April 1989 Volume 8 Number 4
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MONITORING TIMES

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- The Trials and Tribulations of Building the Ultimate Receiver
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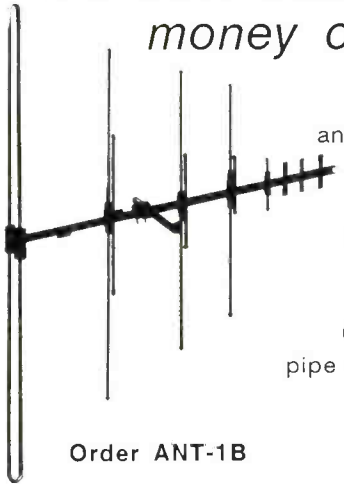

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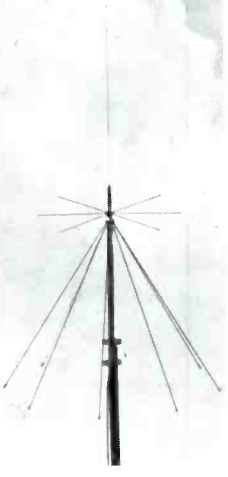

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Vol. 8, No. 4

April 1989

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Former guerillas await resettlement in a Guatemala that has changed forever - p.6

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Bob Kay introduces the MT treasure hunt! - p.34

Check out those flea-market crystals with your own tester - p.92

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Building the Ultimate Receiver by Bob Grove 16

Trials and tribulations? You bet! But it's worth it all to see a dream take shape in reality.

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Like other island nations, fragmented Malaysia relies heavily on shortwave broadcasting to keep it all together.

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Our December feature rekindled memories for Henri Walser -- memories of just what radio meant to those living in Europe during World War II.

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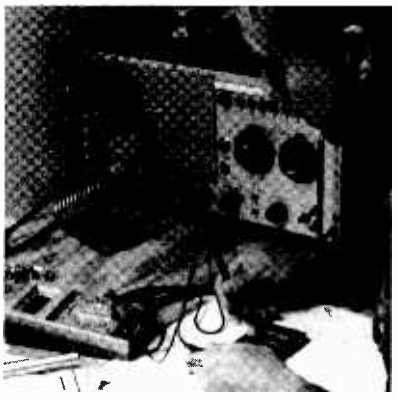
ON THE COVER: Traditional Easter procession, Guatemala City, Guatemala (Photo by Theresa Bries).

Inside this Issue

• The big news this month has got to be the new Grundig Satellit 500. According to Larry Magne, it seems as if the reign of the Sony ICF-2010 as the best portable shortwave receiver may soon be over. While Magne's tests were conducted on a pre-production model, some of his initial conclusions are astounding: ultimate selectivity of between -80 and -85 dB (the $1,295 Japan Radio NRD-525's ultimate selectivity is only a relatively modest -65 dB), the use of a self-tracking preselector (usually found only on professional models), synchronous detection tuning circuitry and more.

No baloney, Sony. It sounds as if you're number two.



• Beating Sony is no easy task. Bob Grove, publisher of *Monitoring Times*, has devoted much of his spare time recently to fulfilling a boyhood dream -- building the ultimate receiver. And, while a pre-production version of the long-awaited SR-1000 should be on display at this year's Dayton Hamvention, the path was long and hard. In this month's *MT*, Grove provides an unusually frank assessment of the process: "The Trials and Tribulations of Building the Ultimate Receiver."

• Well, now that we've got your receiver needs taken care of, let's find something challenging to tune for. On the shortwave bands there's the nation of Malaysia. A pretty exotic place, its shortwave service is divided into external broadcasts (pretty tough to hear) and regional domestic services (*very* tough to hear). As usual, gentlemen, it will be no easy task. Many will fall before the mighty challenge. But, to those with superhuman abilities (not to mention a heck of a lot of luck!), the rewards will be many: the admiration of fellow DXers from Maine to California.

• Don Moore, intrepid treker of places exotic and south, tells the strange but well-documented story of the radio station that overthrew the government of Guatemala. The station, run by only a handful of people, convinced the government and most of the citizens that a powerful invasion was about to happen. The invasion, it turned out, was a radio trick, and into Guatemala City marched a former furniture salesman. Read the story of the granddaddy of Latin American clandestines, Radio Liberacion.

• Scanner enthusiasts should take note of Bob Kay's regular column. In it, you'll find the chance to win prizes - yes prizes! There's nothing to buy. And you might walk away with one of several neat scanner accessories, ranging from antennas to speakers. Go for it, tiger!

There's much more in this month's issue of *Monitoring Times* -- over 100 pages of information designed to help you make the most out of your listening time. Scan through the pages and see why more and more, people are turning to *Monitoring Times*. It's America's favorite radio magazine!

MONITORING TIMES

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LETTERS

Is AM a Lost Cause?

Monitoring Times readers sure seem to love AM radio. No kidding. "AM is not dead!" says Albert Lobel of San Diego, California in response to a recent "American BandScan" column. "Have you ever heard AM-stereo on a good receiver with the proper equalization? It sounds just as good as FM-stereo."

"It's the FCC that's killing AM by letting all these idiots on the bands." And here, only 50 miles from the border, I get lots of Mexicans, with their 3000+% modulation and loud, noisy, Ranchero music..."

"This is truly a classic case of the pot calling the kettle back," says Cynthia Cook of Weaver, Tennessee. "You, an admitted shortwave listener, willing to put up with hurricanes of static in order to hear the 'haunting melody of a Peruvian flute' on some low-powered station in the Andes, have no right to complain about AM."

While admitting that AM radio can't return to the 'Golden Days,' it can, says broadcaster Ken MacHarg, "once again become a viable medium if it offers quality programming to the consumer."

MacHarg, who recently lost a job at an AM station when the staff was replaced by satellite programming, is himself kind of jumping out of the audio frying pan and into the fire. Ken, who has written some of *Monitoring Times'* best articles ("Voices of Faith," March 1988"), has been accepted for work at megawatt shortwave station HCJB.

Before Ken goes, however, like all HCJB personnel, he's got to raise his own support -- in this case over $2,000 for every month he is to work there.

If you'd like to make a contribution -- it's tax deductible -- write a check to HCJB and mark it clearly that it's for the support of Ken and Polly MacHarg. Send it to P.O. Box 55300, Opa Locka, Florida 33055-0401.

During the early 1960s, President Kennedy set as the national goal the placing of a man on the moon before the end of the decade. Ours will be to put a DXer in Quito before 1990. Help him out if you can. He's a great guy.

Speaking of great guys, we have a new addition to the *Monitoring Times* family. Congratulations are in order for Federal File columnist Dave Jones and his wife, Beth, who have become parents of Christopher David. Nice job, folks.

Rap from Our Readers

Interested in pirate radio, laddie? Joe Earley, EI4GX, of Dublin, Ireland, says that he has 50 to 60 tapes of various pirates. He's willing to exchange some of these for recordings of the space shuttle, presumably ours. His address is 3 Whitworth Tce, Drumcondra, Dublin 3, Republic of Ireland.

Robert Eisner, *MT*'s unofficial fast-food frequency monitor, checks in with some new numbers to punch into your scanner: Hardees is now using 30.8400 and 154.5700, Wendy's 457.6125 and 467.8375 and Roy Rogers, 457.5375 and 467.7625. That's only part of the list. Robert and his buddy Joe Hayes, enjoy this rather esoteric aspect of the radio monitoring hobby so much that they make special trips in order to find new fast-food restaurants and their frequencies. That's what Robert said in a recent phone call...

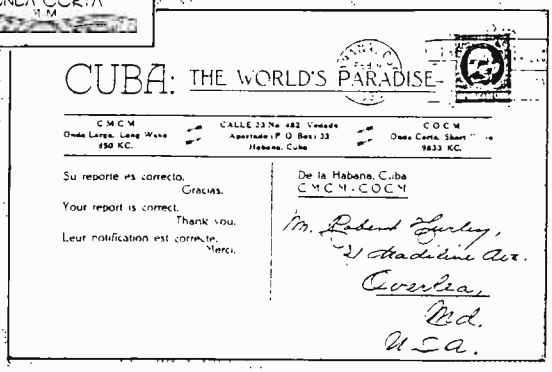
Speaking of frequencies, Jack Metcalf, who authored the pioneering article on emergency networks in last month's issue has some frequency and schedule updates. It now appears the quarterly exercises may take place on the last Wednesday and Thursday of January, April, July and October. A weekly check-in on Wednesdays at 1800 UTC may be heard on 10891 (channel 5).

During the January 25-26 exercise he reports that 300 baud packet and FEC transmission used 12158 kHz (channel F6), and several Region 4 stations used a new frequency, upper sideband mode: 9918 kHz. Utilities monitors, how about sharing your findings on this new network?

Robert Hurley of Baltimore, Maryland, is a new subscriber. "I have just received my first issue of *Monitoring Times* and am amazed at the amount of fascinating information which is packed between its covers. *MT* is an absolutely absorbing source of DX information!"

Bob uses a "twice-used" Radio Shack DX 200 and a 65-foot straight wire antenna. Using this equipment, he's managed to log 57 world band broadcasters representing 42 nations, numerous utilities, several numbers station broadcasts, and countless hams. "I have been firmly bitten by the DX bug," he says.

[More "Letters" on p.100]



Bob Hurley is a second-generation DXer. He passes along some QSLs his father got back in 1938 when he was 17. As Bob says, "they present an interesting look at QSLing 50 years ago."

COMMUNICATIONS

Remote-Controlled Dogs

Back in the 1960s when the Central Intelligence Agency was experimenting with mind-control drugs, government scientists were also hard at work on a variety of techniques to turn dogs and cats into remote-controlled spies and soldiers.

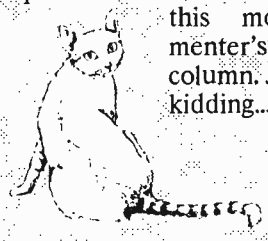
The evidence surfaces in a censored 69-page report dated September 30, 1965, that has recently been declassified. The author, whose name was deleted from the report, notes that "Ever since 1954, it has been known that electrical stimulation of certain deep-lying structures in the brain could serve as an instrumental reinforcer..." The effect was achieved with a wide range of animals, including "rat, cat, monkey, guinea pig."

The most dramatic results, however, were achieved with dogs. Documentation includes photographs of dogs wearing protective plastic helmets over electrodes that had been planted directly in the skull and surrounded by dental clay. Wires extending from the electrodes were run down the animal's neck, beneath its skin, to a battery pack and remote receiver fastened on the dog's back.

Additional photos record a successful demonstration run for visiting project sponsors during which a dog equipped with a remote receiver and a brain implant was made to walk and turn in directions determined by scientists using a remote radio transmitter.

The applications of remote-controlled animals are limited but frightening. It is already well-known that the U.S. Navy has trained dolphins to retrieve lost objects, plant mines on the bottoms of ships, and assassinate enemy frogmen.

Look for easy, "do-it-yourself" plans for a remote-controlled cat in this month's "Experimenter's Workshop" column. Just kidding. Just kidding...



I Love My M-Tree-V

Dr. Shiva Prasad Kosta, director of Banglore, India's Satellite Centre, has found that "nature provides perfect television antennas." We know these natural antennas better as "trees."

Trees, Dr. Kosta claims, "frequently work better than conventional antennas" and notes that coconut, eucalyptus, mango and banana all become excellent receptors when properly hooked up. *HIMAL* magazine offers the following instructions.

"All you do is hook up the the xylem of a tall neighborhood tree to the RF input socket of your VTR and hook the aerial terminal of YOUR TV set to the RF output socket with the DIN-DIN coaxial cable that comes with every Sony you buy. Now, join the RF input adapter to the soft spot on the tree in between the phloem and the cholotenchyma. Voila!"

Presumably, the antenna also works well for shortwave and scanners.

"Unbelievable Power"

When the Federal Communications Commission concluded its operation against pirate radio station *Radio NewYork International*, it received a lot of publicity -- and what *Federal Communications TechNews* editor Benn Kobb calls "unusual new enforcement powers."

Radio NewYork International, an unlicensed station broadcasting from a 200-foot vessel anchored off Long Island, New York, was shut down by the FCC on two occasions. RNI's New York Civil Liberties attorney argued that the spectrum his clients used was unoccupied and that First Amendment rights precluded the FCC from curtailing the broadcasts.

The "unusual powers" were granted the FCC by U.S. District Court Judge John J. McNaught who disagreed, saying that Section 2 of the Communications Act "expressly extends coverage of the Act to all transmissions by radio which originate *and/or are received within the United States.* Jurisdiction under the Act is therefore extended *beyond places over which the United States has sovereignty."* (Emphasis added.)

At a Washington lecture, FCC Field Operations Bureau deputy chief Arlan Van Doorn said that the new authority has "unbelievable implications" that his organization has not yet analyzed. "If the *Sarah* went 40 miles out, would we still go out and get them? We would," he said. "If they go 100 miles out, we would probably get them. If that signal is coming into the United States, we would probably nail them."

Next chapter: The FCC sends U.S. Marines into Bulgaria to shut down a stray jammer.

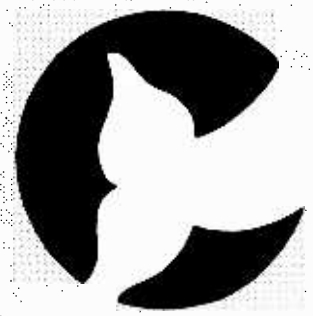
RF Study Required for FM Boosters

More and more, people are worrying about the effect of radio frequency radiation on the environment. Being near all those radio waves is thought by some to cause cancer. But most of that concern has been directed at high-power transmissions.

No longer. Now, even booster stations for FM broadcasters, operating with up to 20 watts, require analysis for radio frequency (RF) radiation before licensing. FM translators,

COMMUNICATIONS

running between 1 and 10 watts, are excluded from the requirement.



Greenpeace on the Air

The international environmental organization Greenpeace now has a program on the air over the shortwaves. Broadcast daily over Superpower KUSW, the station's 2.5 million watts of effective radiated power allow listeners the world over to hear the message of Greenpeace, "bypassing any censorship or control of the broadcast medium."

The Greenpeace programs are in English but plans call for the eventual use of several languages to make the programs more accessible to users in more countries. Tune in on the following schedule: Sundays 2015, Monday 1930, Tuesday 2030, Wednesday 1830, Thursday 1930, Friday 2030, Saturday 1830. All are on 15650 kHz.

Dallas DX Pioneer Electrocuted

Phil Ashcraft, N5DD, one of ham radio's best ambassadors and finest operators, died recently as the result of a high voltage shock he received while working on one of his amplifiers.

Ashcraft did not get started in ham radio until he was 62 but when he got bit by the bug, he went all-out. A successful -- and now retired businessman -- he had the wherewithall to do it right, too. A picture in *QST* some years ago showed him lowering antennas by helicopter to a 185 foot tower. A 2-meter repeater was on an 800 foot tower he owned.

One afternoon, Phil was installing resistors on the input of his two linear amplifiers. He was adjusting the driver and somehow had left the high voltage power supply on. He got hit with 4,500 volts at 2 amps when he reached into the amplifier.

The results were the worst imaginable. The voltage ripped through his body and out of his chest and hands, burning off an ear. His hand was nearly severed, his fingers were welded together and his watch seared into his skin. The room was filled with the smoke of burning flesh. Despite the seriousness of his injuries, Ashcraft was able to call his office for help.

Doctors gave the ham operator a 25 percent chance of living but only if they amputated both arms. There would, he was told, be a long, painful rehabilitation period. Ashcraft refused medical assistance, saying his time had come. That evening, he was able to talk with friends and relatives. By morning he was gone.

We decided to tell you about N5DD not, frankly, because we knew him. We decided to tell you about Phil Ashcraft because of the graphic account of his death and the warning it might provide to other radio hobbyists. If Phil Ashcraft was anything like his friends make him out to be, he'd have wanted us to tell you his story. The next time you're poking around your radio, remember it.

Another "Communications Artist"

Listeners capable of tuning the frequency range of 1240 to 1300 MHz should listen for California State College art professor Mike Heivly.

According to *Federal Communications TechNews*, Heivly was recently granted a license to conduct experiments in "microwave sculpture," using the "radio medium as an art form." One thousand watt digital signals from Heivly's portable stations will be directed straight up into "deep space."

NEWSBREAK:

FCC Denies Scanner Labeling Petition

The Federal Communications Commission has denied a petition filed nearly a year ago by Regency Electronics requiring all receiving equipment which is capable of tuning in transmissions protected under the Electronic Communications Privacy Act of 1986 to carry a warning label.

The proposed wording would have been: "Improper use of this device may violate the provisions of the Electronic Communications Privacy Act of 1986 through intentional unauthorized reception of protected radio communications."

The proposal was vigorously opposed by the Association of North American Radio Clubs (ANARC), whose objection was formally endorsed by Grove Enterprises, publisher of *Monitoring Times*, through written comments filed with the FCC.

The FCC closed the docket on receiver labeling with these comments:

"We do not believe that technically blocking frequencies is a desirable approach ... in addition, the ECPA does not prohibit the manufacture and sale of scanners or any receiver based solely on the ability to receive specific frequencies."

This is a major victory for recreational listeners who have been put upon by vested commercial interests sincew the inception of the ill-advised ECPA in January 1987.

Special thanks to *Federal Communications TechNews, HIMAL Magazine*, Hugh Miller, *W5YI Report*

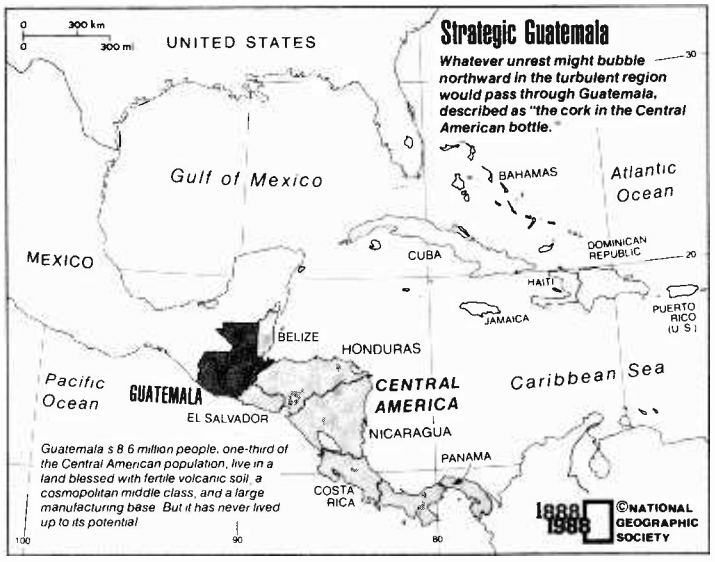
REVOLUTION!

Radio's Role in the Overthrow of Guatemala

by Don Moore

To DXers the 1980s have been the era of the Central American clandestines: Radio Venceremos, Radio Quince de Septiembre, Radio Farabundo Marti, and Radio Liberacion are a few of the seemingly endless list. The Central American political situation never seems to really change, and the stations are there month after month to be logged.

Optimally, a political clandestine station gets its job done fast, and then leaves the air, victorious. For that type of success, today's stations have a role model in Central America's first political clandestine. In 1954 the granddaddy of them all came on the air, overthrew a government almost single-handedly, and then left the air just two months later. Its story is not well known. But perhaps at night, on the mountainsides and in the jungles of Central America, the announcers at Radio Venceremos or Radio Quince de Septiembre sit around the fire and talk about La Voz de la Liberacion.



Two decades of political unrest followed the career of one of history's most successful clandestine radio stations.

Dictators and Presidents

Guatemala, Central America's most important and populous nation, has an unfortunate history of sometimes cruel, sometimes eccentric, dictators. In 1931 the country was taken over by General Jorge Ubico. One of Ubico's favorite pastimes was to ride around the country on a motorcycle with a machine gun strapped on his back.

In other ways, he was the stereotypical banana republic dictator: anyone who crossed him or violated even the most minor of his laws might just be pushed against an adobe wall and shot. Thousands were. Still, Ubico had his good points: one of his hobbies was shortwave radio, and he preferred using shortwave instead of telephone or telegraph, whenever sending messages to officials around the country.

Assumedly, it was Ubico's violent one-man rule, not his shortwave hobby, that led to his overthrow in 1944. Following massive protests by schoolteachers and students, Ubico was forced to resign and hand over the government to several left-wing army officers headed by Colonel Jacabo Arbenz. In 1945 elections were held and rule of the country was turned over to a civilian government. Five years later, Arbenz, just 37 years old, ran for the presidency and won handily.

In the 1950s, most Latin American countries were controlled by right-wing military dictatorships. Many liberal civilian politicians were not allowed to live freely in their own countries. One of Arbenz's first acts was to open Guatemala's doors to political exiles from all over Latin America. However, not only were liberal politicians allowed in, but so were hundreds of exiled Communists and revolutionaries. Although Arbenz said that this was because he believed all men had the right to live freely, regardless of their beliefs, not everyone believed him.

Meanwhile, in the Guatemalan congress, Arbenz was supported by a fifty-one member coalition, which included the congress's four Communist Party representatives. As part of the coalition, Guatemalan communists were given several minor posts in the Arbenz government, mainly in the Agriculture Department. With McCarthyism at its height in the United States, Washington began to keep a watchful eye on Guatemala.

Taking On a Fruit Company

Next, Arbenz did something no Guatemalan president before him had ever done; he decided to take on the United Fruit Company. United Fruit was more than just banana plantations. The largest investor in Guatemala, the company was so powerful that few had dared to tangle with it. The only transportation between the interior of the country and the Caribbean coast was United Fruit's railroad line between Guatemala City and Puerto Barrios. It charged the highest rates in the world. United Fruit also owned the only port facilities on Guatemala's Caribbean coast.

Arbenz angered United Fruit when he announced that the government would give their monopolies some competition by building a road alongside the railway and constructing a new Caribbean port. Then, in another move, Arbenz forced the company to give severance pay to hundreds of laid-off workers.

Arbenz's disagreements with United Fruit did not stop there. A priority of his government was to give land to Guatemala's hundreds of thousands of landless peasants. There was no question where much of that land would come from -- the country's biggest landowner was the United Fruit Company. The company held over a half million acres, eighty-five percent of it uncultivated.

In mid-1952, Arbenz issued a decree that all uncultivated land in the country was subject to government seizure so that it could be given to landless peasants. In early 1953, about 200,000 acres of uncultivated United Fruit land was confiscated. Arbenz did plan to pay for the land. Showing that he had a sense of humor, he offered to pay United Fruit exactly what the company said the land was worth -- according to the value declared on its tax reports. Arbenz was well aware that United Fruit had been cheating on its taxes for years by declaring the land at only about four percent of its true value. United Fruit was infuriated at Arbenz's actions.

The U.S. Steps In

Because of United Fruit's close contacts in Washington, the U.S. government began to look closer at Guatemala's political situation.

John Foster Dulles was Secretary of State, and his brother, Allen Dulles, was head of the CIA. The Dulles family had extensive business contacts with the United Fruit Company. Assistant Secretary of State for InterAmerican Affairs, John Moors Cabot, was a United Fruit stockholder. In August, 1953, they made a decision: Arbenz must go. Allen Dulles brought in some of his best covert action specialists for the task ahead. "Operation Success" had begun.

The CIA had quite a job ahead of it; very few Guatemalans were actually trying to overthrow Arbenz. Because of his land reform program and support for trade unions, the peasants and workers were generally behind him. The middle class, which had neither gained nor lost under Arbenz, was at least willing to tolerate the president until the 1955 elections. Following the 1944 coup, the army had gradually been purged of conservative officers, so those who remained either supported Arbenz, or were neutral. Those Guatemalans who did oppose Arbenz were generally free to do so within the established political system. They saw no reason for violence.

Considering all these factors, it's a wonder that "Operation Success" wasn't named "Operation Failure" instead. But, the CIA had a deep bag of tricks to reach into, and out of it they pulled a World War II propaganda technique called "The Big Lie." Radio would play an important part in this battle.

The key to the plan was psychological warfare. The Guatemalan people had to be convinced that Arbenz no longer controlled the country. This would be accomplished by clandestine radio broadcasts and propaganda leaflet airdrops. Meanwhile, a small military force would be raised to invade Guatemala from a neighboring country. Propaganda would be used to convince the country that this invasion was only a small part of a much larger force of exiled Guatemalans opposed to Arbenz. Other dirty tricks would be used to further confuse and demoralize the population.

Don Moore & Theresa Bries

TGW, Radio Nacional de Guatemala, today. In 1954, the CIA jammed this station to prevent Guatemalans from hearing speeches by President Arbenz.

It was no secret that the U.S. government was unhappy with Arbenz. For example, the United States Information Agency planted over 200 anti-Arbenz articles in the Latin American press during this time. But planners realized Operation Success had to be done covertly, without any apparent connection to the United States government. Not only would such a connection be politically embarrassing to the U.S., but the Guatemalans might realize what was happening and not buy the propaganda. Therefore, the operation had to take place outside of the USA, and be as discreet as possible.

By early 1954, Operation Success was well underway. Nicaraguan dictator, Anastasio Somoza, a staunch enemy of Arbenz, readily agreed to let his country be used as a training base. Guatemalan Colonel Carlos Castillo Armas was brought in to head rebel forces -- the "Army of Liberation." In 1950, Castillo Armas was exiled after organizing an unsuccessful military coup, and he had been making a living as a furniture salesman in Tegucigalpa, Honduras.

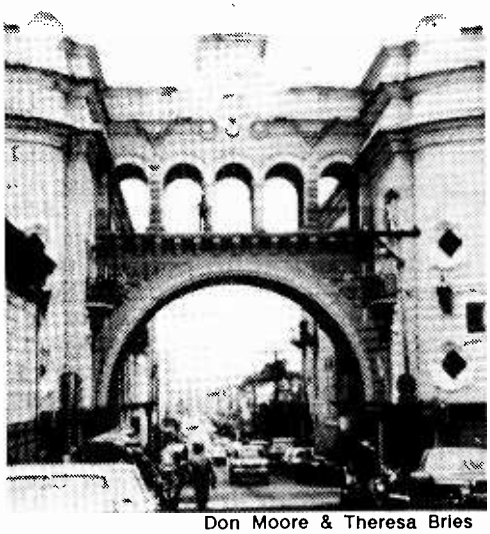
His "army" consisted of about 150 men, a mixture of Guatemalans opposed to Arbenz, and Hondurans, Nicaraguans, and American soldiers of fortune, who were in it for excitement and money. American and Nationalist Chinese pilots were recruited for the rebel Air Force.

La Voz De La Liberacion

Before any invasion could take place, the country had to be psychologically softened up. Therefore, it was important to put the rebel radio station, La Voz de la Liberacion, on the air as soon as possible. CIA technicians set up a complete radio base camp on a remote Nicaraguan farm. Additional transmitters were located in Honduras, the Dominican Republic, and even in the U.S. embassy in Guatemala City.

Although it was never used, a reserve transmitter was set up on Swan Island (which seven years later would be the site of the CIA's famous anti-Castro clandestine, Radio Swan. Not all these transmitters were for La Voz de Liberacion. Other uses included fake military command stations and jamming Radio Nacional de Guatemala (TGW) and other Guatemalan radio stations.

Covert action specialist E. Howard Hunt (now well-known for his involvement in the Watergate scandal) was brought in to head the propaganda campaign. David Atlee



Don Moore & Theresa Bries

Guatemalan officials monitored La Voz de la Liberacion in the telecommunications building, its two wings linked by this second story passageway.

Philips was appointed deputy, in charge of the radio station. For actual on-air announcing, five Guatemalan men and two Guatemalan women were recruited. The Guatemalans were led by announcers Mario Lopez Otero and Jose "Pepe" Toron Barrios.

In early April, 1954, the group was brought together in Florida for technical training at the Opa Locka military base. When training was finished, Hunt treated the group to a night on the town in Miami. In mid-April, the team flew to Managua and a few days later arrived at the radio camp, consisting of a barn for the transmitters and studio, and an old shack to live in. They had two weeks to finish setting up the station, begin recording programs, and to get ready for the hard two month's work ahead of them.

Programs were designed to appeal to patriotism and common values held by Guatemalans. The slogan, "Trabajo, Pan, y Libertad," or "Work, Bread, and Liberty" was adopted to identify with these values. To reach out to all sectors of society, special programs were produced for women, youths, workers, soldiers, army officers, and the elite. The last two groups were especially important, however. Without ensuring that the army and elite would at least be neutral and inactive, the invasion would be doomed to failure.

Advertising Clandestine Radio

The first broadcast was scheduled for May 1, International Labor Day. Since nearly everyone had the day off, there would be a huge potential audience -- if only people knew about the station. Letting its potential listeners know that it is on the air is certainly a problem for any clandestine radio station. After all, an underground radio station can't advertise in the local newspapers. Well, on second thought, maybe it can advertise in the local papers -- because Mario and Pepe did just that for La Voz de la Liberacion!

A few days before the broadcast, half-page ads were placed in each of Guatemala's daily newspapers. The ads were for a special holiday broadcast from Mexico on shortwave. The program would feature popular Mexican singers, a famous actress, and well-known Mexican comedian Cantinflas. Of course, the program's time and frequency were included.

However, when the listeners tuned in, they found the program was not quite what was advertised. The famous stars were there all right, but via phonograph records. Mario and Pepe apologized and explained that the lie was their only way of letting the public know about the initial broadcast. The listeners didn't mind; political intrigue can be a lot more fun than Mexican singers. Here was a station that not only denounced the president, but it claimed that he would soon be overthrown by rebels.

Of course, after just one broadcast, very few people took La Voz de la Liberacion seriously. Still, the following day Arbenz made a speech on Radio Nacional, TGW, denouncing the station. Any doubts people had as to the seriousness of the rebels were dismissed when CIA jammers drowned out Arbenz's speech. Starting on day two, La Voz de la Liberacion had a regular audience. Even Arbenz, himself, tuned in daily!

The Big Lie Begins

The role of La Voz de la Liberacion was quite clear. First, the station had to mobilize into action those Guatemalans who were opposed to Arbenz. Then it had to persuade those who were neutral that opposing Arbenz would not be such a bad idea, if they wanted to be on the winner's side. When a revolution is in the air, everybody wants to go with the winner. Finally, La Voz de la Liberacion had to persuade Guatemalans who supported Arbenz that all was already lost, and that there was no reason to continue the fight.

To carry this out, La Voz de la Liberacion had to convince the Guatemalan people that Arbenz could not effectively control the country. One way the station did this (and also covered up their true identity) was by announcing that it was broadcasting from the mountains outside of Guatemala City. After all, as Mario and Pepe pointed out to listeners, if Arbenz's army couldn't find and close down a little clandestine radio station, how could they stop Castillo Armas if he invaded the country?

To validate their fictitious location, gunshots and screams interrupted the broadcast one night. The announcers shouted "They've found us," and took off out of the studio, just as soldiers burst through the door yelling "Hands up!" Of course, since the station was in Nicaragua, the Guatemalan army was nowhere near it. But the ruse worked so well that Guatemalan officials monitoring La Voz de la Liberacion believed it. Later that evening, TGW announced the army had found and closed down La Voz de la Liberacion.

Now there was no question, either in the eyes of the populace, or the foreign press, that La Voz de la Liberacion had really been broadcasting from the Guatemalan mountains. After all, the government radio station itself had said so.

The next day La Voz de la Liberacion returned to the airwaves. Thanks to the bungling of Arbenz's soldiers and the bravery of the rebels guarding the station, Mario and Pepe said they had narrowly escaped the trap. They went on to announce that the station was now broadcasting from a new and more secure site. But because of imminent danger, the women announcers would no longer be working at the station.

Radio Grounds the Air Force

Although air support is the key to most modern military operations, the CIA could only supply a few obsolete bombers to the "Army of Liberation." Donating anything more modern would be like putting a "Made in USA" banner on the invasion. Yet, there was no way these old planes could successfully face the Guatemalan Air Force's up-to-date fighters in combat.

The Guatemalan Air Force was the biggest factor standing in the way of a successful invasion, since it would control the skies. Not only would government planes be able to freely bomb and strafe the rebels, but, more importantly, by simply flying over them, the Air Force would know how small and insignificant the invasion really was. If modern planes could not be sent to take on the Guatemalan Air Force, something else would have to do it. That something was La Voz de la Liberacion.

The station began by airing programs which praised Soviet pilots who defected. Each day, another tale of a courageous flight to the West was aired. No direct appeals were made to Guatemalan pilots, but it worked. On June 5, Air Force Colonel Rodolfo Mendoza Azurdia defected, flying his plane to nearby Nicaragua.

Soon after, Mendoza was brought out to the station for a visit. He was asked to do a special broadcast and call for his fellow pilots to defect. Not wanting to cause any hardships to his family, which was still in Guatemala, he refused. Mario and Pepe didn't press him, but invited him to share dinner and a bottle of scotch with them that evening.

The two announcers made sure that Mendoza drank more than his share of the scotch. Soon the pilot was drunk. Praising his

bravery, they said it was a shame he couldn't give a speech on the air. But if he did, what would he say, how would he say it? With the persuasion of the bottle to support him, the intoxicated aviator launched into an impassioned speech, putting Arbenz down and telling his fellow pilots how and why they should defect. Each time he started to falter and lose interest, Mario and Pepe prompted him with additional questions, so that he continued his heated discourse.

Finally though, Mendoza was talked out. The scotch took over and he began snoozing on the floor. The two tricksters went over to an old sofa and took out a tape recorder they had hidden under the cushions. Back in the studio, it just took a little work to cut out their questions and splice the pilot's comments into a coherent and lively speech, ready for broadcast the next morning.

The broadcast worked perfectly. Arbenz was convinced that given the chance, more of his pilots would defect with their planes. He ordered the Air Force grounded -- and not a single Air Force plane was permitted to take off for the duration of the crisis.

The Air War Starts

Now the skies were safe, and Castillo Arma's Air Force could go to work. From Tegucigalpa, Honduras, cargo planes took off regularly to drop propaganda leaflets over the capital and principal towns of Guatemala. La Voz de la Liberacion played its part in the air war, each night airing announcements instructing the planes where to drop supplies for nonexistent rebels in the mountains.

Pleas were made asking for listeners to help the rebels by locating potential drop sites. Occasional drops were made, so that local people would find the supplies and report them to the government. This created still more uncertainty about Arbenz's ability to control the countryside.

Even more tension was created when Arbenz decreed a nightly blackout in Guatemala City. The official reason for the blackout was to prevent rebels from bombing the city, as had been threatened on La Voz de la Liberacion. Some thought Arbenz was really trying to make it harder for people to listen to La Voz de la Liberacion. If so, it wasn't a very well thought out plan, since many Guatemalans had either battery radios, or electrical generators.

Regardless of Arbenz's reasoning, Mario and Pepe found ways to use the blackout to their advantage. Listeners were requested to place lighted candles on their patios, to help the rebel Air Force find Guatemala City at night. It was explained that this was necessary so the pilots could orient themselves when making supply drops to the rebels in the hills. Many listeners believed this and thousands of candles were placed on patios.

The following day, the Arbenz government announced that lighting candles was prohibited. Mario and Pepe still weren't finished, however. The next night they were on the air, thanking listeners for helping the rebels by lighting candles. This would make the pilot's job very easy, they explained, when the rebels decided to bomb military bases. Since their supporters were everywhere, the military bases were the only places without candles. The pilots would only need to look for the dark areas and bomb those. The next night, candles blazed all over the city -- even in the army camps!

Taking Care of the Army

Even with the Air Force grounded, the CIA's little rebel force was no match for the 6,000 man Guatemalan army. Something had to be done to make sure a real battle never took place. The break came when CIA agents learned that Arbenz was considering arming the peasants and trade unions who supported him. Arbenz did not totally trust his army, and he wasn't sure how many rebels he was facing. The extra troops could be useful.

However, what might have been a good idea to start with turned into a disaster when Howard Hunt and David Atlee Philips found out. The rebel Air Force was called on to drop leaflets over Guatemala City and other large towns, saying that arming the peasants and trade unions was an insult to the army. The leaflets also charged that this was just the first step of Arbenz's plan to destroy the army and replace it with a civilian militia.

La Voz de la Liberacion began airing commentaries, repeating the charges. Fearing for their future, army officers began to wonder what Arbenz was really planning, and Arbenz started to distrust his officers even more. He would keep the army in the barracks until the crisis was over.

The Invasion

On June 18, 1954, Castillo Armas and his rebel army crossed the border between Honduras and Guatemala, right on schedule. Castillo Armas led the invasion, riding in an old station wagon, while his 150 soldiers followed behind in several rundown cattle trucks. They drove to the border town of Esquilpulas, then set up camp. No one opposed them. That night, La Voz de la Liberacion announced that the vanguard of Castillo Armas' army had crossed the border, and captured Esquipulas after a fierce battle. Mario and Pepe went on to say that, from their location near Guatemala City, they were unable to confirm the rumor that Castillo Armas had five thousand men.

Now the CIA began launching occasional bombing and strafing raids from Puerto Cabezas, Nicaragua. Bombs were dropped on military bases around the country, and on the port at Puerto Barrios, but none on the capital city yet. Sometimes, when bombs ran low, the pilots dropped empty soda bottles. The noise they made when hitting the pavement sounded like a bomb going off. Guatemalans began referring to the bombings as "sulfatos," or "laxatives," because of the effect they supposedly had on government officials. Actually the bombings probably had that effect on anyone nearby!

The war was at a standstill. Castillo Armas and his men settled down in Esquipulas. They were too few to continue the invasion and, for

Nachtway/National Geographic Society

In 1986 President Vinicio Cerezo became Guatemala's first elected civilian leader in 16 years. However, military leaders, industrialists, and wealthy landowners still hold the power.

the moment, their work was done. Meanwhile, the Arbenz government was confused. There was no reliable communication with the border area, and Arbenz refused to let the army go fight the rebels. Sometimes it seemed the only real news the government could get was from the rebel radio station -- and none of it was good. Arbenz sat tight, and kept his army in Guatemala City.

Mario and Pepe continued their tricks. One favorite ploy was to use disinformation to start rumors, such as announcing that there was no truth to the rumor that the water of Lake Atitlan had been poisoned. Other times they would go on the air using a frequency very close to the government station, then mimic the station and put out false announcements to confuse listeners. La Voz de la Liberacion also broadcast messages to fake rebel camps, and reports of fierce battles that never happened.

For weeks, the CIA had been monitoring and noting frequencies used for Guatemalan army radio communications. Now they put this knowledge to use by broadcasting false commands and announcements on these frequencies, thoroughly confusing the army and government. Even U.S. Embassy staff helped start rumors, by calling up Guatemalan friends and asking them questions such as, "Is it true that Zacapa has fallen to the rebels?" Still, though, the stalemate continued.

noise and smoke convinced inhabitants of the nearby city that the end was near. Thousands began to flee, blocking all roads leaving town. Two days later, La Voz de la Liberacion announced that two large columns of rebels were approaching Guatemala City. Appeals were broadcast, asking refugees to get off the roads and let the rebel trucks pass.

Mario and Pepe spent the day broadcasting news of troop movements, redeploying hundreds of fictitious rebel soldiers. Guatemala City was totally in panic. Meanwhile, Castillo Armas and his 150 rebels were still relaxing in Esquipulas. Their only chance for success was La Voz de la Liberacion's propaganda broadcasts. If the station had done its job, every one would believe this final big lie.

Sunday night, at 9:15 pm, Arbenz went on Radio Nacional, TGW, to address the country. More Guatemalans were probably listening to La Voz de la Liberacion than to TGW, and those who were listening to TGW had to put up with the jamming. Arbenz summed up the situation the country was in, and blamed the United States for backing the rebels who had invaded the country. He then said the only way to restore peace to Guatemala was for him to resign from the presidency. He announced his decision to go into exile in Mexico, and turn the government over to his friend, Army Chief of Staff, Colonel Carlos Enrique Diaz.

For the next few days, the scene of action

Don Moore & Theresa Bries

There was no happy ending. Political strife continues in Guatemala to the present day. And no clandestine broadcaster has since had the success of La Voz de la Liberacion.

The Final Days

It was time to get serious. On Friday, June 25, for the first time, bombs were dropped on the army base outside Guatemala City. The was Guatemala City. Diaz and other officers formed and dissolved juntas daily, trying to find one that would suit the U.S. ambassador, and be recognized by the United States. The only solution was to allow Castillo Armas a position in the government. Castillo Armas and his troops flew into Guatemala City.

After seeing how insignificant the rebel army really was, and realizing how easily he could have defeated it, Diaz went home and cried for several days. Meanwhile, with a few more days of political maneuvering, guided by the U.S. ambassador, Castillo Armas became sole president of Guatemala.

The war was over; La Voz de la Liberacion had won. And, it was much easier than anyone had believed possible. David Atlee Philips, the CIA head of the clandestine station, was listening to TGW when Arbenz made his final speech. Philips said he fully expected Arbenz to tell the people about how the invasion was a farce, and to announce that everything was under control. That's all he would have had to do, and the invasion would have been crushed. Philips was shocked by Arbenz's resignation, and couldn't believe that Arbenz (and all the Guatemalan government) had been so taken in by the station's propaganda.

Aftermath

Its work a success, La Voz de la Liberacion shut off its transmitters forever. The transmitters probably found their ways to other battlegrounds around the world. But for most of the people involved, there was no happy ending.

Arbenz spent the next ten years moving around Europe and Latin America, before being granted permanent residency in Mexico in 1965. Five years later he drowned in his bathtub. Howard Hunt, of course, went on to become a household name in the United States after Watergate. David Atlee Philips stayed with the CIA until 1974 when he resigned, critical of the agency's workings. Since then he has written books on the CIA.

Castillo Armas proved to be a corrupt ruler, and in 1957 was assassinated by one of his bodyguards. His was the first in a long string of military governments in Guatemala, finally ending in 1986. Mario and Pepe became victims of the political violence that began in Guatemala in the 1960s, and continues today. Walking across his yard on his way to work one morning, Pepe was shot down in front of his family. Not long afterwards, Mario was machine gunned in a supermarket parking lot.

For the CIA and the U.S. government, success in Guatemala probably came too easy. Seven years later, David Atlee Philips was brought in to run Radio Swan, in preparation for the Bay of Pigs invasion of Cuba. Many other agents who had worked with the Guatemala operation were also recruited to help out. The Bay of Pigs, though, was as big a failure as Guatemala was a success.

There are numerous theories as to why the Bay of Pigs was a disaster. Perhaps part of the reason was a young exiled Argentine doctor who lived in Guatemala in 1954. Che Guevara

watched what happened, learned, and when the end came, took off for Mexico. There he met and became friends with Fidel Castro. A few years later, Castro was the leader of Cuba, and Guevara his second in command.

When Radio Swan came on the air, Guevara knew what was happening. He had been through it all before.

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TGN Gets Bombed

When CIA planes went on bombing runs in Guatemala, their targets were usually military bases. But sometimes a radio station can be worth an army, so the CIA decided they had to put the government station, Radio Nacional, off the air. Bombs loaded and machine guns ready, a plane took off to do the job. But what happened next might have come out of a Laurel and Hardy movie. Because it wasn't TGW that was bombed and strafed, but a peaceful American missionary station, TGN.

According to a tale told by the pilot and copilot, they lost their bearings, but thought they bombed the right station. TGN chief engineer, Wayne Berger, heard another story. TGW's equipment and transmitters were located right next to a military base. When the plane got there, the pilots saw that the base's anti-aircraft guns were armed and waiting. They decided that bombing TGW wasn't such a good idea after all. So they turned around and bombed and strafed the next station they came to, which just happened to be TGN. After arriving back in Nicaragua, the airmen made up the story about getting lost.

Evidence of the attack was found years later. Wayne Berger began working at TGN in the mid-sixties. One day, while doing routine maintenance work, he noticed a hidden bullet hole on one side of a transformer, without a corresponding hole on the opposite side to show where it came out. Wayne decided to investigate, so he took the transformer apart. Inside was a fifty-caliber machine gun bullet. Upon entering the transformer it apparently ricocheted around inside without damaging a single wire, so that the transformer continued functioning for many years. As for the bullet, Wayne keeps it on his desk, and tells its story when he gets the chance.

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Since the earliest days of aviation, one station has watched over the safety of air traffic over a million square miles of ocean . . .

Gander Aeradio

by Brian Nagel

For the flight crew of an aircraft bound for Europe, checking in with Gander Radio is as normal and automatic a practice as hailing a taxi is in New York City. Gander is, simply put, an integral part of the formula if you are flying over the North Atlantic. For shortwave listeners, hearing communications from Gander is a pretty frequent event, too.

Located in the Canadian Province of Newfoundland, the Gander International Flight Service Station (that's the full name for what most of us probably know simply as "Gander" or "Gander Radio") is operated by the Canadian Ministry of Transport (MOT). In fact, you might say Gander is the crown jewel in the Ministry's collection of such stations since it is by far the largest. (Other MOT outlets which use shortwave frequencies are Cambridge Bay and Iqaluit in the Northwest Territory and Churchill, Manitoba.)

Safe and Expedient

Gander is responsible for providing "safe and expedient" movement of all aircraft within some 1,152,000 square miles of ocean. In order to accomplish this, the Gander communications facility and its staff have to maintain a continuous "guard" or watch on designated ICAO (International Civil Aviation Organization) frequencies.

It must operate a fixed teletype circuit as a part of a worldwide network of such circuits (called Aeronautical Fixed Circuit Network -- AFTN), must exchange messages as required with other such fixed stations within this network, receive and process messages from aircraft on international flights and get these messages passed on, in proper format, over the network.

It must also be able to forward messages to aircraft when received from Air Traffic Control or the main offices of airline companies. It takes more than 50 people, maintaining a round-the-clock operation, in order to accomplish all this.

Gander Oceanic radio operators are responsible for giving you a "safe and expedient" trip across the Atlantic

Early Aviation

Gander dates back to 1935 when it was chosen by the British Air Ministry as the site for an airport for land-based planes. At that time, planes that landed on land (as opposed to flying boats which landed on water) were becoming the predominant type. The "flying boat" base was at Botwood, Newfoundland, and the initial radio communications installation was here too. But it moved to Gander in 1938 when the airport there was completed.

In those days wireless operators handled take off and landing instructions. Air Traffic Control was not the separate entity it is today. All communications were sent in Morse Code.

With the arrival of World War II, responsibilities for radio communications at Gander were shifted to the Atlantic Ferry Organization. Gander's strategic location made it a leaping off point on the air road for planes being ferried from the U.S. to the war in Europe. Later the Royal Air Force Ferry Command (later still, the RAF Transport Command) took control for the rest of the war and all the operators

were made to wear uniforms, even though they weren't part of the military.

Gander's war role wasn't limited strictly to routine air-ground communications, either. The facility played a vital role in the war effort when it intercepted signals from the German Battleship "Bismarck," plotted the ship's course and alerted London. This information was instrumental in the British Navy's ability to locate and sink the German warship.

On another occasion Gander monitors picked up signals from five German U-boats operating in the Gulf of St. Lawrence, but they were powerless to do anything to prevent the sinking of the Caribou by those U-boats in October 1942.

After the war, the Civil Aviation Division of the Newfoundland government took control of Gander's radio operations. When Newfoundland became a Canadian province, Gander came under the jurisdiction of the Canadian Air Transport Division. Responsibility for oceanic flight control was given to Gander in 1950.

Expansion

A new facility to house the radio operations was constructed in 1957. In the 1960s, increased flights brought increased contacts and a need for improved speed and efficiency. New transmitters, receivers, radio teletype, and telephone facilities were brought into use. Computerization arrived in the 1970s, automating many of the data reporting systems. Voice transmissions were converted from AM to single sideband in the 1970s, also.

The facility moved from the old building to a new Air Navigations Service Operations Building on Memorial Drive, Gander, in 1986. The new facility is roomier and offers space for equipment expansion when needed.

Gander on the Air

The North Atlantic (NAT) area for which Gander is responsible is split into Northern, Central, and Southern routes. Four networks or "families" of frequencies are used to communicate with aircraft, based on the route being flown, whether the aircraft is registered west or east of 30°

Table 1
Gander Networks

Family A :
3016, 5598, 8825, 13306, 17946

Family B :
2899, 5616, 8864, 13291, 17946

Family C :
2962, 5649, 8879, 13306, 17946

Family D :
2971, 4675, 8891, 11279, 13291, 17946

West and other factors (see Table 1).

Most other airport radio communications operate within only one family. Gander is a part of all four.

There are, not surprisingly, VHF facilities at Gander as well. In addition to using these for purely local communications they also serve as backup for shortwave communications during times when the latter is unreliable for some reason or other. It is recognized, though, that VHF communications are more limited in distance -- even though the effective distances are much greater from and to aircraft in flight than between two ground sites. Gander uses 126.9 and 127.1 MHz.

Many shortwave listeners will have tuned in the VOLMET broadcasts from Gander Radio. These reports on weather conditions at various airports are broadcast between 20 and 30 minutes past the hour and from 50 minutes past the hour 'til the end of the hour. The forecasts cover such airports as Mirabel and Dorval (Montreal), Toronto, Ottawa, and a number of other Canadian city airports. Frequencies used are 3485, 6604, 10051, and 13270. These are easily heard in North America. Try the lower frequencies at night, higher frequencies during the daytime.

Messages to aircraft are concerned with everything from routine weather data to enroute safety information, dangers to navigation, messages from airline company headquarters, as well as urgent or even distress communications. The airlines pay a fee for this communications service. During 1985 Gander had contact with some 115 thousand individual aircraft which represented about half a million individual radio contacts.

The Gander International Flight Service Station is obviously a very busy place. Shortwave listeners can hear this fact for themselves simply by monitoring all the activity on the Gander airwaves.

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Flight Service Specialists

The people the SWL hears talking to aircraft in flight over Gander Radio are Flight Service Specialists. It takes about 30 weeks to become a qualified Flight Service Specialist in Canada. This involves three phases:

A. Recruitment Training. This is six weeks at a Flight Service Station being oriented in such subjects as communications, Morse Code, typing, meteorology, and air navigation systems.

B. Basic Training. This is a 20 week course given at the Transport Canada Training Institute in Cornwall, Ontario. It provides intensive training in all aspects of FSS knowledge and operations.

C. On-the-Job Training. Once the 20 week course is completed, the candidate spends four to six weeks working at an FSS station but under close supervision of a qualified Flight Service Specialist so as to be sure the candidate has assimilated everything and is able to work unsupervised. At that point, the new FSS person is assigned to a specific FSS station.

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16 Channel • 25 Watt Transceiver • Priority
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Bearcat® 200XLT-T

List price $509.95/**CE price $254.95/SPECIAL**
12-Band, 200 Channel • 800 MHz. Handheld
Search • Limit • Hold • Priority • Lockout
Frequency range: 29-54, 118-174, 406-512, 806-956 MHz. Excludes 823.9875-849.0125 and 868.9875-894.0125 MHz.
The *Bearcat* 200XLT sets a new standard for handheld scanners in performance and dependability. This full featured unit has 200 programmable channels with 10 scanning banks and 12 band coverage. If you want a very similar model without the 800 MHz. band and 100 channels, order the **BC 100XLT-T** for only $189.95. Includes antenna, carrying case with belt loop, ni-cad battery pack, AC adapter and earphone. Order your scanner now.

Bearcat® 800XLT-T

List price $549.95/**CE price $259.95/SPECIAL**
12-Band, 40 Channel • No-crystal scanner
Priority control • Search/Scan • AC/DC
Bands: 29-54, 118-174, 406-512, 806-912 MHz.
The Uniden 800XLT receives 40 channels in two banks. Scans 15 channels per second. Size 9¼" x 4½" x 12½." If you do not need the 800 MHz. band, a similar model called the **BC 210XLT-T** is available for $178.95.

Bearcat® 145XL-T

List price $189.95/**CE price $94.95/SPECIAL**
10-Band, 16 Channel • No-crystal scanner
Priority control • Weather search • AC/DC
Bands: 29-54, 136-174, 406-512 MHz.
The *Bearcat* 145XL is a 16 channel, programmable scanner covering ten frequency bands. The unit features a built-in delay function that adds a three second delay on all channels to prevent missed transmissions. A mobile version called the **BC560XLT-T** featuring priority, weather search, channel lockout and more is available for $94.95. CEI's package price includes mobile mounting bracket and mobile power cord.

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Backlit liquid crystal display • Auto Squelch
RIT • Preprogrammed 10 KHz. Channels
Frequency Coverage: 28.0000 MHz. to 29.6999 MHz.
The *President* HR2510 Mobile 10 Meter Transceiver made by Uniden, has everything you need for amateur radio communications. Up to 25 Watt PEP USB/LSB and 25 Watt CW mode. Noise Blanker. PA mode. Digital VFO. Built-in S/RF/MOD/SWR meter. Channel switch on the microphone, and much more! The HR2510 lets you operate AM, FM, USB, LSB or CW. The digitally synthesized frequency control gives you maximum stability and you may choose either pre-programmed 10 KHz. channel steps, or use the built-in VFO for steps down to 100 Hz. There's also RIT (Receiver Incremental Tuning) to give you perfectly tuned signals. With receive scanning, you can scan 50 channels in any one of four band segments to find out where the action is. Order your HR2510 from CEI today.

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10 Meter Mobile Transceiver • New Features
Delivery for this new product is scheduled for June, 1989.
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BC760XLT
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If you purchase a scanner, CB, radar detector or cordless phone from any store in the U.S. or Canada within the last 30 days, you can get up to three years of extended service contract from Warrantech. This service extension plan begins *after* the manufacturer's warranty expires. Warrantech will perform all necessary labor and will not charge for return shipping. Extended service contracts are not refundable and apply only to the original purchaser. A two year extended contract on a mobile or base scanner is $29.99 and three years is $39.99. For handheld scanners, 2 years is $59.99 and 3 years is $79.99. For radar detectors, two years is $29.99. For CB radios, 2 years is $39.99. For cordless phones, 3 years is $34.99. Order your extended service contract today.

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BC70XLT-T *Bearcat* 20 channel scanner.....$159.95
BC175XLT-T *Bearcat* 16 channel scanner $156.95
R2060-T *Regency* 60 channel scanner.....$149.95
TS2-T *Regency* 75 channel scanner.....$269.95
UC102-T *Regency* VHF 2 ch. 1 Watt transceiver...$114.95
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BP205-T Ni-Cad batt. pack for BC200/BC100XLT .. $49.95
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A60-T Magnet mount mobile scanner antenna.....$35.95
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Building the Ultimate Receiver

Trials and tribulations on the road to a dream!

by Bob Grove

If you're like me, after a few years of going through used receivers and new receivers -- good and bad -- you begin to fantasize about owning the world's finest receiver, a dream receiver with superb selectivity, sensitivity, audio quality and frequency coverage.

It was just such daydreaming in 1984 that led to an earnest effort to design a radio that would have incredible listening power. But how does one go about taking on a project of that magnitude? After all, such a design would have to be innovative and fresh, not a typical off-shore "knock-off" of an existing receiver.

After contacting a number of industry authorities, it became painfully clear that RF (radio frequency) design engineers are hard to find and, when they are found, they are expensive. It was not uncommon to get quotes in the neighborhood of $50-60 per hour for research and development!

But the dream went on. I began to compile lists of desirable features and specifications, finally submitting them to a firm in California which started initial development. Their initial price quotes were attractive and their work was good. A few weeks -- and a few thousand dollars -- later, a basic block diagram was forwarded for my inspection and approval. Attached to it was a tentative cost for development: $150,000!

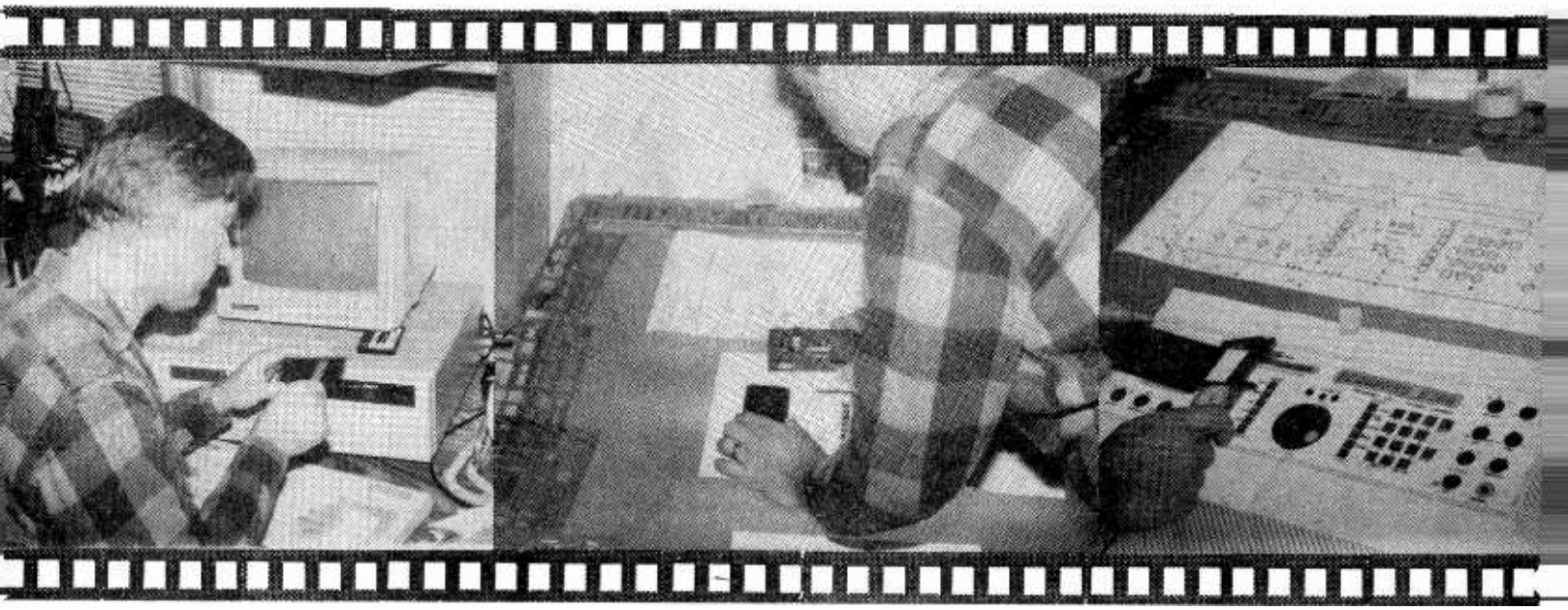
I still remember the nauseous, whirling sensation as I attempted to fully grasp the significance of that figure. Sure, RCA could probably handle such a figure; so could ICOM, Kenwood, Yaesu and the rest. But I could see my home being auctioned off to the highest bidder!

Low key for a while

Clearly, it was time for regrouping. Surely there must be a competent, independent design engineer working out of his basement who doesn't have overhead expenses who would just love to do the job as a challenge. While such individuals do, indeed, exist, many of them are mavericks and prove undependable.

Still smarting, disappointed and somewhat disillusioned, I decided to "put the project on a back burner" for a while. The dream was far from dead, but the cost -- emotional and financial -- was unrealistic at that point.

Then a series of coincidences turned up an experienced, qualified RF design engineer who also knew the radio hobby and whose intuitive skills would prove invaluable. In the meantime,



several off-shore-manufactured receivers emerged with severe shortcomings. Clearly, a better product was needed. Code-named Explorer, the project was reborn.

The art of specmanship

How do you arrive at a list of specifications that will make everyone happy? You can't. No matter what you do to come up with "ideal" specs, they are only ideal for you. For example, international broadcast listeners would like a choice of filter selectivities to combat any adjacent interference: 12, 6 and 4 kilohertz would be nice.

Utilities (two-way communications) listeners are even more adamant in their filter selections: 2.8, 2.4, 2.1 and 1.8 kHz for SSB; 1 kHz for RTTY and FAX; 200, 300 and 500 Hz for CW; 180, 40 and 15 kHz for wide, medium and narrow band FM. Clearly, there is no satisfying some people!

And how about the power source? 120 VAC for US electrical systems or dual 120/240 VAC, 50/60 Hz for domestic and foreign requirements? How about 12 volts DC for mobile applications? And what about power adaptors?

Just how wide a frequency range should the receiver cover? 100 kHz-30 MHz? 30-960 MHz? 100 kHz-1000 MHz? 10 kHz-10 GHz? "DC to daylight" coverage, as wag engineers call enormously-broad frequency capability, is usually impractical and always expensive.

