Voice of the Libyan People (*Saut ash-Shaab al-Libee*) opens at 0455 on 15700 (Ernie Behr, Ont., World of Radio)

LITHUANIA Despite the fact that all its transmitters except 6100 kHz are elsewhere in the Soviet empire, and could be cut off by the Russians, Radio Vilnius has been outspokenly anti-Soviet. Fall frequencies at 2300-2330 have been 17690, 17665 (sometimes with interference sounding like jamming), 15180, 11675, 9610 (Andy Robins, MI and gh) And Radio Kiev on most of the same frequencies at 0030-0100 and 0300-0330 has talked about a "free and sovereign Ukraine" (Ernie Behr, Ont., W.O.R.) Some lower frequencies are likely for winter. These formerly dull stations have become exciting.

MALI The relay of Beijing has been varying 15110.8 to 15109.8 from 1600 to 2256, including English at 1600 and 2000 (Ernie Behr, Ont., SWLD)

MONTSERRAT Uncertainty about the future of the Radio Antilles facility on 930, and a shortwave transmitter formerly used by

Deutsche Welle, was compounded by heavy damage from Hurricane Hugo; it may be off for six months (RN Media Network) The BBC/DW relay on neighboring Antigua was missing at least one frequency after the hurricane, but soon resumed full operation.

NETHERLANDS BBC has agreed to share a new relay site with Radio Nederland, somewhere in southeast Asia, but RN has yet to raise the funds (*Media Network* and *Radio Enlace*) Perhaps BBC now expects to lose its Hong Kong relay by 1997, but it still has Singapore. (via Dick Rush, W.O.R.)

NETHERLANDS ANTILLES RN's Bonaire relay moved from 9675 to 9505 at 1030, and from 6165 to 11720 at 0330.

TWR is powered by two diesel engines, since the island could not supply that much power. One of them broke at the beginning of August; the replacement part and heavy equipment to install it should arrive in mid-November (Chuck Roswell, TWR Bonaire Wavelengths)

NEWFOUNDLAND After years of trying, we finally heard CKZN on 6160 until blocked by Deutsche Welle at 0857; on this occasion, CKZU, Vancouver was barely audible (Bruce MacGibbon and Eric Swedberg, OR, DX Spread) QSL from CKAZ says 5 kW (Swedberg, ibid.)

PAPUA NEW GUINEA Radio Enga, 2410, has been off the air for many months. When a new Japanese-donated transmitter was installed it blew up the station generator. So the Electricity Commission started work to connect the station to the national grid, but asked NBC to erect an extra pole to bring the power supply into the station. A dispute over the land on which the pole is to be erected erupted. The owner demanded 500 kina, then 2000, and now more people claim to be landowners, asking compensation as well. NBC expects the Minister of Communications to sort it out, but Michael Somare passed the buck to the provincial premier (Gordon M. Darling, PNG, R. Australia Communicator)

PARAGUAY Radio Nacional has become one of the most boring stations on the air, since the ouster of Gen. Stroessner; they used to have many fine programs of Paraguayan music, now carry only political talks, sports and endless ads, some up to 15 minutes long, nothing worth listening to (Ernie Behr, W.O.R.) And I'll bet he made the trains run on time too; but I heard some nice folk music on a random check at 0815 on 9735; also try 6025, 19470.

PERU Radio Juanjui heard on 6260 at 1200 and 2305; and Radio San Miguel, seemingly a new station in Puno, on 6380 at 0040 (Rafael Rojas, Lima, Onda Corta) Radio Las Palmas, new station in Nueva Bambamarca, Tocache, on 4510 around 0200 (Rojas, Radio-Enlace) Radio Eco, Iquitos on 5012.1 at 0044 (Gabriel Ivan Barrera, Argentina) Same frequency, same day coming on at 1022, but no anthem until 1056 (Kirk Allen, OK, SWLD)

SAIPAN KYOI meant something in Japanese, but present owner Christian Science Monitor has renamed it KHBI (for Herald Broadcasting International--not to be confused with KHBN, the call wanted by High Adventure in Guam). After three months off to install a second transmitter and new antennas for Australia, the fall schedule is much expanded: 9455 at 2000-2200, 9465 at 1200-1400, 9530 at 0800-1200 & 1400-1600, 15115 at 1000-1200, 15285 at 1200-1400, 15355 at 2200-2400, 15385 at 1400-1800, 15405 at 2200-0200, 15435 at 0000-0200, 17780 at 0200-0800, 17855 at 0600-1000, 17865 at 0200-0600 (via

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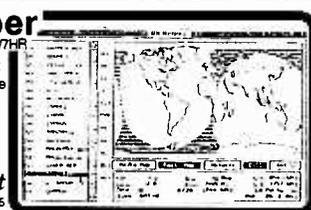
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Shortwave Broadcasting

George Jacobs & Associates) Some changes may be made Nov 5.

SEYCHELLES FEBA has started a daily magazine show in English at 1500-1600 on 9590 and 11760 or 15325, an alternative program to 11865 at that hour (Alok das Gupta, India, *Australian DX News*) On 15325 it IDs only as "Network", with an address in Bangalore, news, music requests and contests (Eric Swedberg and Bruce MacGibbon, OR, *DX Spread*)

SOMALIA Radio SNM, clandestine, used 6516 instead of 6470 at 1500-1700 and identified as Radio Hargeisa; the next day as Radio Halgan, as well as Radio SNM (BBC Monitoring via *RCI SWL Digest*) Later on 6321 but said would move to 11 MHz band. Meanwhile, China has donated a mobile radio station to Hargeisa (BBCM)

SOUTH AFRICA Capital, Radio, Transkei has been heard on second harmonic 7843.6 (*Weltweit Hoeren* via *Onda Corta*) Probably a type for 7853.6, since the fundamental is around 3927.

SRI LANKA Deutsche Welle, Trincomalee is using only two of the three transmitters: German on 21640 at 0700-1000 and 1000-1400, 21570 at 1800-1955. English on 9615 and 11835 at 0200-0250; 17770 at 0900-0950; 6170 and 7225 at 1600-1650; 17810 at 1900-1950; 9670 and 11785 at 2100-2150 (Maarten van Delft, Holland, after a visit to SL)

The complex clandestine situation: Rana Handa, the J.V.P. station used 4432 on Tuesdays, Thursday, Saturday, Sunday at 0130-0215 and 1330-1415, but went silent for three weeks, perhaps due to a new type of bubble-jamming by the SL government; and there's a new "distractor" station by SL authorities, with patriotic songs, Voice of Freedom, daily 0100-0130 and 1300-1330 on 4360, Sunday 0330-0410 on 7010 attacking the J.V.P. party. This station is not mentioned in the government press, must be at least 10 kW, and is unjammed. Rana Hana has more than one transmitter, perhaps four or five at low power of less than 100 watts, not synchronized so signing off at different times; word-of-mouth is probably more effective. Voice of the Tamil Homeland, in the northeast, belongs to the ENDLF faction backed by India; no news or politics heard not but patriotic songs. Times vary, but best at 0130-0230, 1030-1110 on 7100 to 7150 kHz, usually Saturday and Sunday, possibly elsewhere, especially Wednesdays (Victor Goonetilleke, RN *Media Network*)

Tamil National Broadcasting Service is a new clandestine, Wednesday, Friday, Saturday, Sunday at 0130-0215 and 1030-1100 on 7075 to 7125 kHz, sponsored by umbrella organization of three groups, including ENDLF; safe to say it's in northeast province governed by India. All India Radio is very discreet about its broadcasts in Tamil, which almost amount to an official clandestine station, on 7340 and unlisted 1449 kHz from Pondicherry at 2345-0330 and 1115-1700 (Sarith Weerakoon, Sri Lanka, Radio Australia *Communicator*)

SUDAN Radio Sudan under Omdurman now has English at 1530-1600 on 9540, unfortunately under Veritas, Philippines in Chinese (Bruce MacGibbon, OR, *SWLD*)

SWEDEN English to North America from Radio Sweden has reverted to 0230-0300, still on 9695 and 11705; better heard is the 1530-1600 broadcast but now 17880 has interference from BBC, 21610 from VOA; try 21655, weak but clear beamed to Europe. Other targets: 1230 on 15190, 17740, 21570; 1400 on 11905, 17740; 2100 on 9655, 11705; 0100 on 7225, 9640 (via John S. Carson, OK)

SWITZERLAND SRI is scheduled until March 24 with a 30 kW SSB transmitter beamed 171 degrees to Africa at 0545-0730 on 21520, 1845-2200 on 21705.

The monthly week of broadcasts from the Red Cross, Geneva start the last Sunday of each month: Oct. 29, Nov. 26, Dec. 31, Jan. 28, Feb. 25; check the following UTC Tuesday and Friday at 0310-0327 on 6135, 9725, 9885, 12035 (via Kevin Klein, WI, *W.O.R.*)

TONGA Thanks to a major geomagnetic storm, TBC finally had audio after weeks of monitoring no more than a carrier, on 5029.985 varying to 5029.993, fade in around 0450 but best during the 0540-0630

window. Long talk by two alternating women in presumed Tongan until 0600 brief flute and drum music, weak ID and local news in English. Low modulation and only 10% readable at best (Artie Bigley, TX, *RCI SWL Digest*)

TURKEY For English programs from Voice of Turkey: Listen at 2300-2350 and 0400-0450 on 9445, 17760 (*World of Radio*)

UNITED ARAB EMIRATES An Arab around 1300 on 25895 instead of 25900 is presumably Abu Dhabi, continuing a slow but steady downward trend for reasons unknown.

UNITED KINGDOM BBC has a new relay via VOA Greenville, 2100-2130 on 17715, including the Caribbean Report Monday-Friday at 2115, making it audible much more widely than on the only other frequency, Antigua-5975.

UNITED NATIONS You might think UN Radio is gone from shortwave, after the US expelled it from VOA transmitters, but since then UN Radio programs have expanded to a lot of stations where we seldom hear it. By language: Arabic on RTI, Italy; Tunisia, Voice of Nigeria, Radio Cairo. Bangla on AIR, India. Chinese on Radio Beijing. English on RFPI, Costa Rica (many transcription programs in addition to the news), via Switzerland; Spanish on RFPI, HCJB, IRRS--and Saturdays at 0015-0030 on 11830, 15160 during La Voz de la OEA which is via--VOA! (via Frank Starrost, F.R. Germany)

USA In the absence of NDXE, Alabama's main shortwave station is WABB, putting out a strong signal on 2960 kHz, the second harmonic of 1480 from Mobile, heard around 0200 and 1006 (Don Moore, MI) And from 1030 past 1100 (gh, OK)

Tennessee's existing shortwave station, WWCR in Nashville, has garnered universally negative reviews in DX publications. Example: "full of intolerance, anger, American xenophobia and insincerity. Above all, it reminds the listener of the corruption and hypocrisy of the Bakkers and Swaggarts of this world." (Mark Ward, England, *WDXC Contact*) However, in a case of strange bedfellows, WWCR carries the *Israel Press Review*, a transcription, not a relay from Kol Israel, Saturdays at 2000 on 15690 (Tim Hendel, FL, *W.O.R.*) Earlier heard on a Sunday at 2126-2145 (Krik Allen, OK)

WLW heard on 26450 narrowband FM, Saturday 1730, 2215 with remote (Bill Flynn, CA, DXS) After DST ends Oct. 29, WRNO programs air one hour later by UTC, but stay at the same Central time. Frequency usage becomes 1600-2400 on 15420, 0000-0400 on 7355, 0400-0600 on 6185. Alternates are 13720 at 2100-2400, 7355 at 2300-2400; available overnight, especially Sundays but seldom used are: 6185 at 0600-1200, 9715 at 1200-1400, 11965 at 1400-1600, the last probably used Sundays from 1500 (via George Jacobs).

URUGUAY Radiomundo is new, scheduled with 3 kW on 6000 kHz at 0930-1500 (*WRTH LA News*) SODRE has reactivated 9620.1 with 300 watts, heard from 1943 to 2036, asking for reports (Gabriel Ivan Barrera, Argentina, *SWLD*)

VENEZUELA Final word on the mystery 5068 kHz station previously reported under Colombia and Dominican Republic is this: it was heard opening at 2300 giving this address: La Voz de las Canas, Oficina Central, Calle Pulido No. 5-31, Barinas 5201, Estado Barinas, Venezuela (Juan J. Garcia Casado, Spain, *Play-DX*) Confirmed as unofficial station in Barinas at 2300-0100 only (Jorge Garcia Ragel, Barinas, *Play-DX*)

ZIMBABWE Radio 3 is reactivated on 5013 around 2100, sometimes parallel to 4828 (Craig Seager, Australia, *SWL Digest*) But clandestine Radio Truth is on 5015 at 0400-0500 with English after 0430 (Ed LaCrosse, CA, *ibid.*)

Keep up to date with much more news about shortwave broadcasting in REVIEW OF INTERNATIONAL BROADCASTING and/or DX LISTENING DIGEST. Samples are \$2 each in North America, 7 IRCs or US\$3 each overseas mail, US funds on a US bank; 10-issue subscriptions in North America US\$21 or both for US\$40, from Glenn Hauser, Box 1684-MT, Enid, OK 73702.

Broadcast Loggings

Let other readers know what you're enjoying.

*Send your loggings to **Gayle Van Horn***

P.O. Box 1088, Gretna, LA 70053-1088

English broadcast unless otherwise noted.

0030 UTC on 4805

Brazil: Radio Difusora Amazonas. Portuguese. Lively Brazilian music (Robert Pietraszek, Turners Falls, MA)

0100 UTC on 9575

Italy: RAI. Usual news including talk on the hostages held in Lebanon. (Bob Fraser, Cohasset, MA)

0107 UTC on 6090

Luxembourg: Radio Luxembourg. Lady DJ. Repeated references to "1440" radio. Station promotionals and jingles. (Jack Moore, Clementon, NJ)

0120 UTC on 3473.1

Bolivia: Radio Padilla. (tentative) Spanish. Beautiful Andean flute music until 0200 UTC drop out. Presume this was their sign-off. (Rod Pearson, St. Augustine, FL)

0125 UTC on 15042.5

Scotland: Weekend Music Radio. Scottish Highland music in progress at tune-in. Station address given as, "WMMR, 42 Arran Close, Cambridge, England CB1 4JH." (John Bougerois, Thibodaux, LA) Thanks to all the DXers who reported this station!-ed.

0116 UTC on 15139.53

Chile: Radio Nacional de Chile. Spanish. Studio talk show until 0200 UTC. "Musica de la Noche" with Latin and western pop tunes. (Paul Wickliffe, Warren, NJ)

0135 UTC on 17540

Clandestine: Voice of Unity. Pashto/Darl. Poor audio quality for 17540 and parallel 15685 kHz. Numerous mentions of Pakistan. (Mark Seiden, Coral Gables, FL)

0208 UTC on 7415

Pirate: Free Radio One. Interview with the Rev. John Lewis, a very funny guy. Medford, Oregon, address given. (Harold Frodge, Midland, MI)

0212 UTC on 11600

Cuba: Radio Havana. "Spotlight on Latin America" show to 0224. World and national news. (Harold Frodge, Midland, MI)

0225 UTC on 11870

Costa Rica: Radio AWR/Lira. Spanish. Latin tunes, local news and ID, with signal interferences. (Jerry Wilham, Keaau, HI) Multilingual IDs and frequency drifts from 11866/11869.9. (Robert Landau, Secaucus, NJ)

0301 UTC on 7420

Pirate: WBAD. David Bowie and Peter Gabriel music. Announcer mentioned he hadn't been on the air for a year. Station sign-off at 0314 UTC. (Robert Landau, Secaucus, NJ)

0325 UTC on 7420

Pirate: WBIG. Comedy routines, music and ID. Moderate signal until 0406 UTC. (Robert Landau, Secaucus, NJ)

0330 UTC on 4830

Venezuela: Radio Tachira. Spanish. Mystery theater by male announcer, with occasional ID and news breaks. (Mark Seiden, Coral Gables, FL)

0411 UTC on 4910

Zambia: Radio Zambia. English/African vernaculars. Closing news topics and quick interval signal. English ID and talk amid a rapidly deteriorating signal. Wish it had remained a bit longer; this one is not heard nightly.-ed.

0435 UTC on 6105.5

Bolivia: Radio Panamericana. Spanish. Musical variety including a pop version of a Brahms Hungarian Dance. Station ID and commentary with music continuing. (Jerry Wilham, Keaau, HI) Frequency drifts to 6106 kHz with Latin vocals and news.-ed.

0453 UTC on 4890

Gabon: Radio France International relay. French. Interval signal based on the French national anthem, and time tones at the hour. Station ID and frequencies. News with synthesizer music cues separating the news stories. (Paul Wickliffe, Warren, NJ)

0530 UTC on 7285

South Africa: SABC/Radio Orange. News and IDs in English to Spanish at 0540 with local commercials. Amateur radio interferences. (Jerry Wilham, Keaau, HI)

0530 UTC on 7255

Nigeria: Voice of Nigeria. News script and station ID at 0535 UTC. Talks on Jimmy Carter's proposed visit to Nigeria, and debt problems of Ghana and Nigeria. Program schedule at 0558, African drum signal and English sign-off, with French following. (Mark Seiden, Coral Gables, FL)

0535 UTC on 7420

Pirate: KRUD. Musical tunes and mention of Beaver Falls address during station ID. Sign-off at 0542. Strong signal with moderate fades observed. (Robert Landau, Secaucus, NJ)

0559 UTC on 11770

Australia: Radio Australia. French. Waltzing Matilda interval signal. Station frequencies and program guide, followed by chat on Tonga. (John Carson, Norman, OK)

0601 UTC on 9765

Malta: Voice of the Mediterranean. Frequency schedules and programming guides. Newscast suffering from Radio Moscow service. (John Carson, Norman, OK)

0630 UTC on 4845

Mauritania: Radio diffusion-TV de Mauritanie. Arabic. Sign-on with Mauritanian guitar, station ID and twenty minutes of the Koran. (Paul Wickliffe, Warren, NJ)

0710 UTC on 14918 USB

Kiribati: Radio Kiribati. English/Kiribati. Island music and birthday greetings, followed by "Happy Birthday" tune. Signal fading by 0800 UTC. (Jerry Wilham, Keaau, HI) Monitored 0610-0630 UTC with multilingual IDs and Radio Australia news relay. (Frank Hillton, Charlestown, SC)

0711 UTC on 17630

Gabon: Africa Number 1. French. Female DJ with a great African pop music show with rock, calypso, and reggae music. National news on the half hour with male announcer. Musical jingles sing "African numero un." (Paul Wickliffe, Warren, NJ)

0820 UTC on 21550

Finland: Radio Finland. Feature on Finnish distance running and boat racing. Station ID at 0823, national anthem and sign-off. Excellent signal. (Jerry Wilham, Keaau, HI) Frequency 15185 monitored at 0230 UTC. (Harold Frodge, Midland, MI)

0925 UTC on 9695

Brazil: Radio Rio Mar. Portuguese. Fair signal for Brazilian music. Rooster crows signal played frequently. Rio Mar ID at 0930. (Robert Landau, Secaucus, NJ)

0932 UTC on 9850

New Zealand: Radio New Zealand. "Evening Encore" classical music program. ID and "news from Radio New Zealand" at 1000 UTC. Excellent reception -- best I've heard! (Jack Moore, Clementon, NJ) Monitored at 0630 on 15485 kHz. (Robert Pietraszek, Turners Falls, MA)

1000 UTC on 11805

Guam: KTWR. "Pacific DX" program at tune-in with discussion on QSLing WWW and WVVH stations. (Bob Doyle, Shelton, CT)

1020 UTC on 4796

Bolivia: Radio Nueva America. Spanish. Fair signal for rustic Bolivian vocals sung by a lady duet. Program notes and station ID from male/female announcer duo. (Frank Hillton, Charleston, SC)

1035 UTC on 11835

Sri Lanka: Sri Lanka Broadcasting Corporation. Local music to ID at 1038, and intros for American pop tunes. Time signal pips and news at 1045. 50s music from Johnny Mathis. (Mark Seiden, Coral Gables, FL)

1000 UTC on 11805

North Korea: Radio Pyongyang. Frequency and program schedules given. Dry discussion on nonaligned countries. (Bob Doyle, Shelton, CT)

1200 UTC on 6070

Canada: CFRX. Canadian and international news. Traffic and weather report, including lots of commercials and IDs. (John Carson, Norman, OK)

1610 UTC on 21740

Pakistan: Radio Pakistan. World news and current events, followed by talk on international relations of Pakistan. Station sign-off at 1630. (Farrall Smith, Los Angeles, CA)

1938 UTC on 17735

Sultanate of Oman: Radio Oman. Arabic. Very good signal observed for a fifteen minute radio drama, and Arabic pop music program. (Paul Wickliffe, Warren, NJ)

2105 UTC on 15105

Yugoslavia: Radio Yugoslavia. News and weather reports. Rather dry text on politics and fish in the Adriatic. Monitored at 2118 UTC on Sunday for a great third world music show called "Sidewalk Rock." (Paul Wickliffe, Warren, NJ)

2230 UTC on 15010

Vietnam Socialist Republic: Voice of Vietnam. Martial music and ID. News, local pop music and mailbag show. Transmitter cuts out several times through broadcast with bad modulation on voices. (Paul Wickliffe, Warren, NJ) Monitored on 15009.5 at 1010. (Mark Seiden, Coral Gables, FL)

2240 UTC on 4835

Mali: Radiodiffusion-TV Malienne. French. Male announcer speaking uninterrupted for an hour. Instrumental music before sign-off with national anthem at 0000 UTC. (Paul Wickliffe, Warren, NJ)

2240 UTC 9445

Turkey: Voice of Turkey. "Our National Heritage" program discussing the palace of Suleiman, built on a bluff above the Bosphorus. (Robert Hurley, Baltimore, MD)

2355 UTC on 4850

Cameroon: CRTV-Yaounde. English/French. Fair signal for African highlife music at tune-in. Multilingual IDs heard and station frequency schedule. Choral Cameroon anthem and 0000 sign-off. (Frank Hillton, Charleston, SC)

Utility World

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Life On Board

Slowly one of the world's largest warships turns into the wind. A fresh breeze now blows into your face. A lot is going on around you. You learn to grow eyes in the back of your head and that sixth sense now tells you that you had better move. Seconds later, an F-14 Tomcat jet aircraft taxis by and rolls over the very spot where you were standing on the flight deck.

The noise around you is deafening. Aircraft all over the deck are turning up their engines. They are preparing to commence the day's first launch. You must wear ear protection or you would go deaf within seconds.

You watch as the F-14 moves toward number one catapult. Steam from the cats, hot exhaust from the engines, and noise fill the air around you.

Looking around the big flat metal deck you now see aircraft being taxied and attended to by a sea of men wearing colorful jerseys.

Then suddenly the F-14 that almost hit you kicks his two engines into afterburner for launch. A long stream of fire belches out of his two engines. A member of the flight deck crew wearing a blue jersey climbs from under the belly of the aircraft. He has just checked the Tomcat's hook-up to the catapult.

Hand signals are passed amongst the flight deck crew and a hand salute from the pilot indicates he is ready to launch. Now the pilot only looks forward in the cockpit at his airspeed indicator. It is the only thing that matters, since he needs 150 knots of airspeed to get airborne off the ship. Without that 150 knots of airspeed, the aircrew aboard the Tomcat would have to eject.

Within seconds, it is over. The giant fighter aircraft slams forward and dips slightly as it clears the ship. The F-14 is now airborne; his primary mission is to protect the carrier from enemy aggressors.

This scene is carried out dozens of times every day aboard an aircraft carrier of the United States Navy. Recently, your Utility World column editor had an opportunity to experience the flight

deck of an aircraft carrier, up close and personal.

Once every couple of years, I go back out to sea aboard one of our U.S. Navy aircraft carriers. Earlier this year, I boarded the USS Dwight D. Eisenhower (CVN-69) for a two week period with the Naval Reserves.

Life aboard an aircraft carrier is definitely unique. You are really aboard a "floating city." This 1092 foot long naval vessel has just about everything you can imagine; yes, even its own police and fire departments.

The Eisenhower is one of the "Nimitz" class aircraft carriers. It displaces 91,400 tons full load and 96,351 tons when loaded out for combat. A combat load is when the ship is carrying the maximum amount of aviation fuel and ordnance that can be loaded at sea.

Eisenhower is powered by two pressurized-water nuclear reactors. These are connected to four sets of steam turbines that develop 260,000 ship horsepower. Four propellers enable the ship to attain a speed of 30+ knots.

The nuclear cores of the Ike are estimated to last 13 years in normal usage, for a cruising distance of 800,000 to one million miles (not bad on one tank of gas, eh!). The ship's evaporators can produce 1,520 tons of fresh water per day. Ship's electrical generators develop 64,000 kilowatts of electricity plus 8,000 kW emergency power from four diesel sets.

Equipped with air and surface search radar systems, the Ike also has an Anti-Submarine Classification and Analysis Center. This center permits the instant sharing of target data between the carrier, the anti-submarine warfare aircraft, and escorting ships. The ship has numerous antennas, covering all frequency ranges, that bristle from all over its topside spaces. This includes the latest in fleet satellite communications and a full Naval Tactical Data System.

Once underway, the ship takes on its own character. The first thing that you notice is the number of men stationed on the ship - over 6,000 enlisted men and officers. Each of these sailors soon get caught up in the world that revolves around the "mighty Ike." You learn to live, eat, and breath what is happening on the ship. Caught up as you usually get, there are still several ways for a sailor to keep in touch with the outside world.

First, there is the ship's newspaper. Each day the staff of the Public Affairs Office (PAO) puts in up to 15 hours work getting the newspaper ready for the next day's distribution. The paper is even printed onboard by the ship's own print shop. Plenty of news -- international, domestic, Navy, and shipboard -- is contained within its four pages. The newspaper is available each morning of every day the ship is underway. It also carries the all-important TV guide to the ship's entertainment system.

Yes, the Ike has a massive ship Super Site entertainment system. They carry two channels of television programming, channel 2, WIKE, and channel 6, WCVN. Canned network programming and first run movies are the order of the day on the ship's TV channels. In addition, there is a channel that you can view flight ops on. You can see flight deck operations right from the comfort of your berthing space's TV lounge.

When asked how important the TV system was aboard the Eisenhower, the program director for the station JO1, Steven Orr, said, "We watch a lot of TV on the Ike. It is very important to the crew. Cut it off for some reason and we hear about it from all over the ship until it is turned back on."

Also written into the TV schedule is a daily newscast that is



Larry, N5FPW, operates MARS station NNN0CVG while on board the USS Eisenhower

done live from TV studios located in the Public Affairs office. The usual news staples normally found on one's local evening newscast are done aboard the Ike with much the same type personalities with one notable exception. No female news anchors. Yes, ladies, not bad odds; 6,000 men and no women aboard the ship.

Radio is not forgotten onboard either. The ship has four FM radio channels aboard the Eisenhower, all carrying different types of music and programming. These FM channels are 90.1, 92.1, 94.1, and 97.5 MHz. There is even a studio to do live radio, and an impressive record library to support just about anyone's taste in music.

Even with all this entertainment and information provided to the crew, still the best way to help pass time aboard one of these monster ships is by talking to your loved ones back home. Nothing makes a sailor happier than hearing the voices of his family and getting a reassurance from them that "everything is A-OK." This is where the MARS (Military Affiliate Radio System) comes into play.

Shortly after Vietnam, the Navy reinstated the policy of letting ships have MARS radio stations operating while underway. Since that time a large shore-based network devoted to passing shipboard phone patch traffic has developed. On the stateside end of the network are volunteers who devote countless hours helping crewmen aboard Navy, Coast Guard, and NOAA ships talk to their families. These volunteers receive no pay for their services.

Using frequencies in Table 1, shipboard operators can come up on selected calling channels. They put out general calls for any stateside station that can hear them and wants to help run phone patch traffic. Once communications is established, they usually move off the calling channel to another unused but assigned frequency to run the myriad of phone calls for the ship's crew.

When you talk over a telephone, your conversation is normally two way (both parties can hear the conversation at once). When talking via radio phone patch, however, the line is only one way. This necessitates the use of the word "Over" by the parties talking to each other. This lets both radio operators know when to switch from receive to transmit and vice versa. Consequently, you can recognize a MARS phone patch by the prolific use of the word "Over."

The Navy MARS system uses call signs that begin with NNNO. The suffix can usually tell you what kind of station you are listening to. Bob Grove's *Shortwave Directory* lists many of these call signs to aid the listener in determining which naval vessel he is hearing.

In general, stations that have a suffix that begins with "C" are usually shipboard stations. Likewise, "N" suffixes are also used by shipboard stations. However, the bulk of these suffixes are used by naval shore activity MARS radio stations. The "M" suffix is used by Marine Corps activities having MARS stations. Suffixes beginning with "A" or "P" are part of the upper echelon on the Navy-Marine Corps MARS program or stations in charge of specific aspects of the program.

The special military frequencies where these shipboard MARS stations operate are all a part of the afloat specialty net. There are several of these types of specialty nets throughout the MARS system. Specialty nets exist for Antarctica, phone patching, RTTY, and exotic modes (i.e. SSTV, FAX, Packet, etc).

While onboard the Ike I had the privilege of operating NNNOCVG, the Eisenhower's shipboard MARS station. The first thing I noticed about being a shipboard MARS operator is how fast the word travels throughout the ship that the station is open for business. During my stay on the Ike, the regular operators of NNNOCVG were on leave, so that only left me to operate the station.

I did not have to advertise the fact that the station was open;

U.S. NAVY-MARINE CORPS MARS AFLOAT CHANNELS

Table 1

Frequency	CONUS	MARS	Reg	AK	PR	HI	Japan	Philippines	Guam
2046.5	ALL								
3325.0	1-2-3-4								
4007.0	1-2-3-5-7					X			
4013.5	1-2-4				X				
4041.0	ALL	(NAV GUARD/COMMON							
4470.5	5-7	EMERGENCY CHANNEL)			X			X	
4818.5	-----						X		X
7300.0	5-7		X		X				
7358.5	-----						X		
7363.5	1-2-3-4-5				X				
7368.5	ALL					X			
7391.5	ALL				X	X			
7493.5	ALL	(CALLING CH			X		X	X	X
7684.0	ALL		X						
8031.5	1-2-5-7					X			
10258.0	ALL*								
11538.0	ALL		X	X					
11653.5	-----						X		
12047.5	5					X			
12122.5	1-2-3-4								
13378.5	ALL								
13483.5	5-7		X		X		X		X
13528.5	ALL								
13538.5	1-2-3-4								
13643.0	ALL					X		X	X
13826.0	ALL					X	X		X
13974.0	ALL				X	X			
14383.5	ALL	(CALLING/EMERGENCY CHANNEL FOR ALL AREAS)							
14441.5	ALL	(CALLING CH)	X						
14463.5	ALL								
14467.0	ALL								
14470.0	ALL								
14477.0	ALL				X				
14483.5	ALL				X				
14818.5	ALL					X			X
14838.5	ALL				X			X	
14934.5	ALL					X			
16173.0	ALL*								
16298.5	ALL				X	X	X		
16386.0	1-2-3-4								
19186.0	5-7					X	X	X	X
20678.5	ALL					X			X
20936.0	ALL				X				
20997.0	ALL	(CALLING CH)	X	X					
24168.5	ALL								
24265.0	ALL								
24348.5	ALL								
27898.5	ALL*								
27920.0	ALL					X			
27974.0	ALL					X			

* Indicates a MARSTELSYS (MARS RTTY Channel) frequency

word traveled as fast as an F-14. Before long a line had formed outside my door. Just about everyone enjoys talking home if even for a few minutes.

And yes, even in the MARS shack, you cannot escape the flight deck. The angle landing deck was right above the MARS shack. I knew each and every time an aircraft landed on the Ike; it would shake the whole ship and me.

Was it worth the extra hours spent operating MARS aboard a ship? You better believe it. There is no greater satisfaction than seeing the broad smile on a sailor's face when he hears that loved one's voice for the first time in a while. It is all possible through the magic of radio and the Navy-Marine Corps MARS radio system.

And in closing this month, to those shore based operators who volunteer their time, I have this to say to you:

The appreciation of the sailors at sea for your time and assistance in this program cannot be measured on any scale. On behalf of Navy sailors and Marine Corps soldiers everywhere in the world, a big "Bravo Zulu" to you all and a heartfelt thanks. We could not do it without you.

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		

- 2336.0 "NICE" heard at 0750 sending RTTY RYs and SGs. Could not find "NICE" for either the USN or USCG. 850/100N. Any ideas? (John Richardson, Titusville, FL) *Welcome, John, hope to see you more often in these pages. Probably a general call sign used by a naval or coast guard station. Readers?-ed.*
- 2846.0 Valley String and Diamond Bar attempting to set up an RTTY transmission on another frequency. Mentioned 2336.0 at 0738 in USB. Pretty positive these were Navy units. (Richardson, FL)
- 4055.0 Single letter CW beacon "K" heard at 0923. (Leonard Szalony, Fontana, CA)
- 4213.5 FUF-French Naval Radio, Fort de France, Martinique, heard a CW V marker at 0450. (Szalony, CA)
- 4630.0 US90 calling US1123 with departure times for 2CT and 503 at 2324. US1123 announced station closed at 2350 with US1106 monitoring the frequency. (Boehm, TX) *OK, readers, any help on this one for Jim.-ed.*
- 4910.0 RKN34-Moscow, USSR, heard at 1420 with coded meteo in RTTY 1000/50N. (Art Blair, San Francisco, CA)
- 5680.0 USCGC Chilula working CG aircraft 1503 with SAR operations at 2339 in USB. (Battles, NH)
- 5718.0 Rescue 302 working Halifax Military. Advised that subject was spotted off Newcastle coast and DMB was inserted to transmit on frequency 240.6 MHz. VSL Cornwallis was the On Scene SAR commander. Heard at 1346 in USB. (Battles, NH)
- 5720.0 7 Uniform working Foxtrot Tango in USB at 0030. "Lowered Tango Quebec to 5." (Battles, NH)
- 6389.0 CTP-Deiras Naval Radio, Portugal with DE CW marker at 0324. (Jim Boehm, San Antonio, TX)
- 6693.0 Bearcat 18 working Halifax Military in USB at 1619. (Battles, NH)
- 6716.0 SAM 86971 working Andrews AFB, Maryland, in LSB at 0313. (Battles, NH) *Another mystic star channel pops up.-ed.*
- 6728.0 Air Force Two working Andrews AFB at 1434 in USB. (Battles, NH)
- 6994.5 AA6USA-U.S. Army MARS Ft. Sam Houston, Texas, monitored at 0105 in CW. Not sure whether short or long path? (Gregory Dome, San Antonio, TX) *Bet on ground wave, Greg.-ed.*
- 7540.0 Weak Eyes working Candlewick in LSB at 1910. Advised "We are taking hits when we extend to Tuck Control. Meet tomorrow at 10 on the same frequency." (This Weak Eyes call has also been heard evenings on 5696 working USCG COMSTA Miami). (Battles, NH) *Bill, it is obvious they are talking about RTTY by reference to the "taking hits" statement. This could be part of the government drug interdiction network, maybe even a Bravo channel.-ed.*
- 8000.0 JJY-Radio Research Labs Station, Tokyo, Japan, heard at 0814. Second ticks until 0815 then minute tone only until 0819 plus 23 seconds. ID then in CW JJY JJY 1820 then both Japanese and English voice ID followed by NNNNN in CW. (Boehm, TX)
- 8144.0 Single letter CW beacon "K" heard at 1450. (Szalony, CA)
- 8241.5 Aerostat 4 working USCG COMSTA Miami in USB at 2343. (Aerostat 4 is an airborne radar blimp.) (Battles, NH)
- 8255.0 USCG Group Key West advising H8H that they had an EPIC request before they boarded the vessel. Gave crew names, race, sex, and date of births at 0117 in USB. (Richardson, FL) *Battles note: Could this be one of your Bravos.-ed.*
- 8297.5 UKBH-Soviet spaceflight tracking ship KEGOSTROV calling UTDX-KOSMONAUT PAVEL BELAYEV with traffic for UKBH-KEGOSTROV at 0313 indicating that the Soyuz spacecraft had backed away from MIR. (Ricks, PA)
- 8299.5 RMGC-UNID Soviet naval unit calling UTA-Tallin Radio with RYS at 0309 and 0316. RTTY 170/50. (Ricks, PA)
- 8300.0 Mike 83 to Alpha 83 at 0055 in USB discussing a shipment of glow plugs via air. They also talked about a case of Budweiser beer. Who? (Joe Topinka, Berwyn, IL) *I really don't have the foggiest, Joe.-ed.*
- 8450.0 5AB-Benghaz Radio, Libya, with CW marker at 2238. (Nick Grace, Harvard, MA) *Welcome to the Utility World column, Nick. Hope to see you report often.-ed.*
- 8597.0 VTK-Tuticorin Naval Radio, India, in CW at 2333. (Grace, MA)
- 8632.0 XSW-Kaoshung Radio, Taiwan, with marine weather broadcast at 1100. Also heard on 8582.0, 12727.5, 12864.0, 16940.0, and 17035.0. (Boehm, TX)
- 8655.3 IAR-Rome Radio, Italy, with CW V marker at 0051. (W. Page Pyne, Williamsport, MD)
- 8672.5 DAF-Norddeich Radio, West Germany, heard at 0438 with a V CW marker. (Szalony, CA)
- 8678.0 IQX-Trieste Radio, Italy, with CW V marker at 0051. (Pyne, MD)
- 8682.0 EAD3-Aranjuez Radio, Spain, with their CW marker at 0355. (Grace, MA)
- 8688.0 ZSC-Cape Town Radio, South Africa, heard with a CW CW marker at 0102. (Pyne, MD)
- 8719.0 USS Hoist working USS Eastman in USB at 1955. (Battles, NH)
- 8825.0 Royal Air Maroc 205 heard in USB at 0606 working Santa Maria with a position report over 33 north/30 west enroute to Casablanca. Asked to give estimate for the Santa Maria/Lisbon FIR boundary. (Garie Halstead, Saint Albans, WV)
- 8864.0 MAC 60160 heard in USB at 0228 working New York with position report over CROAK (off Norfolk). At 0234 aircraft received its oceanic clearance to Rota, Spain. (Halstead, WV)
- 8981.5 Earthquake working Maintenance in the clear, then into scrambled DVP communications at 1919 in USB. (Battles, NH)
- 8990.0 WD22 in USB at 0045. Station was mobile near Harvard, Massachusetts, going north on highway #2. Stopped at McDonalds near Concord and mentioned highway 27 near Acton. Believed to be operating cross-band as other station not heard. Sounded like someone with the name "Bubba." (Larry Williams, Greenville, SC) *Larry, you have the honor of the Wierd Logging of the Month. Anybody want to hazard a guess?-ed.*
- 8993.0 MAC 00457 requesting phone patch through Ascension Island GCCS to Dover AFB at 0232 in USB. Shifted to 11176 kHz when conditions got marginal on 8993. (Henry Brown, East Falmouth, MA) *Welcome to the logs column, Henry. Please report often.-ed.*
- 9000.0 Digital voice traffic (scrambled voice) noted on this frequency at 1353. (Battles, NH)
- 9006.0 USS Stark working Cape Radio (NASA) in USB at 2217. They were requesting a launch update on the space shuttle. (Larry Riffle, Key West, FL) Andrews AFB working SAM 70050 in USB at 1748. (Battles, NH)
- 9011.0 USAF Croughton GCCS, England, heard at 1857 in USB with an EAM Skyking broadcast. (Battles, NH)
- 9017.0 Genetic working Fisherman on channel Xray-904 in USB at 2000. (Battles, NH)
- 9042.0 Single letter CW beacon "U" heard at 1437. (Szalony, CA)
- 9043.0 Single letter CW beacon "K" heard at 1437. (Szalony, CA)
- 9120.0 Silver Dollar working Catch said that advance have lost communications with Carnation in USB at 1526. (Battles, NH)
- 9220.0 Canary Seed 01 calling any station with a radio check in USB at 1422. Also monitored Locker working Cocktail said was going to "Tango Bravo" in USB at 1403. (Battles, NH)
- 10112.0 McClellan (???-ed.) working Zaribo in USB, then into crypto RTTY. Zaribo then advised to switch to 12205 then into more crypto RTTY at 2012. (Black Bart, Tucson, AZ) *Hey, Black Bart, did I read the hand-writing right, was that McClellan?-ed.*
- 10169.5 HSW63-Bangkok, Thailand, heard at 1407 with coded meteo in RTTY 650/50N. (Blair, CA)
- 10194.0 WGY-903 heard working WGY-907 (FEMA station) in USB at 1544. (Battles, NH)
- 10321.0 BAA8-Beijing, PRC heard at 1018 with coded meteo RTTY 850/50N. (Blair, CA)
- 10478.0 November Lima with a EAM broadcast of 88 items then told all stations to standby to acknowledge message originated from Golf India in USB at 2036. (Battles, NH)
- 10573.0 Noted stations 9AC, 50X, 9VN, 4RO, and 4YA in CW with traffic at 2200. (Mr. Deutsche Welle-At Sea) *Welcome aboard, DW. Hope to hear from you often.-ed.*
- 10644.0 Single letter CW beacon "P" heard at 0311. (Szalony, CA)
- 10644.5 Single letter CW beacon "F" heard at 1433. (Szalony, CA)

- 10646.0 Single letter CW beacon "O" heard at 0029. (Szalony, CA)
- 10960.0 3MA28-Taipei, Taiwan, heard at 1440 with CNA news in English. RTTY 850/50N. (Blair, CA)
- 11108.0 German 3/2 digit number station heard at 2045. (David Hunt-Elgin, ON) *Welcome to the column, hope you report often.-ed.*
- 11214.0 Charlie Echo 31 working Charlie Control In USB at 1736. (Battles, NH)
- 11226.0 Head Dancer working Lajes GCCS with phone patch to Raymond Head Dancer Metro. Weather given for stations 11-18, deleted stations 1-9. Station 19 had a METEOSAT problem. Heard in USB at 1519. Also heard MacDill with an EAM Skyking broadcast in USB at 2347 and Sticker working Alley OOP on X-Ray 905 in USB at 0124. (Battles, NH) *This might prove to be another interesting channel like 13247, Bill. It definitely bears watching also.-ed.*
- 11441.0 SAM 201 passing traffic to Andrews at 1732 in USB. At 1739 both stations went to Mystic Star channel 175L for phone patch traffic. (Dan Burns, Alexandria, VA)
- 12150.0 Single letter CW beacon "K" heard at 0004. (Szalony, CA)
- 12216.0 WGY-903 heard working WGY-907 in USB at 1553 with a weak seven test and talked about the new Harris modems in USB at 1553. (Battles, NH)
- 12265.0 BZR62-Beijing, PRC heard at 1457 with Xinhua news in English. RTTY 425/75R. (Blair, CA)
- 12512.0 UKFI-Soviet spaceflight tracking ship KOSMONAUT YURI GAGARIN with MIR tracking data for UTDX, and UZYY-KOSMONAUT VIKTOR PATSAJEV at 0314. Still tracking MIR several weeks after the manned crew departed. (Ricks, PA)
- 12524.0 UJPL-Soviet research ship AKADEMIK GOLITSYN with a position report for Murmansk Radio via CLJ Havana Radio at 0335. Ship was in the Florida Straits. RTTY 170/50. (Ricks, PA)
- 12977.0 URL-Sevastopol Radio, Ukraine SSR with CQ CW marker parallel to 17153.0 at 0404. (Boehm, TX)
- 12978.8 ICB-Genoa Radio, Italy, with V CW marker at 0753. (Boehm, TX)
- 13040.0 KLC Galveston Radio, Texas, with CW weather information for the Gulf of Mexico including wind speed and sea height at 2340. (Richard Walton, Chico, CA) *Welcome, Rich. Please report often.-ed.*
- 13205.0 Royal Air Force Sydney, Australia, calling an UNID aircraft at 2026. Also UNID station sounded like Tango Tango or Pango Pango called about the time of arrival of principles on a DC-8. (Doyle, CT)
- 13211.0 Andrews AFB working SAM 201 with a phone patch in USB at 1951. (Doyle, CT) Spar 65 calling Andrews on LSB, Andy calling 65 on USB at 1735. Finally got together on LSB were Andy patches 65 to Robbins Metro. Both stations then move to Mystic Star channel 20U. (Burns, VA)
- 13312.0 Slingshot working Calypso 04 with an intercept at 2209 in USB. (Doyle, CT) *U.S. customs channel.-ed.*
- 13336.0 Amsterdam LDOC working an aircraft with a SELCAL of PDLT with write ups at 2239 in USB. (Doyle, CT)
- 13380.0 TIM-Limon Radio, Costa Rica, calling CQ in CW at 0150. (Ricks, PA)
- 13444.0 JRCZ working SRCZ in regards to a message at 1534 in USB. Told to go to channel Alpha Charlie One. (Patrick Kerrigan, Chicago, IL) *Welcome to the column, Pat, please report often.-ed.*
- 13637.0 Single letter CW beacon "K" heard at 0001. (Szalony, CA)
- 13646.0 Single letter CW beacon "K" heard at 0024. (Szalony, CA)
- 13826.0 NNNONWB-South Pole, Antarctica, heard at 0225 in USB. Phone patches being handled stateside by an unidentified Navy MARS station. (Mike Bronowicz, Hewitt, NJ) *Welcome to Utility World, Mike.-ed.*
- 13995.5 PWB33-Belem Naval Radio, Brazil, with RYs, SGs and "Flash" type bell ringing at beginning of each RY test at 0032. Called PWZ Rio de Janeiro Naval Radio at 0048. RTTY 850/50. (Ricks, PA)
- 14475.7 Single letter CW beacon "U" heard at 0021. (Szalony, CA)
- 14507.4 D4B-Sal Island, Cape Verde Islands Aeradio with departure message for South African Airways flight to Heathrow at 0145. RTTY 850/50R. (Ricks, PA)
- 14976.0 Single letter CW beacon "U" heard at 1448. (Szalony, CA)
- 14983.0 Single letter CW beacon "E" heard at 1446. (Szalony, CA)
- 15897.0 Lightning Bolt calling Lightning Bolt Alpha in USB at 1432. UNID tactical net. (Ricks, PA)
- 16091.0 LOL-Buenos Aires Naval Radio, Argentina, with traffic for UNID "La Armada" (Argentine Naval Unit) in Spanish at 0106. RTTY 850/75. (Ricks, PA)
- 16241.5 LOL-Buenos Aires Naval Radio, Argentina, calling YWM-1, Maracaibo Naval Radio, Venezuela, with test message at 2356. RTTY 850/75. (Ricks, PA)
- 16452.0 8RB78-Georgetown Radio, Guyana, in USB working an UNID station at



Chris Merchant, KA1LMR, checks in with a QSL from TIM in Costa Rica.

1442. (Grace, MA)
- 16700.0 UKBY-Soviet spaceflight tracking ship KEGOSTROV calling UTDX-KOSMONAUT PAVEL BELYAYEV with F2 schedule of daily positions, course and speed for trip to retrofire position off northern Brazil, at 0310. The KEGOSTROV was docked at Willemstad, Curacao. RTTY 170/50. (Ricks, PA)
- 16868.0 9VG53-Singapore Radio, Singapore, with their CW marker at 2252. (Grace, MA)
- 16869.0 HPP-Panama Intelmar Radio, Panama, sending a 22 wpm CW CW marker at 0213. (Pyne, MD)
- 16904.0 FUV-Djibouti French Naval Radio with CW marker at 0414. (Grace, MA)
- 16998.0 JDC-Chosi Radio, Japan, with a CW marker at 0335. (Grace, MA)
- 17174.6 ASM-Bahrain Radio, Bahrain, heard with a CW DE marker at 1221. (Boehm, TX)
- 18348.5 Single letter CW beacon "K" heard at 0007. (Szalony, CA)
- 18899.5 NNN0ADF heard with 170/100N Navy MARS RTTY traffic from California at 0130. (Pyne, MD)
- 18993.5 SPW-Warsaw Radio calling CQ in CW, QSX on 16696 at 0038. (Ricks, PA)
- 20935.6 NNN0NRO-NS Rota, Spain, working NNN0NRD-Roosevelt Roads, Puerto Rico, with news on the USS Iowa. Weak signals. Also working phone patches to NNN0NIM in Gulfport, Mississippi, in USB. (Dome, TX) *Navy MARS channel.-ed.*
- 20991.0 Single letter CW beacon "D" heard at 1556. (Boehm, TX)
- 20991.3 Single letter CW beacon "S" heard at 1556. (Boehm, TX)
- 20991.6 Single letter CW beacon "P" heard at 1556. Noted that this beacon cluster the transmissions were synchronized so that each beacon transmitted in the clear for easy identification. (Boehm-TX)
- 20992.0 Single letter CW beacon "C" heard at 0107. (Boehm, TX)
- 22900.0 GPA7-London Press Service, (Rugby) London, England, with a CW/TOR marker heard at 1640. This is purported to be a British Foreign Office Service in the CFL, 6th Edition. (Boehm, TX)
- 23287.0 Hotel 3 Oscar working Bravo 1 Oscar in USB at 1948. (USN Hi-COM channel.) (Battles, NH)
- 25329.0 FUM-French Naval Radio, Papeete, Tahiti, heard at 2325 with a V CW marker. (Boehm, TX)

The Scanning Report

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

Scanner Temptations

How many times have you been fishing and failed to release a catch that was just under the size limitations? How many of you are computer buffs who have enjoyed using a piece of licensed software that was passed on by a friend? And how many of you have violated the ECPA by monitoring cellular phone calls?

The point I'm trying to make is that practically every hobby has rules and regulations that can easily be broken. The hobby of scanning is certainly no exception. Scanning requires that we exercise a degree of common sense and responsibility.

If we were fishing instead of scanning, our common sense and responsible behavior would probably be called sportsmanship. All fishermen know that casting over another angler's line or wading through his casting area are direct violations of unwritten laws.

In the hobby of scanning, both newcomers and seasoned veterans rarely give a thought to scanning sportsmanship. After all, there are no "bag limits" or size limitations to govern the number or type of frequencies that we capture. We simply turn on our scanner radios, punch up a few frequencies and listen to the entire neighborhood -- and that's exactly when we get into trouble.

Cordless phone monitoring is a classic example. Before you begin to monitor your neighbor's cordless phone, ask yourself if you really want to learn about his or her personal activities, sexual habits, and other intimate secrets. Everyone has a few skeletons that are locked away. If you decide to unlock your neighbor's door with a scanner radio, there is no way of limiting the number of skeletons that may decide to fall out.

The following letter from a woman in Madison, Wisconsin, is a good example of what can happen when we decide to peek behind locked doors.

"My neighbor and I were the best of friends for over fifteen years. But that friendship came to an end after I started monitoring her cordless phone conversations on my scanner radio. I simply could not carry on our friendship when I discovered that she was cheating on her husband."

Another popular area that is often monitored by scanner buffs is the baby monitor frequencies between 49.0 and 50.0 megahertz. If cordless monitoring seems risky, then stay away from baby monitors! Some folks never shut the things off! As a result, all of the sounds from within a particular room can be monitored twenty-four hours a day. Some of the sounds on this band would receive at least an "R" rating by the motion picture industry.

With our nation fighting a drug war, the DEA frequencies are one of the hottest bands in the entire VHF/UHF spectrum. Scanner buffs from around the country are constantly writing to me and requesting specific DEA information. But the DEA frequencies, like the baby monitor and cordless frequencies, should be monitored with caution.

If you monitor a surveillance team working within your neighborhood, can you resist the temptation to venture out and personally view the action? Worse yet, can you resist telling your neighbor that the house at the end of the street is being watched by federal agents?

Monitoring your neighbor's cordless phone may not be such a good idea!



For some of us, keeping a secret is an impossibility. In the navy it is often said that "Loose lips sink ships." Imagine what the consequences could be if your neighbor told another neighbor about your monitoring activities? It's very possible that your loose lips could sink the entire undercover operation.

If all this sounds rather far-fetched, you may be surprised by the letter I received a few days ago.

"Hi, I'm 'DEA Dan.' As you might guess, I love to monitor the DEA frequencies. Very often, I'll ride into an area that is under surveillance and watch the action from my car."

I'm sure that most of you will agree that DEA Dan is in big trouble. Dan's actions are akin to jumping into the water and chasing the fish -- conduct unbecoming a sportsman. At the very least, DEA Dan is placing his life and the lives of DEA agents in danger. Scanner buffs don't belong in the middle of surveillance nets. If you are caught, the big boys may not throw you back!

As a writer and scanner buff, I, too, must exercise a degree of scanning sportsmanship. As some of you already know, I don't give out DEA frequencies. Sure, there are plenty of scanner guides that provide that kind of information. I won't argue that point. My conscience will simply not allow me to accommodate mail order DEA requests.

In addition to questions concerning the DEA, my mail has recently included several letters from readers in Washington, D.C. It seems that the Washington Metro Police have discovered that drug dealers are using scanner radios to evade being busted.

Operating on a tight budget, the DC police couldn't afford to install a voice security system in thousands of mobile and hand-held radios. The only other alternative was to use secret code words. Since the code list is changed daily, there's no way to crack it. Drug enforcement officers simply get together, pick the code words at random, and then hit the streets. It's simple, effective, and it works.

If I did know the meaning of the code words, I certainly wouldn't print them in a national magazine like *Monitoring Times*. Or should I? Would I be considered a "sportsman" if

I openly provided so-called "sensitive" frequencies and code-words? More importantly, what would you do? Was I correct in saying that cordless and baby monitors should be scanned with some degree of caution? Or have I been fishing in a dry well?

I'd like to read and publish your response to these questions. Send your letters to The Scanning Report, P.O. Box 98, Brasstown, NC 28902.