Some specs are easier

Fortunately for the beleagured engineer, some specifications everyone agrees with: high frequency stability, freedom from mechanical or electronic drift; wide dynamic range, permitting weak and strong signals to be handled without desensitization, intermodulation, images or dynamic compression; accurate digital frequency display; and low-distortion audio reproduction.

LET THE GAMES BEGIN

Finally, late in 1987, development began in earnest. Several leading communications receivers were studied to determine their strong points and shortcomings. Initial designs were made and the paper chase began -- no sooner had one idea developed than another overtook it. As one subsystem was conceived, a better approach would bump it.

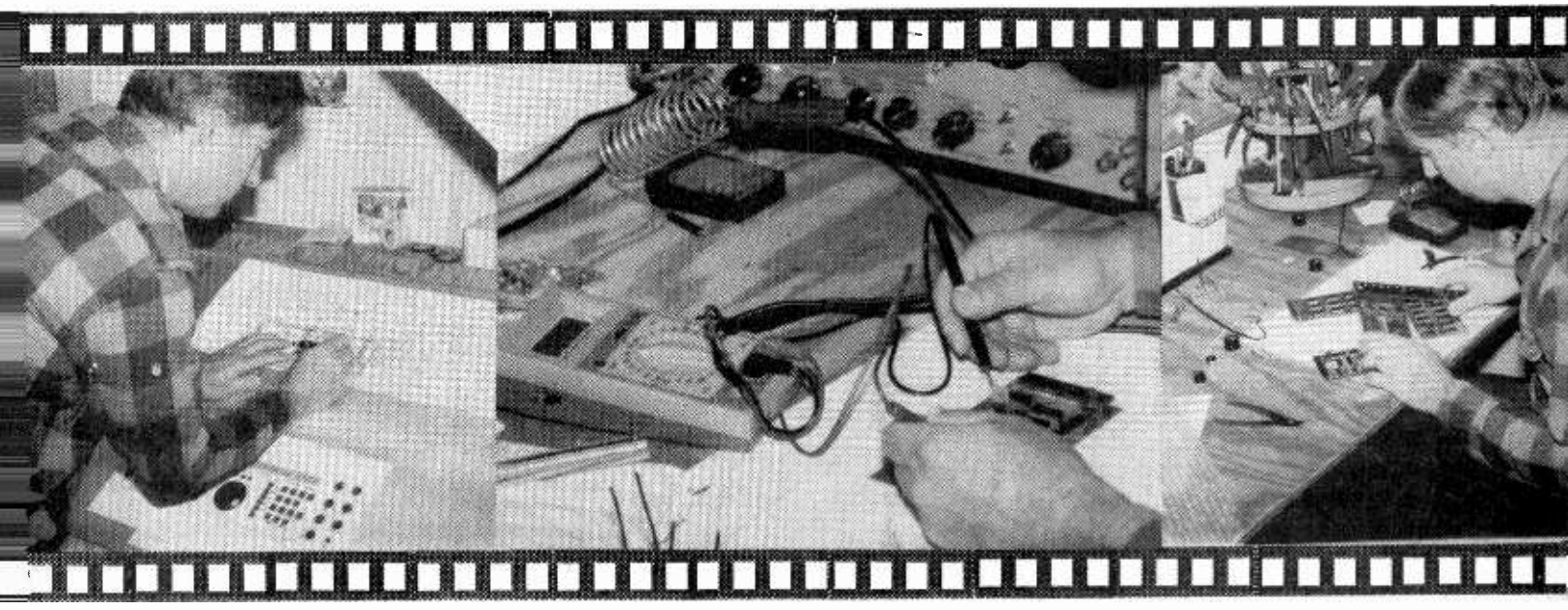
The classic battle between marketing and engineering was on. Salesmen want a receiver with incredible features to sell for peanuts -- and they want it *now!* Engineers know that every "improvement" requires extensive design changes, sets the development program back and costs money. It's an age-old saga.

The Hallmarks: an SDU and wide frequency coverage

The spectrum display unit (SDU) is an awesome intercept tool previously available only on costly commercial, military and government receiving equipment. While conventional scanning and searching circuits laboriously crawl through the spectrum hoping to fall upon an active signal, an SDU visually displays all signals -- simultaneously -- in an entire band. If a new signal pops up, the user quickly tunes it in. He doesn't depend upon chance.

The frequency range of 100 kHz through 1000 MHz -- with no gaps -- covers the vast majority of listening interests. Filter selectivities are expected to be: AM (6 kHz), USB/LSB (2.4 kHz), wideband FM (180 kHz) and narrowband FM (15 kHz). Other signal processing controls allow optimum peaking.

But then the delays came ...



It was originally hoped that the new receiver concept, now designated the SR1000, would be ready to show at the 1988 Dayton Hamvention. But, true to form, more improvements meant inevitable changes -- along with accompanying delays. All that could be shown was an artist's conception and a bunch of prospective brochures -- how embarrassing! And now the 1989 Dayton Hamvention is at hand.

In an industry first, the SR1000 will sport for its SDU, instead of the cumbersome glass cathode ray tube (CRT), a liquid crystal display (LCD)! Making the receiver smaller, lighter in weight and lower in cost, the LCD requires no high voltages, meaning that the SR1000 can operate directly from 12 VDC power as well as from AC mains with an inexpensive power adaptor.

Tired of only 100-300 memory channels? How about 1500?! Channels are selected by direct call-up from a keypad or by sequentially stepping through them with a tuning dial. A scanning module is planned for later.

You say it would be neat to control such a receiver with a computer? The SR1000 has an RS232C port allowing complete computer control of all microprocessor functions.

Coming to grips with costs

The most painful part of merchandising is arriving at a competitive, honest price for a product. While similar surveillance receivers for military, government and commercial interests start at $10,000 and skyrocket from there, those of us with ordinary, flat wallets could never consider such an investment -- regardless of our enthusiasm or the quality of the product.

Early estimates indicated an actual manufacturing cost of around $1600; with the normal 3-5 times markup that manufacturers won't admit to, that could put the suggested retail at a whomping $8000. While such a price is low for the professionals, it is unreachable for most of us hobbyists.

Finally, after considerable soul searching and profit wrenching, it was decided that the receiver would have to sell for under $3000 to make it a reasonable alternative for those listeners who would have to spend that or more for separate pieces of equipment which would only begin to approach the flexibility and performance of the SR1000.

While such a low profit margin would not support the overhead of an international Japanese manufacturer, it does allow a comfortable margin for Grove and our dealers.

But when?

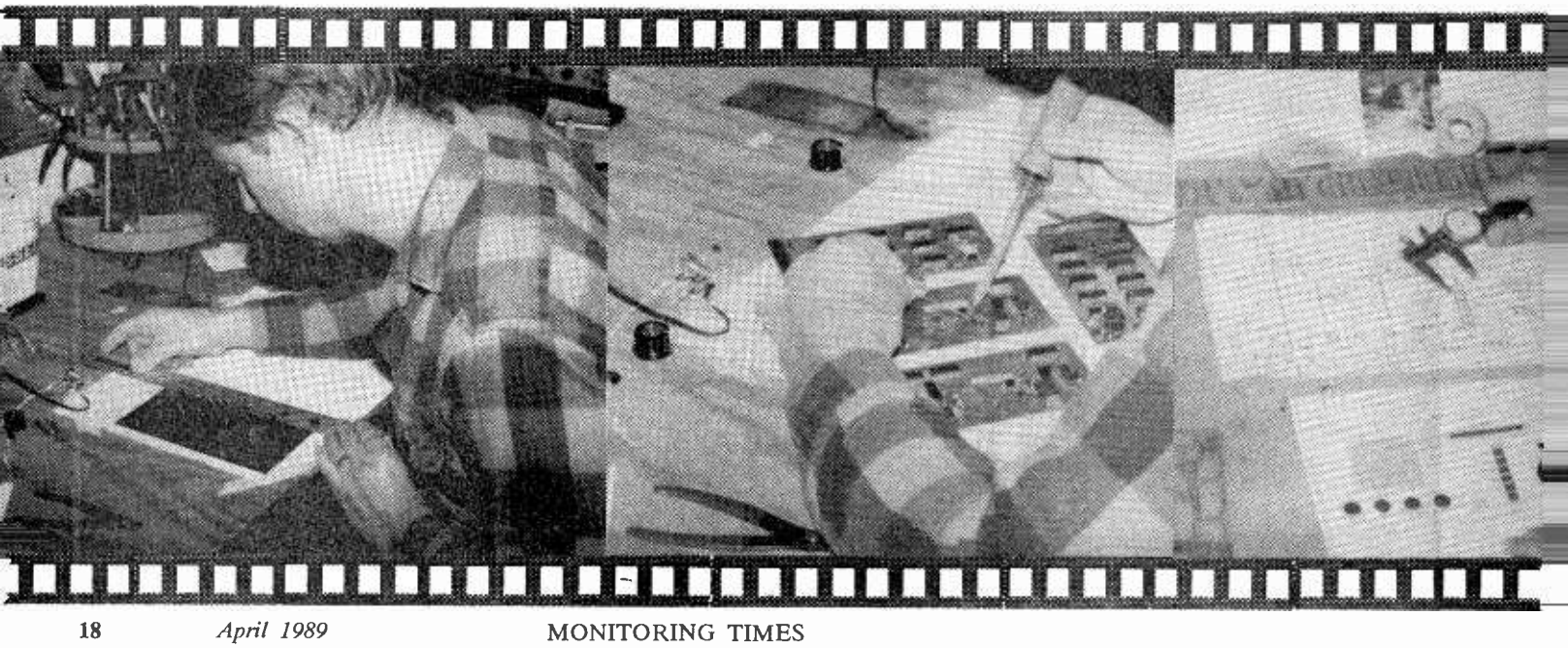
Several steps are necessary between assembly and marketing, not the least of which are field testing of the prototype and FCC certification. Even with perfect results, it is inevitable that something will go wrong, necessitating minor modifications to circuit board layout.

During a recent amateur radio network conference, I was told that the amateur community would be glad to see the SR1000 because it was considered just so much "vaporware", a derogatory term for a proposed product that never sees the light of day.

While the insinuation hurt, it wasn't totally undeserved; the "imminent" arrival of the SR1000 was announced over a year ago. A building has been purchased for the exclusive production of the SR1000 in second quarter, 1989.

For those myriad callers who want the first one, you'll have to wait; that one's MINE!

For additional information on the SR1000 Spectrum Surveillance Receiver send an SASE to Grove Enterprises, P.O. Box 98, Brasstown, NC 28902.



There's More in Malaysia

by Charles Sorrell

You may log the Voice of Malaysia -- not necessarily the easiest task in itself -- and then check the country off your need list, figuring Malaysia no longer holds any DX interest for you. But, really, the fun has only begun! From the standpoint of shortwave broadcast DX, there's a lot more to Malaysia than just hearing the overseas service. Let's take a closer look.

Malaysia was one of the earliest places which man inhabited. Archeologists have found relics that place man's appearance there at least 40 thousand years ago.

The early kingdom of Funan, centered in what today is Cambodia, controlled the area of today's Malay Peninsula during the first few centuries after Christ. By the seventh century, the Sumatra-based Srivijayan Empire was in charge, followed in the thirteenth century by the Majapahit Empire, also based in what today is Indonesia.

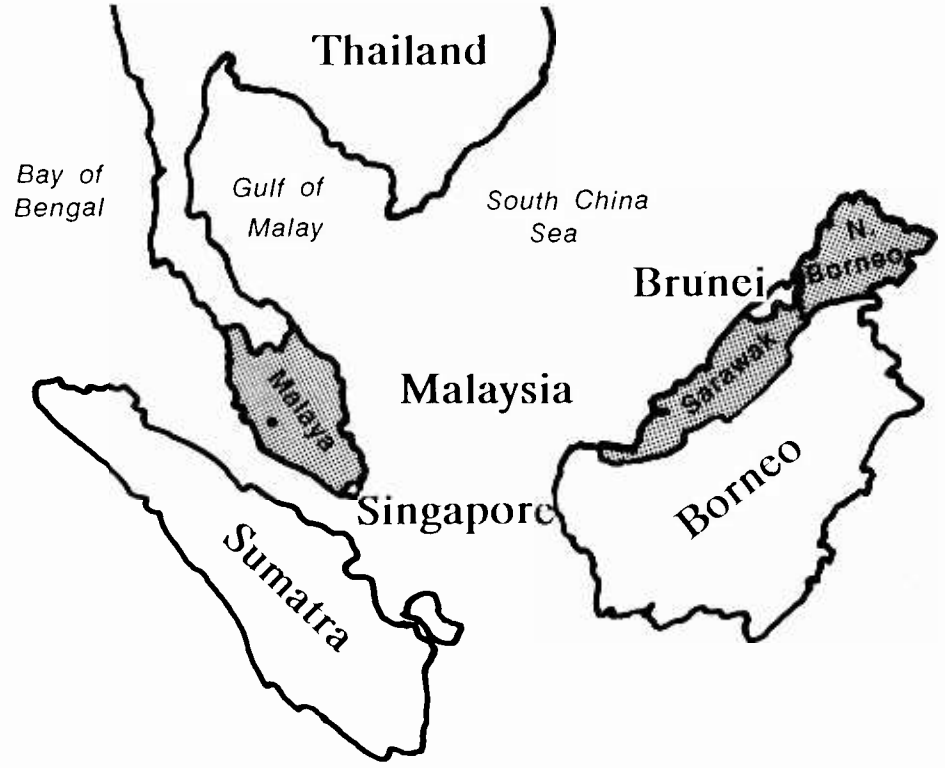
The Portuguese came upon Malaysia in 1509 and by 1511 were dominating the scene. The Dutch took their turn in 1641 and the English in the latter seventeen hundreds. In 1824 the Malay state, known then as Melaka, was ceded to the British and some 50 years later several other independent Malay states joined to form a loose federation with Melaka.

The Japanese had control of Malaysia in 1942-45. After the war there was a brief Malay Union, followed by the Federation of Malaysia which was formed in 1948. Between 1948 and 1960, a state of emergency was in force as the government fought off a communist insurgency. During that period (1957), Malaysia achieved full independence.

For all practical purposes the insurgency was put down, even though echos of it still exist today, including the communist-run clandestine radio station Voice of Malaysian Democracy.

In 1963, Sabah, Sarawak, and Singapore joined the Federation. Singapore, however, soon decided that it had made a mistake and pulled out after just two years and became an independent nation. Malaysia would not be unhappy to have oil-rich Brunei join the federation but Brunei apparently has little interest.

Malaysia today is more or less divided into two parts: West Malaysia (largely the Malay Peninsula) and East Malaysia (largely Sabah and Sarawak). The population, aside from the Malays who are Muslims, is made up of Hindus and Chinese. The Chinese play a very important economic role but see themselves as second class citizens.



The Chinese population served as the source for guerrillas for the communist movement and the government hasn't forgotten that. Now and again there are grumblings on the part of the Chinese population but the government has so far managed to keep the lid on potential trouble.

Malaysia can boast of being the world's largest producer of tin. There's also a lot of rubber and palm oil. English is spoken quite widely, especially in Western Malaysia. The official language, Bahasa Malaysia, is very close to Indonesian and, in fact, the two languages have been using the same spelling system since 1972. If you were DXing then, you remember "Djkarta" becoming "Jakarta" and so on.

Malaysia's capital, Kuala Lumpur (the natives just say "KL" as Californians say "LA" for Los Angeles) has about one million people. The name sounds a lot more romantic in Malay than in English. Kuala Lumpur sits at the junction of the Klang and Gombak Rivers and translates as "muddy river mouth."

KL is a commercial center but, even given its smaller size, it is no match for Singapore -- much less Hong Kong -- as a cosmopolitan center. Despite its size, there's less night life and things to do than one might expect.

As noted, there is rather more to shortwave from Malaysia than just the foreign service, but let's use that as a starting point. "Suara Malaysia" or the Voice of Malaysia isn't all that easy to hear outside Western North America. The service is listed to carry Arabic, Tagalog, Malaysian, Indonesian, Mandarin, Burmese, Thai, and English at various times of the day and night.

6.100, 6.175, 9.750, 11.885, and 15.195 carry the foreign service with the English segment scheduled from 0555 to 0825 on 6.175, 9.750, and 15.295. Not the most opportune listening times for most of us here.

Other language transmissions on 15.295

run to 1230 UTC and then pick up again at 1530 so there are opportunities to log it on this frequency in Malay or Chinese. 15.295 is listed for 500 kW while the other overseas services frequencies are 100 kW.

The transmitters are at Kajang, a small town about 15 miles south of KL. English language reception reports are okay and can be sent to Overseas Service, Voice of Malaysia, P.O. Box 11272, Kuala Lumpur.

Some of the various domestic services of Radio Television Malaysia are also carried on shortwave. The Tamil service is aired for much of the day and night over a 50 kW transmitter on 4850 and this can sometimes be heard during the early morning hours, local time, here. The Chinese service, with 100 kW on 6025 airs for much of the day, too (with an hour's break here and there), but this seldom shows in logs by U.S. listeners. The Bhasa Malaysia service runs 24 hours per day on 5965 and 9515, both 100 kW, but are not often reported, probably due to the fact that these frequencies are in almost constant use by other broadcasters.

There is more to shortwave in Malaysia than just the foreign service.

The domestic English language service (the Blue Network) is aired on a 100 kW transmitter on 7295 and this one is heard fairly often by North American DXers during the morning hours when 41 meters is still open to Asia. A recent schedule change now has this one in operation Monday through Thursday at 2200-0100, 0500-0600, and 0900-1600, Fridays run from 2200-1600 and 0900-1600. Saturdays and Sundays are straight from 2200-1600.

On days when this service is not on between 0100-0500 and 0600-0900, the Educational Radio service fills these time slots with programs for schools, mostly in Malay. 9965 carries Bhasa Malaysia, Chinese, and English services at various times of the day.

Over in Eastern Malaysia there are more broadcasters to chase. Kota Kinabalu, capital of Sabah (once British North Borneo) is some 1,000 km from peninsular Malaysia and separated from it by the South China Sea. Things are a lot wilder here than in Western Malaysia and there's still a lot of room for development. Sabah has southeast Malaysia's tallest mountain, Mt. Kinabalu, which is said to be the sacred resting place of the Dusar peoples. Kinabalu rises to nearly 13,500 feet above the steaming jungles.

Radio Television Malaysia at Kota Kinabalu has two shortwave frequencies in operation, both of which are considerably more difficult to log than broadcasts from the western part of the country. Two 10 kW transmitters are in operation, one on 4970 carrying Bhasa Malaysia from 2130-1600 (so North American DXers have a shot at it during the morning when 60 meters is open to Asia). 5980 is used for English and local languages during the same hours but is much harder to hear. The Sabah transmitters are actually about 22 miles north of Kota Kinabalu at a small market town called Tuaran.

Reception reports go to Radio Television Malaysia, 88614 Kota Kinabalu, Sabah, Malaysia.

The state of Sarawak, too, is a long way from full development and, if anything, it's even wilder than Sabah. Swamps, rivers, jungles, and mountains make for rugged scenery and terrain and hide a lot of oil potential.

Sarawak's shortwave activity is more extensive than Sabah's and comes from three different sites.

Radio Television Malaysia-Sarawak has several networks which air programs on various shortwave frequencies. The Red Network, programming in English and Chinese, uses 4950 and 7160 from 2200-1600. The Yellow Network (in Bhasa Malaysia and the local Melanau language) runs from 2300-1600 on 4835 and 7145.

The Blue Network, with programs in the Bidayuh language, airs from 2200-1500 on 5030. The Green Network (Iban and other local languages) is on 4.895, 6.050, 6.060, and 7.270 from 2200-1500. All of these transmitters are rated at 10 kW. 4835, 4895, 4950, 5030, 7145, 7160, and 7270 all come from Kuching.

Sibu, a timber and commercial center at the head of the Rajan River delta uses 6.050. Miri, in the northeast, is on 6060. Both of these harder to hear outlets have been heard and verified by a number of North American DXers, though it takes the right propagation conditions and a careful search to find a clear window through the interference on these crowded frequencies at the right time of day.

Kuching will confirm correct reports on all three sights. The address is Broadcasting House, Jalan Satok, Kuching, Sarawak, Malaysia. Miri and Sibu will reply direct and may be addressed in care of the Broadcasting House in Sibu (or Miri), Sarawak, Malaysia.

By some DX record-keeping methods the western part of Malaysia, Sarawak, and Sabah all count as different radio countries and all the transmitter sites count as separate stations -- even more if you count the various program or networks and frequency combinations as some do.

But whatever way you slice it, there's a lot more to the Malaysian DXing pie than a casual look reveals.

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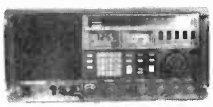

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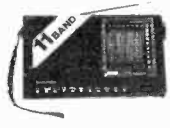

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The BBC -- Revisited

by Henri Walser

Dear Sir:

Your feature about the BBC in the December issue of *Monitoring Times* was of great interest to me. My acquaintance with the BBC and especially their excellent news services started during World War II. Today I am more interested in utility stations due to my professional background. But whenever I want to hear a balanced view of world events, though, I still tune in to the BBC news.

My memories of the war days might interest you and maybe also the readers of the *MT*.

When the German attack on Poland in September 39 started the war, I was 11 years old and living in the city of Basel in Switzerland. This industrial town is located directly at the "three countries corner" where the borders of France, Germany, and Switzerland meet.

Very soon the war and its implications and threats blocked out all other thoughts and interests. For us, the letters "RAF" did not stand for a ruthless terrorist organization as they do today, but for "Royal Air Force." After the collapse of France, this small group of valiant men seemed to be the only ones still fighting against a mighty Germany. England seemed to stand completely alone. I remember this as a dark and seemingly endless period.

Another kind of symbolic magic seemed to be attached to the letters "BBC." Many people in Switzerland listened to the broadcasts from London for reliable news of the war events. Of course, we realized that the BBC news was censored to a certain extent as well, mainly by omitting. In such a conflict, nobody can afford to be completely open. But in the case of the British, what they said in their broadcasts was based on facts, even if it was sometimes painful. Also, one soon learned to read between the lines.

Courtesy BBC

I remember walking home at noon or in the evening in summer, when from every open window I could hear the familiar, booming, "V" identification symbol preceding every news broadcast from the BBC. I don't know how they did it but I can still hear it in my mind and it sounded like big kettle drums. At the same time, a few miles away across the border in Germany, listening to any foreign radio station was considered high treason and was punishable by death.

Switzerland, during the war, was in a peculiar and unpleasant situation. After the initial German victories, we were completely surrounded by the Axis-powers and isolated from the rest of the world. In order to survive, the Swiss made a tremendous effort to use every square inch of soil for food production. However, this did not help much. We were still dependent on the import of millions of tons of foodstuff and other products. Switzerland has no raw material resources to speak of and so coal, iron, steel, etc. were also getting scarce All were high on the list of urgently needed commodities. But, how to get them?

Practically the whole Swiss Army was guarding the borders to prevent the intrusion of foreign troops. Of course, everybody realized that only one power was in a position and capable of doing so. It was to this same power -- Nazi Germany -- that we had to apply for permission to have our imports transported through German held or occupied territory. Naturally we had to make concessions. To cite

only one example: even though we were a neutral state, we were forced to carry out a complete blackout every night in order to make navigation a little more difficult for Allied aircraft.

But despite the barely managed imports -- and the founding of our own oceangoing merchant fleet -- everything, and not only food, became scarce and severe rationing started very early. I remember very vividly that the ration for eggs was one egg per person per month. Bread was stretched regularly by the bakers with potatoes to make up for the insufficient amount of wheat available.

During that time, listening to the BBC on medium waves, the standard practice so far, became more difficult every day. Germany made a huge and mostly successful effort to jam the broadcasts from London, especially, of course, the German language ones. The BBC used every trick in the book, like shifting frequencies around, but finally changed more and more to the use of shortwave.

Now most of the radio sets in Switzerland covered medium and longwave only. Shortwave radios were expensive and rare. The Swiss radio manufacturers realized the potential and came up with a nice idea. They developed and sold shortwave converters which used the existing mediumwave receiver as an if/af amplifier.

For us, even this was a solution we could not afford. From a very early time, however, I had been fascinated by radio. My elder brother and his friend were already building small sets and were teaching me the rudimentaries of circuitry and construction techniques. I decided to build a simple shortwave receiver for better reception of the BBC news bulletins.

The biggest obstacle for realizing this project was, of course, the scarcity of parts. Swiss radio makers used mostly American tubes. Domestic manufacture concentrated on special and big transmitting tubes. But even secondhand receiving tubes were hard to come by and expensive.

But somehow a simple superhet shortwave receiver was taking shape and worked. This might have contributed to my early determination to make radio my career. I became a professional ship's radio officer (1st class license) and sailed all over the world for the better part of 14 years on eight different ships.

I still have a valid Maritime Radio Operator's license. Then I went into Avionics working in Europe, USA, and New Zealand and finally I turned to computer technology.

Listening to radio during World War II was exciting and sometimes puzzling. The strange story of the "Soldatensender Calais" (approximate translation: "Soldiers radio in Calais"), among others, has never been told as far as I know. The transmitter operating during the closing years of the war was extremely popular, not only with the members of the German army. This was mainly due to its use of American-style dance music and the unusual and ironic presentation of news items otherwise suppressed in the German media.

Even though it sounded perfectly like a German station at the first moment, it was certainly not located at Calais, and most probably operated by the British across the channel.

Strangely enough, I still have to listen to the BBC on shortwave even today. Not because of any enemy jamming, though, but because of the tremendous man-made electrical noise in our urban areas which make long and medium wave reception difficult.

This is, of course, caused by TV receivers, TV distribution systems, computer systems, all kinds of electronic gadgets, electrical appliances, and countless other sources. At least in this respect we were better off 50 years ago!

♣

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. 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
Box 1684 - MT
Enid, OK 73702

ALASKA KNLS has added three languages: Cantonese, Vietnamese, Filipino (Radio Netherlands *Media Network*).

ALBANIA Radio Tirana seems to have bowed to pressure from hams to drop 7065 kHz, formerly used to North America. One replacement may be 6085 at 2330 UTC, a bad choice mixed with West Germany (William Westenhaver, PQ, RCI *SWL Digest*). Also noted in English at 0330 on new 11825.25 and 9757.75 (Ernie Behr, Ontario, *SWLD*).

ANDAMAN ISLANDS All India Radio started testing a 10 kilowatt transmitter here on 4760 early mornings and evenings, 7180 local daytime, with home service programs (*RNMN*).

ANGOLA Updating last month: Radio Carina del Sur, Lubango, is now heard daily on 9565 at 1700-1800, Sunday 0700-0800, though irregular. Their Spanish program for Cubans is very polished (Richard Ginbey, RSA, *RNMN*).

AUSTRALIA Radio Australia has a new nightly program, *Pacific Beat*, at 0500-0900 (Radio Australia *Communicator*). The Royal Australian Navy timesignal station (not to be confused with VNG), on 6449.5 and 12984 USB, since January 18 has been transmitting from Humpty-Doo, near Darwin, instead of Belconnen, near Canberra (Commander Patricia Downs, RA *Communicator*).

AUSTRIA From early April, Radio Austria International is relayed by RCI, Sackville, NB at 0500-0600 on 6015 (*RNMN*). If it weren't so late, the relay would also be useful in the central time zone.

BRAZIL Because of the expense, Radio Tamandare has closed shortwave and turned in its license. 1989 holidays in Brazil, which may influence transmissions and programming: March 24, April 21, May 25, October 12, November 2, November 15, December 25 (Marzio Vizzoni, *Play DX*).

CANADA RCI starts relays via China in April, including Japanese from Xi'an on 9715 and 11795 at 1330-1400. (Japan BCL Federation, NHK *DX Corner*). From April 3, RCI relays via Austria to the Mideast will be at 0300-0500 in English and French, frequencies to be announced; including *SWL Digest*, apparently the first airing of the program during the first hour UTC Saturdays (Friday night if audible in North America) (William Westenhaver, *World of Radio*).

CHINA Yet another side to the mushrooming relay-swap business: from April, Radio Beijing via RCI Sackville, at 0300 on 11845 to South America, 0400 to North America on 5960 (*RNMN*).

COSTA RICA Radio for Peace International has added a second, stronger transmitter, allowing two frequencies to be used at once. Experiments led to any pair of the following three at any particular time: 7375, 13663, 21560. Check Monday-Friday 1400-1800, 2100-2400, Tuesday-Saturday 0100-0400, Saturday and Sunday 1800-2400. Among the times for our *World of Radio* are: Tuesday 1700, 2300, Wednesday 0300, Thursday 1700, Friday 2100, Saturday 0100, 1800, 2100, Sunday 0000, 1800, 2100, very approximately. Tests on a 6 MHz frequency and 25945 were also planned.

CHILE The Pinochet government plans to privatize its radio and television stations, that is, turn them over to safely conservative hands, by December. This includes Radio Nacional on 9550 and 15140 (Don Moore, *WOR*).

ECUADOR HCJB's *DX Partyline* has been shifted from 0230 to 0200 UTC Sundays and Tuesdays, and so has *Ham Radio Today* on Thursdays (William Westenhaver, *WOR* and *SWLD*).

EQUATORIAL GUINEA One suspects Radio Africa just jumbles its digits, but after a few months on 9851.7, it switched to 9582.7, in English, religion from 2000 to 2300 on Sundays, until about 2200 other days. (Ernie Behr, Radio Nederland *Radio Enlace*).

GERMANY, EAST From April, Radio Berlin International begins issuing a new series of twelve QSLs picturing vintage German radio receivers, one per month, at least to RBI DX Club members (William Westenhaver, *The DX Spread*).

GERMANY, WEST *Stadtbummel*, the two-monthly German language program from Deutsche Welle "giving away a city," that is, a free flight and vacation to somewhere in Germany, and 99 lesser prizes, airs this year on the following Sundays: March 26 from Konigstein/Taunus; May 28 from Leer/Ostfriesland; July 23 from Bonn on its 2000th anniversary; September 29 from Duisburg; November 26 from Hansestadt Stade (William Westenhaver). It's a sesquihour from 0630 UTC, with a break for news on the hour, repeated every four hours.

GUAM Another time for *DX Asiawaves*, from KSDA is Monday 1029 on 13720 (*Australian DX News*). Don't you believe European stations which pronounce this island GHEEW-uhm.

INDONESIA RRI Jember says they've dropped shortwave, so if you have an outstanding reception report, now is the time for a follow-up (Gordon Darling, Papua New Guinea, *Oz-DX*).

ITALY Marconi Radio International, from the south, planned to test Saturdays and Sundays from 0800 to 1300 on 11390 or 11380 kHz with 100 watts (Dario Monferini, *Play-DX*).

JORDAN Amman accepts QSL reports by phone at 962-677-4111 (Don Jensen, RCI *SWLD*). English before 1400 or so has been on 11955 instead of 9560. Arabic on 11810 puts spurs on 11645 and 11975 at 2130. (Bob Padula, Australia, *WOR*).

KOREA, NORTH KCBS was heard at 0040 on 25600 and 19200 kHz, the 4th and 3rd harmonics of 6400 (Ed LaCrosse, CA, RCI *SWLD*). And the 11740.2 transmitter in Spanish at 20, German at 21, puts spurs on 11716.2 and 11763.8 (Henrik Klemetz, Sweden, *SWLD*).

MARSHALL ISLANDS WSZO is off the air because they need a new balun for their log-periodic antenna (Bob Horvitz, Washington, via Westenhaver).

MONGOLIA A printed schedule now spells it Radio Ulaanbaatar; English expanded to daily for half an hour: 0910 on 12015, 21770; 1200 on 12015, 9615; 1445 on 15305, 9575; 1940 on 11870, 9645, none of them beamed to North America. French:

Monday/Tuesday/Thursday/Friday 1720-1910 on 11870 and 9985 to Europe; 2015-2045 on 11870 and 9645 to Europe and Africa (via Bob Brown, PA, *SWLD*). French actually heard at 1720-1750, repeated at 1755-1825 on 11820, 9985; and from 1840 on 9985 only (Martien Groot, Netherlands, via Finn Krone, *RNMN*). A new Japanese service has bumped English at 12 on Tuesday and Friday (NHK *DX Corner*).

NAMIBIA (non) Voice of Namibia, clandestine from Lubango, Angola, has two new frequencies: 5995 at 0400-0600 (sometimes to 0800), and 4715 at 1800-2000 (Richard Ginbey, RSA, *RNMN*).

NETHERLANDS Following up last month: Radio Netherlands retimes its broadcasts to the Americas from the last Sunday in March: English at 0030 to the east coast, instead of 0230, on 15315 and 6165 Bonaire, 6020 Flevo; 0330 ex-0530 to the west, on 9590, 6165 (William Westenhaver, PQ, *WOR*). And Spanish is at 0230 on 6020, 9590, 6165, 15560 (*Radio-Enlace*). That leaves 0530 for Dutch.

NETHERLANDS ANTILLES TWR has a new DX program, *Bonaire Wavelengths*, produced by Chuck Roswell, for 10 minutes, Saturday 1145 on 11815, 15345; UTC Sunday 0330 on 11930, 9535. Some features were: the Divi-Divi ham net, interviewing a ship radio officer, broadcasting on Aruba, and what 23 percent of TWR's QSL-requesters are doing wrong in not qualifying (for instance, minimum 15 minutes covered, maximum 50 kHz frequency error, no tapes) (via Ken MacHarg, Sheldon Harvey, Bill Dvorak, *WOR* and *SWLD*).

NORWAY Radio Norway planned to make much more use of 25730 on the 11-meter band this spring, starting at 0600-0645 UTC by longpath to western North America! Then to various other targets at 10, 11, 12, 14, 16, 18 (via Bill Dvorak, Kraig Krist, *WOR*).

PALESTINE (non) *Idha'at ul-Filistin* is now carried by Cairo on shortwave, 11980 at 0600 (Ernie Behr, Kenora, Ontario, RCI *SWLD*).

PERU Inflation here topped 2000 percent in 1988 says the *Latin American Weekly Report*, and predictions are for as much as 30,000 percent in 1989. This could lead to less shortwave activity and fewer replies to listeners abroad (Don Moore, OH, *WOR*). However, dollars are now bought and sold legally; quote "Resolucion Cambiaria No. 046-88-EG/90" when you stuff the cash into your reception report (Richard Stoller, Colombia, *WOR*). The inflation has led to cutbacks in use of phones and broadcasting hours; for example, Radio Loreto here in Iquitos, used to be 24 hours, but is now only 1000-0004 (Mery Blas, *Play-DX*).

PORTUGAL English features after the news from Radio Portugal, 0230-0300 UTC days on 9600, 9680, 9705, 11840: Tuesday and Thursday, *Sun and Sea*; Wednesday, *Our Choice of Music*; Friday, *Cultural and Current Events*; Saturday, *Mailbag*, alternating with *DX* or *Philately* (via Ken MacHarg, *WOR*). 9600 is a powerhouse here. (Michael Davis, Nassau, Bahamas)

SOUTH AFRICA A sudden drop in strength from Radio RSA at 1400-1600 on 25790 was not due to propagation, but a beamchange from North America to Europe, while 21535 was switched our way -- poor due to adjacent interference on both sides (William Westenhaver, PQ, *WOR*. And the tentative March-April schedule showed 25790 and 17755 to eastern Europe, Mideast; 21590 to West Africa, West Europe; 21670 to North America; 11925 to southern Africa.

SPAIN After years of comment, both in English and Spanish speaking DX circles, on how illogical Spanish Foreigh Radio or Radio Exterior de Espana are, the service has been renamed "Spanish National Radio, External Service" (*RNMN*). Why on earth don't they just call it Radio Spain International???

SUDAN Some DX editors have been extremely reluctant to accept National Unity Radio as a non-clandestine. Will this convince them? The English segment, now at 1445-1500 on 9435, gives an address of P.O. Box 15, Khartoum (via Kirk Allen, OK, *Fine Tuning*).

SWAZILAND The Swazi Radio service in Portuguese, Radio Paralelo Vinte-sete, has been testing 100 kilowatts on 9750 at 0700-0900 (Richard Ginbey, RSA, *RNMN*).

TAIWAN We heard Voice of Free China announce they will have a joint venture with C-SPAN, making it available to cable subscribers. (Who needs WYFR?)

USA Though we knew a construction permit was on record, it came as a surprise when a new shortwave station began testing in January: KJES, Missionary Radio Evangelism, from The Lord's Ranch, near Vado, New Mexico, which is just outside El Paso, Texas. The tests consisted of an adult shouting commandments over and over, and a chorus of children repeating them, interspersed with IDs; it sounded like a cult, but fortunately, "You shall not kill" was prominently featured. The broadcasts were only occasional, with a five kilowatt transmitter, which will drive a 50 kilowatt unit, the FCC minimum, when regular broadcasts begin in mid-April. Another transmitter is to be added soon.

Ham station W5MQA is on the site, to get reception feedback direct from China and elsewhere. Listeners were invited to call 915-533-2911 to set up a test monitoring schedule individually. Frequencies actually heard were 11730 at 2016-2100; 15140 at 1515-1800; 17830 at 2300-0100. Also mentioned were 6070, 6095, 9665, 11755 (Bruce MacGibbon, OR; George Thurman, IL; Ed LaCrosse, CA; Steve Kremer, MN; *DX Spread*, *WOR*, *SWLD*, *RNMN*).

A schedule printed last summer, but recently sent out, still shows WINB, Red Lion, PA, carrying "Traditional Latin Mass," Sundays 1700 on 15295, 2200 on 15185, to Europe (Ken MacHarg, *WOR*).

As a result of outages last August-September, WWV has installed new equipment for voice announcements, including propagation information at :18 past the hour; and plans to go to a synthesized voice, with incoming information fed by computer (Roger E. Beehler, WWV, via Zack Schindler, MI, *WOR*).

VENEZUELA On a DXpedition at a rural location in Ontario, harmonics from here became audible: Radio Carupano on 2220, two times 1110, from 2220 to 0333 UTC; and then another one on 2540 until closing with the Venezuelan anthem at 0457 (Mike Bolitho, *DX Ontario*).

Keep up with all the latest DX and station news by listening to World of Radio every week, scheduled on WRNO Worldwide, New Orleans, Thursdays at 10:30 a.m. (sometimes) on 15420, 6 p.m. on 7355, Fridays 10 p.m. on 6185, Saturdays 6:30 p.m. on 7355, Sundays 3:30 p.m. on 15420; times are CST/CDT; from April some frequencies may change; also check 13760. And see COSTA RICA above.

Review of International Broadcasting and *DX Listening Digest* bring you lots more information in print; samples are $2 each, 10-issue subscriptions $21, or both for $40, in North America; 7 IRCs or US$3 each for sample by overseas airmail, US funds on a US bank, from Glenn Hauser, Box 1684-MT, Enid, OK 73702, USA.

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.

0020 UTC on 9942
Clandestine: La Voz del CID. Spanish. Editorial comments on Cubans in Angola. Station ID as "La Voz de la Resistencia," and "Radio Camilo Ciefuegos, La Cadena Radial La Voz del CID." Latin musical variety of cumbias and salsas. (Harold Frodge, Midland, MI)

0029 UTC on 9965
Clandestine: Radio Caiman. Spanish. Lady announcer with station KID at 0031 UTC, and political commentary. (Harold Frodge, Midland, MI)

0050 UTC on 9875
Austria: Radio Austria International. Sports 88 Review followed by an editorial on Austrian traditions among men. Multilingual IDs and "Blue Danube" interval signal. Time tones to German programming at 0100 UTC. (Robert Hurley, Baltimore, MD) Monitored on 21695 kHz at 1300 UTC. (Mark Swarbrick, Thorndale, PA)

0120 UTC on 21740
Australia: Radio Australia. Horse racing results heard on parallel frequencies 17795, 17715, and 15395 kHz. Sports report with interviews. Signal fade out by 0140 UTC. (Larry Van Horn, Gretna, LA) Monitored on 15140 kHz at 1500 UTC. (Robert Pietraszek, Turners Falls, MA) *Special thanks also to Leslie Edwards!-ed.*

0125 UTC on 7355
United States: WRNO. Music from group Journey and Elton John. Sports promotional for upcoming LSU basketball game. Contemporary album rock selections and "Rock of New Orleans" ID, to ABC newscast. (Loyd Van Horn, Gretna, LA)

0140 UTC on 4810
Galapagos Islands: La Voz de Galapagos. Spanish. Latin pop vocals to 0155 ID break. Brief mention of "San Cristobal" heard amid a very poor signal quality -- making this one a tough one! Signal dropped out at 0200 UTC for presumed sign-off. (Rod Pearson, St. Augustine, FL)

0159 UTC on 6691.2
Peru: Radio Cutervo. Spanish. Latin solo ballad by lady singer. Clear "Radio Cutervo" ID with frequency at 0200 UTC. Easy-listening Latin tunes with announcer introductions. Echo effect ads, time checks, and Spanish ballads. Rechecked for station at 0300 UTC with ID in progress. Frequency/meter band quote and sign-off Peruvian anthem.

0207 UTC on 9755
Canada: Radio Canada International. Report on the latest escapades of Jim and Tammy Fae. As It Happens show with a Canadian energy report. (Rod Pearson, St. Augustine, FL)

0235 UTC on 9695
Sweden: Radio Sweden. Discussion on Swedish/Soviet history and bilateral association. Continued feature on personal alcohol consumption among Swedes. (Mark Seiden, Coral Gables, FL)

0235 UTC on 11745
Brazil: Radio Bras. Lively Brazilian pop music show. Announcer remarks on listener's letters. Closing station ID, program announcements, and frequency schedules. Sign-off at 0250 UTC. (Rod Pearson, St. Augustine, FL) (Leslie Edwards, Doylestown, PA)

0240 UTC on 9475
Egypt: Radio Cairo. Exotic Egyptian instrumentals. Cairo Today program suffering from poor audio quality. Station ID and Listeners' Letters" show. Parallel frequency 9675 kHz audible. (Frank Hillton, Charleston, SC) Monitored on 21465 kHz at 1300 UTC. (Mark Swarbrick, Thorndale, PA)

0245 UTC on 11760
South Africa: Radio RSA. Discussion on restoration of Persian carpets, by South African craftsman. Frequency/meter band schedule and interesting report from RSA correspondent's visit to Jordan. (John Bougerois, Thibodaux, LA) Monitored at 1300-1600 UTC on 25790 kHz with great Blues music. (Mark Swarbrick, Thorndale, PA)

0246 UTC on 3248
Honduras: Radio Luz y Vida. Spanish. Easy-listening and religious music program, to station ID at 0300 UTC. (Harold Frodge, Midland, MI)

0250 UTC on 3955
South Africa: Radio Orion. Afrikaans. Accordian music, bird call and ID at 0255 UTC. Afrikaans newscast to English news at 0300 UTC. (Mark Seiden, Coral Gables, FL)

0250 UTC on 6140
Cuba: Radio Havana. Jazz selections to 0257 UTC. Station ID with comments and address for QSLs. Station interval signal and international news report. Parallel frequency 9655 kHz audible with fair signal quality. (John Bougerois, Thibodaux, LA)

0300 UTC on 5985
Taiwan via WYFR: Voice of Free China. International newscast, Asian music, and editorial comments on improving foreign relations. (Kenneth MacHarg, Jeffersonville, IN)

0300 UTC on 9535
Bonaire: Trans World Radio. Station interval signal and ID. Religious text on "The Name of Jesus," and choral selections from the Lutheran Hour choir. (Frank Hillton, Charleston, SC) Monitored 1130-1200 UTC on 11815 kHz. (Kenneth MacHarg, Jeffersonville, IN)

0304 UTC on 9800
France: Radio France International. French/English. International news topics and French pop vocals. English service commencing at 0313 UTC. Station ID, headline topics to world news in detail. Audible on parallel frequencies 9550 (fair), 9790, and 11670 kHz. (Frank Hillton, Charleston, SC)

0305 UTC on 4880
South Africa: Radio Five. Top 40 pop music and local news bits. Commercials for Jo'Burg merchants and weather reports. (Mark Seiden, Coral Gables, FL)

0310 UTC on 3300
Guatemala: Radio Cultural. Religious discussion on the eleventh chapter of Genesis. (Mark Seiden, Coral Gables, FL)

0310 UTC on 9545
Germany (FGR): Deutsche Welle. Evening program schedule and German national news with correspondent reports. Political editorial on United States political scene. Audible on parallel frequency 6085 kHz, with fair reception. (Rod Pearson, St. Augustine, FL)

0315 UTC on 3388
Mozambique: Radio Mozambique. Portuguese/African vernaculars. Native African music with vocals, and drum solos. Announcer with local interest reports and station ID. Continued African music with signal deteriorating rapidly!

0315 UTC on 3255
Lesotho: BBC relay. Station ID at tune-in followed by interesting discussion on Lawrence of Arabia. (Cliff Goodlet, Chattanooga, TN)

0335 UTC on 4790
Peru: Radio Atlantida. Spanish. Continuous talk to station ID. Latin music, presumed Venezuelan national anthem and 0400 UTC sign-off. (Frank Mierzwinski, Mt. Penn, PA)

0352 UTC on 4840
Venezuela: Radio Valera. Spanish. Latin pop vocals with announcer's music titles. Station ID as "Esta es Radio Valera" with frequency and city location. Choral national anthem to 0357 UTC sign-off. (Frank Hillton, Charleston, SC)

0355 UTC on 4850
Venezuela: Radio Capital. Spanish. American contemporary tunes. (Harold Frodge, Midland, MI) Audible to 0500 UTC with "Capital" IDs, local merchant ands, and Top 40 music format. (John Bougerois, Thibodaux, LA)

0402 UTC on 4865
Colombia: La Voz del Cinaruco. Spanish. Brassy Colombian instrumentals, and occasional ID/announcement breaks. Latin pops suffering from occasional distorted audio. Local time check for Arauca and Caracol network ID. (Frank Hillton, Charleston, SC) Station IDs mixed with rhumbas from 0459-0508 UTC. (Kenneth MacHarg, Jeffersonville, IN)

0422 UTC on 4895
Colombia: La Voz del Rio Arauca. Spanish. Echo effect for ID heard at tune-in. Local time check to Latin pop vocals. Music program monitored from 0210-0230 UTC. (Kenneth MacHarg, Jeffersonville, IN)

0427 UTC on 5045
Brazil: Radio Cultura do Para. Portuguese. Upbeat female DJ, presents easy-listening Portuguese vocals and lengthy station ID at 0427 UTC. Fair signal, no fading present. (Harold Frodge, Midland, MI)

0432 UTC on 4815
Burkina Faso: RTV Burkina African vernaculars. Native African music to instrumentals and program/station announcements. (Harold Frodge, Midland, MI)

0433 UTC on 6240
Pirate: Falling Star Radio. Pop music variety and station ID. Donation request to the cause of free radio, address given as P.O. Box 1659, Grason Station, New York, NY 10028 (Harold Frodge, Midland, MI) "William Tell Overture" at 0400 sign-on, aid request for Armenia, and station ID. (Jerry McNeil, Asheboro, NC) *Welcome to MT, Jerry!-ed.*

0440 UTC on 7115
Bulgaria: Radio Sofia. Bulgarian Cultural Report on spring fairs in 1989. Classical piano music, station ID, and continued news on music festivals. (Frank Hillton, Charleston, SC)

0445 UTC on 17700
China (PR): Central Peoples Broadcasting Service (CPBS). Chinese. Discussion on laws governing advertising and personal wills. Signal strength is strong, with minimal fading. (Rui-Tao Dong, Cambridge, MA) *Welcome to Monitoring Times! -ed.*

0457 UTC on 5288
Chad: Radio Moundou. French. Horn interval signal to instrumental tune, and choral national anthem. Sign-on ID with partial "ici Moundou" heard. Upbeat native African vocals and French announcements. (Harold Frodge, Midland, MI)

0500 UTC on 6340
Turkey: Turkiye Polis Radyosu. Turkish. String instrument signal and choral national anthem. Lady with station ID, brief announcement to Middle Eastern music. Very poor signal quality, suffering from radio teletype interference. Monitored to 0520 UTC, despite the mess!

0510 UTC on 4905
Chad: Radiodiff Nationale Tchadiene. French. African music, ID and newscast at 0531 Utc. (Frank Mierzwinski, Mt. Penn, PA)

0520 UTC on 4755
Colombia: Caracol Bogota. Spanish. Discussion and interview with program guest. Station ID and Spanish music at 0540 UTC. (Frank Mierzwinski, Mt. Penn, PA)

0536 UTC on 4915
Ghana: Ghana Broadcasting Corp. (GBC). African music with harmonizing voices continuously until 0600 UTC. Station ID and local time check as "It's now 6:00 a.m.," in English. (Frank Mierzwinski, Mt. Penn, PA)

0610 UTC on 5020
Niger: La Voix du Sahel. French. Programming announcements and introductions for African music, sung in vernaculars. Continued announcements and station ID. (Frank Mierzwinski, Mt. Penn, PA)

0950 UTC on 9850
New Zealand: Radio New Zealand. Musical variety and station ID. Newscast and Eleventh Hour musical program (Jerry McNeil, Asheboro, NC)

0955 UTC on 4824
Peru: La Voz de la Selva. Spanish. Peruvian national anthem at sign-on, with station ID and frequency quote. Fair to poor signal strength during Peruvian music tunes. Signal fade-out within fifteen minutes. (Larry Van Horn, Gretna, LA)

1200 UTC on 9540
USSR: Radio Tashkent. Station ID at tune-in, followed by international news and Armenian folk songs. Good signal quality. (Nick Terrence, Huntington, NY)

1645 UTC on 21810
Belgium: Belgische Radio and TV. (BRT). Brussels Calling program with interviews of Antwerp based pop group. (Robert J. Hurley, Baltimore, MD) (Robert Pietraszek, Turners Falls, MA)

1700 UTC on 9870
Saudi Arabia: BSKSA. Arabic. Local and external programming to Europe/Middle East, commencing from k1700-2130 UTC. Programming resumes on 9885 kHz at 2130 UTC, in Arabic until 2300 UTC. (Stephen Price, Conemaugh, PA) *Thanks, Stephen, BSKSA is not reported often!-ed.*

1817 UTC on 21505
Czechoslovakia: Radio Prague. Medical report on the USSR medical unions. News headlines to closing programming at 1825 UTC. (Robert Pietraszek, Turners Falls, MA)

1859 UTC on 9625
Canada: Canadian BC Corp. (CBC). French/English. French Canadian folk tunes to English ID at 1859 UTC. CBC news bulletin at 1900 UTC. Parallel frequency 11720 kHz audible. (Leslie Edwards, Doylestown, PA)

1900 UTC on 9660
Iraq: Radio Baghdad. Arabic. Monitored to 2300 UTC with parallel frequencies noted on 9535, 11895, and 15110 kHz. (Stephen Price, Conemaugh, PA) Monitored from 0315-0330 UTC on 9515 kHz. (Robert J. Hurley, Baltimore, MD)

1905 UTC on 12005
Tunisia: Radio Tunisienne. Arabic. Talk and commentary to news on the USSR. Melodious music with male/female duet singers. IDs heard while monitoring station to 2142 UTC. (Leslie Edwards, Doylestown, PS) (Stephen Price, Conemaugh, PA)

1915 UTC on 15215
Algeria: RTV Algerienne. News in progress at 1915 UTC. Station ID and pop music program with signal fading at 1921 UTC. (Cliff Goodlet, Chattanooga, TN)

1923 UTC on 17870
Liberia: Voice of America relay. Editorial and discussion on African politics and ID at 1929 UTC. (Cliff Goodlet, Chattanooga, TN)

1930 UTC on 17558
Iceland: ISBS. Icelandic. Talk and interviews to 2000 UTC. Station IDs as "Utvarp Reykjavik" amid excellent reception! (Robert Pietraszek, Turners Falls, MA)

1930 UTC on 11890
Oman: Radio Oman. Arabic. Station ID at tune-in quoted exactly as in World Radio TVHandbook. Mention of "Min Muscat" followed by Arabic music. (Stephen Price, Conemaugh, PA)

1932 UTC on 9560
Jordan: Radio Jordan. Friday afternoon music features of the Jazz Hour and Rhythms and Blues. Station ID and news at 2000 UTC. (Leslie Edwards, Doylestown, PA) (Stephen Price, Conemaugh, PA). *Special thanks to the many contributors of Jordanian logs this month! -ed.*

2030 UTC on 15505
Kuwait: Radio Kuwait. Arabic. Middle Eastern music with choral group accompaniment. Station ID at 2100 with signal fading. Parallel frequency 15495 kHz, also experiencing some occasional fading. (Frank Mierzwinski, Mt. Penn, PA)

2056 UTC on 11780
Brazil: Radio Nacional Amazonia. Portuguese. Popular Brazilian music to ID at 2058 UTC, and early sign-off before 2100 UTC. (Harold Frodge, Midland, MI)

2103 UTC on 9540
Madagascar: Radio Netherlands relay. Media Network program that included a discussion on Irish pirate radio. (Harold Frocge, Midland, MI)

2200 UTC on 9595
United Arab Emirates: Voice of the United Emirates. Arabic/English. Parallel frequencies monitored on 11965, and 6170 kHz. Excellent signal strength; however, bands are accompanied by noise and interference. English ID and Holy Koran recitations. English translations of the Koran, followed by news features. (Stephen Price, Conemaugh, PA)

2220 UTC on 5025
Cuba: Radio Rebelde. Spanish. Cuban salsas and program promotional to feature popular Cuban entertainers. Latin ballads and Rebelde ID at 2245 UTC. (Larry Van Horn, Gretna, LA)

2230 UTC on 6110
Malta: Radio Mediterranean. Station ID at tune-in, and news headline synopsis. Sixties song from Credence Clearwater Revival. Station ID and extended news coverage at 2237 UTC. (Mark Seiden, Coral Gables, FL) Monitored to 2345 UTC. (Nick Terrence, Huntington, NY)

2245 UTC on 6190
Switzerland: Swiss Radio International. Dateline show of current affairs. News on health matters and developments in AIDS research. Instrumental Swiss melodies, ID and program schedule with 2300 UTC sign-off. (John Bougerois, Thibodaux, LA)

2300 UTC on 9445
Turkey: Voice of Turkey. International news headlines read by announcer duo. Station ID, Turkish Week in Review show of weekly news topics and feature program, Islam Values of Turkey. (Rod Pearson, St. Augustine, FL)

2305 UTC on 7430
Greece: Voice of Greece. Portuguese. Greek folk selections and news topics on Greek/Brazilian interrelation. (Frank Hillton, Charleston, SC)

2315 UTC on 6769
Clandestine: Radio Farabundo. Spanish. Text regarding Cuba to upbeat Latin tunes. Abrupt sign-off at 2319 UTC. (Harold Frodge, Midland, MI)

Larry Van Horn
P.O. Box 1088
Gretna, LA 70053-1088

Monitoring FEMA

In the February issue of *Monitoring Times*, I wrote an article about the last communications you will ever hear. As nuclear winter sets in, there is one government agency that hopes its communications will survive the attack.

Located at 500 C Street S.W. in Washington, D.C., it's the headquarters of one of the largest federal communications agencies in the United States. This agency, called the Federal Emergency Management Agency or "FEMA," is charged with the responsibility of organizing nonmilitary activities in the event of a nuclear attack.

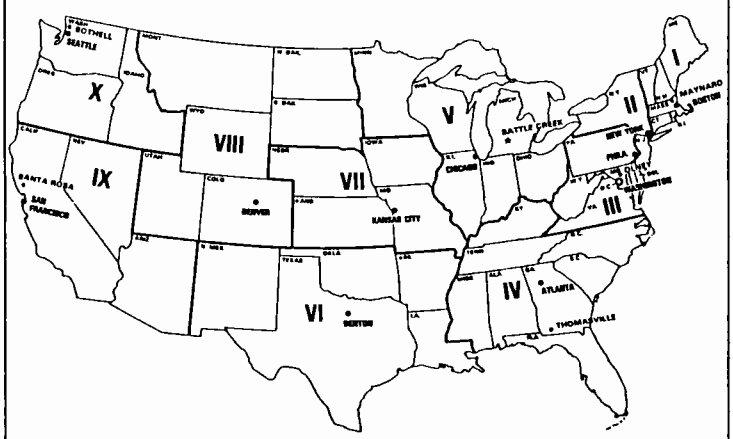
While this agency was created in 1979, FEMA can trace its genealogy back to World War II and our government civil defense efforts during the war. Over the years FEMA has evolved from the Federal Civil Defense Agency to the Defense Civil Preparedness Agency (DCPA), the forefather of FEMA.

Even though nuclear attack is this agency's primary concern, in actuality, FEMA is prepared to respond to a full range of emergencies. FEMA has plans, for example, to assist during natural, manmade, and nuclear disasters. The agency has also developed plans to cover such eventualities as hazard reduction, preparedness planning, relief operations and recovery assistance.

To help carry out these plans, FEMA has an extensive shortwave communications network. The agency also has a number of VHF facilities. Using CW, RTTY, and SSB on its shortwave frequencies, its networks are active on 42 HF channels.

In addition to stations operated by FEMA staff personnel, other stations on FEMA channels are operated by state and local officials. The equipment, however, is furnished, owned and operated under authority of FEMA. The agency operations have been divided into ten regional offices in order to facilitate disaster assistance to state and local governments. Table 1 lists the ten regional offices of FEMA.

TABLE 1
FEMA Regional Offices



REGION 1	J.W. McCormick Post Office and Court House, 4th Floor, Boston, MA 20109
REGION 2	26 Federal Plaza, New York, NY 10287
REGION 3	Curtis Building, 7th Floor, 6th and Walnut Streets, Philadelphia, PA 19106
REGION 4	1371 Peachtree Street S.E., Suite 700, Atlanta, GA 30309
REGION 5	300 S. Walker St., 24th Floor, Chicago, IL 60606
REGION 6	Federal Regional Center, 800 N Loop 2, Denton, TX 76201
REGION 7	Old Federal Office Building, 911 Walnut St., Kansas City, MO 64106
REGION 8	Denver Federal Center, Building 7, Denver, CO 80225
REGION 9	211 Main St., Room 220, Building 105, San Francisco, CA 94129
REGION 10	Federal Regional Center, Bothell, WA 98011

FEMA Callsigns

Callsigns between WGY-900 and WGY-915 are used by stations at FEMA offices and regional headquarters. By noting the last number transmitted by WGY-920 through 998 stations, the region of the station can be determined (Region 1 stations will end with a "1", region 2 with a "2", etc.). WGY-920 through 998 stations are staffed by state and local agency personnel.

U.S. government VIP relocation centers use the callsign WAR. These FEMA relocation centers will house selected U.S. government personnel during a nuclear attack.

WAR callsigns have also been heard on selected Strategic Air Command frequencies at various times. During the last State of the Union address of Ronald Reagan in 1988, WAR callsigns appeared very active on some selected SAC channels. The U.S. government line of succession is located at one spot, the national capitol. Since this is a televised event, the nation and the world knows where to find all of our top U.S. government officials.

Station WGY-915 in Arlington, Virginia, is a FEMA station operated under the auspices of the National Communication System (NCS). This partnership was established by President John Kennedy in 1963. The NCS provides necessary communication for the Federal Government under all conditions ranging from normal situations to national emergencies, including war. The NCS is a confederation of 23 government agencies including the CIA, Department of State, NSA, and Department of Defense.

FEMA's Network Control station is WGY-903 located in Olney, Maryland. Alternate net control stations include WGY-908, WGY-906, WGY-904, and WGY-905 (in order of preference).

On Monday, Thursday, and Friday, network drills occur on 10493 kHz at 1600 UTC (1500 during daylight savings periods). The net control for these drills is WGY-903 in Olney. Additional WGY-903 drills occur on the first Tuesday of January, April, July, and October at 1600 UTC.

A similar drill is conducted by station WGY-906 in Denton, Texas, on the first Tuesday at 1600 UTC during the months of February, May, August, and November. On the first Tuesday at 1600 UTC during the months of March, June, September, and December, station WGY-904 in Thomasville, Georgia, assumes the net control duties.