MT Treasure Hunt

Don't miss this one! At the end of this month, two lucky winners will each receive a 1300 H/A frequency counter from Opto Electronics, and two more lucky winners will receive a gooseneck lamp from Littlite.

The 1300 H/A counters feature eight digit displays, excellent sensitivity, rechargeable Ni-Cad batteries, a telescoping whip antenna and a nine-volt wall transformer. The frequency counters are provided by Opto Electronics, 5821 N.E. 14th Avenue, Fort Lauderdale, Florida 33334. Retail price per unit is approximately \$170.00.

The gooseneck lamps measure 2" x 4" and the 12" neck can be twisted into practically any position. The lamp head contains two grooves for easy installation of a plastic filter and the lamp is dimmer controlled. The lamps are provided by Littlite/CAE Inc., P.O. Box 430, Hamburg, MI 48139. If you discover that you wanted one yesterday, the phone number to Littlite is 313-231-9373. Retail price of each lamp is \$49.95.

Here are the clues:

1. The April '89 edition began our first Treasure Hunt. Provide the answer for clue #4.
2. "The Pros Subscribe. Shouldn't You?" What was the original wording of this popular *MT* ad?
3. Take a standard sheet of 8-1/2 x 11 typewriter paper and place it over the front cover of the July 1989 edition of *MT*. Align the top and left hand edge of the paper with the top and left hand edge of the cover.

Trace the arm of the girl onto the paper. When you're done, her hand will appear to be pointing.

Using the July '89 edition, turn to page 53 and tightly press the paper into the left hand seam of the magazine. Once again, align the top edge of the paper with the top of the page.

The hand is now pointing to a specific sentence on page 53. What are the four numbers in that sentence?

4. On commercial airplanes, flight recording devices are commonly called "Black Boxes." What color are the devices actually painted?
5. The following is the last sentence from a popular column in the June 1989 issue of *MT*: "Drop us a line." What is the name of the column?

Some readers have inquired about sending in multiple entries. Feel free to enter as often as you like. All the entries are simply placed in a box, thoroughly mixed, and then randomly drawn. Address your entries to Treasure Hunt, P.O. Box 98, Brasstown, NC 28902.

Frequency Exchange

The Kansas City Police Department may soon change over to a trunked system. So reports David C. Sterns of Lenexa, Kansas. According to Dave, the new system will use 20 channels in the 800 megahertz range. Here are the proposed new frequencies:

856.2125	857.2125	858.2125	859.2125	860.2125	856.2375
857.2375	858.2375	859.2375	860.2375	856.2625	857.2625
858.2625	859.2625	860.2625	856.4375	857.4375	858.4375
859.4375	860.4375				

Dave also provided the following random list of frequencies for his area:

464.575	Bannister Mall, Maintenance
464.675	Bannister Mall, Security
151.235	Johnson County Park Ranger
153.860	Jackson County Park Ranger

In the state of Illinois, Frank Filzen is hunting frequencies in the Champaign/Urbana areas. Since Frank didn't specify a particular area of interest, feel free to send in a random list of your choosing.

Traveling south and heading for the east coast, our first rest stop is Johnson City, Tennessee. Curtis Harbin lives in Johnson City, and he indicates that the Greenville Police Department is now operating on 155.550 MHz. Some additional frequencies as provided by Curtis are:

Greenville Swat Team	155.595
Crossville Police	155.070
Cumberland Police	155.070
East Ridge Police	460.325
Chattanooga Police	460.075 (Adam)
"	460.350 (Baker)
"	460.225 (Ch. 3)
"	460.475 (Ch. 4)
"	460.400 (Ch. 5, Mutual Aid)

Okay, ready to get moving again? As we pass through Richmond, Virginia, let's take a look at Richard Rowland's federal government list.

163.8875	FBI, KEV 360 Richmond Repeater
167.625	FBI, KEV 360 Input to 163.8875
167.565	FBI, KEV 360 Richmond
414.250	FBI, KEV 360 Richmond
419.552	FBI, KEV 360
165.850	U.S. Secret Service, Richmond Office Repeater
165.8625	U.S. Secret Service, input to 165.850
165.375	U.S. Secret Service Primary Nationwide Repeater
165.2875	AT&F Repeater
166.5375	AT&F Input to 165.2875
167.500	Customs
413.925	Federal Reserve Bank
166.200	U.S. Postal Service Maintenance
410.325	U.S. Postal Office Main Station
169.850	U.S. Postal Inspectors
414.750	U.S. Postal Inspectors (DVP Capability)
407.750	U.S. Postal Inspectors (DVP Capability)
165.950	Internal Revenue Service
409.325	Veterans Administration
409.400	Veterans Administration
413.875	Federal Protection Service
419.175	GSA, Usage unknown
163.200	U.S. Marshal
163.125	Petersburg National Battlefield
166.950	Richmond National Battlefield Park
166.900	Shenandoah National Park
167.175	Blue Ridge Parkway
163.4875	Air National Guard Security at RIC Airport
167.0125	Air National Guard at RIC
148.650	National Guard, Ch 8

148.900	National Guard, Ch 5
149.925	Civil Air Patrol
143.750	Civil Air Patrol, Input to 149.925
148.150	Civil Air Patrol
143.900	Civil Air Patrol, Input to 148.150
163.625	Immigration (Not confirmed)

Leaving Virginia, our scanner radios will get another dose of federal frequencies when we enter the Baltimore/Washington area. Bob Crain lives nearby and has provided the following:

Federal

<u>Customs</u>	166.400	<u>IRS</u>
154.475*	166.4625	166.00
162.825	166.5875*	
163.000*	168.6300	<u>AF#1</u>
163.225*	169.535	171.2875
163.675*	171.25	
164.100	255.60	<u>USMS</u>
164.200	269.3	415.7
164.250	281.4*	163.2
164.250	297.2	167.6875
164.325*	299.2	
164.550*	353.9	<u>FBI</u>
164.700	354.2	165.65
164.775	381.5	165.7875
164.9125	418.225	163.85
165.2375**		165.95
165.2875**	<u>FBI</u>	
165.3377*	165.3750	
165.4625	163.96	<u>FCC</u>
165.5375	163.625	167.05
165.6875**	167.79	
165.7375	419.4	
165.9125	165.3375	
165.950*	167.6375	
165.975*	166.200*	
166.200*	165.875	

As we arrive in Pennsylvania, another scanning adventure is about to begin. Tim Shingara lives in Harrisburg, and has provided over 700 frequencies for agencies throughout the state. Tim's exhaustive list provides frequency coverage for many agencies that operate between 29 and 1800 megahertz.

Interested? Here's the best deal in town. Send a buck with a SASE to the Scanning Report, P.O. Box 98, Brasstown, NC 28902, and I'll send you the list. If you need your cash for the approaching holidays, I'll swap Tim's list for 700 of your frequencies. Either way, remember to include the SASE.

For this month, Pennsylvania is our final stop. However, if you want MT readers to visit your town, simply address

your favorite frequencies, requests, or photos to the Frequency Exchange, P.O. Box 98, Brasstown, NC 28902.

Post Card Madness

Since I started the Treasure Hunt, a lot of readers have responded by using common postcards. The postcard is a very handy and inexpensive way for readers to respond and I certainly encourage their use.

However, don't forget to include your return address! For example: I have a lovely postcard from Baltimore, Maryland. On the front is a color picture of the Washington Monument, Mt. Vernon Place, and the Peabody Institute. The back contains all the correct answers, but there's one thing missing - the sender's address!

Prime Time Scanning

The town of Tarentum, Pennsylvania, is located just north of Pittsburgh. Although it is a small rural community, the folks living in Tarentum are having a lot of fun scanning.

In the *Valley News*, which is the local newspaper for Tarentum, a columnist referred to scanner radios as the "Super-market tabloids of the community." The article went on to state that scanner buffs can pick up all kinds of tidbits on their neighbors by simply monitoring the local police frequencies.

Should we write to the *Valley News* and give them the cordless, cellular, and baby monitor frequencies as well? (News clipping from Deborah and Mark Voss, Sarver, Pennsylvania)

NOAA Weather Monitoring

Did you know that Canada has a weather radio system similar to our NOAA weather stations? The stations operate throughout Canada, and use the identical frequencies that are used here in the United States. In Canada, the system is called "Weatheradio Canada." Here's a list of locations and the related frequencies:

Gander	162.55	Sault Ste. Marie	162.40
Halifax	162.55	Thunder Bay	162.475
Moncton	162.55	Winnipeg	162.55
Quebec City	162.55	Saskatoon	162.55
Montreal	162.55	Regina	162.55
Ottawa	162.40	Edmonton	162.40
Toronto	162.475	Calgary	162.40
Windsor	162.475	Vancouver/Victoria	162.40

Jack Schindler of Ferndale, Minnesota, sent a reception report to the station in Windsor, and he received a rather swell looking verification card. If you live near the Canadian border and can monitor any of the above stations, let the folks in Canada know that you are listening. Better yet, drop me a line so that I can let our readers know as well.

December Gift Giving

Tired of receiving socks, tee shirts, and neck ties for Christmas? I've got a sure-fire method for placing your Christmas Wish List in the hands of every member of your family. Sound interesting? If so, don't miss next month's column.

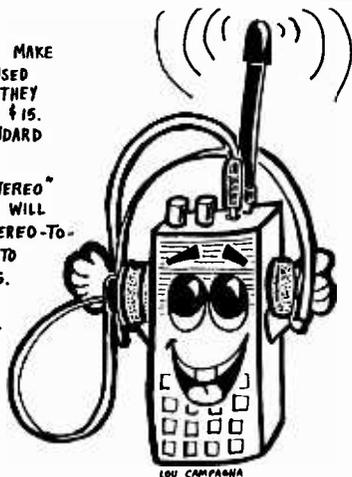
Bob Kay's first book, "The Citizen's Guide to Scanning," is available from many Monitoring Times advertisers this month. Look for advertisements in this issue of Monitoring Times.

INEXPENSIVE STEREO HEADSETS MAKE EXCELLENT COMPANIONS WHEN USED WITH A HAND-HELD SCANNER. THEY CAN BE PURCHASED FROM \$5 - \$15. AND WILL OUT PERFORM STANDARD EARPHONES.

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Sammy the Scanner

NORTHEAST SCANNING NEWS



The Scan-tastic Duo!

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But the features don't stop here. Optional accessories include the RC-12 remote controller, ACC 67 extendable whip antenna, a voice synthesizer to announce frequency settings, and even an access port for external computer control!

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\$1,019⁰⁰

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DIMENSIONS: 11 $\frac{1}{4}$ "W x 4 $\frac{1}{8}$ "H x 10 $\frac{1}{8}$ "D; WEIGHT: 16 lbs.; POWER: 117/240 VAC, 1.5 A

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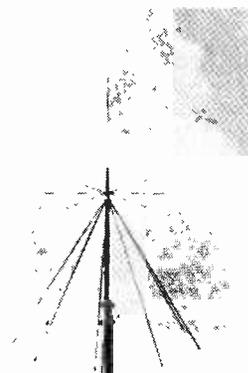
The discone antenna is used by government and military agencies worldwide because of its recognized high performance, wide bandwidth characteristics. Now ICOM offers a professional grade discone at a popular price.

Designed for use with the ICOM R7000 receiver (25-2000 MHz continuous coverage), the AH7000 discone consists of 16 rugged, stainless steel elements and is capable of transmitting up to 200 watts in the amateur 50, 144, 220, 432, 900, and 1200 MHz bands.

As a receiving antenna the AH7000 is superb,

outperforming any omnidirectional antenna we have ever used for continuous 25-1000 MHz (and above) coverage. A base-loaded, vertical top element is used as a low band (30-50 MHz) frequency extender.

The elements are arranged on a 24-inch support pipe equipped with two strong mounting brackets to accommodate any standard mast-pipe (1" to 2 $\frac{1}{2}$ " diameter). Included is approximately 50 feet of low loss 50 ohm coaxial cable with N connectors factory installed. Receiver adaptors available at additional cost at time of order: **Order ANT-3**



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what's new?

Ask the Answer Man

Finally, a book which answers all of the most puzzling questions most frequently asked by shortwave and scanner listening enthusiasts.

What is the best, most cost-effective coax? How can I choose the best antenna for my needs? When do I need a preamplifier or preselector? Will an antenna tuner help reception? How high must my antenna be? Where can I get repairs and parts? What accessories do I really need for improved reception? Which are the best scanners and shortwave receivers? What do all those specifications actually mean?

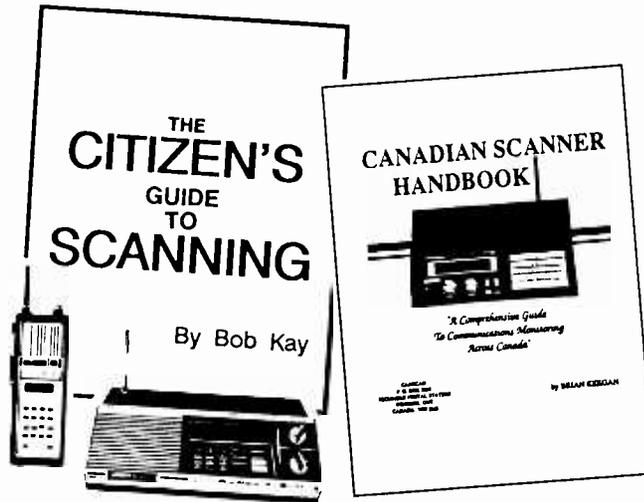
These are just a few of the hundreds of questions authoritatively answered in simple, easy to understand terms found in this handy, illustrated, desk-top reference for radio hobbyists.

Bob Grove's *Scanner and Shortwave Answer Book* is available from Grove Enterprises for \$12.95 plus \$2.00 (P.O. Box 98, Brasstown, NC 28902), and from DX Radio Supply and other MT advertisers.

Q: Where can I find the answers to all my scanner and shortwave questions?



A: Bob Grove's
**SCANNER
AND
SHORTWAVE
Answer Book**



Scanner listeners have a broad choice of new handbooks this month

A "Citizen's Guide" to Scanning

If you enjoy Bob Kay's "no-holds-barred" scanning column in *Monitoring Times*, you'll love his new book, *The Citizen's Guide to Scanning*.

What makes Kay's book unique is that he doesn't follow the rules. Kay is a bona-fide scanner "nut" and anything goes if it'll help you hear more.

Kay covers everything from "A-to-Z." There are chapters that detail what you can hear (along with an exhaustive frequency-by-frequency range breakdown of the entire applicable VHF-UHF spectrum), choosing antennas, what to look for in a receiver, setting up a shack, scanning and the law, a question and answer section, and much, much more.

Both novice and experienced scanner listeners will find his imaginative tips helpful. *The Citizen's Guide to Scanning* is available from DX Radio Supply for \$12.95 (plus 2.00 UPS or .90 book rate), P.O. Box 360, Wagontown, PA 19376 and from Grove Enterprises.

Canadian Scanner Handbook

Brian Keegan's new handbook is just what the title implies; it's not only a frequency directory, but an information-packed guide to help Canadian scanner listeners get the most out of their hobby.

Regionalized by province and categorized by topic, hundreds of discrete frequencies as well as several allocation tables tell the listener where to hunt for targets of interest. Liberally illustrated, the handbook provides systems insights into civilian and government radio installations.

Major topics include antenna systems and signal propagation, public safety agencies, maritime and aircraft, railroads, weather monitoring, mobile and portable telephones, and scanner equipment.

A list of ten codes, special communications codes and sources for equipment and publications caps off this unique publication.

The Canadian Scanner Handbook by Brian Keegan is \$15.95 plus \$3 postage (add an additional \$3 for U.S. orders) from CANSCAN, P.O. Box 3009, Tecumseh Postal Station, Windsor, Ontario, Canada N8N 2M3.



The Shortwave Listener's Program Guide

Scanning Handbook

Like Bob Kay's book, *The Scanner Listener's Handbook* is a thorough treatment of the scanning hobby. From getting started to receivers, antennas, computer controlled monitoring, monitoring laws and more, it's all here.

The Scanner Listener's Handbook by Ed Soomre is \$14.95 plus 2.00 UPS or .90 book rate from DX Radio Supply, P.O. Box 360, Wagontown, PA 19376.

Program Guide for the SWL

Monitoring Times readers who enjoy the program guide section will enjoy Kraig Krist's new *Shortwave Listener's Program Guide*. The *Guide* lists shortwave programs by day and by time within each day.

Accompanying the guide is a frequency section much like the one in *Monitoring Times* which can be coordinated with the program section for a handy reference.

The *Shortwave Listener's Program Guide* does not provide advance program details or even a brief summary of what a listed program is

about, but it does give the reader a thorough and very helpful guide to "what's on" shortwave tonight.

The Shortwave Listener's Program Guide is available from DX Radio Supply for \$14.95 plus 2.50 UPS or 1.25 book rate. Their address is P.O. Box 360, Wagontown, PA 19376.

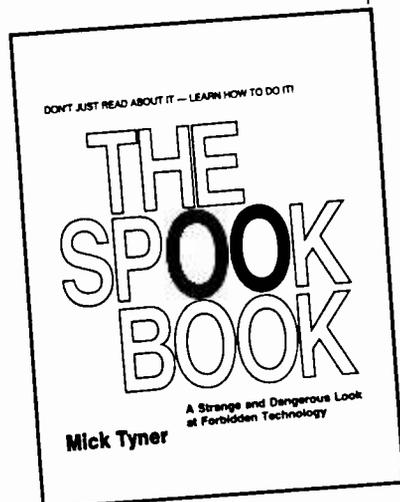
The Spook Book

Just what is so controversial about *The Spook Book*? The fact that it is well written, well documented and comprehensive in its divulgence of methods used for audio and video surveillance, lock picking, security system defeating, weapons fabrications and fireworks formulating.

Under pyrotechnics, Tyner cautions the reader: "Do not make any of the devices discussed here." While that may be like telling someone with a scanner not to listen in on mobile telephones, at least the caveat is well meant.

At quick glance, the reader may equate *The Spook Book* with early anti-establishment works like William Powell's *The Anarchist's Cookbook* or Scott French's *The Big Brother Game*.

In fact, Tyner's writing is far more articulate and non-political. It is objective, well-paced and informative. Rather than sinister and inflammatory,



it is educational and urbane.

Yes, there are chapters dealing with speed radar jamming, home-made artillery and laser bugging, but the sections on electronic eavesdropping are the largest and most detailed, with discussions, evaluations and instruction on the building of such devices as tubular "shotgun" mikes and "ultra-amp" audio processors.

Whether you are cultivated or counterculture, there's something for you in *The Spook Book* by Mike Tyner (\$34.95 postpaid from Advanced Electronic Technologies, Suite 173, 5800-A N. Sharon Amity Road, Charlotte, NC 28215).

HEALD'S SCAN RAIL

THE RAILROAD FREQUENCY DIRECTORY

Railroad Scanning

There is a resurgence of delight in the old steam locomotives in this country and scanner listeners are tuning in on the railroad frequencies--when they know where to look. That's where *Heald's Scan Rail* directory comes in.

By way of introduction, Bruce Heald describes himself as a "third generation railroad man and former boomer operator."

Heald begins his collection with a listing by name of railroads and their associated frequencies. Next comes commuter authorities, including AMTRAK, and their frequencies. Then an alphabetized cross reference by state and city,



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- ICOM R-71A HF Scanning Receiver.....\$850
- Collins R390A (Reconditioned/Calibrated) \$750*
- Japan Radio NRD-525\$1,150
- Sony ICF-2010\$318
- Sony ICF-2003\$245
- Sony Pro-80\$350
- RACAL RA-6790 (GM)/R-2174CALL
- Realistic PRO-2005 Scanner\$399
- 3TF7 Ballast Tube - Brand New!\$40
- Bearcat BC-200XLT - w/Cellular restoration\$275

* Cost includes Federal Express Shipping

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and finally a frequency listing to help find the owners of a particular channel you might have heard some activity on.

Mass transit operators get their due here as well. Many frequencies are identified as to use and there's even a list of major tourist train operations with their frequency authorizations.

If you're a train buff, or even if you simply wish to expand your listening horizons, Heald's manual is a bargain at \$9.95 postpaid. It's available from Bruce K. Heald, 6886 Jefferson St., North Branch, MI 48461.

Grove Discontinues PRO2004 Mods

Grove Enterprises, who first introduced the popular PRO2004

scanner to mail order, has discontinued their modification service.

"Speed enhancement and additional memories were distinct improvements," said Bob Grove, president of Grove Enterprises, "but there were apparent quality control problems in the original manufacture of the boards. Some service centers are no longer repairing the PRO2004s."

No such problems seem to exist in the new PRO2005 which is now being sold in record numbers, even to former owners of the PRO2004.

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

Dabbling in Utilityland

One of the things we all try to maintain in the radio hobby is a fresh edge. Radio monitors are hunters by nature. We are always looking for some new signal out there in the air. But it is all too easy to get bogged down in one form of listening. Soon, the blahs set in and the dials start to get dust on them.

As a confirmed shortwave broadcast listener, I sometimes run into periods where everything starts to sound the same to me. I mean, as much as I love it, how long can one really listen to one kind of radio? Pretty soon you start to look forward to the static crashes for variety!

You are slipping your cogs again, Uncle Skip!!

The fact is that even a beginner needs a little excitement to lighten up the old log book. A sure fire way to get out of them "Broadcast Listener Blues" is to tune around between the standard shortwave broadcast bands. You will find plenty of excitement and adventure. UHF listeners and scanner folks stick with me on this one too, because we are about to harken to the lilting sound of...

UNCLE SKIP'S GUIDE TO UTILITY LISTENING

The simplest definition of a utility is anything that ain't a broadcast signal! There are countless thousands of folks using radio as work instead of play. Those signals, whilst not intended for the pleasure of the radio monitor, can be an absolute gas to listen to. The HF and VHF portions of the frequency spectrum are constantly abuzz with the signals of people participating in incredibly interesting occupations and avocations.

What's the catch?

Well, in the HF spectrum, most of these signals are broadcast in Upper Sideband (USB). That's right, it's those guys who sound like Donald Duck. You will need a receiver that either has a USB mode switch or, if you have a Beat Frequency Oscillator (BFO), you can flick that on and adjust it to clarify that duck voice into a reasonably understandable facsimile of the human voice.

VHF utilities can best be tracked using one of the more modern wide-spectrum synthesized scanners.

What's the payoff?

The payoff is that most of the exciting stuff is not particularly hard to copy. Commercial

businesses, government, and military types tend to use plenty of power to get their signal from point "A" to point "B." Snatching these signals out of the air can be done with fairly modest equipment and antennas.

So what's out there?

Army, Navy, Air Force, commercial airlines, coast guard, ships at sea, even spies. All these things are a simple twist of the dial away. Let's take a look at some things we might monitor.

Navy

We live in a country that has a truly global Navy. While much of the radio activity of the ships at sea is done in RTTY, it is still possible to monitor voice communications and routine traffic on some frequencies. Try 6697,6723, 8778, 8972, 13181, and 13237 kHz just to name a few of the more interesting locations.

The Navy also operates a net on the duplex frequencies of 4066.1/4360.5 and 8247.7/8771.6. In other words, to hear both sides of the conversation, you are going to need two receivers or a very quick wrist.

Scanner users will find the Navy in the neighborhood of 325.2, 340.2, and 360.2 MHz. These are naval-air tower frequencies.

Coast Guard

The Coast Guard operations cover a lot of ocean too. Because so much of their mission is devoted to search, rescue, and emergency operations, the communications tend to be less classified and coded. 5320, 5680, 5692, 5696, 6506.4, and 8984 kHz will give you a piece of the action.

If your rig has memory, you might want to punch in 2182 kHz, the international distress and calling frequency, and 3023 kHz, the international search and rescue frequency. You may just listen in on some pretty exciting events. The Coast Guard also makes informational broadcasts about weather conditions throughout the day on 2670 kHz.

VHF listeners can try 150.05, 157.10, and 157.15 for near shore operations.

Army

We tend to think of the Army's operations as being limited to short range VHF infantry type activities. Not so, Bucko! Our boys in green baggy skin can be monitored best by listening in on the operations of the U.S. Army Corps of



With a simple twist of the dial you can even track military operations.

Engineers. If you tune to 2348.5, 5011, 5015, 5327, 5346, 5400, or 9130 kHz, you might hear the corps operating from your back yard or around the world.

Again, scanner folks can give a listen in the neighborhood of 162.025 through 173.9875 for operations of various Army units.

MARS

Not the planet, rather the Military Affiliated Radio System. Essentially this is a nationwide group of radio amateurs organized to pass messages to and from U.S. military personnel around the world. All branches of the service have depended upon this organization as a morale booster. 4517 and 4593.5 kHz are popular Air Force MARS operations. You might try 5217, 6825, or 9305 kHz to monitor Army MARS.

By far the most interesting MARS station is one run by the Navy in the Antarctic on 6970, 7365, 7370, 7393, 13826, 13974, 14470, or 14761.5 depending on conditions. A bit of diligent listening will let you log a new continent.

VHF MARS operations, including some repeater stations, can be found just above and below the regular two meter amateur radio band. Try frequencies between 143.45 and 143.99 or 148.01 and 148.15.

CAP

The Civil Air Patrol is made up of a group of very dedicated volunteers who participate in nationwide search and rescue operations. They have many regional frequencies but can generally be heard nationwide on 2371, 2374,

7365 kHz (USB), and 14905 kHz (LSB). Again, if you have a memory bank on your rig, you will want to program in 4582 kHz, their emergency and calling frequency.

VHF monitors will do well to listen in to the same band of frequencies as I listed for VHF MARS operations.

Air Force

The Air Force always seems to have something going on on the radio. Worldwide air operations including one-third of the Strategic Air Command on alert at all times makes for a lot of tactical chatter. If you are looking for the most potential excitement, you can monitor SAC on 4725, 6761, 9027, 11243, 13241, 15041, 17975, 20631, or 23337 kHz, or give an ear to NORAD (North American Aerospace Defense Command) on 5297, 9023, 9793, 11441, 14894, or 29855 kHz.

I know a guy who has these frequencies all plugged into the memories of his Sony 2010. Every morning when he wakes up, he turns on the radio and scans these channels. If it doesn't sound like they are going to drop "The Big One," he gets dressed for work. If you are not that pessimistic, you could try 6075, 6738, 8989, 8993, 9014, 9027, or 11176 kHz.

VHF operations can be found in the area of 255 through 275 MHz for tower frequencies. Scanner buffs will also be able to tune in to SAC on 311 MHz.

Commercial Aircraft

HF voice communications can be found for most transcontinental flights. Fruitful frequencies are 5598, 5616, 6577, 6586, 8825, 8846, 8879, 8891, 8921, 11282, and 13306 kHz. You will want to keep an ear open for "Speedbird" as this might be one of the Concord SST aircraft. Memory frequencies would be 3023 and 5680 kHz for search and rescue operations.

VHF listeners have the entire 116 through 136 MHz aircraft band to listen to with 123.1 MHz identified for search and rescue work.

Commercial Shipping

Ships are fun to listen to but you have to remember that most ship to shore operations are duplex in nature. The frequencies for common traffic are too numerous to list but you might listen in to 4125 kHz which is a calling channel as a place to get your feet wet. Once you have heard how shipboard operations are conducted, you will be able to go with the flow on the other maritime frequencies.

Scanner owners can tune through the Maritime Mobile channels running from 156.025 through 157.4250 and 160.625 through 162.0250 MHz, once again allowing for duplex operations.

Intrigue

If you have been tuning around looking for any of the above HF stuff, you have probably already heard one or two "Spy Number" stations. *MT* has carried many fine articles on the probable background and locations of these stations. What you most often hear is a voice reading off groups of numbers in any one of half a dozen languages. Monitoring number stations has become, for some, a hobby in itself.

To assist these folks in their study of spy stations, you might want to take notes and send your loggings in to Larry Van Horn's "Utility World" column. Since so much about these stations remains shrouded in secrecy, information exchange between listeners is the only way to get to the bottom of things. Monitor 4670, 4742, 5812, 6802, and 8418 kHz to get a taste of the clandestine.

While there is nothing quite so dramatic to be found in the VHF bands, Old Uncle Skip periodically hears of folks using business band and cellular phone systems for all sorts of illegal activity. One publication even did an extensive article on the use of cellular phones in the drug smuggling trade, even alluding to modifications to the radios that would affect tracking and billing.

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Whither the Weather

To keep track of weather conditions, you can monitor the NOAA broadcasts on 7880 kHz. You can follow the National Hurricane Center's operations on 6673 and 13267 kHz. You can even listen in to VOLMET aviation weather broadcasts on 2863, 3485, 6604, 6679, 8828, 10048, 10051, 13270, and 13282 kHz. Shannon Aeradio on 3413, 5640, 8957, or 13264 kHz is a very popular way to add Ireland to your logbook.

VHF folks need look no further than 162.40 through 162.55 MHz for National Weather Service broadcasts.

Keeping track of the weather can give you a good idea of where to listen for action on the other frequencies we have discussed.

Scratching the Surface

If a few sessions listening to the above frequencies whets your appetite for utility DXing, you will probably find that you will need more help to sort your way through the multiplicity of neat things to monitor. You can begin to learn more by staying tuned to the pages of *Monitoring Times*. Columns such as "Utility World" and "Outer Limits" as well as regular feature articles on utility broadcasting will help you along.

Also, several excellent books have been written for the dedicated utility listener: *U.S. Military Communications*, Vols. 1, 2, and 3 by Michiel Schaay; *Guide to Utility Stations* by Joerge Klingenfuss; *Uno, Dos, Cuatro - A Guide to the Numbers Stations* by Havana Moon; *Worldwide Air Traffic Frequency Directory*; *Cambridge Airadio*; and, of course, *Shortwave Directory* by Bob Grove. VHF listeners should look for the *Top Secret Registry of U.S. Government Radio Frequencies* by Tom Kneitel.

If you want to try your hand at QSLing utility stations, you will be helped by the *Utility QSL Address Guides*, Vols. 1 and 2 by Symington & Henault. All these books are available from many of the advertisers found right here in *MT*.

Why not give utility listening a try?



The Dynamic Duo

The monitoring of federal agencies and the military is an enjoyable, interesting and rewarding aspect of the radio communications hobby. Fortunately, this enjoyment is not limited to shortwave or even VHF/UHF. There's something to hear on virtually every part of the radio spectrum.

The radio traffic that can be monitored varies from mundane weather reports to maintenance at the local Veteran's Administration Hospital to interesting Strategic Air Command HF broadcasts to exciting DEA or FBI surveillances.

Despite the fact that federal and military monitoring has been explored by literally tens of thousands of monitors, much of its territory is still uncharted. The Federal File this month reexamines the art of federal and military monitoring.

On The Road Again

I've had the opportunity to talk with many federal monitors (herein the use of the term "federal" implies both federal and military unless noted otherwise) and many would-be aspiring federal monitors in recent months. Two related terms crept into every conversation with experienced federal monitors: patience and perseverance.

Patience and perseverance often were spoken of on a higher level of importance than receiving equipment, antennas, or frequency directories, as without patience and perseverance, the remaining items are useful only for SWBC (ShortWave BroadCast) or police/fire/EMS monitoring depending upon the bands of choice.

The majority of the aspiring federal monitors may have understood what the definitions of patience and perseverance are, however, the application of the terms to federal monitoring were not comprehended. The world of federal monitoring is not a world where a listener may casually tune at any given time and expect to hear exciting, chair-edge ear-riveting radio traffic.

This is a contrasting condition to SWBC listening or monitoring of local police and fire radio traffic when a monitor can virtually tune at any time of the day and hear foreign broadcasts from around the world or local excitement (even if you live in Brasstown, NC). So what are the federal monitors doing different than the aspiring federal monitors, especially when equipment is of a secondary concern?

Patience and Perseverance

The aspiring or casual federal monitor may scan several federal frequencies for a few minutes and hear nothing but static or the quietness of a squelched receiver and then proceeds to switch his monitoring activity to something that cuts through that squelch.

The problem is that this monitor did not have the patience to sit and monitor a given set of frequencies over a longer interval than a few minutes. The listener was not able to wait for the desired output -- the capture of a radio signal.

Patience for the federal monitor implies the ability to monitor or search a given set of frequencies or even just a single frequency for more than just a few minutes. Spend a day or an evening of monitoring the same frequency(ies) without changing the search parameters or memory banks.

A common comment -- bordering on a complaint -- that I heard from the aspiring crowd was that it's boring listening to static or a muted speaker on a squelched receiver when monitoring of local action can be attained. I typically responded by informing the aspiring monitors that I find the quiet time most enjoyable and far less hectic than monitoring multibanks of multiple receivers.

Other tasks can be performed during the quiet time such as reading of a newspaper or a good book, correspondence with friends and associates, playing with your children

(presuming they are permitted in your radio shack), or simply meditation in a relaxing position. The type of tasks and amount of tasks is determined by each individual and can be tailored to the number of hours that monitoring is desired to be performed.

Two PRO-2004s are humming in the background as I write this column. Each scanner is scanning a particular bank. And frankly, my patience has already paid off as I discovered two previously unknown FBI frequencies while I was writing this column (the FBI was performing radio tests so I set one scanner searching between 167 and 168 MHz and the other scanner scanned through a preprogrammed bank of FBI frequencies).

Stick-to-itiveness

The second term mentioned earlier is perseverance, which is just as important as patience. Once a monitor develops the patience to calmly sit and monitor a given set of frequencies, then the monitor must learn that the reward in all likelihood will not come in one monitoring session, nor even in several sessions. The rewards of finding new frequencies/channels, or monitoring of a raid of a drug house may take weeks or even months of constant monitoring and the one time when the guard is relaxed for even a moment, the effort is weakened.

Also, it can be stated as Murphy's Law for Monitors -- the one day, the one hour that you do not monitor or tape a frequency that has been under scrutiny for months will be the day or hour that the frequency comes alive.



There is no end to the activities that can be enjoyed while waiting for a channel to become active. Have patience!

Perhaps stating simply -- stick with it, do not give up or relent in your pursuit and do not quit until you have reached your goals. All avid, experienced federal monitors abide by the rules of patience and perseverance. The longer the time spent in pursuit of the goals, the greater the rewards and satisfaction.

Tools Of the Trade

Another word that often is heard is discouragement. This word often leaps into the vocabulary after a monitor has spent weeks at the radio and has heard nothing.

Monitoring time for the vast majority of us is quite limited to the evening hours and the weekends. A tape recorder is an invaluable aid for any monitor, especially a VOX type recorder that is activated when a channel becomes active and is deactivated when the transmission ends. The utilization of a VOX recorder greatly relieves the many hours of boredom and actually enhances federal monitoring.

The VOX tape recorder and receiver can be configured for unattended monitoring during the day while you are at work or in the evenings while your batteries are being recharged for another day at the office. Keeping in mind that the VOX will only record during active transmissions (defined as any transmission that normally would unmute the receiver speaker), there is essentially no dead time between transmissions during playback.

So an entire eight hours of radio traffic can be recorded and reviewed at your leisure versus sitting in the radio room for eight hours to actually monitor only 45 minutes of radio traffic.

I offer this as a serious suggestion to the aspiring monitors as a method to get them involved on a more mature level. I would venture to say that there are few, if any, avid federal monitors who do not utilize a VOX tape recorder or multiple VOX tape recorders.

Equipment was stated earlier in this article as a secondary concern to patience and perseverance. Enjoyment and pleasure can be ascertained without elaborate receiving stations with costs in thousands of dollars. At a minimum, a HF monitor should utilize a receiver with an accurate digital frequency display.

The VHF/UHF monitor can use virtually any modern programmable frequency synthesized scanner (the popular models being the PRO-2004/2005, ICOM R-7000, and the BC-200XLT). An outside antenna is highly recommended as well as accessories such as filters and preamplifiers.

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monitors satellite communications in the UHF military aircraft band (225-400 MHz) using a Cushcraft amateur 220 MHz Ringo Ranger antenna mounted on a tripod which sits on the back porch. An inline preamplifier is also utilized to assist in receiving the satellite signals. The Ringo Ranger for 220 MHz can be purchased with coax and connectors for well under \$50.

Preamplifiers can be purchased starting under \$20 with higher quality units in the \$50 to \$100 range. So for \$100 plus the cost of a receiver capable of tuning the 225-400 MHz range, one may monitor satellite communications. Once again, though, patience and perseverance are the key words.

Sources of Data

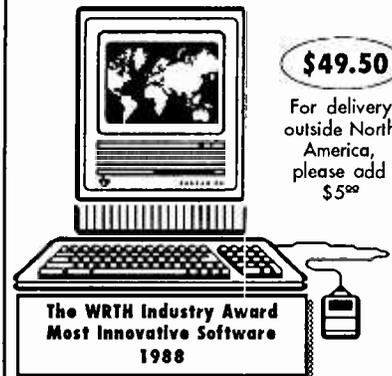
A monitor may have or develop the patience and perseverance necessary to capture new frequencies or listen to interesting radio transmissions; however, without a good data base as a starting point, all the patience and perseverance may be for naught.

Monitoring Times is an excellent point to start searching for material for your data base through the various columns and articles that appear monthly in each issue. And, unlike many other publications, if a mistake occurs in the reporting of information in *MT*, it will be corrected and printed in a future issue.

If you are using *Monitoring Times* along with another source, ask yourself if the data you read in other publications is monitored by the writer or is it second or third-hand? Data that is regurgitated from writings of others or from previous published data seems to have a multiplicity of errors that is exponential in nature.

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I wish each federal monitor good luck and with your patience and your perseverance you will be rewarded.



Simplex, Duplex, Perplex

A suggestion, which came indirectly from a reader, prompts the first topic for this month, specifically, facsimile on VHF. The question which arose related to duplex and semi-duplex operation. Perhaps first we should clarify what is meant by these terms, and also simplex, which is the most common mode of transmission.

Simplex simply refers to two or more stations operating on the same frequency. When one station is transmitting, the other(s) listen. This is the usual case aboard most boats and ships.

Semi-duplex refers to the use of two frequencies. Each station transmits on a different frequency; however, as is the case in simplex transmission, only one station transmits at a time.

Duplex transmission, as with semi-duplex, uses separate frequencies. In this case simultaneous reception and transmission are possible. This is the usual case at coast stations where there is sufficient room for the bulky duplexing equipment, and where separate receiving and transmitting antennae are normally used.

A good example of duplex operation is an amateur repeater, where transmissions received on one frequency are simultaneously retransmitted on another frequency.

The best known use of duplex or semi-duplex transmission in the VHF marine band is for public correspondence -- the handling of telephone calls. Frequently the coast station will retransmit what is received from the ship, as well as the

incoming voice from the landline telephone. The usual frequencies for voice duplex operation are seen in Table 1.

Apart from these frequencies, there are a few two-frequency channels used for harbor control.

Facsimile was the reason behind the reader wanting to know about duplex and semi-duplex operation. On VHF, the only place where one might be able to monitor facsimile would be the public correspondence channels listed above. I have not yet run across any coast stations offering two-way facsimile service on VHF.

If a telephone call were put through to a FAX machine, and the ship had appropriate equipment, FAX messages could be sent. However, except for broadcasting weather and ice maps, facsimile has not yet come to VHF or MF/HF in a major way.

The Canadian Coast Guard does make some scheduled broadcasts of ice information via radiofacsimile on VHF. These are usually made from an ice reconnaissance aircraft using aeronautical frequencies.

It appears, currently, that those vessels needing to send facsimile are either scientific research ships using other frequencies, or else use INMARSAT satellites, which offer direct telephone, telex, and data connections.

Cruise Ship Changes

Since writing the September column on cruise ships, a few changes have come to my attention. To set the record straight, below is a listing of new ships, or ships with new or corrected information.

Carnival Cruise Line

Ecstasy	To be delivered 1990-91	
Fantasy	To be delivered 1990	
Festivale/HPFG		Panama
Carnivale/HOKL		Panama
Celebration/ELFT8		Panama
Holiday/3EYK3		Liberia

Jubilee/ELFK6	Panama
Mardi Gras/3EGN	Panama
Sensation	To be delivered 1990-91
Tropicale/ELBM9	Liberia

Cunard Line

Cunard Princess	Bahamas
Sea Goddess I	Norway
Sea Goddess II	Norway

Epirotiki Lines

Argonaut/SWXZ	Greece
Atlas	Greece
Hermes/SXIP	Greece
Jason/SZLZ	Greece
Jupiter	Greece
Neptune/SXOS	Greece
Oceanos/SZPK	Greece
Odysseus/J4GU	Greece
Orpheus/SXUI	Greece
Pegasus/SWPL	Greece
World Renaissance/SYXQ	Greece

Holland America Line

Nieuw Amsterdam/PJCH	Netherlands Antilles
Noordam/PJCO	Netherlands Antilles

Princess Cruises (P and O Line)

Crown Princess	To be delivered 1990
Dawn Princess*	Italy
Fair Princess*	Italy
Sky Princess	Italy
Star Princess	Liberia

Royal Caribbean Cruise Line

Nordic Empress	To be delivered 1990
Nordic Prince/LAPJ	Norway
Song of America/LENA	Norway
Sovereign of the Seas/LAE82	Norway
Sun Viking/LIZA	Norway

*Sitmar Cruises has been purchased by Princess Cruises with the fleet being merged into the Princess fleet.

Channel	Ship Freq	Coast Freq
24	157.200	161.800
25	157.250	161.850
26	157.300	161.900
27	157.350	161.950
28	157.400	162.000
84	157.225	161.825
85	157.275	161.875
86	157.325	161.925
87	157.375	161.975

Carnival Cruise lines has purchased Holland America Lines cruise and tour operations. However, Holland America will continue to operate as an independent operator.

Oil, Oil Everywhere

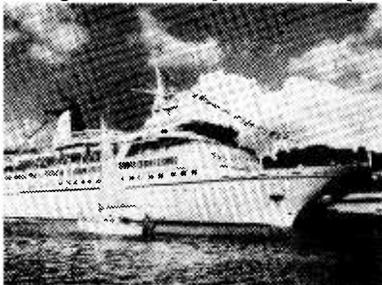
Oil company communications can offer interesting listening. Although when things go wrong it's often routine stuff, it can always become more interesting, as the infamous Exxon Valdez proved. The following represent only a few locations of a couple of oil company offices with transmitter equipment.

Oil Company Transmissions

4.1250 kHz	Mobil Oil Telecom Ltd.	New York, NY
6.2186 kHz	Mobil Oil Telecom Ltd.	New York, NY
8.2942 kHz	Mobil Oil Telecom Ltd.	New York, NY
12.4323 kHz	Mobil Oil Telecom Ltd.	New York, NY
16.5902 kHz	Mobil Oil Telecom Ltd.	New York, NY
22.1240 kHz	Mobil Oil Telecom Ltd.	New York, NY
156.2750 MHz	Amoco Oil	Chicago, IL
156.5000 MHz	Amoco Oil	Chicago, IL
156.5000 MHz	Mobil Oil	Staten Is, NY
156.5000 MHz	Montauk Oil Transportation	New York, NY
156.5500 MHz	Mobil Oil	Staten Is, NY
156.6000 MHz	Amoco Oil	Hornsoyville, VA
156.8000 MHz	Mobil Oil Telecom Ltd.	New York, NY
156.8000 MHz	Morania Oil Tanker Company	New York, NY
156.8000 MHz	Mobil Oil	Staten Is, NY
156.8000 MHz	Morania Oil Tanker Company	New York, NY
156.8000 MHz	Montauk Oil Trans	
156.9500 MHz	Oil Transport. Co.	New Orleans, LA
156.9750 MHz	Morania Oil Tanker Company	New York, NY
156.9750 MHz	Gulf Oil Corporation	Memphis, TN
157.0250 MHz	Mobil Oil Telecom Ltd.	New York, NY

Oil transportation has become important to our society, and tankers come in all shapes and sizes, from fueling barges to gargantuan supertankers capable of carrying over half a million tons of crude oil. These ships are so large that radio is even used for on-board communications. Tankers will be found on virtually every major shipping route, but the Middle East sees particularly heavy tanker traffic.

When monitoring the oil ships, especially when an accident has occurred, marine emergency frequencies, Coast Guard, and other frequencies must not be forgotten. Emergency Measures groups may be activated and other agencies often become involved in the salvage and subsequent cleanup.



Good listening until next time.



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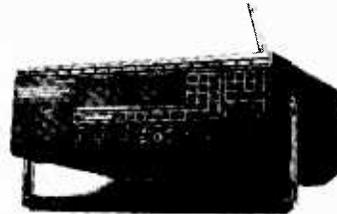
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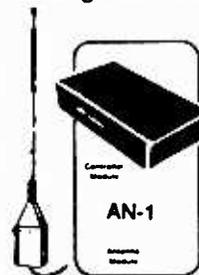
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Goodie List for Ike

Every year about this time I get to feeling a little "Christmasy." You see, during the past twelve months, I've had the chance to play with a lot of really neat ham gear. Come November, I begin to think about it lying under my tree!

In some cases, I can't wait for Christmas. First on my list for this year was a really fantastic 2 meter HT. I had been in need of a new two meter HT for about a year, so when I saw the Alinco DJ-100T at the Rochester hamfest, I decided to spring for it.



I hadn't heard much about this little rig back then but had used its big brother, the AL-22HT high power mobile rig, for some time and was very pleased with it. The DJ-100T was selling for well under 300 bucks, had a 6 watt power option, was small and looked good, and its ten memory channel made it just right for my needs.

The normal battery pack provides a bit over 3 watts of power on the high power position and a quarter watt on low. The high-power pack will push out about 6-1/2 watts. On the Bird watt meter mine put out just a bit under 6 watts with the heavy duty battery pack. Plenty for an HT and with my half-wave MFJ telescoping whip allowed me to work all the local repeaters with ease.

The big feature about the DJ-100T is the receiver. It is without a doubt one of the best I have ever used. This little rig will outperform almost every other rig I have heard. At one particular location both of my high priced two meter rigs are useless due to high RF fields causing lots of intermod problems, but the DJ-100T kept right on working without a glitch. The sensitivity of the unit is excellent.

A touch tone pad, CTSS encoding, and a five inch rubber ducky are standard fare on the DJ-100T. I like the small antenna for it does an adequate job on most of the repeaters. One add-on feature that I like a lot is the earphone mike that Alinco sells. The mike pins to the lapel, and the earphone fits into the ear. Sorta makes you look like a cop or secret service type, but sure is handy, and the mike does an excellent job.

In addition the DJ-100T can easily be put onto MARS or CAP frequencies. All you need do is write Alinco and send a copy of your authorization to operate these frequencies to receive the info.

The audio output of this unit is under half watt, and difficult to use in mobile conditions; that is why I went for earphone mike. One other feature that is lacking on the DJ-100T is the ability to scan.

All in all the DJ-100T is a lot of rig for the money. It is extremely rugged. Mine survived a 100 mile canoe trip, and provided communications from extremely difficult locations (bottom of a river valley with mountains several thousand feet on each side). Its a real bargain! Available through ham radio dealers everywhere.

Digitrex

Is a name that is becoming well known within the amateur community. I have been using two of their products for some time now and highly recommend them.

Their PA-19 Wideband Preamplifier was installed in a old Hammarlund HQ-145 that is used for shortwave listening and monitoring the ham bands. Before installing the PA-19, I don't think I heard a half dozen signals on ten meters with this rig.

With the PA-19, however, the ten meter band came to life -- as did all of the bands above 20 MHz. In short, this unit can make the difference between hearing a signal and not hearing the signal. The PA-19 operates from 0.5 to 200 MHz. While I did not use it at 200 MHz, I can report it works great at 6 meters and put new life into an older Gonset 6 meter sidebander. The PA-19 is well worth the \$18.95 price.

At the same time that I obtained the PA-19, I picked up one of Digitrex's PFC-4500 micro miniature frequency counters. I needed a portable frequency counter and could not find anything as small (both in size and price: \$59.95.) This little unit will sit in the palm of your hand with ease.

It operates from 1 to 500 MHz with a 1 kHz resolution, has four digits, switchable to six and has a sensitivity of 20 to 200 millivolts at the upper and lower band edges. Power is from one 9 volt battery. Size is 2.6 x 1.6 x 1.2 inches. In addition the unit can be easily modified (parts included) to cover up to 1300 MHz!

With a quarter watt out of my 2 meter HT I was able to read the frequency at a range of about ten feet without trouble (when using a half wave whip on the counter.)

Digitrex makes several other pieces of gear for hams, among them a neat two meter transmitter and a low power HF transceiver. Write for their catalog to Digitrex Electronics, 1005 Bloomer Road, Rochester, MI 48063 -- tell em *Monitoring Times* sent you.

The Radio Operators World Atlas

Walt Stinson, W0CP, did radio people a great favor when he put this little book together. *The Radio Operators World Atlas* is published by Graphic Learning International

Publishing Corporation of Boulder, Colorado.

This \$14.95 book contains a wealth of information about every country in the world, slanted towards the radio operator. Consequently it has a lot of information about little known areas of the world that other atlas' overlook. Another big plus for this book is its size, measuring in at only 7-1/4 by 5-1/4 by 5/8th inches which sits nicely on any desk. Don't worry about the print or map sizes, they are quite legible and easy to read.

The Radio Operators World Atlas is available from Walt Stinson, W0CP, 4150 E. Quincy Ave., Englewood, Colorado 80110.

The Little Green Box

Our old friends at Heath Kit have put together one heck-of-a rig in the HW-9! Rated at four watts of output on 80 through 10 meters (3 watts at 10) CW only, the HW-9 does a terrific job. An optional band kit allows operation on 30, 17 and 12 meters, too.



The HW-9 features full break in keying, superhet receiver and broad band tuning. The receiver is very sensitive and the built in audio filter (1kHz and 250 Hz) provides adequate selectivity for fighting QRM. RIT (receiver incremental tuning) permits the operator to tune up to 7 1 kHz off the transmitted signal, making it easy to copy a signal that is not exactly on frequency.

Sensitivity of my receiver is about .4 microvolt for a 10dB S + NN and a .1 microvolt signal produces a readable signal (Heath claims .5 and .2 microvolt signals respectively).

My HW-9 has accounted for 130+ DX countries and all states in a three year period. For the most part I never feel the need for more power when using the HW-9.

The kit is not easy to build, packaging is quite dense with all components being mounted on one board. It is not a first time kit, but I would say anyone who has built one or two kits and takes his time would be able to assemble the HW-9. Two worthwhile accessories are the HFT-9 transmatch and HM-9 power meter.

Available from Heath Company, Benton Harbor, Michigan. Price on the HW-9 was \$249.95 at the time of this writing, the HFT-9 and HM-9 were \$49.95, I suggest you check

the latest catalog though, as there may be a price increase by the time you read this.

MFJ

MFJ has been producing products for the Ham and SWL for many years. If you do not have their catalog I urge you to write for it. Let me tell you about two of their products that I have been using for some time and enjoy a great deal.

The first is the model MFJ-752C Signal Enhancer II. This unit is two tunable audio filtering systems and designed to clarify and eliminate QRM from SSB, AM and CW or RTTY signals. The primary filter is a two-section, four-pole variable filter and has peak, notch, low pass and high pass functions. There is also a auxiliary filter which is a single section two pole peak or notch filter. Using the two independent filters together allows the operator enormous flexibility in filtering signals.

There have been many times when use of this system allowed a contact to take place that simply would not have been possible without it. Users of modest equipment will especially benefit from this filter. Even users of the super rigs will often find the Signal Enhancer II to be a godsend.

The second device that I really like is the MFJ-1270B Packet TNC. This TNC features both VHF and HF packet modems, Easy Mail (personal mail box) and the unit allows the user to copy WEFAX pictures. At a price of only \$139.95 this is a lot of performance. Mine has been in nearly daily operation for over a year and performs without a glitch.

MFJ products are available from MFJ Enterprises, Inc, P.O. Box 494, Mississippi State, MS 39762.

Radio Shack HTX-100

Last but far from least is the new Radio Shack HTX-100 ten meter transceiver. This 25/5 watt rig will let you operate SSB and CW on ten meters. It features broad band tuning, an audio filter on CW, adjustable tune rates of 10,1, or .1 kHz. Adjustable RF gain, squelch, scan from the mike, a noise blanker (that works) real jacks for the CW key and headphones and covers from 28 to 28.97 MHz.



The HTX-100 puts out a very good sounding SSB signal. On CW the keying is clean and crisp, and the built in monitor makes sending easy. My own HTX-100 has been in service for just about one year, and I have had SSB QSO's on every continent, about 35 states and 50 DX

countries, all with nothing more than a five foot loaded whip on the trunk of the car!

To top it off the HTX-100 is small enough to fit in even the most compact car and sells for well under \$300.00 -- see it at your local Radio Shack and tell 'em you read about it in "MT".

DX News

XT2PS, Peter will be active for about two years from Burkina Faso. Look for him around 21265 kHz at 2300 UTC, also around 14210.

KN0E/KH3 Johnston Island, will be active for the next year. Look for him on 1832 kHz at 1130Z, 23405 kHz at 1145Z, 7003 kHz at 1115Z, 14024 kHz at 1030Z and 21025 kHz at 0230Z. Peter will be especially active in contests. QSL via K9UIY.

The USSR has reactivated the MIR space station and by the time you read this two meter QSO's with space may again be a regular thing!

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THE ENGINEERING COMMUNICATIONS TECHNOLOGY ACT OF 1989

Appears to be a dodge by the LAND MOBILE industry to grab frequencies from hams by circumventing the normal process of requesting the FCC to grant them a given set of frequencies.

The office of the Subcommittee on Telecommunications and Finance is in the process of drafting a bill (no number yet) entitled "The Engineering Communications Technology act of 1989." The general gist of the act is that under its provisions the NCS (National Communications System) will provide a list of spectra which the military and other government services hold in reserve and are not using at the present time. This will be everything from DC to about 10 GHz, and specifies that the list of available frequencies be prepared by the end of one year from enactment.

From that list, Congress, or a committee appointed by Congress, is expected to choose some 200 MHz for reassignment to commercial interests.