Station WGY-905 gets the call for net control duties on the second Tuesday of the month during the same months as WGY-904. On Wednesdays at 1600 UTC, all regional stations

Table 2
FEMA HF Foxtrot Channels

Foxtrot No.	Freq(kHz)	Foxtrot No.	Freq(kHz)
6	2320	28[1,6]	10493(day prl)
7[6]	2360	29	10588
8	2377	30	11721
9[6]	2445	31[6]	11801
10[6]	2658	32	11957
11[5]	3341	33	12009
12[3,6]	3379	34[2]	12216
13[6]	3388	35[3]	14450
14[5]	4780	36	14776
15[1,6]	5211(night prl)	37	14837
16	5402	38[3]	14886
17	5821	39	14899
18[6]	5961	40	14908
19	8049	41[5]	16201
20	6106	42	16430
21[6]	6108	43	17519
22	6151	44[4]	17649
23	6176	45[5]	18744
24	6809	46	19757
25[2,6]	7348	47	19969
26	9462	48	20027
27	10194	49	12129
		50	20063
		??	24555

NOTES:
1. Calling/Emergency frequency
2. Point-to-point alternate
3. WGY-908 encrypted CW channel
4. Emergency Secondary, Region 9 and 10
5. WGY-912 encrypted CW
6. DOE Authorization

can be heard on 10493 conducting an open net with no net controls. Stations can also be heard at other nonscheduled times passing traffic with each other on 10493 kHz.

Most of the communications on HF appear to use the upper sideband mode of transmission. The agency does, however, operate a sophisticated RTTY (850/75N) network in support of their operations. Slow speed, encrypted CW transmissions have also been monitored on 3379, 4780, and 18744 by WGY-912 at Mt. Weather, Virginia. WGY-908 has also been heard sending these types of CW transmissions.

FEMA has been known to verify correct reception reports on occasion. I recommend giving the regional stations a try first. Their addresses are listed in Table 1. Remember, don't disclose the actual communications when reporting these stations. Just a list of stations and who they were in contact with at what time will suffice. It might be a good idea to enclose a prepared verification that the staff only has to sign. This might increase your chances of getting a verification from one of these FEMA stations.

For a more complete listing of FEMA stations and their callsigns, you can consult the new edition of the Grove *Shortwave Directory* available from Grove Enterprises in Brasstown.

Table 2 gives a complete roster of FEMA channels as I know them. Any additions or corrections to this list would be appreciated and can be forwarded to the address in the masthead.

Alaska: U.S. Fish and Wildlife Service

Now that the spring thaw has set in and summer is not far behind, Mark Springer in Hooper Bay, Alaska, passes along some summer monitoring tips for the Fish and Wildlife Service.

"Every summer the U.S. Fish and Wildlife Service sets up camp here in Alaska," Mark writes. "Actually, we should be using the plural, camps, since they are strung out all over Alaska." A couple of areas of heavy activity are the Aleutian Islands, and the Yukon-Kuskokwim Delta on the west coast of the state.

With a plethora of bird and wildlife species living in the National Wildlife Refuges managed by the U.S. Fish and Wildlife Service, you can imagine that it is a biologist's paradise.

To keep in touch with each camp, they use HF radio, and it can provide a unique catch for the careful listener. The principle frequency to watch for is 5909 kHz lower sideband.

At around 0500-0600 you can hear KWL-45, the base station at Adak, checking in with field camps on the Aleutian Islands. The field camps use the collective callsign KOD-649. Stations include Buldir Island (where, by the way, the camp discovered the remains of the missing member of a WWII weather observation party), Island Cove, (I think this is on Kiska Island), and a few others. The research vessel *Tiglax*, callsign WZ3423, is also active in the area.

Camps in the Yukon Delta National Wildlife Refuge use the callsign KX3388. These include Old Chevak, West Long Lake, King Dome, and Island Lake. St. Paul and St. George Islands also use the collective callsign KX3388. The main base station located in Anchorage uses the callsign KXA2.

An alternate frequency used by these stations is 3215 kHz upper sideband.

Mark says he hasn't tried getting a verification from these stations, but he would imagine that a nice letter to the Refuge Manager of either the Yukon Delta Refuge or the Aleutian Island National Wildlife Refuge would bring a reply.

I am sure that I speak for all our *MT* Ute World readers, Mark, when I say thank you for this interesting information to help monitor activity from our 49th state.

Pacific Airlines Monitored

Chris Gilliland in Menlo Park, California, reports monitoring a lot of Pacific HF Aeronautical frequencies lately. He has especially been monitoring ICAO areas CEP 1 and CEP 2 (Central and Eastern Pacific) between the west coast and Hawaii.

Most of the aircraft reports are to pass current and next check points by check point name. These check points are shown on Jeppesen Aero charts along with HF frequencies for each station. Jeppesen aero chart P(H/L) 5 covers the whole northern Pacific -- U.S. west coast to Tokyo to Borneo -- and works great when you are flight following via HF radio. The chart also has a table of the Volmet broadcasts (like the one published in the August 1988 Ute World column, Table 1).

One of the most interesting Volmet to hear, according to Chris, is the Tokyo Volmet on 6679 kHz. Chris reports that it uses very clear digitized voice, not a Japanese accented human!

Most all aircraft monitoring that Chris receives are strong in strength for both ground and aircraft transmissions. All these stations use the upper sideband mode of transmission. Here are the active frequencies that Chris has heard:

CEP 1	5574, 8843, 10057 kHz
CEP 2	5547, 6673, 11282 kHz

Utility World

Chris notes that last winter 5547 and 5574 were almost universal, day and night. As the summer conditions move in, the higher frequencies are more in use in the daytime.

He also notes that he has done some monitoring of the SP (South Pacific) aero route frequencies. (3467, 5643, 8867, 13261, 17904 kHz are the frequencies for the SP area-ed.) Some of the flights heard include a UTA flight over the equator enroute to Tahiti and a Hawaiian Air Lines flight to Raratonga. Chris also reports that the Caribbean area can best be heard from the west coast during the evening hours.

Thanks for the report, Chris, and we are looking forward to hearing more from your California monitoring post in the future.

Single Letter HF Beacons Discussed

Joe Topinkain, in Berwyn, Illinois, says that Single Letter HF beacons (SLHFB) "intrigue me." He says that the "U" beacon on 8670.5 kHz is the easiest to hear from his listening post in the Chicago area.

To those novice utility buffs who haven't the slightest idea of what SLHFB refers to, they are the Morse code repeats of single letter characters, heard transmitting throughout the HF radio spectrum. These mystery beacons have been with us since the late 1960s.

About six months ago, Joe came across the "U" beacon on 8136.5 kHz. "I know these are well known and listed in several reference books," said Joe. Now I have discovered a new frequency for the "U" beacon. Joe found one transmitting at 1330 UTC on 7677.5 kHz.

The intriguing part of all of this is that all the transmissions on all these frequencies are perfectly synchronized.

Joe, I have heard this mentioned in passing before, but this is the first time one of our readers has confirmed this for Ute World. Thanks for the information.

In the most recent edition of Joerg Klingenfuss's *Utility Guide*, I noticed that Joerg listed locations for the beacons. I find this very interesting, but I have not had a chance to check in with Joerg and ask him where he got the data.

Joerg lists the beacon locations as follows:

"S" beacon	Arkhangelsk, USSR
"P" beacon	Kalinigrad, USSR
"K" beacon	Khabarovak, Eastern Siberia, USSR
"U" beacon	Kholmsk, Far East, USSR
"C" beacon	Moscow, USSR
"O" beacon	Moscow, USSR
"Z" beacon	Mukachevo, Ukraine, USSR
"U" beacon	Murmansk, USSR
"D" beacon	Odessa, USSR

I hope that Joerg will get in touch with this column and fill us in on how these locations were determined. Thanks, Joerg, from the Utility World.

Intercept Help Wanted

Gilles Thibodeau from our neighbor to the north, Quebec, Canada, has heard an unusual intercept just above 30 MHz. He picked up a ship talking to the U.S. Army station at Black Mountain, South Carolina, on 30.450. Gilles would like to know if anybody has an address on the above station so he can contact them with a verification report. If anybody can help, please drop me a line at my masthead address.

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		

2182.0 CG Port Angeles advising of an imminent broadcast on 2670 in USB at 0614. Notices to Mariners broadcast followed on 2670 at 0615. Reminds mariners not to call for radio checks on Channel 16 VHF and HF, but to use channel 2 VHF and HF. (Hulse,OR)

3485.0 Gander VOLMET at 0158 heard in USB with weather for several Canadian airports. This was followed by a broadcast from New York VOLMET at 0200. (Doyle, CT)

4125.0 USCG Group Charleston working the M/V Charleston kStar at 0230 using USB. (Bill Frantz, Thomasville, GA) *Thanks for the report, Bill. This is a coastal/ship simplex channel-ed.*

4125.0 Tofino Coast Guard Radio, British Columbia, Canada, heard in USB at 1733 with scheduled weather broadcast and marine forecast (Hulse, OR)

4380.0 English female 5-digit number station heard at 0300 on Thursday and Fridays UTC. (H.S., San Diego, CA) *Welcome to Ute World, H.S. I find this logging very interesting also. Are you sure that the female was sending 5 digits or was it 3 digits followed by a break, then 2 digits? If you hear this again, would you verify the format. Again, welcome-ed.*

4507.5 Civil Air Patrol station Corn State (Iowa) working Blackhawk (Ohio) at 0240 in USB. (Frantz, GA)

4670.0 Spanish female 4-figure groups number station broadcasting in AM at 0220. (Matt Haston, TN) *Welcome to Utility World, Matt. We hope you report often to the P.O. Box in Gretna-ed.*

5082.0 Spanish female 5-digit number broadcast heard at 0403 in AM (Harold Frodge, Midland, MI)

5182.0 Spanish female 5-digit number broadcast heard at 0947 on Wednesday UTC. (H.S., CA)

5185.5 Spanish female 5-digit number broadcast heard ending at 0510 on Friday UTC. (H.S., CA)

5205.0 Spanish female 5-digit number broadcast heard ending at 0145 on Friday UTC. (H.S., CA)

5550.0 Czechoslovakian 576 heard in USB at 0753 working Boyeros with an estimate for TANIA (Havana FIR) as 0958 and ETA Havana as 1030. Airliner was given current weather for Havana and Camaguey. (576 had departed Mirabel-Montreal at 0615). (Garie Halstead, Saint Albans, WV)

5598.0 Viasa 722 heard in USB at 0549 working San Juan with his routing along airway "Green 61" to Espichel (Portuguese coast). Milano mentioned as the destination. (Halstead, WV)

5616.0 Cubana 476 heard in USB at 0747 working Santa Maria, Azores. Ground station asking the Cubana flight to contact MAC 60152 on VHF but then learned 476 was in Shanwick, Ireland, area at 20 degrees west. The flight's destination was believed to be "LKPR" Prague, Czechoslovakia. (Halstead, WV) *Interesting, Garie. Wonder how that would have gone over for the crew of the US Air Force MAC flight to talk to a Cubana flight. I hope that Oceanic keeps up better than that with ocean flights.*

5658.0 Libyan aircraft 5A-DCJ heard in USB at 0620 working Tripoli, Libya, with a position report. (Halstead, WV)

5700.0 Rich Lady 01 and 02 working Blue Eyes in USB at 0305. Dual tones heard at the end of each transmission like those on the DEA channels. (Frantz, GA) *This is SAC channel "Bravo Quebec"-ed.*

5762.0 Spanish female 5-digit number broadcast heard at 0600 on Thursday UTC. (H.S., CA)

6340.0 Spanish female number station. Heard them set up with 218-00000 but no numbers followed. Send at 0430 in AM. (Frodge, MI) *Interesting, Harold, seems that some of the senoritas are having problems getting their messages across lately. See other short changed number loggings elsewhere in this column-ed.*

6455.7 CKN-Esquimalt Radio, British Columbia, Canada, sending FAX weather charts at 0328. (120/576). (William T. Clark, Chico, CA) *Welcome to the loggings section, William. Hope you report often to Utility World-ed.*

6505.5 NMC-USCG COMSTA San Francisco, California, sending ARQ sending AFRTS sports news at 0300. (Clark, CA) *Interesting, William, first time I've seen this frequency logged-ed.*

6577.0 San Juan working New York aero radio (ARINC) in reference to the telephone number to call the FCC when SS number station started broadcasting on the channel causing interference. Heard around 2345 in USB. (Doyle, CT) *Interesting, Bob. I didn't know there were SS*

number stations causing interference on this channel. They are probably of the 5-number variety although it would be interesting to know exactly which variety was causing the interference-ed.

6577.0 Iberia 944 heard in USB at 0506 working New York radio with a position report over STOCK and estimate for DEENO. Said that Bermuda would be the next position. (Regularly scheduled flight from Havana to Madrid). (Halstead, WV)

6697.0 2GX calling any station this net in USB at 0335. Also heard Habitat calling YEO76 in USB at 1624, but nothing heard. Part of the call was scrambled. (Hulse, OR) *This is a Navy channel, Chris, and I find the second intercept fascinating. Someone messed up and blew security by not using COMSEC procedures-ed.*

6840.0 Spanish female 4-digit number station heard at 0230 on Friday UTC in AM. (H.S., CA) English female 3/2-digit number station heard at 2330 in AM. Strong. (Frodge, MI)

6870.0 English female number station transmitting 3/2 figure groups at 0215 in AM. Heard a strange hum in the background. (Haston, TN) *Just one of the many oddities heard on numbers broadcasts-ed.*

6905.7 KWAN-US Air Force station at Carswell AFB, Texas, sending weather information via RTTY (425/75N). (Clark, CA)

6963.0 English female 3/2-digit number station heard at 0141. Also heard at 0415. (Frodge, MI)

6968.5 U.S. Navy MARS stations NNN0FRQ and NNN0HFK working each other at 0232 in USB. (Frodge, MI)

7404.0 German female 3/2-digit number station heard in AM at 0609. Very weak. (Frodge, MI)

7411.3 "CF2" working "C3K" and "J41" in USB at 2357. (Harold Frodge, Island Lake, MI) *Interesting, Harold, looks like a U.S. Navy operation on a NASA channel to me-ed.*

7422.7 SLHFB "S" sending a continuous CW letter "S" at 0351. (H.S., CA)

7445.0 English female broadcasting the KPA2 style number broadcast at 0218 in AM. (Haston, TN) Heard on Mondays UTC at 0316 in AM. (Frodge, MI) *It has been reported that these are Israeli Moshad stations-ed.*

7527.0 Spanish female five-digit number broadcast heard at 0700 and 0730 on Thursday UTC in AM. (H.S., CA)

7770.0 Butter Bravo, Charlie, and Convoy 4,8 heard here at various times. See logging at 10277.0 (Frantz, GA)

7887.0 Spanish female five-digit number station broadcasting at 0730 and 0830 on Wednesday UTC plus Thursday UTC at 0500. (H.S.,CA)

8420.0 Spanish female four-digit number broadcast heard at 0300. (H.S., CA)

8793.3 WOM-Pennsuco Radio, F1 working the Norway at 0120 in USB with passenger to shore phone patches. (Doyle, CT). *This is marine ship-to-shore channel 825. The ship side of the conversation can be found on 8269.4-ed.*

8811.9 WOM-Pennsuco Radio, F1 working Royal Viking Sea at 0113 in USB conducting phone patches for passengers aboard the ship. (Doyle, CT). *This is marine ship-shore channel 831. The ship side of the conversation can be found on 8288.0-ed.*

8819.0 Rainbow Radio heard in USB at 0807 working El Al 001 with weather for Boston, New York, and Gander. (Halstead, WV)

8842.0 Aeroflot 4122, aircraft registration 86468 heard on CW at 1825 working COL in Havana advising COL of the aircraft's New York departure at 1805. (Gorbachev's aircraft???). Aeroflot 4116, aircraft registration 86712 heard on CW at 1916 also working COL announcing a New York departure at 1842. I believe this was an aircraft carrying the press that followed the general secretary on his trip. I wonder if anyone heard these aircraft on any of the voice circuits working New York or Gander Oceanic??? (Halstead, WV). *No one who reported here, Garie. I have been trying to catch his aircraft on every trip I hear about on Oceanic channels but no luck yet. Anybody else have any better luck-ed.*

8861.0 South African Airways "Springbok 9257" heard in USB at 0625 working Abidjan with a position report and ETA for Johannesburg, South Africa. (Halstead, WV)

8989.0 Elemendorf and McClellan AFB USAF GCCS stations in USB at 1627 with simultaneous Skyking broadcast. McClellan was stronger. (Hulse, OR)

8990.0 Regional Operational Control station in Jeddah, Saudi Arabia, working Saudi 7114 in USB at 0041. (Doyle, CT)

8992.5 6WW-French Naval Radio, Dakar, Senegal, sending a V CW marker at 0402. (Gregory Dome, San Antonio, TX) Thanks for the report, Greg, from my hometown of San Antonio. Please report often-ed. Heard at 0445 with V CW marker. (K.R. McKenzie, North Delta, BC, Canada)

9010.0 CFH-Canadian Forces station, Halifax, Nova Scotia, transmitting a weather broadcast at 2221 in USB. (Doyle, CT)

9050.0 English female 3/2 digit number station heard transmitting at 0532. (Frodge, MI)

9219.0 Spanish female number station transmitting at 0300 with the following short but interesting broadcast -- "1234567890 545 1234567890." That was all there was to it. (H.S., CA) *Very interesting, H.S. Wonder what happened to the rest of the broadcast-ed.*

9230.0 RTB26-Khabarovsk Meteo, USSR, sending Russian meteo FAX charts at 0400. (120/576). (Clark, CA)

10116.9 BAF4-Beijing Meteo, China, heard at 1930 with a (120/576) FAX weather chart. (Clark, CA)

10277.0 Butter Bravo, Charlie, and Convoy 4,8 heard with very strong signals around 1800 in USB. Seemed to be a nuclear weapons convoy departing certain "main interstate locations." Very strong signals. Probably convoys from the Savannah River Plant in South Carolina. Also heard what sounded like USAF traffic here. Heard same group of stations on 7770.0 and 11555.0. Haven't seen this frequency in any publications. (Frantz, GA). *Bill, I do have a listing on 11555.0 for the DOE Nuclear Transport Safeguard Network. The other two channels I do not have a listing for. They are possibly new channels. Thanks for the log-ed.*

10390.0 FBS-??? heard with an ARQ idler and CW marker at 0305. (Clark, CA) *Interesting, William. This is an Interpol frequency and I do not have a listing for the callsign FBS, any help readers?-ed.*

11055.0 Andrews AFB working 71 at 0117 in reference to a phone patch for 205. (Doyle, CT) *This is Foxtrot 233-ed.*

11288.0 Robin working Slingshot in USB at 2236. Also mentioned Almighty and Hummingbird. (Doyle, CT) *U.S. Customs channel "YD"-ed.*

11288.0 Jeddah, Saudi Arabia, working Saudi 7114 at 0058 with a SELCAL check. Very strong signal here and on 8990. (Note the Customs entry above). (Doyle, CT) *Yea, Bob, maybe the Customs Department ought to move, hi. Very interesting mix-ed.*

11300.0 Khartoum, Addis Ababa, Cairo, Bombay aero stations heard working various aircraft in USB around 1645. Some of the signals were very strong and some of the stations were off frequency. (McKenzie, BC, Canada)

11306.0 Eastern 21 heard in USB at 0458 working Lima Radio with a position report over GYV (Guayaquil) and an estimate for Paion. Destination was Lima, Peru. (Halstead, WV)

11555.0 Butter Bravo, Charlie, and Convoy 4,8 heard on this frequency at various times. See logging on 10277.0 for complete details. (Frantz, GA)

11650.0 English female number station heard at 2005. (Frodge, MI) *Harold, what type of number station was this? My guess is an Israeli Moshad based on frequency-ed.*

11660.0 Spanish female numbers station transmitting four figure groups at 2024. (T. Wilson, Fort Meyers, FL) *Welcome to Utility World loggings. Please report often-ed.*

12088.5 "A6B" working "A4E" at 2106 in USB. They IDed as 6B and 4E after establishing comms. (Frodge, MI) *This sounds like a US Navy channel, Harold-ed.*

12525.2 UYUI-M/V Bela Kun sending RTTY telegrams using 3rd shift cyrillic to Odessa Radio. (Clark, CA)

13044.0 WPS61-Cape D'Aguilar, Hong Kong, heard with a CW marker at 0055. (McKenzie, BC, Canada)

13046.0 PZN4-Paramaribo Radio, Suriname, heard at 0100 with a CW marker. (McKenzie, BC, Canada) *Nice catch, K.R.-ed.*

13084.5 NMN-USCG COMSTA Portsmouth, Virginia, sending via ARQ info on a med-evac patient at 0035. (Dome, TX)

14358.5 English female number station broadcasting 3/2 figure number groups at 2100 in AM. (Haston, TN)

14383.5 NNN0COU U.S. Navy MARS station aboard the USS Saratoga running phone patches via NNN0NAF (Northern Florida) in USB at 2127. (Haston, TN)

14445.0 Station N95 in contact with N91 with strange English accents at 2213 in USB. Possible South African Navy channel. (Haston, TN) *This is also a Canadian CFARS channel, Matt. Could this have been from one of their nets. I do not show a listing for the South African Navy on this channel-ed.*

14638.0 WFK-54 USIA/VOA American Republic File transmitting RTTY 425/75R) information on the PLO in English at 2100. (Dome, TX) Heard at 2215 with upcoming news. (Clark, CA)

14692.5 JMJ4-Tokyo Meteo, Japan sending FAX weather charts at 2200. (Clark, CA)

14934.5 AAA6USA-US Army MARS station Ft. Sam Houston, Texas, sending MARSGRAMS for new recruits at Ft. Bliss using RTTY. (Clark, CA)

16961.5 FUF-French Naval Radio, Fort de France, Martinique, sending a V CW marker at 2345. (Dome, TX)

17016.6 "S" beacon sending continuous CW "S" heard at 2032. (Joseph Topinka, Berwyn, IL) *Thanks for the report, Joseph. Hope you report your SLHFB intercepts often-ed.*

17904.0 Honolulu Aero heard working a twin engine aircraft with nine souls aboard. The aircraft was over the Pacific trying to get back to Midway Island after shutting down one of the aircraft's engines. In USB at 0015. (McKenzie, BC, Canada)

17925.0 Japan Air Aero working various Japan Air flights with the news to passengers aboard the different flights of Emperor Hirohito's death in USB at 0045. (McKenzie, BC, Canada)

19975.0 CLP-1 Minirex Havana, Cuba, sending a V CW marker at 2240. (Dome, TX)

23331.5 KVM-70 Honolulu International, Hawaii, sending FAX weather charts at 2350. (Clark, CA)

The Scanning Report

Bob Kay
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Bug Busting

Here in the north, the frozen grip of winter is quickly melted by the warm soothing breezes of April. Small brooks, held in an icy silence, slowly begin to trickle beneath thinning ice.

High above the budding trees, long vee shaped wedges of geese loudly announce their return from southern feeding grounds. Red breasted robins return to pull worms from the garden and the grass turns a darker shade of green with each passing day.

As the air continues to warm, millions of bugs in every imaginable shape and form will also return. If the bugs enter our home, we call a person specifically trained to locate and kill bugs -- a Bug Buster.

Bug Busting is big business. Bugs are everywhere and getting rid of them can be expensive. Since bugs hide in nooks and crannies, the Bug Buster must be capable of locating, identifying, and destroying them without knowing their exact location.

Keeping your home meticulously clean cannot guarantee that it will remain bug free. There are people out there who will deliberately place bugs in your home, car, or office. The idea of someone carrying a bug in their pocket and placing it in your sofa may sound ridiculous, but it's not as uncommon as one may think. However, these bugs are not of the insect world. They are electronic bugs -- small, cleverly designed devices that can transmit a room full of sounds for distances up to a mile.

As scanner buffs, we all realize that electronic bugging devices are illegal and rightfully so. Even law enforcement agents cannot place a bug without first obtaining a court order. As a result, legally placed bugs are few in number.

Yet, there are millions of bugs being sold in magazines all across the country. Very often they are cleverly advertised for a wide variety of purposes, some of which are rather comical. For instance, one supplier suggested that their "micro FM transmitter" could be placed in a tree to hear birds singing. Another supplier listed an FM transmitter with a one mile range and suggested that the buyer might use it to hear rodents hiding in walls.

But there's no need to strain your eyes reading the small advertisements in the back of magazines. Radio Shack, with millions of stores nationwide, sells an FM wireless microphone that is quite sensitive. Although Radio Shack had no intention of marketing the device for illegal eavesdropping, entrepreneurs quickly turned it into a surveillance bug.

At the very least, the bug business is confusing. On one side of the coin, bugs were said to be illegal -- bugging required a court order. On the opposite side, bugs were being sold to the general public at prices ranging between $15.00 and $200.00. It was obvious that bugs were selling and selling well. If they were not producing a profit, manufacturers wouldn't continue to promote them in sales ads. One could only further assume that if people were purchasing bugs, they must be planting them as well.

I was beginning to get an itchy feeling. Was I bugged? Peering into the dark recesses of my typewriter, I cautiously examined it for bugs. All I found was a warning label: "Keep fingers away from this area when machine is in operation." Fearing bodily injury, I decided not to explore further. I needed a professional. It was time to call the BUG BUSTERS!

Capri Electronics Corporation, P.O. Box 589, Bayfield, Colorado 81122, came to my rescue. Capri specializes in producing "countermeasure systems." To assist in my bug hunting, Capri sent along their "TD-17 Transmitter Detector." In addition to the detector, Capri also sent a copy of the TV show, *Somebody's Listening*. Produced by Ward Lucas of KUSA in Denver, it was an informative program about "everyday" privacy invasion.

According to the tape, we are obsessed with bugging one another. Ex-wives, friends, business partners, and bosses are all experimenting with illegal bugs. It may sound crazy, but it's true. To make matters worse, private detectives, hired by distraught lovers, have been caught using illegal bugs to obtain confidential information on unfaithful partners.

Corporate giants have also been caught bugging their employees. Sometimes an employee is asked to place a bug in a co-worker's office. Then the "old man" sits back and listens to everything that is being said during the entire day.

To make matters worse, electronic bugs, just like the insect variety, tend to be more common during the spring and summer months. Some experts attribute the increase in use to warm weather romances that seem to abruptly begin and end during this time period.

The "TD-17" only weighs seven ounces. It has a high-impact case and measures approximately 4" x 2" x 2". The telescoping antenna extends to 28 inches and the unit came with an installed battery and instruction manual. The TD-17 is designed to locate the most common type of electronic bug -- the miniaturized radio transmitter operating between 1.0 and 1000.00 MHz.

After turning the unit on, I pulled out the antenna and started walking around my den. The TD-17 warns the user of the presence of nearby transmitters by lighting a small LED. There's also a second LED that indicates the distance to the bug by increasing the flash rate. In addition to the two LEDs, the TD-17 also incorporates an audio tone that produces loud "clicks," similar to a geiger counter, as the user nears the bug.

Moving around my den, I adjusted the unit's sensitivity control towards the maximum end and probed around the back of my desk -- nothing. Walking to the book case, I slowly waved the antenna across the various shelves. Suddenly the LEDs lighted and the audio was clicking away. Using the audio and flashing LED, I narrowed the source to the books along the top shelf.

For a moment, it seemed impossible. It certainly seemed ironic. Was *Monitoring Times'* scanning columnist bugged? Cautiously, I removed the books from the shelf and examined each one. All I found was common dust. Placing the TD-17 directly on the empty shelf, it once again indicated an RF signal. But from where? Had someone placed a bug inside the wall?

Opening the door, I stepped into the dining room and found my 14-year-old daughter talking on the cordless telephone. From the manner of flashes and clicks being produced by the TD-17, it was evident that it had picked up the cordless signal from within my den. Feeling relieved, I wandered around the house and also checked the family car -- no bugs were found.

Retailing for about $100, the Capri Bug Detector is both a reliable and affordable unit.

According to Capri, the TD-17 could detect a 25 micro-watt transmitter from over 12 feet away. A bug with that output power would have a range between 250 and 300 feet.

The nearest thing that I had to a low power bug was the cordless phone. So the kids and I developed our own electronic hide and seek game. I would hide the cordless phone in the house and they would use the TD-17 to find it. Even when I cheated and placed the cordless on an outside window ledge, the TD-17 led them right to the signal.

Overall, I was impressed by the unit's sensitivity. There was no doubt that the TD-17 could locate a bug in my home, car, or office. At $98.00 the price wasn't bad either.

Sure, I know what you are thinking ... Bob Kay is paranoid. You are not going to spend a hundred bucks on some bug busting machine when you already know that you are not being bugged.

And that's exactly where the controversy concerning the use of consumer-placed surveillance bugs really begins to heat up. It seems that the person being bugged usually does not suspect anything. Some folks bug their neighbors as a form of entertainment, simply delighting in the ability to hear all the conversations within a particular room.

As previously mentioned, the placing of a bug is illegal. Yet bugs are being sold commercially at an alarming rate. Anyone willing to spend $30.00 can buy a bug with an advertised output range of one mile! And remember, the people buying bugs and placing them are not law enforcement agents tracking criminals. They are our neighbors, ex-wives, husbands, and nosey friends.

As scanner buffs, our knowledge of the hobby should be a deterrent against someone placing a bug in our home. Most of the common bugs available to the public operate in the FM mode, and are well within the range of our scanners. To hear bugs in your neighborhood, here are a few frequencies and search limits to explore. Hopefully, the sounds that you hear won't be coming from within your own home!

88.0 - 115.0 MHz	72.0 - 76.0 MHz
30.0 - 50.0	150.0 - 174.0

MT Treasure Hunt

When you get tired of bug hunting, try a little treasure hunting. Hiking boots and shovels are needed. For the most part, the clues can be found and the treasure discovered without leaving the comfort of your chair. Whether you're an experienced mountain climber or couch potato, everyone can participate.

For sending me the correct answer, I'll send you a small, but very handy, scanning aid. In future issues, the clues will become more difficult and you'll have to work harder to find the treasure. You will also need to hold on to past clues, because I may use them in future hunts.

Each treasure hunt will last two months. That will give every subscriber a chance to respond. This time around, everyone that provides the correct answer with a SASE will receive the scanning aid. Later on, when we get into giving away some of the more expensive gear, there's a problem.

I won't have 30,000 scanner antennas. I'll probably have one, maybe two, if I'm lucky. The equipment will be provided by participating manufacturers of scanning gear. So, in addition to figuring out the clues, I'll probably ask you to send me something that will help decide the winner. Wondering what it might be? I'll give you a hint -- start taking some good pictures of your scanning shacks.

Without any further ado, let's start hunting. Here are the clues:

1. Open the September 1988 issue of *Monitoring Times.*
2. Locate the frequency for the Roanoke Times newspaper that was provided by Howard Weaver.
3. Subtract 417.340 MHz from that frequency.
4. The resulting answer is a very popular frequency among scanner buffs. What common household device uses this frequency?
5. Be sure to send an SASE with your answer to the Prospect Park address.

Reader Frequency Exchange

The reader frequency exchange that we started in January's column is beginning to take shape. If you're a late subscriber, here's how it works: Send in your frequency requests and I will print them for our readers to answer. When a response arrives, I'll send you the original and then print the frequencies for the benefit of everyone.

With your permission, I will also pass on your address to the responding reader. This would effectively begin a pen pal relationship between you and the person that answered your request.

When you send in your request, remember to provide a frequency list of your own. In order for the frequency exchange to be a success, I need your input as well as your requests. Don't worry about sending in a list of little known federal frequencies. Local, confirmed listings of your police and fire department are just as important. Here is a case in point:

The area where I live is called Delaware County. It's a small suburb just south of Philadelphia. In all the years that I have been scanning, I have yet to see a nationally published frequency guide that correctly listed the frequencies for my local police, fire, and ambulance crews.

Not even *Police Call*, which I'm sure is familiar to everyone, has listed them correctly. In fact, I have used my local frequencies as a guide in determining the accuracy of other scanner publications.

So copy down some of your local frequencies and send them to the address on the masthead. They don't need to be typed, stapled, glued, or in any kind of fancy format. I only ask that they be legible and confirmed. The reader frequency exchange is off to a great start. It's up to you to make it a success!

Producing the List of Lists

An anonymous reader from Madison, Wisconsin, suggested that I offer a list of all the frequencies I have received. Although it's going to take quite an effort, I've begun organizing the material to produce the "List of Lists."

I'm also thinking about including a reader profile section as well. If you're interested, just send a group of frequencies for your area along with a small explanation of who you are, your equipment, and a few comments about why you enjoy the hobby of scanning.

Computing With the FRG-9600

Calling all vendors, individuals, or companies that have software for the IBM PC. John Fickewirth, in California, has just purchased an FRG-9600 and the computer interface. Unfortunately, John can't find any control software. Anyone care to help a fellow *MT* reader?

Nintendo Fever

Ok, I know that the Nintendo home video game has nothing to do with scanning. But a young reader named Vince Kwiakoski, from Aston, Pennsylvania, wrote and asked if anyone knew of a direct pass key number to Mike Tyson. Vince is playing the Mike Tyson boxing game and has discovered a pass key number to Super Macho Man, (the last boxer before Tyson). The pass key to Super Macho Man is 069-453-7138.

If anyone has been slugging it out with Mike Tyson's direct pass key number, Vince would appreciate hearing from you.

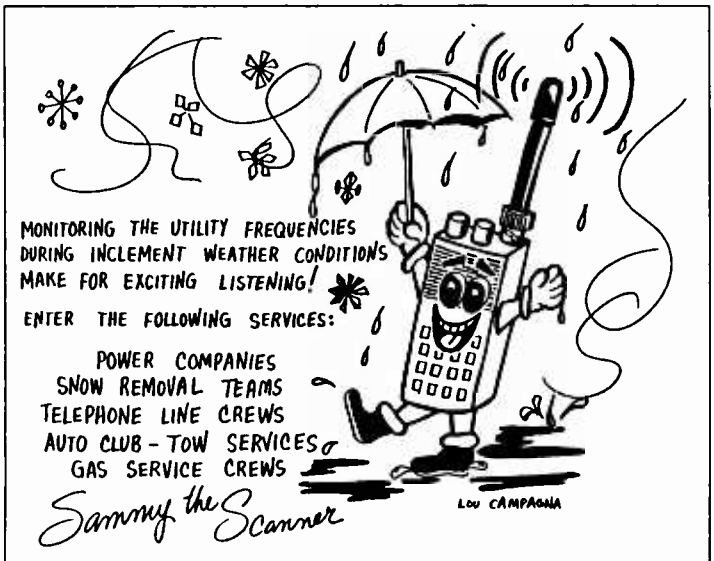
Scanning Fines And Spectators

A 22-year-old man from Rogers City, Michigan, was cited by state police for possession of a scanner in his vehicle. A state police spokesman said that the statute has been on the books for the last 20 years. The law allows scanner radios in homes but not in vehicles. The maximum sentence is one year in jail and a $500.00 fine.

Michigan State Police have also expressed concerns about the number of spectators that scanners, whether at home or in a vehicle, bring to an emergency scene.

Personally, I think the Michigan State Police need to have their heads examined. First of all, the law was placed on the books to prevent criminals from avoiding pursuing police vehicles or road blocks.

Secondly, I've never seen a bunch of people racing to an emergency scene with their hand-held or mobile scanner radios. In fact, most scanner hobbyists would prefer to monitor the action from the comfort of their home. Don't you agree? Incidentally, thanks to Bob Watkins of Milwaukee, Wisconsin, for that newspaper clipping.



Northeast Scanning News' "Sammy the Scanner"

Soviet Star Wars

Did you know that the Soviets are experimenting with a hardened material that can withstand a laser attack? They plan to use this material on their orbiting satellites.

Remember that nuclear powered Soviet satellite that fell from orbit a few months ago? Although it was called a spy satellite in the national news, its exact purpose was never defined. Soviet nuclear satellites are primarily designed to track U.S. surface ships. The accuracy of these satellites is reported to be about 16 meters.

Virginia Sheriff Frequencies

Here is one of the most comprehensive lists for county sheriffs to come across my desk. Contributed by Richard Rowland of Richmond, Virginia.

VIRGINIA SHERIFFS

45.98	Accomack	154.950	Gloucester	453.200	Poquoson City
39.86	Albemarle	154.100	Goochland	39.32	Powhatan
154.845	Albemarle	39.56	Grayson	39.40	Prince Edward
39.76	Allegheny	39.18	Green	155.055	Prince George
39.40	Amelia	39.86	Greensville	39.68	Prince William
42.68	Amelia	39.18	Halifax	39.28	Pulaski
42.70	Amelia	155.430	Hanover	39.42	Rappahannock
39.56	Appomattox	156.030	Hanover	39.80	Rappahannock
39.72	Augusta	39.18	Henry	39.86	Richmond County
460.400	Augusta	39.32	Henry	39.36	Roanoke County
39.40	Bath	39.86	Henry	39.80	Rockbridge
39.32	Bath	154.950	Henry	39.96	Rockingham
39.60	Bedford	39.54	Highland	460.200	Rockingham
39.64	Bland	453.100	Isle of Wight	39.44	Russell
39.42	Botetourt	159.210	Isle of Wight	39.78	Scott
39.36	Brunswick	154.650	James City	154.740	Scott
39.68	Buchanan	453.100	James City Co.	39.94	Shenandoah
39.68	Buckingham	39.48	King & Queen	39.40	Smyth
154.740	Campbell	39.86	King George	39.42	Southampton
156.770	Campbell	39.48	King William	39.28	Spotsylvania
39.20	Caroline	39.44	Lancaster	39.44	Spotsylvania
39.56	Carroll	39.48	Lee	39.40	Stafford
39.42	Charles City	39.72	Loudoun	154.860	StffordD
39.28	Charlotte	39.78	Loudoun	39.66	Suffolk City
39.44	Charlottesville	39.28	Louisa	39.72	Surry
39.68	Chesapeake City	39.36	Louisa	39.60	Sussex
39.20	Clark	39.46	Louisa	154.860	Sussex
39.48	Craig	39.20	Lunenberg	39.32	Tazewell
39.42	Culpepper	39.42	Madison	39.84	Warren
39.60	Culpepper	39.58	Mathews	39.62	Washington
39.64	Culpepper	39.80	Mecklenburg	39.86	Westmoreland
39.40	Cumberland	39.64	Middlesex	39.42	Wise
39.60	Dickenson	154.950	Middlesex	39.64	Wyth
154.860	Dickenson	39.20	Montgomery	154.860	Wyth
39.44	Dinwiddie	39.24	Montgomery	453.150	York
39.56	Essex	39.42	Nelson	453.350	York
39.60	Essex	39.62	Nelson		
39.16	Fairfax	39.42	New Kent	39.50	SERS
39.66	Fairfax	154.950	New Kent	39.54	SERS
154.950	Fauquier	39.44	Northumberland		
39.72	Floyd	39.88	Nottoway		
39.28	Fluvanna	39.42	Orange		
39.40	Franklin	156.150	Orange		
39.28	Frederick	460.150	Page		
39.80	Fauquier	39.68	Patrick		
39.72	Giles	154.710	Patrick		
39.64	Gloucester	39.44	Pittsylvania		

SERS: Sheriff's Emergency Radio Service is used by most all departments and also linked with the Virginia State Police.

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#1300H/A	Model 1300H/A 1-1300 MHz counter with preamp, sensitivity, < 1mV, 27MHz to 450MHz includes Ni-Cad batteries and AC adapter	**$169.95**
#2400H	Model 2400H 10-2400 MHz microwave counter includes Ni-Cad batteries and AC adapter	**$299.95**
#CCA	Model CCA counter/counter, for debugging, ultra sensitive, < 50 micro volts at 150MHz! 1-600 MHz with adjustable threshold, RF indicator LED. Includes Ni-Cad batteries and AC adapter	**$299.95**

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#TA-100S	Telescoping RF pick-up antenna with BNC connector	**$12.00**
#P-100	Probe, direct connection 50 ohm, BNC connector	**$20.00**
#CC-12	Carrying case, gray vinyl with zipper opening. Will hold a counter and #TA-1000S antenna.	**$10.00**

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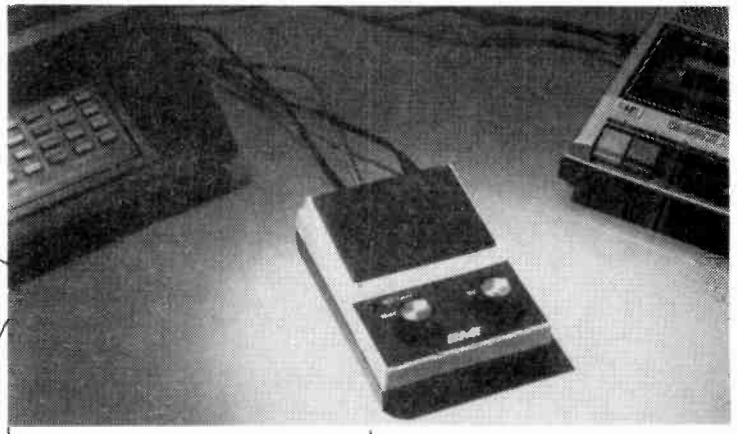
what's new?



Ahoy, Mate!

Few subjects in radio can bring forth such heated debate as pirates. Despite this undeniable fascination, few pirates are actually heard. In fact, at times it seems as if this facet of the monitoring hobby exists more on chatter between hopeful listeners than on the number of stations logged. Nonetheless, everyone, it seems, wants to know more about them.

George Zeller knows a lot about pirates. Over the past nine years, says his bio, he has heard "over 100 different pirate stations, with a QSL rate of about 50%."

In the *1989 Pirate Radio Directory* (do I smell an annual here?), Zeller provides an excellent introduction on "how to hear pirates." The bulk of the book, however, is filled with profiles of dozens of pirate broadcasters, ranging from in-depth histories to brief, two-graph mentions. In all, it's an entertaining look at one of the very few parts of the shortwave industry where creativity is allowed any rope at all.

The 55 page *1989 Pirate Radio Directory* is available from various shortwave radio dealers for $6.00.

Tower Catalog

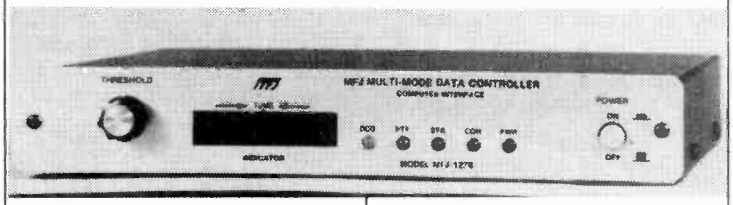
Give It Air

One of the biggest factors in shortwave reception is height. Get that antenna up as high as possible, the higher the better.

How do you get an antenna 80 feet in the air when your house is only ten feet tall? The answer is a tower.

The Aluma Tower Company offers a wide array of communications towers ranging from 100 foot crank-up units to fixed-guy towers that can be stacked to the equivalent of a ten-story house.

Right now, if you mention *Monitoring Times,* you can get a copy of their full-color catalogue free of charge. Write Aluma Tower Company, P.O. Box 2806, Vero Beach, Florida 32961-2806.



MFJ-1278 Multi-Mode Data Controller

MFJ has recently added Navtex receiving and AMTOR transmit and receive to their MFJ-1278 Multi-mode Data Controller. The '1278 was originally released with transmit and receive in seven modes: Packet, RTTY, WeFAX, SSTV, CW, ASCII, and Contest Memory Keyer modes. Also added to the Packet mode is the new Easy Mail Personal Mailbox and new KISS Interface for TCP/IP compatibility.

For more information, contact any MFJ dealer or MFJ Enterprises, Inc., P.O. Box 494, Mississippi State, Mississippi 39762.

Nitelogger

Here it is, monitors. The answer to the age-old question, How can I listen to the radio all night long when I've got to get up for work in the morning?" The answer is the Nitelogger.

The Nitelogger is an automatic tape recorder activator "designed to allow professional quality, unattended, recording of transmissions received on a scanner radio."

It works with any scanner or communications receiver that has a remote speaker jack. Features include an internal speaker (with volume control) that allows you to monitor retransmissions while you're recording. (This is especially important as most radio speakers are disconnected when the external speaker jack is used.)

The Nitelogger is available for $70.00 from Benjamin Michael Industries, Inc., 1139 E. Tower Road, Schaumburg, IL 60173.

Taper Box

MetroWest has introduced the Taper Box for the Bearcat 100XLT and 200XLT. The function of the Taper Box is to allow proper use of the Bearcat-provided charger module without over-charging the NiCad batteries.

All you do is plug the Taper Box directly into the battery pack jack of the scanner. The plug on the cord from your Bearcat charger module plugs into the jack on the Taper Box.

When the charger module is plugged into the Taper Box, a 14 hour timer starts (LED blinking). During that time, the batteries in the scanner will charge at full rate (55 ma). After 14 hours, the charge rate will switch to taper charge (5 ma) to maintain a full charge without damage to the Ni Cads.

The Taper Box is a very affordable $18.00 and is available from MetroWest, 822 North Spring, LaGrange Park, IL 60525.

Attention, Mass!

For Massachusetts area scanner buffs who want to hear more than just police and fire calls (but not federal or military communications), the new *Official*

Protect your NiCads with the MetroWest Taper Box

Massachusetts Scanner *Guide*'s Second Edition by Robert Coburn is packed with business, railroads and aircraft, security agencies, conservation and power companies, amateur radio, ski patrols, cordless and mobile phones, amateur radio, law enforcement, fire and rescue. In fact, the 391-page directory lists just about everything in the civilian spectrum.

Alphabetized by city and cross-referenced by frequency, the guide includes licensee names and call signs. It is available for $17.95 plus $2.05 shipping from Official Scanner Guide, P.O. Box 712, Londonderry, NH 03053.

Shortwave Goes to School

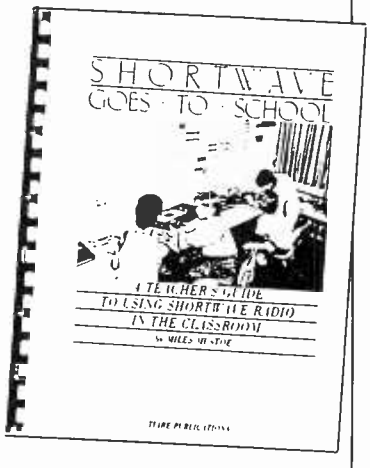
Author Myles Mustoe's writing has previously been featured in the pages of *MT*, as we assisted him in the development of this radio-in-the-classroom curriculum. Innovative educators will enjoy the unique instructional tools available from this teacher's guide.

The monitoring of shortwave can bring boundless perspectives to students of geography, social studies, history, foreign languages and physics. Teachers of advanced students and independent studies programs will find this curriculum to be intellectually challenging. Written to the primary and secondary education levels, the material is easily expanded upon for junior colleges and adult enrichment programs.

A tear-out section of 44 general activity cards is included, centered around learning about shortwave radios and frequencies, signal characteristics and propagation, world time, logging and confirmation procedures, targeting specific world broadcasting stations and programming, and ham radio.

To assist the instructor, a list of publications and equipment suppliers is provided.

While $25 plus $2 shipping may seem quite a bit to pay for a 57 page offset-printed book, this is a teacher's guide and educational materials always cost more. Send for it from Tiare Publications, P.O. Box 493, Lake Geneva, WI 53147.



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

Goodbye PRO2004

A couple of issues back, we mentioned that Radio Shack would soon release their PRO2005 programmable scanner, a follow-on to the popular PRO2004. The 2004 has now been cancelled and the 2005 should be in production shortly.

Features of the new scanner include rubber keypad, 400 channel memory, higher sensitivity, faster scan/search speed, smaller size (but still in a metal cabinet) with neater internal wiring, and a more vertical front panel (like the PRO2021). Cellular frequencies, deleted at the factory, are still restorable by clipping a diode as in the PRO2004.

T.J. "Skip" Arey WB2GHA

P.O. Box 644
Waterford Works, NJ 08089

Fleamarketing

Let me see if I have this straight. . .

"March goes in like a lion and out like a lamb." "April showers bring May flowers." Does that make for a soggy sheep or what????

And then, of course, "Spring is the time when a young man's fancy turns to love." I suppose that explains why my number one and two sons were born in January and February, respectively.

The weather begins to warm, birds sing, woodland creatures come out of hibernation, the world reawakens and . . .

What in the name of radio are you babbling about, Uncle Skip!!

Well, for the radio hobbyist, spring usually brings about a very interesting phenomenon. And I'm not talking about static crashes either!

By April, we find ourselves firmly ensconced in the *Fleamarket Season*. Massive radio garage sales, usually called Hamfests (although computer types are getting in on the fun), can be found springing up like the seasonal posies. These get togethers provide most monitors with the greatest single resource for all manner of new and used hobby related equipment. Think of it as a *Grove industries catalog* spread over a wide geographic area.

Very few true radio freaks can manage to survive through summer without at least one trip to such a meeting. Is it any wonder that the *Dayton Hamvention* with its massive radio fleamarket is held in April. What is it in the migration ritual of the *Lesser North American Radio Monitor* (an odd bird to be sure) that drives them to gather in large congregations and empty their wallets???

Obviously, this can only be a lead in to . . .

Uncle Skip's Guide to Electronic Flea Markets

With a little thought plugged into the process, hamfesting can be both fun and profitable -- well worth the day spent away from all those chores your spouse has lined up for a warm spring day.

Where are all the hamfests?

Well, Bunkey, in the springtime there are parts of the country you can drive five miles in any direction on a Saturday or Sunday and come up with a radio flea market. But most folks have to resort to some research. You can start by turning to the "Convention Calendar" right here in the pages of *MT*. For that matter, its hard to think of a radio magazine that does not devote some space to radio get-togethers, even if it's only the classified section. You can also check your local radio equipment outlet. If you want the straight scoop on hamfests very close to home, you might want to look up one of your local amateur radio operators or a nearby ham club.

Most of these shindigs are held on the weekends so you can clear a space in your schedule. You can plan on spending at least half the day if it is a fair to middlin' size session. If you run into friends, you will probably spend the second half of the day bragging to each other in some fast food restaurant so maybe you better tell your "significant other" not to hold supper.

Dress for success

Nothing can detract from creative money spending quicker then lack of attention to your attire.

First off, wear some good sturdy walking shoes. Moving in and out of the tables and tailgates at a hamfest can cover a lot of ground. Thinking about sore feet will cause you to miss some bargain or, worse yet, pay the posted price just to get back to your car.

We're talking springtime, so it's a real good idea to wear layers of clothes you can remove so you don't get too hot or too cold. You can't enjoy this process if you are behaving like Miss Muffet's porridge. Some of these shows have both inside and outdoor display areas so your personal temperature control can be fairly important.

Bring along a backpack or a "Lil' Old Lady's" shopping bag. Your pockets and arms can fill up very quickly. You must maintain a free hand at all times to reach your wallet.

Funds management

Old Uncle Skip likes to keep a little nestegg for going to hamfests. Something "Off the Books" that doesn't get eaten up in the family budget. The secret of successful fleamarketing is to not spend it all at once. I use a bankrolling technique that is as old as the riverboat gamblers. Take the total you have to spend and put half in your wallet and half someplace else where you can't get to it too quickly. Plan your flea market day around the bucks in your wallet; that is your budget. The hidden funds can be pressed into service when, *and only when*, you see a deal that is just too hard to beat.

If you don't touch your hidden funds, that's okay. You can use them to take your spouse out to dinner to apologize for spending the other half. If you are not in the mood to eat, the extra cash can be used to purchase the little doodads needed to use whatever you bought. For some reason I always find myself spending another 35 percent over my hamfest costs bringing my fleamarket purchases on line.

Even radio people have flea markets!

Planning ahead

Before you head down the road to your flea market, draw up two lists.

The first should be a list of things you need. Tubes for existing rigs, parts for a planned project, materials to repair your antenna, etc. Put the things you need to keep your existing listening post operational on this list.

Now, construct a list of what you want. For example, some receiver you might buy if the price is right.

Once you have developed your lists, take some time to read through parts catalogs and the classified sections of radio magazines (like *MT*'s own "Stock Exchange"). Use this research to get an idea of the going price for the things you are interested in. This tactic

will help you to suppress the "Eyes are bigger than the bankroll" syndrome that has ended so many marriages.

If you are a lover of surplus or antique radios, you should carry a third list of the tube compliments of all your radio collection. It never hurts to buy spare tubes to keep some fine old rig running.

Go early

After attending countless hamfests, Old Uncle Skip has never seen a flea market that wasn't pretty much picked over by 11:00 a.m. Plan to be in line for the opening of the gates if you expect to get what you came for. I once set up a table to unload some gear and the other sellers bought me out of hardware before the show even opened. That, in turn, allowed me to spend this freshly collected capital on goodies I wanted by 9:30 a.m.

Now, having said this, remember that haste makes waste. (I can contradict myself if I want to; it's my column). Do take some time to look around. With the exception of the rarest of pieces, never buy the first thing you see at the price posted. More than one radio person has been drug off in a straight-jacket for purchasing something at a hamfest for $50.00, only to move on to the next exhibitor to find the same item selling for $25.00.

If you love surplus gear, this point cannot be over emphasized. In my personal quest to fill my basement with Collins R-390As, Old Uncle Skip has seen hamfest prices ranging from $75.00 to $450.00. Unless the hardware you are looking for is very, very popular, hang loose, you've got all day, Compadre. Just make sure you are there early enough to take full advantage of it!

Don't forget to eat a big breakfast. The food at these gatherings tends to be passable at best and they tend to charge whatever the market will bear. It never hurts to bring along a sandwich and a can of soda in your coat pocket. The less you spend on sustenance, the more you can spend on toys.

Don't be afraid to haggle

You will discover early on that very few hamfest prices are firm. But, if you have done your homework, don't insult the seller with a silly offer. If you have really examined the market place and know what an item is worth, stick to your guns. The greatest fear of a fleamarket seller is that he or she will need to load all this stuff back in the car and take it home. If you offer someone a low price in the morning and get turned down, stop back after lunch. The closer you get to the end of the day, the better your first offer is going to sound.

Funny things sometimes happen at hamfests. An oldtimer might be holding firm for $100.00 on a rig you want to buy but when an enthusiastic novice asks, the price drops to $35.00. There is still a great spirit in the radio hobby.

Commercial vendors don't haggle as a rule, but keep an eye peeled for "Hamfest Specials" on new gear.

While haggling is fun, never be intimidated into buying something at an inflated price because you think you won't see a good deal in the future. You don't need this hardware to keep your heart pumping, Pal! The rarest radio at the show will be at the next one if the seller doesn't accept a reasonable price. And if you wander back to a table only to find the rig of your dreams walking off in someone else's hands, ain't no big thing, Bunky. Just put it on the top of your list for the next hamfest.

Courtesy and caveat emptor

If you purchase a large item, try to take it back to your car immediately. I have seen the pleasure of these events lost to a seller who was forced to hang around waiting for somebody to pick up a purchased item. The guy could have sold the item to a more courteous purchaser and been home early.

And, of course, be aware of the shady deal. I tend to deal only with folks who are wearing the Callsign tags. That way, if there is a problem, I can track the guy down. Hams don't usually rip each other off because word can get "around the world."

Enjoy yourself

Lots of folks think hamfesting is the most fun in the radio hobby. Radio people can tend to be a solitary lot. Getting out to a flea market allows you to "let the stink blow off" during a great day of window shopping, haggling, and buying. You also get to meet up with folks that share the same interests. You can tell someone how excited you were about hearing Radio Nibbi Nibbi and know they are going to be excited too. You will soak up the vibes. (Sorry, I grew up in the sixties).

I first wrote on the topic of electronic flea markets about five years ago. Interestingly enough, I have not changed my strategies over the years. If you keep to these simple principles, you will have great fun and bring home all manner of goodies at prices that shouldn't upset your spouse too much. You married types might be interested to know that many hamfests have a few XYL vendors who specialize in selling gifts to give your spouse so that "boat anchor" you spent the second mortgage on can enter a happy home.

Dave Jones

430 Garnor Drive
Suffield, OH 44260

Motorola: *Supplier to the Government*

Federal monitors are probably aware of the 32 and 64 channel radio communication systems currently utilized by various federal agencies. The systems have been referenced in many articles and publications including previous Federal File columns. The actual radio communication equipment, however, has only been alluded to and not presented. This month we'll change all that and take a look at the most commonly utilized Motorola radio equipment for the federal government and the military.

Motorola is the largest single supplier of radio equipment to the government; the Syntor series is the newest generation currently in use.

Motorola appears to be the largest single supplier of radio communication equipment and systems to the federal government. Motorola equipment dominates most sites and locations. In fact it's rare to see a non-Motorola unit in use by federal agencies or the military. The only exception is the 225 to 400 MHz UHF military aircraft band -- a market where Motorola does not dominate.

An examination of virtually any issue of *Commerce Business Daily* (CBD) shows just how strong Motorola's presence is in the rest of the market. *CBD* is daily government publication that, among other things, lists the names of all those who have been awarded major contracts with the government and military. Motorola equipment listings are often found under *several* sections, from "Services" to "Communication Systems," with agencies from the Wildlife Service to the FBI to USAF. All request specific Motorola radio communication equipment and services.

The Motorola Syntor X 9000 series is the newest generation field programmable mobile radios in use by federal agencies. X 9000's are available in VHF and UHF frequency ranges and in either a 32 mode or 64 mode configuration. (Motorola uses the term mode instead of channel and as presented later in this column, the reasoning will become apparent.)

The Syntor X 9000 series is comprised of four sections essentially -- a control unit, speaker, transceiver, and antenna. It utilizes a control unit which is connected to the remotely-located transceiver electronics. All user features are controlled via this control unit. The remotely located transceiver is connected to the vehicle's power system, an external antenna, and a speaker.

The control unit provides the operator with the capability to control and monitor the operation of the Syntor X 9000 series radio. Comprised of 24 control buttons and switches, 4 indicator lights, and an alphanumeric display, the unit is able to provide the following functions: power on/off, dim control for display brightness, volume and squelch control, mode selection and scan enable, touch tone pad (similar to a telephone pad), and (optional) user-defined control buttons and switches.

The user-defined controls may work the siren and PA (Public Address), an emergency transmission switch, and other radio options. The touch tone pad keys may perform two functions -- the DTMF tone or user defined functions. The four indicators are for indication of channel busy, transmit, priority channel and non-priority channel.

The configuration of the Syntor X 9000 -- with modes instead of channels -- at first sounds a bit strange. Further examination yields the reason. Each "mode" is programmed into the unit with a multitude of parameters associated with the particular "mode." The mode parameters essentially configure the operating functional characteristics of the radio for a given mode or channel.

Some mode parameters programmable are mode number, transmit frequency, receive frequency, transmit code (tone encode), receive code (tone encode), channel scan -- on/off, highest priority channel enable, second highest priority channel enable and a time out timer setting and enable. The standard configuration is a 32 mode configuration with a 64 mode option available.

The word "programming" keeps arising in the discussion of the Syntor X 9000. The Syntor X 9000 radios are configured with their modes via the use of an internal PROM (Programmable Read Only Memory). Two types of PROMs are in use in the Syntor X 9000 series -- the first type is a fusable link PROM and the second type is an EEPROM (Electrically Erasable PROM). The fusable link PROM may only be programmed once and then any future changes require a new PROM being installed in the radio.

The second type, EEPROM, allow multiple erasures and reprogramming -- over 10,000 cycles. You can often hear a federal agency informing mobile radio users to make sure that they are coming to work tomorrow because the radios are being reprogrammed. Such changes are made before a large scale surveillance operations as well as on a normal, periodic basis.

The operating functions of the radio are determined by the programmed data located in the PROM (or EEPROM). These are mainly hardware parameters set by the design of the radio or hardware adjustments. The Syntor X 9000 VHF units are available with frequency coverage of 150-174 MHz and two power output levels, 40 W and 100 W (watts).

The power outputs are variable slightly upward for increased output or downward to approximately 50 percent ratings. The channel resolution is selectable in multiples of 5.0 kHz or 6.25 kHz (i.e. 165.005, 165.010, 165.015, or 164.0625, 164.125, 164.1875).

Several squelch options are offered -- Private-Line (PL), Digital Private-Line (DPL), Carrier Squelch and Multiple Coded Squelch, PL and DPL are standard with the Syntor X 9000 series and are available in the same radio unit, with the latter two squelch methods being optional. The primary unit power is the vehicle's power system with either a negative (standard) or positive ground (optional).

The transmitter is FCC licensable for 15F2, 16F3, and 16F9 emission modes. All the modes utilize FM modulation with 16F3 being the most common mode -- voice communication. The maximum frequency separation is 24 MHz which is the full range of the unit and the specification states without degradation. Other models are often limited to 8 or 10 MHz frequency separations at best which limits the overall operating (frequency) range of the radio.