Amateurs should be vitally concerned with this act because the frequencies which will be opened up for reallocation include all ham bands above two meters! All of these bands are used on a shared basis with NTIA, NCS, or both. Potentially all of the amateur bands above two meters can be lost!

Think of what this would mean to the amateur community. All of the bands above two meters would be unavailable for use to us. Even the exclusive satellite bands at 435 to 438 and 1.2GHz would be lost.

I urge everyone reading about this act to write to Congressman Edward Markey (D-MA). In your letter, please SPECIFY that, when the bill is introduced, it must EXEMPT the Amateur utilized spectra from being targeted for reassignment to commercial interests. Don't wait 'til it's too late, write now and make our voices heard; we have too much to lose (via 220 NOTES/Chicago).

That's all for this month, have a good holiday. 73, Santa



Belgium

B.R.T., 9925 kHz. Full data color card of "View of the Grand Place Brussels," without verification signer. Received in 60 days for an English report. Station address: P.O. Box 26, Brussels, B-1000 Belgium. (John Miller, Thomasville, GA)

Cameroon

Radio Cameroon, 4850 kHz. Full data printed letter and photograph. Verification signer, James Achany Fontem. Received in 82 days for an English report. Station address: P.O. Box 751, Ebolowa, South Province, Cameroon. (Nick Grace, Harvard, MA)

Costa Rica

Radio for Peace International, 13660 kHz. Full data QSL card with station logo. Verification signer, James Latham, Station Manager. Received in 46 days for an English report and two IRCs. Station address: P.O. Box 88, Santa Ana, Costa Rica. (Robert Landau, Secaucus, NJ) (Fraser Bonnett, Kettering, OH)

Czechoslovakia

Radio Prague, 7345/5930 kHz. Aerial view of Svihov Castle, with illegible verification signer. Received in 72 days for an English report and one IRC. Station address: 12099 Praha 2, Vinohradska 12, Czechoslovakia. (John Carson, Norman, OK) (Gregory Grushko, Chester, NY)

Ecuador

HCJB, 9585 kHz. Partial data QSL letter. Verification signer Vladimir Kulakov. Received in 32 days for a Russian report and three IRCs. Station address: Box 691, Quito, Ecuador. (Gregory Grushko, Chester, NY) (Jack Waterman, Mundelein, IL)

Egypt

Radio Cairo, 7255 kHz. Partial data QSL card, with illegible verification signature. Received in 90 days for an English report, and two IRCs. Station address: P.O. Box 1186, Cairo, Egypt. (Fraser Bonnett, Kettering, OH)

India

All India Radio, 11620 kHz. Full data QSL card, without verification signer. Received in 55 days for an English report and three IRCs. Station address: External Services Division, P.O. Box 500, New Delhi, India. (Gregory Grushko, Chester, NY) (Fraser Bonnett, Kettering, OH)

Iran

Voice of the Islamic Republic of Iran, 15084 kHz. Full data paper QSL (confirmation in Spanish), without verification signer. Received schedules, English magazine "Echo of Islam," Spanish language excerpts from Khomeini speeches, and Khomeini pennant. Received in 84 days for a Spanish/English report. Station address: P.O. Box 19395/3333, Tehran, Iran. (Robert Landau, Secaucus, NJ)

Jordan

Radio Jordan, 13655/9560 kHz. Full data station logo card with hand stamp for verification. Received

As we head into the winter months, readers in northern climes may enjoy a taste of summer below the equator! (from Gert Rudolph Jahncke of St. Leonard, Quebec)



in 30 days for an English report and one U.S. dollar. Station address: P.O. Box 909, Amman, Jordan. (John Miller, Thomasville, GA) (Nick Grace, Harvard, MA)

Libya

Radio Jamahiriya, 15235 kHz. Full data QSL card, without verification signer. Received in 110 days for an English report and three IRCs. Station address: P.O. Box 17, Hamrun, Malta. (Gregory Grushko, Chester, NY) (Fraser Bonnett, Kettering, OH)

Mexico

XEWW-OC, La Voz de la America Latina, 9514 kHz. Full data QSL card, personal letter and "XEW" pennant. Verification signer, Miguel Angel Barrientas, V. Received in 93 days for a Spanish report. Station address: Sistema Radiopolis, Ayuntamiento Num. 52, 06070, Mexico City, D.F., Mexico. (Nick Grace, Harvard, MA)

Panama

HPP, 8589 kHz. Full data QSL letter, with an illegible signature. Received in 31 days for an English utility report. Station address: Panama Intelmar Radio/HPP, P.O. Box 2009, Balboa, Panama. (Nick Grace, Harvard, MA)

Pirate

Radio Angeline, 7415 kHz. Full data QSL card, without verification signer. Received in 13 days for an English report and three U.S. mint stamps. Station address: P.O. Box 40554, Washington, DC 20016. (Fraser Bonnett, Kettering, OH)

The Voice of Stench, 7415 kHz. Full data QSL letter, with verification signer. Received in 22 days for an English report and three U.S. mint stamps. Station address: 3007 R, 4th Avenue, Beaver Falls, PA 15010. (Fraser Bonnett, Kettering, OH)

Portugal

Radio Portugal International, 9680/11840 kHz. Full data QSL card of ancient map and ship, without verification signer. Received in 212 days for an English report and two IRCs. Station address: Radiodifusao, Portugesa, Rua S. Marcal 1, 1200 Lisboa, Portugal. (Randy Bradford, Bellevue, NE) (Robert Landau, Secaucus, NJ)

Seychelles

F.E.B.A.-Mahe, 11810 kHz. Full data QSL card with verification stamp from QSL secretary and program schedule. Received in 51 days for an English report and three IRCs. Station address: Box 234, Mahe, Seychelles, Indian Ocean. (Randy Bradford, Bellevue, NE)

Ship Traffic

NICOPOLIS-ELCW3, 500 kHz. Tanker. Full data prepared QSL card verified and ham QSL with ship. Received for a utility report and one IRC (which was returned), and return postage. Ship address: M/T Nicopolis, United Operators Shipping Agencies, 660 Madison Avenue, New York, NY 10021. (Hank Holbrook, Dunkirk, MD)

KASTNER-GJGV-500 kHz. Bulk Ore Carrier vessel. Full data letter. Received for a utility report and one IRC (which was returned) and return postage. Quoting in part from a fine letter, "It is sad that nowadays the 500 kHz is seldom used, most ships are equipped with satellite or telex direct to shore stations, it looks as though the 500 kHz has had its time, which is still an emergency frequency for ships in distress, together with 2182 kHz for telephone." Ship address: Fundy Gypsum Co., Box 398, Hantsport, N.S. BOP 1 PO, Canada. (Hank Holbrook, Dunkirk, MD) *This was Hank's 519th British ship QSLed! Kudos OM!-ed.*

BAUCHI-ELFP3-500 kHz. Bulk Carrier vessel. Full data prepared QSL card verified. Received for a utility report, one IRC and return postage. (They kept the IRC, but no postage on the envelope.) Ship address: Peninsular Electronics, 13-17 Long Lane, London, EC1A X 9 PN, England. (Hank Holbrook, Dunkirk, MD)

BULKPLOTUS-IBYS-2181/2118 kHz. Bulk Carrier vessel. Full data prepared QSL card verified. Received for a utility report, one IRC (returned) and return postage. Ship address: Capo Falcone Societa Di Navigazione Spa, Vido Giannini 2-6, 1-6124 Genoa, Italy. (Hank Holbrook, Dunkirk, MD)

Syrian Arab Republic

Radio Damascus, 15095 kHz. Full data white logo card with map and tower picture. Illegible verification signer. Received in 170 days for an English report and three IRCs, and a cassette recording. Address: Ommayad Square, Damascus, Syria. (John Carson, Norman, OK)

Tahiti

R.F.O. Tahiti, 15170 kHz. Partial data QSL card, without verification signer. Received in 42 days for an English report, two IRCs and a cassette recording. Station address: Boite Postal 125, Papeete, Tahiti, Society Islands. (Randy Bradford, Bellevue, NE)

USSR

Armenian SSR-Radio Yerevan, 15180 kHz. Partial data QSL card, without verification signer. Received in 53 days for an English report. Station address: 5 Mravian St., Yerevan 375025, Armenian SSR, USSR. (Randy Bradford, Bellevue, NE) (Robert Landau, Secaucus, NJ)

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Digital Voice

Last month I told you about a new 16 tone data mode that is used by the military. Since then I have discovered that this mode is listed in the CCIRR report #864-1, volume III. The CCIRR books are available from Omnicom Inc., 115 Park St. S.E., Vienna, VA 22180 (just around the corner from EEB). Volume III covers HF radio and costs about \$40.00.

Strange Interference on the Ham Bands

While driving home from work one evening, I heard what sounded like a buzzsaw on the 20 meter amateur band on 14.188 LSB. Some hams were complaining about the interference and didn't know what it was. When I got home I recorded the sound.

The next day I played the cassette recording back into a spectrum analyzer and I immediately recognized it as the 16 tone system (mentioned above). I don't know why the military is using the ham bands for test purposes when they have most of the HF spectrum available to them.

Voice Channels, Are They Really Secure?

From time to time I have the opportunity to converse with persons that are involved in the "High Tech" electronics industry and according to them voice is a difficult thing to scramble.

The technical aspects are very complex and are far beyond the scope of this column. However, I would like to discuss some insights on a form of communications that has intrigued shortwave listeners and scanner enthusiasts alike.

One system which involves voice transmissions is used by the Navy. They usually transmit voice in the clear and can be found just about anywhere on the HF bands. When they have the need for privacy, they use the code word "Go

Green" and all that you'll hear from that point on is something that sounds like phonograph records playing backwards at twice the speed.

This system, so I'm told, is very easy to decode and the military uses it as a privacy mode instead of a secure link. It takes the human voice and chops it up into little segments. The segments are scrambled and turned up-side-down by the encoder. The receiving end knows how to unscramble the voice by using the reversed process. It's a lot like taking a set of playing cards and shuffling them but the players have the task of unshuffling the deck.

The problem with this system is that some of the cards, when grouped together, contain the key which tells the players how to unshuffle the deck. Like the playing cards, the key that is contained in the human voice is called the "Harmonics."

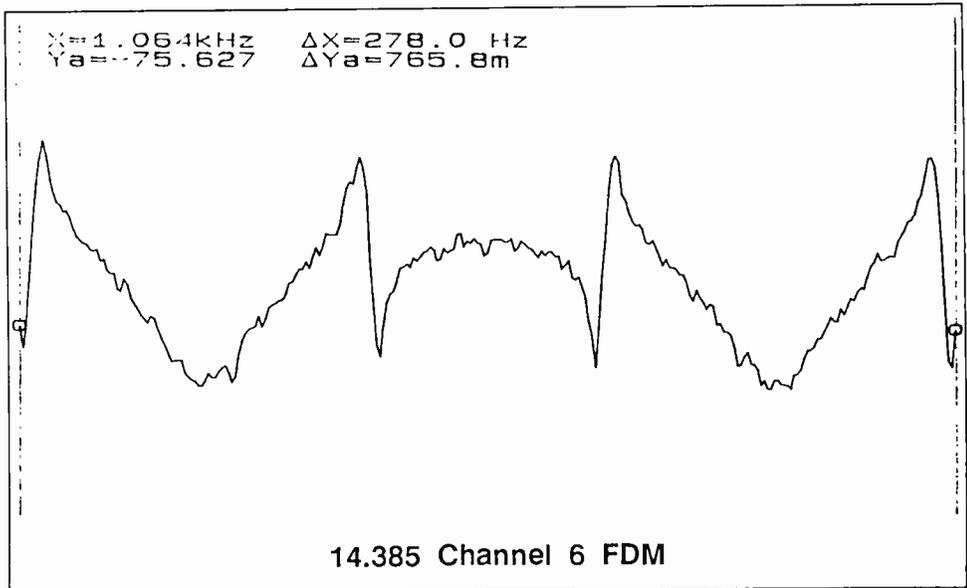
Harmonics are simply the multiples of a fundamental frequency. Two thousand Hertz, for example, is the second harmonic

of one thousand Hertz. Each harmonic in the human voice has a certain amplitude and these amplitudes vary from person to person. That's how we can recognize each other by the sounds of our voice.

You are probably wondering, "Why is he talking about voice in an RTTY column?" Well, scrambled voice is a form of digital communications and RTTY is a digital signal. But unlike voice communications, once RTTY or any data mode is scrambled, it's very difficult to unscramble.

With scrambled voice, the harmonics are also stuck together and the distinct aural signature is still intact. With the proper software and a personal computer, it is possible to analyze and unscramble sound using the information contained in the harmonics. This, I believe, is one of the reasons for the recent protest by the military of the sale of "High Tech" equipment (such as personal computers) to the Soviet Union.

NNN



IS IT BATMAN? No! This is what a single channel of an FDM (Frequency Division Multiplex) RTTY signal looks like on a \$25,000 Hewlett Packard audio spectrum analyzer using a Sony ICR2010 on 14.385 MHz.

Ten Most Asked Questions on SCPC

Well, actually the first question is "What is SCPC?" But since I'll give a brief description of it here, we won't count it.

Single Channel Per Carrier is a method of transmitting a signal via satellite using extremely narrowband technology. How narrow is it? Using the same bandwidth that a video signal needs to occupy, one can crowd dozens of SCPC signals and still have plenty of room for space between each signal.

The single channel part comes from the fact that each signal is self-supporting by way of its own carrier. FM subcarriers such as those found on G3,11 (the Jones intercable services) require the presence of the Mind Extension University carrier to "ride" up to the bird and back.

If Mind Extension becomes Mind Blown, then Jones Intercable disappears. That's why you won't find video on the major SCPC channels; each SCPC service is independently transmitted.

Here He Goes Again

Last month a good deal was said on the subject of the Heil SC-One and SCPC transmissions. There is so much on the subject that I am compelled to return to it. This time I'll answer the ten most asked questions about SCPC.

1. Q: What is the smallest dish I can get away with to hear SCPC?

A: Just because we're not watching video doesn't mean we get to scrimp on equipment. In fact, in some cases, better gear is more critical.

Those living in the center of the U.S. from southern Illinois to Colorado can use dishes as small as four feet in diameter and get good results. Others living in areas further away from the center of the satellites' "footprint" will not be so lucky. Larger reflecting surfaces are in order.

No matter what you want a satellite system for, look for the following in a dish: High surface accuracy; tripod or quadropod feed horn supports are essential for feedhorn stability; and heavy duty polar mounts with grease fittings are signs of good construction. And, finally, remember that, given the above, audio or video, the bigger the better.

2. Q: Do I need a motorized dish for SCPC?

A: Not necessarily. Radio stations which receive network feeds via SCPC don't usually use motorized dishes. Such a "dedicated" terminal would be cheaper initially but would require one to make difficult decisions about which satellite to fix upon. While most news

and Public Radio feeds are on W4, most major league sports are on G2. In addition, there are at least four other satellites which have less comprehensive but no less interesting listening. One may elect to add the motor later so as to keep initial costs down.

3. Q: Do I have to buy special gear for SCPC reception?

A: It depends on what you have. If you have a 950-1450 block downconversion system with a 70 MHz loop on the back of the receiver, all you need is a splitter and a portable radio such as the Portavision 40 (available at Radio Shack for \$39.95).

Simply split the signal from the 70 MHz loop. Put one lead back into the satellite receiver via the 70 MHz IN for normal use and attach the other lead to the antenna of the portable radio. Tune the satellite receiver to an SCPC channel such as W4,3 and tune the low band (channels 1-6) on your radio. You'll hear dozens of SCPC signals and you may never watch TV again!

If you have one of the latest short wave receivers such as the ICOM 7000, you can also receive SCPC. You'll need a dish, LNB, separate power supply for the LNB (this is already built into a regular satellite receiver), feedhorn with polarotor and the necessary wire to get from your dish to your receiver. Expect to pay about \$500 to get SCPC on your 7000.

If you already have both a dish and an ICOM 7000, simply split the signal before it gets to the satellite receiver. Feed one leg to the satellite receiver and the other (with a DC block) to the antenna input on the 7000. Tune the 7000 between 950 and 1450 MHz and you'll hear SCPC. Make notes of where you've found what, just like in shortwave listening.

4. Q: Can I receive stereo SCPC?

A: Sure, but there are some obstacles. First, not every programmer or network has stereo programming. And, in order to receive stereo, you'll need two SCPC receivers. That's because as with FM audio subcarriers on satellite the left and right channels are sent on different frequencies. Usually the two channels will be close together.

5. Q: Where can I get a list of frequencies?

A: You can't. In the first place, there may be hundreds of services using SCPC to feed their programming. Secondly, much of it is seasonal, as with sports, or occasional, as with news. By the time frequencies and times were published and distributed, it would almost all be wrong. There's no substitute for going through each transponder of each satellite and taking notes.

6. Q: I have an older LNA down-conversion system. Can I still get SCPC?

A: Maybe. The older systems used a scheme that wound up with a 70 MHz IF fed directly into the satellite receiver. The down-converter, in this case, is powered by a separate power cable. The LNA system I once had could be used for SCPC but a side effect left me with a horrific buzz in the audio, attributed to poor power supply filtering, that could not be removed and drove me to get a block down system. Good luck!

7. Q: Are there any SCPC channels on Ku band satellites?

A: Yes, Satcom K2 channel 2 is said to have half a dozen SCPC signals present. They range from religious programming and contemporary rock to the Physicians Radio Network.

8. Q: I'm interested in commercially manufactured SCPC gear. What's available?

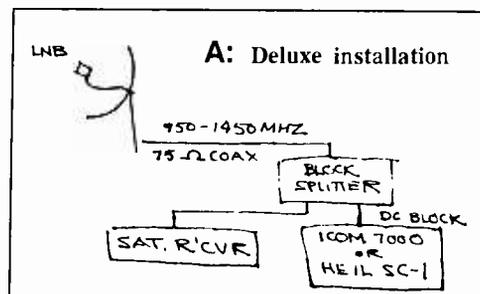
A: You might look in the *Broadcasting Yearbook* in the library for sources of commercially made SCPC gear. The big problem with such gear is that it is extremely expensive. You may expect to pay \$5,000 for the receiver. For the TVRO experimenter, you can't bear the \$40 portable radio.

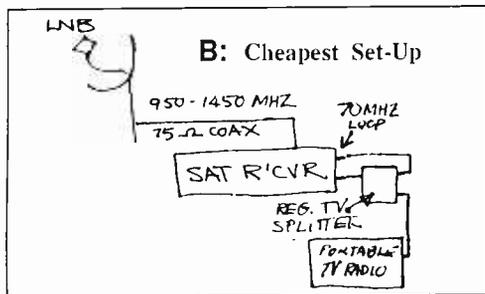
9. Q: Why do I have to keep retuning my SCPC radio?

A: Mostly the problem has to do with LNB quality. For video purposes, all LNBs made these days are relatively drift free. Your satellite receiver won't show any appreciable change in the video. However, SCPC involves extremely narrow-band reception and a lesser quality LNB will exhibit more drift.

Line loss may also be a problem. Radio stations often use 1/2" hard line to feed their SCPC receivers from their LNBs. This is an expensive proposition for home TVRO. Finally, there's the old backlash syndrome which is common in all analog tuning receivers in which an antique string and wheel assembly drives the mechanical tuner.

10. Q: Please draw a block diagram for a TVRO SCPC set up.





Mailbag

In the July 1989 issue of *MT*, I wrote about TVRO only FM subcarriers and two in particular. They were K-SAT, run by Chuck Dawson, and FM America, run by Keith Lamonica. These two enjoyed a certain popularity and nearly slavish devotion among home dish owners the likes of which has yet to be repeated.

Among the responses to that column were two letters which were so well thought out and sincerely expressed that I'm bound to relay them here with some editing.

Jon S. VanAllen, WB7OWL, of West Jordan, Utah, wrote of his recollections of FMA's Keith Lamonica, W7DXX:

"... He ran a great little HF remote base from his 145.43 repeater. This was an SSB link and everyone was encouraged to use it (at no charge). Same with the 2M auto-patch. As with everything else equipment-related, all the W7DXX (gear) was located at his home, which was across the street from the Skaggs Telecomm Satellite facilities... His garage was converted into a studio and was full of state of the art equipment. As a student of Broadcast Engineering at the time, I spent as much time as was possible learning technical info from him, while still not wearing out my welcome!

"He also ran a ham radio awareness call-in program on Sunday afternoons. He probably converted quite a few dish owners to ham radio this way, so although he became abusive on the air at times, he was a plus to the growth of amateur radio if nothing else.

"Keith also disappeared as fast as he appeared. One day I went by to see why the repeater wasn't working and found an empty house with no antennas! I was stunned to say the least... Very strange indeed."

Loren Cox, Jr. of Lexington, Kentucky, wrote the following observations:

"... Dawson did not start K-SAT with the idea that it would be a money maker; it would be a means of personal enrichment. The most he hoped for was enough industry and individual support to permit the operation to break even... K-SAT turned out to be more costly to Dawson personally than he probably originally anticipated. Significant industry support was not forthcoming.

"As for the Lamonica-Dawson feud: neither gentleman was wholly blameless, but by far the greater part of the blame must go to Lamonica,

a man who found himself in a situation he was intellectually incapable of handling, in addition to having the burden of his obvious psychological problems. FMA had a lot of possibilities both as an entertainment and information medium, but Lamonica blew it.

"... My main problem with Dawson and the K-SAT "Army" was their right-wing populist political orientation. If they love anything more than their satellite "dishes," it would have to be their gun collections..."

Transponder Notes

Starting this month, Viacom Satellite and Conus Communications will launch a new 24-

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hour news channel. Marketed directly and only to home dish owners, it will be the first competition CNN and Headlines news has known. Sources say news, sports, weather, business, and feature material will run in a cyclical schedule in a thirty minute cycle.

The 1990 *World Satellite Annual* written and compiled by Mark Long is now available. This is a must for serious TVRO experimenters. Buy it directly from MLE Inc., P.O. Box 159, Winter Beach, FL 32971, or through the STV Bookstore at 800-234-0021. Expect the price to be about \$40 plus shipping.



. . . And All That



How would a jazz musician describe Heaven? Playing an all night session with Charlie "Bird" Parker? Going back in time to join the Duke Ellington Orchestra? Completing a trio with Dave Grusin and Lee Ritenour? How about being able to visit a jazz club that is always open and always hot?

WJAZ in Stamford, Connecticut, may be even better! Twenty-four hours a day jazz lovers just tune to 96.7 FM to hear the groove, and they don't even have to leave home!

Rick Petrone is the father of WJAZ. There is usually a smile below his mustache, and he has good reasons to be happy. He has created a very successful radio station, with an extremely loyal audience.

The format was developed over ten years by trial and error. Rick used to play jazz before University of Connecticut basketball and Yale football coverage as a novelty back when the station was known as WYRS. The owner of the station was very old and trusted Petrone's instincts.

When the station was sold three years later, the new owners suggested scientific audience research. "You can't go into a club and play whatever you want. You have to know your audience to please your audience," Rick discovered. "We're our own best competitor. You have to be when you air an alternative format."

Once a year listeners send in the titles of their top three favorites to be compiled into the "WJAZ Top 96" special. A "Comment Line" is available for phone-in suggestions. The response is important. "If I see a trend, I go with it," notes Petrone. "We have quality listeners, and they listen for long periods of time."

When the station became all jazz in 1981, it was very eager for attention. The first annual WYRS McDonald's Big Band Festival was held, the "Jazz on the Beach" concert series began, and General Manager Warren Lada danced the hula in a snowstorm on The Ferguson Library steps in downtown Stamford.

How could you not notice that?

WJAZ is hardly a one-man station. Rick Petrone is on the air from 3 to 6 p.m., and his old friend and assistant, Ray Lamm, does "morning drive" from 6 to 10 a.m. Ray helps program the station and worked there before the first jazz record was played.

WJAZ listeners also enjoy Pam Landry middays and Yolanda Benton at night. "We have lots of women on the air, and they really know what they are doing. Because they're good broadcasters, they know it better now than when they got here. Jazz was new and different to them, and they had to learn how to pronounce names and learn jazz history. The station now is mostly music, so there is less talk, but they still do a great job," Rick says proudly.

The excitement of WJAZ doesn't end when you turn off your radio. The station has become the cultural center of the local jazz community. Not only is it a good place to hear what other musicians are playing, it's a good place to find out where they're playing. WJAZ announces who is appearing at clubs in their listening area several times a day, and you can call the station's hot line anytime.

WJAZ also brings the musicians to the listeners, free, all year long. Their "Jazz on the Beach" series fills many afternoons with pleasure. "It's really exciting to see a C.E.O. sitting next to someone unemployed and they are both having a great time," says Petrone.

Although the WJAZ audience is primarily 30 to 60 years old with more expendable income than most, Rick describes his audience as "loyal, almost maniacal. They know what they like and they really let us know." Since the station has only 3,000 watts of power in the crowded New York City market, listeners are buying super antennas and receivers to receive the station. Petrone has also started "The

Company Store" where you can mail-order WJAZ tote bags, sweatshirts, mugs, and other memorabilia.

This month WJAZ changes ownership from Chase Broadcasting of Stamford to The Forrest Broadcasting Company. Fingers are crossed that this center for jazz will continue to play.

Go West, Jazz Man!

Probably the granddaddy of all jazz stations is KKKO in Los Angeles. They have developed quite a rapport with the jazz community during the past thirty years. "We divide jazz into two categories: electronic-contemporary and acoustical-traditional. Our music has to have a steady beat and lots of melody."

Operations Manager Cal Milner explains that "You have to carve out your own niche and sound. We play for a special audience, not mass appeal."

Both KKKO and WJAZ share a common strategy: if you are in an area with many radio stations, you must find your audience and cater to it. KKKO considers itself the official jazz radio station for Los Angeles. They produce three annual jazz festivals and numerous live remote broadcasts from clubs. They also rely on newspaper advertisements and TV spots to convey their message.

United Cable of Tulsa, Oklahoma, distributes KKKO nationwide via satellite, as a cable FM service. "We are only heard in areas that don't already have a jazz station. We don't want to compete with local operations," Milner says. "Los Angeles has a need for jazz. KKKO propels the art form."

Two of KKKO's disk jockeys are almost as legendary as the station itself. Chip Gosa (2 to 6 p.m.) and Chuck Niles (6 to 10 p.m.) have been spinning the tunes for over twenty years.

On Sunday evenings, the station tips its hat, or sombrero, to the neighboring countries to the south. Latin sounds are heard from 8 p.m. to midnight, mixing Mexican, Latin American, and Brazilian rhythms.

The future of KKKO might also be in jeop-



Program Director Rick Petrone personally selects everything that is played on WJAZ



DJ Derek Reed in the WJAZ studio



Chief Engineer Chris Tobin at the transmitter control room of WJAZ



ardly. Recently, Los Angeles lost its only commercial classical station, KFAC, to new owners who are turning it into a rock station. The price was a cool \$55 million. The pressure is now on KKKO to add some classical segments to its format to compensate for this change. Only time will tell, but jazz listeners have already made it clear to KKKO's owners they want the jazz to stay. Stay tuned!

Besides KKKO and WJAZ, many other stations program jazz, especially public radio outlets. Try their different sounds tonight, and remember, "It don't mean a thing if it ain't got that swing!"

Bits and Pieces

✓ As fall turns to winter, excitement grows on your AM radios. The best time to hear stations from lands afar is during the colder months. Signals travel much farther at night on mediumwave, but one of the best times to listen is at dawn and dusk. Your radio will sound like you are flying in an airplane. The signals will change that quickly. You never know what you will hear. As darkness comes and goes, a variety of signals will hit the atmosphere and find your radio. Try listening to a frequency that doesn't have a local station on it while driving to or from work. You may hear some interesting things.

✓ Have you heard a new network on the air lately? The United Stations Radio Group has merged with Stargroup Communications. Their Unistar Radio Network has more than 3,000 affiliates, the second largest in the United States. The ABC Radio Networks is the largest. (ABC Radio Networks is actually seven networks: Information, Contemporary, Entertainment, Direction, Rock, FM, and Talkradio. This clever marketing ploy gives ABC the opportunity to sell their services to as many as seven stations in one area.)

✓ Who are the most popular disk jockeys around? According to a recent Arbitron survey, Ross Brittain and Brian Wilson are. They are hosts of the WHTZ "Z Morning Zoo" in New York City, heard by 1.5 million listeners a week. Number two was Jim Kerr of WPLJ, a competitor of "The Zoo." Jim was recently fired for low ratings! Rounding out the top five are Rick Dees of KIIS, Los Angeles; Harry Harrison of WCBS-FM, New York City; and Jay Thomas of KPWR, Los Angeles.

✓ Gerald Turro, owner and operator of FM translator W276AQ in Fort Lee, New Jersey, is asking the FCC for a waiver of current regulations to allow him to air his own programming on his one watt station. The station now

rebroadcasts WALK-FM, Patchogue, New York, on 103.1 MHz. If Turro is successful, it would probably open a flood gate of low power FM stations prohibited by current FCC rules.

Mailbag

"Your column is all about broadcasting in America. When did it start?" asks Gardner Smith of Washington, D.C. This stirs more controversy than almost any other question about radio. Most people quickly quote the appearance of KDKA, Pittsburgh, in 1920 as being the first American broadcaster, but it's much more involved than that.

Marconi was broadcasting from several sites in Massachusetts in 1896. His early spark gap transmitters were in use until as late as 1914. A scientist named Stubblefield demonstrated broadcasting in Murray, Kentucky, in 1892. Another experimental broadcast came from Brant Rock, Massachusetts, in 1907, and was heard by several ships at sea. Lee DeForest unveiled his Audion vacuum tube transmitter, and broadcast the singing of opera star Enrico Caruso in 1910.

Although KDKA was issued a broadcast license on November 7, 1921, it had been transmitting for quite some time previously. WBZ, then in Springfield, Massachusetts, received its license almost two months earlier on September 15, 1921. So, which came first -- the chicken or the egg?

New Station Grants

Look for new broadcasters in these locations: Flagstaff, AZ, 101.1; Tucson Estates, AZ, 1110; Trumann, AR, 106.7; Randsburg, CA, 89.7; Newberry, FL, 100.5; Rockledge, FL, 102.7; Clarksville, GA, 1500; Millen, GA, 94.9; Vanclave, KY, 99.9; Athol, MA, 99.9; Mesquite, NV, 97.5; Corrales, NM, 95.1; Santa Fe, NM, 1550; Heavener, OK, 92.5; South Pittsburgh, TN, 97.3; and Yarmouth, NS, 790. (Courtesy of *The M Street Journal*.)

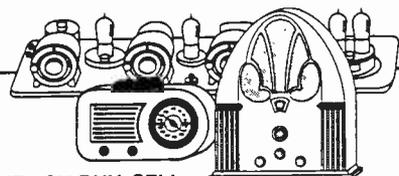
For Sale

Joplin, in southwestern Missouri, could be your new home if you start running a 1 kW AM/3 kW FM combo with excellent real estate and equipment. These stations are not on the air, and the owner will consider selling them separately. Write to: The Great Radio Group, Keven Checkit, P.O. Box 409, Carthage, Mo 64836, or call 417-3580-4049.

A forty-percent partnership of an AM station in Lubbock, Texas, is for sale. The owner is retiring and has two tracts of property as part of the bargain. Get in touch with D. Ballard at 806-791-1747 if you are interested.

Another retiring broadcaster is selling an established AM/FM radio station. The price is very tasty, and the land is included. Contact P. Robillard, 1803 N. 1st East, Haynesville, LA 71038, or call 318-623-0105.

Also on sale this month is a nice AM station



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125 miles from Portland and Seattle. There are living quarters, good fishing and hunting, and the studio and tower, all on the same land included with the station license. Call Radio Station KAZZ at 509-276-8817 to purchase this money maker.

International Bandscan

College radio comes to New Zealand! Hawkes Bay Polytechnic Institute has been granted a short term license for 1431 kHz at 400 watts, operating from 7 a.m. to 5 p.m. daily. Students will use the station to train in multimedia studies.

In Dunedin, three AM stations have moved to FM. 4YA 900 kHz, 4ZB 1044 kHz, and 4ZO 1206 kHz have moved up in frequency. New on the scene in Radio Rhema on 621 kHz with 5 kW, along with existing stations 4YA National Radio on 810 kHz, 4YC the Parliament and Sporting relay on 900 kHz, and 4XC on 1305 kHz.

Several new AM stations appeared in Paris, all with 5 kilowatts of power. Look for them on 981, 999, 1062, 1314, and 1575 kHz. Also, shortwave station Radio Waves International now has a mediumwave relay on 1615 kHz called Radio Star Night.

Due to a serious drought, all stations in Chile have reduced their output powers by 10 to 15 percent to save energy.

And the winner is . . . In London the race is over. 31 parties applied for one frequency and London Jazz will be the new FM occupant on the British dials. It will play all kinds of jazz, gospel, R & B, reggae, and soul music. Spectrum Radio was the victor for the newly allocated AM frequency. They will be broadcasting a variety of ethnic programming in many languages.

Until next month, good listening.

mt

Credits:

Many thanks to Rick Petrone, Chris Segalas, and Chris Tobin at WJAZ; Cal Milner at KKKO; *The New York Times*; *Arbitron*; *The M Street Journal*; Gardner Smith; *Radio World* (For Sale stations); and the International Radio Club of America and the British DX Club for our overseas news.

We are always hungry for your news, comments, and suggestions. Why not join in the fun? Write to: American Bandscan, Monitoring Times, P.O. Box 98, Brasstown, NC 28902.

That's no way to treat a lady!



The commercial offshore Europirate Radio Caroline has been shut down. The Dutch government took the lead in this action with support from the British and French. Fear of an upgrading of Caroline's facilities appears to have sparked the raid on Caroline's ship, the Ross Revenge.

Named in honor of President Kennedy's daughter, Caroline was planning a new all-day rock music service once its Dutch service moved to the M.V. Communicator, formerly the home of highly popular Laser 558.

News of the closing immediately spread throughout Europirate circles. Scotland's Weekend Music Radio carried an extensive report about it which was heard in North America.

It is possible that twenty-five years of offshore broadcasting may have come to an end. But Caroline's countless fans on both sides of the Atlantic are not likely to forget her. She says she will return. Meanwhile an eerie silence has fallen upon 6215 kHz, Caroline's shortwave frequency. Our thanks to Gregg Allenson of North Carolina for alerting us to the Caroline raid.

John "The Man" Frawley

Ary Boender in the Netherlands sends us the sad news that John "The Man" Frawley of former commercial pirate Radio Luimni in Limerick recently died. We have no further details at present.

John's "Snap! Crackle! and Pop!" program made its last broadcast December 23. Radio Luimni was a victim of the Irish government's mostly successful efforts to end radio piracy in that country. John had become a legend in his own time with a following not only in Ireland, but also Europe and America. He was a gentle, beautiful person. It is an understatement to say he will be missed.

Meanwhile, a few Irish pirates manage to hang on. In Dublin, Radio K-FM, Premier 212, and Radio City survive for now. Radio Dublin also continues despite having had its electricity and telephone shut off. I have not heard its 6910 shortwave service for several months, but it had been reduced to a mere 40 watts.

Attention West Coast DXers!

You have a rare chance to hear a Europirate. Scotland's Weekend Music Radio claims it is making it through all the way to the Pacific Coast. Look for it on 15043 UTC Sundays between about 0200 to as late as 0500 or possibly 0600 UTC. Reports go to WMR 42 Arran Close, Cambridge, England.

Meanwhile it is being heard a good deal here on the east coast. Virginia's Pat Murphy got to hear his reception report acknowledged on the air! This writer heard the same show.

West coast DXers should also be looking for Zodiac Radio on 7415 and 7423. Station operator Frank Marauder says he is definitely out your way. We also have the reports to prove it. California's Bill Wolverton, Joe Moell, and Dirk Prado have all logged it. Reports go to Box 5074, Hilo, Hawaii, 96720.

Take a Number

Pat Murphy has brought an unusual numbers station to our attention. This one is on 6840 at 2300 on Sundays only. You will not get groups of numbers but counting in English, and you will hear a mysterious hum or buzz before and after the voice transmission. Supposedly this one comes from Warrenton, Virginia.

Clandestines, Politics, and such

Radio Quince de Septiembre continues on 6214 and should be an easy target around 0000 UTC. If it disappears, that could be a sign that the Contras are in real trouble, at least financially. This appears to be the last Contra broadcaster around.

The sole Lebanese shortwave station which can be logged without much difficulty is Radio Voice of Lebanon on 6550. It should not be very difficult after about 0100. Should it disappear, that could be evidence the Lebanese Christian enclave is in great difficulty. Around Christmas you may hear some holiday music on this one, a rarity for what is a predominantly Muslim part of the world.

In Colombia some of the guerilla groups,

such as M-19, have made at least an uneasy peace with the government. Not so the Cuban-trained National Liberation Army (ELN), whose Radio Patria Libre can be heard on 6755 around 0000 UTC or somewhat later.

Sometimes a licensed station gives you political insight as interesting as that of a clandestine. Guatemala's Radio Tezulutian from the city of Coban was recently monitored announcing the station's opposition to communism, after having broadcast a Roman Catholic mass. This country has the potential to become another El Salvador, and it must be difficult or impossible to stay neutral. Look for Radio Tezulutian on 3370 and 4835 kHz.

RNI Update

Radio Newyork International is in the news again. The station's ship, the Sarah, has been sold to a Boston group known as The Fragile Peace Group. They intend to sail to Europe, rename the ship Liberty, and seek funding from such groups as Greenpeace and Amnesty International as well as sell commercial time.

What the Caroline raid will do to their plans remains to be seen. Our thanks to Robert Thomas and H.R. Gesell for the RNI update.

Stay Alert, NYC Metropolitan Area

Steve from Manhattan says you have a number of stations which should not be difficult to hear. Look for NINE-FM, WJPL, KPRC-FM, and WFPR. All of these use 91.9 MHz in the FM band, and KPRC is sometimes simulcast on 6240 shortwave. For obvious reasons, we will be vague about the schedules, but some favor weekends and others, week nights.

Steve says some of the programming is "leftist oriented." Other stations can be found on 91.5 and 103.1 kHz. There may be as many as twenty-five pirate FM stations in the area.

Meanwhile, *Monitoring Times'* "American BandScan" columnist, Karl Zuk, advises us

that Falling Star Radio (6240), which is widely heard on shortwave, has a new address. It is P.O. Box 1367, Gracie Station, New York, New York 10028.

The Casualty List

Karl also informs us that FM pirate WHOT in Brooklyn (91.5 and 91.) was raided and its equipment seized after it ignored two warnings from the FCC. Its antagonistic attitude toward the FCC and several of its employees probably did not help either. Several months ago Radio Free Texas also discovered the FCC was one of its listeners.

Eurologs

An anonymous reader in England writes that he has logged no less than eight FM pirates in the Birmingham and Wolverhampton areas. Among his catches are Freedom FM (102.0) and Powerhouse (105.4). John Demmitt reports a former Philadelphia man recently received a five year prison sentence for defrauding investors in Radio Caroline during 1981 and 1982.

On a trip to England, Cathy Turner took a radio along. It paid off. She logged pirate Radio Southend on 6290. She also heard what appears to have been an Irish pirate on 6235 which had to battle a jammer. Caroline was found on both 558 and 819 medium wave.

English contributor Martin Lester sends along a number of great Europirate catches. Among these are The Voice of the Netherlands on 7490, the Irish Ozone Radio International on 6820, and Britain Radio International on 6314. Local FM catches include Radio Sangan (89.9), which has primarily an Asian audience, and Skyline FM (94.2), which features black music.

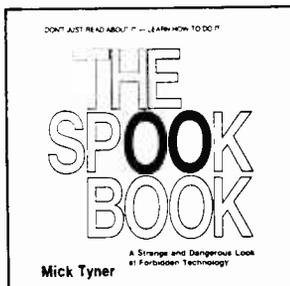
Martin and Ary Boender both advise that Irish-based, longwave Atlantic 252 (254 kHz now, 252 sometime in 1990) is now on the air. The station is a joint venture of the government broadcasting service (RTE) and Radio Luxembourg. It appears to be the Irish government's answer to the pirates which have in recent years had a large segment of the Irish radio audience.

However, if it does not have to compete with them due to their closing, it faces very stiff competition from the ever more popular FM satellite services. Atlantic Sound's signal does extend far beyond Ireland, raising claims of unfair competition from stations in Britain. Under ideal conditions, it should be audible in North America.

And if North American pirates think they have it rough, Martin sends us an article noting that Britain's Radio Investigation Service conducted 450 raids in 1988! These led to 100 prosecutions.

John Demmitt reports on the Israeli version of Radio Caroline. It is Station 7,

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California reader Bill Wolverton logged Zodiac Radio

located on a ship in international waters (so was Caroline) off the coast of Tel Aviv. The operators feel the state-controlled media are too sympathetic toward the Palestine Liberation Organization.

Meanwhile on the Home Front

Kentucky's Keith Cushing got a QSL from WKND (6240). Pat Murphy and Ohio's Fraser Bonnet got impressive Free Radio One (7375, 7415) QSL certificates. So did David Fields and Keith Cushing. Minnesota's Alan Masyga received three pages of literature from them. The station has both a religious and political point of view. It may well be one of the most interesting and controversial pirates around.

In New York Cathy Turner caught a relay of pirate KPRC-FM via Falling Star Radio on 6240. She has also heard it on the FM frequency of 91.9. Other shortwave catches include Voice of Mars (7420), and on 1620, both Radio Candy and Knights of the Revolution.

Also in New York, Jim Hayes heard a

station claiming to be Radio New York International on 7480 in USB at 2226, just one minute after WENJ signed off. The RNI imitator earlier may have been trying to jam WENJ. Jim would like to know if anyone has any cassette copies of the original RNI's broadcasts for sale. Send me a note if you do.

Fraser Bonnett's QSL totals grow with replies in from Voice of Tomorrow (7410), Radio Angeline, Radio USA, and Voice of Stench (7415). He has recent tentative logs of The Voice of Elmer Fudd (7418) and KBSA (7415) plus a definite of WYMN (7418). In Ohio Ken Kendrick logged KRUD on 7420.

George Zeller's Ohio location has yielded no less than eleven recent catches. Among these are Samurai Radio (7444.5), Secret Mountain Laboratory (7418.2), Voice of Bob (7418.23), and Voice of the Purple Pumpkin (7419).

In Kentucky, Keith Kushing found Radio KAOS (7415) and Radio USA (7416.9). In the same state, David Field got Free Radio One (4005, 7415) and Voice of Stench (7415).

Up Massachusetts way Nick Grace checks in with ten loggings. Among them are Radio Comedy Club International (7415), Radio Morania (7355), WFTF (7415), and WART (7420). Nick also logged Scotland's Weekend Music Radio (15043). Recent QSLs include Secret Mountain Lab and RNI.

Finally, this writer managed to bag a few recently. They include United World Radio, with its pro-peace and pro-environment philosophy (7415), WBRI (7488), and Radio Clandestine (7415).

Thanks everybody! Sorry there was not room to use everything.

mt

Basic Beacons

The mornings are crisp, the nights clearer. In most parts of the country, the leaves have already migrated earthward, providing DXers with the unmistakable sign that the DX season for beacons is upon us.

Yes, Virginia, there is a DX season for beacons. Now that it is under way, you might consider some targets to look for on the dial.

Amateur radio has some awards to work for: contests and other incentives to keep interest up. One of the awards for amateurs is the WAS certificate, or Worked All States. This is a pretty difficult thing to accomplish in high frequencies and a virtual impossibility in low frequency beacons.

But that doesn't mean that you can't set a goal for yourself of 10 or 20 or 30 states. These are reasonable possibilities for almost anyone in any part of the 48 conterminous states (U.S. minus Alaska and Hawaii).

For starters -- high power

Start with three of the high-power beacons that carry voice weather broadcasts. Transmitting from Massachusetts, Nantucket can be heard across much of the country. The ID is TUK. It's on 194 kHz, at the low end of the beacon range, and without any competition on that frequency.

You will likely hear the voice more easily than the ID, which is in the background. By listening to the air routes mentioned, you will be able to tell that it is from the Massachusetts area even if you don't pick out the "TUK."

Next is Galveston, Texas. This beacon IDs as GLS on 206 kHz. There are other beacons on this frequency, so you may hear other IDs. However, there are no other beacons on this frequency that have voice broadcasts. All Transcribed WEather Broadcast (TWEB) stations describe weather along particular air routes in their vicinity. These will be mentioned by city names such as Houston-Dallas, etc. This enables you to identify the area where the beacon is located.

The third high-power TWEB beacon is from Grand Isle, Louisiana. This beacon is on 236 kHz and the ID is GNI. Like GLS/206, this beacon shares the frequency with other nonvoice beacons. Both are heard across much of the U.S. They are 2,000 watts each, while Nantucket is a 4,000 watt beacon.

CW Only

TWEB beacons are becoming an endangered species. The voice broadcasts have been eliminated from many of them already. However, this is also a benefit. Many of the

TWEB beacons operated at 400 watts. This makes the CW portion audible for greater distances.

Even if you had trouble hearing the voice, the ID now comes through much clearer. This provides an opportunity for states that might be a little more difficult to catch otherwise. Try for some of these former TWEB beacons that now transmit only their CW ID.

266	BR	Atlanta GA
281	SGK	Knoxville TN
304	BN	Nashville TN
305	RO	Roswell NM
320	HTN	Miles City MT
320	OM	Omaha NE
326	PKZ	Pensacola FL
329	CH	Charleston SC
332	IC	Wichita KS
338	LM	St. Louis MO
344	JA	Jacksonville FL
365	CKK	Miami FL
371	TS	Memphis TN
375	ELM	Elmira NY
388	AM	Tampa FL

All of these have been heard good distances from the transmitters. With the multiple opportunities, you should have a very good chance for Florida and Tennessee.

And a little harder ...

Until a few years ago, there were no beacons between 415 and 515 kHz. Now there are a few. This means less competition on the frequency and a greater opportunity to hear what is there. CKP/423 in Cherokee, Iowa, has been reported from the Atlantic to the Pacific coasts.

Granted, it takes pretty ideal conditions for these extreme distances for a 50 watt beacon. With almost nothing else to interfere, it becomes much more possible. Here are some of the lonelier beacons operating on these frequencies.

416	LB	North Platte NE
417	HHG	Huntington IN
417	HQT	Coats NC
417	RGB	Rifle CO
418	CW	Lake Charles LA
419	RYS	Grosse Ile MI
420	CEK	Crete NE
420	TU	Tupelo MS
423	AU	Auburn AL
423	CKP	Cherokee IA
424	RVJ	Reidsville GA
426	FTP	Fort Payne AL
426	IZS	Montezuma GA
428	EEJ	Sanford NC
435	IYY	Metter GA

The same limiting of beacons also exists above 500 kHz. There are only a few per frequency between 512 and 530 kHz. Actually, there are a large number of Army tactical beacons on some of these frequencies, but these are on so rarely that the effect is the same as if there were only a few. Look for these beacons to reach out for new states.

512	GTB	Ft. Drum NY
513	PP	Omaha NE
515	CL	Port Angles WA
515	OHN	Jefferson City MO
515	OS	Columbus OH
515	SAK	Kalispell MT
516	VPX	Pineville WV
517	GQ	Kansas City MO
520	BF	Seattle WA
521	GF	Cleveland OH
521	GM	Greenville SC
521	INE	Missoula MT
524	AJG	Mt. Carmel IL
524	HEH	Newark OH
526	OJ	Olathe KS

Looking further afield

Finally, there are some high-power beacons that can be heard considerable distances. You may not hear them every night, but you do have a better than average chance of hearing them when conditions are good. Most of these high-powered beacons are marine beacons along the coast.

198	DIW	Dixon NC
216	CLB	Wilmington NC
288	OE	Dry Tortugas FL
290	Y	Yankee town FL
296	G	Galveston TX
298	CB	Cape Henry VA*
298	CL	Fort Macon NC*
298	HL	Cape Henlopen DE*
298	OA	Oak Island NC*
304	OE	Cape Blanco OR*
304	Z	Aransas Pass TX
307	OT	SW Pass Entr. LA
310	H	Egmont Key FL
313	PIL	Padre Island TX
313	Z	Cape Canaveral FL
320	W	Cape San Blas FL

* sequences beacon -- transmits for 1 minute

I recently received a letter from a reader listing 15 or 20 beacons. He felt that he had about exhausted the beacons he could hear from his location. There was only one from this list. Yet almost all of these were possible future catches for him. Don't give up. Start with a goal of ten states; when you reach that goal, try for 15 or 20. And so on.

Good listening!



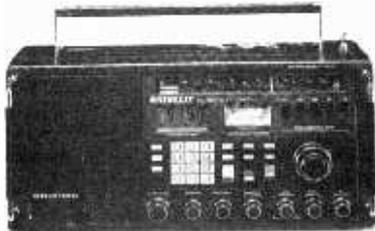


GRUNDIG

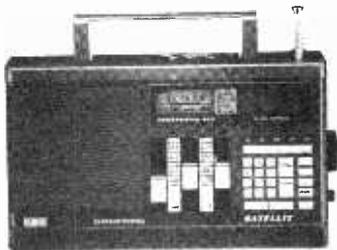
SATELLITE 25th ANNIVERSARY

EEB and GRUNDIG Present This Fabulous Sale to Celebrate the 25th Anniversary of the World Famous Satellite Shortwave Receiver.

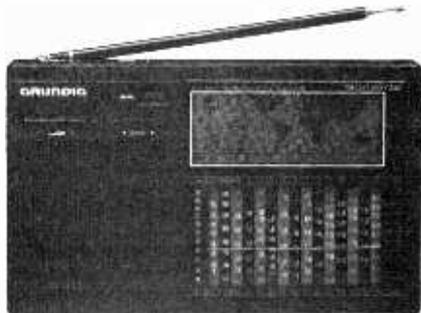
For a Quarter-Century, GRUNDIG World Band Receivers Have Been the Chosen Companions of Yachtspersons, Explorers, Shortwave Enthusiasts and World Travelers. Discover for Yourself GRUNDIG's Outstanding Level of Technology, Sound Quality, User-Friendliness and Reliability.



SATELLIT 650: Regarded by Critics World-Wide as One of the Finest World Band Receivers Ever Produced. AM/FM/SW 1.6-30 MHz with a Host of Useful Features Like 60 Memory Stations. Direct Keypad Tuning and LCD Display with Programmable Clock. Of Course, the 650 Offers Unsurpassed Sound and Reception Quality. **Call!**



SATELLIT 400: A High Performance Compact World Band Receiver. LCD Display, 24 Station Memory, Direct Keypad Tuning and Bass/Treble Controls are Some of It's Major Features. AM/FM/SW with Excellent Sound Quality and High Sensitivity. **Call for sale price!**



YACHT BOY 230: The Newest Member of GRUNDIG's Pocket-Size Series. 13 S/W Bands, AM and FM. FM is Stereo With Headphones. The Unique LCD Display Will Instantly Give You the Local Time Anywhere in the World! Alarm and Sleep Timer Make the "230" a Traveler's "Must-Have"! **Call!**



GRUNDIG, SATELLIT. For 25 Years We Have Been Making the World's Finest World-Band Radios. Every Product We Make Reflects Our Pride and Dedication to Quality. Rely on GRUNDIG to Help You Stay in Touch with World Events, the "Old Country" and the Truth. GRUNDIG! "Your Ear to the World".



SATELLIT 500: Already a Classic! Advanced Features Such as: Direct Keypad Tuning, Alphanumeric Station ID, Synchronous Phase Detector, Built-in Nicad Charger, 42 Station Presets and Two Scanning Modes. Sound Quality, Sensitivity and Construction are to Exacting West German Standards for Excellence. **Call for sale price!**



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program

guide

MT Program Team

Kannon Shanmugam,
Program Manager

4412 Turnberry Circle
Lawrence, KS 66047

Jim Frimmel

Willow Park, Texas

Dale Vanderpoel

Ft. Lauderdale, Florida

Sunday

Nov 5th, 12th, 19th, 26th

- 0008 Radio Canada Int'l: SWL Digest. Ian MacFarland presents DX news and features.
- 0030 BBC: Composer of the Month. Profiles of great composers and selections from their works.
- 0030 Radio Canada Int'l: Music Spot. The latest in popular music.
- 0038 Radio Canada Int'l: Spotlight on Science. The latest developments in science and technology.
- 0101 BBC: Play of the Week. Hour-long drama selections.
- 0108 Radio Canada Int'l: Innovation Canada. A look at Canada's new ideas and technological developments.
- 0109 Deutsche Welle: Commentary. Opinion on current issues.
- 0113 Deutsche Welle: Sports Report. The latest news from the world of sports.



Radio Moscow needs quite a large mailbox, judging from this photo!

- 0115 Radio Japan (North America): Japan Music Scene. Music, background, and interviews.
- 0115 Radio Japan: This Week. The major events of the week, and current affairs topics in Japan.
- 0117 Deutsche Welle: Mailbag/To the Top/Check-point. Listener letters, music, and features on a rotating basis.
- 0130 Radio Canada Int'l: Music Spot. See S 0030.
- 0138 Radio Canada Int'l: SWL Digest. See S 0008.
- 0139 Deutsche Welle: German by Radio. A German language course for English speakers.
- 0209 BBC: British Press Review. Survey of editorial opinion in the British press.
- 0209 Deutsche Welle: Commentary. See S 0109.
- 0213 Deutsche Welle: Sports Report. See S 0113.
- 0215 BBC: The Book People. A look at people in the book trade.
- 0216 Deutsche Welle: Asia in the German Press. A look at what German papers and weeklies have to say about Asia.
- 0223 Deutsche Welle: Mailbag Asia. Answers to listeners' queries, musical requests, and the club corner.
- 0230 BBC: The Ken Bruce Show. A mix of popular music and entertainment news.
- 0300 Radio Canada Int'l: Listeners' Corner. Ian MacFarland and Françoise Borel present listener comments and music requests.
- 0309 Deutsche Welle: Commentary. See S 0109.
- 0313 Deutsche Welle: Sports Report. See S 0113.
- 0315 BBC: From Our Own Correspondent. In-depth news stories from correspondents worldwide.
- 0315 Radio Japan (Americas): Japan Music Scene. See S 0115.
- 0315 Radio Japan: This Week. See S 0115.
- 0317 Deutsche Welle: Mailbag/To the Top/Check-point. See S 0117.
- 0330 BBC: Back to Square One. A quiz show about famous phrases and songs.
- 0339 Deutsche Welle: German by Radio. See S 0139.
- 0352 Radio Canada Int'l: Music. Selections by Radio Canada International announcers.
- 0409 Deutsche Welle: Religion and Society. A roundup of news and developments concerning the world's major religions.
- 0419 Deutsche Welle: Africa in the German Press. A look at what German papers and weeklies have to say about Africa.
- 0430 BBC: Boys in the Back Room. A look at the people behind the scenes in the theatre.
- 0434 Deutsche Welle: People and Places. A program for Africa with interviews, stories, and music.
- 0445 BBC: Personal View. A personal opinion on topical issues in British life.
- 0509 BBC: Twenty-Four Hours. Analysis of the main news of the day.
- 0509 Deutsche Welle: Commentary. See S 0109.
- 0513 Deutsche Welle: Sports Report. See S 0113.
- 0515 Radio Japan: Commentary. Opinions on current news events worldwide.
- 0517 Deutsche Welle: Mailbag/To the Top/Check-point. See S 0117.
- 0520 Radio Japan: Hello from Tokyo. See S 0520.
- 0530 BBC: Financial Review. A look back at the financial week.
- 0539 Deutsche Welle: German by Radio. See S 0139.
- 0540 BBC: Words of Faith. People share how their scripture gives meaning to their lives.
- 0545 BBC: Letter from America. Alistair Cooke's distinctly British view of America.
- 0609 Deutsche Welle: Religion and Society. See S 0409.
- 0619 Deutsche Welle: African in the German Press. See S 0419.
- 0630 BBC: Jazz for the Asking. A jazz music request show.
- 0634 Deutsche Welle: People and Places. See S 0434.
- 0709 BBC: Twenty-Four Hours. See S 0509.
- 0715 Radio Japan: Commentary. See S 0515.
- 0720 Radio Japan: Hello from Tokyo. See S 0520.
- 0730 BBC: From Our Own Correspondent. See S 0315.
- 0745 BBC: Book Choice. Short reviews of current or future best-sellers.
- 0750 BBC: Waveguide. How to hear the BBC better.
- 1109 Deutsche Welle: Arts on the Air. Reports and interviews on major cultural events and developments.
- 1115 BBC: From Our Own Correspondent. See S 0315.
- 1115 Radio Japan: Commentary. See S 0515.
- 1120 Radio Japan: Hello from Tokyo. See S 0520.
- 1130 BBC: Composer of the Month. See S 0030.

LEGEND

- * The first four digits of an entry are the program start time in UTC.
- * The time is followed by the station name, program name, and a brief summary of the program's content.
- * Some listings may be followed by "See X 0000." The letter stands for a day of the week:

S=Sunday M=Monday
T=Tuesday W=Wednesday
H=Thursday F=Friday
A=Saturday

The four digits stand for a time in UTC. Listeners should check back to that date and time to find out more about that particular program.

- * All broadcasts are listed in chronological order, starting on Sunday at 0000 UTC and ending on Saturday at 2359 UTC.
- * All days are in UTC. Remember that if you are listening in North

American prime time, it is actually the next morning UTC. For example, if you are listening to a program at 7:01 pm [EST] on your Thursday night, that's equal to 0001 UTC and therefore Friday morning UTC.

We suggest that you tune in to a program a few minutes before the schedule start time, as some stations have tentative schedules which may slightly vary. We invite listeners and stations to send program information to the program manager at the address above.

program

guide

- 1134 Deutsche Welle: German by Radio. See S 0139.
- 1201 BBC: Play of the Week. See S 0101.
- 1304 Radio Canada Int'l: Sunday Morning. A three-hour magazine program, covering virtually everything under the sun.
- 1308 Radio Canada Int'l (Asia/Pacific): Innovation Canada. See S 0008.
- 1309 BBC: Twenty-Four Hours. See S 0509.
- 1330 BBC: Sports Roundup. The day's sports news.
- 1345 BBC: Personal View. See S 0445.
- 1401 BBC: The Chinese People Stand Up. Chinese history, from the 1949 revolution to the Tiananmen Square uprising.
- 1415 Radio Japan: Commentary. See S 0515.
- 1420 Radio Japan: Hello from Tokyo. See S 0520.
- 1430 BBC: Anything Goes. Sounds from the BBC archives as requested by listeners.
- 1509 Deutsche Welle: Commentary. See S 0109.
- 1513 Deutsche Welle: International Talking Point. A round-table discussion on major trends and events.
- 1515 BBC: From Britain's Music Festivals. A program of classical music from the Britain's great concert festivals.
- 1515 Radio Japan: Commentary. See S 0515.
- 1525 Radio Japan: DX Corner. Kaz Matsuda presents shortwave radio news, features, and reception reports.
- 1534 Deutsche Welle: Pop from Germany. A look at the German pop music scene.
- 1544 Radio Japan: Japan Music Scene. See S 0115.
- 1609 Deutsche Welle: Arts on the Air. See S 1109.
- 1615 BBC: In the Psychiatrist's Chair. The BBC goes Freudian: A psychiatrist interviews well-known personalities.
- 1634 Deutsche Welle: German by Radio. See S 0139.
- 1645 BBC: Letter from America. See S 0545.
- 2308 Radio Canada Int'l: SWL Digest. See S 0108.
- 2310 BBC: Book Choice. See S 0745.
- 2315 BBC: Letter from America. See S 0545.
- 2315 Radio Japan: Commentary. See S 0515.
- 2320 Radio Japan: Hello from Tokyo. See S 0520.
- 2330 BBC: The Chinese People Stand Up. See S 1401.

- 0030 BBC: In Praise of God. A half-hour program of worship.
- 0101 BBC: Feature/Play. Programming on various subjects.
- 0108 Radio Canada Int'l: Listeners' Corner. See S 0300.
- 0109 Deutsche Welle: Commentary. See S 0109.
- 0112 Deutsche Welle: Letter from Berlin/Bonn. The tale of two cities as seen by Deutsche Welle correspondents.
- 0115 Radio Japan (North America): Let's Learn Japanese. Japanese language lessons for English speakers.
- 0115 Radio Japan: Commentary. See S 0515.
- 0116 Deutsche Welle: Religion and Society. See S 0409.
- 0125 Radio Japan: DX Corner. See S 1525.
- 0126 Deutsche Welle: International Talking Point. See S 1513.
- 0144 Radio Japan: Japan Music Scene. See S

- 0115.
- 0145 BBC: Cole Porter Among Friends. A look at the great American songwriter.
- 0209 BBC: British Press Review. See S 0209.
- 0209 Deutsche Welle: Morning Magazine. A magazine program with background information on major world events.
- 0215 BBC: Andy Kershaw's World of Music. Exotic and innovative music from the world over.
- 0230 BBC: Science in Action. The latest in scientific developments.
- 0234 Deutsche Welle: Science and Technology. New scientific and technological developments.
- 0304 Radio Canada Int'l: L'altitude. No details available at press time.
- 0309 Deutsche Welle: Commentary. See S 0109.
- 0312 Deutsche Welle: Letter from Berlin/Bonn. See M 0112.



English Service staff at Deutsche Welle: Peggy Graham, Gregory Benzow, Martin Farrent, Dieter Wemig, Larry Wayne, Helga Korfggen, and Andrew Carnegie.

Monday

Nov 6th, 13th, 20th, 27th

- 0008 Radio Canada Int'l: Listeners' Corner. See S 0300.

NEWS GUIDE

This is your guide to news broadcasts on the air. All broadcasts are daily unless otherwise noted by brackets. These brackets enclose day codes denoting days of broadcast. The codes are as follows:

S = Sunday M = Monday
 T = Tuesday W = Wednesday
 H = Thursday F = Friday
 A = Saturday

We invite listeners and stations to send program information to the program manager.

- 0000 BBC: Newsdesk
- 0000 Christian Science Monitor: News
- 0000 Kol Israel: News
- 0000 KVOH: UPI Radio News
- 0000 Radio Australia: International Report
- 0000 Radio Beijing: News
- 0000 Radio Canada Int'l: News [S-M]
- 0000 Radio Havana Cuba: Int'l News [M-A]
- 0000 Radio Moscow: News
- 0000 Radio New Zealand Int'l: News
- 0000 Spanish National Radio: News
- 0000 Voice of America: News
- 0000 WWCR: News [M-F]
- 0010 Radio Beijing: News About China
- 0030 Christian Science Monitor: News [T-F]
- 0030 KVOH: UPI Headline News
- 0030 Radio Havana Cuba: Newsbreak [M-A]
- 0030 Radio Kiev: News
- 0030 Radio Moscow (World Service): News in Brief [M]
- 0030 Radio Netherlands: News [T-S]
- 0030 Voice of America (Americas, East Asia): News (Special English) [T-S]
- 0030 Voice of America (East Asia): News (Special English) [M]
- 0045 Radio Berlin Int'l: News
- 0051 Spanish National Radio: News Summary [S]
- 0100 BBC: News Summary
- 0100 Belize Radio One: Network News
- 0100 Christian Science Monitor: News
- 0100 Deutsche Welle: World News
- 0100 Kol Israel: News
- 0100 KVOH: UPI Radio News [T-A]
- 0100 Radio Australia: World and Australian News
- 0100 Radio Canada Int'l: News [S-M]
- 0100 Radio Havana Cuba: Int'l News [M-A]
- 0100 Radio Japan: News
- 0100 Radio Moscow: News
- 0100 Radio New Zealand Int'l: News
- 0100 Radio Prague: News
- 0100 Radiotelevisione Italiana: News
- 0100 Spanish National Radio: News
- 0100 Voice of America: News
- 0100 Voice of Indonesia: News
- 0115 Radio Havana Cuba: Cuban Nat'l News [M-A]
- 0130 Christian Science Monitor: News [T-F]

program

Guide



Julian Potter reads the news for the BBC during prime-time hours in North America.

- 0404 Radio Canada Int'l: Coast to Coast. Issues and opinions affecting Canadians.
- 0409 Deutsche Welle: Morning Magazine. See M 0209.
- 0430 BBC: Off the Shelf. A reading selected from the best of world literature.
- 0434 Deutsche Welle: Africa Report. Reports and background to the news from correspondents.
- 0445 BBC: Nature Now. Information about flora, fauna, and natural resources.
- 0509 BBC: Twenty-Four Hours. See S 0509.
- 0509 Deutsche Welle: Commentary. See S 0109.
- 0512 Deutsche Welle: Letter from Berlin/Bonn. See M 0112.
- 0515 Radio Japan: Commentary. See S 0515.
- 0516 Deutsche Welle: Religion and Society. See S 0409.
- 0520 Radio Japan: Cross Currents. A current affairs program featuring views from Japan and abroad.
- 0526 Deutsche Welle: International Talking Point. See S 1513.
- 0530 BBC: Waveguide. See S 0750.
- 0536 Radio Japan: Let's Learn Japanese. See M 0115.
- 0540 BBC: Words of Faith. See S 0540.
- 0545 BBC: Recording of the Week. A personal choice from the latest classical music releases.
- 0551 Radio Japan: Commentary. See S 0515.
- 0556 Radio Japan: Tokyo Pop-In. A short segment featuring a popular song from Japan.
- 0609 Deutsche Welle: Morning Magazine. See M 0209.
- 0630 BBC: The Chinese People Stand Up. See S 1401.
- 0634 Deutsche Welle: Africa Report. See M 0434.
- 0709 BBC: Twenty-Four Hours. See S 0509.
- 0715 Radio Japan: Commentary. See S 0515.
- 0720 Radio Japan: Cross Currents. See M 0520.
- 0730 BBC: In the Psychiatrist's Chair. See S 1615.
- 0736 Radio Japan: Let's Learn Japanese. See M 0115.
- 0751 Radio Japan: Commentary. See S 0515.
- 0756 Radio Japan: Tokyo Pop-In. See M 0556.
- 1109 Deutsche Welle: Newline Cologne. A current affairs program with worldwide reports and a German press review.
- 1115 BBC: Tech Talk. What's new in the world of engineering.
- 1115 Radio Japan: Commentary. See S 0515.
- 1120 Radio Japan: Cross Currents. See M 0520.
- 1130 BBC: The Ken Bruce Show. See S 0230.
- 1134 Deutsche Welle: Hallo Africa. Musical requests and greetings to friends.
- 1136 Radio Japan: Let's Learn Japanese. See M 0115.
- 1151 Radio Japan: Commentary. See S 0515.
- 1156 Radio Japan: Tokyo Pop-In. See M 0556.
- 1215 BBC: Quiz. A topical quiz show; details not available at press time.
- 1230 Radio Canada Int'l: North Country. Sports, weather, and the stock market report.
- 1234 Radio Canada Int'l: Innovation Canada. See S 0108.
- 1245 BBC: Sports Roundup. See S 1330.
- 1308 Radio Canada Int'l: Current Affairs. In-depth news programming.
- 1309 BBC: Twenty-Four Hours. See S 0509.
- 1330 BBC: In the Psychiatrist's Chair. See S 1615.
- 1405 BBC: Outlook. Conversation, controversy, and color from Britain and the rest of the world.
- 1415 Radio Japan: Commentary. See S 0515.
- 1420 Radio Japan: Cross Currents. See M 0520.
- 1430 BBC: Off the Shelf. See M 0430.
- 1436 Radio Japan: Let's Learn Japanese. See M 0115.
- 1445 BBC: The Book People. See S 0215.
- 1451 Radio Japan: Commentary. See S 0515.
- 1456 Radio Japan: Tokyo Pop-In. See M 0556.
- 1509 Deutsche Welle: Newline Cologne. See M 1109.
- 1515 BBC: Feature/Play. See M 0101.
- 1515 Radio Japan: Commentary. See S 0515.
- 1520 Radio Japan: Cross Currents. See M 0520.
- 1534 Deutsche Welle: Weekend Sport. A review of the major sporting events of the weekend.
- 1536 Radio Japan: Let's Learn Japanese. See M 0115.
- 1538 Deutsche Welle: Monday Special. An interview or report on an event or development with special relevance for Africa.
- 1551 Radio Japan: Commentary. See S 0515.
- 1556 Radio Japan: Tokyo Pop-In. See M 0556.
- 1609 Deutsche Welle: Newline Cologne. See M 1109.
- 1615 BBC: Good Books. See M 0315.
- 1630 BBC: Tech Talk. See M 1115.
- 1634 Deutsche Welle: Asia-Pacific Report. Correspondents' reports, interviews, and background news from the Asia-Pacific region.
- 1645 BBC: The World Today. News analysis on a selected location or event in the news.
- 2305 BBC: Commentary. Background to the news from a wide range of specialists.
- 2308 Radio Canada Int'l: Current Affairs. See M 1308.
- 2310 BBC: Financial News. News of commodity prices and significant moves in currency and stock markets.

news guide cont'd from p.57

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|---|--|---|
| <ul style="list-style-type: none"> 0130 KVOH: UPI Headline News [T-A] 0130 Radio Havana Cuba: News [M-A] 0130 Radio Moscow (World Service): News in Brief 0150 HCJB: News [T-A] 0151 Radio Veritas Asia: World News [M-F] 0151 Spanish National Radio: News Summary [S] 0153 Radio Prague: News Wrap-Up 0155 HCJB: News [S] 0155 Radio Veritas Asia: World News [A] 0155 Voice of Indonesia: News in Brief 0200 BBC: World News 0200 Christian Science Monitor: News 0200 Deutsche Welle: World News 0200 HCJB: News [M] 0200 Kof Israel: News 0200 KVOH: UPI Radio News [T-A] 0200 Radio Australia: International Report 0200 Radio Berlin Int'l: News 0200 Radio Canada Int'l: As It Happens [T-A] | <ul style="list-style-type: none"> 0200 Radio Havana Cuba: Int'l News [M-A] 0200 Radio Moscow: News 0200 Radio New Zealand Int'l: News 0200 Radio RSA: News 0200 Swiss Radio Int'l: News 0200 Voice of America: News 0200 Voice of Free China: News and Commentary 0200 WWCR: News [M-F] 0215 Radio Cairo: News 0230 Christian Science Monitor (East Africa): News [M] 0230 Christian Science Monitor: News [T-F] 0230 KVOH: UPI Headline News [T-A] 0230 Radio Finland: Northern Report [T-A] 0230 Radio Havana Cuba: Newsbreak [M-A] 0230 Radio Moscow (World Service): News in Brief [S-M] 0230 Radio Portugal: News [T-A] 0245 Radio Berlin Int'l: News 0300 BBC: World News 0300 Belize Radio One: News 0300 Christian Science Monitor: News 0300 Deutsche Welle: World News | <ul style="list-style-type: none"> 0300 HCJB: News [T-A] 0300 KVOH: UPI Radio News [T-A] 0300 Radio Australia: World and Australian News 0300 Radio Beijing: News 0300 Radio Canada Int'l: News [M-F] 0300 Radio for Peace Int'l: News [T,A] 0300 Radio Havana Cuba: Int'l News [M-A] 0300 Radio Japan: News 0300 Radio Kiev: News 0300 Radio Moscow: News 0300 Radio New Zealand Int'l: News 0300 Radio Prague: News 0300 Voice of America: News 0300 Voice of Free China: News and Commentary 0309 BBC: News About Britain 0310 Radio Beijing: News About China 0315 Radio Cairo: News 0315 Radio France International: News 0315 Radio Havana Cuba: Cuban National News [M-A] 0330 Christian Science Monitor (East Africa): News [M] 0330 Christian Science Monitor: News [T-F] |
|---|--|---|

program guide

BULLETIN BOARD

A guide to the "Newshour"

The BBC's "Newshour" has blossomed into one of the top news programs on shortwave after a mere twelve months of existence. Here's a guide to the segments of the program (all times are UTC and may slightly vary from day to day).

- 2159 Preview of featured stories
- 2200 World news (incl. correspondent reports)
- 2209 News analysis
- 2225 Listener letters [S]
- Financial news [M-F]
- Financial week in review [A]
- 2230 World news summary
- 2232 News analysis
- 2239 British news (incl. correspondent reports)
- 2244 News analysis/feature
- 2250 Sports news
- 2253 News analysis
- 2258 British press review

- 2315 BBC: Poems by Post. Selected poems written by listeners.
- 2315 Radio Japan: Commentary. See S 0515.
- 2320 Radio Japan: Cross Currents. See M 0520.
- 2330 BBC: Multitrack 1: Top 20. What's hot on the British pop music charts.
- 2336 Radio Japan: Let's Learn Japanese. See M 0115.
- 2351 Radio Japan: Commentary. See S 0515.
- 2356 Radio Japan: Tokyo Pop-In. See M 0556.

Tuesday

Nov 7th, 14th, 21st, 28th

- 0030 BBC: Megamix. A compendium of music, sport, fashion, health, travel, news and views for young people.
- 0101 BBC: Outlook. See M 1405.
- 0109 Deutsche Welle: Newline Cologne. See M 1109.
- 0115 Radio Japan: Commentary. See S 0515.
- 0120 Radio Japan: Cross Currents. See M 0520.
- 0125 BBC: Financial News. See M 2310.
- 0126 Radio Japan (North America): Tokyo Pop-In. See M 0556.
- 0130 BBC: Short Story. Brief tales written by BBC listeners.
- 0134 Deutsche Welle: Arts on the Air. See S 1109.
- 0136 Radio Japan: Let's Learn Japanese. See M 0115.
- 0145 BBC: Europe's World. A magazine program reflecting life in Europe and its links with other

- parts of the world.
- 0151 Radio Japan: Commentary. See S 0515.
- 0156 Radio Japan: Tokyo Pop-In. See M 0556.
- 0209 BBC: British Press Review. See S 0209.
- 0209 Deutsche Welle: Morning Magazine. See M 0209.
- 0215 BBC: Network UK. A look at the issues and events that affect the lives of people throughout the UK.
- 0230 BBC: Sports International. Feature program on a topic or person making sports headlines.
- 0234 Deutsche Welle: Economic Notebook. A look at the economic scene in Germany and around the world.
- 0308 Radio Canada Int'l: Current Affairs. See M 1308.
- 0309 Deutsche Welle: Newline Cologne. See M 1109.
- 0315 BBC: The World Today. See M 1645.
- 0315 Radio Japan: Commentary. See S 0515.
- 0320 Radio Japan: Cross Currents. See M 0520.
- 0326 Radio Japan (Americas): Tokyo Pop-In. See M 0556.
- 0330 BBC: John Peel. Tracks from newly released albums and singles from the contemporary music scene.
- 0334 Deutsche Welle: Arts on the Air. See S 1109.
- 0336 Radio Japan: Let's Learn Japanese. See M 0115.
- 0351 Radio Japan: Commentary. See S 0515.
- 0356 Radio Japan: Tokyo Pop-In. See M 0556.
- 0404 Radio Canada Int'l: Innovation Canada. See S 0108.
- 0409 Deutsche Welle: Morning Magazine. See M 0209.
- 0430 BBC: Off the Shelf. See M 0430.
- 0434 Deutsche Welle: Africa Report. See M 0434.
- 0445 BBC: New Ideas. A radio shop window for new products and inventions.
- 0455 BBC: Book Choice. See S 0745.
- 0509 BBC: Twenty-Four Hours. See S 0509.
- 0509 Deutsche Welle: Newline Cologne. See M 1109.
- 0515 Radio Japan: Commentary. See S 0515.
- 0520 Radio Japan: Asia Now. A look at the ever-changing situation in present-day Asia.
- 0530 BBC: Financial News. See M 2310.
- 0534 Deutsche Welle: Arts on the Air. See S 1109.
- 0536 Radio Japan: Let's Practice Japanese. A practice session for the week's language lesson.
- 0540 BBC: Words of Faith. See S 0540.
- 0545 BBC: The World Today. See M 1645.
- 0551 Radio Japan: Commentary. See S 0515.
- 0556 Radio Japan: Tokyo Pop-In. See M 0556.
- 0630 BBC: Rock Salad. Tommy Vance presents another series of heavy metal music. (Motley Crue forever?)
- 0709 BBC: Twenty-Four Hours. See S 0509.
- 0715 Radio Japan: Commentary. See S 0515.
- 0720 Radio Japan: Asia Now. See T 0520.
- 0730 BBC: Europe's World. See T 0145.
- 0736 Radio Japan: Let's Practice Japanese. See T 0536.
- 0745 BBC: Network UK. See T 0215.
- 0751 Radio Japan: Commentary. See S 0515.
- 0756 Radio Japan: Tokyo Pop-In. See M 0556.
- 1115 BBC: Waveguide. See S 0750.
- 1115 Radio Japan: Commentary. See S 0515.
- 1120 Radio Japan: Asia Now. See T 0520.
- 1125 BBC: Book Choice. See S 0745.
- 1130 BBC: Megamix. See T 0030.
- 1136 Radio Japan: Let's Practice Japanese. See T 0536.
- 1151 Radio Japan: Commentary. See S 0515.
- 1156 Radio Japan: Tokyo Pop-In. See M 0556.
- 1215 BBC: Multitrack 1: Top 20. See M 2330.
- 1230 Radio Canada Int'l: North Country. See M 1230.
- 1234 Radio Canada Int'l: SWL Digest. See S 0008.
- 1245 BBC: Sports Roundup. See S 1330.
- 1308 Radio Canada Int'l: Current Affairs. See M 1308.
- 1309 BBC: Twenty-Four Hours. See S 0509.
- 1330 BBC: Network UK. See T 0215.
- 1345 BBC: Boys in the Back Room. See S 0430.
- 1405 BBC: Outlook. See M 1405.
- 1415 Radio Japan: Commentary. See S 0515.
- 1420 Radio Japan: Asia Now. See T 0520.
- 1430 BBC: Off the Shelf. See M 0430.
- 1436 Radio Japan: Let's Practice Japanese. See T 0536.
- 1445 BBC: Cole Porter Among Friends. See M 0145.
- 1451 Radio Japan: Commentary. See S 0515.
- 1456 Radio Japan: Tokyo Pop-In. See M 0556.
- 1515 BBC: A Jolly Good Show. Dave Lee Travis presents listener record requests and dedications, and the UK's top ten albums.
- 1515 Radio Japan: Commentary. See S 0515.
- 1520 Radio Japan: Asia Now. See T 0520.
- 1536 Radio Japan: Let's Practice Japanese. See T 0536.
- 1551 Radio Japan: Commentary. See S 0515.
- 1556 Radio Japan: Tokyo Pop-In. See M 0556.
- 1615 BBC: Omnibus. A half-hour program on practically any topic.
- 1645 BBC: The World Today. See M 1645.
- 2305 BBC: Commentary. See M 2305.
- 2308 Radio Canada Int'l: Current Affairs. See M 1308.
- 2310 BBC: Financial News. See M 2310.
- 2315 BBC: From Britain's Music Festivals. See S 1515.
- 2315 Radio Japan: Commentary. See S 0515.
- 2320 Radio Japan: Asia Now. See T 0520.
- 2336 Radio Japan: Let's Practice Japanese. See T 0536.
- 2351 Radio Japan: Commentary. See S 0515.
- 2356 Radio Japan: Tokyo Pop-In. See M 0556.

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|--|---|---|
| <ul style="list-style-type: none"> 0330 KVOH: UPI Headline News [T-A] 0330 Radio Berlin Int'l: News 0330 Radio Havana Cuba: News [M-A] 0330 Radio Moscow (World Service): News in Brief [S] 0330 Radio Netherlands: News [T-S] 0350 Radiotelevisione Italiana: News 0353 Radio Prague: News Wrap-up 0400 BBC: Newsdesk 0400 Christian Science Monitor: News 0400 Deutsche Welle: World News 0400 HCJB: News [M-A] 0400 Radio Australia: International Report 0400 Radio Beijing: News 0400 Radio Berlin Int'l: News 0400 Radio Canada Int'l: News [M-F] 0400 Radio Havana Cuba: Int'l News [M-A] 0400 Radio Moscow: News 0400 Radio New Zealand Int'l: News 0400 Radio RSA: News 0400 Swiss Radio Int'l: News 0400 Voice of America: News 0410 Radio Beijing: News About China | <ul style="list-style-type: none"> 0425 Radiotelevisione Italiana: News 0430 Christian Science Monitor (East Africa): News [M] 0430 Christian Science Monitor: News [T-F] 0430 Radio Havana Cuba: Newsbreak [M-A] 0430 Radio Moscow (World Service): News in Brief [S-M] 0430 Radio Netherlands: News [M-A] 0445 Radio Berlin Int'l: News 0500 BBC: World News 0500 Christian Science Monitor: News 0500 Deutsche Welle: World News 0500 HCJB: News [S-M]; Latin American News [T-A] 0500 Kol Israel: News 0500 Radio Australia: World and Australian News 0500 Radio Havana Cuba: Int'l News [M-A] 0500 Radio Japan: News 0500 Radio Moscow: News 0500 Radio New Zealand Int'l: News 0500 Spanish National Radio: News 0500 Voice of America: News 0515 Radio Canada Int'l: News [M-F] | <ul style="list-style-type: none"> 0515 Radio Havana Cuba: Cuban National News [M-A] 0530 Christian Science Monitor (East Africa): News [M] 0530 Christian Science Monitor: News [T-F] 0530 Radio Havana Cuba: News [M-A] 0530 Radio Moscow (World Service): News in Brief 0545 Radio Canada Int'l: News [M-F] 0550 HCJB: News [T-A] 0551 Spanish National Radio: News Summary [S] 0555 HCJB: News [S] 0600 BBC: Newsdesk 0600 Christian Science Monitor: News 0600 Deutsche Welle: World News 0600 HCJB: News [M] 0600 Radio Australia: International Report 0600 Radio Berlin Int'l: News 0600 Radio Havana Cuba: Int'l News [M-A] 0600 Radio Korea: News 0600 Radio Moscow: News 0600 Radio New Zealand Int'l: News 0600 Voice of America: News 0615 Radio Berlin Int'l: News |
|--|---|---|

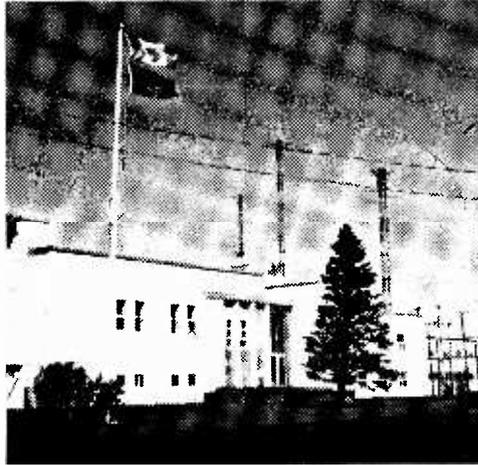
program

guide

Wednesday

Nov 1st, 8th, 15th, 22nd,
29th

- 0030 BBC: Omnibus. See T 1615.
- 0101 BBC: Outlook. See M 1405.
- 0109 Deutsche Welle: Newline Cologne. See M 1109.
- 0115 Radio Japan: Commentary. See S 0515.
- 0120 Radio Japan: Asia Now. See T 0520.
- 0125 BBC: Financial News. See M 2310.
- 0126 Radio Japan (North America): Tokyo Pop-In. See M 0556.
- 0130 BBC: No Life for a Child. A look at the conditions in which some children live (through November 8th).
- 0134 Deutsche Welle: Economic Notebook. See T 0234.
- 0136 Radio Japan: Let's Practice Japanese. See T 0536.
- 0145 BBC: Country Style. David Allan presents British country music.
- 0151 Radio Japan: Commentary. See S 0515.
- 0156 Radio Japan: Tokyo Pop-In. See M 0556.
- 0209 BBC: British Press Review. See S 0209.
- 0209 Deutsche Welle: Morning Magazine. See M 0209.
- 0215 BBC: Tech Talk. See M 1115.
- 0230 BBC: McCartney on McCartney. Mike Read talks with the ex-Beatle about his musical career.
- 0234 Deutsche Welle: Insight. See T 1534.
- 0308 Radio Canada Int'l: Current Affairs. See M 1308.
- 0309 Deutsche Welle: Newline Cologne. See M 1109.
- 0315 BBC: The World Today. See M 1645.
- 0315 Radio Japan: Commentary. See S 0515.
- 0320 Radio Japan: Asia Now. See T 0520.
- 0325 Radio Japan (Americas): Tokyo Pop-In. See M 0556.
- 0330 BBC: Discovery. An in-depth look at scientific research.
- 0334 Deutsche Welle: Economic Notebook. See T 0234.
- 0336 Radio Japan: Let's Practice Japanese. See T 0536.
- 0351 Radio Japan: Commentary. See S 0515.
- 0356 Radio Japan: Tokyo Pop-In. See M 0556.
- 0404 Radio Canada Int'l: SWL Digest. See S 0008.
- 0409 Deutsche Welle: Morning Magazine. See M 0209.
- 0430 BBC: Off the Shelf. See M 0430.
- 0434 Deutsche Welle: Africa Report. See M 0434.



Radio Canada International is located near Sackville, New Brunswick.

- 0445 BBC: Country Style. See W 0145.
- 0509 BBC: Twenty-Four Hours. See S 0509.
- 0509 Deutsche Welle: Newline Cologne. See M 1109.
- 0515 Radio Japan: Commentary. See S 0515.
- 0520 Radio Japan: Radio Japan Journal. Information on the latest developments in the news.
- 0530 BBC: Financial News. See M 2310.
- 0534 Deutsche Welle: Economic Notebook. See T 0234.
- 0536 Radio Japan: Asian Crossroads. Events in Asia and the Pacific.
- 0540 BBC: Words of Faith. See S 0540.
- 0545 BBC: The World Today. See M 1645.
- 0551 Radio Japan: Commentary. See S 0515.
- 0556 Radio Japan: Tokyo Pop-In. See M 0556.
- 0609 Deutsche Welle: Morning Magazine. See M 0209.
- 0630 BBC: Meridian. The world of the arts, including music, drama, and books.
- 0634 Deutsche Welle: Africa Report. See M 0434.
- 0709 BBC: Twenty-Four Hours. See S 0509.
- 0715 Radio Japan: Commentary. See S 0515.
- 0720 Radio Japan: Radio Japan Journal. See W 0520.
- 0730 BBC: Development '89. Aid and development issues.
- 0736 Radio Japan: Asian Crossroads. See W 0536.
- 0751 Radio Japan: Commentary. See S 0515.
- 0756 Radio Japan: Tokyo Pop-In. See M 0556.

- 1109 Deutsche Welle: Newline Cologne. See M 1109.
- 1115 BBC: Country Style. See W 0145.
- 1115 Radio Japan: Commentary. See S 0515.
- 1120 Radio Japan: Radio Japan Journal. See W 0520.
- 1130 BBC: Meridian. See W 0630.
- 1134 Deutsche Welle: Hallo Africa. See M 1134.
- 1136 Radio Japan: Asian Crossroads. See W 0536.
- 1151 Radio Japan: Commentary. See S 0515.
- 1156 Radio Japan: Tokyo Pop-In. See M 0556.
- 1215 BBC: Food Plants. A look at the relationship between human beings and the plants that nourish us.
- 1225 BBC: The Farming World. Issues in agriculture.
- 1230 Radio Canada Int'l: North Country. See M 1230.
- 1234 Radio Canada Int'l: L'attitude. See M 0304.
- 1245 BBC: Sports Roundup. See S 1330.
- 1308 Radio Canada Int'l: Current Affairs. See M 1308.
- 1309 BBC: Twenty-Four Hours. See S 0509.
- 1330 BBC: Development '89. See W 0730.
- 1405 BBC: Outlook. See M 1405.
- 1415 Radio Japan: Commentary. See S 0515.
- 1420 Radio Japan: Radio Japan Journal. See W 0520.
- 1430 BBC: Off the Shelf. See M 0430.
- 1436 Radio Japan: Asian Crossroads. See W 0536.
- 1445 BBC: Business Matters. See W 0430.
- 1451 Radio Japan: Commentary. See S 0515.
- 1456 Radio Japan: Tokyo Pop-In. See M 0556.
- 1509 Deutsche Welle: Newline Cologne. See M 1109.
- 1515 BBC: Poems by Post. See M 2315.
- 1515 Radio Japan: Commentary. See S 0515.
- 1520 Radio Japan: Radio Japan Journal. See W 0520.
- 1530 BBC: King Street Junior. Another series about life in a fictional inner-city elementary school (except November 1st, 29th: Two Cheers..., a satirical look back at the month just past).
- 1534 Deutsche Welle: Living in Germany. The social scene in Germany.
- 1536 Radio Japan: Asian Crossroads. See W 0536.
- 1551 Radio Japan: Commentary. See S 0515.
- 1556 Radio Japan: Tokyo Pop-In. See M 0556.
- 1609 Deutsche Welle: Newline Cologne. See M 1109.
- 1615 BBC: Rock Salad. See T 0630.
- 1634 Deutsche Welle: Asia-Pacific Report. See M 1634.
- 1645 BBC: The World Today. See M 1645.
- 2305 BBC: Commentary. See M 2305.

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- 0630 Christian Science Monitor: News [M-F]
- 0630 Radio Finland: Northern Report [T-A]
- 0630 Radio Havana Cuba: Newsbreak [M-A]
- 0630 Radio Moscow (World Service): News in Brief [S]
- 0630 Swiss Radio Int'l: News
- 0655 HCJB: News [M-A]
- 0700 BBC: World News
- 0700 BRT, Brussels: News [M-F]
- 0700 Christian Science Monitor: News
- 0700 Radio Australia: World and Australian News
- 0700 Radio Havana Cuba: Int'l News [M-A]
- 0700 Radio Japan: News
- 0700 Radio Moscow: News
- 0700 Radio New Zealand Int'l: News [A-S]
- 0700 Voice of Free China: News and Commentary
- 0715 Radio Havana Cuba: Cuban National News [M-A]
- 0730 Christian Science Monitor: News [M-F]
- 0730 Radio Havana Cuba: News [M-A]

- 0730 Radio Moscow (World Service): News in Brief [S-M]
- 0730 Radio Netherlands: News [M-A]
- 0800 BBC: World News
- 0800 Christian Science Monitor: News
- 0800 Radio Australia: International Report
- 0800 Radio Finland: Northern Report [T-S]
- 0800 Radio Korea: News
- 0800 Radio Moscow (World Service): News
- 0800 Voice of Indonesia: News
- 0830 Christian Science Monitor: News [M-F]
- 0830 Radio Finland: Northern Report [T-S]
- 0830 Radio Moscow (World Service): News in Brief
- 0830 Radio Netherlands: News [M-A]
- 0830 Swiss Radio Int'l: News
- 0845 Radio Berlin Int'l: News
- 0855 Voice of Indonesia: News in Brief
- 0900 BBC: World News
- 0900 BRT, Brussels: News [M-F]
- 0900 Christian Science Monitor: News
- 0900 Deutsche Welle: World News
- 0900 Radio Australia: World and Australian News

- 0900 Radio Japan: News
- 0900 Radio Moscow (World Service): News
- 0900 Radio New Zealand Int'l: News
- 0930 Christian Science Monitor: News [M-F]
- 0930 Radio Canada Int'l: News [M-F]
- 0930 Radio Moscow (World Service): News in Brief [S-M]
- 1000 BBC: News Summary
- 1000 Christian Science Monitor: News
- 1000 Radio Australia: International Report
- 1000 Radio Berlin Int'l: News
- 1000 Radio Moscow (World Service): News
- 1000 Radio New Zealand Int'l: News
- 1000 Swiss Radio Int'l: News
- 1000 Voice of America: News
- 1030 Radio Moscow (World Service): News in Brief [S]
- 1030 Radio Netherlands: News [M-A]
- 1045 Radio Berlin Int'l: News
- 1100 BBC: World News
- 1100 Christian Science Monitor: News [M-F]
- 1100 Deutsche Welle: World News
- 1100 Kol Israel: News

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- 2308 Radio Canada Int'l: Current Affairs. See M 1308.
- 2310 BBC: Financial News. See M 2310.
- 2315 BBC: Good Books. See M 0315.
- 2315 Radio Japan: Commentary. See S 0515.
- 2320 Radio Japan: Radio Japan Journal. See W 0520.
- 2330 BBC: Multitrack 2. The latest in British pop music and news.
- 2336 Radio Japan: Asian Crossroads. See W 0536.
- 2351 Radio Japan: Commentary. See S 0515.
- 2356 Radio Japan: Tokyo Pop-In. See M 0556.

Thursday

Nov 2nd, 9th, 16th, 23rd, 30th

- 0030 BBC: King Street Junior (except November 2nd, 30th: Two Cheers...). See W 1530.
- 0101 BBC: Outlook. See M 1405.
- 0109 Deutsche Welle: Newline Cologne. See M 1109.
- 0115 Radio Japan: Commentary. See S 0515.
- 0120 Radio Japan: Radio Japan Journal. See W 0520.
- 0125 BBC: Financial News. See M 2310.
- 0126 Radio Japan (North America): Tokyo Pop-In. See M 0556.
- 0130 BBC: Waveguide. See S 0750.
- 0134 Deutsche Welle: Living in Germany. See W 1534.
- 0136 Radio Japan: Asian Crossroads. See W 0536.
- 0140 BBC: Book Choice. See S 0745.
- 0145 BBC: Society Today. A weekly look at the changes in Britain.
- 0151 Radio Japan: Commentary. See S 0515.
- 0156 Radio Japan: Tokyo Pop-In. See M 0556.
- 0209 BBC: British Press Review. See S 0209.
- 0209 Deutsche Welle: Morning Magazine. See M 0209.
- 0215 BBC: Network UK. See T 0215.
- 0230 BBC: Assignment. Examinations of current topical issues.
- 0234 Deutsche Welle: Living in Germany. See W 1534.
- 0308 Radio Canada Int'l: Current Affairs. See M 1308.
- 0309 Deutsche Welle: Newline Cologne. See M 1109.
- 0315 BBC: The World Today. See M 1645.
- 0315 Radio Japan: Commentary. See S 0515.
- 0320 Radio Japan: Radio Japan Journal. See W 0520.

- 0326 Radio Japan (Americas): Tokyo Pop-In. See M 0556.
- 0330 BBC: Quiz. See M 1215.
- 0334 Deutsche Welle: Living in Germany. See W 1534.
- 0336 Radio Japan: Asian Crossroads. See W 0536.
- 0351 Radio Japan: Commentary. See S 0515.
- 0356 Radio Japan: Tokyo Pop-In. See M 0556.
- 0404 Radio Canada Int'l: L'attitude. See M 0304.
- 0409 Deutsche Welle: Morning Magazine. See M 0209.
- 0430 BBC: Off the Shelf. See M 0430.
- 0434 Deutsche Welle: Africa Report. See M 0434.
- 0445 BBC: Andy Kershaw's World of Music. See M 0215.
- 0509 BBC: Twenty-Four Hours. See S 0509.
- 0509 Deutsche Welle: Newline Cologne. See M 1109.
- 0515 Radio Japan: Commentary. See S 0515.
- 0520 Radio Japan: Business and Science. Information on Japan's economy and developments in science and technology.
- 0530 BBC: Financial News. See M 2310.
- 0534 Deutsche Welle: Living in Germany. See W 1534.
- 0540 BBC: Words of Faith. See S 0540.
- 0545 BBC: The World Today. See M 1645.
- 0551 Radio Japan: Commentary. See S 0515.
- 0556 Radio Japan: Tokyo Pop-In. See M 0556.
- 0609 Deutsche Welle: Morning Magazine. See M 0209.
- 0630 BBC: Food Plants. See W 1215.
- 0634 Deutsche Welle: Africa Report. See M 0434.
- 0640 BBC: The Farming World. See W 1225.
- 0709 BBC: Twenty-Four Hours. See S 0509.
- 0715 Radio Japan: Commentary. See S 0515.
- 0720 Radio Japan: Business and Science. See H 0520.
- 0730 BBC: Write On... Paddy Feeny answers listener letters.



Kaz Matsuda has been the presenter of "DX Corner" on Radio Japan. But MT's Glenn Hauser says he's gone to Australia!

- 0745 BBC: Network UK. See T 0215.
- 0751 Radio Japan: Commentary. See S 0515.
- 0756 Radio Japan: Tokyo Pop-In. See M 0556.
- 1109 Deutsche Welle: Newline Cologne. See M 1109.
- 1115 BBC: New Ideas. See T 0445.
- 1115 Radio Japan: Commentary. See S 0515.
- 1120 Radio Japan: Business and Science. See H 0520.
- 1125 BBC: Book Choice. See S 0745.
- 1130 BBC: Drama. A dramatic production in serial form.
- 1134 Deutsche Welle: Hallo Africa. See M 1134.
- 1151 Radio Japan: Commentary. See S 0515.
- 1156 Radio Japan: Tokyo Pop-In. See M 0556.
- 1215 BBC: Multitrack 2. See W 1830.
- 1230 Radio Canada Int'l: North Country. See M 1230.
- 1234 Radio Canada Int'l: Spotlight on Science. The latest developments in science and technology.
- 1245 BBC: Sports Roundup. See S 1330.
- 1308 Radio Canada Int'l: Current Affairs. See M 1308.
- 1309 BBC: Twenty-Four Hours. See S 0509.
- 1330 BBC: Network UK. See T 0215.
- 1345 BBC: Jazz Scene UK (November 2nd, 16th, 30th) or Folk in Britain (November 9th, 23rd). A look at jazz or folk music on the British Isles.

Are we ahead or behind?

Twice a year, chaos reigns on the shortwave bands as stations adjust to daylight savings time - or don't adjust. It's a messy and impossible system, but also a fact of life.

If we've missed any program time changes, please let us know at the address on page 56.

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- 1400 Radio Moscow (World Service): News
- 1400 Radio RSA: News
- 1400 Voice of America: News
- 1400 WWCR: News [M-F]
- 1405 Radio Finland: Northern Report [T-A]
- 1410 Radio Beijing: News About China
- 1425 HCJB: News [M-F]
- 1430 Christian Science Monitor: News [M-F]
- 1430 Radio Moscow (World Service): News in Brief [S]
- 1430 Radio Netherlands: News [M-A]
- 1445 Radio Berlin Int'l: News
- 1445 Radio Canada Int'l: News
- 1500 BBC: Newsreel
- 1500 Belize Radio One: News [M-A]
- 1500 Christian Science Monitor: News
- 1500 Deutsche Welle: World News
- 1500 Radio Australia: World and Australian News
- 1500 Radio Beijing: News
- 1500 Radio Japan: News

- 1500 Radio Moscow (World Service): News
- 1500 Radio RSA: News
- 1500 Voice of America: News
- 1510 Radio Beijing: News About China
- 1525 HCJB: News [M-F]
- 1526 Radio Veritas Asia: World News [M-A]
- 1530 BRT, Brussels: News [M-S]
- 1530 Christian Science Monitor: News [M-F]
- 1530 Deutsche Welle: African News [M-F]
- 1530 Radio Moscow (World Service): News in Brief
- 1530 Swiss Radio Int'l: News
- 1545 Radio Berlin Int'l: News
- 1552 Radio RSA: News in Brief
- 1600 BBC: World News
- 1600 Christian Science Monitor: News
- 1600 Deutsche Welle: World News
- 1600 Radio Australia: International Report
- 1600 Radio France International: News
- 1600 Radio Korea: News
- 1600 Radio Moscow (World Service): News
- 1600 Radio Portugal: News [M-F]
- 1600 Voice of America: News
- 1609 BBC: News About Britain

- 1615 Radio Canada Int'l: News
- 1625 HCJB: News [M-F]
- 1630 Christian Science Monitor: News [M-F]
- 1630 Radio Moscow (World Service): News in Brief [S-M]
- 1630 Radio Netherlands: News [M-A]
- 1630 Voice of America (except Africa): News (Special English)
- 1645 Radio Berlin Int'l: News
- 1645 Radio Berlin Int'l: News
- 1700 BBC: World News
- 1700 Belize Radio One: News [M-F]
- 1700 Christian Science Monitor: News
- 1700 Radio Australia: World and Australian News
- 1700 Radio Japan: News
- 1700 Radio Moscow (World Service): News
- 1700 Voice of America: News
- 1730 BRT, Brussels: News
- 1730 Christian Science Monitor: News [M-F]
- 1730 Radio Moscow (World Service): News in Brief [S]
- 1730 Swiss Radio Int'l: News
- 1800 BBC: Newsdesk

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- 1405 BBC: Outlook. See M 1405.
- 1415 Radio Japan: Commentary. See S 0515.
- 1420 Radio Japan: Business and Science. See H 0520.
- 1430 BBC: Off the Shelf. See M 0430.
- 1445 BBC: Write On... See H 0730.
- 1451 Radio Japan: Commentary. See S 0515.
- 1456 Radio Japan: Tokyo Pop-In. See M 0556.
- 1509 Deutsche Welle: Newline Cologne. See M 1109.
- 1515 BBC: The Pleasure's Yours. Gordon Clyde presents classical music requests.



Radio Japan production staff in the studio control room.

- 1515 Radio Japan: Commentary. See S 0515.
- 1520 Radio Japan: Business and Science. See H 0520.
- 1534 Deutsche Welle: Spotlight on Sport. Background stories and coverage of important sporting events.
- 1551 Radio Japan: Commentary. See S 0515.
- 1556 Radio Japan: Tokyo Pop-In. See M 0556.
- 1609 Deutsche Welle: Newline Cologne. See M 1109.
- 1615 BBC: Assignment. See H 0230.
- 1634 Deutsche Welle: Asia-Pacific Report. See M 1634.
- 1645 BBC: The World Today. See M 1645.
- 2305 BBC: Commentary. See M 2305.
- 2308 Radio Canada Int'l: Current Affairs. See M 1308.
- 2310 BBC: Financial News. See M 2310.
- 2315 BBC: Music Review. Classical music events and developments from around the world.
- 2315 Radio Japan: Commentary. See S 0515.
- 2320 Radio Japan: Business and Science. See H 0520.
- 2351 Radio Japan: Commentary. See S 0515.
- 2356 Radio Japan: Tokyo Pop-In. See M 0556.

Friday

Nov 3rd, 10th, 17th, 24th

- 0030 BBC: Verdi and His World. A look at the great operatic composer.
- 0101 BBC: Outlook. See M 1405.
- 0109 Deutsche Welle: Newline Cologne. See M 1109.
- 0115 Radio Japan: Commentary. See S 0515.
- 0120 Radio Japan: Business and Science. See H 0520.
- 0125 BBC: Financial News. See M 2310.
- 0126 Radio Japan (North America): Tokyo Pop-In. See M 0556.
- 0130 BBC: Jazz Scene UK (November 3rd, 17th) or Folk in Britain (November 10th, 24th). See H 1345.
- 0134 Deutsche Welle: Science and Technology. See M 0234.
- 0145 BBC: Talking From... Profiles from Northern Ireland, Scotland, and Wales.
- 0151 Radio Japan: Commentary. See S 0515.
- 0156 Radio Japan: Tokyo Pop-In. See M 0556.
- 0209 BBC: British Press Review. See S 0209.
- 0209 Deutsche Welle: Morning Magazine. See M 0209.
- 0215 BBC: Seven Seas. A weekly program about ships and the sea.
- 0230 BBC: Dramah. See H 1130.
- 0234 Deutsche Welle: Spotlight on Sport. See H 1534.
- 0308 Radio Canada Int'l: Current Affairs. See M 1308.
- 0309 Deutsche Welle: Newline Cologne. See M 1109.
- 0315 BBC: The World Today. See M 1645.
- 0315 Radio Japan: Commentary. See S 0515.
- 0320 Radio Japan: Business and Science. See H 0520.
- 0326 Radio Japan (Americas): Tokyo Pop-In. See M 0556.
- 0330 BBC: Focus on Faith. Comment and discussion on the major issues in the worlds of faith.
- 0334 Deutsche Welle: Science and Technology. See M 0234.
- 0351 Radio Japan: Commentary. See S 0515.
- 0356 Radio Japan: Tokyo Pop-In. See M 0556.
- 0404 Radio Canada Int'l: Spotlight on Science. See H 1234.
- 0409 Deutsche Welle: Morning Magazine. See M 0209.
- 0430 BBC: Off the Shelf. See M 0430.
- 0434 Deutsche Welle: Africa Report. See M 0434.

- 0445 BBC: Jazz Scene UK (November 3rd, 17th) or Folk in Britain (November 10th, 24th). See H 1345.
- 0509 BBC: Twenty-Four Hours. See S 0509.
- 0509 Deutsche Welle: Newline Cologne. See M 1109.
- 0515 Radio Japan: Commentary. See S 0515.
- 0520 Radio Japan: Japan Panorama. Culture, traditions, and lifestyles of the Japanese people.
- 0530 BBC: Financial News. See T 0125.
- 0534 Deutsche Welle: Science and Technology. See M 0234.
- 0540 BBC: Words of Faith. See S 0540.
- 0545 BBC: The World Today. See M 1645.
- 0551 Radio Japan: Commentary. See S 0515.
- 0556 Radio Japan: Tokyo Pop-In. See M 0556.
- 0609 Deutsche Welle: Morning Magazine. See M 0209.
- 0630 BBC: Meridian. See W 0630.
- 0634 Deutsche Welle: Africa Report. See M 0434.
- 0709 BBC: Twenty-Four Hours. See S 0509.
- 0715 Radio Japan: Commentary. See S 0515.
- 0720 Radio Japan: Japan Panorama. See F 0520.
- 0730 BBC: Churchill at War. A look at Churchill's actions during the Second World War.
- 0751 Radio Japan: Commentary. See S 0515.
- 0756 Radio Japan: Tokyo Pop-In. See M 0556.
- 1109 Deutsche Welle: Newline Cologne. See M 1109.
- 1115 BBC: Talking From... See F 0145.
- 1115 Radio Japan: Commentary. See S 0515.
- 1120 Radio Japan: Japan Panorama. See F 0520.
- 1130 BBC: Meridian. See W 0630.
- 1134 Deutsche Welle: Hallo Africa. See M 1134.
- 1151 Radio Japan: Commentary. See S 0515.
- 1156 Radio Japan: Tokyo Pop-In. See M 0556.
- 1215 BBC: Churchill at War. See F 0730.
- 1230 Radio Canada Int'l: North Country. See M 1230.
- 1234 Radio Canada Int'l: Coast to Coast. See M 0404.
- 1245 BBC: Sports Roundup. See S 1330.
- 1308 Radio Canada Int'l: Current Affairs. See M 1308.
- 1309 BBC: Twenty-Four Hours. See S 0509.
- 1330 BBC: John Peel. See T 0330.
- 1405 BBC: Outlook. See M 1405.
- 1415 Radio Japan: Commentary. See S 0515.
- 1420 Radio Japan: Japan Panorama. See F 0520.
- 1430 BBC: Off the Shelf. See M 0430.
- 1445 BBC: Nature Now. See M 0445.
- 1451 Radio Japan: Commentary. See S 0515.
- 1456 Radio Japan: Tokyo Pop-In. See M 0556.
- 1509 Deutsche Welle: Newline Cologne. See M 1109.