The receiver has an available preamplifier to increase signal sensitivity. The standard Syntor X 9000 VHF receiver has 0.50 microvolts sensitivity at 20 dB quieting. The optional preamplifier improves the sensitivity to 0.25 microvolts at 20 dB quieting. A quite significant improvement.

The Syntor X 9000 series is far from the only Motorola product currently in use by federal agencies and the military. Another popular series is the MX-300 series hand-helds which are no longer in production. The MX-300 series hand-helds are in wide use by both the military and government agencies in part because of the DVP and DES options. The MX-300 was available in a multitude of configurations and in both VHF and UHF frequency ranges which assisted in its wide usage.

The VHF models were available in 2, 4, or 6 channel models with power outputs from 1 W to 6 W. The VHF models also had available a receiver preamplifier for increased receiver sensitivity. The channel spacing is 30 kHz (i.e. 164.000, 164.030, 164.060) with a maximum frequency separation (for transmit) of 12 MHz. The UHF models were available in 2, 4, 6, or 8 channel models with power outputs from 1 W to 5 W. The channel spacing for the UHF models is 25 kHz.

The frequency coverage of the federal/military UHF model is 403-430 MHz, a bit below and above the 406-420 federal land mobile band. The maximum frequency separation for transmit is 6 MHz which limited agencies to restrict their transmit frequencies to a particular area in the 403-430 range. In part this can explain why most users in the federal 406-420 band have their transmit frequencies clustered around a certain frequency range (i.e. DEA mobile outputs in the 416-417 MHz range).

The MX-300 series also offered an 800 MHz version called MX-300T. The MX-300T is capable of transmitting from 806-821 MHz and capable of reception in either the 857-866 MHz range or the 851-860 MHz range. The unit output power is 1.5 W. The MX-300T is designed for operation in trunked systems with a wide variety of options.

A vast myriad of radios exist in use today by the federal government and military and the Federal File has presented two of the most common VHF and UHF Motorola radios. Knowing what the capabilities of the radio system being monitored are can assist in the monitoring of that particular system. A future Federal File will present and examine some UHF AC radio communication equipment.

Jean Baker, KIN9DD

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Indianapolis, IN 46228

LDOC Frequencies

Long Distance Operational Control (LDOC) frequencies are often active with lots of interesting communications between airline companies and their aircraft. These frequencies are utilized for phone patches between aircraft and airline company stations. Messages are relayed by aero enroute ground stations from dispatchers to flights concerning weather conditions at airports of destination.

In some instances, you will actually find airline companies using an LDOC frequency for direct communications with their flights. The communications can concern exchanges between pilots and maintenance/engineering departments of their respective airlines, "off and on" (departure and arrival) reports to dispatchers, passenger counts, catering problems, ETA to destination, passenger or crew illness, unexpected births enroute, weather, and drunk, "high," or crazy passengers. The list is practically endless as to why a pilot would need to talk with his company.

When a pilot requires a phone patch, he will first contact an aeronautical enroute ground station. The operator will put the patch through, sometimes on the frequency that they were first called up on (i.e. Houston Radio). Usually, however, they'll ask the pilot to come up on another frequency which is allocated for LDOC usage (i.e. ARINC) for the phone patch. Since ARINC and many other ground facilities also act as middlemen between ATC centers and aircraft flying over areas which are out of radar coverage, they need separate frequencies for these two different types of communications.

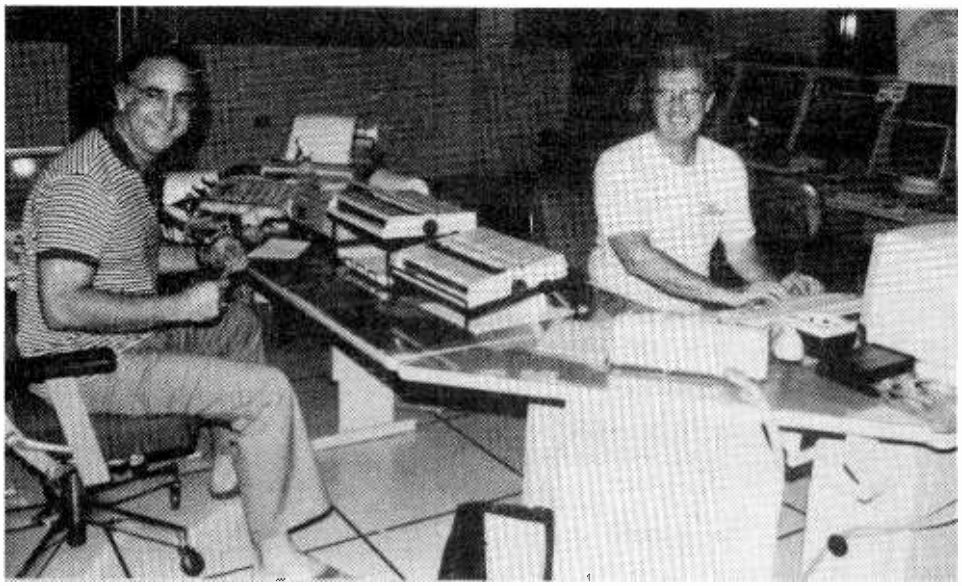
Note that in Table 1 all frequencies in the 21 MHz aeronautical band are utilized by LDOC stations only. Most aero enroute ground stations use frequencies from 2 through 17 MHz relay of ATC traffic to and from aircraft. However, LDOC freqs are liberally sprinkled through those bands also.

And speaking of ARINC, above is a photo of operators at the Honolulu Communications Center at their consoles.

In addition to guarding the LDOC frequencies for the central west, north, south, and central east Pacific, they also handle communications between Air Traffic Control and flights over the same area. If any readers missed the latter frequencies when they were featured in a recent issue, drop me a line and I'll send them to you.

Foot-In-Mouth Dept.

In a recent feature article I wrote for *Monitoring Times,* I wondered aloud about the existence of an FCC ruling concerning HF aero comms over the continental United States.



These two Honolulu operators are coordinating the data between ATC and the other ARINC operators who are working airborne traffic.

Readers Richard Holbert, WA2OXJ; and Jeffrey Krause, PH.D, referred me to FCC Rules and Regulations Section 87.295 (a), which reads as follows:

> *Regular use of high frequencies for aeronautical enroute mobile (R) communications in the domestic continental United States (excluding Alaska) will not be permitted.*

However, I think that if an emergency situation occurred (failure of VHF radios), use of HF radios would be allowed -- although it's not specifically mentioned.

I'm curious enough to go ahead and read the rest of FCC's Rules and Regulations as to what is and isn't sanctioned. Anyway, I really appreciate these readers letting me know about this ruling and encourage others to please send corrections, additions, deletions, etc., to any material featured in "Plane Talk"

Table 1

AFRICA LONG DISTANCE OPERATIONAL CONTROL

Addis Ababa, Bahrain, Cairo, Harare, Jeddah, Johannesburg, Kabul, Kinshasa, Luanda, Monrovia, Nairobi

3013, 5532, 5538, 5544, 6526, 6640, 6646, 8927, 8933, 10033, 10075, 10093, 11348, 11354, 13330, 13339, 13348, 17925, 17931, 17937, 21943, 21961, 21982, 21994

ASIA LONG DISTANCE OPERATIONAL CONTROL

Auckland, Bangkok, Beijing, Bombay, Hong Kong, Jakarta, Karachi, Manila, Nauru, Rangoon, Seoul, Singapore, Sydney, Tokyo

3007, 4687, 6637, 8921, 8930, 10072, 10078, 11342, 11351, 13324, 13333, 13342, 13351, 17916, 17922, 17928, 17934, 17940, 21949, 21970

EUROPE LONG DISTANCE OPERATIONAL CONTROL

Amsterdam, Athens, Belgrade, Berne, Brussels, Bucharest, Budapest, Dublin, Frankfurt, Khabarovsk, Lisbon, London, Madrid, Moscow, Paris, Prague, Rome, Stockholm, Tashkent, Warsaw

3010, 3497, 4654, 4687, 5529, 5532, 5535, 5541, 6526, 6637, 6643, 8921, 8924, 8930, 8936, 10027, 10030, 10069, 10072, 10078, 10093, 11345, 11351, 13324, 13327, 13333, 13336, 13342, 13345, 13351, 17916, 17922, 17931, 17940, 21940, 21946, 21952, 21958, 21967, 21973, 21979, 21988, 21997

NORTH AMERICA LONG DISTANCE OPERATIONAL CONTROL

Boyeros, Camaguey, Honolulu, Houston, Mexico City, New York, Ottawa, San Francisco, San Juan, Santiago De Cuba, Santo Domingo, Toronto, Vancouver

3007, 3013, 3494, 5529, 5538, 5544, 5562, 6526, 6637, 6640, 6646, 8927, 8933, 8936, 8954, 10027, 10033, 10039, 10075, 11342, 11348, 11390, 13330, 13339, 13348, 17919, 17925, 17940, 17934, 21964, 21985

SOUTH AMERICA LONG DISTANCE OPERATIONAL CONTROL

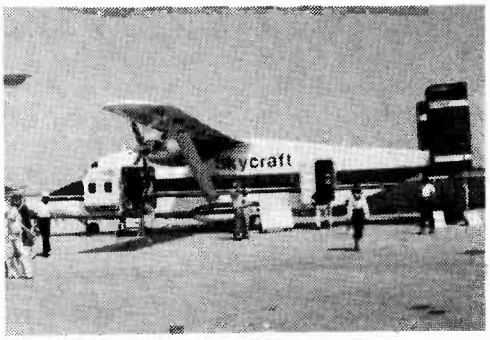
Barranquilla, Belem, Bogota, Brasilia, Buenos Aires, Cali, Cartagena, Chiclayo, Lima, Maiquetia, Manaus, Piarco, Recife, Rio de Janeiro, San Andres Island, Sao Paulo, Talara, Trujillo

3010, 5535, 5553, 6547, 6643, 8896, 8924, 8938, 8939, 10030, 11327, 11339, 11345, 11366, 11375, 11393, 13309, 13327, 13336, 17919, 17928, 17937, 21955, 21976

or any other article that has my by-line in *MT*!

Bob Grove contributed the following information and frequencies for the Goodyear Blimps. He reports that they identify themselves as "30" (Columbia), "40" (America), and "50" (Enterprise). Frequencies in use are 132.000 (VHF Aero Band); 151.625 (ground crew to airship), 469.925 (security), and at media events they can be monitored on 161.640, 161.700, and 161.760 MHz FM. Look for a Dave Jones article on these grand ships of the air in a future issue of this magazine.

Mr. J. C. asks if any other readers know which frequency is used in the daytime by SAC for airborne refueling purposes. He is also interested in obtaining frequencies (HF) which are utilized by the RAF and Italian Military Aircraft. Can any readers help with these?



Bert Huneault (Windsor, Ontario, Canada) submitted the photo of the Shorts SD-330 Aircraft. He says that it's an ugly duckling of an aircraft although extremely efficient. The flight attendant who just came out of the plane was a lot prettier than the aircraft! This photo was taken at Windsor Airport.

Air Traffic Control to be Updated

Starting in 1992 and continuing through most of 1999, a system known as the Advanced Automation System will be installed in a series of stages, which will replace the existing air traffic control system.

The first part of the Advanced Automation System to be implemented will be the new air traffic controller work stations which will be called "sector suites." These will feature full-color monitors that display weather, traffic, and flight data including position, headings, and, when aircraft are fitted with the correct mode, altitude. These sector suites will be linked to host computers which have just recently been installed in 20 of the country's enroute control centers (ARTCCs) that will perform the majority of the data processing. In 1990, the first systems will be delivered to the FAA Technical Center (Atlantic City, NJ) in late 1990 for approximately 18 months of testing.

Seattle (WA) ARTCC is to receive the first of the operational systems in April 1992. The FAA reports that it hopes to have all of the 5000 sector suites ordered operational by June of 1995.

The FAA will require commercial airlines to install MODE S transponders enabling them to transmit altitude and to communicate over a data link with the air traffic control computers. However, aircraft without MODE S equipment (private aviation) will have to receive instructions by radio.

Altitude will be shown on controller's display only if the aircraft has an altitude transmitting transponder. Commercial airliners will receive instructions from the computers instead of over the radio. New equipment, which has been under development for many years, would have screens much like those on the sector suites which will be capable of displaying corresponding weather and traffic information on the flight deck.

Atlanta Flight Support

Eastern Airlines provides air/ground radio services for their multi-airline clients across the nation. These radio services also include setting up phone patches, relaying weather information at airport of destination, in-flight medical service assistance (provided by MEDLINK) in case of on-board emergencies, etc.

The chart featured here shows the VHF enroute frequencies utilized coast to coast by airlines who are Atlanta Flight support's clients when contacting their Communications Center in Atlanta, Georgia.

This company also has a large international (HF) communications network under its auspices which will be featured in an upcoming "Plane Talk" column.

Many thanks to John Gerler, Chief Radio Operator (and *MT* subscriber!) for Atlanta Flight Support, who contributed the frequency chart.

That's it for this time. Airline addresses and other goodies will be featured in the next "Plane Talk" column. Until then, 73 and out.

Ike Kerschner, N3IK

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

Packet

About a year and a half ago I joined the thousands of amateurs world-wide who are enjoying packet radio. In that time I have talked to many amateurs who have differing opinions about this new mode. Not everyone is enthusiastic about packet. But all agree that it does many things quite well and is by far the most reliable digital mode available to amateurs at the moment.

The one comment that keeps coming to my attention is that packet will never replace CW! That's true to a great extent for yesterday's amateurs. At the same time, CW will likewise never be able to replace packet. Packet is so versatile that we have only started to realize its many applications to amateur radio. Rather than try to explain the mechanics of packet in one short column, I would like to tell you what this mode can do for you.

Time Shifting

How often have you wanted to chat with a ham friend but have been unable to contact him because your time schedules did not jive? Packet can eliminate that problem. By simply leaving a message for your friend either on his personal bulletin board (or mail box) or his local packet bulletin board system (PBBS) you can stay in touch.

Your ham friend can, of course, answer you the same way, or perhaps schedule a phone or CW QSO at a later time. It does not matter if your friend lives down the block or half a world away, packet solves the problem.

Third Party Traffic

The usual third party traffic that you sent via CW or the phone traffic nets can be handled by packet easier – and usually faster. Remember, though, if you are going to send third party traffic via packet, follow the same procedures as you would on any other mode. That is, use the same message format, and keep word count to 25 or so.

Photo 1

The major difference in this type of third party traffic handling is that you can enter the message into your local system at any time and it will be picked up and forwarded to its destination by other users of the system.

There are of course certain protocols that are different when using packet for third party traffic. It's a good idea to get filled in on the proper procedure by someone on your local PBBS. The book *Your Gateway to Packet Radio* by Stan Horzepa is an excellent source for information on using packet for third party traffic and it lists the general protocols being used by most PBBS's.

Keeping in Touch

Keeping up-to-date with everything that's happening in the world of ham radio is where packet really shines. For example, when the 18 MHz band was opened for operation, packet operators knew about it within hours. Whenever a special event is about to take place, or something interesting is going on, it's put onto the PBBS's.

Regular propagation reports, DXpeditions, Oscar events, MIR, legislation affecting amateurs – you name it – is all updated on a regular basis. In addition, non-amateur news is also circulated via packet, for example a recent recall of potentially dangerous coffee makers circulated via packet within hours of the manufacturers announcement. Stories, comments, requests for help, offers of help, circuits, software, games, info on new gear, mods for existing gear and storage and transmission of images are all part of the packet scene.

As you can see, the exciting things that can be done via packet are limited only by our imaginations. This is truly a great new field and one I urge all of you to participate in it.

Gear Required

The first requirement for packet gear is a transmitter and receiver capable of tuning packet radio. Your normal HF rig or VHF gear is suitable in most cases. A TNC (terminal node controller) and dumb terminal or computer are also part of the packet station. A dumb terminal is simply a keyboard and screen such as is used in hospitals and industry to access a main frame computer. Dumb terminals are limited in the options of operation available to the user; consequently most amateurs use a computer so the data can be stored on a disk or manipulated in some particular manner.

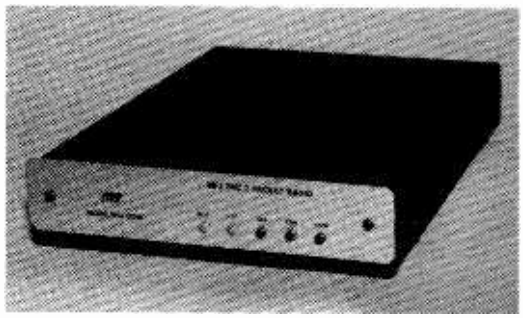


Photo 2

There are a wide variety of TNC's on the market to choose from. One of the better units (see photo one) is the Kantronics KAM (Kantronics All Mode). This particular unit will allow the user to run packet on both VHF and HF at the same time. In addition, the KAM is useable on CW, RTTY, AMTOR and WEFAX. If you use the KAM with a computer, a terminal program will be required (such as Pro-Comm, or Kantronics Pacfile) to allow the KAM to talk to the computer. The KAM can be used with any computer on the market including the popular Commodore machines.

A second TNC available is the MFJ TNC 2 (photo 2). Unlike the KAM this unit will function only on packet; however it will copy WEFAX if additional software is used with it. The major feature I like about this unit is that it costs less than one half of the price of most multi-mode units. While it does not receive all modes, it does an outstanding job on packet.

Rigs

For my own station, I use a Kenwood TR-751 all-mode two meter rig, and a Uniden HR2510 ten meter transceiver for all of my present packet work. However any VHF/UHF FM rig will do the job, even your little HT if you can reach others on packet with it. For HF the rig must be very frequency stable. Normally that dictates a new digital unit or one of the better tube type rigs. A good 500 kHz filter is also useful on HF.

For antennas, I suggest a good omni-directional antenna for VHF or a beam if you wish to work into more distant areas directly. Use whatever HF antenna you have available, beams are excellent choices on the DX bands.

Learning

About 75% of all packet takes place on VHF. It is best to start out on VHF packet and advance to HF as you gain experience. The reason VHF is the better place to start is because you can learn the ropes and get help from a local packeteer. Most local PBBS's have help menu's to assist the beginner. Whereas HF packet has special techniques

that will be easier to master after you understand the basic principals involved.

As with any new mode, packet can be intimidating. When I first started, I made many errors and felt foolish any number of times. The important thing, though, is to persist and learn. And it won't take long till you are keyboarding with the best of them.

18 MHz is *IN!*

At long last, U.S. amateurs are allowed the use of the 18 MHz band (18.068 - 18.168 MHz). On January 31, the FCC made it official and the U.S. is now on 17 meters. N3IK became active on 18 MHz February 5, 1989, first QSO was with FY5, second with W7 (Idaho) while using my HW9 at a whopping 2 watts into my 80 meter delta loop. Signals have been great and lots of neat rag-chewing going on. DX is easy to work on both phone and CW. Generally CW activity takes place from about 18.068 to 18.110 and SSB from 18.110 to 18.168 MHz. Give this band a try -- YOU WILL LIKE IT!

Propagation

Sunspot numbers have not been quite as strong recently. The numbers were only in the 170's. Nevertheless, it's a lot better now than it was at this time last year. We can expect the numbers to continue to be in the 180 to 200 range for a long time with resulting excellent DX on 20 through 6 meters.

New From Uniden

The folks that brought us the fantastic HR-2510 have recently announced a new amateur transceiver, the HR-2600. Like the 2510, this is a CW, SSB, FM transceiver with some differences. Power will remain 25 watts, the courtesy beep has been removed and a 100 kHz offset has been added for repeater operation. Additional features include CTSS tone encoding, a 5 kHz scan rate, and operator-controlled up and down step rate (controlled by mike switches). The CW switch-over time has been reduced to one half second, and the unit will scan the entire band instead of just 500 kHz segments.

The CPU and frequency determining circuits are encapsulated in epoxy, hence no longer will it be possible to modify the Uniden ten meter rigs for out of band operation. The 2600 should be available in late spring of this year!

A source at Uniden has informed me that the company is seriously considering donating a ten meter ham rig to any school that has an amateur radio club (a la Apple Computers) in an effort to encourage more youngsters to enter the ranks of amateur radio. What a fantastic idea! Nice going Uniden!!

Keep an eye on these people. There's more coming from this company in the near future.

New, New, New

3D2 Rotuma has been given official ARRL DXCC status and cards from the recent 3D2XX and the 1982, 3D2XR operation are creditable for your DXCC standings.

MV island (Malyj Vysotskij Island) has also been awarded DXCC status. The ARRL will accept 4J1FS operation (July 1988) for credit.

4W0PA, Hans is active from Yemen on 14180 / 14145 SSB at 2015 most days, he is also working CW on 14020 during the same time slot some days.

ZK1XC & ZK1SJ Cook Islands will be active through March 13, 1989.

Enforcing the Rules

I constantly hear amateurs harping about the availability of rigs that will cover ten meters. The fear is that CB-types will get ahold of them. The Uniden 2510 and the Radio Shack HTX-100 are two rigs that have been mentioned any number of times.

Now let's look at some facts. First of all, assume you know of someone who is operating in the ten meter band and does not have a ham license. What are you going to do? If you expect a quick phone call to the FCC to cure the problem then you believe in Santa Claus, too. For each offender the FCC takes out, there are hundreds more who will never be caught! A hose job with an AK-47 or MAC 10 might cure the problem but the trouble is that the law frowns upon such action by citizens against other citizens. Another approach is to throw your 1500 watt final on and blast them out of the band. Yeah, this works too; they simply move into the CW portion, or on into some place where you -- as a legal ham -- cannot follow.

Do you have any ideas on the subject? If so, I would like to hear them.

Ten Meter AMSTAT Net for Beginners

AMSTAT has announced a new net with operations on 28.460 MHz at 1900 hours UTC on Sunday. This net is designed to inform and educate those who are interested in space operations via OSCAR and the various other satellites. Discussions on orbital mechanics, transponder modes, satellite tracking programs and antennas will be featured. Join them.

That's all for April, gang. Write soon and let me know what you want to see in "On the Ham Bands. 73, Ike N3IK

the qsl report

Gayle Van Horn
P.O. Box 1088
Gretna, LA 70053-1088

Angola
D3E Luanda Radio, 8565 kHz. CW marker. Partial data QSL letter in Portuguese. Verification signer, Gomes-Ferreira. Received in 450 days for two IRCs and a Portuguese utility reception report. Station address: C.P. 625, Luanda, Angola Peoples Republic. (Rick Albright, Merced, CA)

Atlantic Ocean
DGNZ M/S Columbus New Zealand, 16587 kHz USB. Full data prepared frequency card. Verification signer, Heinz Wohlgemutt, REO. Received in seven days for a German utility reception report, a souvenir postcard, and one U.S. dollar. Ship address: c/o Columbus Line, 510 Walnut Street, Philadelphia, PA 19106. (Rick Albright, Merced, CA)

Central African Republic
Radio Centrafrique, 5034 kHz. Partial data "Map" card. Verification signer, Michael Bata. Received in 21 days for a French reception report, and mint stamps. Station address: Boite Postal 940, Bangui, Central African Republic. (Aboe Thaliep, Batang, Central Java)

Denmark
OVG8 Danish Naval Radio, Frederikshvn, 8148 kHz. CW marker. Full data black-and-white QSL card. Verification signer, Chief Communications Officer. Received in 60 days for an English utility reception report, Flaaderadio, Signal Centre, DK-9900, Frederikshavn, Denmark. (Rick Albright, Merced, CA)

Ethiopia
Clandestine-Radio Halgan, 9590 kHz. Full data personal letter and political pamphlet. Verification signer, Mohammed Ismail BariBari. Received in 90 days for an English reception report and two IRCs. Station address: Box 838, Addis Ababa, Ethiopia. (Aboe Thaliep, Batang, Central Java)

France
Radio France International, 9805 kHz. Full data "Panorama in Paris" postcard. Verification signer, Allouis-Issoudun. Received in 28 days for an English reception report. Station address: Boite Postal 9516, Paris, France. (Aboe Thaliep, Batang, Central Java)

Guam
Coast Guard Communication Station, 8150 kHz. Partial data on Coast Guard letterhead, information newsletter, and station schedule. Verification signer, Ronald G. Wilkins, Chief Warrant Officer. Received in 60 days for an English utility reception report. Station address: Commanding Officer, U.S. Coast Guard, Communication Station, Guam. Additional address: Box 149 NCWP, FPO San Francisco, CA 96630-1845. (Milan Seifert, APO San Francisco, CA)

Guatemala
Radio Tezulutlan, 3370 kHz. Partial data "Village Scenery" card, and a partial data station form letter. Verification signer, Carlos Arnoldo Wilhelm, Director Ejecutivo. Received in 98 days for a Spanish reception report, and one U.S. dollar. Station address: Apartado Postal No. 19, Coban, Alta Verapaz, Guatemala, Centro America. (Richard L. Coday, Oildale, CA)

Italy
RAI, 9575 kHz. Full data "Renato Guttuso" painting postcard, without verification signer. Received in 70 days for an English reception report, and two IRCs. Station address: Viale Mazzini 14, 00195 Roma, Italy. (Edward J. Cichorek, Somerset, NJ)

Japan
JCS Choshi Radio Station, 12878 kHz. Full data "Antennas" postcard and personal letter. Verification signer, Chosi Radio Station personnel. Received in 60 days for an English utility reception report. Station address: 7756 Kobatake-Shinmachi, Chosi-city, Chiba Pref,, Japan 288. (Milan Seifert, APO San Francisco, CA)

Aviation Weather Service Center-Tokyo Volmet, 13282 kHz. Full data personal letter, and VOLMET map card, without verification signer. Received in one month for an English utility reception report. Station address: New Tokyo Int'l Airport, 133 Aza Komemae Furugome, Narita City, Japan. (Milan Seifert, APO San Francisco, CA)

Lesotho
Radio Lesotho, 4800 kHz. Full data Lesotho "Flag" card, without verification signer. Received in 242 days for an English reception report and one IRC. Station address: P.O. Box 552, Maseru, Lesotho. (Kenneth D. MacHarg, Jeffersonville, IN)

Libya
Radio Jamahiriya, 15235 kHz. Full data station letter. Verification signer, Mohamed Sweidan, Director. Received in 93 days for an English reception report and two IRCs. QSL address: P.O.Box 17, Hamrun, Malta. (Edward J. Cichorek, Somerset, NJ)

New Zealand
Awarua Coast Radio Station, 12740 kHz USB. Full data station letter, and logo/map postcard. Verification signer, Bevan J. Simpson, Watch Supervisor. Received in 30 days for an English utility reception report. Station address: Awarua Radio, District Telecom Manager's Office, Telecom Corp. of New Zealand Ltd., Invercargill, New Zealand. (Milan Seifert, APO San Francisco, CA)

Pacific Ocean
DILL M/S Luwigshafen Express, 16587 kHz USB. Full data prepared frequency card. Verification signer, Radio Officer Henningsen. Received in ten days for a German utility reception report, souvenir postcard, and one U.S. dollar. Ship address: c/o Hapag Lloyd Line, 1221 Broadway, Oakland, CA 94612. (Rick Albright, Merced, CA)

PGEH M/S Nedlloyd Bahrain, 16593 kHz USB. Full data prepared frequency card and a color photo of the ship. Verification signer, Chief Radio Officer. Received in 38 days for a Dutch utility reception report, a souvenir postcard, and one U.S. dollar. Ship address: c/o Nedlloyd Line, 650 California, San Francisco, CA 94108. (Rick Albright, Merced, CA)

SXTD M/S Golden Odyssey, 12416 kHz USB. Partial data prepared frequency card and a color photo of the ship. Verification signer, Chief Radio Officer. Received in 100 days for an English utility reception report, a souvenir postcard, and one U.S. dollar. Ship address: c/o Royal Cruise Line, 1 Maritime Plaza, Suite 660, San Francisco, CA 94111. (Rick Albright, Merced, CA)

GREAT CATCH!?

Let us know what QSL's you've received. The information you provide may be of help to your fellow hobbyists! Send all QSL information to Gayle Van Horn at the address above.

Peru
Radio Atlantida, 4790 kHz. Partial data personal letter and no data postcard of the "Belen Floating District." Received in 460 days for two Spanish reception reports, and one U.S. dollar. Station address: Arica 441, Iquitos, Peru. (Richard L. Coday, Oildale, CA)

Philippines
NNOCUP USS Nimitz, 14477 kHz USB. Full data prepared frequency card, black-and-white photo of the ship. Verification signer, Lt. Zeiler. Receiver in 65 days for an English utility reception report, a souvenir postcard, and one U.S. dollar. Ship address: MARS Station, OIC/RMC, USS Nimitz CVN-68, FPO Seattle, WA 98789-2820. (Rick Albright, Merced, CA)

Suriname
PZN4 Paramaribo Radio, 13046 kHz CW. Full data color map QSL card. Verification signer, F.H. Muskiet. Received in 40 days for an English utility reception report, a souvenir postcard, and one U.S. dollar. Station address: Box 1139, Grote Combeweg 5, Paramaribo, Suriname. (Rick Albright, Merced, CA)

Thailand
Aeronautical VOLMET Radio, 11387 kHz USB. Full data card, personal letter, and schedule. Verification signer Chief Telecommunication Division. Received in 30 days for an English utility reception report. Station address: Telecommunications Division, Meterological Dept., 612 Sukumvit Road, Bangkok 10110, Thailand. (Milan Seifert, APO San Francisco, CA)

Yemen PDR
70A Aden Marine Radio, 13060 kHz CW. Full data black-and-white QSL card and letter. Verification signer, Ali Mohsin. Received in 90 days for an English utiltity reception report, a souvenir postcard, and one U.S. dollar. Station address: Box 1256, Tawahi, Aden, Yemen PDR. (Rick Albright, Merced, CA)

Bill Romberg received this QSL in about 60 days from Radio Berlin International

Jack Albert

203 York Place
New Lenox, IL 60451

The M-7000 Revisited

Last January I did a review on the M-7000 and I mentioned that there was a problem with the filters. That's no longer true. Since then, I discovered that the review unit had a problem with one of the filter chip sockets. The socket was making a poor connection to the chip and this caused the filter circuit to shift frequency. It also caused a distorted "crossed ellipse" display on the tuning scope and poor copy on some modes (two other complaints). I found this problem when I installed the new "Version II" ROM upgrade.

With the new V 2 package, there are two new ARQ modes that are added features to the M-7000. ARQ E and ARQ E-3 are similar to the FEC mode B. Also baud rate buttons (L4n and L7n) are now operational in the ARQ and TDM modes. Another feature is the OPI (over-print inhibit) on/off switch which is selected in the PRINTER MENU. When "on" is selected, the printer will not over-print on a line (that was my fourth complaint). Other ROM fixes included the swapping of the FAX and Packet buttons "LFn" and "RFn" (see Figure 1) and the FAX video screen prints a positive picture which is the same as the printer.

With the new ROM and the repaired filter problem, I decided to buy the review unit and I'm happy I did so. Now I have the capability of receiving even more modes and the M-7000 freed up my computer. That's because I used it with a terminal program and an "All mode TNC" to copy RTTY. Now I can use my computer for loggings and copy RTTY at the same time.

The V2 package cost $69.95 (plus $3.00 shipping and handling) and it comes with instructions, a new set of manuals and the replacement ROM. Installing the ROM is easy. Just remove the M-7000's cover and the video board, pop out the old ROM and replace it with the new one. You can purchase the V2 kit from Universal Shortwave, 1280 Alda Drive, Reynoldsburg, OH 43068, or call them at the toll free number, 800-431-3939. The main number for technical help is 614-866-4267.

Communicating with RTTY and DX, *or* *There's No Fool Like an April Fool*

If you are involved with communications, you probably have heard of the term "DC to light." It means that the frequency coverage of an electronic device can virtually cover the full frequency spectrum; that is, from DC (direct current) all the way to the wavelength of light. After reading some of the Stereo HiFi ads, one would think that light would shine from a speaker because of the system's extended frequency response. Buy why would you need a stereo system that would please any passing bat?

Looking at the bottom end, you'll eventually reach DC which isn't considered a frequency spectrum. Last December I did an article on "Rock Bottom RTTY" and I mentioned that there were RTTY signals as low as 15 kHz. But if you can consider DC as a spectrum, 15 kHz would look like UHF!

You are probably wondering, "What is he talking about?!" Well, last April a friend played a dirty trick on me and told me about a system that the government is planning on using which involves communicating with RTTY and DC. The story went like this.

The system will use a special receiver that has the capability of tuning the DC range. Yes, DC, he added, does have a spectrum and it's measured in volts. WWV, for example, would be found at 2.5, 5, 15, and 20 microvolts. The DC level will be modulated slightly with an RTTY signal. Shifting the DC level would be the equivalent to frequency modulation. The special receiver will tune voltages just like your SW receiver tunes frequencies. Using a special "Hall Effect" receiving antenna, a receiver can be as small as a "Handi Talki." Larger units will be used aboard a destroyer or in "Comm Center."

The transmitter is a different story. Because of the wavelength formula that is used to determine the length of an antenna at a given frequency, a transmitting antenna gets longer as the frequency decreases. Because the frequency of DC is zero, the length of the DC antenna will be infinitely long! That's the biggest problem that scientists are trying to solve. In the real world, you can't have an antenna that stretches from here to eternity! You have to limit it to within the continental United States.

Even if you can construct an antenna system that stretches across the U.S., how can it be efficient? Government contractors are proposing a "superconducting" wire antenna and the main route will stretch from San Francisco to New York along Interstate 80. Another route, which hasn't been decided, will return to the starting point thus creating a gigantic loop antenna covering the U.S.

Only one antenna will be constructed but there will be about fifty transmitters on line sharing the system and more will be added by 1990. Each transmitter will have its own assigned voltage and all fifty will transmit on a twenty-four hour basis. If one transmitter shuts down, the whole system will be unbalanced. Backup transmitters will be used to maintain redundancy on a standby basis.

One thing he pointed out was the ecological impact that this system will have on our earth. Questions such as "what effect will this have on the earth's magnetic field?" and "how will this affect navigational devices?" were considered. He also said that organizations such as the John Birch Society (because they always get involved), the Boy Scouts of America (because the system will affect their compass readings) may be in protest of such a system.

He ended it with APRIL FOOL! ZCZC

M — 7000 V2

BI MAN	FRM LEFT AUTO SYNC	FRM RIGHT MAN SYNC	ARQ-E 3		1	2	3	MARK FREQ
BI AUTO	BIT/CHAR UP				4	5	6	SPACE FREQ
SPLIT SCREEN	BIT/CHAR DOWN		ARQ-E	ALTERNATE	7	8	.9	SHIFT
DATABIT	LITERAL	PROGRAM	HELP			0	BAUD	
LEFT KEYBOARD					RIGHT KEYBOARD			
SRO Line/Gray	STATUS PRINT	SCREEN PRINT	CW		NOR/REV POS/NEG	FILTER TUNE	START STOP	MEMORY SELECT
SPEED UP	SCROLL UP	UOS/PAR IOC	SITOR	NORMAL	SHIFT UP	VFT GROUP	ATC	ARQ CHANNEL
SPEED DOWN	SCROLL DOWN	Case Chge Direction	ARQ		SHIFT DOWN	SHIFT	INPUT SELECT	AUTO TUNE
ASCII	SCREEN CLEAR	BAUDOT	PACKET		Alphabet	DEMOD MODE	AGC	FAX

Ken Reitz, KC4GQA

Route 5, Box 156A
Louisa, VA 23093

Starting Out in TVRO

Those of you who followed up on the February column and wrote to the mail order companies which sell TVRO gear have, by now, received pricing information. Whether or not you actually do your own installation or have a dealer do it, hang on to those catalogs. Use the pricing information as a gauge against what a local dealer charges for the same or similar system.

Getting Started

As with all hobbies, there are many ways to get into satellite television. You can spend two or three thousand dollars for a top of the line system installed or as little as $500 for a pretty good one you install yourself.

The best no-risk way to put in a system is to call your local satellite TV dealer and arrange for a site survey/demonstration. Many dealers have a portable demo dish on a trailer which they take to a prospective customer's address. With this unit they can find just the right spot on your property on which a dish can be planted.

In addition, they will hook a receiver to the dish to show you what's up there. (This will also be an excellent time to look for signs of terrestrial interference.) If you like what you see -- sign on the dotted line.

Dealer Advantages

There are advantages in owning a dealer installed system: 1. Most dealers pretest a system prior to installation to insure against factory defective components.

2. Assuming the dealer is competent (most of the fly-by-night, quick-buck artists were washed out of the business by the scrambling-induced dish "crash" of 1986), you'll get the job done properly.

3. In the event a component under warranty fails, a good dealer will work quickly to see that a replacement is installed. These dealers know that if the job is done right the first time, they'll spend less time later in costly field callbacks.

4. Later, if a new model comes out and you're ready to trade up, a dealer will usually offer a decent allowance on the old rig.

And finally, 5. it's always good to know someone who is technically knowledgeable and can give you good advice for the price of a phone call. Just don't wear their ears out looking for free advice. They've got families to feed, too.

Doing It Yourself

Who wouldn't like to be laying in a nice hammock with a cold soda in hand, watching some poor guy sweating out an installation in your backyard? Fun, sure, but you don't learn much. Doing your own installation is usually cheaper and, believe me, it's quite an experience.

If you buy your system through mail order, you may be required to pay in advance by cashier's check. If so, this will put you at a disadvantage in the event the equipment is not as advertised or is a factory defect. Expect to spend a lot of time on the phone during prime-time rates.

When you place your order, be sure to include a good book on the subject of TVRO installation. Or you can buy one weeks ahead of the shipment and you'll be mentally prepared for the undertaking.

It will also be nice to have a few close friends who can help lift the assembled dish on the pole and assist with the final set-up.

It's a litle early to make a dedicated Ku dish a worthwhile investment.

The Used System

Buying a used satellite system is a great way to get into the hobby. While, like buying a used car, there are numerous potential pitfalls, this method does have advantages. The biggest advantage is price. For hundreds less than the cost of a good shortwave receiver you can buy a decent TVRO system including the dish, receiver, and necessary feed horn electronics.

Often, too, with a used system, the dish will be fully assembled and adjusted to your latitude with all electronics and motor in place. This will save hours of assembly.

When buying a used system, ask to see the entire system up and running. This will assure you that all the components work -- at least for now. And remember that when you're ready to upgrade, your used system can be resold to someone else ready to embark on their own adventures in the Clarke belt.

Back to Basics: Ku Revisited

A recent letter from *Monitoring Times* subscriber Chester Jaffee of Berkeley, California, prompts a return to the subject of Ku Band Satellite TV. In his letter, Chester asks, "Can you please give me the addresses of retailers that will ship me Ku band antennas? I had no luck in my area."

It's a good question because it suggests the need for a dedicated Ku system. In other words, not a Ku retro fit or upgrading an existing C band system. There are reasons for going this route. A primary concern for those in an urban setting is to avoid installing a massive C band dish which might excite the neighbors. Or perhaps there just isn't the space for the necessary ten foot C band dish. An excellent signal at Ku can be had with a six, four, or even three foot dish on certain satellites (depending on your location) and they can be roof mounted.

Locating Ku-only gear, especially dishes, may be difficult but here are some things you can try. Call the American Home Satellite Association (AHSA) at 800-321-2472. They should be able to help you locate sources. Check with the Central California Satellite Dealer Association, 2150 Monterey Road, Space 236, San Jose, CA 95112, or call them at 408-293-4741. In addition, the Sky Store stocks Ku equipment and can be reached at 800-328-7733 for ordering.

In the meantime, here's what to look for in a dedicated Ku dish: 1. Surface accuracy is of the utmost importance. One piece (no seams or bumpy surfaces) is best. Four to six foot dishes should be the size range but good pictures can be had from commercially designed three footers. Anything over six foot is unlikely to be fully illuminated by your Ku feedhorn.

2. The feed horn support must be rigid. Ku is not the place for wobbly button hook designs. Look for tripod or quadropod supports.

3. Dish mounts must be "polar" mounts. In order to track the Clarke belt the mount must have adjustments for the elevation and be able to pivot east to west while maintaining these settings. Old Ku DBS dishes such as used by the now defunct U.S.C.I. need to be fitted to a polar mount in order to track. I'd like to know if anybody's tried that.

An important thing to keep in mind when contemplating setting up a Ku only satellite TV system is "what's up there?" As it turns out, not much.

On K2 NBC has quite a few feeds for affiliates and backhauls; Fox Network has an east and west coast feed and there'll be the occasional raw news feed. There are also a few channels on the Canadian Bird Anik C3 and even more if you speak French. The fact is that it's still a little early in the Ku game plan to make a dedicated dish a worthwhile investment.

More Mailbag

Jim Newman, an *MT* subscriber who recently moved to the West Indies island of Grenada, wrote a long and interesting letter asking about the TVRO reception needs in

that geographic area. Satellite television has revolutionized off shore entertainment for the many inhabitants of the islands which heretofore hadn't anything but shortwave radio for news from stateside.

Among Jim's concerns are: a large hill directly to the west of his house; being so far east of the footprint center of most American domestic satellites; minimum dish size; and picking up Cincinnati Reds baseball games.

Well, Jim, even without a big hill to the west restricting the look angle to 45 degrees, it would be tough to get good pictures off the major cable satellite (Galaxy 1 at 134 degrees west). The look angle of my dish here in Virginia toward G1 is about 13 degrees above the horizon. Obviously, the further east a dish is placed, the closer it gets to the ground. There is a point at which "ground noise" is reflected into the dish and seriously degrades the signal.

Unless you can plant a dish on top of the offending hill, my guess is you'll miss all the birds west of Anik D1. (For specifics on satellites, their Clarke belt location, foot print, power contours, and transponder leasees, you'll need the *World Satellite Almanac*. It's $29.95 from STV Bookstore, P.O. Box 2384, Shelby, NC 28151.)

That's the bad news. The good news is that you'll probably get good signals on the remaining ten domestic U.S. satellites.

Just how big should your dish be? As with any location, my advice is to buy the biggest dish you can afford. Just as with shortwave listening or Ham radio, the antenna is the critical element. But it's especially critical as you get further away from the center of the satellite's footprint. Your best bet is to talk with several of the many home dish owners on the island. Ask them what size dish they have, where they got it, shipping costs, and so forth. My guess is that a 12 to 16 foot dish is in order and they're not cheap.

As to the Cincinnati Reds Radio Network, they may be doing analog SCPC feeds (see *MT* October 1988 for SCPC reception techniques). If so, try Westar 4 xponder 1 or 3. Or try Galaxy 2 xponder 1 or 3. If not, they may be doing digital SCPC via SATCOM F1 which would not be receivable.

Two final notes for you and all others living off shore: 1. On Galaxy III, Satcom F4, Spacenet III and Galaxy II, you'll notice quite a few channels (sports, premium movies, and superstations) scrambled via the VideoCypherII. My understanding is that it is not legal to have a VCII outside the U.S., let alone authorize it, so there could be some problems in that respect.

And, secondly, there's an excellent chance that you may be able to receive eastern satellites which would not be visible to stateside dish owners, most notably Brazilsat, PanAM sat, and the European-American Intelsat birds. Reception for these birds will require a feedhorn capable of receiving the circularly polarized signals of the foreign satellites.

Word has it that CBS will be scrambled full time by the first of this month.

Transponder Notes

Word has it that CBS will be scrambled full time by the first of this month. No word yet as to the type of encryption system they will use. One thing for certain is that it will not be available to the home dish owners.

Update on North America One. NA 1's Satellite Information Network is presented live from 8:00 to 9:00 CT Monday through Friday on Galaxy 2 xponder 2, 6.2 MHz audio. The show, hosted by Bill Wardino, features news of particular interest to dish owners on the Wednesday night show.

Look for *In the Clear*, a weekly hour-long program for dish owners now on Wednesdays on Westar 4 Channel 14. The program is sponsored by the American Home Satellite Association and is broadcast live every fourth Wednesday at 10:45 p.m. ET. The show is repeated the following three Wednesdays at 9:00 p.m. ET.

Missing the BBC's *Six O'Clock News*? That's because they've moved to Westar 5, 15 (Brightstar). This brings up an interesting point. Common carriers are the companies that perform the actual uplinking of programming. Anyone with programming material will negotiate a contract with the common carrier for a particular transponder at a certain price. Usually this is done on an hourly basis for occasional video or a yearly basis as with full time cable programmers.

When the contract is up, a programmer, for technical or financial reasons, may choose to use a different carrier. This is why, as with the BBC, a program you're used to watching suddenly disappears.

Look for changes to occur on the first of each month or the beginning of a new year. New services beginning operation often commence programming at the first of the month as well. It's fun to scan the Clarke Belt by going through each satellite transponder by transponder at the beginning of each month and take note of the changes. You'll be surprised how many there are.

Larry Miller

P.O. Box 98
Brasstown, NC 28902

It is informational and inflammatory, reassuring and irritating; it is

Talk Radio

"You airheads! You *know-nothings*!" Clive Thomas was on a roll, spewing his disdain over the airwaves from Orlando, Florida, talk-radio station 740-WWNZ. On a small black box by his right hand, green lights blinked insistently, signaling the presence of callers willing to spar with the abrasive Thomas over the air.

Everything is game on 74-Wins. On a recent program, discussions ranged from the salaries of Congressmen, to life on Mars, to the firing of local weathercaster Mike Burger, to the behavior pattern of rats. And during Thomas' morning shift, listeners called because the 46 year old host had resurrected the fading *Last Temptation of Christ* controversy. Thomas had seen the movie, which had been kept out of central Florida theatres, during a recent trip to New York City. Universal studios and Cineplex Odeon were the targets of his verbal venom: "They kowtowed to the know-nothings and the airheads!" he shouted.

And so it goes in the WWNZ studios, four stories above West Colonial Drive in the American Pioneer Bank building. And the green lights keep blinking as the red lights on the digital clock continue to count down the minutes until the end of the Clive Thomas show.

Something for Everybody

It is informational and inflammatory. It is reassuring and irritating. At its best, it is engaging and entertaining; at worst, repetitive and boring. It is talk radio, an electronic community where neighbors seldom meet one another but who share their thoughts with each other more openly than they do with their wives and children.

In the movie *Talk Radio*, actor Eric Bogosian portrays a manic and abrasive late night talk show host who plays on these people, airing calls from the fringes: rapists, racists, drug addicts and a man who says that the package sitting on Bogosian's radio console is a bomb.

No Dream

While Bogosian's character might well exist only in fantasy, the popularity of talk radio is no dream. Combined with a fully-staffed news department, as is WWNZ, the format is probably the most expensive to operate. But it can be lucrative.

Once seen as the gentle companion of the elderly, talk radio now draws demographics more desirable to advertisers -- prime 25 to 54 year olds. Surveys, say producer Ken Charles, show stations like 74-Wins attract information-hungry professionals and business people. Only one percent of those who listen call, he says, but the others are clearly there.

When the Guy Gannett Broadcasting Co. purchased WWNZ from Susquehanna Broadcasting Company last year, they changed the format from service-oriented programs to a more newsy style. In just six months, ratings increased 60 percent.

"It's all show business," says afternoon host Jim Philips. "What does the Eric Bogosian character say in *Talk Radio*?" he asks, recalling the film. "It's the last neighborhood. It really is."

A Voz do Vale

When Albino Baptista speaks, one Waterbury, Connecticut, community listens. Baptista is the host of 1380-WNAQ, Naugatuck's *A Voz do Vale* program. Started some 14 years ago and running seven nights a week, Baptista is unpaid for his 7:00 to 11:00 p.m. show.

Tune in the station and you'll likely hear a *fado*, a slow, sad, Portuguese song about love. Or maybe you'll hear a soccer game or information from the Portuguese consulate in Waterbury. One thing is for certain, though. No matter what you hear, it'll be in Portuguese.

Baptista reads American magazines and newspapers over the air. "My listeners, they want to know all the news. But a lot of Portuguese people, they don't understand English." Older people, he says, have a particularly hard time. There are between 12,000 and 15,000 Portuguese-Americans who live in Waterbury and Naugatuck. Baptista estimates his audience at 15,000.

The 56 year old quality control inspector prides himself on helping local Portuguese-Americans "to remember and keep the Portuguese culture" while at the same time letting them know about events and news in the United States. Says Baptista, "I think my show helps them..."

Heavy Metal

According to *Radiotrends*, heavy metal formats continue to emerge. But selling the ear-shattering rock music shows to advertisers "remains a problem."

Although Satellite Music Network's Z-Rock format continues to gain affiliates around the country, the audience -- 16 to 30 year old head-bangers, skewed 60% to males -- is a tough sell. As *Radiotrends* Managing Editor Phyllis Stark puts it, "Z-rock audiences are not exactly potential yacht owners."

Brenda Wrighton of Pennsylvania finds monitoring a breeze with her GE World Monitor and a homemade ten element yagi.

"I know it's going to be tough," says Z-Rock's Lee Abrams. "In 1971, the AOR thing was real new and the advertisers thought [its audience] was all hippies and drug dealers. Now they think the Z-Rock audience is all Satan worshippers." That perception is expected to change. "Top 40 stations don't have trouble selling, so, after a time, we shouldn't either."

According to *RadioTrends,* published by Bolton Research Corporation, Z-Rock is already being aired in Denver, Houston, Minneapolis and Dallas, to name a few.

Getting Rich on Radio

In *FMedia!,* Dr. Bruce Elving, the Washington law firm of Cohen & Berfield is advising their clients to file (with the FCC) for frequencies of stations about to lose their licenses.

Here's how it works. You find a station that's having some difficulty. When it's time for them to renew their license, you file an application for their frequency. "I'm quite serious about this application for your frequency," you sputter indignantly when approached by the station. "However (eyes cast downward in humility), I would be willing to take a cash settlement in order to withdraw..."

Cohen & Berfield have reportedly engineered settlements whereby the station has had to parcel out huge amounts of cash, just to get the challenger off their back. 98.5-WROR and its AM Boston had to shell out $1,030,500 in 1988. The price was $3,775,000 in another 1988 case, this time against 103.5-WGMS and its AM. The list goes on and on.

Such "settlements" are legal and even encouraged by the FCC as a way to keep their workload down. Says Elving, "I've been told that people sometimes apply for a station, knowing there will be a comparative hearing, hoping to get a job as part of the settlement."

Bits 'n Pieces

Listen to 530 kHz. That's where Pinzone Communications Products of Newbury, Ohio, is testing their Corum Anti-Skywave Antenna. Of course, the purpose of the antenna is to cut down on the "skipping" that the signal does so... *Federal Communications Technews* says the AM broadcast antenna provides "pure vertical polarization from a low-profile, self-resonant structure." Just thought you'd want to know.

Meanwhile, the FCC is thinking about actively "thinning the ranks" of AM stations. The idea seems to be based in a proposal that would, at least in part, discourage AM stations that go dark from coming back on the air. Before doing so, the stations would have to meet very stringent (read: nearly impossible) interference standards.

Mailbag

Selden Richardson of Richmond, Virginia, provides a quick update on our story in February about the sign-off of WLEE: The station is back on the air -- with a few changes. First, there's a new owner, Doy Humphrey of Phoenix, Arizona. Then there's a new schedule -- WLEE is now a daytimer. Which brings us to frequency. WLEE has moved from 1480 kHz and is now on 1320. What did Mr. Humphrey get for his purchase? The WLEE call letters, equipment and library.

Thanks to Mr. Richardson for keeping us up to date on the station. Says Seldon, "One less retreat for AM broadcasting."

Be an American BandScan Reporter. *See any stories about radio in the local paper? Send them to Monitoring Times, P.O. Box 98, Brasstown, NC 28902.*

New Station Grants

Arkansas: 101.3-Pine Bluff and 102.5-Cabot, **California**: 96.1-Visalia, **Delaware**: 101.3-Milford, **Florida**: 1030-Oviedo, **Louisiana**: 105.9-Berwick, 96.3-Brusly and 92.9-Erath, **Michigan**: 89.9-Traverse City, **Minnesota**: 98.3-Blackduck, **Mississippi**: 101.1-Vicksburg, **Nevada**: 105.1-Las Vegas, **New York**: 88.7-New Paltz and 88.7-Poughkeepsie (both will share time on the same frequency!), **North Carolina**: 102.7-Scotland Neck, **North Dakota**: 98.7-Bismark, **South Carolina**: 89.1-Aiken and 93.7 Georgetown, **Utah**: 92.5-Coalville, **West Virginia**: 98.7-Pocatalico and 102.9-Welch. All courtesy that fine weekly publication, *M Street Journal.*

For Sale

In Denver, Colorado, an AM on 1390 -- programmed with Z-Rock, curiously enough -- is up for sale by its owner. 24 hours, it is "doing well." Call Dr. Huttner, 303-321-1956. **Washington** (state) AM-FM, $500,000 and **California** FM, $1,200,000. Call Broadcast Media Associates, 1-800-237-3777. Central **Indiana** Class A FM. Excellent equipment, new 300+ foot tower, automation equipment, land and building. Has 70 to 80,000 dollar cash flow; did over quarter of a million in 1987-88. Must have financial reference on 1st call before information is released. Call 414-235-2625. Central **Florida** AM in resort town. $300,000. Call Rick Mitchell, 813-439-6489. AM-FM in central **Utah.** Will sacrifice for $350,000. Call Business Broker Associates 615-756-7635.

International BandScan

Venezuela will be launching, it is reported, a super-power AM station that wil be "more powerful than the Voice of America" in the western hemisphere. Domingo Vina, director of the Central Office of Information, told reporters that funding for the station, to be called the Voice of Venezuela, was approved in a meeting of President Jaime Lusinchi's cabinet. The proposed station will reportedly operate on 1240 kHz with one million watts. Studios will be in Caracas; the transmitter near Punto Fijo. Station officials expect VOV to be audible "from Canada to Argentine." Keep an ear out!

Credits: *Broadcasting,* Fred Chesson, Waterbury, Connecticut; *DX News, M Street Journal,* Orlando *Sentinal* (via Lew Miller, Ocala, Florida), *Radiotrends.*

Dr. John Santosuosso

P.O. Box 1116
Highland City, FL 33846

Pirates and More Pirates...!

Irish Pirates: Down But Not Out

This just in from Ary Boender in the Netherlands. Free radio magazine *Anoraks UK* reports that a few Irish pirates defied the government's order that they leave the air in 1988. These appear to be Radio North in County Donegal, Monaghan town's Radio Star Country, and Ireland's best known pirate, Radio Dublin.

Possibly some Radio Dublin broadcasts may still be relayed on shortwave, so 6910 may be worth monitoring. However, Radio Dublin has mothballed their main medium-wave transmitter, not wanting to risk confiscation. Apparently some other stations are considering the possibility of following suit. Indications are that a mass return to the airwaves is not impossible.

Scotland

That venerable old Scottish pirate Weekend Music Radio has run an extensive number of test transmissions to North America. Among those fortunate to receive some of these were Florida's Terry Krueger and Connecticut's Gregg Bares, who seems to hear Europirates more easily than Europeans do!

WMR transmitted on 6917 and 15045 kHz. Virginia's Steve Rogovich caught them on 15045 from 1853 to 1940 UTC. He notes the address for reports is WMR, 42 Arran Close, Cambridge, England. This station is an excellent verifier. With this one, future tests are always a possibility.

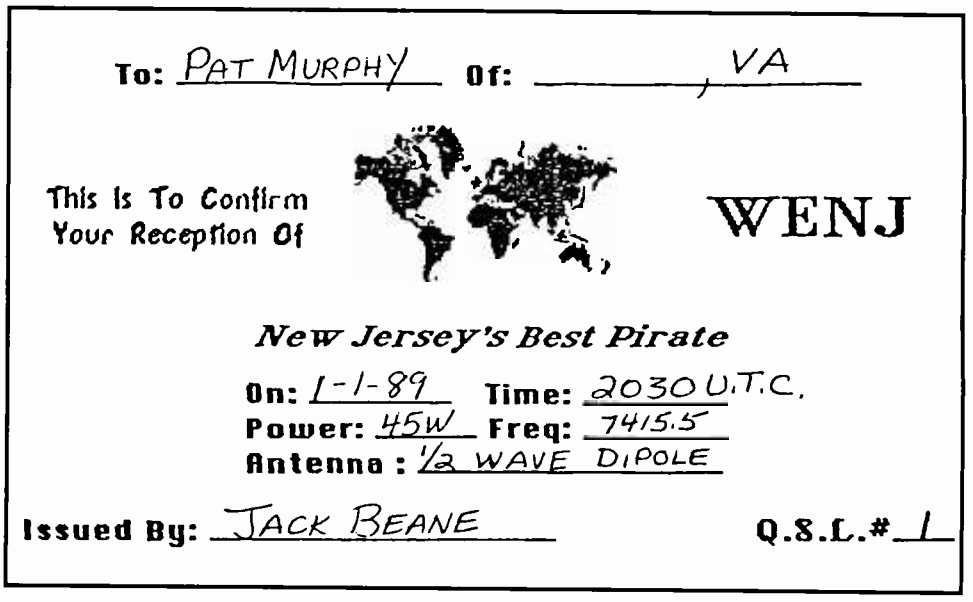
WJDI

If you thought domestic free radio activity was quiet, then you haven't seen the inside of Box 1116 recently. We were very pleased to hear from the operator of station WJDI. He reports WJDI broadcasts on 1620 kHz with 1500 (it has been announcing 1000) watts. The best time to hear it is after midnight Eastern Time until about 1:30 a.m. The station features middle-of-the-road and soft-rock music.

Currently WJDI has been announcing the address of a radio club, with which it is not affiliated. However, it hopes to establish an address of its own. When this is accomplished, we will advise *Monitoring Times* readers where reports can be sent.

WJDI also provided us with some information about another station which listeners in the northeastern United States might be able to hear. WNYS broadcasts on 1000 kHz Sundays only during daylight hours and features classical music.

As for WJDI, readers of *MT* can vouch for its popularity. Steve Rogovich reports no less than three logs of it! In New Jersey, both Kevin Murray and Ray Babecki logged it as did Jim Kalach and Gregg Bares in Connecticut. Pennsylvania's Barry Diefenderfer has bagged it twice so far. Out in Ohio, Tim Francisco monitored WJDI from 0505 to sign off at 0522.


To: PAT MURPHY Of: , VA

This Is To Confirm Your Reception Of WENJ

New Jersey's Best Pirate

On: 1-1-89 Time: 2030 U.T.C.
Power: 45W Freq: 7415.5
Antenna: 1/2 WAVE DIPOLE

Issued By: JACK BEANE Q.S.L.# 1

WENJ

These days, if a pirate is on, Steve Rogovich hears it. He found WENJ on 7415.5 at 2006. It also found its way into Rhode Island where Earl Tosca heard it on 7419.8. New York's Jim Hayes logged it on 6240 at 1805 UTC. Gregg Bares monitored it in Connecticut. Our loyal reporter, Kathy Turner, has heard the station no less than five times from her New York location. Another regular reporter, Ohio's Fraser Bonnett, also sends along a logging on 7415 at 2030.

Several readers sent us greatly appreciated copies of their WENJ QSLs. The first of these received was from Pat Murphy who, upon hearing DJ Jack Beane announce a phone number, called and requested his. The station will also respond to reports sent to Box 5074, Hilo, Hawaii 96720. By the way, reader Murphy can be heard on legal radio! Tune in Norfolk, Virginia, WNIS on 850 kHz.

... AND STILL MORE!!!

WENJ and WJDI are only two of numerous stations readers are hearing. One of the more unusual logs received was Earl Tosca's of a station calling itself both Ronald Reagan Radio and Radio Stardust. He found it on 7414.1 in LSB at 0130. From Illinois, William Stegall writes with reports on two other stations which appear to have recently reactivated. KROK was heard on 7415.2 at 22:14 with classic oldies. After it left the air, WKUE was monitored on 7414. Both stations use the Hawaii mail drop given above.

Another old-timer which has returned is Radio USA. Jim Hayes found it with punk rock and dirty jokes on 6240 at 0010 UTC. Kathy Turner heard it on 7415 at 1700 and announcing the Hawaii mail drop for reports.

We are still receiving reports on Falling Star Radio. Wisconsin's Robert Brossell heard it at 0515 on 6241 with George Harrison's recording of "Cracker Puff Palace." The address is Box 1659, Gracie Station, New York, New York 10028. Steve Rogovich also heard a Falling Star transmission. They announced the theme of their broadcast was the prevention and avoidance of violence. The station signed off with the "William Tell Overture." Pat Murphy says the station has requested that "counterculture materials" be sent to it, and it does not consider itself a "pirate."