1100 Radio Australia: World and Australian News	1200 Radio Australia: International Report	1300 Radio Finland: Northern Report [T-A]
1100 Radio Beijing: News	1200 Radio Beijing: News	1300 Radio Moscow (World Service): News
1100 Radio Finland: Northern Report [T-F]	1200 Radio Berlin Int'l: News	1300 Radio RSA: News
1100 Radio Japan: News	1200 Radio Canada Int'l: World Report [M-F]	1300 Trans World Radio, Bonaire: News [S]
1100 Radio Korea: News	1200 Radio Finland: Northern Report [T-F]	1300 Voice of America: News
1100 Radio Moscow (World Service): News	1200 Radio Moscow (World Service): News	1315 Radio Berlin Int'l: News
1100 Radio New Zealand Int'l: News	1200 Radio New Zealand Int'l: News	1325 HCJB: News [M-F]
1100 Radio RSA: News	1200 Swiss Radio Int'l: News	1330 Christian Science Monitor: News [M-F]
1100 Swiss Radio Int'l: News	1200 Voice of America: News	1330 Radio Moscow (World Service): News in Brief [S-M]
1100 Trans World Radio, Bonaire: News [M-F]	1210 Radio Beijing: News About China	1330 Swiss Radio Int'l: News
1100 Voice of America: News	1230 BRT, Brussels: News [M-S]	1330 Voice of America: News (Special English)
1109 BBC: News About Britain	1230 Christian Science Monitor: News	1345 Radio Berlin Int'l: News
1110 Belize Radio One: News Summary [T-F]	1230 Radio Berlin Int'l: News	1352 Radio RSA: News in Brief
1110 Radio Beijing: News About China	1230 Radio Moscow (World Service): News in Brief	1400 BBC: News Summary [A-S]; Five-Minute News [M-F]
1120 Belize Radio One: News Summary [A]	1245 Radio France International: News	1400 Christian Science Monitor: News
1125 Belize Radio One: News Summary [M]	1300 BBC: World News	1400 Radio Australia: International Report
1130 Christian Science Monitor: News	1300 Belize Radio One: News	1400 Radio Beijing: News
1130 Radio Moscow (World Service): News in Brief [S-M]	1300 Christian Science Monitor: News	1400 Radio Berlin Int'l: News
1130 Radio Netherlands: News [M-A]	1300 Christian Science Monitor: News [M-F]	1400 Radio France International: News
1152 Radio RSA: News In Brief	1300 Radio Australia: World and Australian News	1400 Radio Japan: News
1200 BBC: News Summary [S]; Newsreel [M-A]	1300 Radio Canada Int'l (Asia/Pacific): News [S-F]	1400 Radio Korea: News
1200 Christian Science Monitor: News [M-F]	1300 Radio Canada Int'l: News [S]	

program

guide

- 1515 BBC: Music Review. See H 2315.
- 1515 Radio Japan: Commentary. See S 0515.
- 1520 Radio Japan: Japan Panorama. See F 0520.
- 1534 Deutsche Welle: Economic Notebook. See T 0234.
- 1551 Radio Japan: Commentary. See S 0515.
- 1556 Radio Japan: Tokyo Pop-In. See M 0556.
- 1609 Deutsche Welle: Newsline Cologne. See M 1109.
- 1615 BBC: Science in Action. See M 0230.
- 1634 Deutsche Welle: Asia-Pacific Report. See M 1634.
- 1645 BBC: The World Today. See M 1645.
- 2305 BBC: Commentary. See M 2305.
- 2308 Radio Canada Int'l: Current Affairs. See M 1308.
- 2310 BBC: Financial News. See M 2310.
- 2315 BBC: Worldbrief. A roundup of the week's news headlines and human-interest happenings.
- 2315 Radio Japan: Commentary. See S 0515.
- 2320 Radio Japan: Japan Panorama. See F 0520.
- 2330 BBC: Multitrack 3. Sarah Ward presents innovative and alternative rock music.
- 2351 Radio Japan: Commentary. See S 0515.
- 2356 Radio Japan: Tokyo Pop-In. See M 0556.

Saturday

Nov 4th, 11th, 18th, 25th

- 0030 BBC: From the Weeklies. A review of the weekly British press.
- 0045 BBC: Recording of the Week. See M 0545.
- 0101 BBC: Outlook. See M 1405.
- 0109 Deutsche Welle: Newsline Cologne. See M 1109.
- 0115 Radio Japan: Commentary. See S 0515.
- 0120 Radio Japan: Japan Panorama. See F 0520.
- 0125 BBC: Financial News. See M 2310.
- 0126 Radio Japan (North America): Tokyo Pop-In. See M 0556.
- 0127 Deutsche Welle: Caribbean Report. A weekly look at developments in the Caribbean region.
- 0130 BBC: Behind the Wall. Colin Thubron's account of his travels across China.
- 0134 Deutsche Welle: Random Selection. Larry Wayne takes a look at Germany from the lighter side.
- 0145 BBC: Book Choice. See S 0745.
- 0150 BBC: New Ideas. See T 0445.
- 0151 Radio Japan: Commentary. See S 0515.
- 0156 Radio Japan: Tokyo Pop-In. See M 0556.

- 0209 BBC: British Press Review. See S 0209.
- 0209 Deutsche Welle: Commentary. See S 0109.
- 0213 Deutsche Welle: International Talking Point. See S 1513.
- 0215 BBC: Network UK. See T 0215.
- 0230 BBC: People and Politics. Background to the British political scene.
- 0234 Deutsche Welle: Man and Environment. A program on all topics relating to the environment in industrial and developing countries.
- 0308 Radio Canada Int'l: Innovation Canada. See S 0108.
- 0309 Deutsche Welle: Newsline Cologne. See M 1109.
- 0315 BBC: The World Today. See M 1645.
- 0315 Radio Japan: Commentary. See S 0515.
- 0320 Radio Japan: Japan Panorama. See F 0520.
- 0326 Radio Japan (Americas): Tokyo Pop-In. See M 0556.
- 0327 Deutsche Welle: Caribbean Report. See A 0127.
- 0330 BBC: The Vintage Chart Show. Past top ten hits with Jimmy Savile.
- 0330 Radio Canada Int'l: SWL Digest. See S 0008.
- 0334 Deutsche Welle: Random Selection. See A 0134.
- 0351 Radio Japan: Commentary. See S 0515.
- 0352 Radio Canada Int'l: Music Spot. See S 0030.
- 0356 Radio Japan: Tokyo Pop-In. See M 0556.
- 0404 Radio Canada Int'l: Spotlight on Science. See H 1234.
- 0409 Deutsche Welle: Africa Highlight. A weekly feature on an important topic concerning

- Africa.
- 0423 Deutsche Welle: Development Forum. Reports and interviews on projects and progress in Africa and Asia.
- 0430 BBC: Here's Humph! All that jazz with Humphrey Lyttelton.
- 0434 Deutsche Welle: Science and Technology. See M 0234.
- 0445 BBC: Personal View. See A 0030.
- 0509 BBC: Twenty-Four Hours. See S 0509.
- 0509 Deutsche Welle: Newsline Cologne. See M 1109.
- 0515 Radio Japan: This Week. See S 0115.
- 0527 Deutsche Welle: Caribbean Report. See A 0127.
- 0530 BBC: Financial News. See M 2310.
- 0534 Deutsche Welle: Random Selection. See A 0134.
- 0540 BBC: Words of Faith. See S 0540.
- 0545 BBC: The World Today. See M 1645.
- 0609 Deutsche Welle: Africa Highlight. See A 0409.
- 0623 Deutsche Welle: Development Forum. See A 0423.
- 0630 BBC: Meridian. See W 0630.
- 0634 Deutsche Welle: Science and Technology. See M 0234.
- 0709 BBC: Twenty-Four Hours. See S 0509.
- 0715 Radio Japan: This Week. See S 0115.
- 0730 BBC: From the Weeklies. See F 2315.
- 0745 BBC: Network UK. See T 0215.
- 1109 Deutsche Welle: Panorama. A review of the major events of the week.
- 1115 BBC: Behind the Wall. See A 0130.
- 1115 Radio Japan: This Week. See S 0115.

Members of the current events staff of Deutsche Welle. The staff produces "Newsline Cologne" and "Morning Magazine."



- 1800 Belize Radio One: Headline News [M-A]
- 1800 Christian Science Monitor: News
- 1800 Kol Israel: News
- 1800 Radio Australia: International Report
- 1800 Radio Canada Int'l: News
- 1800 Radio Korea: News
- 1800 Radio Moscow (World Service): News
- 1800 Radio RSA: News
- 1800 Voice of America: News
- 1800 WWCR: News [M-A]
- 1815 Radio Berlin Int'l: News
- 1830 Belize Radio One: Network News
- 1830 Christian Science Monitor: News [M-F]
- 1830 Radio Canada Int'l: News [M-F]
- 1830 Radio Finland: Northern Report [M-F]
- 1830 Radio Kuwait: News
- 1830 Radio Moscow (World Service): News in Brief
- 1830 Radio Netherlands: News [M-A]
- 1830 Swiss Radio Int'l: News
- 1830 Voice of America: News (Special English)
- 1852 Radio RSA: News in Brief
- 1900 BBC: News Summary

- 1900 Christian Science Monitor: News
- 1900 Deutsche Welle: World News
- 1900 HCJB: Latin American News [M-F]
- 1900 Radio Australia: World and Australian News
- 1900 Radio Canada Int'l: News [M-F]
- 1900 Radio Havana Cuba: Int'l News [M-A]
- 1900 Radio Japan: News
- 1900 Radio Moscow (World Service): News
- 1900 Radio New Zealand Int'l: News
- 1900 Radio Portugal: News [M-F]
- 1900 Radio RSA: News
- 1900 Spanish National Radio: News
- 1900 Voice of America: News
- 1903 Radio Jamahiriya, Libya: Headlines
- 1930 Christian Science Monitor: News [M-F]
- 1930 Radio Berlin Int'l: News
- 1930 Radio Havana Cuba: Cuban National News [M-T]; Newsbreak [W-A]
- 1930 Radio Moscow (World Service): News in Brief [A-S]
- 1935 Radiotelevisione Italiana: News
- 1947 Radio Jamahiriya, Libya: News
- 1950 HCJB: News [M-F]

- 2000 BBC: World News
- 2000 Christian Science Monitor: News
- 2000 Kol Israel: News
- 2000 Radio Australia: International Report
- 2000 Radio Havana Cuba: Int'l News [M-A]
- 2000 Radio Jordan: News
- 2000 Radio Moscow (World Service): News
- 2000 Radio New Zealand Int'l: News
- 2000 Radio RSA: News
- 2000 Voice of America: News
- 2000 Voice of Indonesia: News
- 2015 Radio Berlin Int'l: News
- 2025 Radio Havana Cuba: Cuban National News [M-A]
- 2025 Radiotelevisione Italiana: News
- 2030 Christian Science Monitor: News [M-F]
- 2030 Radio Havana Cuba: News [M-A]
- 2030 Radio Korea: News
- 2030 Radio Moscow (World Service): News in Brief [S]
- 2030 Radio Netherlands: News [M-A]
- 2045 Radio Berlin Int'l: News
- 2052 Radio RSA: News in Brief

**Suggestions?
Something missing?**

Let us know your corrections, additions, and suggestions of what you'd like to see to Program Manager Kannon Shanmugam at 4412 Turnberry Circle, Lawrence, Kansas 66047.

- 1130 BBC: Meridian. See W 0630.
- 1134 Deutsche Welle: Mailbag Africa. Listeners' questions, music requests, and the club corner.
- 1215 BBC: Multitrack 3. See F 2330.
- 1245 BBC: Sports Roundup. See S 1330.
- 1300 Radio Canada Int'l: Canadian Journal. A magazine program on Canadian life.
- 1309 BBC: Twenty-Four Hours. See S 0509.
- 1330 BBC: Network UK. See T 0215.
- 1345 BBC: Sportsworld. Paddy Feeny presents almost three hours of live sports.
- 1401 BBC: Sportsworld (continued). See A 1345.
- 1415 Radio Japan: This Week. See S 0115.
- 1509 Deutsche Welle: Commentary. See S 0109.
- 1513 Deutsche Welle: Africa This Week. A review of trends and events on the African continent.
- 1515 BBC: Sportsworld (continued). See A 1345.
- 1515 Radio Japan: This Week. See S 0115.
- 1534 Deutsche Welle: Man and Environment. See A 0234.
- 1609 Deutsche Welle: Panorama. See A 1109.
- 1615 BBC: Sportsworld (continued). See A 1345.
- 1623 Deutsche Welle: Development Forum. See A 0423.
- 1634 Deutsche Welle: Religion and Society. See S 0409.
- 2308 Radio Canada Int'l: Innovation Canada. See S 0108.
- 2310 BBC: Book Choice. See S 0745.
- 2315 BBC: A Jolly Good Show. See T 1515.
- 2315 Radio Japan: This Week. See S 0115.
- 2338 Radio Canada Int'l: Coast to Coast. See M 0404.

IF YOU KNEW HOW MANY DOLPHINS DIED TO MAKE THIS TUNA SANDWICH, YOU'D LOSE YOUR LUNCH.

Over 6 million dolphins were killed by tuna fleets in the eastern tropical Pacific over the last 30 years.

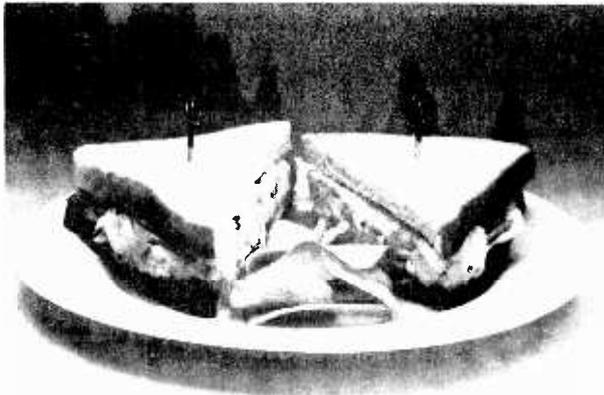
These dolphins weren't killed for food or for use in any product. They were killed purely to increase net profits.

It was just these dolphins' bad luck that schools of large, profitable yellowfin tuna often swim below dolphin herds. And in the late '50s, fishermen realized that if they could snare the dolphins, they could net tons and tons of the tuna below.

First, the dolphins are chased and herded with speedboats, helicopters, and underwater explosives. Then, an enormous net is set around the herd and drawn closed at the bottom.

Exhausted and entangled in the nets, many dolphins suffocate. Some are literally crushed to death.

The Marine Mammal Protection Act of 1972 has helped. But it hasn't



helped enough. Over 100,000 dolphins continue to die each year at the hands of the tuna industry.

Please donate your time or money to Greenpeace so we can continue our efforts to save the dolphins. If you must eat canned tuna, buy only Albacore or chunk

white tuna which isn't caught 'on dolphins.'

Better yet, don't buy any tuna at all. It will only leave a bad taste in your mouth.

GREENPEACE
1436 U Street, Washington, DC 20009

QSL

- 1 Churchill's Island
- 2 Mar Onee Antwerp
- 3 Sigeta Delivery
- 4 Le Dir lin de l'etro-ne americain
- 5 Transieurs
- 6 Ance of Green Gables
- 7 Le Frere Amire
- 8 Les Portes tournautes
- 9 Martha, Huth & Ede
- 10 Un zoo a ruit
- 11 The Young Magician

Radio Canada International

QSL from Paul Garland, El Paso, TX

news guide cont'd from p.57

- | | | |
|---|---|--|
| <ul style="list-style-type: none"> 2055 Voice of Indonesia: News in Brief 2100 BBC: News Summary 2100 Belize Radio One: News [M-F] 2100 BRT, Brussels: News 2100 Christian Science Monitor: News 2100 Deutsche Welle: World News 2100 KVOH: UPI Radio News 2100 Radio Australia: World and Australian News 2100 Radio Canada Int'l: News [A-S]; The World at Six [M-F] 2100 Radio Finland: Northern Report [M-F] 2100 Radio Japan: News 2100 Radio Moscow (World Service): News 2100 Radio New Zealand Int'l: News 2100 Spanish National Radio: News 2100 Swiss Radio Int'l: News 2100 Voice of America: News 2130 Christian Science Monitor: News [M-F] 2130 KVOH: UPI Headline News 2130 Radio Canada Int'l (Africa): News 2130 Radio Canada Int'l: As It Happens [M-F] | <ul style="list-style-type: none"> 2130 Radio Moscow (World Service): News in Brief 2130 Swiss Radio Int'l: News 2200 BBC: Newshour 2200 Christian Science Monitor: News 2200 KVOH: UPI Radio News 2200 Radio Australia: International Report 2200 Radio Berlin Int'l: News 2200 Radio Canada Int'l (Asia/Pacific): News 2200 Radio Canada Int'l: News [A-S]; The World at Six [M-F] 2200 Radio Havana Cuba: Int'l News [M-A] 2200 Radio Moscow (World Service): News 2200 Radiotelevisione Italiana: News 2200 Voice of America: News 2200 Voice of Free China: News and Commentary 2230 Christian Science Monitor: News [M-F] 2230 Kol Israel: News 2230 KVOH: UPI Headline News 2230 Radio Havana Cuba: National News[M-A] 2230 Radio Moscow (World Service): News in Brief [A-S] 2230 Voice of America: News (Special English) 2245 Radio Berlin Int'l: News | <ul style="list-style-type: none"> 2300 BBC: World News [A-S]; 5-Minute News[M-F] 2300 Belize Radio One: News [M-F] 2300 Christian Science Monitor: News 2300 KVOH: UPI Radio News 2300 Radio Australia: World and Australian News 2300 Radio Canada Int'l: News 2300 Radio for Peace Int'l: News [F] 2300 Radio Japan: News 2300 Radio Moscow: News 2300 Voice of America: News 2300 Voice of Turkey: News 2330 BRT, Brussels: News 2330 Christian Science Monitor: News [M-F] 2330 KVOH: UPI Headline News 2330 Radio Canada Int'l: As It Happens [M-F]; News [A] 2330 Radio for Peace Int'l: News [M] 2330 Radio Korea: News 2330 Radio Moscow (World Service): News in Brief [A-S] 2330 Radio Polonia: News 2335 Voice of Greece: News [S] |
|---|---|--|

MT Monitoring Team

Greg Jordan,
Frequency Manager

1855-1 Franciscan Terrace
Winston-Salem, NC 27127

Joe Hanlon

Philadelphia, Pennsylvania

Richard A. Keen

Golden, Colorado

frequency

section

0000-0100	Radio Luxembourg	6090			
0000-0100	Radio Moscow	11845	12025	12055	15415
		17880	21690	21790	
0000-0100	Radio Moscow N. America Service	7150	9600	9700	9720
		9765	9865	11750	12050
		15425	17605	17700	17840
		21460	21470		
0000-0100	Radio New Zealand, Wellington	15485	17705		
0000-0100	Radio for Peace, Costa Rica	13660	21565		
0000-0100	Radio Thailand, Bangkok	9655	11905		
0000-0100	Radio Tonga, Tonga	5050			
0000-0100	SBC Radio One, Singapore	5010	5052	11940	
0000-0100	Spanish National Radio, Madrid	9630	15110		
0000-0100 T-S	Superpower KUSW, Utah	15580			
0000-0100	Voice of America, Washington	5995	6130	9455	9775
		9815	11580	11695	11740
		15205			
		7315	9495		
0000-0100	WHRI, Noblesville, Indiana	7355			
0000-0100	WRNO, New Orleans, Louisiana	15690			
0000-0100 IRR	WWCR, Nashville, Tennessee	5985	9505	15170	
0000-0100	WYFR, Oakland, California	6195	7235	9570	11945
0030-0045	BBC, London, England*	15360	17875		
0030-0100	BBC, London, England	5975	6005	6175	7325
		9915	9590	12095	15260
		9925			
0030-0100 T-S	BRT, Brussels, Belgium	9745	11775	15155	15230
0030-0100	HCJB, Quito, Ecuador	6110	9520	9598	9835
0030-0100	Radio Budapest, Hungary	11910	15160		
0030-0100	Radio Kiev, Ukrainian SSR	9610	11675	15180	17665
		17690			
0030-0100	Radio Netherlands, Hilversum	6020	6165	15315	
0030-0100	SLBC, Colombo, Sri Lanka	6005	9720		
0035-0040	All India Radio, New Delhi	3925	4860		
0045-0100	Radio Berlin Int'l, E. Germany	6080	11890		
0045-0100	Radio Korea (South), Seoul	15575			
0045-0100	Radio New Zealand, Wellington	15485	17705		
0048-0100	WINB, Red Lion, Pennsylvania	15145			
0050-0100	Vatican Radio, Vatican City	9605	11780	15180	

0000 UTC [7:00 PM EST/4:00 PM PST]

0000-0030	BBC, London, England	5975	6005	6175	7325
		9590	9915	12095	15260
		17875			
0000-0030	Kol Israel, Jerusalem	11605	12080	15615	
0000-0030	Radio Canada Int'l, Montreal	9755	11730		
0000-0030	Radio Korea (South), Seoul	15575			
0000-0030 M	Radio Norway, Oslo	15165			
0000-0045	WINB, Red Lion, Pennsylvania	15145			
0000-0050	Radio Pyongyang, North Korea	15115	15160		
0000-0055	Radio Beijing, PR China	15066	15130	17715	17855
0000-0100	All India Radio, New Delhi	6055	7215	9535	9910
		11715	11745	15110	
0000-0100	Adventist World Radio, Costa Rica	9725	11870		
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	Christian Science World Service	7400	9850	13760	
0000-0100	CKWX, Vancouver, British Columbia	6080			
0000-0100	CFRB, Toronto, Ontario	6070			
0000-0100	FEBC, Manila, Philippines	15445			
0000-0100	KSDA, Guam	15125			
0000-0100	KVOH, Rancho Simi, California	17775			
0000-0100	Radio Australia, Melbourne	15140	15160	15240	15320
		17750	17795	21740	
0000-0100	Radio Canada Int'l, Montreal	5960	9755		
0000-0100	Radio Havana Cuba	11820			
0000-0100	Radio Japan, Tokyo	11660	15330		

0100 UTC [8:00 PM EST/5:00 PM PST]

0100-0110	Vatican Radio, Vatican City	9605	11780	15180	
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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.

The last entry on a line is the frequency. Several codes may be found after a frequency as follows:

- * SSB indicates Single Sideband transmission.
- * 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.
- * [ML] after a frequency indicates a multi-lingual transmission containing English-language programs. All other frequencies may be assumed to be English language programs directed to various parts of the world.
- * 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

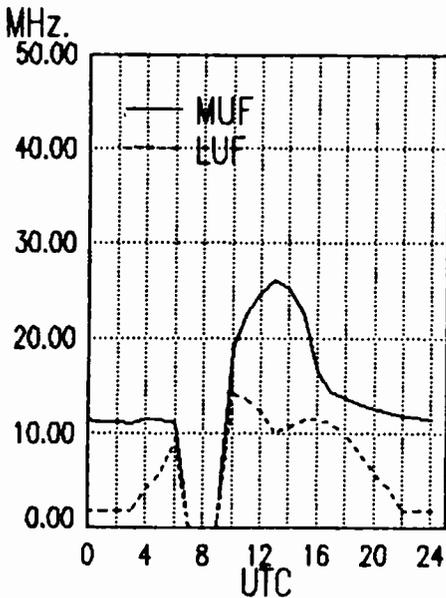
0200-0300	BBC, London, England	5975	6005	6175	6195
		7325	9410	9590	9660
		9915	12095	15235	15260
		15310	17705	17815	
0200-0300	CBC Northern Quebec Service	6195	9625		
0200-0300	CBN, St. John's, Newfoundland	6160			
0200-0300	CBU, Vancouver, British Columbia	6160			
0200-0300	CFCF, Montreal, Quebec	6005			
0200-0300	CFCN, Calgary, Alberta	6030			
0200-0300	CFRB, Toronto, Ontario	6070			
0200-0300	CHNS, Halifax, Nova Scotia	6130			
0200-0300	Christian Science World Service	9455	9850	13760	
0200-0300	CKWX, Vancouver, British Columbia	6080			
0200-0300	HCJB, Quito, Ecuador	9745	11775	15155	
0200-0300	A,S KSDA, Guam	17865			
0200-0300	T-A KVOH, Rancho Simi, California	17775 (ML)			
0200-0300	Radio Australia, Melbourne	15160	15180	15240	15320
		15395	17715	17750	17795
		21740			
0200-0300	Radio Baghdad, Iraq	9515	11810		
0200-0300	Radio Cairo, Egypt	9475	9675		
0200-0300	T-A Radio Canada Int'l, Montreal	9535	9755	11845	11940
0200-0300	Radio Havana Cuba	9710	11820		
0200-0300	Radio Luxembourg	6090			
0200-0300	Radio Moscow, USSR	11845	12025	15415	15590
		17600	17880	21585	21690
		21790			
0200-0300	Radio Moscow N. America Service	7165	7290	9600	9700
		9720	9865	11750	12050
		15425	17605	17840	21470
		3955			
0200-0300	Radio Orion, South Africa	13660	21565	25945(A)	
0200-0300	T-A Radio for Peace, Costa Rica	15485	17705		
0200-0300	Radio New Zealand, Wellington	9580	9615	11935	
0200-0300	Radio RSA, South Africa	9655	11905		
0200-0300	Radio Thailand, Bangkok	5030			
0200-0300	Radio Tonga, Tonga	11710			
0200-0300	RAE, Buenos Aires, Argentina	5052	11940		
0200-0300	SBC Radio One, Singapore	6005	9720	15425	
0200-0300	SLBC, Colombo, Sri Lanka	11695			
0200-0300	T-S Superpower KUSW, Utah	7285			
0200-0300	Voice of Asia, Taiwan	5950	7445	9680	11740
0200-0300	Voice of Free China, Taiwan	6045			
0200-0300	Voice of Kenya, Nairobi	15145			
0200-0300	WINB, Red Lion, Pennsylvania	7315	9495		
0200-0300	WHRI, Noblesville, Indiana				

0200-0300	WRNO, New Orleans, Louisiana	7355			
0200-0300	IRR WWCR, Nashville, Tennessee	7520			
0200-0300	WYFR, California	5985	9505	15170	
0215-0220	Radio Nepal, Kathmandu	5005	7165		
0230-0240	Port Moresby, Papua New Guinea	3925	4890	5960	5985
		6020	6040	6080	6140
		9520			
0230-0245	WHF Radio Budapest, Hungary	6110	9520	9585	9835
	A	11910	15160		
0230-0245	Radio Pakistan, Islamabad	7010	11570	15115	15580
		17660			
0230-0300	Radio Finland, Helsinki	11755	15185		
0230-0300	T-A Radio Portugal, Lisbon	6060	6080	9600	9680
		9705	11840		
		9762v			
0230-0300	Radio Tirana, Albania	7205	15160		
0230-0300	Voice of America, Washington	3905	4860	4880	4895
0240-0250	All India Radio, New Delhi	5960	5990	6110	6120
		7195	7295	9550	9610
		11830	11870	15305	
0245-0300	Radio Berlin Int'l, E. Germany	6080	11785	11890	15125
0245-0300	Radio Korea, Seoul, South Korea	9640	15575		

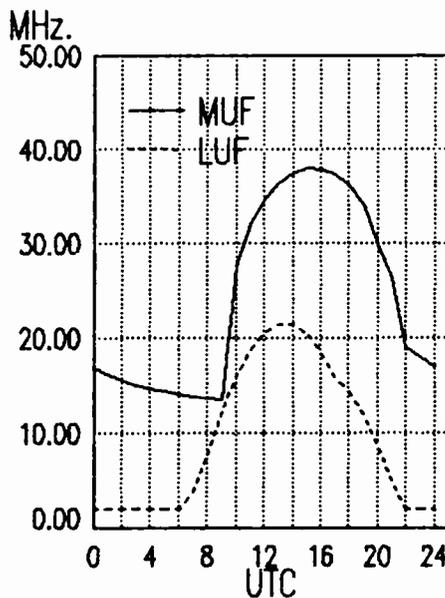
0300 UTC [10:00 PM EST/7:00 PM PST]

0300-0330	WINB, Red Lion, Pennsylvania	15145			
0300-0307	Radio Pakistan, Islamabad	5090	5930	7095	
0300-0330	BBC, London, England	3955	5975	6005	6180
		6195	7325	9410	9660
		9915	11750	12095	15260
		15390	15420		
0300-0330	Radio Berlin Int'l, E. Germany	6080	11785	11890	15125
0300-0330	Radio Cairo, Egypt	9475	9675		
0300-0330	Radio Japan, Tokyo	15195	15325	17825	21610
0300-0330	Radio Kiev, Ukrainian SSR	9610	11675	12000	15180
		17665	17690		
0300-0330	Radio Sweden Int'l, Stockholm	9695	11705		
0300-0350	Deutsche Welle, West Germany	6085	9545	11810	15205
0300-0350	Radio Baghdad, Iraq	11810	11945		
0300-0355	Radio Beijing, China	9690	11715	15066	15130
		15510	17855		
0300-0400	CBC Northern Quebec Service	6195	9625		
0300-0400	CBN, St. John's, Newfoundland	6160			

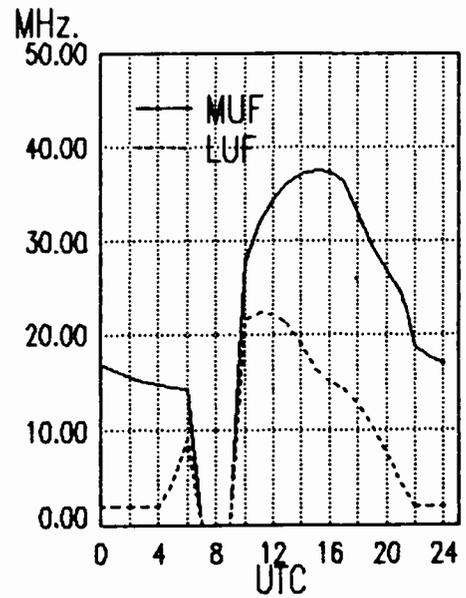
East Coast To Middle East



East Coast To West Africa



East Coast To Central Africa



East Coast

frequency

section

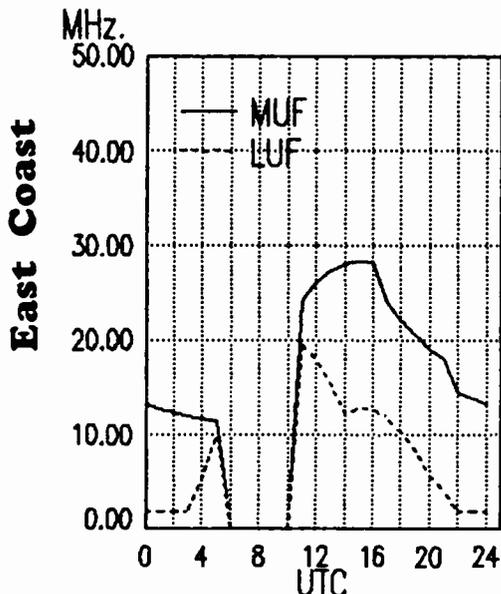
0300-0400	CBU, Vancouver, British Columbia	6160			
0300-0400	CFCF, Montreal, Quebec	6005			
0300-0400	CFCN, Calgary, Alberta	6030			
0300-0400	CHNS, Halifax, Nova Scotia	6130			
0300-0400	Christian Science World Service	9455	9850	13760	
0300-0400	CKWX, Vancouver, British Columbia	6080			
0300-0400	CFRB, Toronto, Ontario	6070			
0300-0400	HCJB, Quito, Ecuador	9745	11775	15155	
0300-0400	La Voz Evangelica, Honduras	4820			
0300-0400	Radio Australia, Melbourne	11945	15160	15240	15320
		15395	17750	17795	21740
0300-0400	Radio Havana Cuba	9710	11820		
0300-0400	Radio Moscow, USSR	7165	7290	7390	9600
		9720	11675	11750	12050
		15280	15415	15425	17600
		17605	17665	17840	17880
		21585	21625	21690	21790
0300-0400	Radio New Zealand, Wellington	15485	17705		
0300-0400 T-A	Radio for Peace, Costa Rica	7375	21565		
0300-0400	Radio Prague, Czechoslovakia	5930	7345	9540	11685
		11990	13715	15540	
0300-0400	Radio Thailand, Bangkok	9655	11905		
0300-0400	SBC Radio One, Singapore	5052	11940		
0300-0400	SLBC, Colombo, Sri Lanka	6005	9720	15425	
0300-0400 T-S	Superpower KUSW, Utah	9815			
0300-0400	TIFC, Costa Roca	5055	9645		
0300-0400	Trans World Radio, Bonaire	9535	11930		
0300-0400	Voice of America, Washington	6035	7280	9525	9575
		11835			
0300-0400	Voice of Free China, Taiwan	5950	7445	9680	11745
		15345			
0300-0400	Voice of Kenya, Nairobi	6045			
0300-0400	Voice of Turkey, Ankara	9445	17760		
0300-0400	WHRI, Noblesville, Indiana	7315	9495		
0300-0400	WMLK, Bethel, Pennsylvania	9465			
0300-0400	WRNO, New Orleans, Louisiana	6185			
0300-0400 IRR	WWCR, Nashville, Tennessee	7520			
0300-0400	WYFR Satellite Net, California	5985	9505	15566	
0310-0330	Vatican Radio, Vatican City	9610			
0315-0345	Radio France Int'l, Paris	3965	5990	7135	7280
		9550	9745	9790	11670
		11700	11995	15135	15300
0330-0400	BBC, London, England	3955	5975	6005	6180
		9410	9915	12095	15390
		15420			

0330-0400	Radio Netherland, Hilversum	6165	9590		
0330-0400 S,M	WINB, Red Lion, Pennsylvania	15145			
0335-0400	Radio New Zealand, Wellington	15485	17705		
0330-0400	Radio Tanzania, Dar es Salaam	9684			
0330-0400	Radio Tirana, Albania	9500			
0330-0400	United Arab Emirates Radio	11940	15435	15555	17890
0335-0340	All India Radio, New Delhi	3905	4860	9610	11830
		11870	11890	15305	
0340-0350 M-A	Voice of Greece, Athens	7430	9395	9420	
0350-0400	RAI, Rome, Italy	15330	17795	21610	
0352-0357v	Radio Yerevan, Armenian SSR	9610	11675	15180	17690

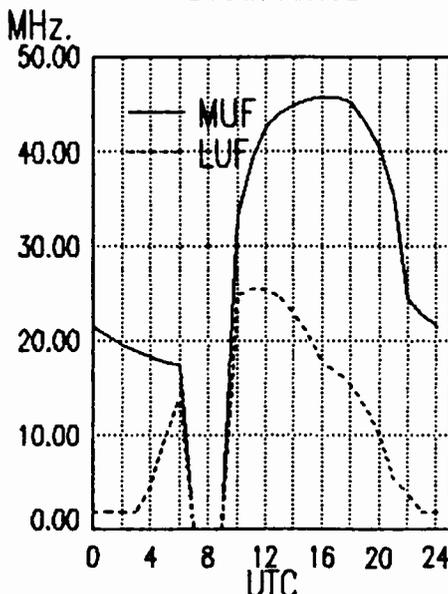
0400 UTC [11:00 AM EST/8:00 PM PST]

0400-0405	Radio Uganda, Kampala	4976	5026		
0400-0410	Radio Thailand, Bangkok	9655	11905		
0400-0410	RAI, Rome, Italy	6155	11905	15330	
0400-0415	Radio Berlin Int'l, E. Germany	11785	15125		
0400-0420	Radio Botswana, Gabarone	4820			
0400-0420 T-S	Radio Zambia, Lusaka	3345	6165		
0400-0425	Radio Bucharest, Romania	6155	9510	9570	11830
		11940	15380		
0400-0425	Radio Netherland, Hilversum	9590	11720		
0400-0430	BBC, London, England	3955	5975	6005	6180
		6195	7105	9410	9540
		9580	9600	9915	11750
		11815	12095	15070	15245
		15420	17885		
0400-0430	La Voz Evangelica, Honduras	4820			
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
0400-0500	TIQ, Costa Rica	5955v			
0400-0430	Trans World Radio, Bonaire	9535	11930		
0400-0430 S,M	WINB, Red Lion, Pennsylvania	15145			
0400-0445	Radio Berlin Int'l, E. Germany	11785	15125		
0400-0450	Deutsche Welle, West Germany	7150	7225	9565	9765
		15265			
0400-0450	Radio Pyongyang, North Korea	15160	15180		
0400-0455	Radio Beijing, China	11685	11840	15195	
0400-0500	CBC Northern Quebec Service	6195	9625		
0400-0500	CBN, St. John's, Newfoundland	6160			
0400-0500	CBU, Vancouver, British Columbia	6160			

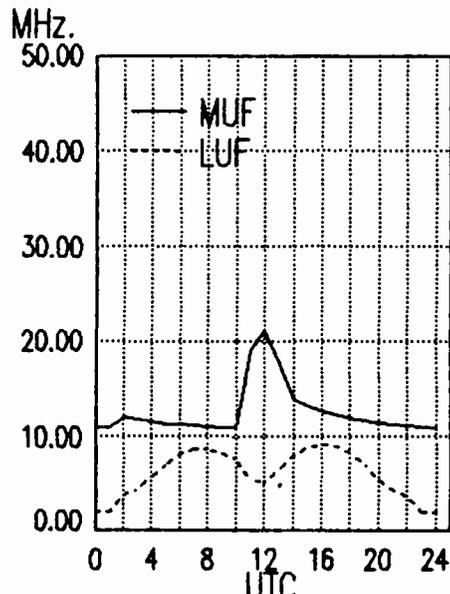
East Coast To East Africa



East Coast To South Africa



East Coast To Central Asia



frequency

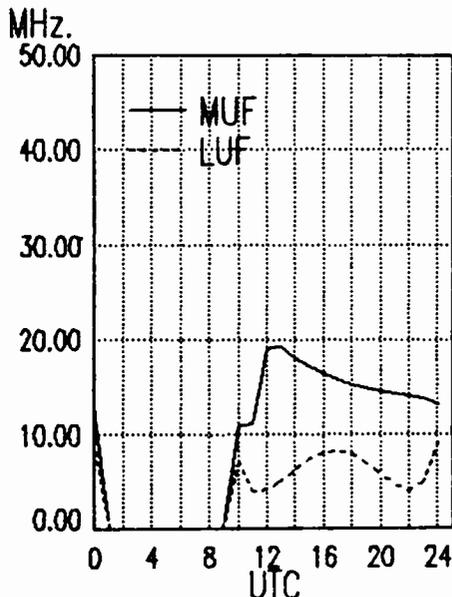
section

0400-0500	CFCF, Montreal, Quebec	6005			
0400-0500	CFCN, Calgary, Alberta	6030			
0400-0500	CHNS, Halifax, Nova Scotia	6130			
0400-0500	Christian Science World Service	9455	9870	13760	
0400-0500	CKWX, Vancouver, British Columbia	6080			
0400-0500	CFRB, Toronto, Ontario	6070			
0400-0500	FEBC, Manila, Philippines	11850			
0400-0500	HCJB, Quito, Ecuador	11775	15155		
0400-0500	Radio Australia, Melbourne	11910	15160	15240	15320
		17715	17795	21740	
0400-0500	Radio Havana Cuba	5965	9710	11760	11820
0400-0500	Radio Moscow, USSR	7150	7290	7390	9600
		11675	15415	15425	15455
		15540	17605	17665	17675
		27840	17860	17880	21585
		15485	17705		
0400-0500	Radio New Zealand, Wellington	7375	USB	21565	
0400-0500	Radio for Peace, Costa Rica	11750			
0400-0500	Radio Sofia, Bulgaria	5030			
0400-0500	Radio Tonga, Tonga	4880	11880		
0400-0500	Radio 5, South Africa	5052	11940		
0400-0500	SBC Radio One, Singapore	9815			
0400-0500 T-S	Superpower KUSW, Utah	3980	5995	6035	6040
0400-0500	Voice of America, Washington	7170	7200	7280	9525
		9540	9575	11835	15205
		15275			
0400-0500	Voice of Kenya, Nairobi	6045			
0400-0500V	Voice of Nicaragua, Managua	6100			
0400-0500	Voice of Turkey, Ankara	9445			
0400-0500	WHRI, Noblesville, Indiana	7315	9495		
0400-0500	WMLK, Bethel, Pennsylvania	9465			
0400-0500	WRNO, New Orleans, Louisiana	6185			
0400-0500	WYFR Satellite Net, California	5985	9505	9520	
0425-0440	RAI, Rome, Italy	5990	7275		
0430-0455	Radio Netherlands, Hilversum	9895	13700		
0430-0500	BBC, London, England	3955	5975	6005	7185
		9410	9510	9580	9600
		9915	12095	15070	15280
		15245	15420		
0430-0500	BBC, London, England*	7210	9750	11945	
0430-0500	Radio Tirana, Albania	9480	11835		
0430-0500 S,M	Trans World Radio, Bonaire	9535	11930		
0430-0500	Trans World Radio, Swaziland	3205	7205		
0432-0500 A,M	FEBA, Seychelles	15325	17820	(irr)	
0445-0500	Radio Berlin Int'l, E. Germany	11785	15125		

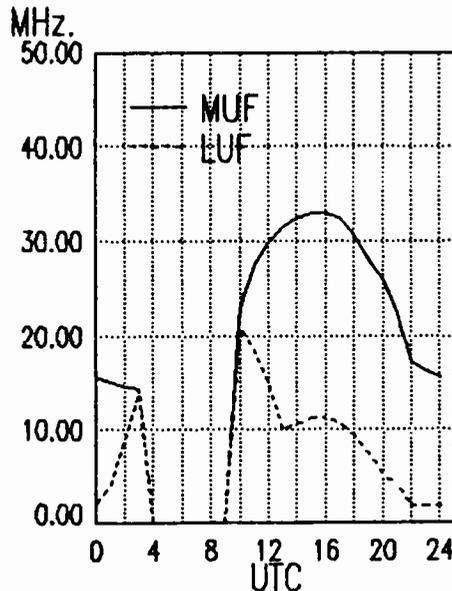
0500 UTC [12:00 PM EST/9:00 PM PST]

0500-0510	Radio Lesotho, Maseru	4800			
0500-0510 M-A	Radio Zambia, Lusaka	3345	6165		
0500-0515	GBC, Accra, Ghana	4915			
0500-0515	Kol Israel, Jerusalem	11588	15640	17575	
0500-0515	Vatican Radio, Vatican City	9645	11740	15190	
0500-0530 S,M	Trans World Radio, Bonaire	9535	11930		
0500-0530	Trans World Radio, Swaziland	3205	5055	7210	
0500-0545	Radio Berlin Int'l, E. Germany	11785	15125		
0500-0550	Deutsche Welle, West Germany	6130	9670	9700	9845
		11705	11845		
0500-0600	BBC, London, England	5975	6005	6195	9410
		9510	9600	9640	9915
		11940	12095	15070	15245
		15280	17740	17815	17885
		21470			
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	Christian Science World Service	9455	9870	13760	
0500-0600	CKWX, Vancouver, British Columbia	6080			
0500-0600	CFRB, Toronto, Ontario	6070			
0500-0600	FEBC, Manila, Philippines	11850			
0500-0600	HCJB, Quito, Ecuador	9745	11775		
0500-0600	Radio 5, South Africa	4880	11880		
0500-0600	Radio Australia, Melbourne	11910	15160	15240	15320
		17715	17795	21740	
0500-0600	Radio Havana Cuba	5965	11760	11820	
0500-0600	Radio Japan, Tokyo	15195	15270	17765	17810
		17825			
0500-0600	Radio Kuwait	15345			
0500-0600	Radio Moscow, USSR	7290	11845	12010	12030
		13645	15320	15540	17860
		17880	21690	21790	
0500-0600	Radio New Zealand, Wellington	15485	17705		
0500-0600	Radio for Peace, Costa Rica	7375	USB	21565	
0500-0600	Radio Thailand, Bangkok	9655	11905		
0500-0600	Radio Tonga, Tonga	5030			
0500-0600 S,M	Radio Zambia, Lusaka	11880			

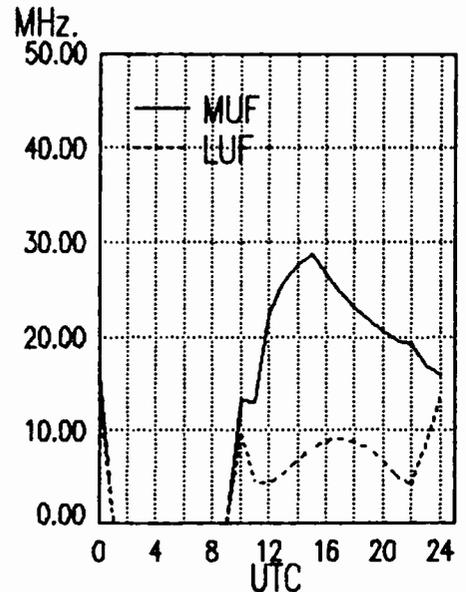
East Coast To South East Asia



East Coast To Indian Ocean



East Coast To Indonesia



East Coast

frequency

section

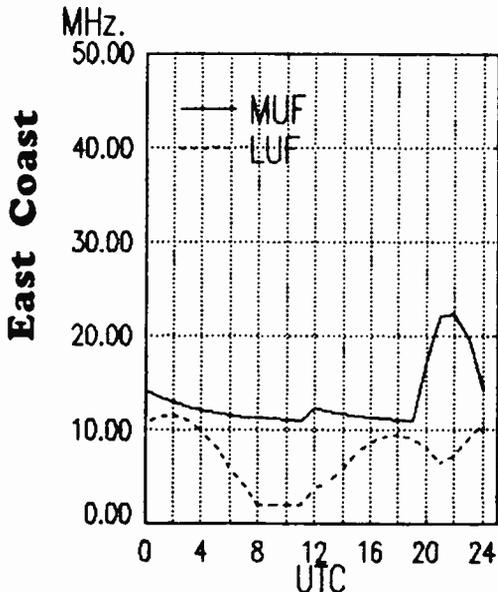
0500-0600	SBC Radio One, Singapore	5052	11940
0500-0600	Spanish National Radio, Madrid	9630	
0500-0600 A,S	Superpower KUSW, Utah	6175	
0500-0600 S	Swaziland Commercial Radio	6155	9705
0500-0600	TIQ, Costa Rica	5955v	
0500-0600	Voice of America, Washington	6035	7170 7200 9535
		9575	15205
0500-0600	Voice of Kenya, Nairobi	6045	
0500-0600 IRR	Voice of Nicaragua, Managua	6100	
0500-0600 IRR	Voice of Nigeria, Lagos	7255	
0500-0600	WINB, Red Lion, Pennsylvania	15145	
0500-0600	WHRI, Noblesville, Indiana	7315	9495
0500-0600 M-A	WMLK, Bethel, Pennsylvania	9465	
0500-0600	WYFR Satellite Net, California	5985	11580 15566 17640
0510-0520	Radio Botswana, Gaborone	3356	4820 7255
0515-0530 M-F	Radio Canada Int'l, Montreal	6055	6140 7155 9740
		9750	9760 11840 15225
0527-0600 F	FEBA, Seychelles	17820	
0530-0545	BBC, London, England*	3990	6050 6140 7210
		9750	
0530-0555	Radio Austria Int'l, Vienna	6015	
0530-0555	Radio Bucharest, Romania	9640	11840 11940 15340
		15380	17720
0530-0600	Radio Tirana, Albania	9500	
0530-0600	Trans World Radio, Swaziland	5055	7210
0530-0600	UAE Radio, United Arab Emirates	15435	17775 21700
0545-0600 M-F	Radio Canada Int'l, Montreal	6055	6140 7155 9740
		9760	11840 15225
0555-0600	Ghana Broadcasting Corp., Accra	3366	4915
0555-0600	Voice of Malaysia, Kuala Lumpur	6175	9750 15295

0600 UTC [1:00 AM EST/10:00 PM PST]

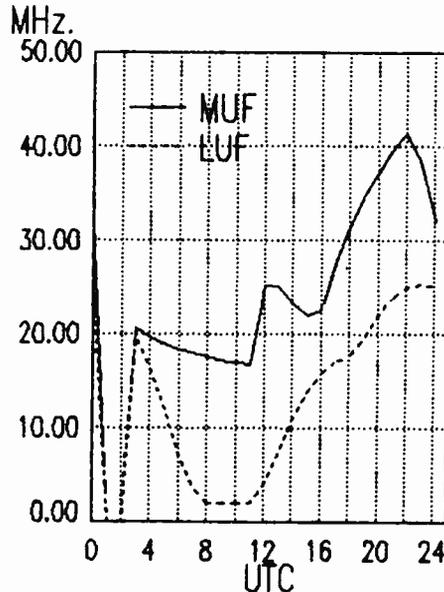
0600-0615	Radio Ghana, Accra	3366	4915
0600-0615 M-A	Radio Zambia, Lusaka	6165	7235
0600-0620	Vatican Radio, Vatican City	6185	9645
0600-0630 F	FEBA, Mahe, Seychelles	17820	
0600-0630	Laotian National Radio	7113	
0600-0630	Radio Australia, Melbourne	11910	15160 15240 15395
		17715	21525 21740
0600-0630 S	Radio Norway Int'l, Oslo	15165	
0600-0630	Trans World Radio, Swaziland	6070	
0600-0630	Voice of Kenya, Nairobi	6045	
0600-0645 S	Radio Cameroon, Yaounde	4850	

0600-0650	Deutsche Welle, West Germany	11765	13790 15185 17875
0600-0650	Radio Pyongyang, North Korea	13650	15160 15180
0600-0700	BBC, London, England	5975	6005 6195 7150
		9410	9580 9600 9610
		9640	9760 11925 11940
		12095	15070 15245 15280
		17740	17815 17885 21470
0600-0700	CBU, Vancouver, British Columbia	6160	
0600-0700	CFCF, Montreal, Quebec	6005	
0600-0700	CFCN, Calgary, Alberta	6030	
0600-0700	CHNS, Halifax, Nova Scotia	6130	
0600-0700	Christian Science World Service	9455	9840 11980
0600-0700	CKWX, Vancouver, British Columbia	6080	
0600-0700	CFRB, Toronto, Ontario	6070	
0600-0700	HCJB, Quito, Ecuador	9745	11775
0600-0700	King of Hope, South Lebanon	6215	
0600-0700	Radio Havana Cuba	11835	
0600-0700	Radio Jordan, Amman	9560	
0600-0700	Radio Korea, Seoul, South Korea	7275	9570 11830
0600-0700	Radio Kuwait	15345	
0600-0700	Radio Moscow, USSR	12010	12030 12050 13605
		13645	13710 15135 15320
		15540	15425 15585 21690
		21790	
0600-0700	Radio New Zealand, Wellington	15485	17705
0600-0700 A,S	Radio Thailand, Bangkok	9655	11905
0600-0700	Radio Tonga, Tonga	5030	
0600-0700 IRR	Radio Zambia, Lusaka	11880	
0600-0700	Radio 5, South Africa	11880	
0600-0700	SBC Radio One, Singapore	5052	11940
0600-0700 S	Superpower KUSW, Utah	6175	
0600-0700	Voice of America, Washington	6035	6080 6095 6125
		7170	7200 7280 7325
		9530	9540 9575 11915
		7285	
0600-0700	Voice of Asia, Taiwan	6175	9750 15295
0600-0700	Voice of Malaysia, Kuala Lumpur	6100	
0600-0700 IRR	Voice of Nicaragua, Managua	6100	
0600-0700	Voice of the Mediterranean	9765	
0600-0700	WHRI, Noblesville, Indiana	9495	9620
0600-0700 M-A	WMLK, Bethel, Pennsylvania	9465	
0600-0700	WYFR, Oakland, California	13760	11580
0600-0700	WYFR Satellite Net, California	5985	6065 7355 9852.5
		15566	17640
0615-0630 M-A	Vatican Radio, Vatican City	15190	17730
0625-0700	Trans World Radio Monte Carlo	7105	

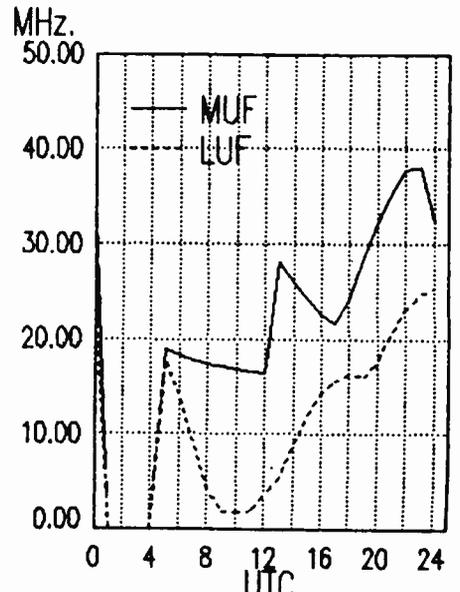
East Coast To Far East



East Coast To Pacific



East Coast To Australia



frequency

section

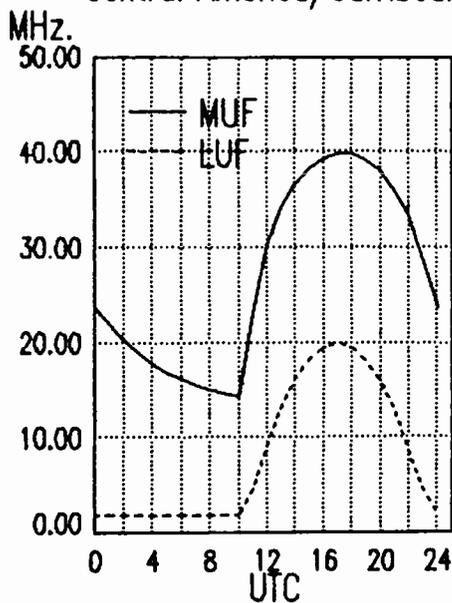
0630-0635 M-F	RTVC, Brazzaville, Congo	15190 irr	0700-0800	HCJB, Quito, Ecuador	6130 9610 9745 11835
0630-0700	AWR, Forli, Italy	7125	0700-0800	King of Hope, South Lebanon	11925
0630-0700	Radio Australia, Melbourne	11910 15160 15240 15395	0700-0800	Radio Ghana, Accra	6215
		17715 17750 21740	0700-0800	Radio Havana Cuba	6130
0630-0700	Radio Bucharest, Romania	21600	0700-0800	Radio Japan, Tokyo	11835
0630-0700	Radio Finland, Helsinki	6120 9560 11755 15270			5990 15195 15270 15325
0630-0700	Radio Polonia, Warsaw, Poland	6135 7270 15120			17765 17810 21500 21690
0630-0700	Swiss Radio Int'l, Berne	3985 6165 9535 12030	0700-0800	Radio Jordan, Amman	11955
		15430 17570	0700-0800	Radio Korea, Seoul, South Korea	6060 7275 9570
0630-0700	Trans World Radio, Swaziland	5055 6070 7210 9725	0700-0800	Radio Kuwait	15345
0630-0700	Vatican Radio, Vatican City	9645 11740	0700-0800	Radio Moscow, USSR	9765 11845 13710 15135
0630-0700 A,S	Voice of Kenya, Nairobi	7270			15480 15540 15585 17660
0645-0700	BBC, London, England*	6150 7260 11945			21625
0645-0700	Radio Ghana, Accra	6130	0700-0800 A,S	Radio Thailand, Bangkok	9655 11905
0645-0700	Radio Bucharest, Romania	11940 15250 15335 17790	0700-0800	Radio Tonga, Tonga	5030
		17805 21665	0700-0800	Radio 5, South Africa	11880