From Connecticut, Bob Thomas informs us he is still hearing WGEC on 1610. This is

the unusual operation we reported on previously. It is sponsored by a black church and features gospel music.

Barry Diefenderfer has heard a strange "easy-listening music" station on 3870. It was heard at 0540 UTC at his Pennsylvania location with a strong signal but no voice announcements of any kind. Does anybody know more about this one?

Barry also suggests that you might hear something out of the ordinary on 3880 from about 0400 to as late as 0800 or 0900 UTC. It might sound like a rerun of an old *Amos and Andy* show or something else equally bizarre. Seems like some of the people who complain about pirates are not above a little piracy themselves. Enough said.

And yes, The Voice of Tomorrow is still around. Kathy Turner heard it on 7410 at 2025 with commentary and Nazi music. It currently uses Box 314, Clackamus, Oregon 97015, for its address.

One That Didn't Get Away

Jack Warfield sends along information about CBOR. No, this was not a Canadian pirate, but a station operated by a thirteen-year-old Fairfield, Connecticut, resident. He was putting out quite a signal on 7414 kHz. Unfortunately, one of the places he was heard was the FCC monitoring station in Grand Island, Nebraska.

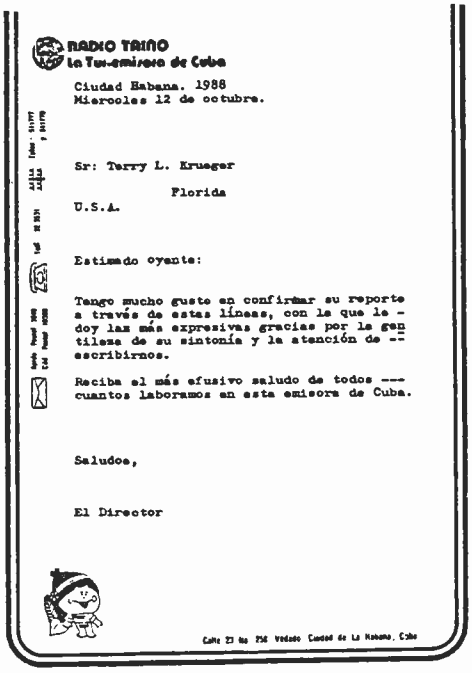
Europirate Tests

Gregg Bares informs us that England's Radio Orion (which he has already managed to hear and QSL!) has told him it will test to North America on 6290 kilohertz. Listen for them Saturday and Sunday from 0630 to 0700 UTC. They only run 20 watts, but Gregg has proven they can be heard. His was the first definite report of reception from the USA.

The Clandestine Report

Yes, Virginia, there is news other than piracy these days! Let's start off with an intriguing item from Terry Krueger. At present, there is no actual Panamanian clandestine. However, Costa Rican Radio Impacto (5030/6150 kHz) is somewhat filling the void. Tune it in between 0400 and 0430 and you may hear anti-Noriega commentary by Mayin Correa. She is technically still Panamanian senator for the Panama City area but currently is living in exile in Miami.

Krueger is also hearing a new anti-Khomeini clandestine known as Voice of the Feda'i (Voice of the Worker). It is on a variable frequency of 4160 from 0230 to 0500. The identification is "Seda-ye Khargari." The language is Farsi (Persian).



RADIO TAINO
La Tuo-emisora de Cuba

Ciudad Habana. 1988
Miercoles 12 de octubre.

Sr: Terry L. Krueger
Florida
U.S.A.

Estimado oyente:

Tengo mucho gusto en confirmar su reporte a través de estas líneas, con la que le - doy las más expresivas gracias por la gentileza de su sintonía y la atención de -- escribirnos.

Reciba el más efusivo saludo de todos --- cuantos laboramos en esta emisora de Cuba.

Saludos,

El Director

Although not as frequently heard these days, the legendary Comandante David and his Radio Libertad Cubana are still around. In Tennessee, Robert Harris heard him on 7057.1 at 0133. Hear the Comandante once, and you will never forget him.

Robert is also hearing Radio Taino, with strong signals on both 830 and 1160. Pennsylvania's John Demmitt says this Cuban broadcaster most likely will begin regular broadcasting on 830, perhaps by the time you read this. And, yes, Taino can be verified. Take a look at Terry Krueger's QSL. Krueger suggests sending a Spanish report if possible and warns it may take several tries. The address is Apartado 3040, La Habana 10300, Cuba.

Radio Caiman now seems to be relatively QRM free. Look for it with its powerful signal on the current frequency of 9965. This is by far the easiest clandestine to hear.

Numbers, You Say? How can we leave without a bit of numbers intrigue? In Georgia, H.T. Adams reports English numbers at 4:05 on 10357 kHz. This writer heard something from his central Florida location he almost did not believe recently. It was a Spanish numbers station on 7515 which signed off at 0305. What made the broadcast so unusual was that the young lady had a definite Castilian accent!

If you haven't heard the bugle and snare drum on 6670 at 0000 UTC, you might want to try 6675. Also, you might find it helpful to brush up on your Bulgarian!

Tune in 9122 at 2200 on Saturdays only. It will not mean much now. Someday this may be a real shocker.

That 13377 report we promised you? Due to so much other news, please forgive us for holding it over for still another month.

We Were Overwhelmed This Month!

The volume of mail was unbelievable. If, by accident, something you sent was overlooked, please forgive us. It was not intentional. We try to acknowledge all contributions, but it may take a little longer than usual these days. That is the kind of problem we love to have, so please keep up the fantastic work. Thank you. You are the *greatest*.

consumer electronics

Little Brother

Imagine this all-too common American scene: It's Sunday morning and the kids have just completed another 24 hour marathon in front of the TV set. You nudge them to make sure they're still breathing and notice something unusual about their eyes: they're twice their normal size! Boy, if only there was some way to keep those kids from plastering their little button noses up against the screen.

If the father in our imaginary scene had lived even one year ago, he would have had little choice other than to talk to or perhaps even discipline his children in an effort to control the amount of TV his kids watched. Fortunately, such old-fashioned ideas are no longer necessary. Today we have the Imex 20/20 "Eye Guardian."

From its vantage point high above your TV set, the Imex unit, looking something like a surveillance camera, creates an adjustable infrared zone that senses the presence of your young cable cadets. When they get too close, a yellow light begins to flash. "Warning! Warning!" it seems to shout. And if the kids still don't react, the "Eye Guardian" takes matters into its own *hands and turns off the TV* until the kids retreat to a safe distance. Imagine, now you can leave your kids in front of the TV virtually forever...and never worry about their eyes!

Right now, we're at work on our own invention. We're going to call it the "Mind Guardian." You install the Mind Guardian and when the kids turn on the TV set, they find it doesn't work any more.

The press release on the Imex 20/20 Eye Guardian failed to mention price, availability or the address of the manufacturer.

Three-Faced

Radios today have so many features that it was inevitable. Someone was bound to run out of space on the front panel for all the knobs and buttons.

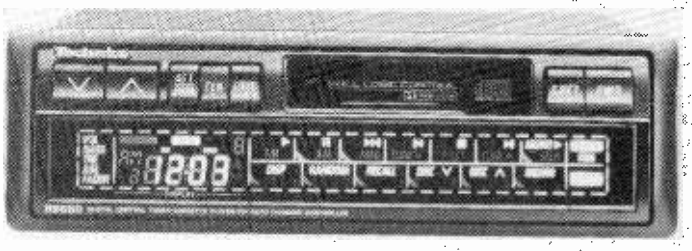
The new Technics CQ-R9550 car audio head unit solves this problem by eliminating the knobs and buttons and replacing them with a touch sensitive LCD screen.

Touch it once and it serves as the control and display panel for the quartz digital alphatuner. Touch it a second time, and use an all-new LCD control panel to operate the full-logic cassette deck. Hit it a third time and it becomes an entirely new control panel for the optional 12-disc CD changer. (See picture 1.)

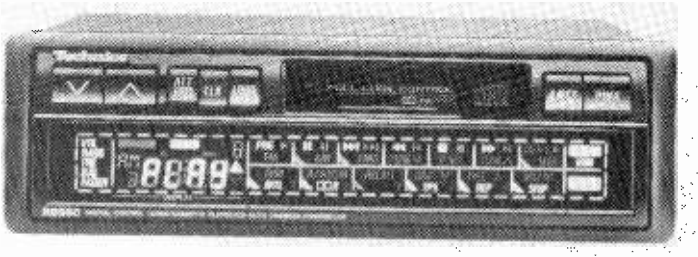
The main functions of all three sources are also accessible from a palm-size wireless remote control included with the CQ-R9550.

Each source has its own illuminated function legends and when one of the sources is activated, the user hears a confirmation beep. Also, a marker light in the corner corresponds to the selected source, providing both visible and audible feedback of the unit's operation.

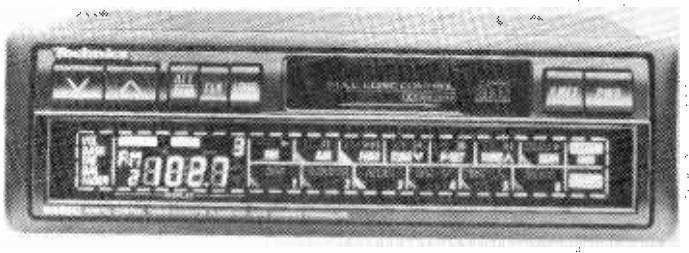
The CQ-R9550 retails for $699.95. The optional trunk mounted CD player is $799.95.



Model CQ-R9550 (CD Mode)



Model CQ-R9550 (Tape Mode)



MODEL CQ-R9550 (Tuner Mode)

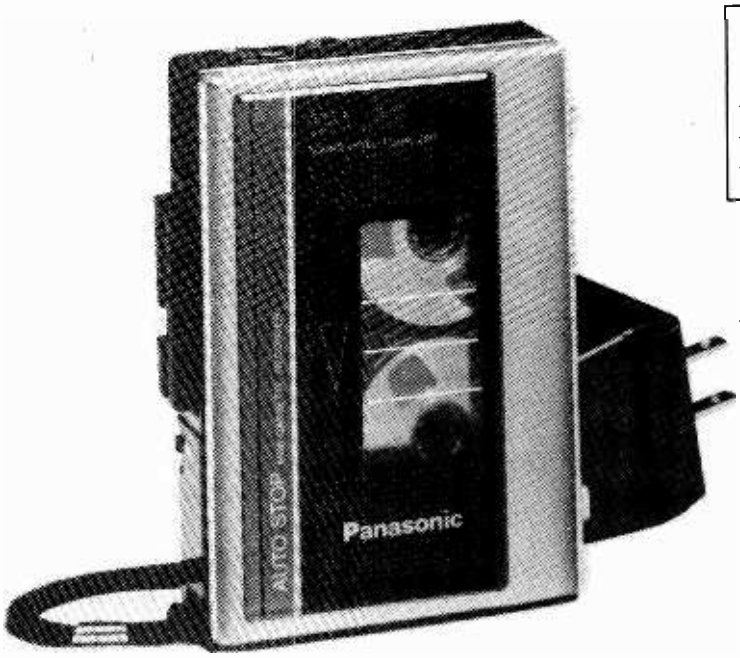
Personal Stereo and Cassette

The convenience of auto-reverse and the quality sound reproduction ability of Dolby NR have both been included in the ultra-compact little Panasonic RQ-V320 personal stereo radio cassette player. In addition, two other important features have been included with the auto-reverse unit -- tape direction memory and separate fast forward and rewind controls.

Tape direction memory stores the current direction of tape travel in the unit's memory, even after the power is turned off.

Dolby NR is an electronic system that helps reduce tape hiss and high-frequency noise during playback, resulting in improved signal-to-noise ration and a more pleasurable sound. A three-band graphic equalizer enables the user to shape sound to their liking.

The Panasonic RQ-V320 covers FM only (but with a



local/DX switch) and is available for only $99.95.

Laser FAX

"The future of facsimile is here today." So goes the slogan for Canon's FAX-L920 Laser Facsimile machine. In this case, the advertising slogan turns out to be true.

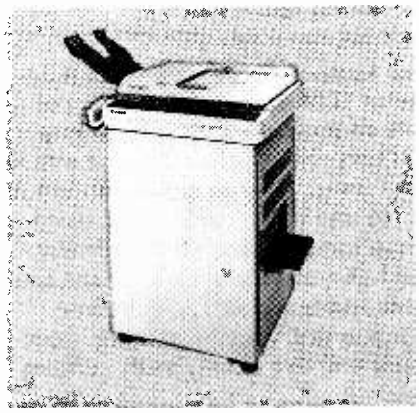
The FAX-L920, which consists of a main unit and a printer, doesn't look like a facsimile machine at all. *Radio Electronics* magazine, so the story goes, had planned to use a picture of the unit on their front cover back in November.

"We thought the Canon machine would be a great choice because it was the most technically sophisticated FAx we knew of," says one member of *RE*'s editorial staff. "We eventually decided against using it because we didn't think people would recognize it as a fax -- the machine looks more like an office copier." Indeed, the 'L920 does include a full-feature leaser copier.

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

It also features a 32-megabit memory that makes the machine's advance features possible, including batch transmissions, relay broadcast, confidential mailboxes, delayed transmission and more.

Other features make the unit fascinating. For example, the machine is even equipped to run out of paper. Forget to fill the machine up and it will automatically store up to 24 pages of information in its internal memory until the supply of paper is restored.



Such a machine clearly stands at the forefront of the FAX revolution. And it carries a price tag that will certainly keep the peasants from participating in this particular phase of the revolution: $8,399.00.

BOB KAY IS HUNTING FOR TREASURE!

There'll be clues buried in the pages of Monitoring Times; winners can come up with a scanning treasure of their own to keep.

Turn to his column on page 35 and join in on the fun.

Joe Woodlock

P.O. Box 98
Brasstown, NC 28902

Platform Irene

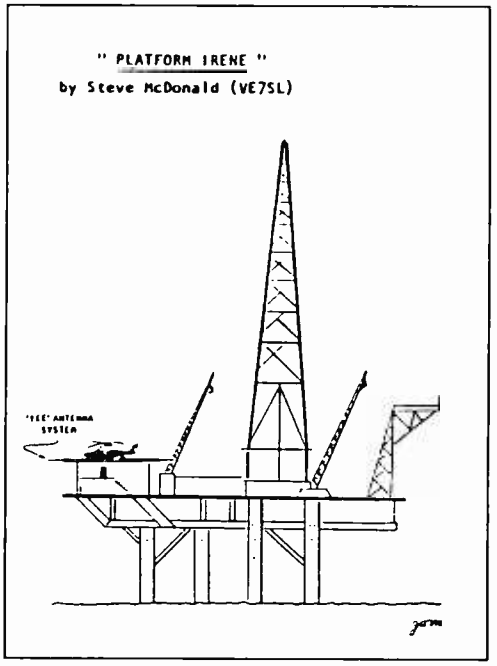
Early in 1986, a new beacon made its appearance below 500 kHz. Its ID was IEE; the frequency 415.

For a number of months, IEE remained a msystery though some information made its way to the hobby community. It was known, for example, that it was operated by Union Oil. And it had been placed on the west coast -- somewhere on the west coast.

Steve McDonald, VE7SL, became interested in IEE again this past winter when once again, IEE began appearing. "I noticed that it was far and away the loudest and most consistent signal out of California." Every evening, shortly after sunset, Steve checked 415 kHz. It was there "like clockwork," says Steve, "and I decided to...find out more..."

The rumors turned out to be true. IRR was indeed operated by Union Oil. But it wasn't on the West Coast -- it was *off* the West Coast, four and a half miles off the coast of California in the Point Pedernales offshore oil fields. IEE was on Platform "Irene"!

Irene itself stands some 260 feet from the waterline to the crown of its towering drill rig. A Southern Avionics SS-250C transmitter pumps 30 watts of power into a model 1000 "Helipad" antenna, a horizontal wire running around the outer edge of the landing deck. The antenna wire itself is held out over the water by long, insulated poles. Says Steve, "I suspect that being over 100 feet above a salt water counterpoise is one of the reason why IEE is so well heard!"



Dialing Down Under

David Latchum of Shaftsbury, Vermont, drops in with a nice collection of loggings including "L" on 284 kHz. The best guess on the location of 284/L is Montreal (Dorval International - Lima). Here's how we came up with our guess: there was a beacon at Roxton on this frequency (284/URA) which was recently decommissioned. Roxton is a short distance east of the Montreal beacon location. And L has not been reported recently on 332. On this basis, it seems likely that the L beacon being heard here is simply Montreal with a new frequency. Right?

Check out 344 kHz. There have been as many as eleven different beacons logged on this frequency. Traditionally, this has always been the heaviest reported in terms of different beacons logged. If you have a loop antenna, dial up 344 kHz and rotate (the antenna, the antenna!). If you are willing to spend ten or fifteen minutes digging about the dirt here, you should be amply rewarded with a handsome collection of beacons. Table 1 is a selection from a recent issue of *DX Reporter.*

Alain Tremblay of Quebec reports hearing voice on 344/LNT. He caught that at 0423 UTC. 344/AVN, says David Latchum, is not heard often. And 344/BFR at Virgil Grissom Muinicipal in Bedford, Indiana, was last heard by Cornelia Campbell back in February of 1987.

Two marine beacons have been reported on 302 kHz -- OQ out of Oak Orchard, New York, and V from Port Weller, Ontario. Oak Orchard was supposed to have moved to 297 kHz for the 1988 boating season but it's still there, going strong. Port Welkler was supposed to have shut down altogether. It, too, is still on the air. Under the old sequenced system, Port Weller was operating at SQ14 and Oak Orchard at SQ36 with R/Burlington Bay in the middle. Judging from the reported times -- OQ at 1643 and V at 1640 -- the sequencing has changed.

Finally, 372/VDI in Vidalia, Georgia, was scheduled to change its ID to UQN. Give it a listen. It's your chance to bag two beacons for the price of one: one while it's calling itself VDI and one when it changes to UQN.

Table 1

State	Location	ID	Time	Reporter
Colorado	Carbondale (Rocky Mountain Air) PVT	CQL	0504	Shaun Merrigan, AB
Florida	Jacksonville (International)	JA	0420	David Latchum, VT
Indiana	Bedford (Virgil Grissom Municipal)	BFR	0708	Cornelia Campbell, DE
Maine	Millinocket (Mun.-Milnot) TWEB	LNT	0013	David Latchum, VT
Missouri	Joplin (Municipal) -- LSB only	JL	0506	Joe Woodlock, IL
Montana	Baker (Municipal - Timber)	BKU	0503	Shaun Merrigan, AB
New York	Rochester (Monroe County)	AVN	0014	David Latchum, VT
N Carolina	Kenansville (Duplin County)	DPL	0823	Cornelia Campbell, DE
Quebec	Havre-St. Pierre	YGV	0423	Patrick O'Connor, NH
Texas	Seminole (Gaines County)	GNC	0519	Shaun Merrigan, AB
Texas	Wichita Falls (Scotland)	SKB	1130	Joe Woodlock, IL

Newly Authorized (or On the Air)

217/LOP Lampson, California; 315/CNL Colombo, Sri Lanka (Katuayake International); 350/KI Kaikoura, New Zealand (used to be 326 kHz) -- those courtesy of Ken Stryker, Unidentified Beacons Editor of *The Lowdown. The Lowdown* is the monthly publication of the Longwave Club of America, 45 Wildflower Road, Levittown, PA 19057. A one year subscription is a very affordable $12.00.

Letters to the LOWFER

A newcomer to the ranks of LF DXers is Bob Ellery of Queens Village in Philadelphia. He says that he's been hearing 520/LORE. "I've heard this one before," says Bob, "but it used to be just 'LOR.'

First, 520/LOR comes to you by way of El Valor, Peru, so congratulations are in order. That's a nice catch. In answer to your question, however, the "E" means that the beacon's main transmitter is off line. Airport or coast guard personnel are alerted to the fact that the back-up transmitter has kicked in by the addition of the trailing "E." Some DXers count this as a separate beacon, others do not.

program guide

Sunday

April 2, 9, 16, 23, 30

0011 Kol Israel: Spotlight. A weekly news magazine.
0011 Radio Moscow (World Service): Inside Report. A look at the present-day issues and events in the Soviet Union.
0030 BBC: Composer of the Month. Profiles and music of famous composers.
0037 Radio Netherlands: Newsline. News analysis from correspondents worldwide.
0045 Radio Moscow (World Service): Music. Music selections played by Radio Moscow staff.
0052 Radio Netherlands: Over To You. A listener contact program with Barry O'Dwyer.
0101 BBC: Play of the Week. Hour-long drama selections.
0111 Kol Israel: Spotlight. See S 0011.
0111 Radio Moscow (World Service): News and Views. Soviet views on news developments.
0132 Radio Moscow (World Service): Music. See S 0045.
0208 Swiss Radio International: Dateline. World news, commentary, and analysis of current affairs.
0209 BBC: British Press Review. Survey of editorial opinion in the British press.
0211 Kol Israel: Spotlight. See S 0011.
0211 Radio Moscow (World Service): Science and Engineering. Developments in Soviet science and technology.
0215 BBC: Reading. A serialized story or novel, as adapted for radio.
0218 Swiss Radio International: Swiss Shortwave Merry-Go-Round. Bob Thomann and Bob Zanotti present DX news and advice.
0230 BBC: The Ken Bruce Show. A mix of popular music and entertainment news.
0232 Radio Moscow (World Service): Music. See S 0045.
0311 Radio Moscow (World Service): Perestroika. Insight on where the Soviet Union is going.
0315 BBC: From Our Own Correspondent. In-depth news stories from correspondents worldwide.
0330 BBC: Screenplay. A quiz show on the movies, as hosted by Iain Johnstone.
0332 Radio Moscow (World Service): Russian by Radio. Lessons in Russian for English speakers.
0337 Radio Netherlands: Newsline. See S 0037.
0352 Radio Netherlands: Over to You. See S 0052.
0408 Swiss Radio International: Dateline. See S 0208.
0411 Radio Moscow (World Service): Culture and the Arts. A look at the varied arts and cultures of the Soviet Union.
0418 Swiss Radio International: Swiss Shortwave Merry-Go-Round. See S 0218.
0430 BBC: Sing Gospel! Developments in contemporary religious music.
0430 Radio Netherlands: Sunday Spotlight. A look at events and issues affecting Africa over the past week.
0432 Radio Moscow (World Service): Audio Book Club. The best of Russian classics and contemporary Soviet literature.
0445 BBC: Worldbrief. A 15-minute roundup of the week's news headlines and other events.
0509 BBC: Twenty-Four Hours. Analysis of the main news of the day.
0511 Radio Moscow (World Service): News and Views. See S 0111.
0530 BBC: Financial Review. A look back at the financial week.
0532 Radio Moscow (World Service): Music. See S 0045.
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.
0611 Radio Moscow (World Service): Perestroika. See S 0311.
0630 BBC: Jazz for the Asking. Jazz music request show.
0632 Radio Moscow (World Service): Russian by Radio. See S 0332.
0638 Swiss Radio International: Feature. Programs broadcast on a rotating basis are "The Grapevine" (listener comment), "Supplement" (news analysis), and "Roundabout Switzerland" (travel/discovery).
0709 BBC: Twenty-Four Hours. See S 0509.
0711 Radio Moscow (World Service): Mailbag. Answers to listener questions.
0730 BBC: From Our Own Correspondent. See S 0315.
0730 Radio Netherlands: Happy Station. Tom Meyer's family entertainment program with music and letters.
0732 Radio Moscow (World Service): Music. See S 0045.
0745 BBC: Book Choice. Short reviews of current or future best-sellers.
0750 BBC: Waveguide. How to hear the BBC better.
1108 Swiss Radio International: Feature. See S 0638.
1111 Radio Moscow (World Service): Science and Engineering. See S 0211.
1115 BBC: From Our Own Correspondent. See S 0315.
1115 Kol Israel: Mainstream. Consumer and community news.
1130 BBC: Composer of the Month. See S 0030.
1130 Radio Netherlands: Happy Station. See S 0730.
1132 Radio Moscow (World Service): Music. See S 0045.
1201 BBC: Play of the Week. See S 0101.
1208 Swiss Radio International: Feature. See S 0638.
1211 Radio Moscow (World Service): News and Views. See S 0111.
1232 Radio Moscow (World Service): Music. See S 0045.
1309 BBC: Twenty-Four Hours. See S 0509.
1311 Radio Moscow (World Service): Culture and the Arts. See S 0411.
1330 BBC: Sports Roundup. The day's sports news.
1332 Radio Moscow (World Service): Audio Book Club. See S 0432.

MT Program Team

Kannon Shanmugam, Program Manager
4412 Turnberry Drive
Lawrence, KS 66046

Jim Frimmel, TX

Dale Vanderpoel, FL

Dieter Wernig heads Deutsche Welle's North American Service. Deutsche Welle has revamped its program schedule, creating more uniformity between the various broadcasts. See the program listing for details.

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

Peggy Anne-Graham hosts "To the Top," a look at the German pop charts, which airs every three weeks on Deutsche Welle's Sunday broadcasts. She also hosts "Arts on the Air," a weekly arts magazine, on Tuesday broadcasts.

1338 Swiss Radio International: Feature. See S 0638.
1345 BBC: Worldbrief. See S 0445.
1401 BBC: Feature. Programming on various subjects.
1411 Radio Moscow (World Service): Perestroika. See S 0311.
1430 BBC: Anything Goes. Sounds from the BBC archives as requested by listeners.
1430 Radio Netherlands: Happy Station. See S 0730.
1432 Radio Moscow (World Service): Russian by Radio. See S 0332.
1511 Radio Moscow (World Service): News and Views. See S 0111.
1515 BBC: Concert Hall. A program of classical music from the world's great concert halls.
1532 Radio Moscow (World Service): Music. See S 0045.
1538 Swiss Radio International: Feature. See S 0638.
1611 Radio Moscow (World Service): Mailbag. See S 0711.
1615 BBC: Feature. Programming on various subjects.
1630 Radio Netherlands: Happy Station. See S 0730.
1632 Radio Moscow (World Service): Music. See S 0045.
1645 BBC: Letter from America. See S 0545.
2309 BBC: Book Choice. See S 0745.
2311 Radio Moscow (World Service): Top Priority. A discussion and analysis program.
2315 BBC: Letter from America. See S 0545.
2330 BBC: Feature. See S 1401.
2332 Radio Moscow (World Service): Russian by Radio. See S 0332.

Monday

April 3, 10, 17, 24

0011 Kol Israel: Calling All Listeners. A mailbag program.
0011 Radio Moscow (World Service): Perestroika. See S 0311.
0024 Kol Israel: DX Corner. Ben Dalfen presents DX news.
0030 BBC: In Praise of God. A half-hour program of worship.
0030 Radio Netherlands: Happy Station. See S 0730.
0032 Radio Moscow (World Service): Audio Book Club. See S 0432.
0101 BBC: Time Will Tell. The possible consequences of today's political choices (through April 10).
0111 Kol Israel: The Week in Review. Comment in the Israeli press.
0111 Radio Moscow (World Service): News and Views. See S 0111.
0132 Radio Moscow (World Service): Jazz Show. A jazz music program.
0145 BBC: Chopin Collection. A look at the classical pianist and composer Chopin.
0208 Swiss Radio International: Feature. See S 0638.
0209 BBC: British Press Review. See S 0209.
0211 Kol Israel: Calling All Listeners. See M 0011.
0211 Radio Moscow (World Service): Mailbag. See S 0711.
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.
0232 Radio Moscow (World Service): Music. See S 0045.
0311 Radio Moscow (World Service): Inside Report. See S 0011.
0315 BBC: Food and Drink. A look at nutritional consumption and changing eating habits.
0330 BBC: Anything Goes. See S 1430.
0330 Radio Netherlands: Happy Station. See S 0730.
0345 Radio Moscow (World Service): Your Top Tune. A quiz show featuring popular music.
0408 Swiss Radio International: Feature. See S 0638.
0411 Radio Moscow (World Service): Top Priority. See S 2311.
0430 BBC: Reading. A serialized story or novel, as adapted for radio.
0432 Radio Moscow (World Service): Russian by Radio. See S 0332.
0437 Radio Netherlands: Newsline. See S 0037.
0445 BBC: Nature Now. Information about flora, fauna, and natural resources.
0509 BBC: Twenty-Four Hours. See S 0509.
0511 Radio Moscow (World Service): News and Views. See S 0111.
0530 BBC: Waveguide. See S 0750.
0532 Radio Moscow (World Service): Music. See S 0045.
0540 BBC: Words of Faith. See S 0540.
0545 BBC: Recording of the Week. A personal choice from the latest classical music releases.
0611 Radio Moscow (World Service): Inside Report. See S 0011.
0630 BBC: Feature. See S 1401.
0638 Swiss Radio International: Dateline. See S 0208.
0645 Radio Moscow (World Service): Your Top Tune. See M 0345.
0709 BBC: Twenty-Four Hours. See S 0509.
0711 Radio Moscow (World Service): Science and Engineering. See S 0211.
0730 BBC: Feature. See S 1615.
0732 Radio Moscow (World Service): Music. See S 0045.
0737 Radio Netherlands: Newsline. See S 0037.
0752 Radio Netherlands: The Research File. A science and technology review, covering the latest discoveries and developments.
1108 Swiss Radio International: Dateline. See S 0208.
1111 Radio Moscow (World Service): Mailbag. See S 0711.
1115 BBC: Health Matters. Latest developments in medicine and advice on how to stay fit and well.
1115 Kol Israel: Pillar of Fire. A look at Israel's history.
1130 BBC: The Ken Bruce Show. See S 0230.
1132 Radio Moscow (World Service): Music. See S 0045.
1137 Radio Netherlands: Newsline. See S 0037.
1152 Radio Netherlands: The Research File. See M 0752.
1208 Swiss Radio International: Dateline. See S 0208.

NEWS GUIDE

This is your guide to news broadcasts on the air. All broadcasts are daily unless otherwise noted by brackets. These brackets enclose day codes denoting days of broadcast. The codes are as follows:

S= Sunday
M= Monday
T= Tuesday
W=Wednesday
H= Thursday
F= Friday
A= Saturday

We invite listeners and stations to send program information to the program manager.

0000 BBC: Newsdesk
0000 Kol Israel: News
0000 KYOI: News [M-F]
0000 Radio Australia: Int'l Report
0000 Radio Canada Int'l: News [S-M]
0000 Radio Canada Int'l: World at Six [T-A]
0000 Radio Moscow: News
0000 Spanish Foreign Radio: News
0000 Voice of America: News
0000 WCSN: News [T-F]
0030 BRT, Brussels: News [T-A]
0030 Radio Canada Int'l:As It Happens[T-A]
0030 Radio Canada Int'l: News [S]
0030 Radio Kiev: News
0030 Radio Moscow (World Service): News in Brief [M]
0030 Radio Netherlands: News [T-S]
0030 Voice of America (Special English): News
0030 WCSN: News [T-F]
0045 Radio Berlin Int'l: News
0051 Spanish Foreign Radio: News Summary
0100 BBC: News Summary
0100 Deutsche Welle: World News
0100 Kol Israel: News
0100 KYOI: News [M-F]
0100 Radio Australia: World and Australian News
0100 Radio Berlin Int'l: News
0100 Radio Canada Int'l: News [S-M]
0100 Radio Japan: News [M-A]
0100 Radio Moscow: News
0100 Radio Prague: News
0100 Radiotelevisione Italiana: News
0100 Spanish Foreign Radio: News
0100 Voice of America: News
0100 WCSN: News [T-F]
0130 Radio Moscow (World Service): News in Brief
0130 WCSN: News [T-F]
0149 Radio Veritas Asia: World News [M-F]
0151 Spanish Foreign Radio: News Summary

program guide

1211 Radio Moscow (World Service): News and Views. See S 0111.
1215 BBC: My Music. A quiz show on - you guessed it - music!.
1232 Radio Moscow (World Service): Request Program. Programs featured include "Music at Your Request" and "Listeners' Request Club".
1245 BBC: Sports Roundup. See S 1330.
1309 BBC: Twenty-Four Hours. See S 0509.
1311 Radio Moscow (World Service): Top Priority. See S 2311.
1330 BBC: Feature. See S 1615.
1332 Radio Moscow (World Service): Audio Book Club. See S 0432.
1338 Swiss Radio International: Dateline. See S 0208.
1405 BBC: Outlook. An excellent magazine (i.e., covering everything!) program.
1411 Radio Moscow (World Service): Inside Report. See S 0011.
1437 Radio Netherlands: Newsline. See S 0037.
1445 BBC: Reading. See S 0215.
1445 Radio Moscow (World Service): Your Top Tune. See M 0345.
1452 Radio Netherlands: The Research File. See M 0752.
1511 Radio Moscow (World Service): News and Views. See S 0111.
1515 BBC: Time Will Tell. See M 0101 (through April 10).
1532 Radio Moscow (World Service): Folk Box. A program for lovers of folk music.
1538 Swiss Radio International: Dateline. See S 0208.
1611 Radio Moscow (World Service): Science and Engineering. See S 0211.
1615 BBC: Reading. See M 0430.
1630 BBC: Health Matters. See M 1115.
1632 Radio Moscow (World Service): Music. See S 0045.
1637 Radio Netherlands: Newsline. See S 0037.
1645 BBC: The World Today. News analysis on a selected location or event in the news.
1652 Radio Netherlands: The Research File. See M 0752.
2300 BBC: Commentary. Background to the news from a wide range of specialists.
2311 Radio Moscow (World Service): Update. Comments on and in-depth analysis of the latest developments in the world.
2315 BBC: The Learning World. An international survey of education around the world.
2330 BBC: Multitrack 1: Top 20. What's hot on the British pop music charts.

Tuesday

April 4, 11, 18, 25

0011 Kol Israel: News-Word. A look at the language used in reporting Israel.
0011 Radio Moscow (World Service): Inside Report. See S 0011.
0017 Kol Israel: Spectrum. Science, technology, and medicine news.
0030 BBC: Megamix. A compendium of music, sport, fashion, health, travel, news and views for young people.
0037 Radio Netherlands: Newsline. See S 0037.
0045 Radio Moscow (World Service): Your Top Tune. See M 0345.
0052 Radio Netherlands: The Research File. See M 0752.
0101 BBC: Outlook. See M 1405.
0111 Kol Israel: Concert Hall. Classical music.
0111 Radio Moscow (World Service): News and Views. See S 0111.
0113 Radio Prague: Newsview. Commentary on current news items in Czechoslovakia.
0122 Radio Prague: Folk Music Section. Traditional folk music from the Slovak region.

The anchor team for the "Herald of Christian Science," the religious program broadcast on WCSN and KYOI, the two Christian Science Monitor stations. Broadcasts are in English, French, and German, and are broadcast on weekends.

0125 BBC: Financial News. News of commodity prices and significant moves in currency and stock markets.
0126 Radio Prague: Introducing Czechoslovakia. Different facets of work and life in Czechoslovakia.
0130 BBC: Short Story. Brief tales written by BBC listeners.
0130 Radio Prague: Sports Round-Up. Full coverage of European sports, and sports commentaries.
0132 Radio Moscow (World Service): Yours for the Asking. Music as requested by listeners.
0133 Radio Prague: Meet the People. Questions from listeners are posed to guests in the studio.
0139 Radio Prague: The World Federation of Trade Unions Calling. Reports on business dealings and trade unions.
0145 BBC: Europe's World. A magazine program reflecting life in Europe and its links with other parts of the world.
0149 Radio Prague: Interview Time. Interviews with tourists visiting Czechoslovakia.
0208 Swiss Radio International: Dateline. See S 0208.
0209 BBC: British Press Review. See S 0209.
0211 Kol Israel: Spectrum. See T 0017.
0211 Radio Moscow (World Service): Focus on Asia and the Pacific. News and comments on events in the region.
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.
0245 Radio Moscow (World Service): Musical Program. A musical feature program.
0311 Radio Moscow (World Service): Inside Report. See S 0011.
0313 Radio Prague: Newsview. See T 0113.
0315 BBC: The World Today. See M 1645.
0322 Radio Prague: Folk Music Section. See T 0122.
0326 Radio Prague: Introducing Czechoslovakia. See T 0126.
0330 BBC: John Peel. Tracks from newly released albums and singles from the contemporary music scene.
0330 Radio Prague: Sports Round-Up. See T 0130.
0333 Radio Prague: Meet the People. See T 0133.
0337 Radio Netherlands: Newsline. See S 0037.
0339 Radio Prague: The World Federation of Trade Unions Calling. See T 0139.
0345 Radio Moscow (World Service): Music. See S 0045.
0349 Radio Prague: Interview Time. See T 0149.
0352 Radio Netherlands: The Research File. See M 0752.
0408 Swiss Radio International: Dateline. See S 0208.
0411 Radio Moscow (World Service): Update. See M 2311.
0430 BBC: The Learning World. See M 2315.
0437 Radio Netherlands: Newsline. See S 0037.

0152 Radio Veritas Asia: World News [A]
0153 Radio Prague: News Wrap-Up
0200 BBC: World News
0200 Deutsche Welle: World News
0200 Kol Israel: News
0200 KYOI: News [M-F]
0200 Radio Australia: International Report
0200 Radio Berlin Int'l: News
0200 Radio Canada Int'l:As It Happens[T-A]
0200 Radio Moscow: News
0200 Radio RSA: News
0200 Swiss Radio Int'l: News
0200 Voice of America: News
0200 Voice of Free China: News and Commentary
0200 WCSN: News [T-F]
0215 BBC (South Asia): Newsreel
0215 Radio Cairo: News
0230 Radio Moscow (World Service): News in Brief [S-M]
0230 Radio Portugal: News [T-A]
0230 WCSN: News [T-F]
0245 Radio Berlin Int'l: News
0300 BBC: World News
0300 Deutsche Welle: World News
0300 KYOI: News [M-F]
0300 Radio Australia: World and Australian News
0300 Radio Beijing: News
0300 Radio Berlin Int'l: News
0300 Radio Japan: News [M-A]
0300 Radio Moscow: News
0300 Radio Prague: News
0300 Radio RSA: News
0300 Voice of America: News
0300 Voice of Free China: News and Commentary
0300 WCSN: News [T-F]
0309 BBC: News About Britain
0309 Radio Beijing: News About China
0315 Radio Cairo: News
0330 Radio Finland: Northern Report [T-A]
0330 Radio Moscow (World Service): News in Brief [S]
0330 Radio Netherlands: News [T-S]
0330 WCSN: News [T-F]
0350 Radiotelevisione Italiana: News
0353 Radio Prague: News Wrap-Up
0400 BBC: Newsdesk
0400 Deutsche Welle: World News
0400 KYOI: News [M-F]
0400 Radio Australia: International Report
0400 Radio Berlin Int'l: News
0400 Radio Havana Cuba: International News
0400 Radio Moscow: News
0400 Radio RSA: News
0400 Swiss Radio Int'l: News
0400 Voice of America: News
0400 WCSN: News [M-F]
0425 Radiotelevisione Italiana: News
0430 Radio Havana Cuba: News Update
0430 Radio Moscow (World Service): News in Brief [S-M]
0430 Radio Netherlands: News [M-A]
0430 WCSN: News [T-F]

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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.
0511 Radio Moscow (World Service): News and Views. See S 0111.
0530 BBC: Financial News. See T 0125.
0532 Radio Moscow (World Service): Music. See S 0045.
0540 BBC: Words of Faith. See S 0540.
0545 BBC: The World Today. See M 1645.
0611 Radio Moscow (World Service): Inside Report. See S 0011.
0630 BBC: Musical Feature. A feature program concentrating on a music-related topic.
0638 Swiss Radio International: Dateline. See S 0208.
0645 Radio Moscow (World Service): Music. See S 0045.
0709 BBC: Twenty-Four Hours. See S 0509.
0711 Radio Moscow (World Service): Focus on Asia and the Pacific. See T 0211.
0730 BBC: Europe's World. See T 0145.
0737 Radio Netherlands: Newsline. See S 0037.
0745 BBC: Network UK. See T 0215.
0745 Radio Moscow (World Service): Musical Program. See T 0245.
0752 Radio Netherlands: Images. A cultural magazine, highlighting film, theatre, opera, books, and serious music.
1108 Swiss Radio International: Dateline. See S 0208.
1111 Radio Moscow (World Service): Focus on Asia and the Pacific. See T 0211.
1115 BBC: Waveguide. See S 0750.
1115 Kol Israel: With Me in the Studio. An interview with a studio guest.
1125 BBC: Book Choice. See S 0745.
1130 BBC: Citizens. A radio soap opera, featuring the travails of five fictional Britons and their friends.
1137 Radio Netherlands: Newsline. See S 0037.
1145 Radio Moscow (World Service): Musical Program. See T 0245.
1152 Radio Netherlands: Images. See T 0752.
1208 Swiss Radio International: Dateline. See S 0208.
1211 Radio Moscow (World Service): News and Views. See S 0111.
1215 BBC: Multitrack 1: Top 20. See M 2330.
1235 Radio Moscow (World Service): Folk Box. See M 1532.
1245 BBC: Sports Roundup. See S 1330.
1309 BBC: Twenty-Four Hours. See S 0509.
1311 Radio Moscow (World Service): Update. See M 2311.
1330 BBC: Network UK. See T 0215.
1338 Swiss Radio International: Dateline. See S 0208.
1345 BBC: Recording of the Week. See M 0545.
1405 BBC: Outlook. See M 1405.

The English Service staff at HCJB, the religious broadcaster in Quito, Ecuador.

1411 Radio Moscow (World Service): Inside Report. See S 0011.
1437 Radio Netherlands: Newsline. See S 0037.
1445 BBC: Chopin Collection. See M 0145.
1445 Radio Moscow (World Service): Music. See S 0045.
1452 Radio Netherlands: Images. See T 0752.
1511 Radio Moscow (World Service): News and Views. See S 0111.
1515 BBC: A Jolly Good Show. Dave Lee Travis presents your record requests and dedications in his own unique way, including the Album of the Month.
1532 Radio Moscow (World Service): Music and Musicians. Music from world-famous performers and composers.
1538 Swiss Radio International: Dateline. See S 0208.
1611 Radio Moscow (World Service): Focus on Asia and the Pacific. See T 0211.
1615 BBC: Omnibus. A half-hour program on practically any topic.
1637 Radio Netherlands: Newsline. See S 0037.
1645 BBC: The World Today. See M 1645.
1645 Radio Moscow (World Service): Musical Program. See T 0245.
1652 Radio Netherlands: Images. See T 0752.
2309 BBC: Commentary. See M 2309.
2311 Radio Moscow (World Service): Update. See M 2311.
2315 BBC: Concert Hall. See S 1515.

Wednesday

April 5, 12, 19, 26

0011 Kol Israel: With Me in the Studio. See T 1115.
0011 Radio Moscow (World Service): Inside Report. See S 0011.
0030 BBC: Omnibus. See T 1615.
0037 Radio Netherlands: Newsline. See S 0037.
0045 Radio Moscow (World Service): Music. See S 0045.
0052 Radio Netherlands: Images. See T 0752.
0101 BBC: Outlook. See M 1405.
0111 Kol Israel: Israel Sound. Pop and rock music.
0111 Radio Moscow (World Service): News and Views. See S 0111.
0125 BBC: Financial News. See T 0125.

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0445 Radio Berlin Int'l: News
0500 BBC: World News
0500 Deutsche Welle: World News
0500 Kol Israel: News
0500 KYOI: News [M-F]
0500 Radio Australia: World and Australian News
0500 Radio Berlin Int'l: News
0500 Radio Japan: News [S-F]
0500 Radio Moscow: News
0500 Radio New Zealand Int'l: News
0500 Voice of America: News
0500 WCSN: News [M-F]
0515 Radio Finland: Northern Report [T-A]
0530 Radio Moscow (World Service): News in Brief
0530 WCSN: News [T-F]
0600 BBC: Newsdesk
0600 Deutsche Welle: World News
0600 KYOI: News [M-F]
0600 Radio Australia: International Report
0600 Radio Moscow: News
0600 Voice of America: News
0600 WCSN: News [M-F]
0615 Radio Berlin Int'l: News
0615 Radio Canada Int'l: News [M-F]
0630 Radio Moscow (World Service): News in Brief [S]
0630 Swiss Radio Int'l: News
0630 WCSN: News [T-F]
0645 Radio Canada Int'l: News [M-F]
0700 BBC: World News
0700 KYOI: News [M-F]
0700 Radio Australia: World and Australian News
0700 Radio Japan: News [S-F]
0700 Radio Moscow (World Service): News
0700 Voice of Free China: News and Commentary
0700 WCSN: News [M-F]
0730 Radio Finland: Northern Report [T-A]
0730 Radio Moscow (World Service): News in Brief [S-M]
0730 Radio Netherlands: News [M-A]
0730 WCSN: News [T-F]
0745 Radio Berlin Int'l: News
0800 BBC: World News
0800 BRT, Brussels: News [T-F]
0800 KYOI: News [M-F]
0800 Radio Australia: International Report
0800 Radio Berlin Int'l: News
0800 Radio Moscow (World Service): News
0830 Radio Moscow (World Service): News in Brief
0830 Radio Netherlands: News [M-A]
0830 Swiss Radio Int'l: News
0900 BBC: World News
0900 Deutsche Welle: World News
0900 KYOI: News [M-F]
0900 Radio Australia: World and Australian News
0900 Radio Finland: Northern Report [T-A]
0900 Radio Japan: News [S-F]

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0130 BBC: How It All Began. Keith Parsons looks at the origins of some of the major issues in the world.
0132 Radio Moscow (World Service): Request Program. See M 1232.
0145 BBC: Country Style. Uh oh - it's back! British country music! Hide the children!
0208 Swiss Radio International: Dateline. See S 0208.
0209 BBC: British Press Review. See S 0209.
0211 Kol Israel: With Me in the Studio. See T 1115.
0211 Radio Moscow (World Service): Focus on Asia and the Pacific. See T 0211.
0215 BBC: Health Matters. See M 1115.
0230 BBC: Citizens. See T 1130.
0245 Radio Moscow (World Service): Musical Program. See T 0245.
0311 Radio Moscow (World Service): Inside Report. See S 0011.
0315 BBC: The World Today. See M 1645.
0330 BBC: Discovery. An in-depth look at scientific matters.
0337 Radio Netherlands: Newsline. See S 0037.
0345 Radio Moscow (World Service): Music. See S 0045.
0352 Radio Netherlands: Images. See T 0752.
0408 Swiss Radio International: Dateline. See S 0208.
0411 Radio Moscow (World Service): Update. See M 2311.
0430 BBC: Business Matters. A weekly survey of commercial and financial news.
0437 Radio Netherlands: Newsline. See S 0037.
0445 BBC: Country Style. See W 0145.
0509 BBC: Twenty-Four Hours. See S 0509.
0511 Radio Moscow (World Service): News and Views. See S 0111.
0530 BBC: Financial News. See T 0125.
0532 Radio Moscow (World Service): Music. See S 0045.
0540 BBC: Words of Faith. See S 0540.
0545 BBC: The World Today. See M 1645.
0611 Radio Moscow (World Service): Inside Report. See S 0011.
0630 BBC: Meridian. The world of the arts, including music, drama, and books.
0638 Swiss Radio International: Dateline. See S 0208.
0645 Radio Moscow (World Service): Music. See S 0045.
0709 BBC: Twenty-Four Hours. See S 0509.
0711 Radio Moscow (World Service): Focus on Asia and the Pacific. See T 0211.
0730 BBC: Development '89. Aid and development issues.
0737 Radio Netherlands: Newsline. See S 0037.
0745 Radio Moscow (World Service): Musical Program. See T 0245.
0752 Radio Netherlands: More than Tulips. A look at the Dutch provinces (through May).
1108 Swiss Radio International: Dateline. See S 0208.
1111 Radio Moscow (World Service): Focus on Asia and the Pacific. See T 0211.
1115 BBC: Country Style. See W 0145.
1115 Kol Israel: Israel Mosaic. Topical features.
1130 BBC: Meridian. See W 0630.
1137 Radio Netherlands: Newsline. See S 0037.
1145 Radio Moscow (World Service): Musical Program. See T 0245.
1152 Radio Netherlands: More than Tulips. See W 0752.
1208 Swiss Radio International: Dateline. See S 0208.
1211 Radio Moscow (World Service): News and Views. See S 0111.
1215 BBC: Feature. Programming on various subjects.
1225 BBC: The Farming World. Issues in agriculture.
1232 Radio Moscow (World Service): Music and Musicians. See T 1532.
1245 BBC: Sports Roundup. See S 1330.
1309 BBC: Twenty-Four Hours. See S 0509.

Akio Nagano broadcasts news for Radio Japan's English service (check news guide for details).

1311 Radio Moscow (World Service): Update. See M 2311.
1330 BBC: Development '89. See W 0730.
1338 Swiss Radio International: Dateline. See S 0208.
1405 BBC: Outlook. See M 1405.
1411 Radio Moscow (World Service): Inside Report. See S 0011.
1437 Radio Netherlands: Newsline. See S 0037.
1445 BBC: Business Matters. See W 0430.
1445 Radio Moscow (World Service): Music. See S 0045.
1452 Radio Netherlands: More than Tulips. See W 0752.
1511 Radio Moscow (World Service): News and Views. See S 0111.
1515 BBC: The Learning World. See M 2315.
1530 BBC: After Henry. The story of three women after the death of one of their husbands (except March 29th: Two Cheers for March, a satirical look back at the month just past).
1532 Radio Moscow (World Service): Jazz Show. See M 0132.
1538 Swiss Radio International: Dateline. See S 0208.
1611 Radio Moscow (World Service): Focus on Asia and the Pacific. See T 0211.
1615 BBC: Musical Feature. See T 0630.
1637 Radio Netherlands: Newsline. See S 0037.
1645 BBC: The World Today. See M 1645.
1645 Radio Moscow (World Service): Musical Program. See T 0245.
1652 Radio Netherlands: More than Tulips. See W 0752.
2309 BBC: Commentary. See M 2309.
2311 Radio Moscow (World Service): Update. See M 2311.
2315 BBC: Food and Drink. See M 0315.
2330 BBC: Multitrack 2. Mitchell Johnson presents pop music and news.

Thursday

April 6, 13, 20, 27

0011 Kol Israel: Jewish News Review. A look at events affecting followers of Judaism.
0011 Radio Moscow (World Service): Inside Report. See S 0011.
0017 Kol Israel: Living Here. A look at people who have made Israel their home.
0030 BBC: After Henry (except March 30th: Two Cheers for March). See W 1530.
0032 Radio Moscow (World Service): Music. See S 0045.
0037 Radio Netherlands: Newsline. See S 0037.
0052 Radio Netherlands: More than Tulips. See W 0752.
0101 BBC: Outlook. See M 1405.
0111 Kol Israel: Israel Mosaic. See W 1115.
0111 Radio Moscow (World Service): News and Views. See S 0111.
0125 BBC: Financial News. See T 0125.
0130 BBC: Waveguide. See S 0750.
0132 Radio Moscow (World Service): Folk Box. See M 1532.
0140 BBC: Book Choice. See S 0745.
0145 BBC: Society Today. A weekly look at the changes in Britain.

0900 Radio Moscow (World Service): News
0930 Radio Canada Int'l: News [M-F]
0930 Radio Finland: Northern Report [T-A]
0930 Radio Moscow (World Service): News in Brief [S-M]
1000 BBC: News Summary
1000 BRT: Brussels: News [M-F]
1000 KYOI: News [M-F]
1000 Radio Australia: International Report
1000 Radio Berlin Int'l: News
1000 Radio Moscow (World Service): News
1000 Radio New Zealand Int'l: News [M-F]
1000 Swiss Radio Int'l: News
1000 Voice of America: News
1030 KYOI: News [T-F]
1030 Radio Moscow (World Service): News in Brief [S]
1030 Radio Netherlands: News [M-A]
1030 Voice of America (Special English): News [S]
1100 BBC: World News
1100 Deutsche Welle: World News
1100 Kol Israel: News
1100 KYOI: News [M-F]
1100 Radio Australia: World and Australian News
1100 Radio Berlin Int'l: News
1100 Radio Japan: News [S-F]
1100 Radio Moscow (World Service): News
1100 Radio New Zealand Int'l: News
1100 Radio RSA: News
1100 Swiss Radio Int'l: News
1100 Voice of America: News
1109 BBC: News About Britain
1130 KYOI: News [T-F]
1130 Radio Moscow (World Service): News in Brief [S-M]
1130 Radio Netherlands: News [M-A]
1130 Voice of America (Special English): News [M-F]
1200 BBC: News Summary [S]
1200 BBC: Newsreel [M-A]
1200 KYOI: News [M-F]
1200 Radio Australia: International Report
1200 Radio Canada Int'l: News [M-A]
1200 Radio Finland: Northern Report [T-F]
1200 Radio Moscow (World Service): News
1200 Swiss Radio Int'l: News
1200 Voice of America: News
1215 Radio Berlin Int'l: News
1230 KYOI: News [T-F]
1230 Radio Berlin Int'l: News
1230 Radio Moscow (World Service): News in Brief
1300 BBC: World News
1300 KYOI: News [M-F]
1300 Radio Australia: World and Australian News
1300 Radio Berlin Int'l: News
1300 Radio Canada Int'l:World Report[M-F]
1300 Radio Finland: Northern Report [T-F]
1300 Radio Moscow (World Service): News
1300 Voice of America: News
1330 BRT, Brussels: News [M-F]
1330 KYOI: News [T-F]
1330 Radio Moscow

program guide

0208 Swiss Radio International: Dateline. See S 0208.
0209 BBC: British Press Review. See S 0209.
0211 Kol Israel: Living Here. See H 0017.
0211 Radio Moscow (World Service): Focus on Asia and the Pacific. See T 0211.
0215 BBC: Network UK. See T 0215.
0230 BBC: Assignment. A weekly examination of a topical issue.
0245 Radio Moscow (World Service): Musical Program. See T 0245.
0311 Radio Moscow (World Service): Inside Report. See S 0011.
0315 BBC: The World Today. See M 1645.

The staff at "This Week," Radio Japan's weekly news program. From left: Kazuo Harashima, Yuka Nukina, Tatae Akiyama, and Yoshimasa Sakamoto. The program can be heard on Saturdays at 1100 and 2300 UTC.

0330 BBC: My Music. See M 1215.
0337 Radio Netherlands: Newsline. See S 0037.
0345 Radio Moscow (World Service): Music. See S 0045.
0352 Radio Netherlands: More than Tulips. See W 0752.
0408 Swiss Radio International: Dateline. See S 0208.
0411 Radio Moscow (World Service): Update. See M 2311.
0430 BBC: Society Today. See H 0145.
0437 Radio Netherlands: Newsline. See S 0037.
0445 BBC: Andy Kershaw's World of Music. See M 0215.
0509 BBC: Twenty-Four Hours. See S 0509.
0511 Radio Moscow (World Service): News and Views. See S 0111.
0530 BBC: Financial News. See T 0125.
0532 Radio Moscow (World Service): Music. See S 0045.
0540 BBC: Words of Faith. See S 0540.
0545 BBC: The World Today. See M 1645.
0611 Radio Moscow (World Service): Inside Report. See S 0011.
0630 BBC: They Made Our World. See W 1215.
0638 Swiss Radio International: Dateline. See S 0208.
0640 BBC: The Farming World. See W 1225.
0645 Radio Moscow (World Service): Music. See S 0045.
0709 BBC: Twenty-Four Hours. See S 0509.
0711 Radio Moscow (World Service): Focus on Asia and the Pacific. See T 0211.
0730 BBC: Write On... Paddy Feeny with correspondence and listeners' questions.
0737 Radio Netherlands: Newsline. See S 0037.
0745 BBC: Network UK. See T 0215.
0745 Radio Moscow (World Service): Musical Program. See T 0245.
0752 Radio Netherlands: Media Network. A weekly survey of communications developments around the globe.
1108 Swiss Radio International: Dateline. See S 0208.
1111 Radio Moscow (World Service): Focus on Asia and the Pacific. See T 0211.
1115 BBC: New Ideas. See T 0445.
1115 Kol Israel: Studio Three. A look at the arts, music, and culture.
1125 BBC: Book Choice. See S 0745.
1130 BBC: Citizens. See T 1130.
1137 Radio Netherlands: Newsline. See S 0037.
1145 Radio Moscow (World Service): Musical Program. See T 0245.
1152 Radio Netherlands: Media Network. See H 0752.
1208 Swiss Radio International: Dateline. See S 0208.
1211 Radio Moscow (World Service): News and Views. See S 0111.
1215 BBC: Multitrack 2. See W 1830.
1232 Radio Moscow (World Service): Jazz Show. See M 0132.
1245 BBC: Sports Roundup. See S 1330.
1309 BBC: Twenty-Four Hours. See S 0509.
1311 Radio Moscow (World Service): Update. See M 2311.
1330 BBC: Network UK. See T 0215.
1338 Swiss Radio International: Dateline. See S 0208.
1345 BBC: Jazz Scene UK (6th, 20th) or Folk in Britain (13th, 27th). A look at folk or jazz music on the British Isles.
1405 BBC: Outlook. See M 1405.
1411 Radio Moscow (World Service): Inside Report. See S 0011.
1437 Radio Netherlands: Newsline. See S 0037.
1445 BBC: Write On... See H 0730.
1445 Radio Moscow (World Service): Music. See S 0045.
1452 Radio Netherlands: Media Network. See H 0752.
1511 Radio Moscow (World Service): News and Views. See S 0111.
1515 BBC: The Pleasure's Yours. Gordon Clyde presents classical music requests.
1530 WRNO: World of Radio. Glenn Hauser's comprehensive communications magazine.
1532 Radio Moscow (World Service): Yours for the Asking. See T 0132.
1538 Swiss Radio International: Dateline. See S 0208.
1611 Radio Moscow (World Service): Focus on Asia and the Pacific. See T 0211.
1615 BBC: Assignment. See H 0230.
1637 Radio Netherlands: Newsline. See S 0037.
1645 BBC: The World Today. See M 1645.
1645 Radio Moscow (World Service): Musical Program. See T 0245.
1652 Radio Netherlands: Media Network. See H 0752.
2300 WRNO: World of Radio. See H 1530.
2309 BBC: Commentary. See M 2309.
2311 Radio Moscow (World Service): Update. See M 2311.
2315 BBC: Music Now. Malcolm Singer presents modern classical music.
2345 BBC: Feature. Programming on various subjects.

Friday

April 7, 14, 21, 28

0011 Kol Israel: Pillar of Fire. See M 1115.
0011 Radio Moscow (World Service): Inside Report. See S 0011.
0030 BBC: BBC Singers. The Beeb's very own present classical choral music.
0032 Radio Moscow (World Service): Music. See S 0045.
0037 Radio Netherlands: Newsline. See S 0037.
0052 Radio Netherlands: Media Network. See H 0752.
0101 BBC: Outlook. See M 1405.
0111 Kol Israel: Studio Three. See H 1115.
0111 Radio Moscow (World Service): News and Views. See S 0111.
0113 Radio Prague: Newsview. See T 0113.
0125 BBC: Financial News. See T 0125.

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(World Service): News in Brief [S-M]
1330 Swiss Radio Int'l: News
1330 Voice of America (Special English): News
1345 Radio Berlin Int'l: News
1400 BBC: News Summary [A-S]
1400 BBC: World News [M-F]
1400 KYOI: News [M-F]
1400 Radio Australia: International Report
1400 Radio Berlin Int'l: News
1400 Radio Canada Int'l: News [S]
1400 Radio Finland: Northern Report [T-A]
1400 Radio Japan: News [S-F]
1400 Radio Moscow (World Service): News
1400 Radio RSA: News
1400 Voice of America: News
1430 Radio Moscow (World Service): News in Brief [S]
1430 Radio Netherlands: News [M-A]
1500 BBC: Newsreel
1500 Deutsche Welle: World News
1500 KYOI: News [M-F]
1500 Radio Australia: World and Australian News
1500 Radio Japan: News [S-F]
1500 Radio Moscow (World Service): News
1500 Radio RSA: News
1500 Voice of America: News
1505 Radio Finland: Northern Report [T-A]
1527 Radio Veritas Asia: World News [M-A]
1530 Radio Moscow (World Service): News in Brief
1530 Swiss Radio Int'l: News
1545 Radio Berlin Int'l: News
1545 Radio Canada Int'l: News
1600 BBC: World News
1600 Deutsche Welle: World News
1600 Radio Australia: International Report
1600 Radio Berlin Int'l: News
1600 Radio Moscow (World Service): News
1600 Voice of America: News
1600 WCSN: News [M-F]
1609 BBC: News About Britain
1630 BRT, Brussels: News [M-F]
1630 Radio Moscow (World Service): News in Brief [S-M]
1630 Radio Netherlands: News [M-A]
1630 Voice of America (Special English): News
1630 WCSN: News [M-F]
1700 BBC: World News [S-F]
1700 Radio Australia: World and Australian News
1700 Radio Japan: News [S-F]
1700 Radio Moscow (World Service): News
1700 Voice of America: News
1700 WCSN: News [M-F]
1703 Radio Jamahiriya, Libya: Headlines
1715 Radio Berlin Int'l: News
1715 Radio Canada Int'l: News
1730 Radio Berlin Int'l: News
1730 Radio Moscow (World Service): News in Brief [S]

program guide

0125 Radio Prague: Folk Music Section. See T 0122.
0128 Radio Prague: Health and Medicine. A look at different aspects of health care in Czechoslovakia.
0130 BBC: Jazz Scene UK (7th, 21st) or Folk in Britain (14th, 28th). See H 1345.
0132 Radio Moscow (World Service): Music and Musicians. See T 1532.
0135 Radio Prague: Letter from Czechoslovakia. A program focusing on the real personal life in Czechoslovakia, and opinions of Czech individuals.
0140 Radio Prague: DX Chat. Reception reports and DX news.
0145 BBC: Talking From... Profiles from Northern Ireland, Scotland, and Wales.
0149 Radio Prague: The World Federation of Trade Unions Calling. See T 0139.
0208 Swiss Radio International: Dateline. See S 0208.
0209 BBC: British Press Review. See S 0209.
0211 Kol Israel: Pillar of Fire. See M 1115.
0211 Radio Moscow (World Service): Focus on Asia and the Pacific. See T 0211.
0215 BBC: Seven Seas. A weekly program about ships and the sea.
0230 BBC: Citizens. See T 1130.
0245 Radio Moscow (World Service): Musical Program. See T 0245.
0311 Radio Moscow (World Service): Inside Report. See S 0011.
0313 Radio Prague: Newsview. See T 0113.
0315 BBC: The World Today. See M 1645.
0325 Radio Prague: Folk Music Section. See T 0122.
0328 Radio Prague: Health and Medicine. See F 0128.
0330 BBC: Focus on Faith. Comment and discussion on the major issues in the worlds of faith.
0335 Radio Prague: Letter from Czechoslovakia. See F 0135.
0337 Radio Netherlands: Newsline. See S 0037.
0340 Radio Prague: DX Chat. See F 0140.
0345 Radio Moscow (World Service): Music. See S 0045.
0349 Radio Prague: The World Federation of Trade Unions Calling. See T 0139.
0352 Radio Netherlands: Media Network. See H 0752.
0408 Swiss Radio International: Dateline. See S 0208.
0411 Radio Moscow (World Service): Update. See M 2311.
0430 BBC: Short Story. See T 0130.
0437 Radio Netherlands: Newsline. See S 0037.
0445 BBC: Jazz Scene UK (7th, 21st) or Folk in Britain (14th, 28th). See H 1345.
0509 BBC: Twenty-Four Hours. See S 0509.
0511 Radio Moscow (World Service): News and Views. See S 0111.
0530 BBC: Financial News. See T 0125.
0532 Radio Moscow (World Service): Music. See S 0045.
0540 BBC: Words of Faith. See S 0540.
0545 BBC: The World Today. See M 1645.
0611 Radio Moscow (World Service): Inside Report. See S 0011.
0630 BBC: Meridian. See W 0630.
0638 Swiss Radio International: Dateline. See S 0208.
0645 Radio Moscow (World Service): Music. See S 0045.
0709 BBC: Twenty-Four Hours. See S 0509.
0711 Radio Moscow (World Service): Focus on Asia and the Pacific. See T 0211.

The presenters of "P.O. Box 4559," Radio RSA's weekly program of listener letters. The program airs on Radio RSA's Sunday broadcasts.

0730 BBC: And So To Bed. A look at what goes on while humans doze off (through April 7).
0737 Radio Netherlands: Newsline. See S 0037.
0745 Radio Moscow (World Service): Musical Program. See T 0245.
0752 Radio Netherlands: Rembrandt Express. A magazine program with a "fresh dimension".
1108 Swiss Radio International: Dateline. See S 0208.
1111 Radio Moscow (World Service): Focus on Asia and the Pacific. See T 0211.
1115 BBC: Talking From... See F 0145.
1115 Kol Israel: Thank Goodness It's Friday. A look at Judaism today.
1130 BBC: Meridian. See W 0630.
1137 Radio Netherlands: Asiascan. A live magazine show with interviews with newsmakers, press reviews, monthly quizzes and listener opinion.
1145 Radio Moscow (World Service): Musical Program. See T 0245.
1208 Swiss Radio International: Dateline. See S 0208.
1211 Radio Moscow (World Service): News and Views. See S 0111.
1215 BBC: And So To Bed. See F 0730.
1232 Radio Moscow (World Service): Yours for the Asking. See T 0132.
1245 BBC: Sports Roundup. See [illegible] 1330.
1309 BBC: Twenty-Four Hours. See S 0509.
1311 Radio Moscow (World Service): Update. See M 2311.
1330 BBC: John Peel. See T 0330.
1338 Swiss Radio International: Dateline. See S 0208.
1405 BBC: Outlook. See M 1405.
1411 Radio Moscow (World Service): Inside Report. See S 0011.
1437 Radio Netherlands: Asiascan. See F 1137.
1445 BBC: Nature Now. See M 0445.
1445 Radio Moscow (World Service): Music. See S 0045.
1511 Radio Moscow (World Service): News and Views. See S 0111.
1515 BBC: Music Now. See H 2315.
1532 Radio Moscow (World Service): Request Program. See M 1232.
1538 Swiss Radio International: Dateline. See S 0208.
1545 BBC: Feature. See H 2345.
1611 Radio Moscow (World Service): Focus on Asia and the Pacific. See T 0211.
1615 BBC: Science in Action. See M 0230.
1637 Radio Netherlands: Newsline. See S 0037.
1645 BBC: The World Today. See M 1645.
1645 Radio Moscow (World Service): Musical Program. See T 0245.
1652 Radio Netherlands: Airtime Africa. Music, discussion with studio guests, and analysis of the issues that concern both Europe and Africa.
2309 BBC: Commentary. See M 2309.
2311 Radio Moscow (World Service): Update. See M 2311.
2315 BBC: From The Weeklies. A review of the British weekly press.
2330 BBC: Multitrack 3. Sarah Ward presents innovative and alternative rock music.

1730 Radio New Zealand Int'l: News [S-F]
1730 Swiss Radio Int'l: News
1730 WCSN: News [M-F]
1747 Radio Jamahiriya, Libya: News
1800 BBC: Newsdesk
1800 Kol Israel: News
1800 KYOI: News [M-F]
1800 Radio Australia: International Report
1800 Radio Canada Int'l: News
1800 Radio Moscow (World Service): News
1800 Radio New Zealand Int'l: News
1800 Radio RSA: News
1800 Voice of America: News
1800 WCSN: News [M-F]
1830 BRT, Brussels: News [M-F]
1830 Radio Kuwait: News
1830 Radio Moscow (World Service): News in Brief
1830 Radio Netherlands: News [M-A]
1830 Radio New Zealand Int'l: News [M-F]
1830 Swiss Radio Int'l: News
1830 Voice of America (Special English): News
1830 WCSN: News [M-F]
1900 BBC: News Summary
1900 Deutsche Welle: World News
1900 KYOI: News [M-F]
1900 Radio Australia: World and Australian News
1900 Radio Canada Int'l: News [M-F]
1900 Radio Havana Cuba: International News
1900 Radio Japan: News
1900 Radio Moscow (World Service): News
1900 Radio New Zealand Int'l: News
1900 Radio RSA: News
1900 Voice of America: News
1900 WCSN: News [M-F]
1915 Radio Berlin Int'l: News
1930 Radio Canada Int'l: News [M-F]
1930 Radio Finland: Northern Report [M-F]
1930 Radio Havana Cuba: News Update
1930 Radio Moscow (World Service): News in Brief [A-S]
1930 WCSN: News [M-F]
1935 Radiotelevisione Italiana: News
1945 Radio Berlin Int'l: News
2000 BBC: World News
2000 Kol Israel: News
2000 KYOI: News [S-F]
2000 Radio Australia: International Report
2000 Radio Berlin Int'l: News
2000 Radio Jordan: News
2000 Radio Moscow (World Service): News
2000 Radio New Zealand Int'l: News
2000 Radio RSA: News
2000 Voice of America: News
2000 WCSN: News [M-F]
2025 Radiotelevisione Italiana: News
2030 KYOI: News [M-H]
2030 Radio Moscow (World Service): News in Brief [S]
2030 Radio Netherlands: News [M-A]
2030 WCSN: News [M-F]
2100 BBC: News Summary
2100 Deutsche Welle: World News

program guide

Saturday

April 1, 18, 15, 22, 29

0011 Kol Israel: Letter from Jerusalem. News commentary.
0011 Radio Moscow (World Service): Inside Report. See S 0011.
0015 Kol Israel: Thank Goodness It's Friday. See F 1115.
0030 BBC: Personal View. Opinion on topical issues in British life.
0037 Radio Netherlands: Newsline. See S 0037.
0045 BBC: Recording of the Week. See M 0545.
0045 Radio Moscow (World Service): Music. See S 0045.
0052 Radio Netherlands: Rembrandt Express. See F 0752.
0101 BBC: Outlook. See M 1405.
0110 Kol Israel: Shabbat Shalom. Sabbath record requests.
0111 Radio Moscow (World Service): News and Views. See S 0111.
0113 Radio Prague: Newsview. See T 0113.
0120 Radio Prague: The Week's Events in Czechoslovakia. A weekly news review of recent happenings in Czechoslovakia.
0125 BBC: Financial News. See T 0125.
0125 Radio Prague: The Arts in Czechoslovakia. A look at the cultural atmosphere in Czechoslovakia.
0130 BBC: Classical Record Review. Edward Greenfield reviews new releases.
0132 Radio Moscow (World Service): Music. See S 0045.
0135 Radio Prague: North American Mailbag Program. Reception reports, musical requests, and listener letters.
0145 BBC: Book Choice. See S 0745.
0150 BBC: New Ideas. See T 0445.
0208 Swiss Radio International: Dateline. See S 0208.
0209 BBC: British Press Review. See S 0209.
0211 Kol Israel: Thank Goodness It's Friday. See F 1115.
0211 Radio Moscow (World Service): Focus on Asia and the Pacific. See T 0211.
0215 BBC: Network UK. See T 0215.
0230 BBC: People and Politics. Background to the British political scene.
0245 Radio Moscow (World Service): Musical Program. See T 0245.
0300 WRNO: World of Radio. See H 1530.
0311 Radio Moscow (World Service): Inside Report. See S 0011.
0313 Radio Prague: Newsview. See T 0113.
0315 BBC: The World Today. See M 1645.
0320 Radio Prague: The Week's Events in Czechoslovakia. See A 0120.
0325 Radio Prague: The Arts in Czechoslovakia. See A 0125.
0330 BBC: The Vintage Chart Show. Past top ten hits with Jimmy Savile.
0335 Radio Prague: North American Mailbag Program. See A 0135.
0337 Radio Netherlands: Newsline. See S 0037.
0345 Radio Moscow (World Service): Your Top Tune. See M 0345.
0352 Radio Netherlands: Rembrandt Express. See F 0752.
0408 Swiss Radio International: Dateline. See S 0208.
0411 Radio Moscow (World Service): Update. See M 2311.
0430 BBC: Here's Humph! All that jazz with Humphrey Lyttelton.
0437 Radio Netherlands: Newsline. See S 0037.
0445 BBC: Personal View. See A 0030.
0509 BBC: Twenty-Four Hours. See S 0509.
0511 Radio Moscow (World Service): News and Views. See S 0111.
0530 BBC: Financial News. See T 0125.
0532 Radio Moscow (World Service): Yours for the Asking. See T 0132.
0540 BBC: Words of Faith. See S 0540.
0545 BBC: The World Today. See M 1645.
0611 Radio Moscow (World Service): Inside Report. See S 0011.
0630 BBC: Meridian. See W 0630.
0638 Swiss Radio International: Dateline. See S 0208.
0645 Radio Moscow (World Service): Your Top Tune. See M 0345.
0648 Swiss Radio International: Swiss Shortwave Merry-Go-Round. See S 0218.
0709 BBC: Twenty-Four Hours. See S 0509.
0711 Radio Moscow (World Service): Focus on Asia and the Pacific. See T 0211.
0730 BBC: From The Weeklies. See F 2315.
0737 Radio Netherlands: Newsline. See S 0037.
0745 BBC: Network UK. See T 0215.
0745 Radio Moscow (World Service): Musical Program. See T 0245.
0752 Radio Netherlands: Over To You. See S 0052.
1108 Swiss Radio International: Dateline. See S 0208.
1111 Radio Moscow (World Service): Focus on Asia and the Pacific. See T 0211.
1115 BBC: Classical Record Review. See A 0130.
1115 Kol Israel: Spotlight. See S 0011.
1118 Swiss Radio International: Swiss Shortwave Merry-Go-Round. See S 0218.
1130 BBC: Meridian. See W 0630.
1137 Radio Netherlands: Newsline. See S 0037.
1145 Radio Moscow (World Service): Musical Program. See T 0245.
1152 Radio Netherlands: Over to You. See S 0052.
1208 Swiss Radio International: Dateline. See S 0208.
1211 Radio Moscow (World Service): News and Views. See S 0111.
1215 BBC: Multitrack 3. See F 2330.
1218 Swiss Radio International: Swiss Shortwave Merry-Go-Round. See S 0218.
1232 Radio Moscow (World Service): Request Program. See M 1232.
1245 BBC: Sports Roundup. See S 1330.
1309 BBC: Twenty-Four Hours. See S 0509.
1311 Radio Moscow (World Service): Update. See M 2311.
1330 BBC: Network UK. See T 0215.
1338 Swiss Radio International: Dateline. See S 0208.
1345 BBC: Sing Gospel! See S 0430.
1348 Swiss Radio International: Swiss Shortwave Merry-Go-Round. See S 0218.
1401 BBC: The Ken Bruce Show. See S 0230.
1411 Radio Moscow (World Service): Inside Report. See S 0011.
1430 BBC: Sportsworld. Paddy Feeny presents almost three hours of live sports.
1437 Radio Netherlands: Newsline. See S 0037.
1445 Radio Moscow (World Service): Your Top Tune. See M 0345.
1452 Radio Netherlands: Over to You. See S 0052.
1511 Radio Moscow (World Service): News and Views. See S 0111.
1515 BBC: Sportsworld (continued). See A 1430.
1532 Radio Moscow (World Service): Music. See S 0045.
1538 Swiss Radio International: Dateline. See S 0208.
1548 Swiss Radio International: Swiss Shortwave Merry-Go-Round. See S 0218.
1611 Radio Moscow (World Service): Focus on Asia and the Pacific. See T 0211.
1615 BBC: Sportsworld (continued). See A 1430.
1637 Radio Netherlands: Newsline. See S 0037.
1645 Radio Moscow (World Service): Musical Program. See T 0245.
1652 Radio Netherlands: Over to You. See S 0052.
2309 BBC: Book Choice. See S 0745.
2311 Radio Moscow (World Service): Culture and the Arts. See S 0411.
2315 BBC: A Jolly Good Show. See T 1515.
2330 WRNO: World of Radio. See H 1530.
2332 Radio Moscow (World Service): Audio Book Club. See S 0432.
2359 ALL STATIONS: Larry Miller, Live! *Monitoring Times* very own Larry Miller hosts an evangelical shortwave program. The broadcast airs April 1st.

news guide cont'd from p.65

2100 KYOI: News [S-F]
2100 Radio Australia: World and Australian News
2100 Radio Berlin Int'l: News
2100 Radio Japan: News
2100 Radio Moscow (World Service): News
2100 Swiss Radio Int'l: News
2100 Voice of America: News
2100 WCSN: News [M-F]
2130 KYOI: News [M-H]
2130 Radio Canada Int'l: News
2130 Radio Moscow (World Service): News in Brief
2130 Swiss Radio Int'l: News
2130 WCSN: News [M-F]
2200 BBC: Newshour
2200 BRT, Brussels: News [M-F]
2200 KYOI: News [S-H]
2200 Radio Australia: International Report
2200 Radio Berlin Int'l: News
2200 Radio Canada Int'l [Asia]: News [M-F]
2200 Radio Canada Int'l: News [A-S]
2200 Radio Canada Int'l: World at Six [M-F]
2200 Radio Finland: Northern Report [M-F]
2200 Radio Moscow (World Service): News
2200 Radiotelevisione Italiana: News
2200 Voice of America: News
2200 Voice of Free China: News and Commentary
2200 WCSN: News [M-F]
2230 Kol Israel: News
2230 KYOI: News [M-H]
2230 Radio Canada Int'l: As It Happens [M-F]
2230 Radio Moscow (World Service): News in Brief [A-S]
2230 Radio Polonia: News
2230 Voice of America (Special English): News
2230 WCSN: News [M-F]
2233 Radio Jamahiriya, Libya: Headlines
2245 Radio Berlin Int'l: News
2300 BBC: World News
2300 KYOI: News [S-H]
2300 Radio Australia: World and Australian News
2300 Radio Berlin Int'l: News
2300 Radio Canada Int'l: News
2300 Radio Jamahiriya, Libya: News
2300 Radio Japan: News [S-F]
2300 Radio Moscow: News
2300 Radio New Zealand Int'l: News
2300 Voice of America: News
2300 Voice of Turkey: News
2300 WCSN: News [M-F]
2330 KYOI: News [M-H]
2330 Radio Moscow (World Service): News in Brief [A-S]
2330 Radio New Zealand Int'l: News [S-H]
2330 WCSN: News [M-F]
2335 Voice of Greece: News [S]

frequency section

MT Monitoring Team

EAST COAST:

Greg Jordan, Frequency Manager

1855-I Franciscan Terrace
Winston-Salem, NC 27127

Joe Hanlon, PA

WEST COAST:

Bill Brinkley, CA

Pete Wahlquist, CA

0000 UTC [8:00 PM EDT/5:00 PM PDT]

0000-0015		Voice of Kampuchea, Phnom-Penh	9693 11938
0000-0030		BBC, London, England	5975 6005 6175 7325 9590 9915 11955 12095 15260 17875
0000-0030		Kol Israel, Jerusalem	7465 9385 9435
0000-0030		Radio Berlin Int'l, East Germany	6080 11890
0000-0030		Radio Korea (South), Seoul	15575
0000-0030	M	Radio Norway Int'l, Oslo	9620 11845
0000-0045		Radio Yugoslavia, Belgrade	5980 9620 11735
0000-0045		WINB, Red Lion, Pennsylvania	15295
0000-0050		Radio Pyongyang, North Korea	15115 15160
0000-0055		Radio Beijing, PR China	9770 11715
0000-0100		All India Radio, New Delhi	6055 7215 9535 9910 11715 11745 15110
0000-0100		CBC Northern Quebec Service	6195 9625
0000-0100		CBN, St. John's, Newfoundland	6160
0000-0100		CBU, Vancouver, British Colombia	6160
0000-0100		CFCF, Montreal, Quebec	6005
0000-0100		CFCN, Calgary, Alberta	6030
0000-0100		CHNS, Halifax, Nova Scotia	6130
0000-0100		CKWX, Vancouver, British Colombia	6080
0000-0100		CFRB, Toronto, Ontario	6070
0000-0100		FEBC, Manila, Philippines	15445
0000-0100		(US) Far East Network, Tokyo	3910
0000-0100		KSDA, Guam	15125
0000-0100		KVOH, Rancho Simi, California	17775
0000-0100		KYOI, Saipan	15405
0000-0100		Radio Australia, Melbourne	15140 15160 15240 15320 17750 17795 21740
0000-0100		Radio Baghdad, Iraq	9515 11775
0000-0100		Radio Canada Int'l, Montreal	5960 9755
0000-0100		Radio Havana Cuba	9655
0000-0100		Radio Luxembourg	6090
0000-0100		Radio Moscow	7370 9790 9840 12010 12045 15170 15295 17570 17655 17675 17850 17860 17880 17890 21790
0000-0100		Radio Moscow N. America Service	6000 6045 7215 7310 9685 11735 11750 17700 17720 21530 17700
0000-0100		Radio New Zealand, Wellington	15150 17705
0000-0100		Radio for Peace, Costa Rica	21555
0000-0100		Radio Thailand, Bangkok	9655 11905
0000-0100		SBC Radio One, Singapore	5010 5052 11940
0000-0100		Spanish 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 17820
0000-0100		WCSN, Boston, Massachusetts	9850
0000-0100		WHRI, Noblesville, Indiana	7365 9495
0000-0100		WRNO, New Orleans, Louisiana	7355
0000-0100		WSHB, Cyprus Creek, S. Carolina	11980
0000-0100		WYFR, Oakland, California	5950 9505 15440
0030-0045		BBC, London, England*	6195 7235 9570 11945 15360 17875
0030-0100		BBC, London, England	5975 6005 6175 7325 9515 9580 9915 9590 11955 12095 15260
0030-0100		HCJB, Quito, Ecuador	9720 11775 11910 15155
0030-0100		Radio Austria Int'l, Vienna	9875 13730
0030-0100		Radio Netherlands, Hilversum	6020 6165 15315
0030-0100		SLBC, Colombo, Sri Lanka	6005 9720
0035-0040		All India Radio, New Delhi	3925 4860
0045-0100		Radio Korea (South), Seoul	15575
0045-0100	A	Radio New Zealand, Wellington	15150 17705
0048-0100		WINB, Red Lion, Pennsylvania	15145
0050-0100		Vatican Radio, Vatican City	6150 9605 11780

0100 UTC [9:00 PM EDT/6:00 PM PDT]

0100-0103	S	Port Moresby, Papua New Guinea	3295 4890 5960 5985 6020 6040 6080 6140 9520

LEGEND

- The first four digits of an entry are the broadcast start time in UTC. The second four digits represent the end time.
- In the space between the end time and the station name is the broadcast schedule.

S=Sunday M=Monday T=Tuesday W=Wednesday
H=Thursday F=Friday A=Saturday

If there is no entry, the broadcasts are heard daily. If, for example, there is an entry of "M," the broadcast would be heard only on Mondays. An entry of "M,W,F" would mean Mondays, Wednesdays and Fridays only. "M-F" would mean Mondays through Fridays. "TEN" indicates a tentative schedule and "TES" a test transmission.

- [ML] after a frequency indicates a multi-lingual transmission containing English-language programs.
- The last entry on a line is the frequency. Codes here include "SSB" which indicates a Single Sideband transmission, and "V" for a frequency that varies. [ML] after a frequency indicates a multi-lingual transmission containing English-language programs.
- v after a frequency indicates that it varies
- Notations of USB and LSB (upper and lower sideband transmissions) usually refer only to the individual frequency after which they appear.
- Listings followed by an asterisk (*) are for English lessons and do not contain regularly scheduled programming.

We suggest that you begin with the lower frequencies that a station is broadcasting on and work your way up the dial. Remember that there is no guarantee that a station will be audible on any given day. Reception conditions can change rapidly, though, and if it is not audible one night, it may well be on another.

HOW TO USE THE PROPAGATION CHARTS

Propagation charts can be an invaluable aid to the DXer in determining which frequencies are likely to be open at a given time. To use the propagation charts, choose those for your location (the are divided into east coast, midwest and west coast of North America). Then look for the one most closely describing the geographic location of the station you want to hear.

Once you've located the correct charts, look along the horizontal axis of the graph for the time that you are listening. The top line of the graph shows the Maximum Useable Frequency [MUF] and the lower line the Lowest Useable Frequency [LUF] as indicated on the vertical axis of the graph.

While there are exceptions to every rule (especially those regarding shortwave listening), you should find the charts helpful in determining the best times to listen for particular regions of the world. Good luck!

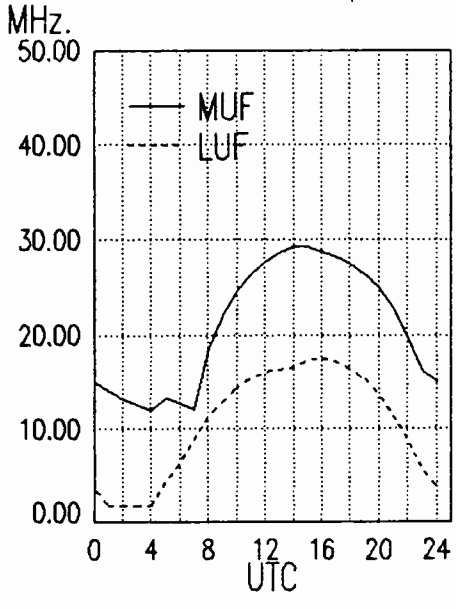
frequency section

0100-0110		Vatican Radio, Vatican City	6150	9605	11780	
0100-0115		All India Radio, New Delhi	6055	7215	9535	9910
			11715	11745	15110	
0100-0120		RAI, Rome, Italy	9575	11800		
0100-0130		Kol Israel, Jerusalem	7465	9385	9435	
0100-0130	W,A	Radio Budapest, Hungary	6110	9520	9585	9835
			11910	15160		
0100-0130		Radio Canada Int'l, Montreal	5960	9535	9755	11845
			11940			
0100-0130		Radio Netherlands, Hilversum	6020	6165	15315	
0100-0130		Laotian National Radio	7113v			
0100-0130	S,M	WINB, Red Lion, Pennsylvania	15145			
0100-0150		Deutsche Welle, West Germany	6040	6085	6145	9565
			9735	11865		
0100-0150		Radio Baghdad, Iraq	9515	11810		
0100-0155	S	Radio Austria Int'l, Vienna	9875	13730		
0100-0200		BBC, London, England	5975	6005	6175	7325
			9410	9590	9915	11955
			12095	15260	17815	
0100-0200		CBC Northern Quebec Service	6195	9625		
0100-0200		CBN, St. John's, Newfoundland	6160			
0100-0200		CBU, Vancouver, British Colombia	6160			
0100-0200		CFCF, Montreal, Quebec	6005			
0100-0200		CFCN, Calgary, Alberta	6030			
0100-0200		CHNS, Halifax, Nova Scotia	6130			
0100-0200		CKWX, Vancouver, British Colombia	6080			
0100-0200		CFRB, Toronto, Ontario	6070			
0100-0200		(US) Far East Network, Tokyo	3910			
0100-0200		FEBC, Manila, Philippines	15445			
0100-0200		HCJB, Quito, Ecuador	9720	11755	11910	15155
0100-0200	T-A	KVOH, Rancho Simi, California	13695			
0100-0200		KYOI, Saipan	15405			
0100-0200		Radio Australia, Melbourne	15160	15180	15240	15320
			15395	17715	17795	
			17750	21740		
0100-0200		Radio Havana Cuba	9655			
0100-0200		Radio Japan, Tokyo	17810	17845	17880	
0100-0200		Radio Luxembourg	6090			
0100-0200		Radio Moscow	17655	17675	17825	17850
			17860	17890	21790	
0100-0200		Radio Moscow, N. American Service	6000	6045	7215	7310
			9685	11735	11750	12050
			17700	17720	21530	
0100-0200		Radio New Zealand, Wellington	15150	17705		
0100-0200		Radio for Peace, Costa Rica	21555			
0100-0200		Radio Prague, Czechoslovakia	5930	6055	7345	9540
			9625	11990		
0100-0200		Radio Thailand, Bangkok	9655	11905		
0100-0200		RAE, Buenos Aires, Argentina	9690			
0100-0200		SBC Radio One, Singapore	5010	5052	11940	
0100-0200		SLBC, Colombo, Sri Lanka	6005	9720	15425	
0100-0200		Spanish National Radio, Madrid	9630	15110		
0100-0200	T-S	Superpower KUSW, Utah	11695			
0100-0200		Voice of America, Washington	5995	6130	9455	9740
			9775	9815	11580	11740
			15205	17735	18157	USB
0100-0200		Voice of Indonesia, Jakarta	9680	11790		
0100-0200		Voice of Free China, Taiwan	5985	9680	11740	15345
0100-0200		WCSN, Boston, Massachusetts	9850			
0100-0200		WHRI, Noblesville, Indiana	7365	9495		
0100-0200		WRNO New Orleans, Louisiana	7355			
0100-0200		WSHB, Cyprus Creek, S. Carolina	11980			
0100-0200		WYFR, Oakland, California	5950	9505	9680	
0130-0140	T-S	Voice of Greece, Athens	7430	9420	11645	
0130-0145	TWFS	Radio Budapest, Hungary	6110	9520	9585	9835
			11910	15160		
0130-0200	S,M	Radio Canada Int'l, Montreal	5960	9535	11845	11940
0130-0200		Radio Veritas Asia, Philippines	15330	15365		
0130-0200		WINB, Red Lion, Pennsylvania	15145			
0145-0200		Radio Berlin Int'l, East Germany	11785	11890		

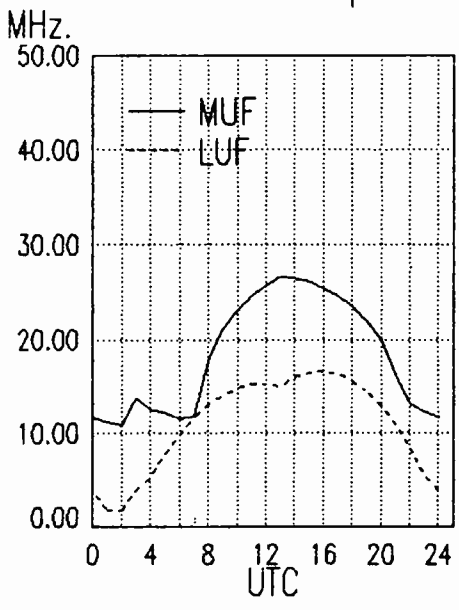
0200 UTC [10:00 PM EDT/7:00 PM PDT]

0200-0215		Vatican Radio, Vatican City	6145	7125	9650	
0200-0230		BBC, London, England	5975	6005	6175	7325
			9410	9515	9590	9915
			12095	15260	17815	
0200-0230		Burma Bcasting Service, Rangoon	7185			
0200-0230		Radio Berlin Int'l, East Germany	11785	11890		
0200-0230		Radio Kiev, Ukrainian SSR	9860	13645	15240	15455
			17665			
0200-0230		Swiss Radio Int'l, Berne	6095	6135	9725	9885
			12035	17730		
0200-0250		Deutsche Welle, West Germany	6035	7285	9690	11945
0200-0250		Radio Baghdad, Iraq	9515	11810		
0200-0250		Radio Bras, Brasilia, Brazil	11745v			
0200-0255		Radio Bucharest, Romania	5990	6155	9510	9570
			11830	11940		

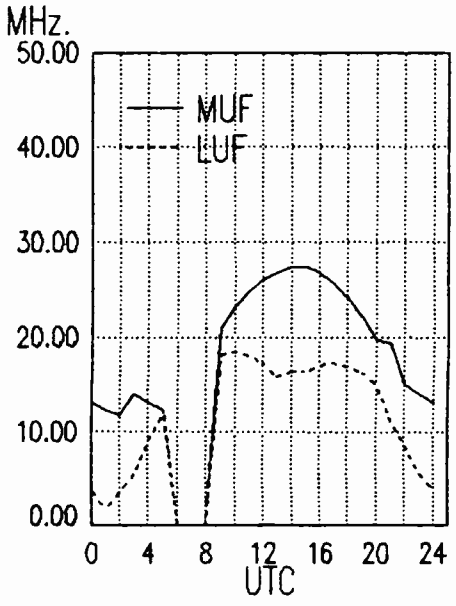
East Coast To
Western Europe



East Coast To
Eastern Europe



East Coast To
Middle East

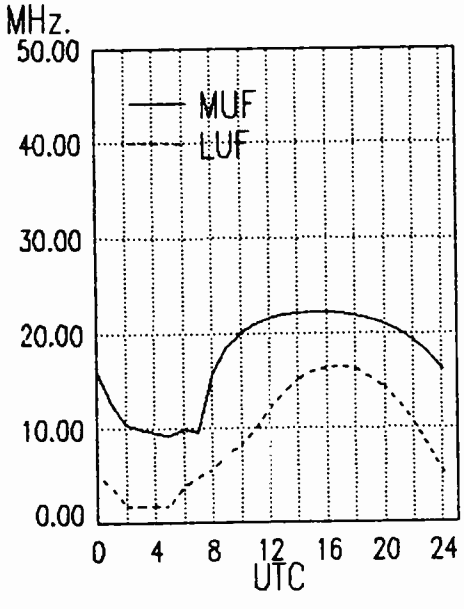


0200-0300		CBC Northern Quebec Service	6195	9625		
0200-0300		CBN, St. John's, Newfoundland	6160			
0200-0300		CBU, Vancouver, British Colombia	6160			
0200-0300		CFCF, Montreal, Quebec	6005			
0200-0300		CFCN, Calgary, Alberta	6030			
0200-0300		CFRB, Toronto, Ontario	6070			
0200-0300		CHNS, Halifax, Nova Scotia	6130			
0200-0300		CKWX, Vancouver, British Colombia	6080			
0200-0300		(US) Far East Network, Tokyo	3910			
0200-0300		HCJB, Quito, Ecuador	9720	11775	15155	
0200-0300	A,S	KSDA, Guam	17865			
0200-0300	T-A	KVOH, Rancho Simi, California	13695			
0200-0300		KYOI, Saipan	17780			
0200-0300		Radio Australia, Melbourne	15160	15180	15240	15320
			15395	17715	17750	17795
			21740			
0200-0300		Radio Cairo, Egypt	9475	9675		
0200-0300		Radio Havana Cuba	6140	9655	9770	
0200-0300		Radio Luxembourg	6090			
0200-0300		Radio Moscow, USSR	6000	6045	7215	7310
			9685	9700	11735	11750
			12050	15425	17700	17720
			21530			
0200-0300		Radio Moscow World Service	17590	17675	17775	17825
			17890	21690	21790	
0200-0300		Radio Orion, South Africa	3955			
0200-0300		Radio for Peace, Costa Rica	13660			
0200-0300	A	Radio New Zealand, Wellington	15150	17705		
0200-0300		Radio RSA, South Africa	9580	9615	11760	
0200-0300		Radio Thailand, Bangkok	9655	11905		
0200-0300		SBC Radio One, Singapore	5010	5052	11940	
0200-0300		SLBC, Colombo, Sri Lanka	6005	9720	15425	
0200-0300	T-S	Superpower KUSW, Utah	11695			
0200-0300		Trans World Radio, Bonaire	9535	11930		
0200-0300		Voice of America, Washington	5995	6035	7205	9740
			18157	USB		
0200-0300		Voice of Asia, Taiwan	7285			
0200-0300		Voice of Free China, Taiwan	5985	9680	11740	15345
0200-0300		Voice of Kenya, Nairobi	6045			
0200-0300		WCSN, Boston, Massachusetts	9850			
0200-0300		WINB, Red Lion, Pennsylvania	15145			
0200-0300		WHRI, Noblesville, Indiana	7520	9495		
0200-0300		WRNO, New Orleans, Louisiana	7355			
0200-0300		WSHB, Cyprus Creek, S. Carolina	9745			
0200-0300	T-S	WYFR Satellite Net, California	5950	9505	11715	
0213-0300		Radio France International, Paris	9790	9800	11670	13685
0215-0220		Radio Nepal, Kathmandu	5005	7165		
0230-0240		Port Moresby, Papua New Guinea	3925	4890	5960	5985
			6020	6040	6080	6140
			9520			
0230-0245		Radio Pakistan, Islamabad	7010	11570	15115	15580
			17660			
0230-0300		BBC, London, England	5975	6005	6175	7325
			9410	9515	9915	12095
			15260	15280		
0230-0300		Radio Berlin Int'l, East Germany	6125	6165	11750	
0230-0300		Radio Finland, Helsinki	9635	11755		
0230-0300	T-A	Radio Portugal, Lisbon	6060	9600	9680	9705
			11840			
0230-0300		Radio Sweden, Stockholm	9695	11705	11950	SSB
0230-0300		Radio Tirana, Albania	7065	9760		
0240-0250		All India Radio, New Delhi	3905	4860	4880	4895
			5960	5990	6110	6120
			7195	7295	9550	9610
			11830	11870	15305	
0245-0300		Radio Korea, Seoul, South Korea	9640	15575		
0255-0300		Radio Yerevan, Armenian SSR	13645	15180	15455	

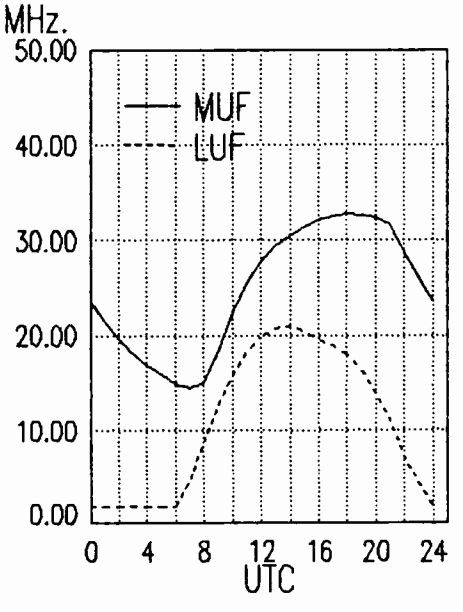
0300 UTC [11:00 PM EDT/8:00 PM PDT]

0300-0330		WINB, Red Lion, Pennsylvania	15145			
0300-0307		Radio Pakistan, Islamabad	5090	5930	7095	
0300-0310		CBC Northern Quebec Service	6195	9625		
0300-0330		BBC, London, England	3955	5975	6005	6175
			7185	7325	9410	9660
			9915	11750	12095	15260
			15280	15420	17815	
0300-0330		Radio Cairo, Egypt	9475	9675		
0300-0330		Radio Japan, Tokyo	11870	15195	17765	17810
			17825	21610		
0300-0345	A	Radio New Zealand, Wellington	15150	17705		
0300-0350		Deutsche Welle, West Germany	6085	6185	9605	9700
0300-0355		Radio Beijing, PR China	9690	9770	11715	
0300-0400		CBN, St. John's, Newfoundland	6160			
0300-0400		CBU, Vancouver, British Colombia	6160			
0300-0400		CFCF, Montreal, Quebec	6005			
0300-0400		CFCN, Calgary, Alberta	6030			
0300-0400		CHNS, Halifax, Nova Scotia	6130			

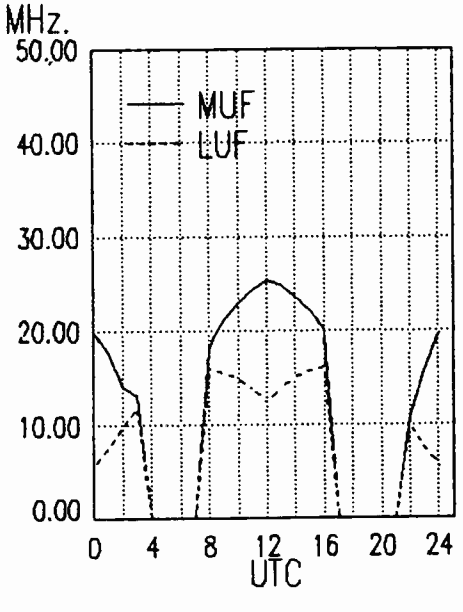
East Coast To
Artic Europe



East Coast To
West Africa



East Coast To
Central Asia



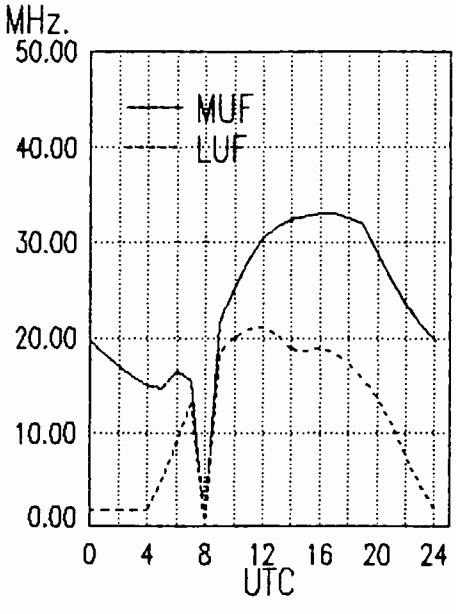
frequency section

0300-0400		CKWX, Vancouver, British Colombia	6080			
0300-0400		CFRB, Toronto, Ontario	6070			
0300-0400		(US) Far East Network, Tokyo	3910			
0300-0400		HCJB, Quito, Ecuador	9720	11775	15155	
0300-0400	T-A	KVOH, Rancho Simi, California	13695			
0300-0400		KYOI, Saipan	17780			
0300-0400		La Voz Evangelica, Honduras	4820			
0300-0400		Radio Australia, Melbourne	11945	15160	15240	15320
			15395	17715	17750	17795
			21740			
0300-0400	T-A	Radio Canada Int'l, Montreal	9755	11845	11940	
0300-0400		Radio for Peace, Costa Rica	13663v			
0300-0400		Radio Havana Cuba	9655	6140	9770	
0300-0400		Radio Japan, Tokyo	5960	9645		
0300-0400		Radio Moscow, USSR	6000	6045	7215	7310
			9700	9765	9635	11735
			11750	12050	15425	17720
			21530			
0300-0400		Radio Moscow World Service, USSR	15140	15200	17560	17570
			17590	17645	17655	17675
			17775	17825	17890	21690
			21790			
0300-0400		Radio Prague, Czechoslovakia	5930	6055	7345	9540
			9625	11990		
0300-0400		Radio Thailand, Bangkok	9655	11905		
0300-0400		SBC Radio One, Singapore	5010	5052	11940	
0300-0400		SLBC, Colombo, Sri Lanka	6005	9720	15425	
0300-0400	T-S	Superpower KUSW, Utah	9815			
0300-0400		Trans World Radio, Bonaire	9535	11930		
0300-0400		Voice of America, Washington	5995	6035	9280	9575
0300-0400		Voice of Kenya, Nairobi	6045			
0300-0400		WCSN, Boston, Massachusetts	9850			
0300-0400		WHRI, Noblesville, Indiana	7520	9495		
0300-0400		WRNO, New Orleans, Louisiana	7355			
0300-0400		WSHB, Cyprus Creek, N. Carolina	9745			
0300-0400		WYFR Satellite Net, California	5950	9505		
0310-0330		Vatican Radio, Vatican City	6150			
0313-0400		Radio France Int'l, Paris	3965	7135	9550	9790
			9800	11670	11700	11995
0330-0340	S-F	Port Moresby, Papua New Guinea	3925	4890	5960	5985
			6020	6040	6080	6140
			9520			
0330-0400		BBC, London, England	3955	5975	6005	6105
			6155	6175	6195	9410
			9915	11750	12095	17815
0330-0400		Radio Netherland, Hilversum	6165	9590		
0330-0400	S,M	WINB, Red Lion, Pennsylvania	15145			
0335-0400		Radio New Zealand, Wellington	15150	17705		
0330-0400		Radio Tanzania, Dar es Salaam	9684			
0330-0400		Radio Tirana, Albania	7065	9760		
0330-0400		Radio Sweden, Stockholm	11705			
0330-0400		United Arab Emirates Radio	9640	11940	15435	17775
0335-0340		All India Radio, New Delhi	3905	4860	9610	11830
			11870	11890	15305	
0340-0350	M-A	Voice of Greece, Athens	7430	9395	9420	
0345-0400		Radio Berlin Int'l, East Germany	9620	11785		
0350-0400		RAI, Rome, Italy	9710	11905	15330	

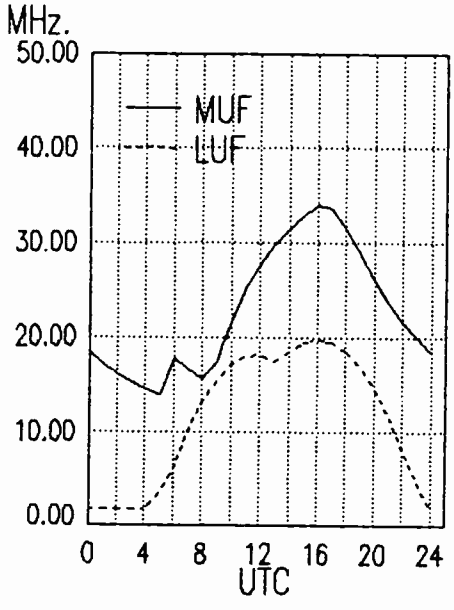
0400 UTC [12:00 AM EDT/9:00 PM PDT]

0400-0405		Radio Uganda, Kampala	4976	5026		
0400-0410		Radio Thailand, Bangkok	9655	11905		
0400-0410		RAI, Rome, Italy	9710	11905	15330	
0400-0415		Kol Israel, Jerusalem	9435	11588		
0400-0415		Radio RSA, South Africa	7295	9585	11900	
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			
0400-0425		Radio Netherland, Hilversum	6165	9590		
0400-0430		BBC, London, England	3955	5975	6005	6155
			6175	6195	7105	7160
			7185	7260	9410	9580
			9600	9915	12095	15420
0400-0430		La Voz Evangelica, Honduras	4820			
0400-0430	S,M	Radio Austria Int'l, Vienna	6015	6155		
0400-0430		Radio Berlin Int'l, East Germany	9620	11785		
0400-0430	M	Radio Norway Int'l, Oslo	9650	11750		
0400-0430		SLBC, Colombo, Sri Lanka	6005	9720	15425	
0400-0430		Radio Tanzania, Dar es Salaam	9684			
0400-0430		Swiss Radio Int'l, Berne	6135	9725	9885	12035
0400-0430		Trans World Radio, Bonaire	9535	11930		
0400-0430	S,M	WINB, Red Lion, Pennsylvania	15145			
0400-0450		Deutsche Welle, West Germany	7150	7225	9565	9765
			11765			
0400-0450		Radio Pyongyang, North Korea	15160	15180		
0400-0455		Radio Beijing, PR China	9645	11695	11980	
0400-0500		CBC Northern Quebec Service	6195	9625		

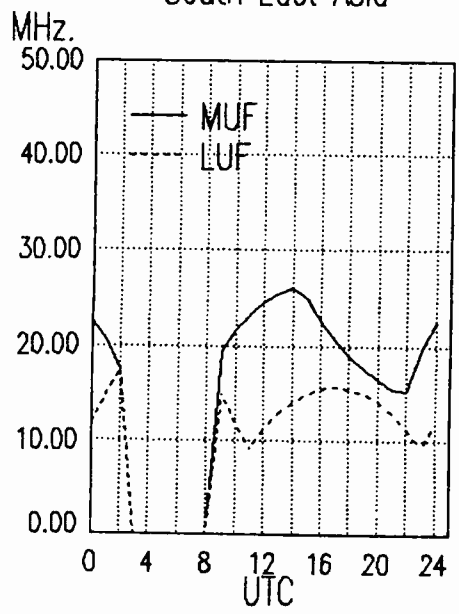
East Coast To
Central Africa



East Coast To
South Africa



East Coast To
South East Asia

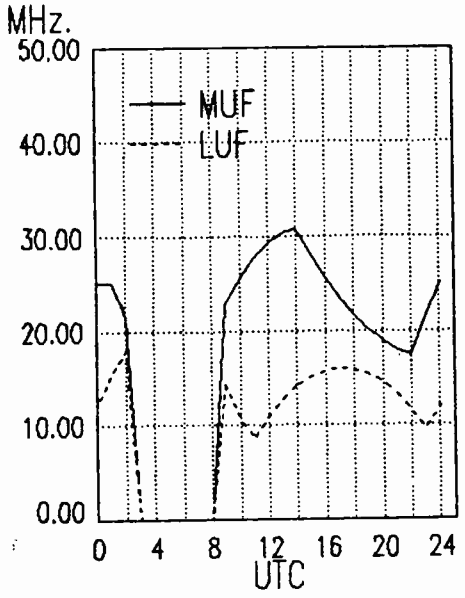


0400-0500		CBN, St. John's, Newfoundland	6160			
0400-0500		CBU, Vancouver, British Colombia	6160			
0400-0500		CFCF, Montreal, Quebec	6005			
0400-0500		CFCN, Calgary, Alberta	6030			
0400-0500		CHNS, Halifax, Nova Scotia	6130			
0400-0500		CKWX, Vancouver, British Colombia	6080			
0400-0500		CFRB, Toronto, Ontario	6070			
0400-0500		(US) Far East Network, Tokyo	3910			
0400-0500		FEBC, Manila, Philippines	11850			
0400-0500		HCJB, Quito, Ecuador	9720	11775	15155	
0400-0500		KYOI, Saipan	17780			
0400-0500		Radio Australia, Melbourne	11910	15160	15240	15320
			17715	17795	21740	
0400-0500		Radio Finland, Helsinki	6120	9635	11715	15185
0400-0500		Radio Havana Cuba	5965	6035	6140	9655
			11760			
0400-0500		Radio Moscow, USSR	6000	7215	7310	7370
			11710	12050	15240	15405
			15425	15455		
0400-0500		Radio New Zealand, Wellington	15150	17705		
0400-0500		Radio for Peace, Costa Rica	13660			
0400-0500		SBC Radio One, Singapore	5010	5052	11940	
0400-0500	T-S	Superpower KUSW, Utah	9815			
0400-0500		Voice of America, Washington	3980	5995	6035	7170
			7200	7280	9575	11835
0400-0500		Voice of Kenya, Nairobi	6045			
0400-0500V		Voice of Nicaragua, Managua	6100			
0400-0500		WCSN, Boston, Massachusetts	9870			
0400-0500		WHRI, Noblesville, Indiana	7520	9495		
0400-0500		WRNO, New Orleans, Louisiana	6185			
0400-0500		WSHB, Cyprus Creek, S. Carolina	9455			
0400-0500		WYFR Satellite Net, California	5950	9520		
0425-0440		RAI, Rome, Italy	5990	7275		
0430-0455		Radio Austria Int'l, Vienna	6015	6155	15410	
0430-0455		Radio Netherlands, Hilversum	9895	13700		
0430-0500		BBC, London, England	3955	5975	6005	7185
			9410	9510	9580	9600
			11945	12095	15070	15280
			15420	17815		
0430-0500		BBC, London, England*	7210	9750	11945	
0430-0500		Radio Tirana, Albania	9480	11835		
0430-0500	S,M	Trans World Radio, Bonaire	9535	11930		
0430-0500		Trans World Radio, Swaziland	3205	7205		
0432-0500	A,M	FEBA, Seychelles	15325	17820	(irr)	

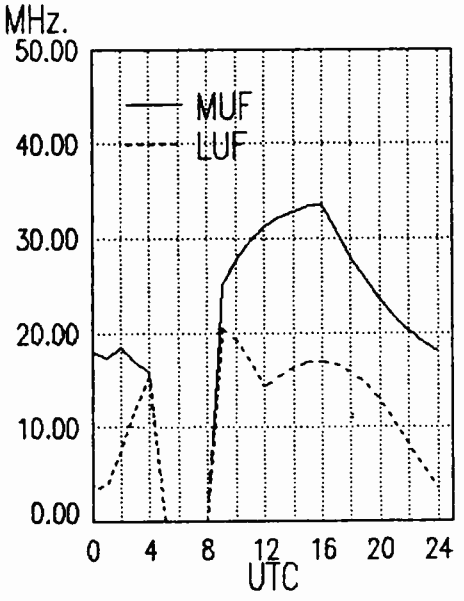
0500 UTC [1:00 AM EDT/10:00 PM PDT]

0500-0510		Radio Lesotho, Maseru	4800			
0500-0510	M-A	Radio Zambia, Lusaka	3345	6165		
0500-0515		GBC, Accra, Ghana	4915			
0500-0515		Vatican Radio, Vatican City	9645	15190		
0500-0530	M	Radio Norway Int'l, Oslo	11745	15175		
0500-0530	S,M	Trans World Radio, Bonaire	9535	11930		
0500-0530		Trans World Radio, Swaziland	3205	5055	7210	
0500-0545		Radio Berlin Int'l, East Germany	5965	6115	9645	11810
			13610			
0500-0550		Deutsche Welle, West Germany	5960	6120	6130	9635
			9700			
0500-0600		BBC, London, England	5975	6005	6155	6195
			9410	9510	9580	12095
			15070	15120	15420	17815
			17885			
0500-0600		CBC Northern Quebec Service	6195	9625		
0500-0600		CBU, Vancouver, British Colombia	6160			
0500-0600		CFCF, Montreal, Quebec	6005			
0500-0600		CFCN, Calgary, Alberta	6030			
0500-0600		CHNS, Halifax, Nova Scotia	6130			
0500-0600		CKWX, Vancouver, British Colombia	6080			
0500-0600		CFRB, Toronto, Ontario	6070			
0500-0600		(US) Far East Network, Tokyo	3910			
0500-0600		FEBC, Manila, Philippines	11850			
0500-0600		HCJB, Quito, Ecuador	6230	9720	11775	
0500-0600		KVOH, Rancho Simi, California	11960			
0500-0600		KYOI, Saipan	17780			
0500-0600		Radio Australia, Melbourne	11910	15160	15240	15320
			15395	17715	17750	17795
			21740			
0500-0600		Radio for Peace, Cost Rica	13660			
0500-0600		Radio Havana Cuba	5965	9655	11760	
0500-0600		Radio Japan, Tokyo	11870	17810		
0500-0600		Radio Kuwait	15345			
0500-0600		Radio Moscow, USSR	5905	7215	7310	7370
			9765	12050	15240	15425
			15455			
0500-0600		Radio New Zealand, Wellington	15150	17705		
0500-0600		Radio Thailand, Bangkok	9655	11905		
0500-0600	S,M	Radio Zambia, Lusaka	11880			
0500-0600		SBC Radio One, Singapore	5010	5052	11940	

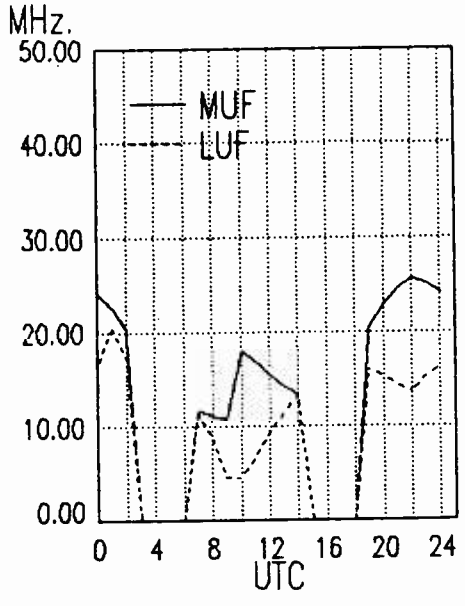
East Coast To
Indonesia



East Coast To
Indian Ocean



East Coast To
Far East

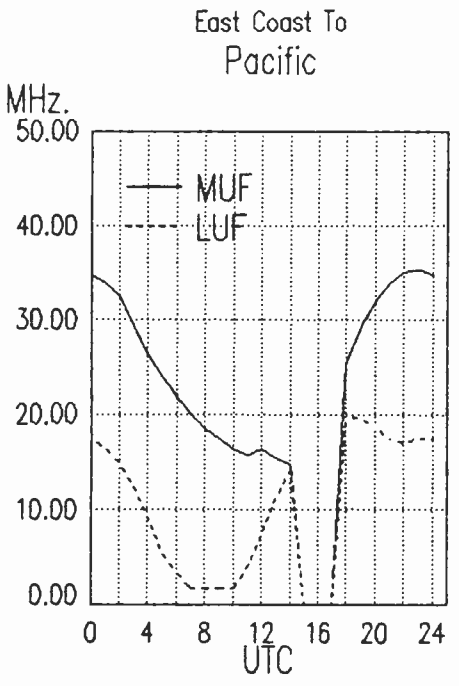


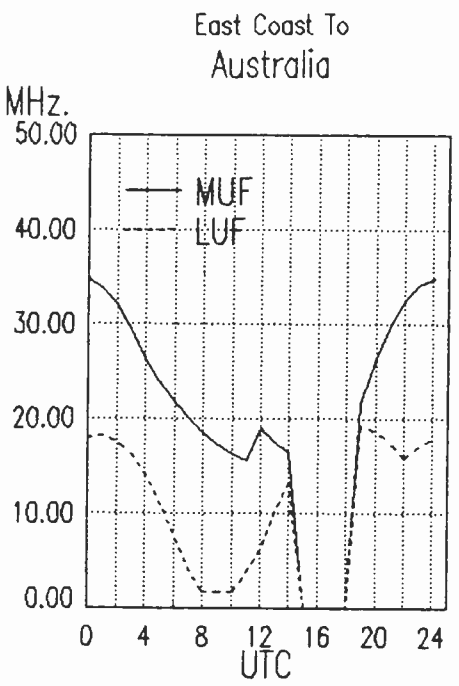
frequency section

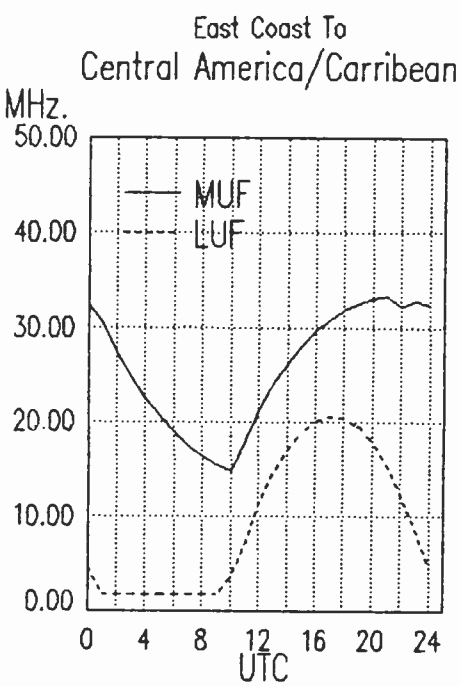
0500-0600		Spanish National Radio, Madrid	9630	15110			
0500-0600	S	Superpower KUSW, Utah	6175				
0500-0600	S	Swaziland Commercial Radio	6155	9705			
0500-0600		Voice of America, Washington	5995	6035	7170	7200	
			7280	9540	9575	15205	
0500-0600		Voice of Kenya, Nairobi	6045				
0500-0600	IRR	Voice of Nicaragua, Managua	6100				
0500-0600		Voice of Nigeria, Lagos	7255	15120	15185		
0500-0600		WCSN, Boston, Massachusetts	9870				
0500-0600		WINB, Red Lion, Pennsylvania	15145				
0500-0600		WHRI, Noblesville, Indiana	7520	9495			
0500-0600	M-A	WMLK, Bethel, Pennsylvania	9455				
0500-0600		WRNO, New Orleans, Louisiana	6185				
0500-0600		WSHB, Cyprus Creek, S. Carolina	9455				
0500-0600		WYFR Satellite Net, California	5950	11580	13695		
0510-0520		Radio Botswana, Gaborone	3356	4820	7255		
0515-0600		Radio Berlin Int'l, East Germany	15240	17775			
0527-0600	F	FEBA, Seychelles	17820				
0530-0545		BBC, London, England*	3990	6050	6140	7210	
			9750				
0530-0555		Radio Bucharest, Romania	9640	11840	11940	15340	
			15380	17720			
0530-0600		Radio Tirana, Albania	7300				
0530-0600		Trans World Radio, Swaziland	5055	7210			
0530-0600		UAE Radio, United Arab Emirates	15435	17775	21700		
0545-0600		Radio Berlin Int'l, East Germany	15240	17800	21540	21645	
0555-0600		Ghana Broadcasting Corp., Accra	4915				
0555-0600		Voice of Malaysia, Kuala Lumpur	6175	9750	15295		