0700 UTC [2:00 AM EST/11:00 PM PST]

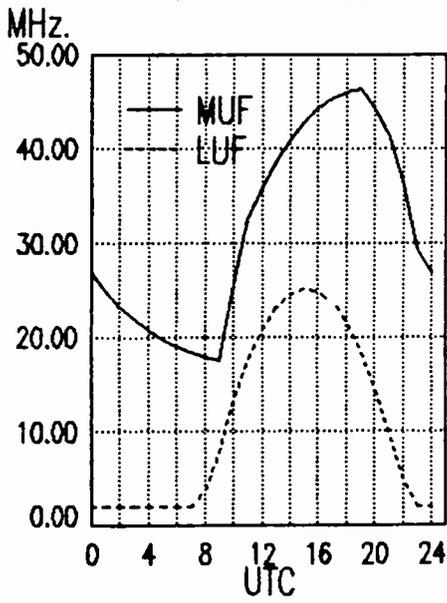
0700-0710	Radio Bucharest, Romania	11940 15250 15335 17790
		17805 21665
0700-0710	Radio Sierra Leone, Freetown	5980
0700-0715	Radio Ghana (HS), Accra	3366 4915
0700-0730	BBC, London, England	3955 5975 6195 7150
		9410 9600 9760 11940
		12095 15070 15280 15360
		15400 17815 21470
0700-0730	Burma Bcating Service, Rangoon	9730
0700-0730	Radio Australia, Melbourne	9655 11720 11910 15160
		15240 15395 15425 17715
		21740
0700-0730	Radio Bucharest, Romania	21600
0700-0730	Radio New Zealand, Wellington	15485 17705
0700-0730 S	Radio Zambia, Lusaka	11880
0700-0750	Radio Pyongyang, North Korea	15340 17795
0700-0800	ABC, Perth, Australia	15425
0700-0800	CBU, Vancouver, British Columbia	6160
0700-0800	CFCF, Montreal, Quebec	6005
0700-0800	CFCN, Calgary, Alberta	6030
0700-0800	CHNS, Halifax, Nova Scotia	6130
0700-0800	Christian Science World Service	9455 9840 11980
0700-0800	CKWX, Vancouver, British Columbia	6080
0700-0800	CFRB, Toronto, Ontario	6070
0700-0800	ELWA, Monrovia, Liberia	11830

0700-0800	Radio Thailand, Bangkok	9655 11905
0700-0800	Radio Tonga, Tonga	5030
0700-0800	Radio 5, South Africa	11880
0700-0800	SBC-1, Singapore	5052 11940
0700-0800	Soloman Islands Broadcasting Corp	9545
0700-0800 S	Superpower KUSW, Utah	6135
0700-0800	Trans World Radio, Monte Carlo	9485
0700-0800	Trans World Radio, Swaziland	6070 9725
0700-0800	Voice of America, Washington	6020 9750 15600 17700
		17710 21500
0700-0800	Voice of Free China, Taiwan	5950
0700-0800 A,S	Voice of Kenya, Nairobi	7270
0700-0800	Voice of Malaysia, Kuala Lumpur	6175 9750 15295
0700-0800	WHRI, Noblesville, Indiana	9495 9620
0700-0800	WYFR, Oakland, California	6065 7355 9852.5 15566
0700-0800	WYFR Satellite Network	13760
0715-0730	Radio Korea, Seoul, South Korea	13670 15575
0715-0730 M-A	Vatican Radio, Vatican City	11725 15190
0715-0735 S	FEBA, Mahe, Seychelles	15115 17785
0720-0730 M-A	Vatican Radio, Vatican City	6248 9645 11740
0730-0735	All India Radio, New Delhi	5990 6010 6020 7110
		7205 9610 9675 11850
		11935 15235 15250 17705
0730-0800	ABC, Alice Springs, Australia	2310 [ML]
0730-0800	ABC, Katherine, Australia	2485
0730-0800	ABC, Tennant Creek, Australia	2325 [ML]
0730-0800	Radio Australia, Melbourne	9655 15160 15395 17715
0730-0745	BBC, London, England*	3975 6010 7230 9915
0730-0755	Radio Austria Int'l, Vienna	6155 13730 15410 21490
0730-0755	Radio Finland, Helsinki	6120 9560 11755
0730-0800	AWR, Forli, Italy	7125

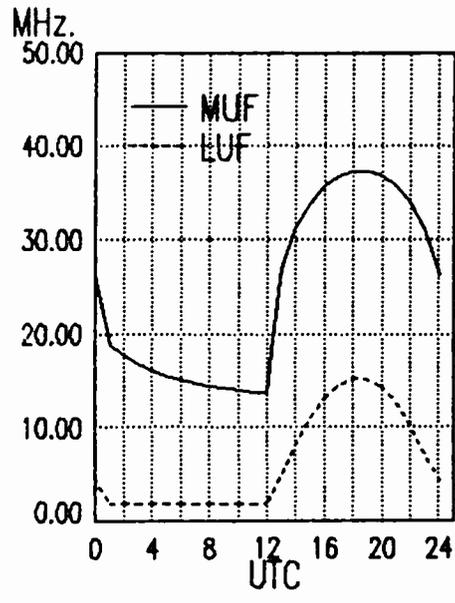
East Coast To Central America/Caribbean



East Coast To South America



East Coast To West Coast



East Coast

frequency

section

0730-0800	BBC, London, England	3955	7150	7325	9410
		9600	9640	9760	11860
		11940	12095	15070	15360
		15400	17815	21470	
0730-0800	Radio Netherland, Hilversum	9630	9715		
0730-0800	Radio Prague, Czechoslovakia	11685	17840	21705	
0730-0800	Swiss Radio Int'l, Berne	3985	6165	9535	
0740-0750	W Radio Free Europe, Munich*	5985	7115	9695	9725
		11895	15355		
0755-0800	Radio Pacific Okean, USSR	12050	12070	17605	

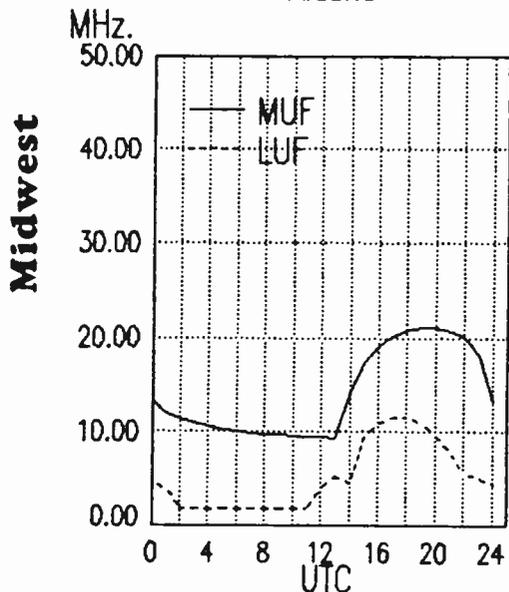
0800-0900	CBN, St. John's, Newfoundland	15280	15360	15070	15400
		17815			
0800-0900	CBU, Vancouver, British Columbia	6160			
0800-0900	CFCF, Montreal, Quebec	6005			
0800-0900	CFCN, Calgary, Alberta	6030			
0800-0900	CHNS, Halifax, Nova Scotia	6130			
0800-0900	Christian Science World Service	9455	17855		
0800-0900	CKWX, Vancouver, British Columbia	6080			
0800-0900	CFRB, Toronto, Ontario	6070			
0800-0900	King of Hope, South Lebanon	6215			
0800-0900	KNLS, Anchor Point, Alaska	11715			
0800-0900	Radio Australia, Melbourne	5995	6020	6080	9580
		9655	9710	11720	15395
		17715			

0800 UTC [3:00 AM EST/12:00 PM PST]

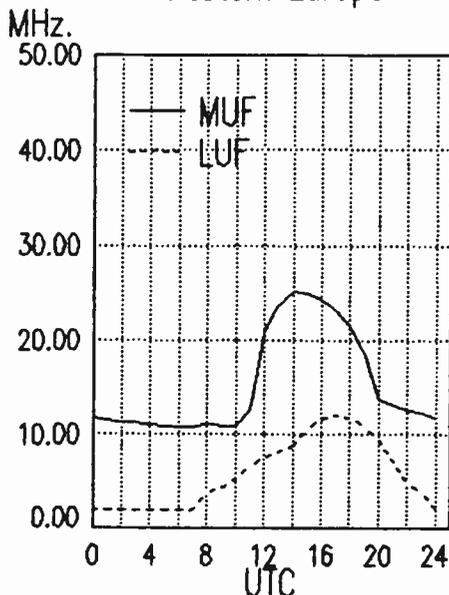
0800-0805	M-F Port Moresby, Papua New Guinea	3925	4890	5960	5985
		6020	6040	6080	6140
		9520			
0800-0805	Soloman Islands Broadcasting Corp	9545			
0800-0900	Radio Berlin Int'l, E. Germany	7185	9730	21465	21540
0800-0815	M-A Radio Zambia, Lusaka	6165	7235		
0800-0825	M-A Radio Finland, Helsinki	17795	21550		
0800-0825	Radio Netherland, Hilversum	9630	9715		
0800-0825	Voice of Malaysia, Kuala Lumpur	6175	9750	15295	
0800-0830	HCJB, Quito, Ecuador	6130	9610	9745	11835
		11925			
0800-0830	S Radio Austria Int'l, Vienna	6155	13730	15410	15450
0800-0830	Radio Bangladesh, Dhaka	12030	15525		
0800-0830	Radio Berlin Int'l, East Germany	6040	6115	7185	9730
		21465	21540		
0800-0830	S Radio Norway, Oslo	15165	25730		
0800-0830	Radio Tirana, Albania	9500	11835		
0800-0830	Voice of Islam, Pakistan	15525	17870		
0800-0835	S FEBA, Mahe, Seychelles	15325	17785		
0800-0835	Trans World Radio, Swaziland	6070	9725		
0800-0840	Trans World Radio, Monte Carlo	9485			
0800-0850	Deutsche Welle, West Germany	9770			
0800-0850	Radio Pyongyang, North Korea	11830	15115	15160	15180
0800-0900	ABC, Alice Springs, Australia	2310	[ML]		
0800-0900	ABC, Katherine, Australia	2485			
0800-0900	ABC, Perth, Australia	15425			
0800-0900	ABC, Tennant Creek, Australia	2325	[ML]		
0800-0900	AFAN, Antarctica	6010.5			
0800-0900	BBC, London, England	7150	7325	9410	9600
		9640	9760	11860	11940

0800-0900	Radio Jordan, Amman	11955			
0800-0900	Radio Moscow, USSR	13710	15135	15210	15585
		17570	17660	21625	
0800-0900	Radio for Peace, Costa Rica	12030			
0800-0900	Radio Tonga, Tonga	5030			
0800-0900	SBC Radio One, Singapore	5052	11940		
0800-0900	S Superpower KUSW, Utah	6135			
0800-0900	Voice of Indonesia, Jakarta	11790	15105		
0800-0900	A.S. Voice of Kenya, Nairobi	7270			
0800-0900	WHRI, Noblesville, Indiana	7355			
0805-0900	KTWR, Guam	15210			
0815-0845	M-F Voice of America, Washington DC	7175	9575	9750	11710
		11915	15600	17710	21500
		[ML]			
0830-0840	All India Radio, New Delhi	5960	5990	6010	6020
		6050	6065	6100	6140
		7110	7140	7160	7250
		7280	7295	9610	11850
		15235	15250	17705	
0830-0900	S Bhutan Bcasing Service, Thimpu	6035			
0830-0900	FEBC, Manila, Philippines	11850	15350		
0830-0900	HCJB, Quito, Ecuador	6130	9745	11925	
0830-0900	Radio Beijing, China	9700	11755	15440	
0830-0855	Radio Finland, Helsinki	15245	17795		
0830-0900	Radio Netherlands, Hilversum	17575	21485		
0830-0900	Radio Prague, Czechoslovakia	11685	17840	21705	
0830-0900	Swiss Radio Int'l, Berne	9560	9885	13685	17830
		21695			
0840-0850	M-A Voice of Greece, Athens	9855	15630		
0840-0900	S-F Trans World Radio, Monte Carlo	7105			

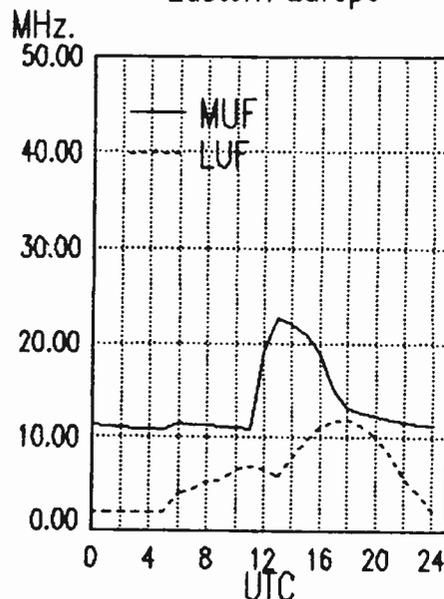
East Coast To Alaska



Midwest To Western Europe



Midwest To Eastern Europe



frequency

section

0845-0900	Radio Prague, Czechoslovakia	6055	7345	9505	
0850-0900	All India Radio, New Delhi	5960	5990	6010	6020
		6050	6065	6100	6140
		7110	7140	7150	7160
		7250	7280	7295	9610
		11850	15235	15250	17705
0850-0900	Radio Korea, Seoul	13670			

0900-1000	KNLS, Anchor Point, Alaska	6065			
0900-1000	Radio Afghanistan, Kabul	4450	6085	15435	17720
0900-1000	Radio Australia, Melbourne	5995	6080	9580	9655
		9760	11720	11800	15415
0900-1000	Radio Japan, Tokyo	15270	17890		
0900-1000	Radio Korea, Seoul, South Korea	7550	13670		
0900-1000	Radio Moscow, USSR	13710	15135	15210	15540
		15580	17570	17660	21585

0900 UTC [4:00 AM EST/1:00 AM PST]

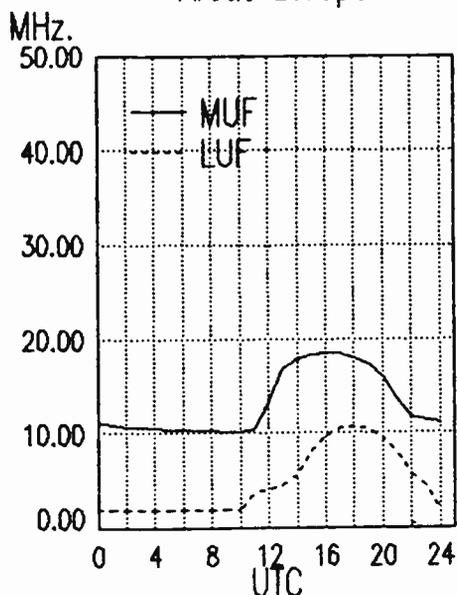
0900-0910	All India Radio, New Delhi	5960	5990	6010	6020
		6050	6065	6100	6140
		7110	7140	7150	7160
		7250	7280	7295	9610
		11850	15235	15250	17705
0900-0910	S Trans World Radio, Monte Carlo	7105			
0900-0910	Voice of Lebanon, Beirut	6548			
0900-0920	ABC, Perth, Australia	15425			
0900-0920	KTWR, Agana, Guam	15210			
0900-0925	BRT, Brussels, Belgium	5915	17595	21810	26050
0900-0925	Radio Netherlands, Hilversum	17575	21485		
0900-0930	FEBC, Manila, Philippines	9800	11850	15350	
0900-0930	Nippon Broadcasting Corp.	3925			
0900-0930	Radio Beijing, China	11755	15440		
0900-0930	S Radio Norway, Oslo	21710			
0900-0930	A,S Radio Prague, Czechoslovakia	11685	17840	21705	
0900-0950	Deutsche Welle, West Germany	6160	9650	11785	11945
		17780	21650		
0900-1000	ABC, Alice Springs, Australia	2310	[ML]		
0900-1000	ABC, Katherine, Australia	2485			
0900-1000	ABC, Tennant Creek, Australia	2325	[ML]		
0900-1000	S Adventist World Radio, Portugal	9670			
0900-1000	BBC, London, England	9410	9740	9750	11750
		11845	11860	11955	12095
		15070	15360	15400	17640
		17790	21470		
0900-1000	CFCF, Montreal, Quebec	6005			
0900-1000	CFCN, Calgary, Alberta	6030			
0900-1000	CHNS, Halifax, Nova Scotia	6130			
0900-1000	Christian Science World Service	9455	17855		
0900-1000	CKWX, Vancouver, British Columbia	6080			
0900-1000	CFRB, Toronto, Ontario	6070			
0900-1000	HCJB, Quito, Ecuador	6130	9745	11925	
0900-1000	King of Hope, South Lebanon	6215			

0900-1000	Radio New Zealand, Wellington	9850			
0900-1000	Radio for Peace, Costa Rica	13660			
0900-1000	S Radio Prague, Czechoslovakia	6055	7345	9505	[ML]
0900-1000	Radio RSA, South Africa	11805			
0900-1000	Radio Tanzania, Dar es Salaam	7165			
0900-1000	Radio Tonga, Tonga	5030			
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	WHRI, Noblesville, Indiana	7355	9495		
0910-0940	M-A Radio Ulan Bator, Mongolia	12015			
0915-0930	Radio Korea, Seoul, South Korea	9570			
0920-1000	ABC, Perth, Australia	6140			
0925-1000	KTWR, Guam	11805			
0930-0935	All India Radio, New Delhi	5960	5990	6010	6020
		6050	6065	6100	6140
		7110	7140	7160	7250
		7280	7295	9610	11850
		15235	15250	17705	
0930-0940	Radio Canada Int'l, Montreal	5960	9755		
0930-0945	BBC, London, England*	9725	11955		
0930-1000	CBN, St. John's, Newfoundland	6160			
0930-1000	Radio Beijing, China	9700	11755	15440	
0930-1000	Radio Sweden Int'l, Stockholm	15390			
0945-1000	BBC, London, England*	5995	7180	9725	11955
0945-1000	M-A Radio Prague, Czechoslovakia	6055	7345	9505	

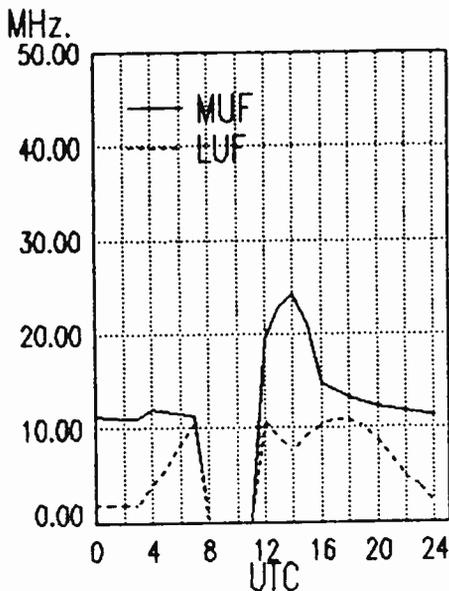
1000 UTC [5:00 AM EST/2:00 AM PST]

1000-1030	HCJB, Quito, Ecuador	6130	9745	11925	
1000-1030	Radio Beijing, China	11755	15440	17710	
1000-1030	Radio Tanzania, Dar es Salaam	7165			
1000-1030	Swiss Radio Int'l, Berne	9560	13685	17670	21695
1000-1030	Voice of Ethiopia, Addis Ababa	9560			
1000-1030	Voice of Vietnam, Hanoi	9840	15010		
1000-1045	Radio Berlin Int'l, E. Germany	9770	11890	21540	

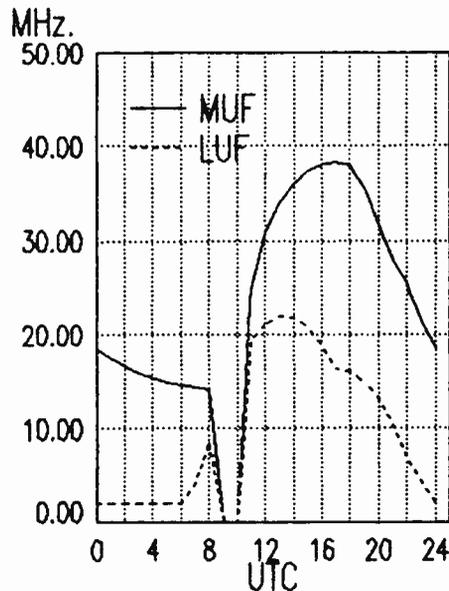
Midwest To Arctic Europe



Midwest To Middle East



Midwest To West Africa



Midwest

frequency

section

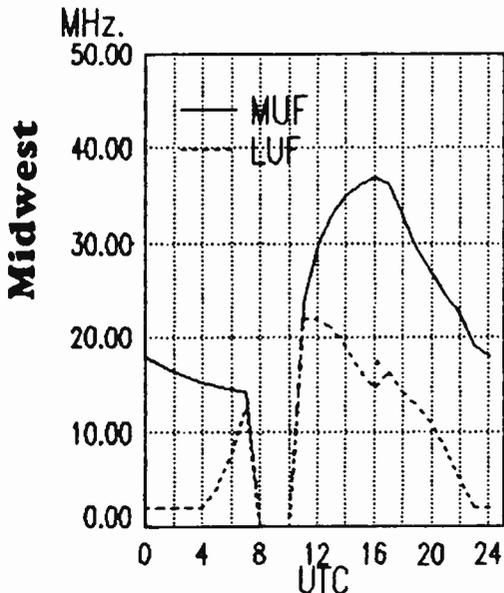
1000-1055	A	Trans World Radio, Monte Carlo	7105
1000-1100		ABC, Alice Springs, Australia	2310 [ML]
1000-1100		ABC, Katherine, Australia	2485
1000-1100		ABC, Perth, Australia	9610
1000-1100		ABC, Tennant Creek, Australia	2325 [ML]
1000-1100		All India Radio, New Delhi	11860 11915 15130 15335
			17387 11785
1000-1100		BBC, London, England	9410 9740 11750 12095
			15070 15360 17640 17790
			21710 25750
1000-1100		CBN, St. John's, Newfoundland	6160
1000-1100		CFCF, Montreal, Quebec	6005
1000-1100		CFCN, Calgary, Alberta	6030
1000-1100		CHNS, Halifax, Nova Scotia	6130
1000-1100		Christian Science World Service	9455 9495
1000-1100		CKWX, Vancouver, British Columbia	6080
1000-1100		CFRB, Toronto, Ontario	6070
1000-1100		FEBC, Manila, Philippines	9800
1000-1100		KSDA, Guam	13720
1000-1100		KTWR, Agana, Guam	11805
1000-1100		Radio Afghanistan, Kabul	4405 6085 15435 17720
1000-1100		Radio Australia, Melbourne	5995 9580 9655 9770
			15415
1000-1100		Radio Moscow, USSR	9600 15405 15535 17570
			17775 21690
1000-1100		Radio New Zealand, Wellington	9850 11780
1000-1100		Radio RSA, South Africa	11805
1000-1100		SBC Radio One, Singapore	5010 5052 11940
1000-1100	S	Superpower KUSW, Utah	6135
1000-1100		Voice of America, Washington	6030 5985 9590 11720
			11915 15425
1000-1100		Voice of Kenya, Nairobi	7270
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
1030-1055		Radio Austria Int'l, Vienna	15450 21490
1030-1100		BBC, London, England*	7180 9660 9725
1030-1100		HCJB, Quito, Ecuador	6130 9745 11925
1030-1100		Radio Netherlands, Hilversum	6020 9675
1030-1100	A,S	Radio Tanzania, Dar es Salaam	7165
1030-1100		SLBC, Colombo, Sri Lanka	11835 15120 17850 [ML]
1030-1100		UAE Radio, United Arab Emirates	15320 15435 17775 21605
1030-1100		Voice of America, Washington*	11965

1040-1050	H	Radio Free Europe, Munich*	7115 9695 9725
			11895 15355
1040-1050	M-A	Voice of Greece, Athens	11645 15630
1045-1100		Radio Berlin Int'l, E. Germany	6115
1045-1100	S	Radio Budapest, Hungary	7220 9585 9835 11910
			15160 15220
1045-1100	M-A	Radio Prague, Czechoslovakia	6055 7345 9505
1055-1100		Trans World Radio, Bonaire	11815 15345
1055-1100	S	Trans World Radio, Monte Carlo	7105

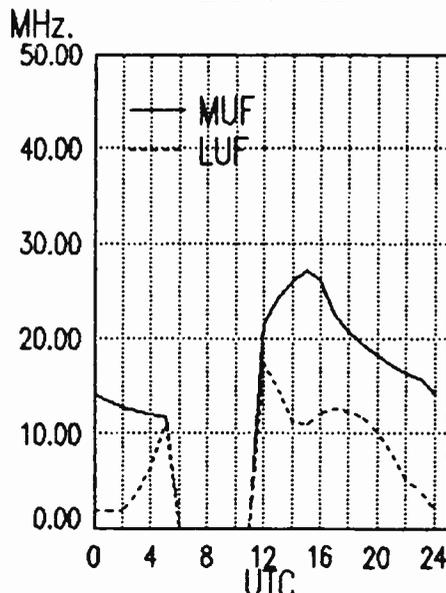
1100 UTC [6:00 AM EST/3:00 AM PST]

1100-1105		Radio Pakistan, Islamabad	6090 7290
1100-1120		Radio Pakistan, Islamabad	15606 17660
1100-1125		Radio Netherland, Hilversum	6020 9675
1100-1130		BBC, London, England*	7120
1100-1130		HCJB, Quito, Ecuador	6130 9745 11925
1100-1130		KTWR, Guam*	9820 11665
1100-1130		Radio Berlin Int'l, E. Germany	6115
1100-1130		Radio Finland, Helsinki	15400 21550
1100-1130		Radio Mozambique, Maputo	9525 11818 11835
1100-1130		SLBC, Colombo, Sri Lanka	11835 15120 17850 [ML]
1100-1130		Swiss Radio Int'l, Berne	13635 15570 17830 21770
1100-1130		Voice of Vietnam, Hanoi	9840 15010
1100-1150		Deutsche Welle, West Germany	15410 17765 17800 21600
1100-1150		Radio Pyongyang, North Korea	9600 9977 11735
1100-1155		Radio Beijing, China	9660 15540 17855
1100-1200		ABC, Alice Springs, Australia	2310 [ML]
1100-1200		ABC Brisbane, Australia	9660
1100-1200		ABC, Katherine, Australia	2485
1100-1200		ABC, Perth, Australia	9610
1100-1200		ABC, Tennant Creek, Australia	2325 [ML]
1100-1200		BBC, London, England	5965 6195 7180 9410
			9515 9740 11750 11775
			15070 15420 17640 17790
			21470 21710 25750
1100-1200		CBC Northern Quebec Service	6065 9625
1100-1200		CBN, St. John's, Newfoundland	6160
1100-1200		CFCF, Montreal, Quebec	6005
1100-1200		CFCN, Calgary, Alberta	6030
1100-1200		CHNS, Halifax, Nova Scotia	6130
1100-1200		Christian Science World Service	9455 9495
1100-1200		CKWX, Vancouver, British Columbia	6080
1100-1200		CFRB, Toronto, Ontario	6070

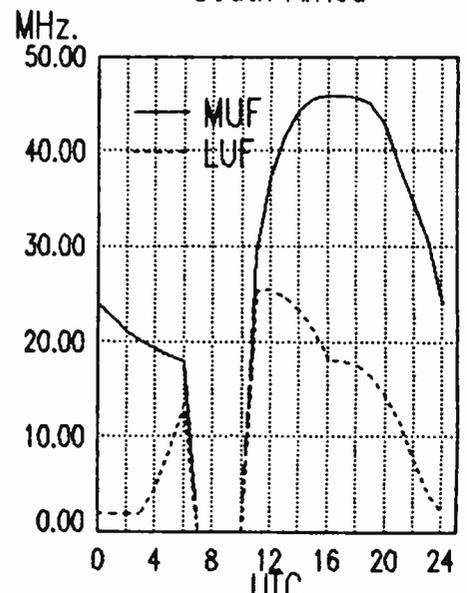
Midwest To
Central Africa



Midwest To
East Africa



Midwest To
South Africa



frequency

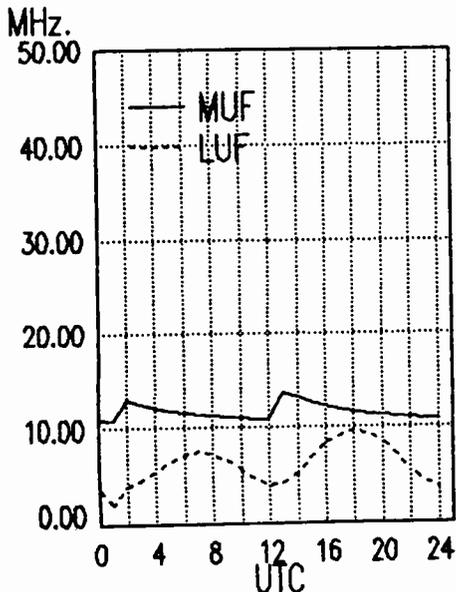
section

1100-1200	Radio Australia, Melbourne	5995 6060 6080 7215	1200-1220	Radio Bucharest, Romania	17720 21665
		9580 9645 9710 11800	1200-1225 M-F	Radio Finland, Helsinki	15400 21550
1100-1200	Radio Japan, Tokyo	6120 11815 11840	1200-1225	Radio Polonia, Warsaw, Poland	6095 7285
1100-1200	Radio Moscow, USSR	9600 15135 15220 15585	1200-1225	Voice of Islamic Republic Iran	7215 9575 11715 11790
		17645 17660 17815 17830	1200-1230	Radio Netherland, Hilversum	5955 9715 17575 21480
		9850 11780			21520
1100-1200	Radio New Zealand, Wellington	11805 11900 21590	1200-1230 S	Radio Norway, Oslo	15165
1100-1200	Radio RSA, South Africa	7165	1200-1230	Radio Somalia, Mogadishu	6095
1100-1200 A,S	Radio Tanzania, Dar es Salaam	11880 [IRR]	1200-1230	Radio Tashkent, Uzbek, USSR	9540 9600 11785 15460
1100-1200 S	Radio Zambia, Lusaka	5010 5052 11940	1200-1230	Radio Thailand, Bangkok	9655 11905
1100-1200	SBC-1, Singapore	9850	1200-1230 S	Radio Zambia, Lusaka	11880 [IRR]
1100-1200 S	Superpower KUSW, Utah	11815 15345	1200-1230	Swiss Radio In'y'l, Berne	6165 9535 12030
1100-1200	Trans World Radio, Bonaire	5985 6030 9590 9660	1200-1235 M-A	Radio Ulan Bator, Mongolia	9615 12015
1100-1200	Voice of America, Washington	9760 11915 15160 15425	1200-1255	Radio Beijing, China	11600 11660 15400 15540
		5980 7445			17855
1100-1200	Voice of Asia, Taiwan	7270	1200-1300	ABC, Alice Springs, Australia	2310 [ML]
1100-1200	Voice of Kenya, Nairobi	9465 11790	1200-1300	ABC Brisbane, Australia	9660
1100-1200	WHRI, Noblesville, Indiana	6185	1200-1300	ABC, Katherine, Australia	2485
1100-1200	WRNO, New Orleans, Louisiana	5950 11580	1200-1300	ABC, Perth, Australia	9610
1100-1200	WYFR, Oakland, California	4820 5955 7255	1200-1300	ABC, Tennant Creek, Australia	2325 [ML]
1110-1120 M-F	Radio Botswana, Gaborone	11740	1200-1300 S	Adventist World Radio, Africa	17890
1115-1130	Radio Korea, Seoul, South Korea	17840 21485	1200-1300	AFAN, Antarctica	6012
1115-1130	Vatican Radio, Vatican City	5005	1200-1300	Adventist World Radio, Costa Rica	9725 11870
1115-1145	Radio Nepal, Kathmandu	7220 9585 9835 11910	1200-1300	BBC, London, England	6195 9515 9740 11750
1130-1145 A	Radio Budapest, Hungary	15160 15220			11775 11940 12095 15070
		6155 13730 15430 21475			17640 17705 17790 21470
1130-1155	Radio Austria Int'l, Vienna	15115 15390 17695			21710 25750
1130-1200	BBC, London, England*	11740	1200-1300	CBC Northern Quebec Service	6065 9625
1100-1200	HCJB, Quito, Ecuador	5955 9715 17575 21480	1200-1300	CBN, St. John's, Newfoundland	6160
1130-1200	Radio Netherland, Hilversum	21520	1200-1300	CFCF, Montreal, Quebec	6005
		9655 11905	1200-1300	CFCN, Calgary, Alberta	6030
1130-1200	Radio Thailand, Bangkok	9480 11855	1200-1300	CHNS, Halifax, Nova Scotia	6130
1130-1200	Radio Tirana, Albania	7215 9575 11715 11790	1200-1300	Christian Science World Service	9495 9530 11930
1130-1200	Voice of Islamic Republic Iran	6065 7110 9610 9675	1200-1300	CKWX, Vancouver, British Columbia	6080
1135-1140	All India Radio, New Delhi	11620 11850 15320	1200-1300	CFRB, Toronto, Ontario	6070
		6248 9645 11740	1200-1300	HCJB, Quito, Ecuador	11740 15115 17890
1140-1145 M-A	Vatican Radio, Vatican City	6055 7345 9505	1200-1300	Radio Australia, Melbourne	5995 6060 6080 7205
1145-1200	Radio Prague, Czechoslovakia		1200-1300		7215 9580 9710 9770
					11800
			1200-1300	Radio Canada Int'l, Montreal	9635 11855 17820
			1200-1300	Radio Moscow, USSR	9600 9875 11800 15135
					15320 15490 15540 15550
					15585 17830 17850
			1200-1300	Radio RSA, South Africa	9585 11805 21590
			1200-1300 A,S	Radio Tanzania, Dar es Salaam	7165

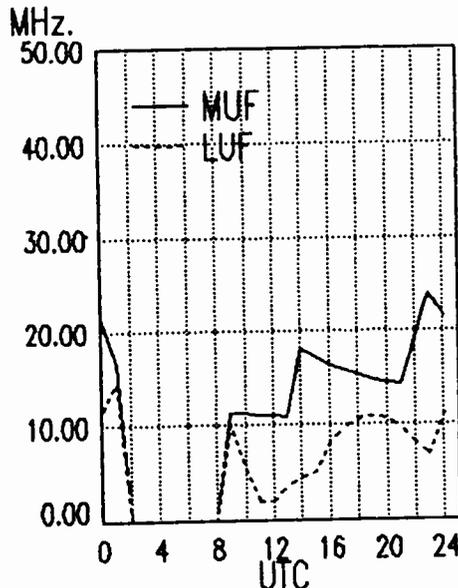
1200 UTC [7:00 AM EST/4:00 AM PST]

1200-1205	Radio New Zealand, Wellington	9850 11780
1200-1215	BBC, London, England*	3915 6065 7275
1200-1215	Vatican Radio, Vatican City	17865 21515
1200-1215	Voice of Kampuchea, Phnom-Penh	9693 11938

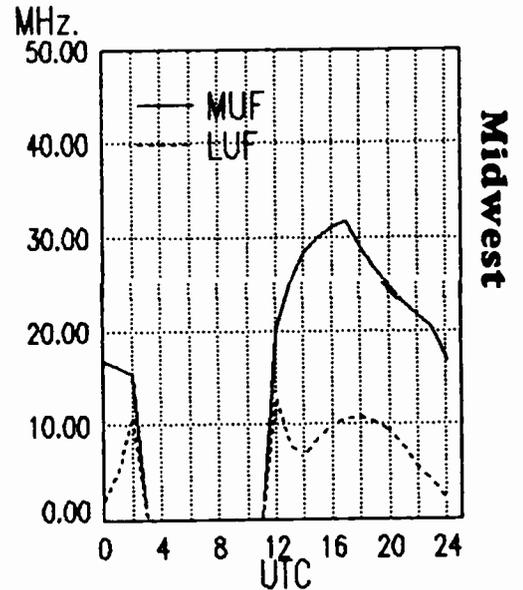
Midwest To
Central Asia



Midwest To
South East Asia



Midwest To
Indian Ocean



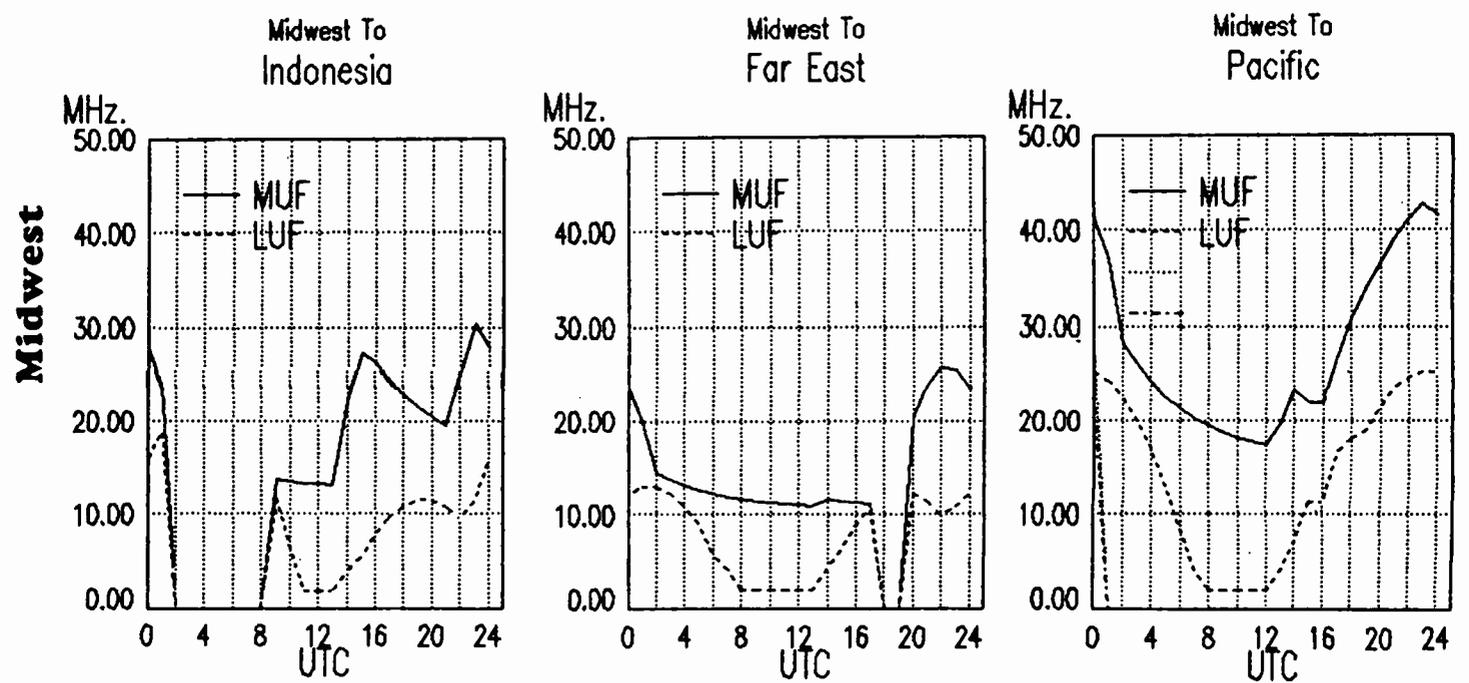
frequency

section

1200-1300	SBC Radio One, Singapore	5010	5052	11940
1200-1300 A,S	Superpower KUSW, Utah	9850		
1200-1300	Trans World Radio, Bonaire	11815	15345	
1200-1300	Trans World Radio, Sri Lanka	11920		
1200-1300	Voice of America, Washington	6110	9760	11715 15160
		15425		
1200-1300	Voice of Kenya, Nairobi	7270		
1200-1300	WHRI, Noblesville, Indiana	9465	11790	
1200-1300	WYFR, Oakland, California	5950	11580	11830 13695
		15215	15255	
1215-1245	Radio Korea, Seoul, South Korea	7275	11740	
1215-1300	Radio Cairo, Egypt	17595		
1230-1235	All India Radio, New Delhi	3905	4800	4920 7280
		9565	9615	11620 11735
		15120	15250	17620
1230-1245 A	Radio Budapest, Hungary	7220	9585	9835 11910
		15160	15220	
1230-1255 M-A	BRT, Brussels, Belgium	17555	21815	
1230-1255	Voice of Turkey, Ankara	15255		
1230-1300	BBC, London, England*	6125	7255	6195 9635
		9660	11780	12040 15270
		15390	15435	17695
1230-1300	Radio Bangladesh, Dhaka	15195	17710	
1230-1300	Radio Berlin Int'l, East Germany	15440	17880	21465 21540
1230-1300	Radio Sweden, Stockholm	17740	21610	
1230-1300	Sri Lanka Broadcasting Corp.	9720		
1235-1245	Voice of Greece, Athens	11645	15630	17550
1240-1250 M	Radio Free Europe, Munich*	5985	7115	9695 9725
		11895	15355	
1245-1300	Radio France Int'l, Paris	9805	11670	15155 15195
		15365	17650	21635 21645

1300 UTC [8:00 AM EST/5:00 AM PST]				
1300-1310	Radio France Int'l, Paris	11670	15155	15365 17650
		21635	21645	
1300-1315	Radio Berlin Int'l, E. Germany	15440	17880	21465 21540
1300-1325	Radio Bucharest, Romania	9690	11940	15365 17750
1300-1330	BBC, London, England	5995	6195	7180 9515
		9740	11750	11775 11940
		12095	15070	15310 15420
		17640	17790	21470 21710
1300-1330	Radio Cairo, Egypt	17595		
1300-1330	Radio Finland, Helsinki	15400	21550	

1300-1330	Radio Ghana, Accra	4915	7295
1300-1330 S	Radio Norway Int'l, Oslo	9590	
1300-1330	Radio Yugoslavia, Belgrade	17740	21555 25795
1300-1330	Trans World Radio, Sri Lanka	11920	
1300-1330	Voice of Kenya, Nairobi	7270	
1300-1332 A,S	Trans World Radio, Bonaire	11815	15345
1300-1350	Radio Pyongyang, North Korea	9325	9345 9555 9600
		11335	11735
		11600	11660 11855 15280
		15455	
1300-1400	ABC, Alice Springs, Australia	2310	[ML]
1300-1400	ABC Brisbane, Australia	9660	
1300-1400	ABC, Katherine, Australia	2485	
1300-1400	ABC, Perth, Australia	9610	
1300-1400	ABC, Tennant Creek, Australia	2325	[ML]
1300-1400	CBC Northern Quebec Service	9625	11720
1300-1400	CBN, St. John's, Newfoundland	6160	
1300-1400	CBU, Vancouver, British Columbia	6160	
1300-1400	CFCF, Montreal, Quebec	6005	
1300-1400	CFCN, Calgary, Alberta	6030	
1300-1400	CHNS, Halifax, Nova Scotia	6130	
1300-1400	Christian Science World Service	9495	9530 11930
1300-1400	CKWX, Vancouver, British Columbia	6080	
1300-1400	CFRB, Toronto, Ontario	6070	
1300-1400 S	ELWA, Monrovia, Liberia	11830	
1300-1400	FEBC, Manila, Philippines	11850	
1300-1400	HCJB, Quito, Ecuador	11740	15115 17890
1300-1400	KNLS, Anchor Point, Alaska	9725	
1300-1400	Radio Australia, Melbourne	5995	6060 6080 7205
		9580	
1300-1400 S	Radio Canada Int'l, Montreal	9625	11720 11955 17820
1300-1400	Radio Jordan, Amman	9560	
1300-1400	Radio Korea (South), Seoul	9750	15575
1300-1400	Radio Moscow, USSR	7315	7370 9640 9650
		9655	9755 11840 12050
		15220	15540 15585 17655
		17830	17870
1300-1400	Radio Peace and Progress, USSR	11870	11900 15180 17635
1300-1400	Radio RSA, South Africa	11805	17730 21590
1300-1400 A,S	Radio Tanzania, Dar es Salaam	7165	
1300-1400	SBC Radio One, Singapore	5010	5052 11940
1300-1400 A,S	Superpower KUSW, Utah	9850	
1300-1400	Voice of America, Washington	6110	9760 11715 15160
		15425	
1300-1400	Voice of Malaysia	7295	



frequency

section

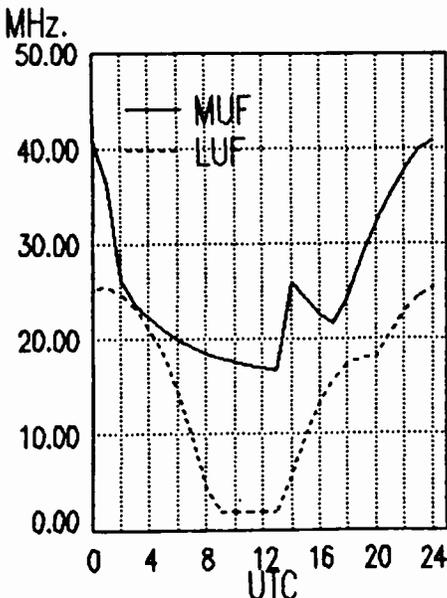
1300-1400	WHRI, Noblesville, Indiana	9465 11790
1300-1400 IRR	WWCR, Nashville, Tennessee	15690
1300-1400	WYFR, Oakland, California	5950 11580 11830 13695
		15215
1315-1400	Radio Berlin Int'l, E. Germany	11705 15240
1330-1345	Radio Korea, Seoul, South Korea	7275 11740
1330-1400	BBC, London, England	5995 6195 7180 9410
		9515 11750 11775 12095
		15140 15310 17640 17790
		17885 21470 21710 25750
1330-1400	All India Radio, New Delhi	9545 10330 11810 15335
1330-1400	Laotian National Radio	7113
1330-1400	Radio Australia, Melbourne	15430
1330-1400 S	Radio Finland, Helsinki	15400 21550
1330-1400	Radio Tashkent, Uzbek, USSR	5945 9540 9600 11785
		15460
1330-1400	Swiss Radio Int'l, Berne	9620 11695 13635 15570
		17830 21695
1330-1400	UAE Radio, United Arab Emirates	15435 17775 21605
1330-1400	Voice of Islamic Republic Iran	9525 9685 9770
1330-1400	Voice of Kenya, Nairobi	6100
1330-1400	Voice of Vietnam, Hanoi	12010 15010
1332-1400 A	Trans World Radio, Bonaire	11815 15345
1345-1400	Radio Berlin Int'l, East Germany	9730

1400-1500	All India Radio, New Delhi	9545 11810 15335
1400-1500	BBC, London, England	5995 6195 7180 9740
		9750 11750 12095 15070
		15140 15310 15400 17640
		17705 17790 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	Christian Science World Service	13760 17555 21780
1400-1500	CKWX, Vancouver, British Columbia	6080
1400-1500	CFRB, Toronto, Ontario	6070
1400-1500 S	ELWA, Monrovia, Liberia	11830
1400-1500	FBCB, Manila, Philippines	9670 11850
1400-1500	HCJB, Quito, Ecuador	11740 15115 17890
1400-1500	KNLS, Anchor Point, Alaska	9725
1400-1500	Radio Australia, Melbourne	5995 6035 6060 6080
		7205 9580 15140 15245
1400-1500 S	Radio Canada Int'l, Montreal	9625 11720 11955 17820
1400-1500	Radio Japan, Tokyo	9505 9695 11865 11815
		15410
1400-1500	Radio Korea, Seoul	9570 9750 15575
1400-1500	Radio Moscow, USSR	9640 9655 11840 11900
		12010 12065 15135 15295
		15320 15490 15540 15585
		17660 17815 21630
1400-1500	Radio RSA, South Africa	11925 21535 21590 25790
1400-1500 A,S	Radio Tanzania, Dar es Salaam	7165
1400-1500	SBC Radio One, Singapore	5010 5052 11940
1400-1500	Superpower KUSW, Utah	9850
1400-1500	Voice of America, Washington	6110 9760 11920 15160
		15205 15245 15410 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	WHRI, Noblesville, Indiana	9465 15105
1400-1500 IRR	WWCR, Nashville, Tennessee	15690
1400-1500	WYFR, Oakland, California	5950 11580 11830 13695
		15130 15215
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]

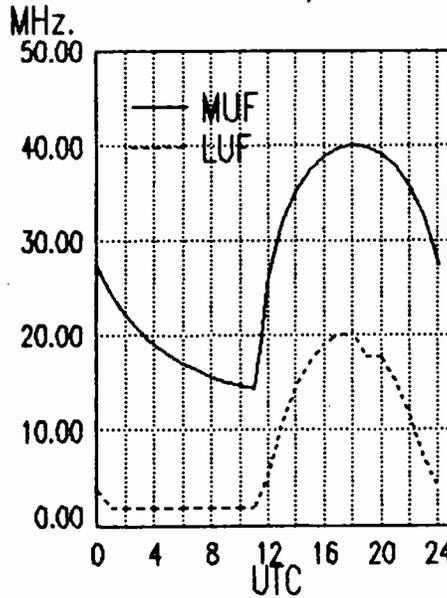
1400 UTC [9:00 AM EST/6:00 AM PST]

1400-1430	ABC, Alice Springs, Australia	2310 [ML]
1400-1430	ABC, Tennant Creek, Australia	2325 [ML]
1400-1430	Radio Finland, Helsinki	9560 11715 11925 15185
		17800
1400-1430	Radio France Int'l, Paris	21770
1400-1430 S	Radio Norway Int'l, Oslo	21710
1400-1430	Radio Polonia, Warsaw, Poland	6095 7285
1400-1430	Radio Sweden Int'l, Stockholm	17740 21610
1400-1430	Radio Tirana, Albania	9500 11985
1400-1430	Voice of Ethiopia, Addis Ababa	9550 11710
1400-1450 T	Radio Free Europe, Munich*	5985 7115 7695 9725
		11895 15355
1400-1450	Radio Pyongyang, North Korea	6576 11735
1400-1455	Radio Beijing, China	7405 11600 11855 15165
1400-1500	ABC, Katherine, Australia	2485
1400-1500	ABC, Perth, Australia	9610
1400-1500	Adventist World Radio, Italy	7275

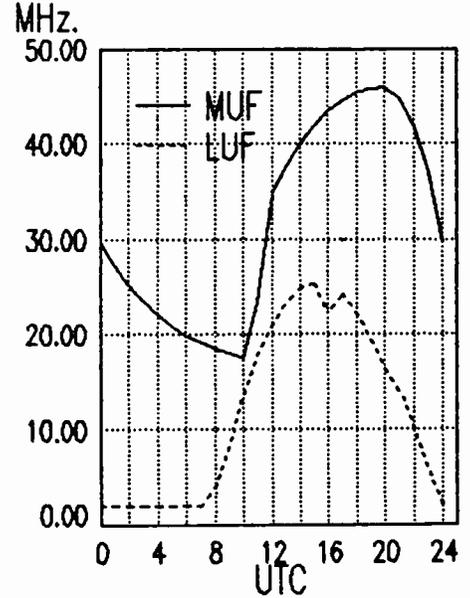
Midwest To Australia



Midwest To Central America/Caribbean



Midwest To South America



Midwest

frequency

section

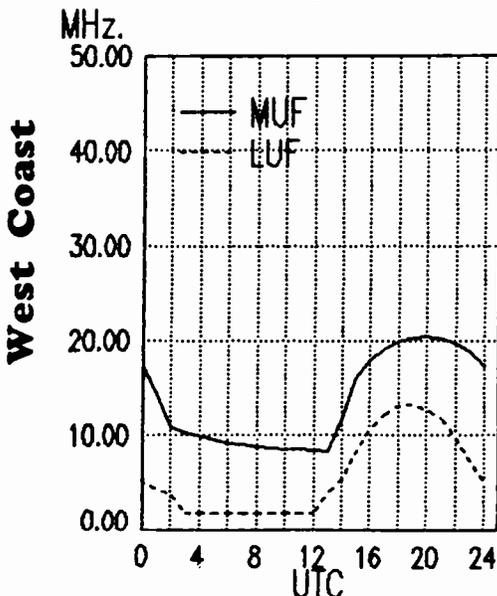
1430-1500	Burma Broadcasting Service	5985
1430-1500	King of Hope, Southern Lebanon	6280
1430-1500	KTWR, Agana, Guam	9780
1430-1500	Radio Austria Int'l, Vienna	6155 11780 13730 21490
1430-1500	Radio Netherland, Hilversum	5955 13770 15150 17605
1430-1500	Radio Prague, Czechoslovakia	9605 11685 13715 15110
		17705 21505
1445-1500	Radio Canada Int'l, Montreal	11935 15160 15305 15325
		17795 17820 21545
1445-1500 M-A	Radio Ulan Bator, Mongolia	9645 15305