0600 UTC [2:00 AM EDT/11:00 PM PDT]

0600-0615		Radio Ghana, Accra	3366	4915			
0600-0615	M-A	Radio Zambia, Lusaka	6165	7235			
0600-0620		Vatican Radio, Vatican City	6185	9645			
0600-0630	F	FEBA, Mahe, Seychelles	17820				
0600-0630		Laotian National Radio	7113				
0600-0630		Radio Australia, Melbourne	11910	15160	15240	15425	
			17715	17750	21740		
0600-0630		Radio Berlin Int'l, East Germany	15240	17880	21540	21645	
0600-0630		Radio Tirana, Albania	7300				
0600-0630		Trans World Radio, Swaziland	6070				
0600-0630		Voice of Kenya, Nairobi	6045				
0600-0645		Radio Berlin Int'l, East Germany	5965	11810			
0600-0645	S	Radio Cameroon, Yaounde	4850				
0600-0650		Deutsche Welle, West Germany	11765	13790	15185	17875	
0600-0650		Radio Pyongyang, North Korea	13650	15160	15180		
0600-0700		BBC, London, England	5975	6005	6195	7105	
			7150	7185	9410	9580	
			9600	9640	11825	12095	
			15070	15280			
0600-0700		CBC Northern Quebec Service	6195	9625			
0600-0700		CBU, Vancouver, British Colombia	6160				
0600-0700		CFCF, Montreal, Quebec	6005				
0600-0700		CFCN, Calgary, Alberta	6030				
0600-0700		CHNS, Halifax, Nova Scotia	6130				
0600-0700		CKWX, Vancouver, British Colombia	6080				
0600-0700		CFRB, Toronto, Ontario	6070				
0600-0700		HCJB, Quito, Ecuador	6230	9720	11775		
0600-0700		(US) Far East Network, Tokyo	3910				
0600-0700		King of Hope, South Lebanon	6215				
0600-0700		KYOI, Saipan	17780				
0600-0700		Radio Havana Cuba	9525	11760			
0600-0700		Radio Jordan, Amman	9560				
0600-0700		Radio Korea, Seoul, South Korea	6060	7275	9570		
0600-0700		Radio Kuwait	15345				
0600-0700		Radio Moscow, USSR	7310	9765	12050		
0600-0700		Radio New Zealand, Wellington	12045	17705			
0600-0700	A,S	Radio Thailand, Bangkok	9655	11905			
0600-0700		Radio Zambia, Lusaka	11880				
0600-0700		Radio 5, South Africa	11880				
0600-0700		SBC Radio One, Singapore	5010	5052	11940		
0600-0700	S	Superpower KUSW, Utah	6175				
0600-0700		Voice of America, Washington	5995	6035	6040	6080	
			6125	7170	7200	7280	
			7325	9530	9550	11805	
			11915	11925			
0600-0700		Voice of Asia, Taiwan	7285				
0600-0700		Voice of Free China, Taiwan	5985				
0600-0700		Voice of Malaysia, Kuala Lumpur	6175	9750	15295		
0600-0700		Voice of Nicaragua, Managua	6100				
0600-0700		Voice of the Mediterranean	9765				
0600-0700		Voice of Nigaria, Lagos	15185				
0600-0700		WCSN, Boston, Massachusetts	7365				
0600-0700		WHRI, Noblesville, Indiana	6100	9495			
0600-0700	M-A	WMLK, Bethel, Pennsylvania	9455				
0600-0700		WSHB, Cyprus Creek, S. Carolina	9455				
0600-0700		WYFR, Oakland, California	11580				
0600-0700		WYFR Satellite Net, California	5950	6065	7355	9680	
			9852.5				



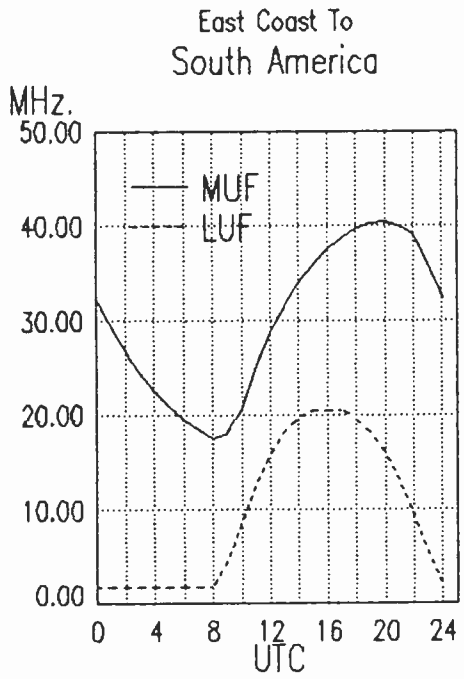


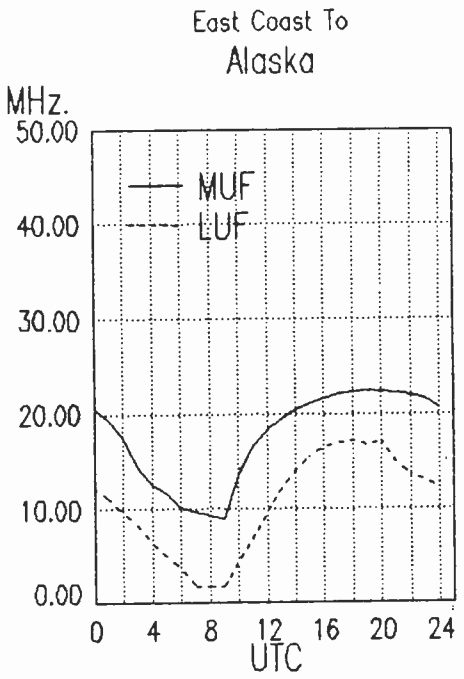


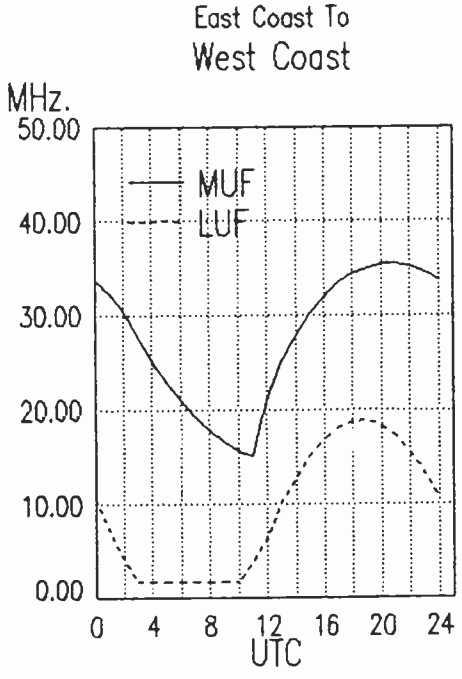
0615-0630	M-F	Radio Canada Int'l, Montreal	6055	6140	7155	9740	
			9760	11840	15325		
0615-0630	M-A	Vatican Radio, Vatican City	15190	17730			
0625-0700		Trans World Radio Monte Carlo	7105				
0630-0700		AWR, Forli, Italy	7125				
0630-0700	A	CPBS-1, China*	11330	15550	15590	17605	
0630-0700		Radio Australia, Melbourne	11945	15160	15240	15315	
			15395	15425	17715	17750	
			17795				
0630-0700		Radio Bucharest, Romania	21600				
0630-0700		Radio Finland, Helsinki	6120	9560	11755	15270	
0630-0700		Radio Polonia, Warsaw, Poland	6135	7270	15120		
0630-0700		Radio Tirana, Albania	7205	9500			
0630-0700		Swiss Radio Int'l, Berne	12030	15430	17570		
0630-0700		Trans World Radio, Swaziland	5055	6070	7210	9725	
0630-0700	A,S	Voice of Kenya, Nairobi	7270				
0645-0700		BBC, London, England*	6150	7260	11945		
0645-0700	M-F	Radio Canada Intl, Montreal	6050	6140	7155	9740	
			9760	11840	15325		
0645-0700		Radio Ghana, Accra	6130				
			11705	11800			
0645-0700		Radio Bucharest, Romania	11940	15250	15335	17790	
			17805	21665			

0700 UTC [3:00 AM EDT/12:00 PM PDT]

0700-0703		Port Moresby, Papua New Guinea	3925	4890	5960	5985	
			6020	6040	6080	6140	
			9520				
0700-0710		Radio Bucharest, Romania	11825	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	7120	
			7150	9410	9600	9640	
			11825	11860	12095	15070	
			15400	17815			
0700-0730		Burma Bcasting Service, Rangoon	9730				
0700-0730		Radio Australia, Melbourne	9655	11720	15160	15240	
			15395	17715	17750		
0700-0730		Radio Bucharest, Romania	21600				
0700-0730		Radio New Zealand, Wellington	12045	15150			
0700-0730	S	Radio Zambia, Lusaka	11880				
0700-0750		Radio Pyongyang, North Korea	15340	17795			
0700-0800		ABC, Perth, Australia	15425				
0700-0800		CBU, Vancouver, British Colombia	6160				
0700-0800		CFCF, Montreal, Quebec	6005				
0700-0800		CFCN, Calgary, Alberta	6030				
0700-0800		CHNS, Halifax, Nova Scotia	6130				
0700-0800		CKWX, Vancouver, British Columbia	6080				
0700-0800		CFRB, Toronto, Ontario	6070				
0700-0800		ELWA, Monrovia, Liberia	11830				
0700-0800		(US) Far East Network, Tokyo	3910				
0700-0800		HCJB, Quito, Ecuador	6130	9610	9745	11835	
			11925				
0700-0800		King of Hope, South Lebanon	6215				
0700-0800		KVOH, Rancho Simi, California	11960				
0700-0800		KYOI, Saipan	17780				
0700-0800		Radio Ghana, Accra	6130				
0700-0800		Radio Havana Cuba	9525				
0700-0800		Radio Japan, Tokyo	5990	15195	15270	15325	
			17810	21695			
0700-0800		Radio Jordan, Amman	11955				
0700-0800		Radio Korea, Seoul, South Korea	6060	7275	9570		
0700-0800		Radio Kuwait	15345				
0700-0800		Radio Moscow, USSR	7310	9580	9765	12050	
			15460	15475	17810		
0700-0800	A,S	Radio Thailand, Bangkok	9655	11905			
0700-0800		SBC-1, Singapore	11940				
0700-0800		Soloman Islands Broadcasting Corp	9545				
0700-0800	S	Superpower KUSW, Utah	6135				
0700-0800		Trans World Radio, Monte Carlo	7105				
0700-0800		Trans World Radio, Swaziland	6070	9725			
0700-0800	A,S	Voice of Kenya, Nairobi	7270				
0700-0800		Voice of Malaysia, Kuala Lumpur	6175	9750	15295		
0700-0800		Voice of Nigeria, Lagos	15120	15185			
0700-0800		WCSN, Boston, Massachusetts	7365				
0700-0800		WHRI, Noblesville, Indiana	6100	9495			
0700-0800	M-A	WMLK, Bethel, Pennsyvlania	9455				
0700-0800		WSHB, Cyprus Creek, S. Carolina	9455				
0700-0800		WYFR, Oakland, California	6065	7355	9680		
0700-0800		WYFR Satellite Network	9852.5				
0715-0730		Radio Korea, Seoul, South Korea	13670	15575			
0715-0730	M-A	Vatican Radio, Vatican City	11725	15190			
0715-0735	S	FEBA, Mahe, Seychelles	15115	17785			
0715-0800	A,S	Radio Berlin Int'l, East Germany	6040	7185	9730	21465	
			21540				
0720-0730	M-A	Vatican Radio, Vatican City	6248	9645	11740		
0730-0800		ABC, Alice Springs, Australia	2310	[ML]			





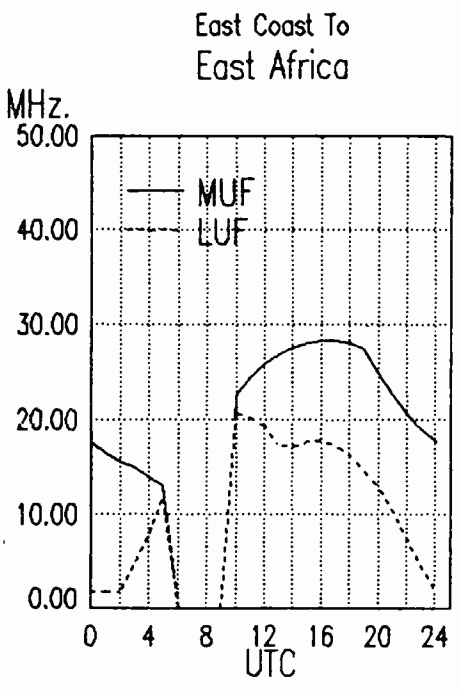


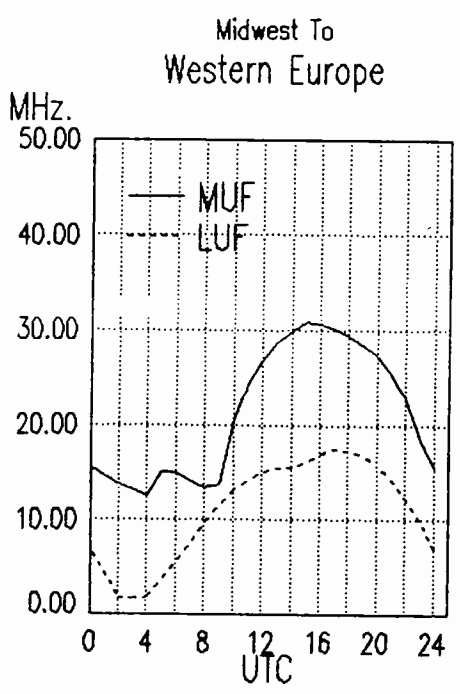
frequency section

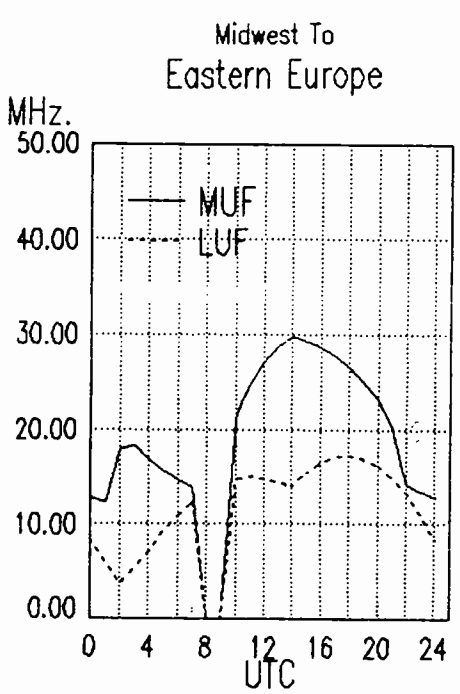
0730-0800		ABC, Katherine, Australia	2485			
0730-0800		ABC, Tennant Creek, Australia	2325	[ML]		
0730-0800		Radio Australia, Melbourne	5955	9655	11720	15240
0730-0800		Radio Prague, Czechoslovakia	11685	17840	21705	
0730-0735		All India Radio, New Delhi	5990	6010	6020	7110
			7205	9610	9675	11850
			11935	15235	15250	17705
0730-0745		BBC, London, England*	3975	6010	7230	9915
0730-0755		Radio Finland, Helsinki	6120	9560	11755	
0730-0800		AWR, Forli, Italy	7125			
0730-0800		BBC, London, England	3955	5975	7150	9410
			9600	9640	11860	12095
			15070	15105	15400	
0730-0800		Radio Netherland, Hilversum	9630	9715		
0730-0800		Radio Prague, Czechoslovakia	11685	17840	21705	
0730-0800		Swiss Radio Int'l, Berne	3985	6165	9535	
0740-0750	W	Radio Free Europe, Munich*	5985	7115	9695	9725
			11895	15355		

0800 UTC [4:00 AM EDT/1:00 AM PDT]

0800-0805	M-F	Port Moresby, Papua New Guinea	3925	4890	5960	5985
			6020	6040	6080	6140
			9520			
0800-0805		Soloman Islands Broadcasting Corp	9545			
0800-0815	M-A	Radio Zambia, Lusaka	6165	7235		
0800-0825	M-A	Radio Finland, Helsinki	17795	21550		
0800-0825		Radio Netherland, Hilversum	9630	9715		
0800-0825		Voice of Malaysia, Kuala Lumpur	6175	9750	15295	
0800-0830		HCJB, Quito, Ecuador	6130	6205	9745	
0800-0830	S	Radio Austria Int'l, Vienna	6155	13730	15410	15450
0800-0830		Radio Bangladesh, Dhaka	12030	15525		
0800-0830		Radio Tirana, Albania	9500	11835		
0800-0830		Voice of Nigeria, Lagos	7255	15185		
0800-0830		Voice of Islam, Pakistan	15525	17870		
0800-0835	S	FEBA, Mahe, Seychelles	15325,	17785		
0800-0835		Trans World Radio, Swaziland	6070	9725		
0800-0840		Trans World Radio, Monte Carlo	7105			
0800-0850		Deutsche Welle, Koln, W. Germany	9770			
0800-0850		Radio Pyongyang, North Korea	9530	11830	15160	15180
0800-0900		ABC, Alice Springs, Australia	2310	[ML]		
0800-0900		ABC, Katherine, Australia	2485			
0800-0900		ABC, Perth, Australia	15425			
0800-0900		ABC, Tennant Creek, Australia	2325	[ML]		
0800-0900		AFAN, Antarctica	6010.5			
0800-0900		BBC, London, England	5975	9410	11860	
			12095			
			15070	15400	17815	15240
0800-0900		CBN, St. John's, Newfoundland	6160			
0800-0900		CBU, Vancouver, British Colombia	6160			
0800-0900		CFCF, Montreal, Quebec	6005			
0800-0900		CFCN, Calgary, Alberta	6030			
0800-0900		CHNS, Halifax, Nova Scotia	6130			
0800-0900		CKWX, Vancouver, British Colombia	6080			
0800-0900		CFRB, Toronto, Ontario	6070			
0800-0900		(US) Far East Network, Tokyo	3910			
0800-0900		King of Hope, South Lebanon	6215			
0800-0900		KNLS, Anhor Point, Alaska	6065			
0800-0900		KYOI, Saipan	11900			
0800-0900		Radio Australia, Melbourne	5995	9580	9655	9710
			11720	11770		
0800-0900		Radio Jordan, Amman	11955			
0800-0900		Radio Moscow, USSR	7310	9760	11705	11745
			11900	12010	15135	15155
			15475	15230	15460	15520
			15540			
0800-0900		Radio for Peace, Costa Rica	12030			
0800-0900		SBC Radio One, Singapore	5010	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	9495		
0800-0900		WYFR, Oakland, California	9680	11580		
0800-0900		WYFR Satellite Network	6065			
0805-0900		KTWR, Guam	11805			
0815-0845	M-F	Voice of America, Washington DC	7175	9575	9750	11710
			11915	15600	17715	21500
			[ML]			
0830-0840		All India Radio, New Delhi	5960	5990	6010	6020
			6050	6065	6100	6140
			7110	7140	7160	7250
			7280	7295	9610	11850
			15235	15250	17705	
0830-0855		Radio Austria Int'l, Vienna	6155	13730	15410	15450
0830-0900	S	Bhutan Bcasting Service, Thimpu	6035			
0830-0900		FEBC, Manila, Philippines	11850	15350		
0830-0900		HCJB, Quito, Ecuador	6130	9745		
0830-0900		Radio Beijing, China	9700	11755	15440	





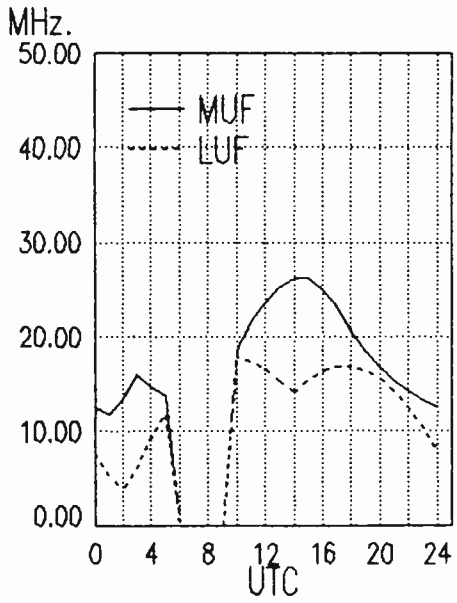


0830-0855		Radio Finland, Helsinki	11855	15245		
0830-0900		Radio Netherlands, Hilversum	17575	21485		
0830-0900		Radio Prague, Czechoslovakia	11685	17840	21705	
0830-0900		Swiss Radio Int'l, Berne	9560	9885	13685	17830
			21695			
0830-0900		Voice of Nigeria, Lagos	7255	15120		
0840-0850	M-A	Voice of Greece, Athens	9855	15630		
0840-0900	S-F	Trans World Radio, Monte Carlo	7105			
0845-0900		Radio Prague, Czechoslovakia	6055	7345	9505	
0850-0900		All India Radio, New Delhi	5960	5990	6010	6020
			6050	6065	6100	6140
			7110	7140	7150	7160
			7250	7280	7295	9610
			11850	15235	15250	17705

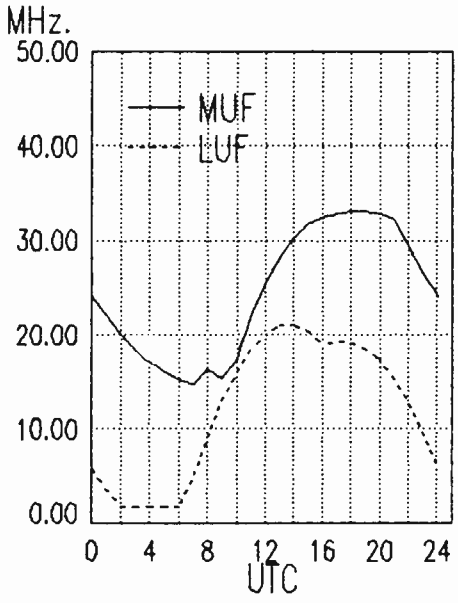
0900 UTC [5:00 AM EDT/2:00 AM PDT]

0900-0910		All India Radio, New Delhi	5960	5990	6010	6020
			6050	6065	6100	6140
			7110	7140	7150	7160
			7250	7280	7295	9610
			11850	15235	15250	17705
0900-0910		Port Moresby, Papua New Guinea	3295	4890	5960	5985
			6020	6040	6080	6140
			9520			
0900-0910	S	Trans World Radio, Monte Carlo	7105			
0900-0910		Voice of Lebanon, Beirut	6548			
0900-0925		BRT, Brussels, Belgium	17595	21810		
0900-0925		Radio Netherlands, Hilersum	17575	21485		
0900-0930		FEBC, Manila, Philippines	11850	15350		
0900-0930		Nippon Broadcasting Corp.	3925			
0900-0930		Radio Beijing, China	9700	11755		
0900-0930	A,S	Radio Prague, Czechoslovakia	11685	17840	21705	
0900-0945	A,S	Radio Berlin Int'l, East Germany	21465	21540		
0900-0950		Deutsche Welle, West Germany	6160	9650	11785	11945
			17780	17875	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	5975	7325	9410	9750
			9760	11750	11845	11860
			11955	12095	15070	15175
			15360	15400	17815	
0900-1000		CFCF, Montreal, Quebec	6005			
0900-1000		CFCN, Calgary, Alberta	6030			
0900-1000		CHNS, Halifax, Nova Scotia	6130			
0900-1000		CKWX, Vancouver, British Colombia	6080			
0900-1000		CFRB, Toronto, Ontario	6070			
0900-1000		(US) Far East Network, Tokyo	3910			
0900-1000		HCJB, Quito, Ecuador	6130	9745		
0900-1000		King of Hope, South Lebanon	6215			
0900-1000		KNLS, Anchor Point, Alaska	6065			
0900-1000		KTWR, Agana, Guam	11805			
0900-1000		KYOI, Saipan	11900			
0900-1000		Radio Afghanistan, Kabul	4450	6085	15435	17720
0900-1000		Radio Australia, Melbourne	5995	6080	9580	9655
			9760	11720	11770	15415
0900-1000		Radio Japan, Tokyo	11840	11885	15270	17810
0900-1000		Radio Korea, Seoul, South Korea	7550	13670		
0900-1000		Radio Moscow, USSR	9735	11705	11900	12010
			15475			
0900-1000		Radio for Peace, Costa Rica	13660			
0900-1000	S	Radio Prague, Czechoslovakia	6055	7345	9505	[ML]
0900-1000		Radio Tanzania, Dar es Salaam	7165			
0900-1000		SBC Radio One, Singapore	5010	5052	11940	
0900-1000	S	Superpower KUSW, Utah	6135			
0900-1000		Voice of America, Washington	6130			
0900-1000		Voice of Kenya, Nairobi	7270			
0900-1000		Voice of Nigeria, Lagos	7255	15120	15185	
0900-1000		WHRI, Noblesville, Indiana	7355	9495		
0900-1000		WYFR, Oakland, California	11580			
0915-0930		Radio Korea, Seoul, South Korea	9570			
0915-0950	M-A	Radio Ulan Bator, Mongolia	9615	12015		
0930-0935		All India Radio, New Delhi	5960	5990	6010	6020
			6050	6065	6100	6140
			7110	7140	7160	7250
			7280	7295	9610	11850
			15235	15250	17705	
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	

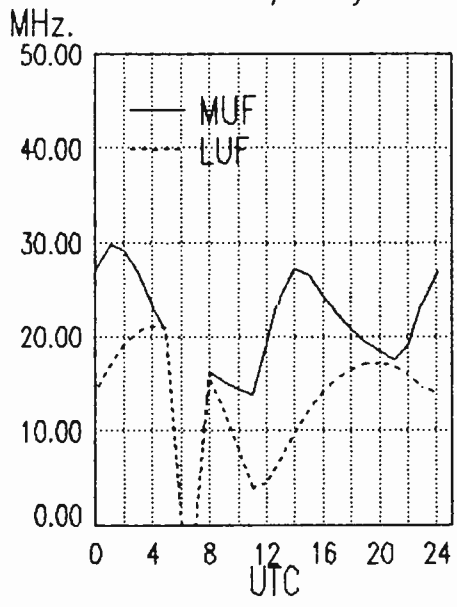
Midwest To
Middle East



Midwest To
West Africa



Midwest To
Indonesia/Malaysia



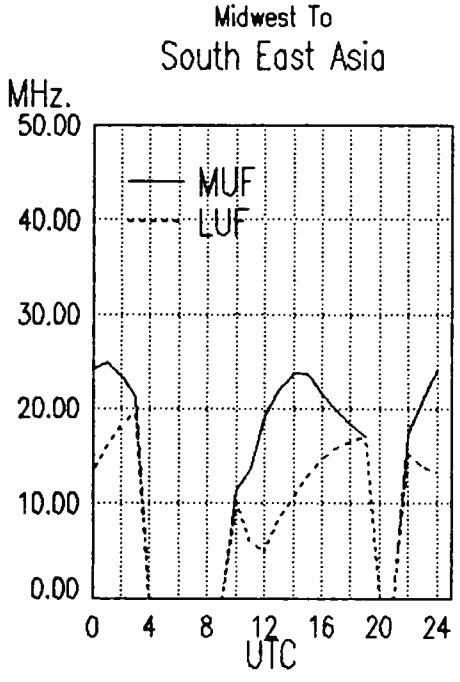
frequency section

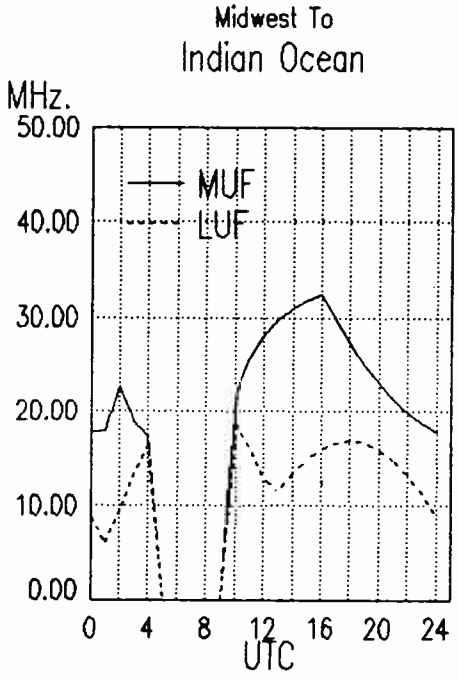
1000 UTC [6:00 AM EDT/3:00 AM PDT]

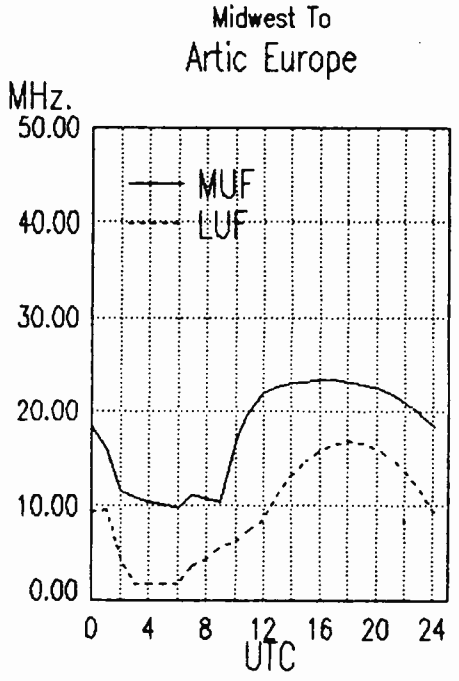
1000-1030		HCJB, Quito, Ecuador	6130	9745	11925		
1000-1030		Radio Afghanistan, Kabul	4450	6085	15435	17720	
1000-1030		Radio Beijing, China	9700	11755	15440		
1000-1030	S	Radio Norway Int'l, Oslo	11850	15230	21705	25730	
1000-1030		Radio Tanzania, Dar es Salaam	7165				
1000-1030		Swiss Radio Int'l, Berne	9560	9885	13685	17830	
			21695				
1000-1030		Voice of Ethiopia, Addis Ababa	9560				
1000-1030		Voice of Vietnam, Hanoi	12010	15010			
1000-1055	A	Trans World Radio, Monte Carlo	7105				
1000-1100		ABC, Alice Springs, Australia	2310	[ML]			
1000-1100		ABC, Katherine, Australia	2485				
1000-1100		ABC, Perth, Australia	9610				
1000-1100		ABC, Tennant Creek, Australia	2325	[ML]			
1000-1100		All India Radio, New Delhi	11860	11915	15130	15335	
			17387	11785			
1000-1100		BBC, London, England	9410	9740	11750	11845	
			12095	15070	15360	17705	
			17790	18080	21710	21470	
			25750				
1000-1100		CBN, St. John's, Newfoundland	6160				
1000-1100		CFCF, Montreal, Quebec	6005				
1000-1100		CFCN, Calgary, Alberta	6030				
1000-1100		CHNS, Halifax, Nova Scotia	6130				
1000-1100		CKWX, Vancouver, British Colombia	6080				
1000-1100		CFRB, Toronto, Ontario	6070				
1000-1100		(US) Far East Network, Tokyo	3910				
1000-1100		KSDA, Guam	9465				
1000-1100		KTWR, Agana, Guam	11805				
1000-1100		KYOI, Saipan	11900				
1000-1100		Radio Afghanistan, Kabul	15435	17720			
1000-1100		Radio Australia, Melbourne	9580	9770	15415		
1000-1100		Radio Moscow, USSR	9705	9780	9875	11705	
			11900	15140	15420	15475	
			15595				
1000-1100		Radio New Zealand, Wellington	6100	9850			
1000-1100	S	Radio Prague, Czechoslovakia	6055	7345	9505	[ML]	
1000-1100		SBC Radio One, Singapore	5010	5052	11940		
1000-1100	S	Superpower KUSW, Utah	6135				
1000-1100		Voice of America, Washington	6030	5985	6165	9590	
			11720				
1000-1100		Voice of Kenya, Nairobi	7270				
1000-1100		Voice of Nigeria, Lagos	7255	15120			
1000-1100		WHRI, Noblesville, Indiana	7355				
1000-1100		WSHB, Cyprus Creek, S. Carolina	9495				
1000-1100		WYFR, Oakland, California	5950				
1005-1010		Radio Pakistan, Islamabad	15606	17660			
1030-1040		Voice of Asia, Taiwan	5980				
1030-1045	A	Radio Budapest, Hungary	7220	9585	9835	11910	
			15160	15220			
1030-1100		BBC, London, England*	7180	9660	9725		
1030-1100		HCJB, Quito, Ecuador	6130	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	15435	17865	21605		
1030-1100		Voice of America, Washington*	11965				
1040-1050	H	Radio Free Europe, Munich*	7115	9695	9725		
			11895	15355			
1040-1050	M-A	Voice of Greece, Athens	11645	15630			
1045-1100	S	Radio Budapest, Hungary	7220	9585	9835	11910	
			15160	15220			
1045-1100	M-A	Radio Prague, Czechoslovakia	6055	7345	9505		
1055-1100	S	Trans World Radio, Monte Carlo	7105				

1100 UTC [7:00 AM EDT/4:00 AM PDT]

1100-1105		Radio Pakistan, Islamabad	6090	7290		
1100-1105	A	Port Moresby, Papua New Guinea	3295	4890	5960	5985
			6020	6040	6080	6140
			9520			
1100-1110	S	Port Moresby, Papua New Guinea	3295	4890	5960	5985
			6020	6040	6080	6140
			9520			
1100-1115		Radio New Zealand, Wellington	9850	11780		
1100-1120		Radio Pakistan, Islamabad	15606	17760		
1100-1125		Radio Netherland, Hilversum	6020	9675		
1100-1130		BBC, London, England*	7120			
1100-1130		HCJB, Quito, Ecuador	11925			
1100-1130		Kol Israel, Jerusalem	9385	11700	15485	15640
			15650	17635	17685	21625
1100-1130		KTWR, Guam*	9820	11665		
1100-1130	S	Radio Austria Int'l, Vienna	13730	15450		
1100-1130		Radio Finland, Helsinki	11945	15400		
1100-1130		Radio Mozambique, Maputo	9525	11818	11835	
1100-1130		SLBC, Colombo, Sri Lanka	11835	15120	17850	[ML]





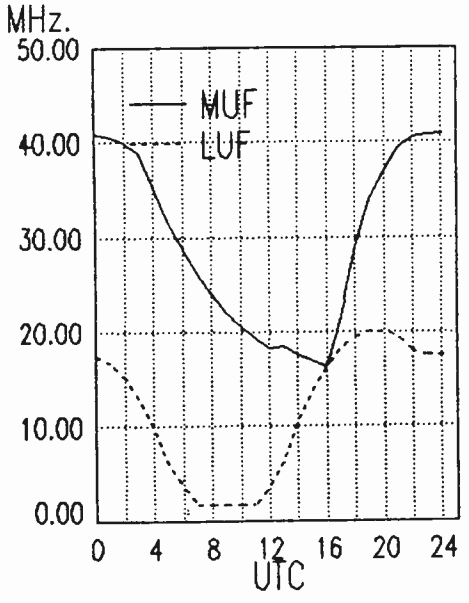


1100-1130		Swiss Radio Int'l, Berne	11935	13635	15570	17830
1100-1130		Voice of Vietnam, Hanoi	12010	15010		
1100-1150		Deutsche Welle, West Germany	15410	17765	17800	21600
1100-1150		Radio Pyongyang, North Korea	9600	9977	11735	
1100-1155		Radio Beijing, China	9665			
1100-1200		ABC, Alice Springs, Australia	2310	[ML]		
1100-1200		ABC, Katherine, Australia	2485			
1100-1200		ABC, Perth, Australia	9610			
1100-1200		ABC, Tennant Creek, Australia	2325	[ML]		
1100-1200		BBC, London, England	5965	6195	7180	9410
			9515	9740	9750	9760
			11750	11775	12095	15070
			15360	17790	18080	21710
			21470	25750		
1100-1200		CBC Northern Quebec Service	6065	9625		
1100-1200		CBN, St. John's, Newfoundland	6160			
1100-1200		CFCF, Montreal, Quebec	6005			
1100-1200		CFCN, Calgary, Alberta	6030			
1100-1200		CHNS, Halifax, Nova Scotia	6130			
1100-1200		CKWX, Vancouver, British Colombia	6080			
1100-1200		CFRB, Toronto, Ontario	6070			
1100-1200		(US) Far East Network, Tokyo	3910			
1100-1200		KYOI, Saipan	11900			
1100-1200		Radio Australia, Melbourne	5995	7215	9580	9645
			9710	9770		
1100-1200		Radio Japan, Tokyo	6120			
1100-1200		Radio Moscow, USSR	9600	15225	15460	15475
			17590			
1100-1200		Radio RSA, South Africa	17755	21590	21800	
1100-1200	A,S	Radio Tanzania, Dar es Salaam	7165			
1100-1200	S	Radio Zambia, Lusaka	11880	[IRR]		
1100-1200		SBC-1, Singapore	5010	5052	11940	
1100-1200	S	Superpower KUSW, Utah	6130			
1100-1200		Voice of America, Washington	5985	6030	6110	6165
			9590	9760	11720	15425
1100-1200		Voice of Asia, Taiwan	5980	7445		
1100-1200		Voice of Kenya, Nairobi	7270			
1100-1200		Voice of Nigeria, Lagos	7255	15120		
1100-1200		WHRI, Noblesville, Indiana	7520	11790		
1100-1200		WSHB, Cyprus Creek, S. Carolina	9495			
1100-1200		WYFR, Oakland, California	5950	7355		
1110-1120	M-F	Radio Botswana, Gaborone	4820	5955	7255	
1115-1130		Radio Korea, Seoul, South Korea	11740			
1115-1130		Vatican Radio, Vatican City	17840	21485		
1115-1145		Radio Nepal, Kathmandu	5005			
1115-1200		Trans World Radio, Bonaire	11815	15345		
1130-1145	A	Radio Budapest, Hungary	7220	9585	9835	11910
			15160	15220		
1130-1200		HCJB, Quito, Ecuador	11740			
1130-1200		Radio Berlin Int'l, East Germany	17880	21465	21540	
1130-1200		Radio Netherland, Hilversum	5955	9715	17575	21480
			21615			
1130-1200		Radio Thailand, Bangkok	9655	11905		
1130-1200		Radio Tirana, Albania	9480	11855		
1130-1200		Voice of Islamic Republic Iran	7230	9520	9685	11790
1135-1140		All India Radio, New Delhi	6065	7110	9610	9675
			11850	15320		
1140-1145	M-A	Vatican Radio, Vatican City	6248	9645	11740	
1145-1200		BBC, London, England*	5995	7180	15280	
1145-1200		Radio Bangladesh, Dakha	15255	17740		
1145-1200		Radio Prague, Czechoslovakia	6055	7345	9505	

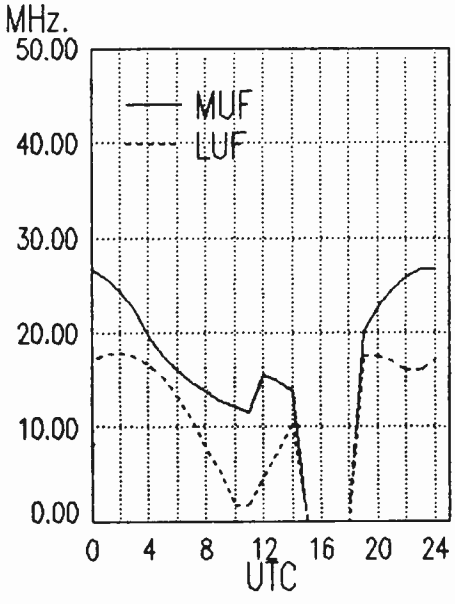
1200 UTC [8:00 AM EDT/5:00 AM PDT]

1200-1205	M-A	Port Moresby, Papua New Guinea	3295	4890	5960	6020
			6040	6080	6140	9520
1200-1215		BBC, London, England*	3915	6065	7275	
1200-1215		Radio Berlin Int'l, East Germany	15440	17880	21465	21540
1200-1215		Vatican Radio, Vatican City	15190	17865		
1200-1215		Voice of Kampuchea, Phnom-Penh	9693	11938		
1200-1220		Radio Bucharest, Romania	17720	21665		
1200-1225	M-F	Radio Finland, Helsinki	11945	15400		
1200-1225		Radio Polonia, Warsaw, Poland	6095	7285		
1200-1230		Radio Netherland, Hilversum	5955	9715	17575	17605
			21480	21615		
1200-1230		Radio Somalia, Mogadishu	6095			
1200-1230		Radio Tashkent, Uzbek, USSR	5945	9540	9600	11785
1200-1230		Radio Thailand, Bangkok	9655	11905		
1200-1230		Radio Yugoslavia, Belgrade	11735	15325	15380	
1200-1230	S	Radio Zambia, Lusaka	11880	[IRR]		
1200-1235	M-A	Radio Ulan Bator, Mongolia	9615	12015		
1200-1236		HCJB, Quito, Ecuador	6075			
1200-1255		Radio Beijing, China	9665	11600		
1200-1300		ABC, Alice Springs, Australia	2310	[ML]		
1200-1300		ABC, Katherine, Australia	2485			
1200-1300		ABC, Tennant Creek, Australia	2325	[ML]		
1200-1300	S	Adventist World Radio, Africa	17890			
1200-1300		AFAN, Antarctica	6012			

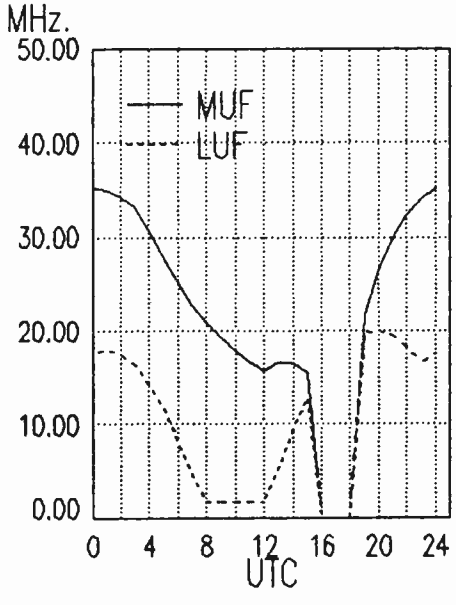
Midwest To Pacific



Midwest To Far East



Midwest To Australia



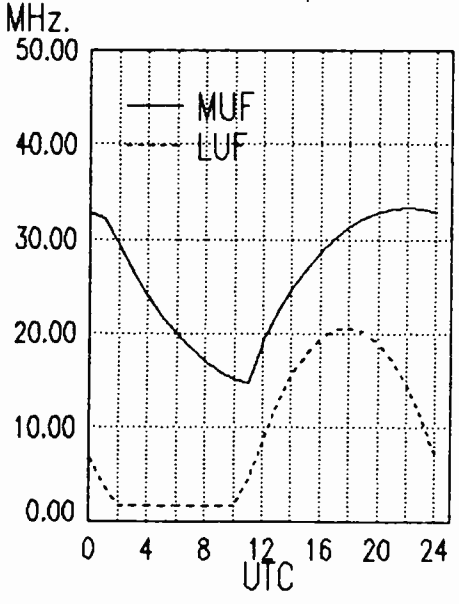
frequency section

1200-1300		BBC, London, England	6195	9510	9515	9740
			11750	11775	12095	15070
			17705	17790	18080	21470
			21710	25750		
1200-1300		CBC Northern Quebec Service	6065	9625		
1200-1300		CBN, St. John's, Newfoundland	6160			
1200-1300		CFCF, Montreal, Quebec	6005			
1200-1300		CFCN, Calgary, Alberta	6030			
1200-1300		CHNS, Halifax, Nova Scotia	6130			
1200-1300		CKWX, Vancouver, British Colombia	6080			
1200-1300		CFRB, Toronto, Ontario	6070			
1200-1300		(US) Far East Network, Tokyo	3910			
1200-1300		HCJB, Quito, Ecuador	11740	15115	17890	
1200-1300		KYOI, Saipan	11900			
1200-1300		Radio Australia, Melbourne	5995	6060	7205	7215
			9580	9770	11800	
1200-1300		Radio Moscow, USSR	9600	15475	15490	15540
			15595	15560	17645	17700
			17810	21800		
1200-1300	A,S	Radio Tanzania, Dar es Salaam	7165			
1200-1300		SBC Radio One, Singapore	5010	5052	11940	
1200-1300	S	Superpower KUSW, Utah	6130			
1200-1300		Trans World Radio, Bonaire	11815	15345		
1200-1300		Trans World Radio, Sri Lanka	11920			
1200-1300		Voice of America, Washington	6110	9760	15160	15425
1200-1300		Voice of Kenya, Nairobi	7270			
1200-1300		Voice of Nigeria, Lagos	7255	15120		
1200-1300		WCSN, Boston, Massachusetts	5980			
1200-1300		WHRI, Noblesville, Indiana	7520	11790		
1200-1300		WSHB, Cyprus Creek, S. Carolina	13760			
1200-1300		WYFR, Oakland, California	5950	7355	9680	
1215-1245		Radio Korea, Seoul, South Korea	7275	11740		
1215-1300		Radio Berlin Int'l, East Germany	15240			
1215-1300		Radio Cairo, Egypt	17595			
1230-1235		All India Radio, New Delhi	3905	4800	4920	7280
			9565	9615	11735	15120
1230-1255	M-A	BRT, Brussels, Belgium	17565	21815		
1230-1255		Radio Austria Int'l, Vienna	6155	13730	15450	
1230-1300		BBC, London, England*	6125	7255	6195	9635
			9660	11780	12040	15270
			15390	15435	17695	
1230-1300		Radio Bangladesh, Dhaka	15195	17710		
1230-1300		Radio Sweden, Stockholm	9565	17815	21570	
1240-1250	M	Radio Free Europe, Munich*	5985	7115	9695	9725
			11895	15355		
1245-1300		Radio Berlin Int'l, East Germany	15440	17880	21465	21540
1245-1300		Radio France Int'l, Paris	9805	11670	15365	15155
			17720	21645		
1235-1245		Voice of Greece, Athens	11645	15630	17565	

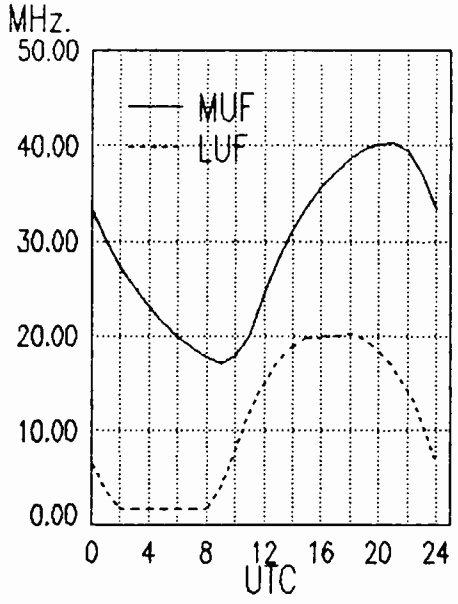
1300 UTC [9:00 AM EDT/6:00 AM PDT]

1300-1305		Port Moresby, Papua New Guinea	3295	4890	5960	5980
			6020	6040	6080	6140
			9520			
1300-1310		Radio France Int'l, Paris	11670	15155	15365	17720
			21645			
1300-1325		Radio Bucharest, Romania	9690	11940	15405	17720
1300-1330		BBC, London, England	5995	6195	7180	9510
			9515	9740	11750	11775
			12095	15070	15420	17790
			17885	18080	21470	21710
			25750			
1300-1330	S	Radio Austria Int'l, Vienna	11780	13730	21490	
1300-1330		Radio Cairo, Egypt	17595			
1300-1330		Radio Ghana, Accra	4915	7295		
1300-1330		Radio Moscow, USSR	6050	9705	9815	11840
			11900	15225	15420	15475
			15530	15540	15560	15595
			17645	17810		
1300-1330	S	Radio Norway Int'l, Oslo	6035	9590	15310	21705
1300-1330		Swiss Radio Int'l, Berne	6165	9535	12030	
1300-1330		Trans World Radio, Sri Lanka	11920			
1300-1330		Voice of Kenya, Nairobi	7270			
1300-1332	A,S	Trans World Radio, Bonaire	11815	15345		
1300-1350		Radio Pyongyang, North Korea	9325	9345	9555	9600
			11335	11735		
1300-1355		Radio Beijing, China	11600	11660	11755	15280
			15455			
1300-1400		ABC, Alice Springs, Australia	2310	[ML]		
1300-1400		ABC, Katherine, Australia	2485			
1300-1400		ABC, Tennant Creek, Australia	2325	[ML]		
1300-1400		CBC Northern Quebec Service	6065	9625		
1300-1400		CBN, St. John's, Newfoundland	6160			
1300-1400		CBU, Vancouver, British Colombia	6160			
1300-1400		CFCF, Montreal, Quebec	6005			
1300-1400		CFCN, Calgary, Alberta	6030			
1300-1400		CHNS, Halifax, Nova Scotia	6130			
1300-1400		CKWX, Vancouver, British Colombia	6080			

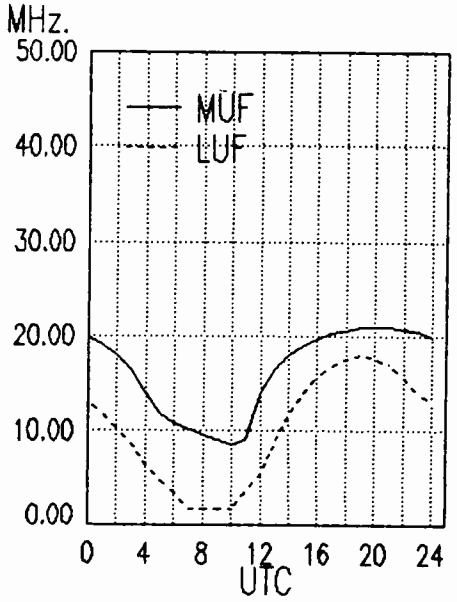
Midwest To
Central America/Caribbean



Midwest To
South America



Midwest To
Alaska

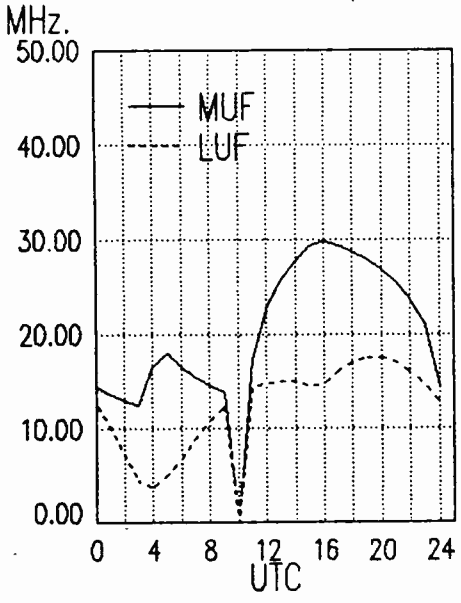


1300-1400		CFRB, Toronto, Ontario	6070				
1300-1400	S	ELWA, Monrovia, Liberia	11830				
1300-1400		(US) Far East Network, Tokyo	3910				
1300-1400		FEBC, Manila, Philippines	11850				
1300-1400		HCJB, Quito, Ecuador	11740	15115	17890		
1300-1400		KNLS, Anchor Point, Alaska	7355				
1300-1400		KYOI, Saipan	11900				
1300-1400		Radio Australia, Melbourne	5995	6060	6080	7205	
			9580				
1300-1400	M-F	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 RSA, South Africa	17755	21590			
1300-1400	A,S	Radio Tanzania, Dar es Salaam	7165				
1300-1400		SBC Radio One, Singapore	5010	5052	11940		
1300-1400	S	Superpower KUSW, Utah	6130				
1300-1400		Voice of America, Washington	6110	9760	11715	15160	
			15425				
1300-1400		Voice of Malaysia	7295				
1300-1400		Voice of Nigeria, Lagos	7255	15120			
1300-1400		WCSN, Boston, Massachusetts	5980				
1300-1400		WHRI, Noblesville, Indiana	9455	11790			
1300-1400		WSHB, Cyprus Creek, S. Carolina	13760				
1300-1400		WYFR, Oakland, California	5950	6010	9680	13695	
			15055	15365			
1330-1345		Radio Korea, Seoul, South Korea	7275	11740			
1330-1400		BBC, London, England	5995	6195	7180	9410	
			9740	15070	15420	11750	
			17790	17885	18080	21470	
			21710	25750			
1330-1400		All India Radio, New Delhi	9545	10330	11810	15335	
1330-1400		Laotian National Radio	7113				
1330-1400	S	Radio Finland, Helsinki	11945	15400			
1330-1400		Radio Moscow, USSR	6050	9705	11840	13680	
			13710	15420	15475	15595	
			15560	17645			
1330-1400		Radio Tashkent, Uzbek, USSR	5945	9540	9600	11785	
			15455				
1330-1400		Swiss Radio Int'l, Berne	11695	13635	15135	15570	
			17830	21695			
1330-1400		UAE Radio, United Arab Emirates	15435	17865	21605		
1330-1400		Voice of Islamic Republic Iran	9525	9685	9770		
1330-1400		Voice of Kenya, Nairobi	6100				
1330-1400		Voice of Turkey, Ankara	17785				
1330-1400		Voice of Vietnam, Hanoi	12010	15010			
1332-1400	A	Trans World Radio, Bonaire	11815	15345			

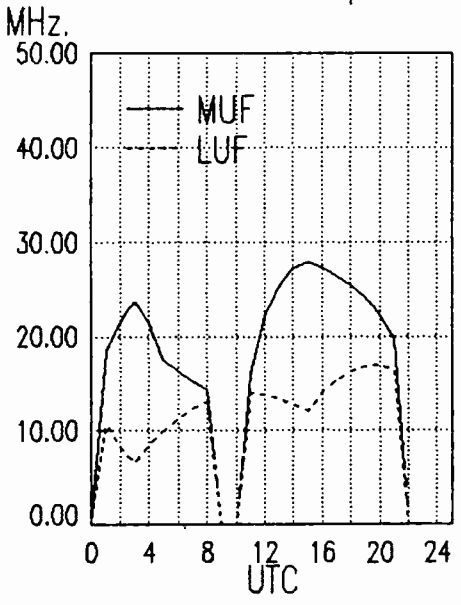
1400 UTC [10:00 AM EDT/7:00 AM PDT]

1400-1427		Voice of Nigeria, Lagos	15120				
1400-1430		ABC, Alice Springs, Australia	2310	[ML]			
1400-1430		ABC, Tennant Creek, Australia	2325	[ML]			
1400-1430		Radio Finland, Helsinki	9560	11715	11850	15185	
1400-1430	S	Radio Norway Int'l, Oslo	15175	15195	21705		
1400-1430		Radio Polonia, Warsaw, Poland	6095	7285			
1400-1430		Radio Sweden, Stockholm	15345	17815	21615		
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	15165		
1400-1500		ABC, Katherine, Australia	2485				
1400-1500		ABC, Perth, Australia	9610				
1400-1500		Adventist World Radio, Italy	7275				
1400-1500		All India Radio, New Delhi	9545	11810	15335		
1400-1500		BBC, London, England	5995	6195	7180	9740	
			9750	11750	12095	15070	
			17705	17790	18080	21710	
			21470	25750			
1400-1500		CBN, St. John's, Newfoundland	6160				
1400-1500		CBC Northern Quebec Service	9625	11720			
1400-1500	M-A	CBU, Vancouver, British Colombia	6160				
1400-1500		CFCF, Montreal, Quebec	6005				
1400-1500		CFCN, Calgary, Alberta	6030				
1400-1500		CHNS, Halifax, Nova Scotia	6130				
1400-1500		CKWX, Vancouver, British Colombia	6080				
1400-1500		CFRB, Toronto, Ontario	6070				
1400-1500	S	ELWA, Monrovia, Liberia	11830				
1400-1500		(US) Far East Network, Tokyo	3910				
1400-1500		FEBC, Manila, Philippines	9670	11850			
1400-1500		HCJB, Quito, Ecuador	11740	17890			
1400-1500		KYOI, Saipan	11900				
1400-1500		Radio Australia, Melbourne	5995	6035	6060	6080	
			7205	9580			
1400-1500	S	Radio Canada Int'l, Montreal	9625	11720	11955	17820	
1400-1500		Radio Japan, Tokyo	7140	9695	11815		
1400-1500		Radio Korea, Seoul	9570	9750	15575		
1400-1500		Radio Moscow, USSR	11840	15475	15595	17810	

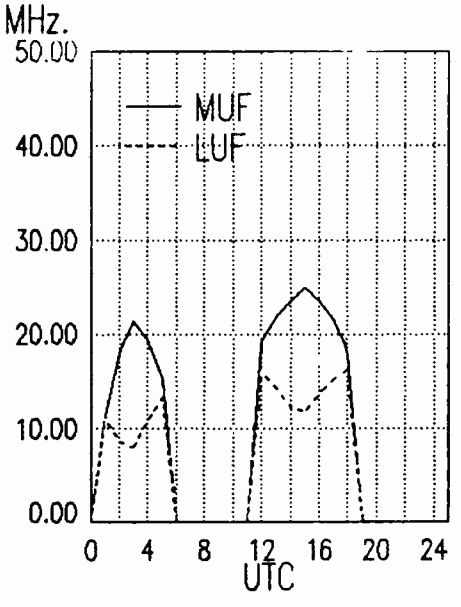
West Coast To
Western Europe



West Coast To
Eastern Eroupe



West Coast To
Middle East

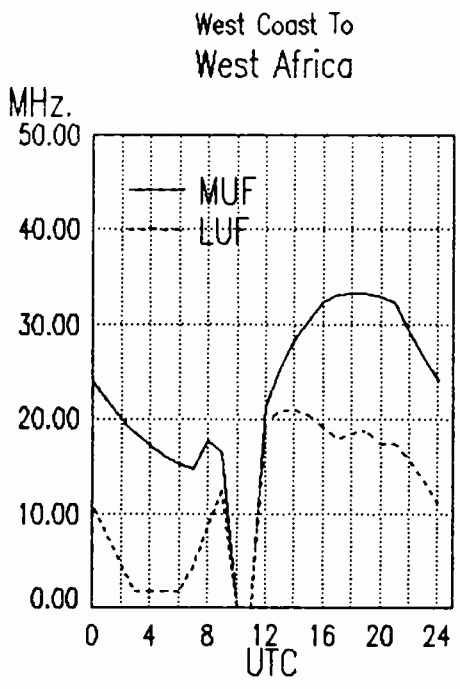


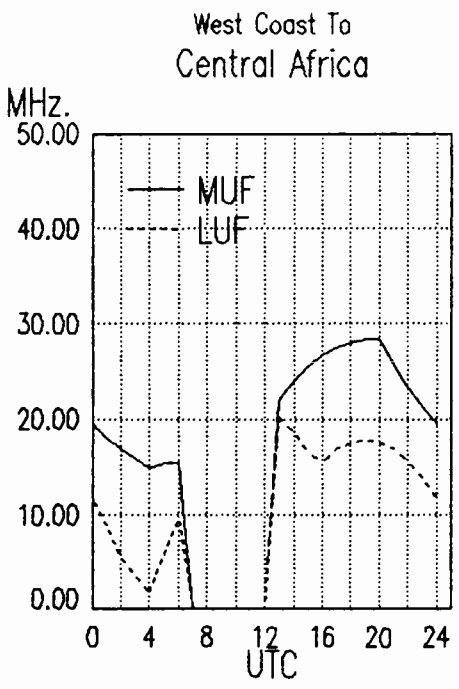
frequency section

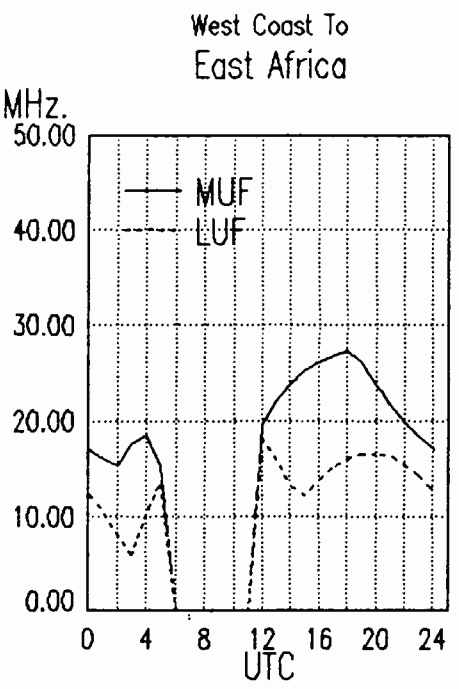
1400-1500		Radio RSA, South Africa	11925	21535	21590	25790
1400-1500	A,S	Radio Tanzania, Dar es Salaam	7165			
1400-1500		SBC Radio One, Singapore	5010	5052	11940	
1400-1500	S	Superpower KUSW, Utah	9850			
1400-1500		Voice of America, Washington	6110	9645	9700	9760
			11920	15160	15205	
1400-1500		Voice of Kenya, Nairobi	6100			
1400-1500		Voice of Malaysia, Kuala Lumpur	4950			
1400-1500		Voice of Mediterranean, Malta	11925			
1400-1500		Voice of Nigeria, Lagos	7255			
1400-1500		WCSN, Boston, Massachusetts	13760			
1400-1500		WHRI, Noblesville, Indiana	9455	11790		
1400-1500		WSHB, Cyprus Creek, S. Carolina	17640			
1400-1500		WYFR, Oakland, California	5950	9600	11830	17612.5
1400-1500		WYFR Satellite Net, California	13695	15375		
1415-1420		Radio Nepal, Kathmandu	3230	5005		
1430-1500	F	ABC, Alice Springs, Australia	2310	[ML]		
1430-1500	F	ABC, Tennant Creek, Australia	2325	[ML]		
1430-1500		Burma Broadcasting Service	5985			
1430-1500		King of Hope, Southern Lebanon	6280			
1430-1500		KTWR, Agana, Guam	9780			
1430-1500		Radio Australia, Melbourne	6060	9580		
1430-1500		Radio France International, Paris	6175	9805	11670	13715
			15155			
1430-1500		Radio Netherland, Hilversum	5955	13770	15150	17575
			17605			
1430-1500		Radio Prague, Czechoslovakia	9605	11685	13715	15110
			17705	21505		
1430-1500		Radio Sofia, Bulgaria	7245	9740	11735	
1445-1500		Radio Berlin Int'l, East Germany	15240	17880		
1445-1500	M-A	Radio Ulan Bator, Mongolia	9575	15305		