1500 UTC [10:00 AM EST/7:00 AM PST]

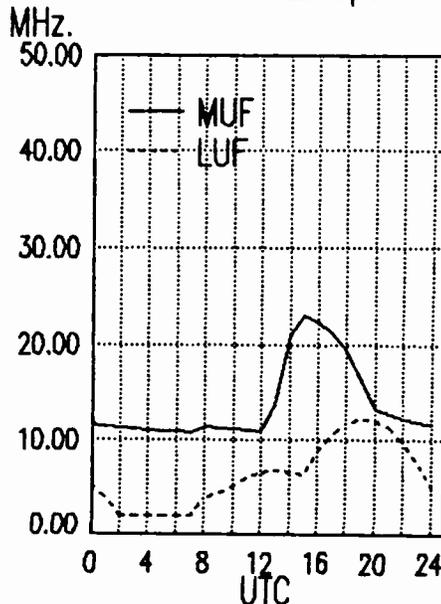
1500-1505	Africa No. 1, Gabon	7200 17630
1500-1510	Vatican Radio, Vatican City	11955 15090 17870
1500-1515	FEBA, Mahe, Seychelles	15325
1500-1515	Radio Ulan Bator, Mongolia	9645 15305
1500-1525	Radio Bucharest, Romania	9510 9690 11775 11940
		15250 15335
1500-1525	Radio Netherland, Hilversum	5955 13770 15150 17605
1500-1530	Radio Berlin Int'l, East Germany	15240 17880
1500-1530	Radio Sofia, Bulgaria	9560 11735 15310
1500-1530 A,S	Radio Tanzania, Dar es Salaam	7165
1500-1530	Radio Veritas Asia, Philippines	9525 9770 15445
1500-1550	Deutsche Welle, West Germany	9735 11965 17765 21600
1500-1550	Radio Pyongyang, North Korea	6576 9325 9345 9640
		9977 11740
1500-1555	Radio Beijing, China	7405 11600 11795 15165
1500-1600 F	ABC, Alice Springs, Australia	2310 [ML]
1500-1600	ABC, Perth, Australia	9610
1500-1600 F	ABC, Tennant Creek, Australia	2325 [ML]
1500-1600	Adventist World Radio, Guam	11980
1500-1600	AWR, Alajuela, Costa Rica	15460
1500-1600	BBC, London, England	5995 6155 6195 7180
		9410 9740 11750 11775
		11940 12095 15070 15140
		15260 15400 17640 17705
		17740 17790 21470 21660
		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	Christian Science World Service	13760 17555 21780
1500-1600	CKWX, Vancouver, British Columbia	6080
1500-1600	CFRB, Toronto, Ontario	6070
1500-1600 S	ELWA, Monrovia, Liberia	11830
1500-1600	FEB, Manila, Philippines	11850
1500-1600	HCJB, Quito, Ecuador	11740 15115 17890
1500-1600	King of Hope, Southern Lebanon	6280
1500-1600	KNLS, Anchor Point, Alaska	11700
1500-1600	KTWR, Agana, Guam	11650
1500-1600	Radio Australia, Melbourne	5995 6035 6060 6080
		7205 7215 9580 15140
		15245
1500-1600 S	Radio Canada Int'l, Montreal	9625 11720 11955 17820
1500-1600	Radio Japan, Tokyo	11815 11865 15195 21700
1500-1600	Radio Jordan, Amman	9560
1500-1600	Radio Korea (South), Seoul	9870
1500-1600	Radio Moscow, USSR	9640 9755 11840 11900
		11995 12010 12065 15135
		15295 15490 15585 17660
1500-1600	Radio RSA, South Africa	11925 21535 21590 25790
1500-1600	SBC Radio One, Singapore	5010 5052 11940
1500-1600	SLBC, Sri Lanka	9720
1500-1600	Superpower KUSW, Utah	9850
1500-1600	Voice of America, Washington	6110 9575 9645 9700
		9760 15205 15260
1500-1600	Voice of Ethiopia, Addis Ababa	7165 9560
1500-1600	Voice of Indonesia, Jakarta	11784 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	WHRI, Noblesville, Indiana	15105 21840
1500-1600	WRNO, New Orleans, Louisiana	11965
1500-1600 IRR	WWCR, Nashville, Tennessee	15690
1500-1600	WYFR, Oakland, California	5950 11580
1500-1600	WYFR Satellite Net	11830 13695 15215
1515-1600	FEBA, Mahe, Seychelles	11865 15325
1530-1545	All India Radio, New Delhi	3905 3925 4860 6160
		7160 7412 9545 9950
1530-1555	BRT, Brussels, Belgium	17595 21810
1530-1600	Radio Prague, Czechoslovakia	6055 7395 9605 11685
		11990 13715 15110 15155
		17705 17840 21405 21505
1530-1600	Radio Sofia, Bulgaria	7245 9740 11735

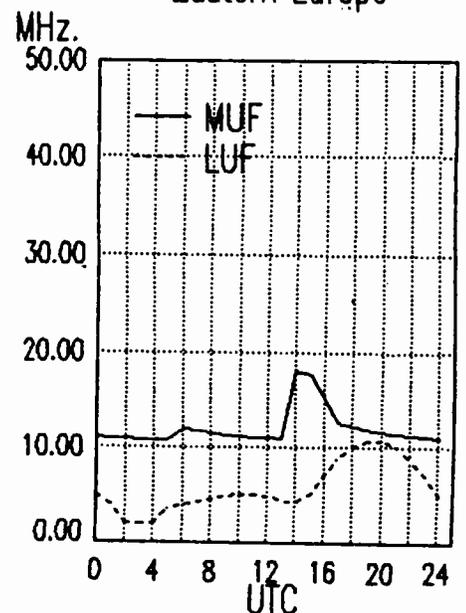
Midwest To
Alaska



West Coast To
Western Europe



West Coast To
Eastern Europe



frequency

section

1615-1630	Voice of Vietnam, Hanoi	10011	11750
1630-1700	A Radio Austria Int'l, Vienna	6155	11780 13730 21490
1630-1700	Radio Netherlands, Hilversum	6020	15570
1630-1700	Radio Peace & Progress, USSR	9830	11670 11695 11910
		11775	12055 17595 17615
1630-1700	RTM Morocco	17595	17815
1645-1700	Radio Korea (South), Seoul	5975	7275 9870

1700 UTC [12:00 PM EST/9:00 AM PDT]

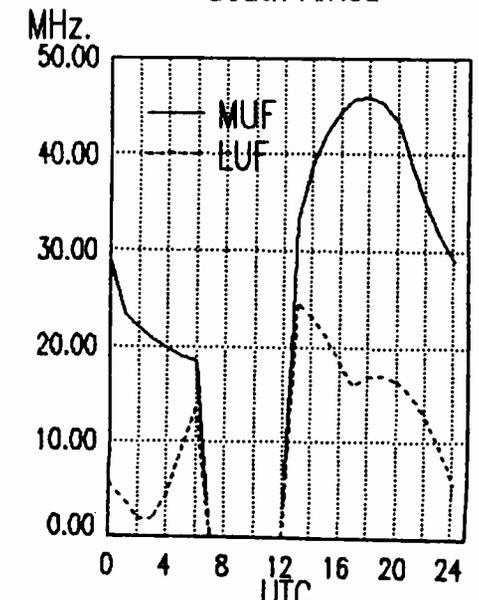
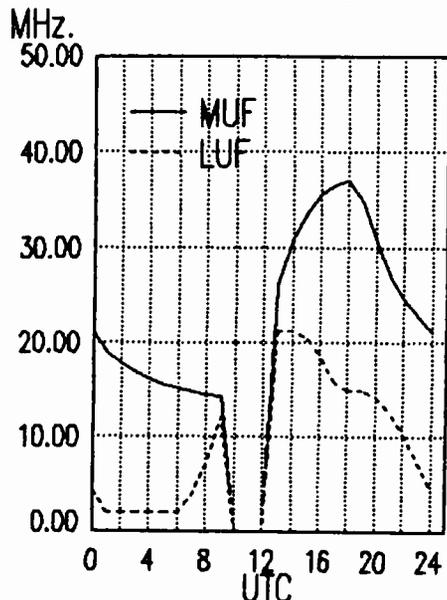
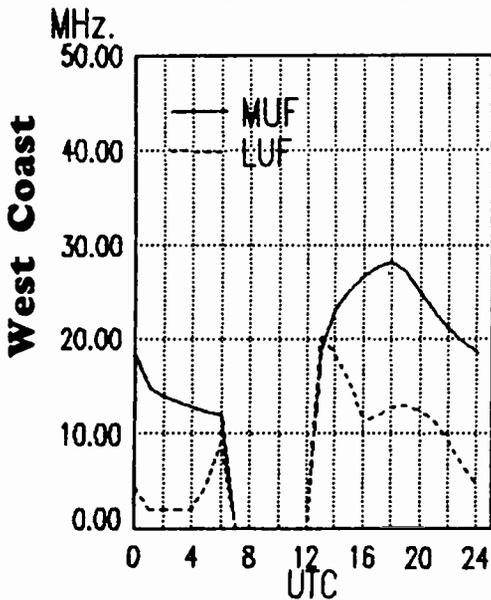
1700-1705	Radio Uganda, Kampala	4976	5026
1700-1715	M-A Voice of Namibia (Angola)	11955	
1700-1725	Radio Budapest, Hungary	6110	9585 9835 11910
		15160	
1700-1725	Radio Netherland, Hilversum	6020	15570
1700-1730	Radio Australia, Melbourne	5995	6060 6080 7205
		9580	15140 15245
1700-1730	Radio Berlin Int'l, E. Germany	7295	9730 15355 17780
1700-1730	Radio Japan, Tokyo	9695	11815 11865
1700-1730	S Radio Norway Int'l, Oslo	17840	25730
1700-1730	Radio Sweden Int'l, Stockholm	6065	9655
1700-1730	SLBC, Colombo, Sri Lanka	11800	
1700-1745	BBC, London, England	9410	9740 11750 11775
		11940	12095 15070 15260
		15310	15400 17640 17695
		17880	21470 21660 21710
1700-1750	Radio Pyongyang, North Korea	7290	9345 9640 9977
		11760	
1700-1755	Radio Beijing, China	9570	9750 11575
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	Christian Science World Service	21640	
1700-1800	CKWX, Vancouver, British Columbia	6080	
1700-1800	CFRB, Toronto, Ontario	6070	
1700-1800	Radio Havana Cuba	11920	
1700-1800	Radio Jordan, Amman	9560	
1700-1800	Radio Korea, Seoul, South Korea	5975	9870 15575

1700-1800	M-F Radio Malabo, Equatorial Guinea	9553	[ML]
1700-1800	Radio Moscow, USSR	9655	9755 9795 9825
		9895	11730 11840 11940
		11995	12010 12030 12050
		12080	13605 15135 15295
		15540	15585 15615 17570
		17595	
1700-1800	Radio for Peace, Costa Rica	21565	25945
1700-1800	Radio Riyadh, Saudi Arabia	9705	9720
1700-1800	Radio Tanzania, Dar es Salaam	9684	
1700-1800	Radio Zambia, Lusaka	9580	
1700-1800	RTM Morocco	17815	
1700-1800	SBC Radio One, Singapore	5052	11940
1700-1800	Superpower KUSW, Utah	15650	
1700-1800	A,S Swaziland Commercial Radio	6155	
1700-1800	Voice of Africa, Egypt	15255	
1700-1800	Voice of America, Washington	6110	9575 9645 9760
		11760	11920 15205 15410
		15445	15580 15600 17785
		17800	17870
1700-1800	Voice of Kenya, Nairobi	6100	
1700-1800	WHRI, Noblesville, Indiana	13760	15105
1700-1800	WINB, Red Lion, Pennsylvania	15295	
1700-1800	S-F WMLK, Bethel, Pennsylvania	9465	
1700-1800	WRNO, Louisiana	15420	
1700-1800	IRR WWCN, Nashville, Tennessee	15690	
1700-1800	WYFR Satellite Net	13695	15170 15215
1700-1800	WYFR, Okeechobee, Florida	11580	13770
1715-1730	Radio Canada Int'l, Montreal	11935	15305 15325 17820
		21545	
1715-1745	BBC, London, England*	3975	6185 7165
1718-1800	Radio Pakistan, Islamabad	6210	
1725-1740	Radio Suriname Int'l, Paramibo	17835v	
1725-1800	Radio New Zealand, Wellington	11780	15150
1730-1735	All India Radio, New Delhi	4840	4860 4920 6160
		7412	9950
1730-1755	Radio Austria Int'l, Vienna	5945	6155 12010 13730
1730-1755	Radio Bucharest, Romania	7105	9530 9685 11790
		11940	15270 15340 17860
		7205	9580 15245
1730-1800	Radio Australia, Melbourne	5995	6035 6060 6080
		7205	9580 15245
1730-1800	Radio Polonia, Warsaw, Poland	6135	9540
1730-1800	Radio Prague, Czechoslovakia	9605	11685 11990 13715
		15110	17840 21505
1730-1800	Swiss Radio Int'l, Berne	3985	6165 9535

West Coast To Central Africa

West Coast To West Africa

West Coast To South Africa



frequency

section

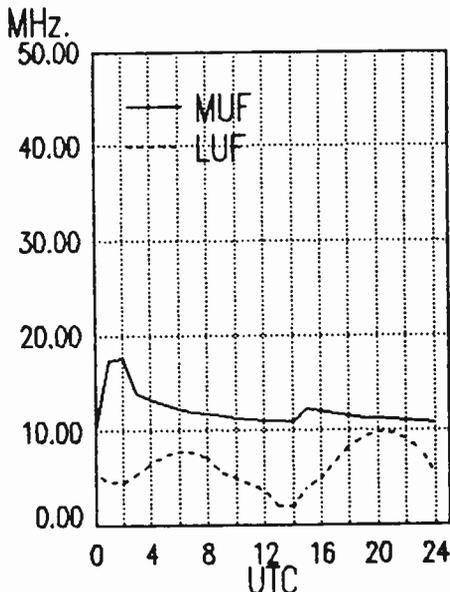
1734-1800	FEBA, Mahe, Seychelles	11810			
1745-1800	BBC, London, England	9410	9740	11750	12095
		15070	15310	15400	17640
		17695	17880	21470	
1745-1800	Radio Canada Int'l, Montreal	11935	15305	15325	17820

1800 UTC [1:00 PM EST/10:00 AM PST]

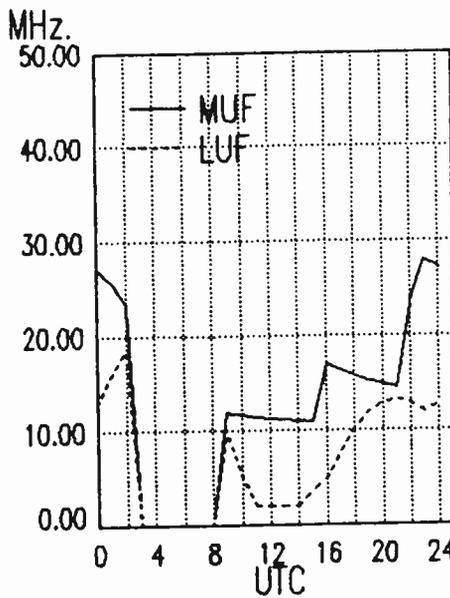
1800-1805	A	SBC Radio One, Singapore	11940			
1800-1815		Radio Cameroon, Yaounde	3970	4750	4795	4850
			5010			
1800-1815		SLBC, Colombo, Sri Lanka	11800			
1800-1825	A,S	FEBA, Mahe, Seychelles	11760			
1800-1825		Radio Prague, Czechoslovakia	9605	11685	11990	13715
			15110	17840	21505	
			7325	9410	9740	11750
1800-1830		BBC, London, England	12095	15070	15310	15400
			15420	17640	17695	17830
			17880			
1800-1830	S	Radio Bamako, Mali	4835	5995		
1800-1830		Radio Mozambique, Maputo	3265	4855	9618	
1800-1830	S	Radio Norway, Oslo	15235			
1800-1830		Voice of Africa, Egypt	15255			
1800-1830		Voice of Vietnam, Hanoi	12020	15010		
1800-1845		Radio Abidjan, Ivory Coast	11920			
1800-1845		Trans World Radio, Swaziland	9525			
1800-1850		Radio Bras, Brasilia, Brazil	15265			
1800-1856		Radio RSA, South Africa	17765	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		Christian Science World Service	21640			
1800-1900		CKWX, Vancouver, British Columbia	6080			
1800-1900		CFRB, Toronto, Ontario	6070			
1800-1900		KNLS, Anchor Point, Alaska	11945			
1800-1900		Radio Australia, Melbourne	5995	6035	6060	6080
			7205	7215	9580	15245
1800-1900		Radio Jordan, Amman	9560			

1800-1900		Radio Kuwait, Kuwait	11665			
1800-1900		Radio Malabo, Equatorial Guinea	9553v [ML]			
1800-1900		Radio Moscow, USSR	9755	9825	9895	11730
			11840	11940	11995	12010
			12080	15135	15245	15265
			15295	15405	15425	15585
			15475	17570		
			11780	15150		
1800-1900		Radio New Zealand, Wellington	21565	25945		
1800-1900		Radio for Peace, Costa Rica	9705	9720		
1800-1900		Radio Riyadh, Saudi Arabia	9684			
1800-1900		Radio Tanzania, Dar es Salaam	9580			
1800-1900		Radio Zambia, Lusaka	15650			
1800-1900		Superpower KUSW, Utah	6155			
1800-1900	A,S	Swaziland Commercial Radio	9575	9760	11760	11920
1800-1900		Voice of America, Washington	15205	15410	15445	15580
			15600	17785	17800	17870
			9662			
1800-1900		Voice of Ethiopia	6100			
1800-1900		Voice of Kenya, Nairobi	13760	17830		
1800-1900		WHRI, Noblesville, Indiana	15295			
1800-1900		WINB, Red Lion, Pennsylvania	9465			
1800-1900	S-F	WMLK, Bethel, Pennsylvania	15420			
1800-1900		WRNO, New Orleans, Louisiana	15690			
1800-1900	IRR	WWCR, Nashville, Tennessee	11580	15215	15345	
1800-1900		WYFR, Oakland, California	11830	13695	15170	
1800-1900		WYFR Satellite Net, California	9385	11585	12077	13750
1815-1830		Kol Israel, Jerusalem	5995	7235	15325	17820
1815-1830	M-F	Radio Canada Int'l, Montreal	6240	7505	11510	15510
1815-1900		Radio Bangladesh, Dhaka	5995	6135	7125	7285
1800-1855		Radio Polonia, Warsaw, Poland	9525	11840		
			5915	11695		
1830-1855		BRT, Brussels, Belgium	7325	9410	9740	11750
1830-1900		BBC, London, England	12095	15070	15245	15400
			17695	17880		
1830-1900		Radio Berlin Int'l, E. Germany	9665	13610	15145	15255
1830-1900	M-F	Radio Canada Int'l, Montreal	13650	15325	17875	21675
1830-1900		Radio Korea, Seoul, South Korea	9870	15575		
1830-1900	MWF	Radio Mozambique, Maputo	3265	4855	9618	
1830-1900		Radio Netherland, Hilversum	6020	15560	17605	21685
1830-1900		Radio Sofia, Bulgaria	7245	9560	11735	15330
1830-1900		Swiss Radio International, Berne	9885	11955		
1840-1850	M-A	Voice of Greece, Athens	11645	12045	15630	
1840-1900		Radio Senegal, Dakar	4950			
1845-1855		Radio Nacional, Conaky, Guinea	4833	4900	7125	

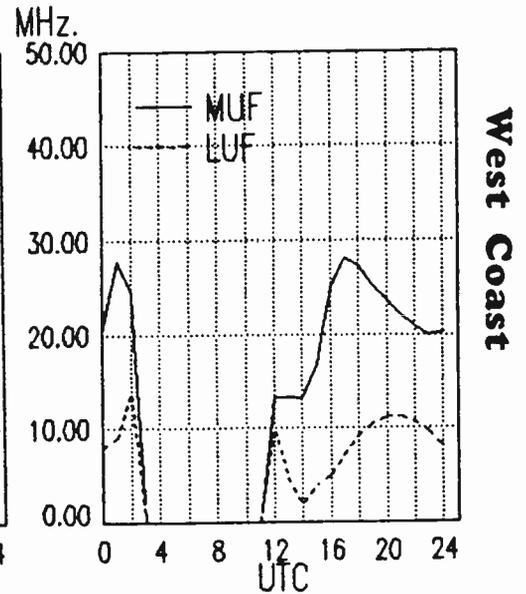
West Coast To Central Asia



West Coast To South East Asia



West Coast To Indian Ocean



frequency

section

1845-1900 Africa No. 1 15475
 1845-1900 All India Radio, New Delhi 7412 11620

1900 UTC [2:00 PM EST/11:00 AM PST]

1900-1905 M-A	Vatican Radio, Vatican City	6190	6248	7250	9645
1900-1915	Radio Bangladesh, Dhaka	6240	7505	11510	
1900-1915	Radio Tanzania, Dar es Salaam	9684			
1900-1925	Radio Netherland, Hilversum	6020	15560	17605	21685
1900-1925	Voice of Islamic Republic Iran	9695			
1900-1930 F	ABC, Alice Springs, Australia	2310	[ML]		
1900-1930 F	ABC, Tennant Creek, Australia	2325	[ML]		
1900-1930	Radio Afghanistan, Kabul	7160	7310	9640	
1900-1930 M-F	Radio Canada Int'l, Montreal	15260	17820		
1900-1930	Radio Japan, Tokyo	9695	11850	11865	15270
1900-1930	Radio Kiev, Ukrainian SSR	7150	7240	7250	9600
1900-1930 S	Radio Norway Int'l, Oslo	15235			
1900-1930 M-F	Radio Portugal, Lisbon	11740	11870	15250	
1900-1930	Voice of Vietnam, Hanoi	9840	12020	15010	
1900-1950	Deutsche Welle, Koln, W. Germany	11810	13790	15390	17810
1900-1955	Radio Beijing, China	6860	9470		
1900-2000	All India Radio, New Delhi	7412	11620	11935	15360
1900-2000	BBC, London, England	9410	9740	11750	12095
		15070	15140	15400	17760
		17880			

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	Christian Science World Service	21640			
1900-2000	CKWX, Vancouver, British Columbia	6080			
1900-2000	CFRB, Toronto, Ontario	6070			
1900-2000	HCJB, Quito, Ecuador	15220	15270	17790	
1900-2000	Radio Algiers, Algeria	9509	9685	15215	17745
1900-2000	Radio Australia, Melbourne	6035	6060	6080	7205
		7215	9580	15140	

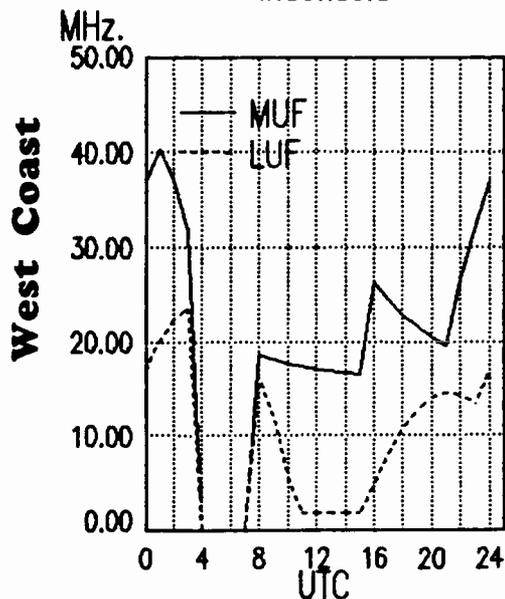
1900-2000 A,S	Radio Canada Int'l, Montreal	15260	17820		
1900-2000	Radio Ghana, Accra	6130			
1900-2000	Radio Havana Cuba	15340			
1900-2000	Radio Jordan, Amman	9560			
1900-2000	Radio Kuwait, Kuwait	11665			
1900-2000 M-A	Radio Malabo, Equatorial Guinea	9553	[ML]		

1900-2000	Radio Moscow, USSR	11840	11995	12010	12050
		13605	13625	15135	15295
		15425	15540	15615	17605
1900-2000	Radio Moscow British Service	7240	7350	9450	9695
1900-2000	Radio New Zealand, Wellington	11780	15485		
1900-2000	Radio for Peace, Costa Rica	21566	25944		
1900-2000	Radio Prague, Czechoslovakia	5930	7345	11855	
1900-2000	Radio Riyadh, Saudi Arabia	9705	9720		
1900-2000	Radio RSA, South Africa	17765	21535		
1900-2000	Radio Zambia, Lusaka	9580			
1900-2000	Spanish Foreign Radio, Madrid	11790	15280	15375	15395
1900-2000	Superpower KUSW, Utah	15650			
1900-2000 A,S	Swaziland Commercial Radio	6155			
1900-2000	Trans World Radio Swaziland	3205			
1900-2000	Voice of America, Washington	9525	9700	9760	11760
		11870	15180	15205	15410
		15445	15580	15600	17740
		17785	17800	17870	

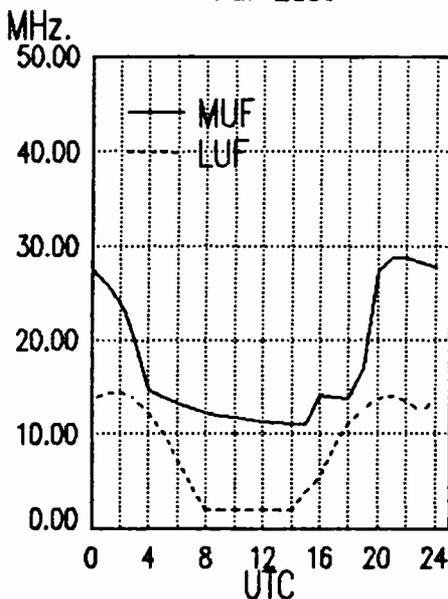
1900-2000	Voice of Ethiopia, Addis Ababa	9595			
1900-2000	Voice of Kenya, Nairobi	6100			
1900-2000	WHRI, Noblesville, Indiana	13760	17830		
1900-2000	WINB, Red Lion, Pennsylvania	15295			
1900-2000 S-F	WMLK, Bethel, Pennsylvania	9465			
1900-2000	WRNO, New Orleans, Louisiana	15420			
1900-2000 IRR	WWCR, Nashville, Tennessee	15690			
1900-2000	WYFR Satellite Net, California	11580	11830	13695	15170
		15215	15566	21615	

1910-1920	Radio Botswana, Gaborone	3356	4820		
1920-1930 M-A	Voice of Greece, Athens	7430	9395	9425	
1930-1940	Radio Togo, Lome	5047			
1930-2000	ABC, Katherine, Australia	2485			
1930-2000	Radio Beijing, China	6955	7480	9440	
1930-2000	Radio Austria Int'l, Vienna	5945	6155	12010	13730
1930-2000	Radio Bucharest, Romania	7145	9690	9750	11940
1930-2000	Radio Korea, Seoul, South Korea	9870	15575		
1930-2000	Voice Islamic Republic Iran	6030	9022		
1930-2000	WINB, Red Lion, Pennsylvania	15185			
1935-1955	RAI, Rome, Italy	7275	7290	9575	
1940-2000 M-A	Radio Ulan Bator, Mongolia	9575	11870		
1945-2000	All India Radio, New Delhi	9755	11860		
1950-2000	Vatican Radio, Vatican City	6190	7250	9645	

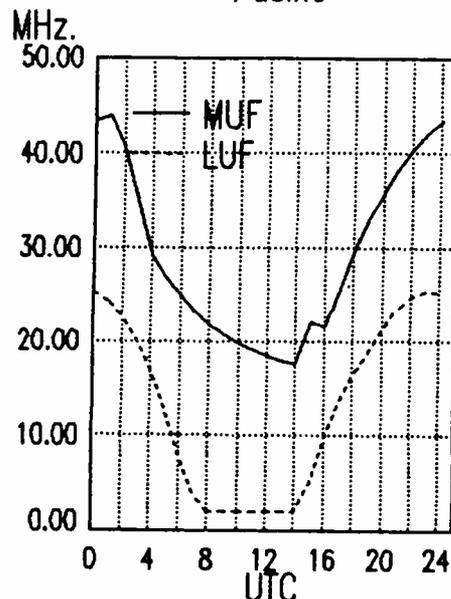
West Coast To Indonesia



West Coast To Far East



West Coast To Pacific



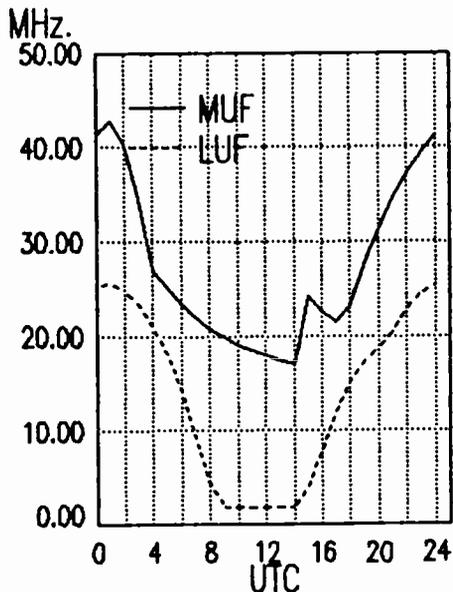
frequency

section

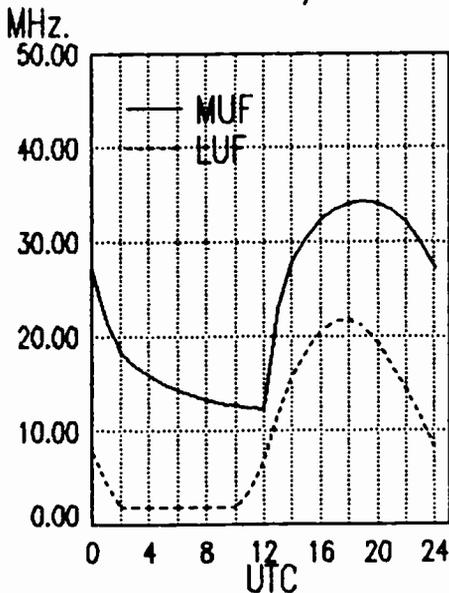
2000 UTC [3:00 PM EST/12:00 PM PST]					
2000-2005	Radio Zambia, Lusaka	3345	6165		
2000-2010	A Radio Zambia, Lusaka	3345	6165		
2000-2010	Voice of Kenya, Nairobi	6100			
2000-2015	Radio Togo, Lome	3220	5047		
2000-2015	M-A Radio Ulan Bator, Mongolia	9575	11870		
2000-2015	Trans World Radio, Swaziland	3205			
2000-2025	Radio Beijing, China	6955	7480	9440	9745
		11715			
2000-2025	Radio Bucharest, Romania	5990	6105	7145	7195
		9750	9690	11940	
2000-2030	Kol Israel, Jerusalem	15640	17575	17630	
2000-2030	Radio Australia, Melbourne	6035	7205	7215	9580
		9620			
2000-2030	Radio Berlin Int'l, East Germany	9665	11920	15255	
2000-2030	M-F Radio Canada Int'l, Montreal	15260	17820		
2000-2030	Radio Ghana, Nairobi	3366	4915		
2000-2030	Radio Korea, Seoul	6480	7550	15575	
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 Republic of Iran	6030	9022		
2000-2045	All India Radio, New Delhi	7412	9755	9910	11620
		11860			
2000-2050	Radio Pyongyang, North Korea	6576	9345	9640	9977
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	9410	11715	11750
		11820	12095	15070	15140
		15260	15400	17695	17760
		17880			
2000-2055	Radio Beijing, China	6955	7480	9440	9745
		15110			
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	Christian Science World Service	15390	17555	15610	

2000-2100	CKWX, Vancouver, British Columbia	6080			
2000-2100	CFRB, Toronto, Ontario	6070			
2000-2100	King of Hope, Southern Lebanon	6280			
2000-2100	KVOH, Rancho Simi, California	17775			
2000-2100	Radio Baghdad, Iraq	13660			
2000-2100	Radio Havana Cuba	15340			
2000-2100	Radio Jordan, Amman	9560			
2000-2100	Radio Kuwait, Kuwait	11665			
2000-2100	Radio Malabo, Equatorial Guinea	9553v			
2000-2100	Radio Moscow, USSR	9865	11730	11820	11840
		12030	12050	15135	15425
		15615	17595	17605	17850
2000-2100	Radio New Zealand, Wellington	15485	17705		
2000-2100	A,S Radio for Peace, Costa Rica	21566	25944		
2000-2100	Radio Riyadh, Saudi Arabia	9705	9720		
2000-2100	Radio Tonga, Tonga	5025			
2000-2100	Radio Zambia, Lusaka	9580			
2000-2100	Superpower KUSW, Utah	15650			
2000-2100	Voice of America, Washington	9700	9760	11760	15205
		15410	15445	15580	15600
		17785	17800	17870	
2000-2100	WHRI, Noblesville, Indiana	13760	17830		
2000-2100	WINB, Red Lion, Pennsylvania	15185			
2000-2100	WRNO, New Orleans, Louisiana	15420			
2000-2100	IRR WWCR, Nashville, Tennessee	15690			
2000-2100	WYFR, Oakland, California	11580	13695	15170	15215
		15566	17845	21525	21615
		15095	17710		
2005-2100	Radio Damascus, Syria	6100			
2010-2100	A,S Voice of Kenya, Nairobi	11830			
2015-2100	ELWA, Monrovia, Liberia	6165	9575		
2025-2045	RAI, Rome, Italy	6095	7285		
2030-2055	Radio Polonia, Warsaw, Poland	5975	7325	9410	11715
2030-2100	BBC, London, England	11920	12095	15070	15160
		15260	15400	17695	17755
		17760	17880		
2030-2100	Radio Australia, Melbourne	9580	9620		
2030-2100	Radio Korea, Seoul, South Korea	6480	7550	15575	
2030-2100	Radio Netherland, Hilversum	9860	13700	15560	
2030-2100	M Radio Tallin, Estonian SSR	5925			
2030-2100	Radio Tirana, Albania	9480	11835		
2030-2100	Voice of Africa, Cairo, Egypt	15375			
2030-2100	Voice of Vietnam, Hanoi	9840	12020	15010	
2045-2100	All India Radio, New Delhi	7412	9550	9910	11620
		11715			

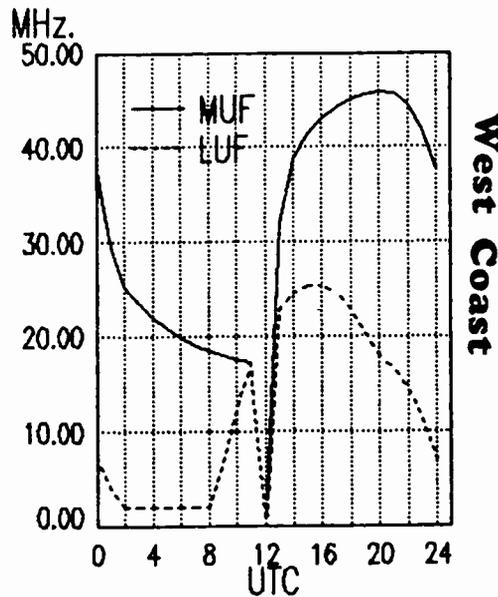
West Coast To Australia



West Coast To Central America/Caribbean



West Coast To South America



frequency

section

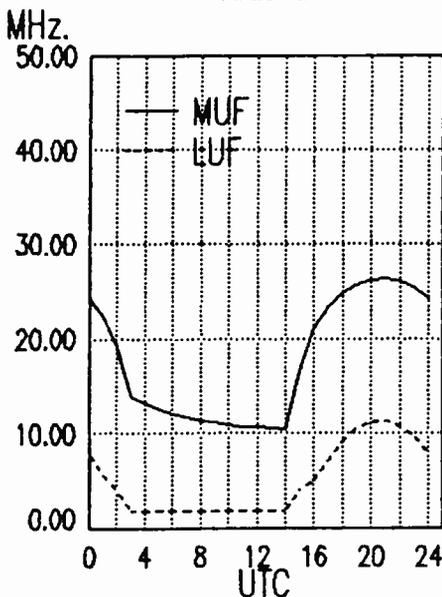
2045-2100 IBRA Radio, Malla 7110
 2045-2100 Vatican Radio, Vatican City 9625 11700 11760 15120

2100 UTC [4:00 PM EST/1:00 PM PST]

2100-2105	Radio Damascus, Syria	15095	17710
2100-2105	Radio New Zealand, Wellington	15485	17705
2100-2105	Radio Zambia, Lusaka	3345	6165
2100-2110 A,S	Voice of Kenya, Nairobi	6100	
2100-2115	IBRA Radio, Malta	7110	
2100-2125	BRT, Brussels, Belgium	5915	9925
2100-2125	Radio Bucharest, Romania	5990	6105 7145 7195
		9690	9750 11940
2100-2125	Radio Finland, Helsinki	6120	11755 11845
2100-2125	Radio Netherland, Hilversum	9860	13700 15560
2100-2130	Radio Berlin Int'l, E. Germany	6115	
2100-2130	Radio Budapest, Hungary	6110	7220 9585 9835
		11910	15160
2100-2130	Radio Japan, Tokyo	11800	11765 15230 15270
		17810	17890
2100-2130	Radio Korea, Seoul, South Korea	6480	7550 15575
2100-2130	Radio Peace & Progress, USSR	7340	7420 9550 9820
		11980	15240
2100-2130	Radio Sweden, Stockholm	9655	11705
2100-2130	Swiss Radio Int'l, Berne	9885	13635 15525
2100-2135	ELWA, Monrovia, Liberia	11830	
2100-2150	Radio Baghdad, Iraq	13660	
2100-2150	Voice of Turkey, Ankara	9795	
2100-2200	WYFR, Oakland, California	11580	13695 15170 15215
		15566	17845 21525 21615
2100-2150	Deutsche Welle, West Germany	9670	9765 11785 13780
2100-2155	Radio Beijing, China	9820	11500
2100-2200 M-A	ABC, Alice Springs, Australia	2310	[ML]
2100-2200	ABC, Katherine, Australia	2485	
2100-2200 M-A	ABC, Tennant Creek, Australia	2325	[ML]
2100-2200	All India Radio, New Delhi	7412	9910 11620 11715
2100-2200	BBC, London, England	3995	5975 6005 6175
		6195	7325 9410 11750
		12095	15070 15260 15400
		17755	17760 17880
2100-2200 M-F	CBC Northern Quebec Service	9625	11720
2100-2200	CBN, St. John's, Newfoundland	6160	
2100-2200	CBU, Vancouver, British Columbia	6160	

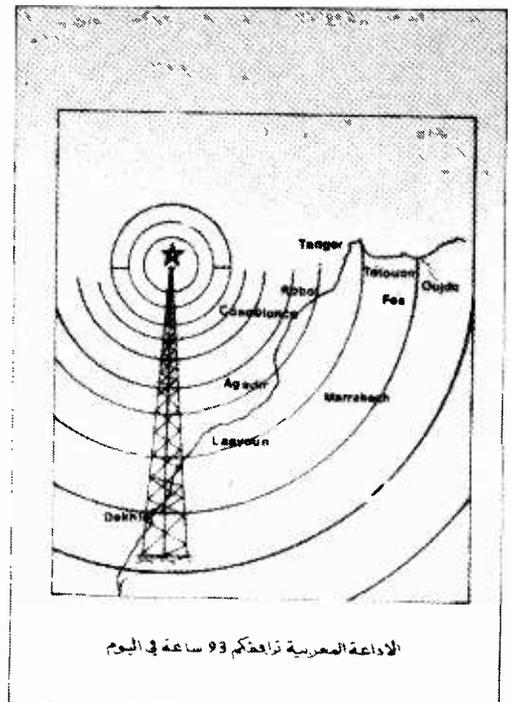
2100-2200	CFCF, Montreal, Quebec	6005	
2100-2200	CFCN, Calgary, Alberta	6030	
2100-2200	CHNS, Halifax, Nova Scotia	6130	
2100-2200	Christian Science World Service	15390	15610 17555
2100-2200	CKWX, Vancouver, British Columbia	6080	
2100-2200	CFRB, Toronto, Ontario	6070	
2100-2200	King of Hope, Southern Lebanon	6280	
2100-2200	KSDA, Agat, Guam	7365	15125
2100-2200	KVOH, Rancho Simi, California	17775	(ML)
2100-2200	Radio Australia, Melbourne	15160	15240 15395 17795
2100-2200 A,S	Radio Canada Int'l, Montreal	15325	17875
2100-2200	Radio Jordan, Amman	9560	
2100-2200	Radio Moscow, USSR	9665	9735 9865 11820
		11840	11940 11980 12030
		12050	15295 15425 17605
		17700	17850
2100-2200 A,S	Radio Malabo, Equatorial Guinea	9552.5	
2100-2200	Radio Tonga, Tonga	5025	
2100-2200	Radio for Peace, Costa Rica	21566	25944
2100-2200 A,S	Radio Zambia, Lusaka	9580	
2100-2200	Spanish Foreign Radio, Madrid	11790	15280
2100-2200	Superpower KUSW, Utah	15650	
2100-2200	Voice of Africa, Cairo, Egypt	15280	
2100-2200	Voice of America, Washington	9700	9760 11760 15205
		15410	15445 15580 15600
		17785	17800 17870
		13760	17830
2100-2200	WHRI, Noblesville, Indiana	13720	
2100-2200	WRNO, New Orleans, Louisiana	13720	
2100-2200 IRR	WWCR, Nashville, Tennessee	15690	
2103-2200	WINB, Red Lion, Pennsylvania	15185	
2110-2200	Radio Damascus, Syria	15095	17710
2110-2200	VOA Pacific Service	9525	11965 15185
2115-2200	Radio Cairo, Egypt	9900	
2130-2145	BBC, London, England*	5965	7160
2130-2200	BBC, London, England*	6030	7230 9635
2130-2200	HCJB, Quito, Ecuador	15270	17790 21470
2130-2200 A,S	Radio Canada Int'l, Montreal	11880	15150 17820
2130-2200	Swiss Radio Int'l, Berne	6190	
2135-2150 S-F	ELWA, Monrovia, Liberia	11830	
2145-2200	Radio Berlin Int'l, East Germany	5965	9730
2150-2200 M-F	ELWA, Monrovia, Liberia	11830	

West Coast To Alaska



This month we have QSLs from Andrew Hill of Staffordshire, England: one from Radiodiffusion Television Marocaine (Moroccan Broadcasting System) and the other from Radio Norway International.

Many thanks to all those who have sent QSLs; we'll use them whenever and wherever we are able! MT copies and returns any QSLs sent to the QSL Editor at P.O.Box 98, Brasstown, NC 28902.



frequency

section

2200 UTC [5:00 PM EST/2:00 PM PST]

2200-2205	M-F	ELWA, Monrovia, Liberia	3993	11830			
2200-2205		Radio Damascus, Syria	15095	17710			
2200-2210		Radio Sierra Leone, Freetown	5980				
2200-2215	M-A	ABC, Alice Springs, Australia	2310	[ML]			
2200-2215	M-A	ABC, Tennant Creek, Australia	2325	[ML]			
2200-2215		BBC, London, England*	5965	7160			
2200-2215	M-F	Voice of America, Washington	9640	11740	15120		
2200-2225		RAI, Rome, Italy	5990	9710			
2200-2225		Vatican Radio, Vatican City	9615	11830	15105		
2200-2230		ABC, Katherine, Australia	2485				
2200-2230		All India Radio, New Delhi	7412	9550	9910	11620	
			11715				
2200-2230		CBC Northern Quebec Service	9625	11720			
2200-2230	S	KGEI, San Francisco, California	15280				
2200-2230		Radio Beijing, China	3985	6165			
2200-2230		Radio Jordan, Amman	9560				
2200-2230	S	Radio Norway Int'l, Oslo	15265				
2200-2230		Radio Prague, Czechoslovakia	6055				
2200-2245		BBC, London, England	3955	5975	6005	6175	
			7325	9410	9590	9915	
			11955	12095	15070	15260	
			15400	17755	17760		
2200-2245		Radio Berlin Int'l, E. Germany	9730				
2200-2245		Radio Cairo, Egypt	9900				
2200-2245		Radio Yugoslavia, Belgrade	7215	9620	9660	11735	
2200-2300		CBN, St. John's, Newfoundland	6160				
2200-2300		CBU, Vancouver, British Columbia	6160				
2200-2300		CFCF, Montreal, Quebec	6005				
2200-2300		CFCN, Calgary, Alberta	6030				
2200-2300		CHNS, Halifax, Nova Scotia	6130				
2200-2300		Christian Science World Service	9465	15300	17555		
2200-2300		CKWX, Vancouver, British Columbia	6080				
2200-2300		CFRB, Toronto, Ontario	6070				
2200-2300		King of Hope, Southern Lebanon	6280				
2200-2300		KVOH, Rancho Simi, California	17775				
2200-2300		Radio Australia, Melbourne	15160	15240	15320	15395	
			17795	21740			
2200-2300		Radio for Peace, Costa Rica	21566	25944			
2200-2300		Radio Havana Cuba	7140				
2200-2300		Radio Moscow, USSR	12025	12050	17570	17700	
2200-2300		Radio Moscow North American Svc	9720	9865	9530	9765	
			11750				
2200-2300		Radio Tonga, Tonga	5025				
2200-2300		SBC Radio One, Singapore	5010	5052	11940		
2200-2300		Superpower KUSW, Utah	15580				
2200-2300		Voice of America, Washington	11880	15185	15290	15305	
			15320	17735	17740	17820	
			18157	USB			
2200-2300		Voice of Free China, Taiwan	9955	15345			

2200-2300		Voice of the UAE, Abu Dhabi	9595	11985	13605	17612.5	
2200-2300		WHRI, Noblesville, Indiana	13760	17830			
2200-2300		WINB, Red Lion, Pennsylvania	15185				
2200-2300		WRNO, New Orleans, Louisiana	13720				
2200-2300		WWCR, Nashville, Tennessee	15690				
2200-2300		WYFR, Oakland, California	11580	13695	15170	15215	
			17845	21525			
2215-2230		BBC, London, England*	11820	15390			
2230-2300	A,S	CBC Northern Quebec Service	9625	11720			
2230-2300		Kol Israel, Jerusalem	11605	15615	15640	17575	
			17630				
2230-2300		Radio Mediterran, Malta	6110				
2230-2300		Radio Polonia, Warsaw, Poland	5995	6135	7125	7270	
2230-2300		Radio Tirana, Albania	7215	9480			
2230-2300		Radio Vilnius, Lithuanian SSR	6100				
2245-2300		All India Radio, New Delhi	6055	7215	9535	9910	
			11715	11745			
2245-2300		BBC, London, England	3955	5975	6005	6175	
			7325	9410	9570	9590	
			9915	11785	11945	12095	
			15070	15260	15400	17755	
2245-2300		Radio Berlin Int'l, E. Germany	5965	9730			

2300 UTC [6:00 PM EST/3:00 PM PST]

2300-2330		Radio Mediterran, Malta	6110				
2300-2330	S	Radio Norway, Oslo	11785				
2300-2345		WINB, Red Lion, Pennsylvania	15145				
2300-2345		WYFR, Oakland, California	5985	11580	15170		
2300-2350		Radio Pyongyang, North Korea	13650				
2300-0000		All India Radio, New Delhi	6055	7215	9535	9910	
			11715	11745			
2300-0000		Adventist World Radio, Costa Rica	9725	11870			
2300-0000		BBC, London, England	3955	5975	6110	6175	
			7325	9410	9590	9915	
			11945	12095	15260		
2300-0000	M-F	CBC Northern Quebec Service	6195	9625			
2300-0000		CBN, St. John's, Newfoundland	6160				
2300-0000		CBU, Vancouver, British Columbia	6160				
2300-0000		CFCF, Montreal, Quebec	6005				
2300-0000		CFCN, Calgary, Alberta	6030				
2300-0000		CHNS, Halifax, Nova Scotia	6130				
2300-0000		Christian Science World Service	9465	15300	17555		
2300-0000		CKWX, Vancouver, British Columbia	6080				
2300-0000		CFRB, Toronto, Ontario	6070				
2300-0000		KVOH, Rancho Simi, California	17775				
2300-0000		Radio Australia, Melbourne	15160	15240	15320	15395	
			17795	21740			
2300-0000		Radio for Peace, Costa Rica	21565				
2300-0000		Radio Japan, Tokyo	11765	15195	17810		
2300-0000		Radio Luxembourg	6090				
2300-0000		Radio Moscow	11845	12025	12055	17620	
			17850	21690	21790		
2300-0000		Radio Moscow, (N. American Svc)	9530	9765	11710	11730	
			11750	15290			
2300-0000		Radio Polonia, Warsaw	5995	6135	7125	7270	
2300-0000		Radio Thailand, Bangkok	9655	11905			
2300-0000		Radio Tonga, Tonga	5050				
2300-0000		SBC Radio One, Singapore	5010	5052	11940		
2300-0000		Superpower KUSW, Utah	15580				
2300-0000		Voice of America, Washington, DC	15290	17735	17820	18157	
			USB				
2300-0000		Voice of the UAE	9595	11985	13605		
2300-0000		WHRI, Noblesville, Indiana	13760	17830			
2300-0000		WRNO, New Orleans, Louisiana	13720				
2315-2330		BBC, London, England*	11820	15390			
2330-0000		Radio Korea, Seoul, South Korea	15575				
2330-0000		Radio Tirana, Albania	9760v				
2330-0000		Voice of Vietnam, Hanoi	9840	15010			
2335-2345	M-A	Voice of Greece, Athens	9395	9420	11645		
2345-0000		BBC, London, England*	3915	6080	7180	9580	
2348-0000		WINB, Red Lion, Pennsylvania	15145				



Panasonic's RF-B65

For traveling, there are all sorts of tiny mini-portables to be had. Most of these midgets sound about as pleasant as an electric drill.

Compact Portables Preferred

As a result, savvy shortwave listeners tend to look for something just a bit beefier and more satisfying to take along on trips. For years, the standard was the compact, sensible Sony ICF-7600. However, it came with analog frequency readout and had other limitations. So, in 1983 Sony introduced the digital ICF-2002 -- since repackaged as the ICF-2003 -- to provide synthesizer tuning and digital readout in a compact, high-tech package.

Panasonic, as usual, took its time coming up with something similar. But when it did, it was a winner. The model RF-B60 did pretty much all the '2003 did, but generally did it just a bit better. However, what the 'B60 didn't do was to receive single-sideband signals.

Single-Sideband Capability

Enter its replacement, the new RF-B65, which *does* process single-sideband signals properly.

The 'B65 is obviously a takeoff on Sony's ICF-2003. Its tuning is fully synthesized, and the set's size, weight and features combine to make it nigh ideal for traveling. But it does have a number of improvements -- along with some drawbacks -- as compared with Sony's popular model.

Improvements over Sony Model

The first and most notable plus is in the tuning. The Sony has up/down slewing buttons -- like on a TV remote control -- but no tuning knob. The Panasonic, on the other hand, has both a knob and slewing controls. Also, the Sony tunes only in 5 kHz increments, whereas the Panasonic tunes in either 5 or 1 kHz increments.



control, it sounds quite pleasant on longwave, mediumwave AM, FM and shortwave. In fact, this little set sounds so good that you can but wonder what a set of continuous bass and treble tone controls could have accomplished -- especially on FM!

There are some other refinements, too... two clocks instead of one, for example. Too, Panasonic's warranty is valid for two years, -- twice as long as Sony's.

Sony Still Best for DXing

But there are some aspects of the Sony that are preferable, especially for radio enthusiasts. For one thing, the Sony's selectivity is a bit tighter -- although that on the Panasonic is well-suited to reception of ordinary international broadcasters.

Another Sony plus is its separate clock display. You can read the time and frequency at the same time, as the set has separate displays for each. The Panasonic, however, shows either the time or the frequency...but not both simultaneously.

Otherwise, the two sets share much in common. Both have only fair field sensitivity with the built-in telescopic antenna. This means that if you live in the central or western parts of North America you may be disappointed in the number of stations you can pick up without a separate outboard antenna.

Also, neither has adequate dynamic range to operate successfully with a serious outdoor antenna in such high-signal parts of the world as Europe or Eastern North America. Also, neither has a dial light to aid in nighttime operation, and the clocks on both sets don't display seconds. Each set displays frequencies in the XXXXX kHz format on an LCD.

For traveling, both sets have "lock" controls to prevent them from going on accidentally in your suitcase and running down the batteries. But the Panasonic's

For interpolation between tuning points, both use analog fine tuning. Too, the Sony uses slewing to leap from one band to the next, while the Panasonic has a more-convenient pushbutton arrangement.

Programmable channel memories can be useful if you listen to certain stations regularly. The Panasonic has 36 of these, whereas the Sony has only ten. However, for shortwave the Panasonic has only nine, whereas all ten of the Sony's work on shortwave. So, on shortwave the Sony actually has the slight edge.

The Panasonic also has a little flip-up chart where you can jot down which stations are entered within each memory channel. With the Sony, you have to mark these down on a separate slip of paper or secrete them in the folds of your brain.

A signal strength indicator can be an aid in tuning, and also is nice to have for monitoring and logging for reception reports. The Panasonic has a digital indicator with fifteen increments; all the Sony has is a single little "glow light" that is all but useless. On the other hand, the Panasonic indicator tends to overread, which makes it less useful than it could be.

Superior Audio Quality

But for world band program listeners the Panasonic's biggest plus is its audio quality, which is clearly superior to that of the Sony. Even though the Panasonic has only a two-position switch for a tone

lock slider switch is right alongside the volume slider control. We found ourselves switching that on and off accidentally at times.

Handy Control Aids Tuning

Designers of portables try to keep protrusions to a minimum, as these tend to get hit and sometimes even knocked off while the set is being toted about. In this regard, the 'B65's tuning knob is interesting for two reasons. First, it appears as a conventional -- yet almost flush -- round knob on the front panel. But, in addition, it operates as a knurled thumbwheel control from the side of the set.

That's a clever approach to a very traditional control. However, it would have been better if Panasonic had included a fast-tuning dimple on the front of the knob. The way it is now, you can't grip the side of the knob. Because it's recessed, you're stuck with having to turn it by pressing down hard on the knob's flat front surface -- hardly the ideal arrangement, and tiring, too.

Bottom Line: A Superior Value

The new 1990 *Passport to World Band Radio* shows the Sony ICF-2003 as listing for \$299.95 in the US. The Panasonic RF-B65, though, lists for twenty bucks less: \$279.95.

The bottom line is that for world band program listening Panasonic's new RF-B65 is the better value. It's a snap to operate and sounds quite good for such a small set. However, the Sony ICF-2003's slightly tighter selectivity continues to give it the performance edge for shortwave DXing, as well as for listening to utility or amateur stations in the relatively narrow single-sideband or CW modes.

MAGNAVOX D2935 BOWING OUT

For several months, now, there have been reports that the Philips and Magnavox D2935 portable has been discontinued. In reality, while production appears to have ceased because of sharp rises in manufacturing costs, Philips inventory of D2935 receivers has been large enough to allow this product to remain in its line for some time.

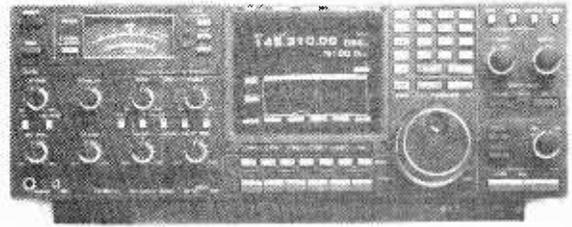
Now, however, the D2935 has been formally discontinued in the U.S. by Philips' subsidiary, Magnavox, although the larger D2999 continues to be carried. As of our press deadline, at least one world band retailer -- Universal Shortwave -- has the '2935 in stock at \$189.95. In the 1990 *Passport to World Band Radio* the '2935 is acclaimed as "the best bargain among world band radios - grab it while you can."

NO CHIP, MAN

Word from industry sources has it that Sangean's long-awaited model ATS-808, which was to have been on the market by now, will not appear until March of 1990 or thereabouts. The problem: The LSI microprocessor chip reportedly has a failure rate of around 90%!



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Informative Catalogs

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This 48 page catalog covers all major lines of ham gear including Kenwood, Icom, Yaesu, AEA, Alinco, MFJ and Kantronics. With prices!

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SWL CATALOG

52 pages of everything that is new for the SWL, including receivers, antennas, RTTY & FAX decoders, books and accessories

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New Scanners from Radio Shack

Each August the annual Radio Shack catalog is mailed to millions of faithful Tandy customers nationwide. Most MT recipients of that catalog probably turn immediately to the scanner radios to see what's new!

This year's catalog introduces four new models (actually three; the PRO2005 has been available for about six months and has been previously reviewed in MT). Let's take a peek at the remaining three, examining their key features.



PRO-2023

This 20-channel desktop unit offers 29-54, 108-174 and 406-512 MHz frequency coverage and automatic weather search. It also allows user-programmable search over any range in a band, as well as up/down manual stepping. A monitor bank allows temporary storage of frequencies uncovered during the search operation. Also provided are channel one priority, individual channel lockout and delay, and a backlit LCD frequency/status display.

A telescopic whip is provided for compact operation, while a rear-panel Motorola jack offers attachment to an external antenna. List price, \$169.95.

PRO2024

For another thirty dollars added to the price of the PRO2023 described above, the scanner enthusiast may also enjoy 60 memory

channels in six banks and fast/slow scan/search speed switching.

The frequency range is somewhat different from the lower-priced model, however: 30-54, 118-136, 138-174 and 380-512 MHz. Since there is no choice of AM or FM mode, the 380-400 military UHF aeronautical range is useless (the radio defaults to FM there), so the lower-cost PRO-2023 actually offers more usable frequency range. List price, \$199.95.



PRO2022

To climb to the next increment requires an additional \$150 -- let's see what that buys us. 200 memory channels (10 banks of 20 each) for a start. Frequency coverage is 30-54, 108-136, 138-174, 380-512 and 806-960 MHz (cellular ranges censored, of course).

While primary power is 120 VAC, a jack is provided for an optional 12 VDC mobile power cord. The antenna jack is a BNC type and a snap-on whip is provided. List price, \$349.95.



PRO2005

The most popular scanner on the market offers 400 memory channels (in 10 banks of 40 channels each) and continuous 25-520 and 760-1300 MHz frequency coverage (cellular bands defeated by a diode, easily clipped for total frequency restoration).

This flexible scanning receiver allows choice of 5, 12.5 or 50 kHz search steps (30 kHz on restored cellular ranges), selectable AM or FM mode on any channel and fast/slow scan/search speeds. List price \$419.95; available from Grove Enterprises for \$389.



Epigram

Beginning in 1990, the old 118-136 MHz VHF aircraft communications band will be expanded to 137 MHz. Since this is AM mode, it will be interesting to see how long it takes scanner manufacturers to modify their microprocessors for this provision -- scanners now automatically default to FM mode above 136 MHz.



GRE 800 MHz SUPER CONVERTER II

Most early scanners, and many late models as well, do not include 800 MHz coverage. Of those that do, quite a few have their 825-845 and 870-890 MHz cellular frequencies deleted. The GRE Super Converter II fills all those voids, providing continuous 810-912 MHz reception when used with any scanner that has 410-512 MHz coverage.

While the actual frequency allocation in that part of the spectrum is 806-960 MHz, most listeners soon learn that the vast majority of interesting monitoring is found below 900 MHz. Thus, the GRE accessory fits the needs of most scanning enthusiasts.

Installing and using the GRE Super Converter II is simplicity itself. Equipped with BNC connectors and utilizing its own self-contained nine volt battery, the unit simply plugs between the antenna and the scanner. If your scanner utilizes a Motorola plug, then you will have to arrange some sort of adaptor to accommodate the interconnection.

Switched on, a red LED signals its ready status. Switched off, the converter is automatically bypassed, restoring the scanner to normal coverage. The module may be left in line permanently, simply switched on and off as it is needed.

Frequencies between 810 and 912 MHz are monitored by entering 410 through 512 MHz frequencies into the scanner. In other words, the GRE accessory down-converts the 800 MHz band by exactly 400 MHz. For example, to hear 880.000 MHz you would program 480.000 into your scanner when the GRE is switched on. The mental math is easy to grasp.

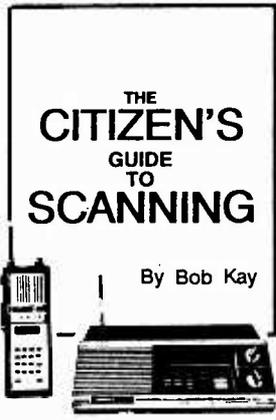
Although not all 800 MHz band frequencies can be exactly registered on your scanner due to the "rounding off" that scanners do, frequencies come close enough for monitoring with no problem.

Let's check it out

Attaching the GRE to a Uniden BC200XLT hand-held scanner was a breeze -- just a couple of seconds and it was ready for action. Entering some known, but weak, 800 MHz frequencies into the Bearcat we discovered that the sensitivity of the GRE throughout the 800 MHz spectrum was excellent -- as a matter of fact, as good as an ICOM R7000 using the same antenna.

The rugged steel housing has a black, baked enamel finish; the

Everything You Ever Wanted To Know About Scanning...



It's the first complete, comprehensive soup-to-nuts scanner book written for the serious scanner enthusiast. For the person who wants more out of his scanner than police and fire. From a "how to get started" section for newcomers to Bob Kay's "masters" tips on how to get the most out of your radio, "Citizen's Guide to Scanning" has

it. Includes an exhaustive frequency allocation section that tells you who is on the radio and where you can hear them.

Citizen's Guide to Scanning is available from DX Radio Supply for \$12.95 plus 2.00 UPS or .90 book rate, P.O. Box 360, Wagontown, PA 19376.

**By Monitoring Times' own
Bob Kay**

legends are silk screened quite professionally. Could the insides be as good looking as the case? The temptation was too much to resist. Anyway, the cover has to be removed to change batteries, so we decided it was time for a thorough internal examination.

Just to make sure that you don't lose the screws that hold the cover in place (and they are small!), GRE packages an extra pair in a little plastic bag.

The GRE uses a double-sided printed circuit board with plated-through holes. Surface mount devices (SMDs) are used exclusively except for tunable coils which are in shielded cans. Some inductances are etched on the board, as are the RF circuit paths which makes switching virtually lossless.

Two separate slide switches are operated in tandem by one plastic link. When you operate the on/off switch, you are also activating the bypass switch, either engaging the converter or allowing signals to go around it from one connector to the other. Clever and effective.

If you presently own a mobile, base or hand-held scanner which does not have 800 MHz coverage, or if coverage on that band has gaps in the 810-912 MHz range which you would like to restore, the GRE converter is the way to go.

The GRE Super Converter II has an \$89 suggested retail price plus \$4 shipping from GRE America, Inc., 425 Harbor Blvd., Suite B, Belmont, CA 94002. It is also available from GRE dealers and from Grove Enterprises for \$82.95 plus \$2 shipping.



Catalogs. We all get them. In fact, the only thing you need to be qualified to receive them is an address that the U.S. Postal Service can get to.

Each month, *Monitoring Times*, with the help of its readers, will sift through the best and worst of the mail order catalogs. And although we can't make specific recommendations on the items we list, we hope to point out some of the more interesting gadgets that are available to the electronic enthusiast.

Shortwave Meets the Masses

When Mobile Oil starts to list worldband radios in their catalog, you know that shortwave has reached the status of fad. And there it is. On page 16 of their "Fall Parade of Values," is "Grundig's Miniature Multi-Band Radio," the Yacht Boy 220.

So how exciting is this 12-band radio? The brochure says that in addition to AM, FM and the always exciting longwave (beep beep beep), you can enjoy "international shortwave ... Tokyo, Moscow, London, Radio Free Europe."

We'll buy the Tokyo, Moscow, and London part. But it's not likely you'll be enjoying RFE from the states -- especially not unless you can speak Serbo-Croate or one of RFE's other more esoteric languages.

There's a pricetag on all of this excitement, right? Right. You can get the Grundig Yachtboy 220 for \$129.96 plus \$9.96 shipping and handling. Use your Mobile credit card and dial 1-800-992-0212.



Playing Taps

If you read the electronics catalogs, virtually all of them offer some sort of anti-phone tapping devices. The Sharper Image, a San Francisco, California-based firm, is no exception. Their Tele-Sentry Security Phone can "detect 98% of the taps used in phone snooping."

The Tele-Sentry Security Phone looks like any other phone but has a small green LED on the side. When the light is on, the line is secure. When it goes out, the phone automatically turns off the handset's microphone so you can't inadvertently give out any state secrets. A red LED goes on when an extension phone is lifted or in use.

At \$79 plus 5.50 shipping, the Tele-Sentry Security Phone is very affordable too, now making recreational paranoia available to even the lower classes. Have your Mastercard or Visa ready and call 1-800-344-4444.

Talking Egg

"Leave messages to your family or staff by pulling the string and talking into the egg."

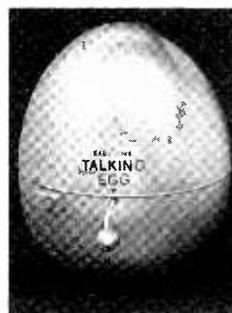
No kidding. That's what the catalog says. Your message is recorded onto a magnetic disk which is housed in what appears to be



a plastic egg. The message can be erased and recorded over again and again.

But won't you feel silly talking into an egg? Sure. But the yolks on you. The Talking Egg takes only one message at a time. "Suggested retail price: \$69.95"

Yeah. Right. From Damark at \$19.00 plus \$5.00 shipping at 1-800-950-9090.



Plugaround

Interested in using the scanner out on the front porch? Lounging around on the deck listening to the BBC? Do all of these possibilities excite you but at the same time make you cringe because you'd have to disassemble the shack to bring the radio outside?

B.N. Genius may have the answer in what they call the plugaround. "Turn Any Speaker Into A Wireless Component!" says the catalog.

The idea is simple. The plugaround's transmitter plugs into your stereo and the 20-watt RMS remote amplifier plugs into a wall socket. You put the speakers wherever you want them.

Plugaround is really designed for your stereo but could probably be adapted to your scanner or shortwave. A bit pricey at \$199.95 plus shipping -- B.N. Genius also

offers to Federal Express you four live Maine lobsters for \$149.95 plus overnight shipping -- you can charge the Plugaround to your Mastercard or Visa by calling 1-800-468-4410.

We humbly suggest that you instead buy a cheap wireless intercom instead. The plugaround's strong suit is the fidelity it transmits -- not something of incredible concern to either scanner or shortwave listeners.

FM Signal Booster

FM DXers! Look at this! An FM signal booster for your car! (Part no. 12-1873) According to the new Radio Shack catalog, it kicks signals up by some 10 dB "to bring more stations in clearly." Easy hookup. With mounting hardware.

12 volt DC with negative or positive ground. Just \$19.95. The indoor signal booster (No. 15-1105) is \$6.00 more but runs off AC and is switchable from 0, 10 or 20 dB gain. Both from your local Radio Shack.



"Catalogs" welcomes your participation. See something interesting in your pile of fresh junk mail? Clip it and send it in! Add your own comments. We'll profile it or pan it based on what kind of mood we're in.

Be sure to include the name of the catalog, the item's description, price and shipping information along with the phone order number. Send it to "Catalogs," P.O. Box 98, Brasstown, NC 28902.



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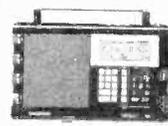


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The KENWOOD R2000 150 kHz to 30 MHz. 10 memories. AM, FM, SSB, CW, VHF 118-174 MHz opt VC10.

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FRG8800 offers functionality and operating convenience for the serious shortwave listener. 150 kHz to 29.999 MHz. Direct keyboard entry. Dual Clocks/Timers. Wide/Narrow Filter. 12 Memories. AM, SSB, CW, FM, VHF 118-174 MHz option \$119.95. FRG8800 \$649.95 + \$10 UPS



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MS101. All new mini set similar to Panasonic RFB10. 9 Band, AM, FM, 7SW, stereo w/headset MS101 \$79.95 + \$4 UPS

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the output jack or port of the transmitter with a 50-ohm noninductive load, such as a Heath Antenna. Turn on the transmitter and measure across the 50-ohm load with the RF probe and meter. The RMS voltage is 15.

In order to convert this data to power in watts you will use: $P(\text{watts}) = E^2/R$, where E is the RMS voltage and R is the load resistance in ohms. Hence, $W = 225/50$, which results in 4.5 watts. The same procedure is used no matter what the load resistance for a circuit happens to be.

When checking the gain of a particular RF power-amplifier stage, you must bear in mind that the resistor input impedance is almost always lower than the output impedance. Therefore, the base voltage will read lower than the collector voltage.

For example, an RF amplifier has a 10-ohm input impedance. The output impedance at the collector is, say, 28 ohms. With one watt of input power to the stage you will read 3.16 RMS volts (take the square root of $W \times R$ for voltage). Now, suppose that the amplifier output power is 10 watts. The resultant RMS voltage is 16.73. The stage gain may be computed by $10 \log (P1/P2)$, where P1 is the higher power. The gain of this stage is 10 dB.

Closing Remarks

This project is simple enough for any beginner to handle. The end product need not be a work of art, so don't feel that you should avoid getting involved. You will learn by doing, and you will have a neat little test instrument for future use.

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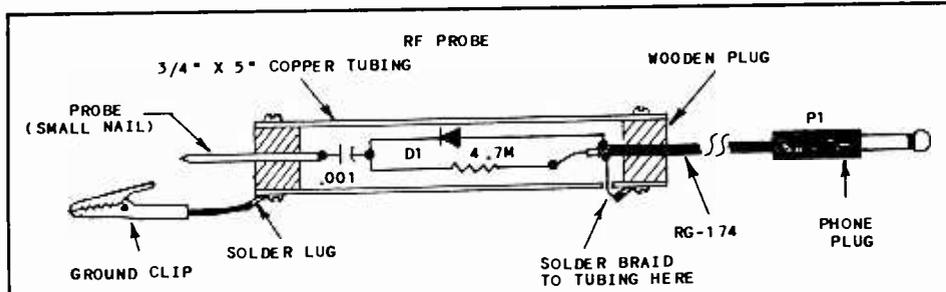


Figure 2 -- Circuit and physical details for an RF probe. D1 is a 1N34A or 1N60A germanium diode. A similar probe may be constructed for DC voltage measurement. Simply eliminate the inner capacitor, diode, and resistor and make a straight-through connection to the probe tip. See text for additional information about this RF probe.

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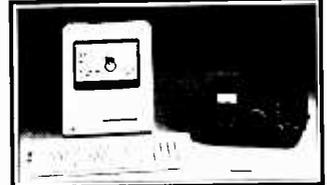


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Modifying the DX150/160

Prior to Tandy marketing the DX-440 (a Sangean ATS-803A variant) in 1989, Radio Shack had a loooooong dry spell in the short-wave radio market. Probably the last decent (for its time) receivers that Tandy marketed were the DX-150/160 models of the mid to late 70s. Often these old "war-horses" can be had for a song at hamfests, swap meets, or flea markets. Prices for either of these receivers should be around \$40 to \$70 dollars depending upon cosmetic condition.

While the analog dial is inaccurate, the intermod figures are mediocre and the selectivity is broad as a barn door. And that's the good news. Still, if you get a chance at owning one of these receivers, a little work will make it a very usable shortwave DXing tool. The fact is that you can tighten up the IF pass-band, provide two IF bandwidths, and end up with a good back-up receiver for the shack, or a spare rig for that young sir or madam who shows interest in SW listening.

First, let's look at each receiver and see what we are in for. The DX-150 (A or B) model has four bands covering 500 kHz to 30 MHz. The DX-160 has five bands and covers 150 kHz to 30 MHz. The outsides look basically the same. There are some small differences on the back panels but both work off of 12 V DC, lending themselves well to portable mobile applications.

Since the dial lights are extinguished when working off of DC voltage, the overall current drain of both receivers is reduced to around 40 ma. The 150 has an internal speaker while the 160 has an external speaker jack on the back and no internal speaker.

The overall circuitry is very similar, but the PC board layout is quite a bit different, once you start digging around inside. Both receivers are capable of receiving AM, SSB, and CW (the latter two modes use a BFO control to inject carrier).

The object of this month's Experimenter's

Workbench is to modify the DX-150 receiver in several ways so as to drastically improve the overall operation. These modifications can be easily applied to the DX-160 as well. What we hope to accomplish is an improvement in IF selectivity, increased sensitivity, addition of two IF bandwidths, upgrade of the antenna connector on the rear panel to a coaxial connector, and improvement of broadcast band performance when using an external loop antenna.

The most noteworthy increase in overall performance came not from a modification, but rather an RF and IF alignment. Here's why: during assembly and quality check at the factory, these radios are aligned, not by meters and signal generators, but by "optimizing" the coil settings.

A QC tech will take a tuning tool and start each slug at the top of the coil form and run the slug down a prescribed number of turns. This guarantees that the receiver will function adequately right out of the box. A dramatic increase in performance (sensitivity wise) will be readily noticeable once the RF and IF coils are properly aligned using the proper test equipment.

Word of caution. The IF alignment is quite simple. The RF alignment, however, requires some specialized equipment. The antenna coils can be peaked on each band segment to provide an apparent increase in sensitivity, but beyond this I do not recommend the inexperienced radiophile delving into the black art of super-het alignment.

IF and RF Alignments

Let's proceed with the IF alignment: first locate a weak broadcast station and tune it in for maximum strength on the S-Meter. Be sure that the peaked signal doesn't register more than S-1 or S-2 on the meter. The object of this exercise is to peak IF coils T1, T2, and T3 to the frequency of the 455 kHz ceramic IF filter.

These coils won't be marked, but are located on the main PC board in a row directly behind the slide rule dial. T1 has a red adjustment screw, T2 is white, and T3 is black (see Figure 1). On the DX-160, the coils you need to peak are T16, T17, and T18 colored red, white, and black respectively. (These coils are actually silk screened T16, T17, etc. on the PC board).

Begin by turning the slug of T2 slowly one direction and then the other while watching the S-Meter. Tune for maximum S-Meter reading on the weak BC station. Then proceed to do the same thing to T1 and then T3. Repeat this procedure until no further

signal increase is noted on the meter.

Now, before I'm condemned by the old timers in the crowd for using the S-Meter as a tuning aid during alignment, let me just say that Heathkit has been doing this for years. As long as the received signal is not strong enough to swamp the AGC circuitry of the receiver, this procedure is valid. The second thing -- not everyone will have access to a quality AC Voltmeter to connect across the speaker leads. This is a cheap and dirty way of pulling an alignment.

Once you're satisfied that the IF strip is properly aligned, you can proceed to the RF alignment *if you have the necessary test equipment and experience.*

If you just want to peak the antenna coils on each band to increase RF sensitivity, start with band B (band A does not have an antenna coil) and locate a weak signal at one end of the band (S-1 or 2 on the meter). The antenna coils are located on the RF board to the right of the chassis behind the dial and are the set of coils closest to the dial (see Fig 2).

Peak the antenna coil and go to the high end of the band and tune another weak signal and repeat the process. Go back and forth from the high end to the low end of the dial tweaking the antenna coil to ensure adequate sensitivity across the entire band. Repeat the process on the other bands.

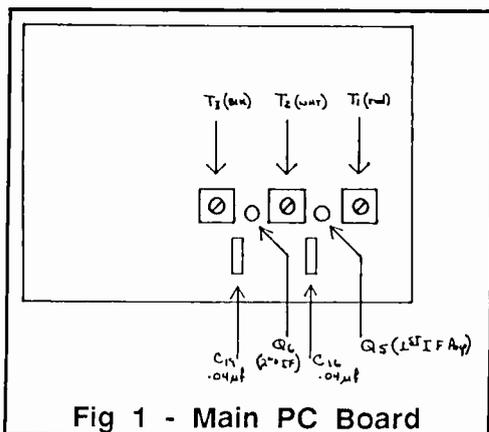
IF Selectivity

Now for the IF selectivity mod. The DX-160 has a silk-screened PC board so parts location is a snap. The DX-150, however, does not have the parts silk-screened so refer to Figure 1 for the location of Q5 (1st IF amp), Q6 (2nd IF amp), and capacitors C16 and 19 which will be replaced by two 455 kHz ceramic resonators (available from the Small Parts Center, Lansing, MI).

C16 and 19 are bypass capacitors (.04 mfd each) connected to the bases of Q5 and Q6 respectively. Once located, they are removed from the main PC board and the ceramic resonators are soldered in their place. There is just enough lead length on the resonators to connect with the holes on the PC board.

Now the IF bandwidth is quite narrow, so narrow, in fact, that standard AM does not sound too good; the sidebands are actually being cut off! What to do? Re-wire the REC/STBY switch on the front panel to switch the second resonator into and out of the circuit, of course! The REC/STBY switch then becomes the WIDE/NARROW selectivity switch for the receiver.

Locate the wires from the REC/STBY



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switch (one brown and one red wire), trace them back to the main PC board and clip them off. Solder a piece of scrap wire across the foil traces on the bottom of the PC board where the red and brown wires were connected. This puts the receiver into the receive mode all the time.

Run the brown wire to the receiver chassis ground. Take one of the old bypass capacitors (either C16 or 19) and solder it onto the foil side of the board, at the base of Q6 (one of the holes for the ceramic resonator). Leave the other end unconnected. Take the red wire and route it over to the unconnected end of the capacitor you just connected to the base of Q6 and solder the red wire onto the free lead.

Now by throwing the REC/STBY switch in one position, the capacitor is placed in parallel with the ceramic resonator effectively shorting it out and giving a wide IF passband. Flipping the switch to the other position will place the second resonator into the circuit and tighten the selectivity. This process is identical for the DX-160 except the parts are silk-screened on the main PC board so they are easy to find (refer to Fig 3 for switch operation).

SO-239 Coax Connector

An SO-239 coaxial connector is an easy mod. Simply punch a 5/8 inch hole in the rear panel next to the antenna terminal strip, mount the connector and solder a short piece of wire from the center pin on the back of the SO-239 to the A-1 terminal on the back of the antenna terminal strip. Since this is the low impedance antenna port, it should work nicely

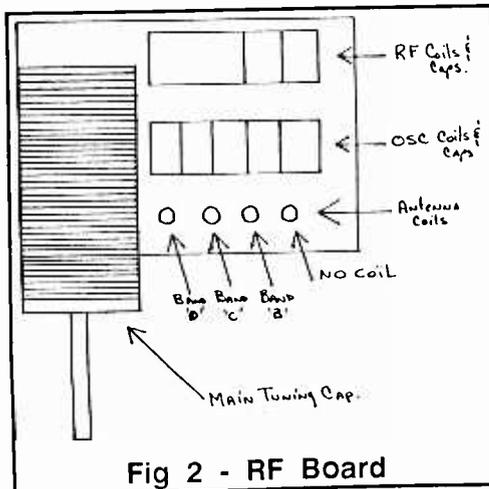


Fig 2 - RF Board

with a coaxial fed antenna like the Grove ANT-3 Windom Dipole variant.

If more selectivity is desired, try placing a passive antenna tuning unit like the Grove TUN-3 between the antenna feedline and the receiver coaxial antenna jack. This places additional tuned circuits in front of the DX-150 RF front end, and helps sharpen the front end passband and reject unwanted signals.

External Loop Antenna

In order to improve the broadcast reception with an external loop antenna, remove the piece of cardboard that covers the rear of the radio upper chassis. Cover it with several layers of aluminum foil and replace it on the receiver. The aluminum foil will effectively shield the internal BC loop when the top and the foil wrapped cardboard are in place.

An external BC loop antenna can now be added to antenna terminals A1 and A2 on the back panel of the receiver. The external loop will now provide a deep null and peak since the internal RF pickup by the built-in BC loop antenna is minimized.

Record Jack

If you like to record your listening sessions, a record jack could be added by simply installing a 1/8 inch phone jack on the back panel and running the audio pick up to the high side of the volume control. This will place preamplified audio on the record jack and the audio will not vary with the volume control setting.

Logging Scale?

If anyone has a method of adding a logging scale to the bandspread dial, drop me a line and I'll see that it gets into this column. I hope that these mods will be of use to those of you who have a DX-150/160 lying around the shack. The ceramic resonators are available from Chris Hethorn, KM8X, who runs the Small Parts Center, 6818 Meese Drive, Lansing, MI 48911, at a cost of approximately \$.75 each.

That's a wrap for this month, gang. Next month we'll be revisiting the R-7000 mods and going over some reader mail. Till then, 73s and Gud DXing.

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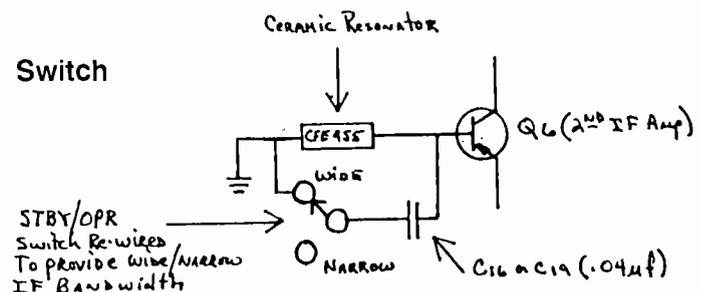
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Fig 3 -
 RC/STBY Switch



The Durable Dipole

Picking out the right antenna can be difficult. But when you find that one particular design is used over and over again by experienced radio experimenters, operators, and engineers, the choice can become easier. One such antenna -- the halfwave center-fed dipole -- is found in communications installations around the world. And, as a matter of record, the dipole does have a number of desirable features to offer.

The features which the dipole has to offer are many. First, it is an effective antenna, providing sufficient gain for many types of communications systems. Second, it is not too narrow banded, and can usually be used across a reasonable-sized band segment, or entire band, with excellent success. Third, it is about as inexpensive as any antenna you'll encounter. And fourth, it is not at all difficult to design, build, and erect.

Now add to all of these features the fact that, even when it is mounted as low as 15 or 20 feet above ground, the halfwave center-fed dipole still gives a good account of itself. It can be bent, curved, or twisted to fit your particular real estate, and still support good communications for your listening post or station.

Another plus for many installations is that, although it does have a couple of sharp nulls in its pattern, for practical purposes, most experienced operators consider the dipole almost nondirectional in its response characteristics.

And we shouldn't forget to mention that the dipole is a useful antenna from as low as the medium frequency bands on up to the UHF region of the radio spectrum. If there is one antenna which could be called the "universal antenna," I would say that it is the halfwave center-fed dipole. OK. There's the sales job. Now let's make one.

Building the Antenna

You can determine the overall length (in feet) of the antenna by dividing the frequency for which the antenna is being designed into 468. For instance, overall length of an antenna for 10 MHz is $468/10 = 46.8$ feet. If you'd rather work in meters, divide the frequency into 143. Then the length for a 10 MHz dipole would be $143/10 = 14.3$ meters.

Persons working with dipoles report good results using wire sizes from very thin to very thick. In principle, the thicker the

wire, the better. Thicker wire gives wider bandwidth to the antenna and thin wire is more likely to break in wind and weather. (Soft-drawn copper wire often breaks after a few months when used for long spans, like 75 feet or more). Good wires to use are number 12 or 14 hard-drawn copper, or braided copper, antenna wire.

You will also need to obtain enough coaxial feedline to lead from your antenna to your operating position. And don't forget to include enough for the bands and a few extra feet for ease of handling.

For VHF and UHF antennas, the feedline should be high quality, foam type if the run is longer than a few wavelengths. For HF and lower frequencies, average quality coax is fine. Also, get the proper coax fitting to allow you to connect the feedline to your rig. Two end insulators and a center insulator complete the list of supplies you will need.

The impedance of the feedline is often quoted at 72-75 ohms. But, due to various factors, the actual feedpoint impedance varies greatly from one installation to another. The feedpoint is likely to be closer to 50 ohms for most MF and HF installations, with VHF and UHF getting closer to the 72 ohm target. For receive-only applications on MF and HF you can usually use cable of any impedance with good results.

Step One

Calculate the length (L) as described above. Then cut two lengths of wire a bit

longer than L/2 long. You cut them longer because of the extra length needed to wrap the wires around the insulators. The amount of this extra length can be determined by putting some scrap wire onto the insulators you buy to see how much it takes to fit through and around them. See the inset in Figure 1 for the way to do this.

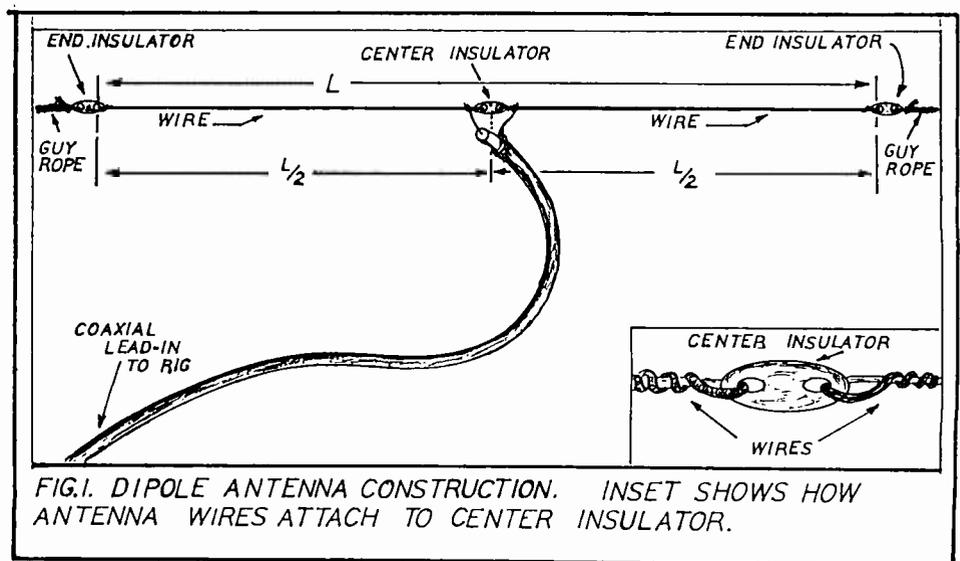
Getting the L of the completed antenna correct to the fraction of an inch isn't critical for MF or HF antennas, but be fairly exact with measuring L for the VHF and UHF antennas.

Step Two

At the ends of the antenna wires where they will be twisted together on each side of the center insulator, scrape them clean before attaching them to the insulator. Then attach them and solder the lead-in cable in place as shown in Figure 1.

If you can't solder the connections, wrap and twist the wires together as tightly as you can. Then cover them with plastic electrical tape. Expect nonsoldered connections to need reworking every few weeks or months.

Sometimes a balun is recommended at the center insulator connections. If you use the antenna for receive-only, forget the balun. If you intend to use the antenna to transmit also, sometimes a balun helps, but even for transmitting, a balun is often not necessary or helpful. If you do use a balun, follow the manufacturer's instructions in installing it.



Step Three

Attach the two end insulators as shown in the inset in Figure 1.

Step Four

Attach guy ropes to the end insulators and mount the antenna as high and in-the-clear as possible. If you can't get it high, get it up anyhow. I've seen dipoles work DX when hung only five feet off the ground. It isn't recommended though.

The antenna is now ready to use. Happy monitoring!

RADIO RIDDLES

Last Month: After telling you how to make a reflector ("afterburner!") for your antenna, I asked you "who it was that made the first antenna system which utilized a reflector, and where did they get the idea?"

Well, it was the first man to produce radio waves, Heinrich Hertz. Hertz, an outstanding physicist, knew that his "electric waves" were the same sort of waves as light waves. Thus, he applied the already well-developed technology of optics to his electric waves.

So, in his research on these waves, Hertz not only used parabolic reflectors on his microwave (yes, microwave!) antennas, he used a large prism made of pitch to bend the waves at times!

This Month: As mentioned above, Hertz's demonstrations of electromagnetic waves in the late 1800s were in the microwave region of the spectrum. On the other hand, all early radio communications development was in the long and very long waves. Microwave communications was not a common engineering reality until the 1930s and 40s.

If radio was discovered in the microwave region of the spectrum, why did the early radio pioneers, like Marconi, first develop the less useful longer waves and ignore the more useful short, very short, and ultra short waves for so many decades?

Find the answer to this month's riddle, and much more, next month in your copy of *Monitoring Times*. Til then, Happy Thanksgiving, Peace, DX, and 73.

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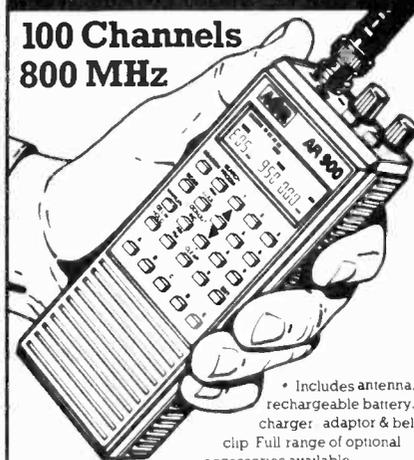
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Q. Do you feel that there is a sharing of world friendship by writing reception reports to international broadcasting stations? (Donald Michael Choleva, Euclid, OH)

A. If you feel a sense of friendship as you write the reception report, then certainly at least part of that sharing has occurred. Virtually all foreign broadcasters are government agencies; their primary purpose is to convey the philosophies, cultures and life styles of their particular society to inquisitive listeners, hopefully to favorably influence as well as inform them.

Q. If a scanner can be made to cover low, high and UHF bands with one antenna, why does the Bearcat 800 require two antennas just because 800 MHz is added? (Jeff Hooper, Blairsville, GA)

A. For two reasons. First, 800 MHz requires a shorter antenna which would reduce signal pickup on the lower frequency bands. Second, the BC800 is a spinoff of the 210/220 series with an 800 MHz converter added, cheaper to make than having to integrate the new circuitry and redesign the circuit board.

Q. Is it possible that I am hearing 870 MHz cellular transmissions in the 450 MHz band? How can I know for sure? (F.H., La Mesa, CA)

A. Quite possible. Others have reported the phenomenon which may be caused by mixing of excessively strong 800 MHz signals with harmonics of the 400 MHz oscillator, intermodulation, cross modulation or images.

Most likely, however, is the confusion over hearing legitimate conventional 454 MHz mobile telephone signals and thinking that it is cellular.

Q. What is the frequency range used for Air Fone's air-to-ground telephone service? (Jack Metcalfe, Lancaster, PA)

A. Operating under an Experimental/Developmental class license, Air Fone

utilizes frequencies in the 944.204-945.994 MHz part of the spectrum. Channel allocations are spaced 6 kHz and emissions utilize both double and single sideband modes.

Q. In a recent Ask Bob column, you recommended the "Interference Handbook" by William Nelson. When I wrote to the address given for Radio Publications, the Post Office advised me that the address had been changed but that their forwarding order had expired. Is there a new address?

A. There certainly is: Radio Amateur Call Book, 925 Sherwood Drive, Lake Bluff, Illinois 60044, has bought out all rights to Radio Publications. This excellent reference on causes and cures for radio frequency interference is also available from many amateur radio dealers who advertise in *MT*.

Q. I often see references to "harmonics," such as the "third harmonic on 4500 kHz." Exactly what is a harmonic? (Bob Hurley, Baltimore, MD)

A. Any oscillator (the signal-generating portion of a transmitter) produces not only its desired (fundamental) frequency, but a large number of whole-number multiples (harmonics) of that frequency as well. Even with properly-designed transmitters, some of those undesirable multiples are radiated and may cause interference.

Harmonics are numbered by their multiplied product of the fundamental frequency; for example, a third harmonic is simply three times the fundamental frequency. Therefore, in your example, the fundamental (deliberately generated) frequency of the transmitter would have been one-third of the harmonic frequency: 1500 kHz.

With the present high sunspot count, skip from higher frequency harmonics generated by international broadcasters are being heard around the world. It is common, for example, for third-harmonic signals from 11.5 and 15 MHz world broadcasting powerhouses to disrupt scanner reception in the 34 and 45 MHz range.

Q. Is it possible to break digital scrambling like the Digital Encryption Standard (DES) system?

A. Possible? Yes. Probable? No. The National Security Agency (NSA) would not allow the system to be available commercially until they could break it. They estimate that it would take a \$20 million computer (their Crays can probably do it) and they are unaware that anyone has built a DES-cracking machine.

Such a machine, conjectures the NSA expert, would require 1 million special chips, each capable of sampling data bits at a rate of 1 million per second. Thus, such a machine, sampling 1 trillion keys per second, could probably crack single encryption (not multilayered encryption) in about 70,000 seconds (20 hours).

NSA no longer endorses DES as the ultimate government standard and is looking for a more powerful encryption system. Some experts recommend using triple encryption of the old DES system, a simple three-key approach which would be compatible with DES systems now in place.

Q. Is it safe to use the grounding screw on an AC wall outlet for a radio ground? (Bruce Deerlake, Dayton, OH)

A. Yes, unless there is something terribly wrong with the wiring. By code, the third wire (ground) on the AC wiring must be attached to the metal bracket holding the AC wall plug (into which the mounting screw is threaded) and earth-grounded at the entry of the wiring into your home.

The only disadvantages are that the wiring, by its close proximity, may couple electrical noise into the ground wire, and sometimes the actual earth grounding leaves a great deal to be desired. You may wish to test the receptacle with an inexpensive ground fault detector, often available for \$3-4 from chain discount department stores.

Q. Can the proposed nationwide satellite paging system be heard on a scanner? (Richard Shelton, Chillicothe, OH)

A. No. The paging signals come down from C-band satellites operating in the 4 GHz (4000 MHz) range. The ground

station feeds the received signal to commercial FM broadcasting stations (88-108 MHz) where the digital call is sent on a subcarrier (SCA--subsidiary carrier authorization). A frequency-agile paging receiver constantly searches through the FM band looking for the tell-tale data stream.

Cue, the nation's largest satellite paging company, utilizes the Spacenet 3 satellite; others use Westar 4. United Video is the ground station contractor for Cue's service. C band is chosen for this service, says Cue's B. J. Rogers, because Ku band (12 GHz) experiences outages in rain.

Q. I need to ground my radio, but the #6 ground wire outside my building is too large to run through a closed window. What can I do? (Reger Henderson, Memphis, TN)

A. Use braided wire, such as the shielding removed from an old piece of coaxial cable, between the radio and the outside ground wire. This will work just fine and is flat enough for a window to close on.

Q. I have a new Grove Scanner Beam. My scanner reception is much worse than before; how come? (Robert Strika, Iowa City, IA)

A. As you can see from the construction, there is virtually nothing that can be wrong with the antenna itself, assuming its elements are extended correctly and that it is mounted properly and high enough to clear nearby obstacles in its path.

Have you checked the cable and connectors to make sure there are no shorts and that the center conductor is protruding far enough to make contact? This is especially suspect with F connectors; the wire should extend slightly (no more than 1/8") beyond the end of the connector.

Are you using splices? Don't. Have you coupled two different impedance cables with an adaptor? Don't. Replace the balun transformer if all else fails; about one in one hundred is defective and you never know until you try it. They're only about \$2 at Radio Shack or K Mart and Grove will replace it at no charge if you have determined that it is defective.

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Is your coax cable low loss like RG8/U, RG6/U or Belden 9913? Don't use RG58/U in runs of more than 50 feet unless you are in a high signal level area and can tolerate some loss.

Are you using a preamplifier? Remove it temporarily to test the antenna system alone.

Finally, it is possible that the increased signal strength is causing the scanner to overload and desensitize. This is verified by the presents of considerable numbers of repeated signals--intermod and images.

If overload is the problem, often a

simple 6 or 10 dB attenuator such as the units sold in the TV accessories section of Radio Shack and discount department stores may be installed between the antenna and the radio or preamplifier.

Questions or suggestions sent to Bob Grove are printed in this column as space permits. If you prefer a reply by return mail, you must enclose a self-addressed, stamped envelope.

The most commonly asked questions and answers are now compiled into the Shortwave and Scanner Answer Book. Watch for it!

LETTERS

continued from page 3

"P.S. You might at least *try* listening to the BBC sometimes if the Burger King order window traffic gets a bit dull..."

Uh, Mr. Atkinson... Mr. Atkinson... We don't mean to interrupt and we certainly don't mean any harm, but isn't that what we said, though perhaps a little more succinctly? Or did I miss something?

"I read your November 1988 issue," says Craig Brown of Herndon, Virginia, "and you all do seem to be somewhat negative on religious programming. Some of your readers may enjoy this type of programming. I'd be careful not to tilt too far in this direction."

Planning to be in Washington, D.C. next month? Interested in the world of sleuthing? Then you'll want to be sure to catch Surveillance Expo '89. Conference themes are communications security, data/information security and investigations technology.

For more information, contact James Ross at 301-831-8400. Oh, and by the way, *MT's* own Bob Grove will be giving forums on bugging frequencies.

"In the SWL program guide," says Allan

G. Dunn, "I wonder why the big gap in schedules between 1700 and 2300 UTC, my prime listening hours on weekends. Is it because the broadcasters do not submit English language schedules for those hours? And why isn't the popular RCI SWL Digest program shown?"

Those are good questions. And there are equally good answers. The reason for the gap between 1700 and 2300 UTC is simple. First, during the week, few people in this country listen to shortwave since they are at work. This fact is not totally lost on the broadcasters either. So, for us, it is a way to conserve space.

If we cut out that time period when few people listen, we pick up more space so that we can give more substantial listings during the more popular listening times. Similarly, few programs stay in the listing forever. We try to give a constantly varying selection -- a selection that has actually been heard by the staff.

If you desire more complete listings, there is a new book available. It's called the *Shortwave Listener's Program Guide*. You can find out more about it in the "What's New" section.

One other thing. Allan points out an error in Mark Weigand's article on page 17

of the September issue. "The national ham emergency frequency is shown as 146.695 MHz. Actually, it is 145.695 MHz. Allan says that Gerry Dexter made the same mistake in his excellent *Shortwave Listening With the Experts*.

Kirk Baxter writes back to say "thanks" for publishing current information on his club, A*C*E, and to respond to our suggestion that club bulletins put *Monitoring Times* on their complimentary subscription list so that we can continue to give them free publicity.

According to Kirk, their printing and postage budget did not allowed them to send out complimentary copies of the bulletin on a regular basis in the past. And it still doesn't. But he does promise to "send one periodically." We'll be able to advise readers as to whether the club is able to continue publishing on a regular basis. Thanks, Kirk. We look forward to seeing it.

Since we're still on the topic of clubs, John Knight of Florissant, Colorado, asks if we have the address for the Longwave Club of America. Sure, 'nuff, John. It's 45 Wildflower Road, Levittown, PA 19057.

"Now you're asking everyone who liked 'The Last Signal on Earth' to write in? Well, your request will probably net you four or five replies in favor. Then you can print them all and say, 'See! We told you we were right!' Hardly a way to get a fair and unbiased response, though.

"Further, just because hams publish fiction does not recommend fiction to me. I do not wish to emulate hams. I do not like hams. I swear, if yet another ham tells me (with that fanatical glint in his eye) that 'shortwave listening is good because *it might lead you into The Hobby*,' I'm gonna grab the nearest blunt instrument and..."

So says Bill Rogers Jr. of Mt. Pleasant, Michigan, in yet another measured response to the fictional piece we ran back in July.

Before we do close off this topic *forever*, I did want to run the three positive (out of 30, maybe 40, thousand readers?) responses to the piece that Jeffrey Miller, KB2FBI summarized as "Radio-techno-geek-type gets the girl, the world ends and all the 'good people' go to radio heaven."

First, comes Stephen D. White of Chesapeake, Virginia, who says, "I have just finished reading the 'Letters' section of the September issue of *Monitoring Times* and could not believe some of the comments

Monitoring Post Pin-Up

On the right is Lt. Arnal Cook's answer to all those laws regarding scanners in your car! Notice Mom is nowhere near for this "typical" walk around the block. All eight pieces of equipment are powered and ready to go.

Arnal says that, although this photo is tongue-in-cheek, at some point he used all these for official Navy business at his duty station in Rota, Spain.

He could often be seen wearing the pager, Motorola Expo VHF, and the Kenwood TH21A 2 meter at the same time -- until his two-year-old threw the TH21A in the trash, that is. There should have been nine receivers on this well-equipped stroller!

Do you have a favorite picture of you and your monitoring post? Send it to MONITORING POST, P.O. Box 98, Brasstown, NC 28902, and show it off. We know you're proud!



made about 'The Last Radio Signal on Earth.' I found the story to be most enjoyable -- kind of like a breath of fresh air from the normal routine." Thank you, Steven.

Bob Zirkelbach of Pleasant Hills, California, also found the story "a welcome and interesting change from the usual." "The cover," he says, "was a real attention-getter, even though, at first, I thought I had received someone else's mail. It was grrrrreat."

Bob also says that the cover and story was the subject of discussion one night "during one of our local QSOs on the air." The vote, he reports, was one no and two in favor of *The Last Radio Signal on Earth*. Thank you, Bob.

But wait. Didn't we say earlier that there were three positive responses? Yes. There is a third reader who said he enjoyed "The Last Radio Signal on Earth" but he asked that we not publish his letter for fear of retaliation by fellow hobbyists. For his own protection we have placed him and his family in a Federally-supervised fiction protection program. He is now living in a pine-bough lean-to located somewhere in the High Sieras.

And that closes the book (or, in this case, magazine) on fiction in *Monitoring Times*. For now.



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.

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Date	Location	Club/Contact Person	Date	Location	Club/Contact Person
Nov 2-3	Regina, Sask.	Electronic Expo 89/ Radio Supply & Service 3033 Saskatchewan Dr/ Regina Sask S4T 1H5	Nov 12	Fl. Wayne, IN	Allan Co ARTS/ Vic Berko P.O. Box 10342, Ft. Wayne, IN 46851
Nov 3-5	Houston, TX	Texas State Conv/ Alan Cross WA5UZB 13918 Lillija Rd, Houston, TX 77037	Nov 18-19	Tampa, FL	So FL Conv/ Frank Ziegler Jr K4EUK 8316 Shillbrook Ave, Tampa, FL 33615
Nov 4	W.Monroe, LA	Twin City Ham Club/ Benson Scott AE5V 107 Contempo, West Monroe, LA 71291	Nov 19	Washington, PA	Wash Am Comm/ Walt Piroth N3BKW 225 W. Pike St #4, Houston, PA 15342
Nov 5	Southfield, MI	Oak Park ARC/ Alan Quirie KA8ZRR 4324 Mandalay, Royal Oak, MI 48073	Nov 26	N.Olmsted, OH	North Coast ARC/ Chuck Early K8RSH P.O. Box 30529, Cleveland, OH 44130
Nov 5	Denver, CO	Rocky Mt Radio League/ Fred Brachle N0FIK 8230 Reed Ct, Arvada, CO 80003 Talk-in: 146.34/94	Dec 2-3	Apache Jct, AZ	Superstition ARC/ Bill Glaze KA7SUF 7809 E Javelinn, Mesa, AZ 85208
Nov 11-12	Fl.Lauderdale,FL	Broward ARC/ Jim Lorah WB4KOB 2407 Flamingo Lane, Fl.Lauderdale, FL 33312			

Monitoring Times is happy to run brief announcements of radio events open to our readers. Send your announcements at least 60 days before the event to: Monitoring Times Convention Calendar, P.O. Box 98, Brasstown, NC 28902.

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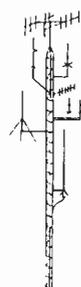
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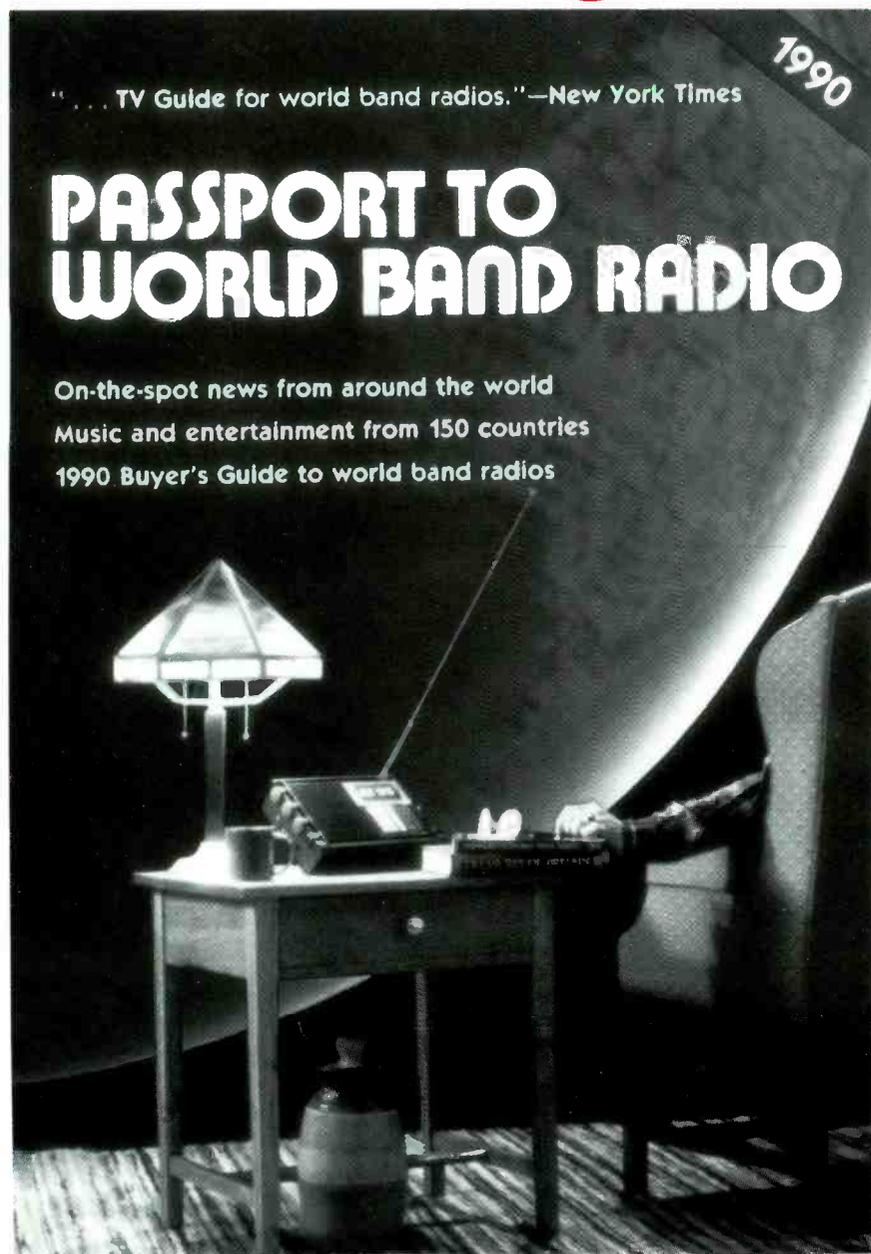
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