1500 UTC [11:00 AM EDT/8:00 AM PDT]

1500-1505		Africa No. 1, Gabon	7200	15200		
1500-1510		Vatican Radio, Vatican City	11960	15090	17870	
1500-1515		BBC, London, England	5995	6195	7180	9410
			9515	9740	11750	12095
			15070	15260	15400	17705
			17885	18080	21470	21710
			25750			
1500-1515		FEBA, Mahe, Seychelles	15325			
1500-1520		Radio Ulan Bator, Mongolia	9575	15305		
1500-1525		Radio Bucharest, Romania	9510	9690	11775	11940
			15250	15335		
1500-1525		Radio Netherland, Hilversum	5955	13770	15150	17575
			17605			
1500-1530		Radio Berlin Int'l, East Germany	15240	17880		
1500-1530		Radio Sofia, Bulgaria	9560	11735	15310	
1500-1530	A,S	Radio Tanzania, Dar es Salaam	7165			
1500-1530		Radio Veritas Asia, Philippines	9770	15215		
1500-1550		Deutsche Welle, West Germany	9735	11965	17810	21600
1500-1550		Radio Pyongyang, North Korea	6576	9325	9345	9640
			9977			
1500-1555		Radio Beijing, China	11600	15165		
1500-1600	F	ABC, Alice Springs, Australia	2310	[ML]		
1500-1600		ABC, Perth, Australia	9610			
1500-1600	F	ABC, Tennant Creek, Australia	2325	[ML]		
1500-1600		AWR, Alajuela, Costa Rica	15460			
1500-1600		Burma Broadcasting Service	5985			
1500-1600		CBC Northern Quebec Service	9625	11720		
1500-1600		CBN, St. John's, Newfoundland	6160			
1500-1600		CBU, Vancouver, British Colombia	6160			
1500-1600		CFCF, Montreal, Quebec	6005			
1500-1600		CFCN, Calgary, Alberta	6030			
1500-1600		CHNS, Halifax, Nova Scotia	6130			
1500-1600		CKWX, Vancouver, British Colombia	6080			
1500-1600		CFRB, Toronto, Ontario	6070			
1500-1600	S	ELWA, Monrovia, Liberia	11830			
1500-1600		(US) Far East Network, Tokyo	3910			
1500-1600		FEBC, Manila, Philippines	11850			
1500-1600		HCJB, Quito, Ecuador	11740	11810	15115	17890
1500-1600		King of Hope, Southern Lebanon	6280			
1500-1600		KNLS, Anchor Point, Alaska	7355			
1500-1600		KTWR, Agana, Guam	11650			
1500-1600		KYOI, Saipan	11900			
1500-1600		Radio Australia, Melbourne	5995	6035	6060	6080
			7205	7215	9580	
1500-1600	S	Radio Canada Int'l, Montreal	9625	11720	11955	17820
1500-1600		Radio Japan, Tokyo	9505	9695	11815	21700
1500-1600		Radio Jordan, Amman	9560			
1500-1600		Radio Korea (South), Seoul	9870			
1500-1600		Radio Moscow, USSR	5980	11730	11840	11900
			15475	15540	15560	17665
			17810	17820		
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			





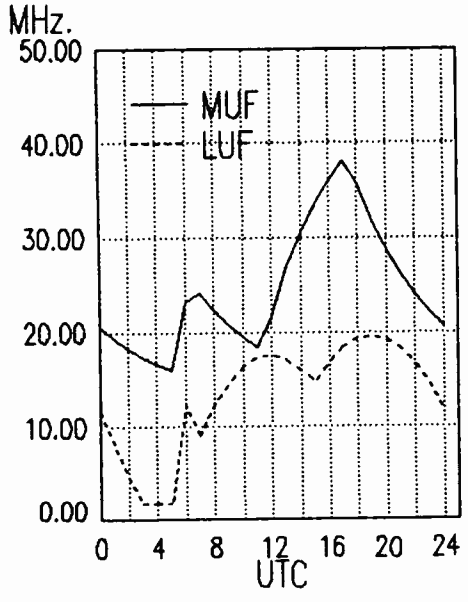


1500-1600	S	Superpower KUSW, Utah	9850
1500-1600		Voice of America, Washington	6110 9575 9645 9700 9760 15205
1500-1600		Voice of Ethiopia, Addis Ababa	7165 9560
1500-1600		Voice of Indonesia, Jakarta	11790 15150
1500-1600		Voice of Kenya, Nairobi	6100
1500-1600		Voice of Malaysia, Kuala Lumpur	4950
1500-1600		Voice of Mediterranean, Malta	11925
1500-1600		Voice of Nigeria, Lagos	7255 11770
1500-1600		WCSN, Boston, Massachusetts	13760
1500-1600		WHRI, Noblesville, Indiana	15105 21840
1500-1600	S	WRNO, New Orleans, Louisiana	11965
1500-1600		WSHB, Cyprus Creek, S. Carolina	17640
1500-1600		WYFR, Oakland, California	5950 9600 17612.5
1500-1600		WYFR Satellite Net	11830 13695 15375
1515-1530	M-H	Radio Budapest, Hungary	7220 9585 9835 11910 15160 15220
1515-1600		BBC, London, England	5995 6195 7180 9410 9515 9740 11750 12095 15070 15260 15400 17885 18080 21470 21710
1515-1600		FEBA, Mahe, Seychelles	11865 15325
1515-1600		Radio Berlin Int'l, East Germany	6115 7295 9730 15255 17775
1530-1545		All India Radio, New Delhi	3905 3925 4860 6160 7160 7412 9545 9950
1530-1555		BRT, Brussels, Belgium	17585 21810
1530-1600		Radio Prague, Czechoslovakia	6055 7395 9605 11685 11990 13715 15110 15155 17705 21505
1530-1600		Radio Sweden, Stockholm	15240 15330 17810
1530-1600		Radio Tanzania, Dar es Salaam	9684
1530-1600		Radio Tirana, Albania	9480 11835
1530-1600		Radio-Television Morocco, Rabat	17595
1530-1600		Swiss Radio Int'l, Berne	13685 15430 17830 21630
1530-1600		Voice of Asia, Taiwan	5980 7445
1530-1600		Voice of Nigeria, Lagos	15120
1540-1550	M-A	Voice of Greece, Athens	9855 11645 15630
1545-1600		Radio Canada Int'l, Montreal	9555 11915 11935 15315 15325 17820
1545-1600		Vatican Radio, Vatican City	11810 15120 17730
1545-1600		Voice of Vietnam, Hanoi	10011 11750
1550-1600	H-S	KTWR, Agana, Guam	9780

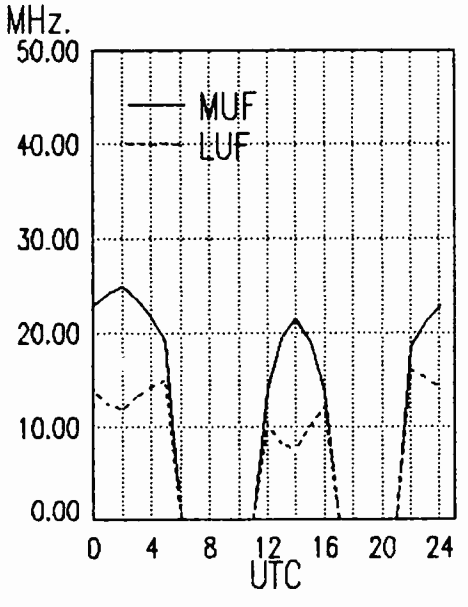
1600 UTC [12:00 PM EDT/9:00 AM PDT]

1600-1610		FEBA, Mahe, Seychelles	11865 15325
1600-1610		Radio Lesotho, Maseru	4800
1600-1610		SBC Radio One, Singapore	5010 5052 11940
1600-1625		Radio Budapest, Hungary	6110 9585 9835 11910 15160
1600-1625		Radio Prague, Czechoslovakia	6055 9605 11665 11685 11990 13715 15110 15155 15165 17705 17730 21505
1600-1630		ELWA, Monrovia, Liberia	11830
1600-1630		HCJB, Quito, Ecuador	15115 17890
1600-1630		KTWR, Agana, Guam	11905
1600-1630	S	Radio Norway Int'l, Oslo	9610 15265 15310 21705
1600-1630		Radio Pakistan, Islamabad	7365 9465 9785 11615 11625 15125
1600-1630		Radio Polonia, Warsaw, Poland	6135 9540
1600-1630	M-F	Radio Portugal, Lisbon	15245
1600-1630		SLBC, Colombo, Sri Lanka	6075 9720
1600-1630		Trans World Radio, Swaziland	5055 9525
1600-1630		Voice of Asia, Taiwan	5980 7445
1600-1630		Voice of Vietnam, Hanoi	9840 12020
1600-1645		Radio Nacional Angola, Luanda	7245 9535 11955
1600-1645		UAE Radio, United Arab Emirates	11730 15435 17865
1600-1650		Deutche Welle, West Germany	6170 7200 9745 15105 15595 17825 21680
1600-1655		Radio Beijing, China	9570 11600 11715
1600-1700	F	ABC, Alice Springs, Australia	2310 [ML]
1600-1700		ABC, Perth, Australia	9610
1600-1700	F	ABC, Tennant Creek, Australia	2325 [ML]
1600-1700		AWR, Alajuela, Costa Rica	15460
1600-1700		BBC, London, England	5975 5995 6195 7180 9740 9410 9515 11750 12095 15070 15260 15400 17705 17885 18080 21470
1600-1700		CBC Northern Quebec Service	9625 11720
1600-1700		CBN, St. John's, Newfoundland	6160
1600-1700		CBU, Vancouver, British Colombia	6160
1600-1700		CFCF, Montreal, Quebec	6005
1600-1700		CFCN, Calgary, Alberta	6030
1600-1700		CHNS, Halifax, Nova Scotia	6130
1600-1700		CKWX, Vancouver, British Colombia	6080
1600-1700		CFRB, Toronto, Ontario	6070
1600-1700		(US) Far East Network, Tokyo	3910

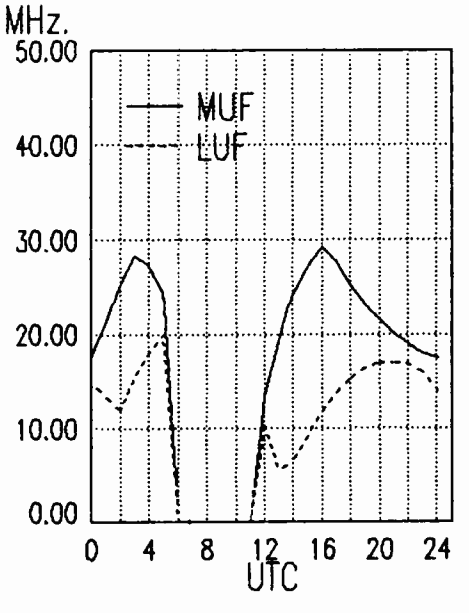
West Coast To
South Africa



West Coast To
Central Asia



West Coast To
Indian Ocean



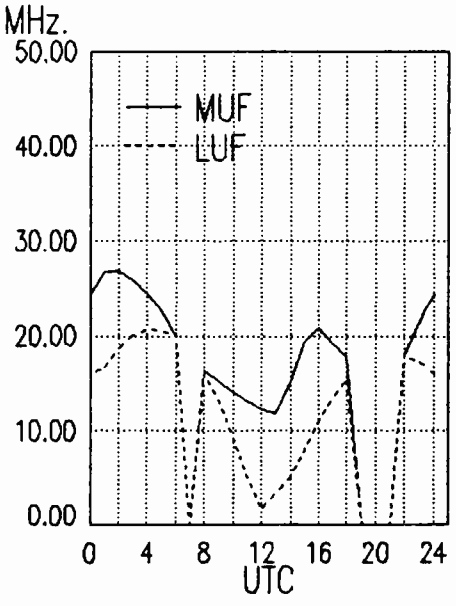
frequency section

1600-1700		KNLS, Anchor Point, Alaska	7355			
1600-1700		KSDA, Guam	11980			
1600-1700		Radio Australia, Melbourne	5995	6035	6060	6080
			7205	7215	9580	
1600-1700		Radio Beijing, China	15130			
1600-1700	S	Radio Canada Int'l, Montreal	9625	11720	11955	17820
1600-1700		Radio France Int'l, Paris	11705	15360	17620	17795
1600-1700		Radio Jordan, Amman	9560			
1600-1700		Radio Korea, Seoul, South Korea	5985	9870		
1600-1700		Radio Malawi, Blantyre	3380	5995		
1600-1700		Radio Moscow, USSR	7160	7265	7345	9705
			9825	9875	11730	11840
			12010	15475	15550	
1600-1700		Radio Riyadh, Saudi Arabia	9705	9720		
1600-1700		Radio Tanzania, Dar es Salaam	9684			
1600-1700		Superpower KUSW, Utah	15650			
1600-1700		Voice of America, Washington, DC	9575	9645	9760	15205
			15410	15445	15580	15600
			17785	17800	17870	
1600-1700		WCSN, Boston, MA	21640			
1600-1700		WHRI, Noblesville, Indiana	15105	21840		
1600-1700		WRNO, New Orleans, Louisiana	15420			
1600-1700		WYFR, Oakland, California	9600	15440	17612.5	
1600-1700		WYFR Satellite Network	11830	13695	15375	21615
1600-1700		Radio Zambia, Lusaka	9580			
1615-1630		Voice of Vietnam, Hanoi	11750			
1630-1700		Radio Netherlands, Hilversum	6020	15570		
1630-1700		RTM Morocco	17595	17815		
1645-1700		Radio Korea (South), Seoul	5975	7275	9870	

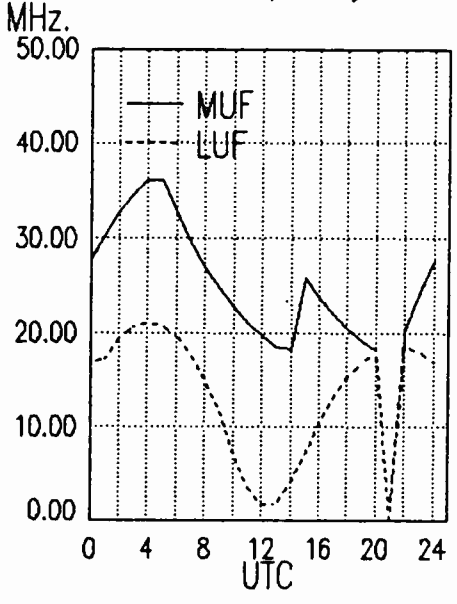
1700 UTC [1:00 PM EDT/10:00 AM PDT]

1700-1705		Radio Uganda, Kampala	4976	5026		
1700-1715		Kol Israel, Jerusalem	9385	11585	13750	
1700-1715	M-A	Voice of Namibia (Angola)	11955			
1700-1725		Radio Netherland, Hilversum	6020	15560		
1700-1730		Radio Australia, Melbourne	5995	6060	6080	7205
			9580			
1700-1730		Radio Japan, Tokyo	9505	11705	11815	
1700-1730	S	Radio Norway Int'l, Oslo	9655	15220	15310	21700
1700-1730		SLBC, Colmbo, Sri Lanka	11800			
1700-1745		BBC, London, England	9410	9515	9740	11750
			11775	12095	15070	15260
			15400	17885	21470	
1700-1750		Radio Pyongyang, North Korea	7290	9345	9640	9977
1700-1755		Radio Beijing, China	9570	9750	11600	
1700-1800	F	ABC, Alice Springs, Australia	2310 [ML]			
1700-1800		ABC, Tennant Creek, Australia	2325 [ML]			
1700-1800		AWR Africa, Gabon	9625			
1700-1800		CBC Northern Quebec Service	9625	11720		
1700-1800		CBN, St. John's, Newfoundland	6160			
1700-1800		CBU, Vancouver, British Colombia	6160			
1700-1800		CFCF, Montreal, Quebec	6005			
1700-1800		CFCN, Calgary, Alberta	6030			
1700-1800		CHNS, Halifax, Nova Scotia	6130			
1700-1800		CKWX, Vancouver, British Colombia	6080			
1700-1800		CFRB, Toronto, Ontario	6070			
1700-1800		(US) Far East Network, Tokyo	3910			
1700-1800		Radio Havana Cuba	11920			
1700-1800		Radio Jordan, Amman	9560			
1700-1800		Radio Korea, Seoul, South Korea	5975	9870	15575	
1700-1800	M-F	Radio Malabo, Equatorial Guinea	9553 [ML]			
1700-1800		Radio Moscow, USSR	5920	6095	7260	7265
			7345	9705	9825	9875
			11840	12015	15460	15475
1700-1800		Radio Riyadh, Saudi Arabia	9705	9720		
1700-1800		Radio Tanzania, Dar es Salaam	9684			
1700-1800		Radio Zambia, Lusaka	9580			
1700-1800		RTM Morocco	17815			
1700-1800		SBC Radio One, Singapore	5052	11940		
1700-1800		Superpower KUSW, Utah	15650			
1700-1800	A,S	Swaziland Commercial Radio	6155			
1700-1800		Voice of Africa, Egypt	15255			
1700-1800		Voice of America, Washington	6110	9575	9645	9760
			11760	11920	15205	15410
			15445	15580	15600	17785
			17800	17870		
1700-1800		Voice of Kenya, Nairobi	6100			
1700-1800		Voice of Nigeria, Lagos	11770			
1700-1800		WCSN, Boston, Massachusetts	21640			
1700-1800		WHRI, Noblesville, Indiana	13760	15105		
1700-1800		WINB, Red Lion, Pennsylvania	15295			
1700-1800	S-F	WMLK, Bethel, Pennsylvania	9465			
1700-1800		WRNO, Louisiana	15420			
1700-1800		WYFR Satellite Net	11830	13695		
1700-1800		WYFR, Okeechobee, Florida	11855	15375	17750	
1715-1730		Radio Canada Int'l, Montreal	5995	7235	15325	17820
1715-1745		BBC, London, England*	3975	6185	7165	
1718-1800		Radio Pakistan, Islamabad	6210	7835		

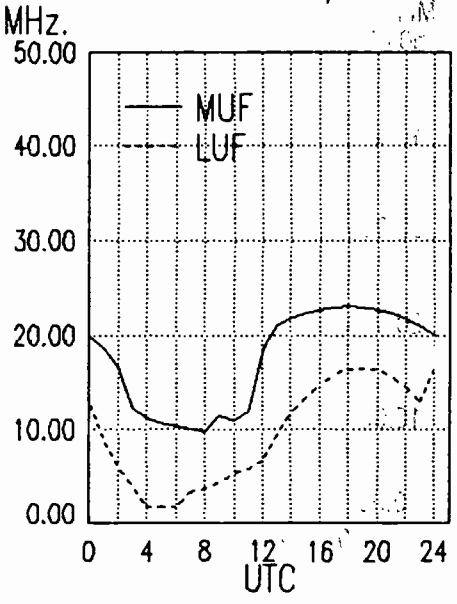
West Coast To
South East Asia



West Coast To
Indonesia/Malaysia



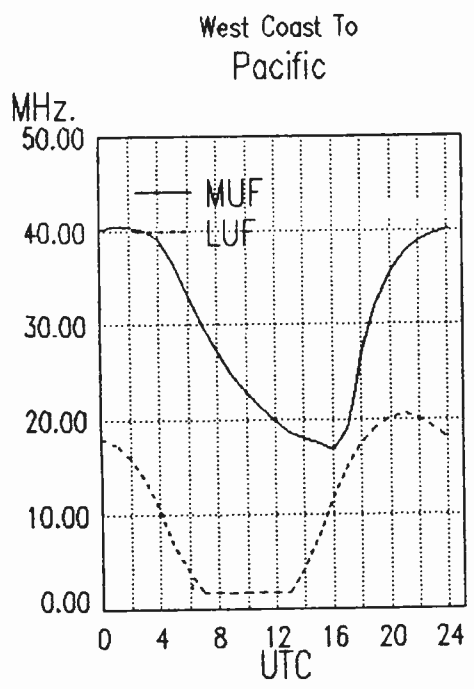
West Coast To
Artic Europe

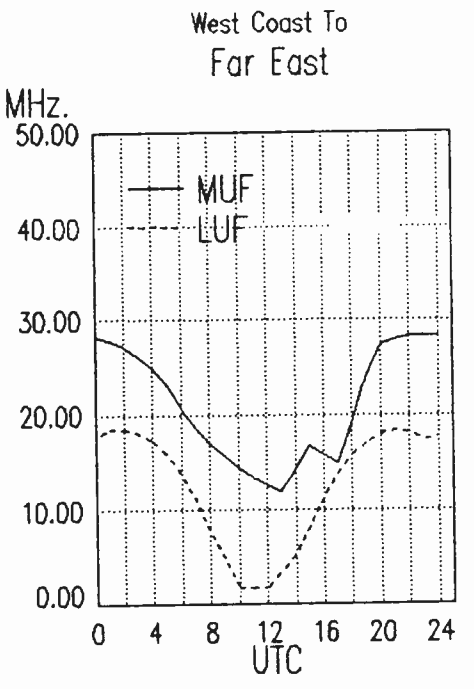


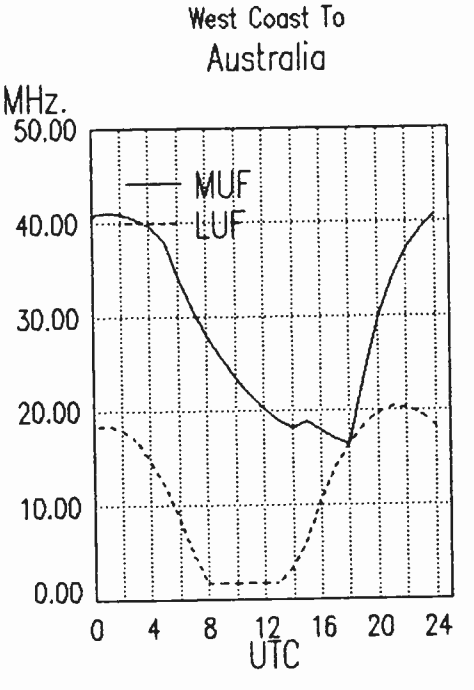
1725-1740	Radio Suriname Int'l, Paramibo	7835v
1725-1800	Radio New Zealand, Wellington	11780 15150
1730-1735	All India Radio, New Delhi	4840 4860 4920 6160 7412 9950
1'730-1755	BRT, Brussels, Belgium	5915 11695
1730-1755	Radio Austria Int'l, Vienna	5945 6155 12010 13730
1730-1755	Radio Bucharest, Romania	7105 9530 9685 11790 11940 15270 15340
1730-1800	Radio Australia, Melbourne	5995 6035 6060 6080 7205 9580
1730-1800	Radio Berlin Int'l, East Germany	9665 13610 15145 15255
1730-1800	Radio Polonia, Warsaw, Poland	6135 9540
1730-1800	Radio Prague, Czechoslovakia	9605 11685 11990 13715 15110 21505
1730-1800	RAE, Buenos Aires, Argentina	15345
1734-1800	FEBA, Mahe, Seychelles	11810
1745-1800	BBC, London, England	9410 9740 11750 12095 15070 15400 17885 21470

1800 UTC [2:00 PM EDT/11:00 AM PDT]

1800-1805	A	SBC Radio One, Singapore	11940
1800-1815		Radio Cameroon, Yaounde	3970 4750 4795 4850 5010
1800-1815		SLBC, Colombo, Sri Lanka	11800
1800-1825	A,S	FEBA, Mahe, Seychelles	11760
1800-1825		Radio Prague, Czechoslovakia	5930 7345 9605 11685 11990 13715 15110 21505
1800-1825		RAE, Buenos Aires, Argentina	15345
1800-1830		BBC, London, England	7325 9410 11750 12095 15070 15400 15420 17885
1800-1830	S	Radio Bamako, Mali	4835 5995
1800-1830	M-F	Radio Canada Int'l, Montreal	15260 17820
1800-1830		Radio Mozambique, Maputo	3265 4855 9618
1800-1830		Radio Sweden, Stockholm	6065 11845
1800-1830		Voice of Africa, Egypt	15255
1800-1830		Voice of Vietnam, Hanoi	9840 12020
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	15365 17795 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 Colombia	6160
1800-1900		CFCF, Montreal, Quebec	6005
1800-1900		CFCN, Calgary, Alberta	6030
1800-1900		CHNS, Halifax, Nova Scotia	6130
1800-1900		CKWX, Vancouver, British Colombia	6080
1800-1900		CFRB, Toronto, Ontario	6070
1800-1900		(US) Far East Network, Tokyo	3910
1800-1900		KNLS, Anchor Point, Alaska	7355
1800-1900		KYOI, Saipan	9455
1800-1900		Radio Australia, Melbourne	5995 6035 6060 6080 7205 7215 9580
1800-1900	A,S	Radio Canada Int'l. Montreal	15260 17820
1800-1900		Radio Jamahiriya, Libya	15450
1800-1900		Radio Jordan, Amman	9560
1800-1900		Radio Kuwait, Kuwait	11665
1800-1900		Radio Malabo, Equatorial Guinea	9553v [ML]
1800-1900		Radio Moscow, USSR	7150 7265 9540 9825 9875 11840 12010 15460 15480
1800-1900		Radio New Zealand, Wellington	11780 15150
1800-1900		Radio Riyadh, Saudi Arabia	9705 9720
1800-1900		Radio Tanzania, Dar es Salaam	9684
1800-1900		Radio Zambia, Lusaka	9580
1800-1900		Superpower KUSW, Utah	15650
1800-1900	A,S	Swaziland Commercial Radio	6155
1800-1900		Voice of America, Washington	9575 9760 11760 11920 15205 15410 15445 15580 15600 17785 17800 17870 21485
1800-1900		Voice of Ethiopia	9662
1800-1900		Voice of Kenya, Nairobi	6100
1800-1900		Voice of Nigeria, Lagos	11770 15120
1800-1900		WCSN, Boston, Massachusetts	21640
1800-1900		WHRI, Noblesville, Indiana	13760 17830
1800-1900		WINB, Red Lion, Pennsylvania	15295
1800-1900	S-F	WMLK, Bethel, Pennsylvania	9465
1800-1900		WRNO, New Orleans, Louisiana	15420
1800-1900		WYFR, Oakland, California	11580 11855 15375
1800-1900		WYFR Satellite Net, California	11830 13695
1815-1900		Radio Bangladesh, Dhaka	6240 7505 11510 15510
1830-1855		Radio Austria Int'l, Vienna	5945 6155 12010 13730
1800-1855		Radio Polonia, Warsaw, Poland	5995 6135 7125 7285 9525 11840







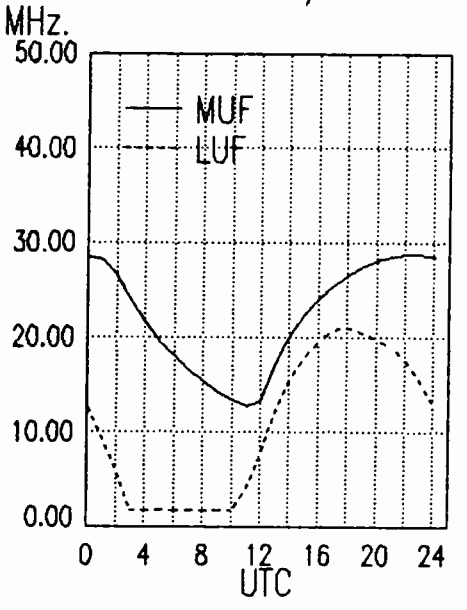
frequency section

1815-1830		Radio Korea, Seoul, South Korea	9870	15575		
1830-1855		BRT Brussels, Belgium	5915	11695		
1830-1900		BBC, London, England	7325	9410	9740	11750
			12095	15070	15400	17885
1830-1900		Radio Berlin Int'l, E. Germany	9665	13610	15145	15255
1830-1900	MWF	Radio Mozambique, Maputo	3265	4855	9618	
1830-1900		Radio Netherland, Hilversum	6020	15175	17605	21685
1830-1900		Radio Sofia, Bulgaria	7245	9560	11735	15310
1830-1900		Swiss Radio International, Berne	3985	6165	9535	9885
			11955			
1840-1850	M-A	Voice of Greece, Athens	11645	12045	15630	
1840-1900		Radio Senegal, Dakar	4950			
1845-1855		Radio Nacional, Conaky, Guinea	4833	4900	7125	
1845-1900		All India Radio, New Delhi	7412	11620		

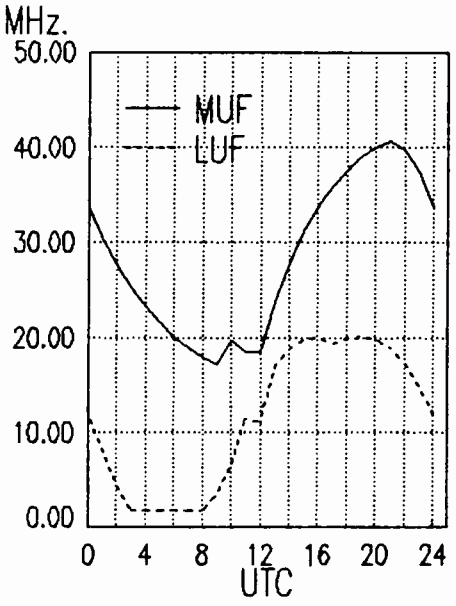
1900 UTC [3:00 PM EDT/12:00 PM PDT]

1900-1903		Africa No. 1, Gabon	15475			
1900-1905	M-A	Vatican Radio, Vatican City	6190	6248	7250	9645
1900-1915		Radio Bangladesh, Dhaka	6240	7505	11510	
1900-1915		Radio Tanzania, Dar es Salaam	9684			
1900-1925		Radio Netherland, Hilversum	6020	15560	17605	21685
1900-1925		Voice of Islamic Republic Iran	9695			
1900-1930	F	ABC, Alice Springs, Australia	2310	[ML]		
1900-1930	F	ABC, Tennant Creek, Australia	2325	[ML]		
1900-1930		Kol Israel, Jerusalem	12077	13750	15640	
1900-1930		Radio Afghanistan, Kabul	7160	7310	9640	
1900-1930		Radio Berlin Int'l, East Germany	9665	11920	15255	
1900-1930		Radio Japan, Tokyo	9505	11705		
1900-1930	S	Radio Norway Int'l, Oslo	9590	15225	15310	21705
1900-1930	M-F	Radio Portugal, Lisbon	11740	11870	15250	
1900-1930		Radio Sofia, Bulgaria	7245	9560	11735	15310
1900-1930		Voice of Vietnam, Hanoi	9840	12020		
1900-1950		Deutsche Welle, Koln, W. Germany	9745	11810	13790	15390
1900-1955		Radio Beijing, China	6860	9470		
1900-2000		All India Radio, New Delhi	7412	11620	11935	15360
1900-2000		BBC, London, England	9410	9740	12095	15070
			15400	17885		
1900-2000		CBC Northern Quebec Service	9625	11720		
1900-2000		CBN, St. John's, Newfoundland	6160			
1900-2000		CBU, Vancouver, British Colombia	6160			
1900-2000		CFCF, Montreal, Quebec	6005			
1900-2000		CFCN, Calgary, Alberta	6030			
1900-2000		CHNS, Halifax, Nova Scotia	6130			
1900-2000		CKWX, Vancouver, British Colombia	6080			
1900-2000		CFRB, Toronto, Ontario	6070			
1900-2000		(US) Far East Network, Tokyo	3910			
1900-2000		HCJB, Quito, Ecuador	15270	17790	21470	
1900-2000		KYOI, Saipan	9455			
1900-2000		Radio Algiers, Algeria	9509	9685	15215	17745
1900-2000		Radio Australia, Melbourne	6035	6060	6080	7205
			7215	9580		
1900-2000		Radio Ghana, Accra	6130			
1900-2000		Radio Havana Cuba	11800	11950		
1900-2000		Radio Jordan, Amman	9560			
1900-2000		Radio Korea, Seoul, South Korea	9870	15575		
1900-2000		Radio Kuwait, Kuwait	11665			
1900-2000	M-A	Radio Malabo, Equatorial Guinea	9553	[ML]		
1900-2000		Radio Moscow, USSR	5905	6030	7150	7170
			9540	9755	9765	9825
			9875	11840	15135	17570
1900-2000		Radio Moscow British Service	5905	6020	7115	7150
			7170			
1900-2000		Radio New Zealand, Wellington	11780	15150		
1900-2000		Radio Prague, Czechoslovakia	5930	7345		
1900-2000		Radio Riyadh, Saudi Arabia	9705	9720		
1900-2000		Radio RSA, South Africa	7295	15365	17795	21590
1900-2000		Radio Zambia, Lusaka	9580			
1900-2000		Spanish National Radio, Madrid	11790	15375	15395	
1900-2000		Superpower KUSW, Utah	15650			
1900-2000	A,S	Swaziland Commercial Radio	6155			
1900-2000		Trans World Radio Swaziland	3205			
1900-2000		Voice of America, Washington	9700	9760	11760	15205
			15410	15445	15580	15600
			17785	17800	17870	
1900-2000		Voice of Ethiopia, Addis Ababa	9595			
1900-2000		Voice of Kenya, Nairobi	6100			
1900-2000		Voice of Nigeria, Lagos	7255	11770		
1900-2000		WCSN, Boston, Massachusetts	21640			
1900-2000		WHRI, Noblesville, Indiana	13760	17830		
1900-2000		WINB, Red Lion, Pennsylvania	15295			
1900-2000	S-F	WMLK, Bethel, Pennsylvania	9465			
1900-2000		WRNO, New Orleans, Louisiana	15420			
1900-2000		WYFR, Oakland, California	11855	15566	17845	
1900-2000		WYFR Satellite Net, California	11830	13695	15375	
1910-1920		Radio Botswana, Gaborone	3356	4820		
1915-2000		Radio Berlin Int'l, East Germany	9665	13610	15255	
1920-1930	M-A	Voice of Greece, Athens	6225	7430	9395	9425
1930-1940		Radio Togo, Lome	5047			

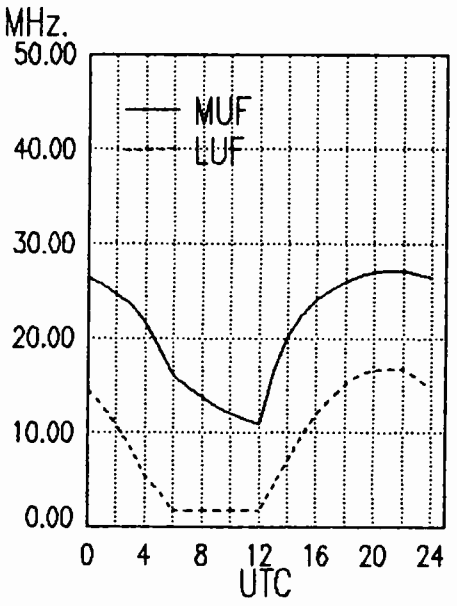
West Coast To
Central America/Caribbean



West Coast To
South America



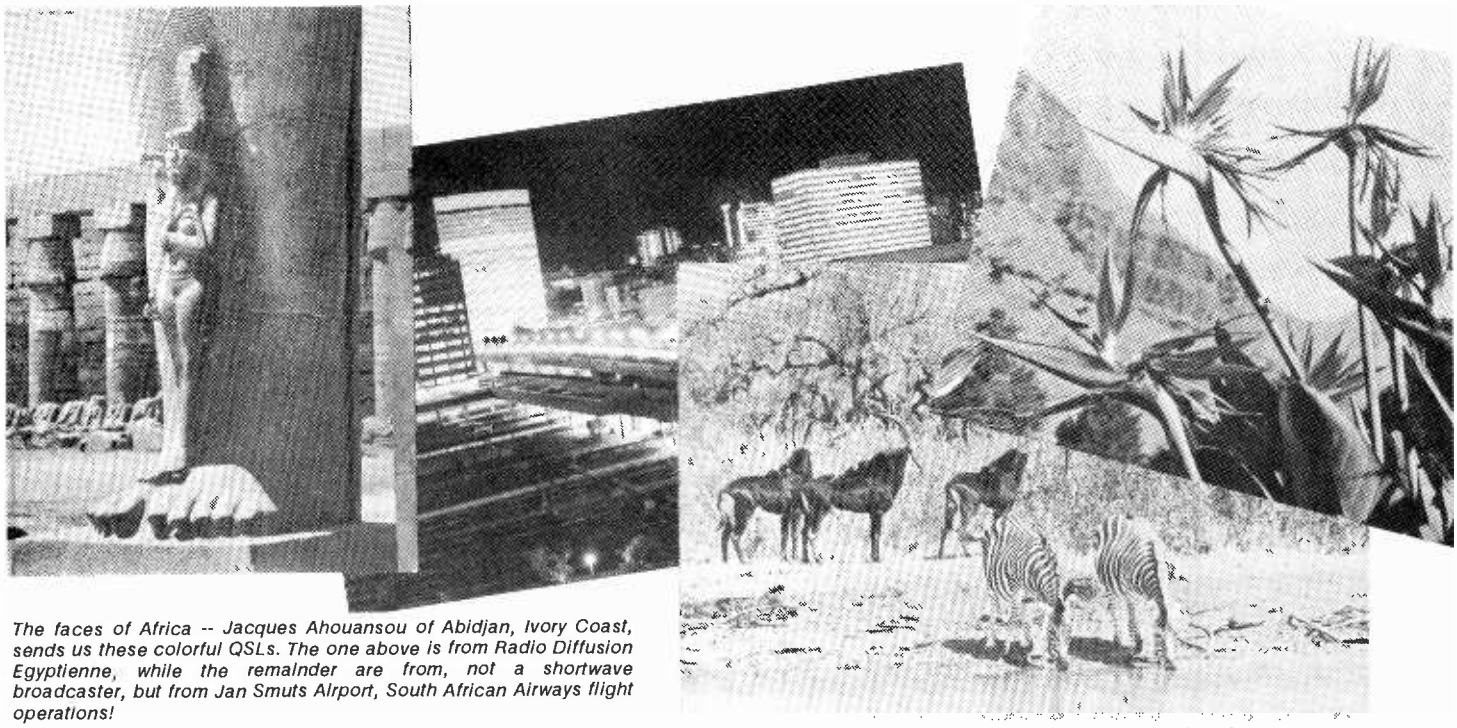
West Coast To
Alaska



1930-2000		ABC, Katherine, Australia	2485			
1930-2000		Radio Beijing, China	6955	7480	9440	
1930-2000		Radio Bucharest, Romania	7145	9690	9750	11940
1930-2000	M-F	Radio Canada Int'l, Montreal	9555	11945	15325	17875
1930-2000		Voice of Republic of Iran	6080	9022		
1930-2000		WINB, Red Lion, Pennsylvania	15185			
1935-1955		RAI, Rome, Italy	7275	7290	9575	
1940-2000	M-A	Radio Ulan Bator, Mongolia	9575	11870		
1945-2000		All India Radio, New Delhi	9755	11860		
1950-2000		Vatican Radio, Vatican City	6190	7250	9645	

2000 UTC [4:00 PM EDT/1:00 PM PDT]

2000-2005	S-F	Port Moresby, Papua New Guinea	3295	4890	5960	5985
			6020	6040	6080	6140
			9520			
2000-2005		Radio Zambia, Lusaka	3345	6165		
2000-2010	A	Radio Zambia, Lusaka	3345	6165		
2000-2010		Voice of Kenya, Nairobi	6100			
2000-2015		Radio Togo, Lome	3220	5047		
2000-2015	M-A	Radio Ulan Bator, Mongolia	9575	11870		
2000-2015		Trans World Radio, Swaziland	3205			
2000-2025		Radio Beijing, China	6955	7480	9440	9745
			11715			
2000-2025		Radio Bucharest, Romania	5990	6105	7145	7195
			9570	9690	11940	
2000-2030		Radio Australia, Melbourne	6035	7205	7215	9580
			9620			
2000-2030		Radio Budapest, Hungary	6110	7220	9585	9835
			11910	15160		
2000-2030		Radio Ghana, Nairobi	3366	4915		
2000-2030		Radio Norway International, Oslo	15310			
2000-2030		Radio Polonia, Warsaw, Poland	7125	7145	9525	
2000-2030	M-F	Radio Portugal Lisbon	11740			
2000-2030		Swaziland Commercial Radio	6155			
2000-2030		Voice of Nigeria, Lagos	7255			
2000-2030		Voice of Republic of Iran	6080	9022		
2000-2045		All India Radio, New Delhi	7412	9755	9910	11620
			11860			
2000-2050		Radio Pyongyang, North Korea	6576	9345	9640	9977
2000-2050		Voice of Turkey, Ankara	9825			
2000-2056		Radio RSA, South Africa	7295	15365	17795	
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	6180	6195	7325
			9410	9740	11785	11820
			12095	15070	15260	15400
			17760	17885		
2000-2100		CBC Northern Quebec Service	9625	11720		
2000-2100		CBN, St. John's, Newfoundland	6160			
2000-2100		CBU, Vancouver, British Colombia	6160			
2000-2100		CFCF, Montreal, Quebec	6005			
2000-2100		CFCN, Calgary, Alberta	6030			
2000-2100		CHNS, Halifax, Nova Scotia	6130			
2000-2100		CKWX, Vancouver, British Colombia	6080			
2000-2100		CFRB, Toronto, Ontario	6070			
2000-2100		(US) Far East Network, Tokyo	3910			
2000-2100		King of Hope, Southern Lebanon	6280			
2000-2100		KYOI, Saipan	9465			
2000-2100		Radio Baghdad, Iraq	7280			
2000-2100		Radio Havana Cuba	11800			
2000-2100		Radio Jordan, Amman	9560			
2000-2100		Radio Kuwait, Kuwait	11665			
2000-2100		Radio Malabo, Equatorial Guinea	9553v			
2000-2100		Radio Moscow, USSR	9765	9755	9825	9875
			11840	15135	15405	
2000-2100		Radio New Zealand, Wellington	12050	15150		
2000-2100		Radio for Peace, Costa Rica	21555			
2000-2100		Radio Riyadh, Saudi Arabia	9705	9720		
2000-2100		Radio Zambia, Lusaka	9580			
2000-2100		Superpower KUSW, Utah	15650			
2000-2100		Voice of America, Washington	9700	9760	11760	15205
			15410	15445	15580	15600
			17785	17800	17870	
2000-2100		Voice of Nigeria, Lagos	11770			
2000-2100		WCSN, Boston, Massachusetts	11680			
2000-2100		WHRI, Noblesville, Indiana	13760	17830		
2000-2100		WINB, Red Lion, Pennsylvania	15185			
2000-2100	S-F	WMLK, Bethel, Pennsylvania	9465			
2000-2100		WRNO, New Orleans, Louisiana	15420			
2000-2100		WSHB, Cyprus Creek, S. Carolina	17612.5			
2000-2100		WYFR, Oakland, California	9455	11855	15566	17612.5
2000-2100	M-A	WYFR Satellite Net, California	11830	13695	15375	
2005-2100		Radio Damascus, Syria	9950	12085		
2010-2100	A,S	Voice of Kenya, Nairobi	6100			
2015-2100		ELWA, Monrovia, Liberia	11830			
2025-2045		RAI, Rome, Italy	6165	9575		
2030-2055		Radio Polonia, Warsaw, Poland	6095	7285		



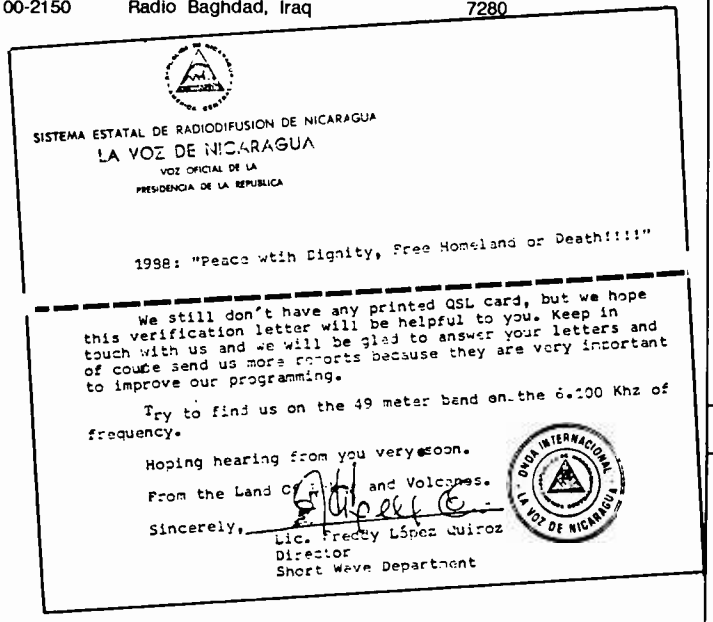
The faces of Africa -- Jacques Ahouansou of Abidjan, Ivory Coast, sends us these colorful QSLs. The one above is from Radio Diffusion Egyptienne, while the remainder are from, not a shortwave broadcaster, but from Jan Smuts Airport, South African Airways flight operations!

frequency section

2030-2100		BBC, London, England	5975	6180	7325	9410
			11750	12095	15070	15400
			15260	17760	17885	
2030-2100		Radio Australia, Melbourne	9580	9620		
2030-2100		Radio Beijing, China	6955	7480	9440	9745
			11790			
2030-2100		Radio Korea, Seoul, South Korea	6480	7550	15575	
2030-2100		Radio Netherland, Hilversum	9860	13700	15560	
2030-2100		Radio Sofia, Bulgaria	7115	7155	9700	11720
2030-2100		Radio Tirana, Albania	9480	11835		
2030-2100		Voice of Africa, Cairo, Egypt	15375			
2030-2100		Voice of Vietnam, Hanoi	9840	12020	15010	
2045-2100		All India Radio, New Delhi	7412	9550	9910	11620
			11715			
2045-2100		IBRA Radio, Malta	7110			
2045-2100		Vatican Radio, Vatican City	9625	11700	11695	15120

2100 UTC [5:00 PM EDT/2:00 PM PDT]

2100-2105		Radio Damascus, Syria	9950	12085		
2100-2105		Radio Zambia, Lusaka	3345	6165		
2100-2110		Vatican Radio, Vatican City	6190	7250	9645	
2100-2110	A,S	Voice of Kenya, Nairobi	6100			
2100-2115		IBRA Radio, Malta	7110			
2100-2125		BRT, Brussels, Belgium	5915	9925		
2100-2125		Radio Beijing, China	6955	7480	9440	9745
			11790			
2100-2125		Radio Bucharest, Romania	5990	6105	7145	7195
			9690	11940		
2100-2125		Radio Finland, Helsinki	6120	9670	11755	
2100-2125		Radio Netherland, Hilversum	9860	13700	15560	
2100-2130	S	Radio Austria Int'l, Vienna	5945	6155	9585	9870
2100-2130		Radio Budapest, Hungary	6110	9535	9535	11910
			15160			
2100-2130		Radio Japan, Tokyo	5965	7140	7280	17835
2100-2130		Radio Korea, Seoul, South Korea	6480	7550	15575	
2100-2130		Radio Sweden, Stockholm	6065	9655		
2100-2130		Swiss Radio Int'l, Berne	9885	13635	15570	
2100-2135		ELWA, Monrovia, Liberia	11830			
2100-2145		Radio Yugoslavia, Belgrade	5980	7130	9620	9660
2100-2145		WYFR, Oakland, California	5950	9455	11855	17612
			17845			
2100-2150		Radio Baghdad, Iraq	7280			



SISTEMA ESTATAL DE RADIODIFUSION DE NICARAGUA
LA VOZ DE NICARAGUA
VOZ OFICIAL DE LA
PRESIDENCIA DE LA REPUBLICA

1988: "Peace with Dignity, Free Homeland or Death!!!!"

We still don't have any printed QSL card, but we hope this verification letter will be helpful to you. Keep in touch with us and we will be glad to answer your letters and of course send us more reports because they are very important to improve our programming.

Try to find us on the 49 meter band on the 6.100 Khz of frequency.

Hoping hearing from you very soon.

From the Land of [illegible] and Volcanoes.

Sincerely,

Lic. Freddy López Quiroz
Director
Short Wave Department

ONDA INTERNACIONAL LA VOZ DE NICARAGUA

We thought you'd like to see a fragment of the QSL letter received by Alan Reymant of Nelson, Canada. La Voz de Nicaragua sends its "revolutionary greetings"!

2100-2200		WYFR Satellite Net	11830	13695	15375	
2100-2150		Deutsche Welle, West Germany	7130	9765	13780	
2100-2155		Radio Beijing, China	6860	9470	9860	
2100-2200	M-A	ABC, Alice Springs, Australia	2310	[ML]		
2100-2200		ABC, Katherine, Australia	2485			
2100-2200	M-A	ABC, Tennant Creek, Australia	2325	[ML]		
2100-2200		All India Radio, New Delhi	7412	9910	11620	11715
2100-2200		BBC, London, England	3995	5975	6005	6175
			6180	7325	9410	11785
			12095	15070	15260	15400
			17760	17885		
2100-2200		CBC Northern Quebec Service	9625	11720		
2100-2200		CBN, St. John's, Newfoundland	6160			
2100-2200		CBU, Vancouver, British Colombia	6160			
2100-2200		CFCF, Montreal, Quebec	6005			
2100-2200		CFCN, Calgary, Alberta	6030			
2100-2200		CHNS, Halifax, Nova Scotia	6130			
2100-2200		CKWX, Vancouver, British Colombia	6080			
2100-2200		CFRB, Toronto, Ontario	6070			
2100-2200		(US) Far East Network, Tokyo	3910			
2100-2200		King of Hope, Southern Lebanon	6280			
2100-2200		KSDA, Agat, Guam	7365	15125		
2100-2200		KVOH, Rancho Simi, California	17775			
2100-2200		KYOI, Saipan	9465			
2100-2200		Radio Australia, Melbourne	15160	15240	15395	17795
2100-2200		Radio Jordan, Amman	9560			
2100-2200		Radio Moscow, USSR	5905	6055	7150	7170
			7290	9505	9515	9590
			9620	9625	9730	9765
			9780	9790	9800	9820
			9840	9875	11840	12030
			12050	15405	15425	17720
2100-2200	A,S	Radio Malabo, Equatorial Guinea	9552.5			
2100-2200		Radio for Peace, Costa Rica	21555			
2100-2200	A,S	Radio Zambia, Lusaka	9580			
2100-2200		Spanish National Radio, Madrid	9765	11790		
2100-2200	M-A	Superpower KUSW, Utah	15650			
2100-2200		Voice of Africa, Cairo, Egypt	15280			
2100-2200		Voice of America, Washington	9700	9760	11760	15205
			15410	15445	15580	15600
			17785	17800	17870	
2100-2200		Voice of Free China, Taiwan	9852.5	11805		
2100-2200		Voice of Nigeria, Lagos	15120			
2100-2200		WCSN, Boston, Massachusetts	11680			
2100-2200		WHRI, Noblesville, Indiana	9770	17830		
2100-2200		WRNO, New Orleans, Louisiana	15420			
2100-2200		WSHB, Cyprus Creek, S. Carolina	17750			
2103-2200		WINB, Red Lion, Pennsylvania	15185			
2110-2200		Radio Damascus, Syria	9950	12085		
2115-2200		Radio Cairo, Egypt	9900			
2125-2155	S	Radio Austria Int'l, Vienna	9870			
2130-2145		BBC, London, England*	5965	7160		
2130-2200		BBC, London, England*	6030	7230	9635	
2130-2200		HCJB, Quito, Ecuador	15270	11790	17790	
2130-2200		Kol Israel, Jerusalem	9010	9435	11605	
2130-2200	A,S	Radio Canada Int'l, Montreal	11880	15150	17820	
2130-2200		Radio Sofia, Bulgaria	9700	11720		
2130-2200		Radio Vilnius, Lithuanian SSR	6100			
2135-2150	S-F	ELWA, Monrovia, Liberia	11830			
2145-2200		Radio Berlin Int'l, East Germany	6125	9730		
2150-2200	M-F	ELWA, Monrovia, Liberia	11830			

2200 UTC [6:00 PM EDT/3:00 PM PDT]

2200-2205	M-F	ELWA, Monrovia, Liberia	3993	11830		
2200-2205		Radio Damascus, Syria	9950	12085		
2200-2210	M-H	Port Moresby, Papua New Guinea	3925	4890	5960	5985
			6020	6040	6080	6140
			9520			
2200-2210		Radio Sierra Leone, Freetown	5980			
2200-2215	M-A	ABC, Alice Springs, Australia	2310	[ML]		
2200-2215	M-A	ABC, Tennant Creek, Australia	2325	[ML]		
2200-2215		BBC, London, England*	5965	7160		
2200-2215	M-F	Voice of America, Washington	9640	11740	15120	
2200-2225		RAI, Rome, Italy	5990	9710		

frequency section

2200-2225		Vatican Radio, Vatican City	6015	9615	11830	
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	S	Radio Austria Int'l, Vienna	9870	11780		
2200-2230		Radio Beijing, China	3985	6165		
2200-2230		Radio Berlin Int'l, East Germany	6125	9730		
2200-2230		Radio Jordan, Amman	9560			
2200-2230	S	Radio Norway Int'l, Oslo	9605	11850		
2200-2230		Radio Prague, Czechoslovakia	6055			
2200-2230		Radio Vilnius, Lithuanian SSR	9765	9860	13645	15180
			15455			
2200-2245		BBC, London, England	3955	5975	6175	6180
			6195	7325	9410	9590
			9915	11920	12095	15070
			15260	15400		
2200-2245		Radio Cairo, Egypt	9900			
2200-2250		Voice of Turkey, Ankara	7160	9445	9680	
2200-2255		RAE, Buenos Aires, Argnetina	11710	15345		
2200-2300		CBN, St. John's, Newfoundland	6160			
2200-2300		CBU, Vancouver, British Colombia	6160			
2200-2300		CFCF, Montreal, Quebec	6005			
2200-2300		CFCN, Calgary, Alberta	6030			
2200-2300		CHNS, Halifax, Nova Scotia	6130			
2200-2300		CKWX, Vancouver, British Colombia	6080			
2200-2300		CFRB, Toronto, Ontario	6070			
2200-2300		(US) Far East Network, Tokyo	3910			
2200-2300		King of Hope, Southern Lebanon	6280			
2200-2300		KVOH, Rancho Simi, California	17775			
2200-2300		KYOI, Saipan	15405			
2200-2300		Radio Australia, Melbourne	15160	15240	15320	15395
			17795	21740		
2200-2300		Radio Canada Int'l, Montreal	9760	11945		
2200-2300		Radio for Peace, Costa Rica	13665			
2200-2300		Radio Havana Cuba	7140			
2200-2300		Radio Moscow, USSR	9685	9720	9780	11690
			11735	17570	17605	17700
2200-2300		Radio Moscow North American Svc	6045	6170	7115	7150
			7195	7215	7310	9530
			9720	9765	12050	13605
			15405	15245	15425	17605
			21530			
2200-2300		Radio Sofia, Bulgaria	9700	11720		
2200-2300		SBC Radio One, Singapore	5010	5052	11940	
2200-2300	M-A	Superpower KUSW, Utah	15580			
2200-2300		Voice of America, Washington	11760	15185	15290	15305
			15320	17735	17740	17820
			18157	USB		
2200-2300		Voice of the UAE, Abu Dhabi	6170	9595	11965	
2200-2300		WCSN, Boston, Massachusetts	9495			
2200-2300		WHRI, Noblesville, Indiana	9770	17830		
2200-2300		WINB, Red Lion, Pennsylvania	15185			
2200-2300		WRNO, New Orleans, Louisiana	15420			
2200-2300		WSHB, Cyrus Creek, S. Carolina	17640			
2200-2300		WYFR, Oakland, California	11830	11855	13695	15375
			17612	17845		
2215-2230		BBC, London, England*	11820	15390		
2230-2300	A,S	CBC Northern Quebec Service	9625	11720		
2230-2300		Radio Austria Int'l, Vienna	9870	11780		
2230-2300		Radio Mediterran, Malta	6110			
2230-2300		Radio Polonia, Warsaw, Poland	5995	6135	7125	7270
2230-2300		Radio Sweden, Stockholm	11925	SSB		
2230-2300		Radio Tirana, Albania	7215	9480		
2230-2300		Swiss Radio Int'l, Berne	6190			
2245-2300		All India Radio, New Delhi	6055	7215	9535	9910
			11715	11745		
2245-2300		BBC, London, England	3955	5975	6175	6195
			7325	9410	9570	9590
			9915	11785	11945	12095
			15260	15400	17875	

2300 UTC [7:00 PM EDT/4:00 PM PDT]

2300-2315		BBC, London, England	3955	5975	6175	6195
			7325	9410	9590	9915
			11945	12095	15070	15260
2300-2330		Kol Israel, Jerusalem	7465	9385	9435	
2300-2330		Radio Canada Int'l, Montreal	9755	11730		
2300-2350		Radio Pyongyang, North Korea	13650			
2300-0000		Radio Luxembourg	6090			
2300-2330		Radio Mediterran, Malta	6110			
2300-2330		Radio Sofia, Bulgaria	9700	11720		
2300-2330		Superpower KUSW, Utah	15580			
2300-2345		WINB, Red Lion, Pennsylvania	15185			
2300-2345		WYFR, Oakland, California	5950	9505	15440	
2300-0000		All India Radio, New Delhi	6055	7215	9535	9910
			11715	11745		
2300-0000		CBC Northern Quebec Service	9625	11720		
2300-0000		CBN, St. John's, Newfoundland	6160			
2300-0000		CBU, Vancouver, British Colombia	6160			
2300-0000		CFCF, Montreal, Quebec	6005			
2300-0000		CFCN, Calgary, Alberta	6030			
2300-0000		CHNS, Halifax, Nova Scotia	6130			
2300-0000		CKWX, Vancouver, British Colombia	6080			
2300-0000		CFRB, Toronto, Ontario	6070			
2300-0000		(US) Far East Network, Tokyo	3910			
2300-0000		KVOH, Rancho Simi, California	17775			
2300-0000		KYOI, Saipan	15405			
2300-0000		Radio Australia, Melbourne	15160	15240	15320	15395
			17795	21740		
2300-0000		Radio for Peace, Costa Rica	21555			
2300-0000		Radio Japan, Tokyo	11800	15195	17810	
2300-0000		Radio Moscow	7295	7440	9625	9790
			9840	11690	15420	17570
			17655	21790		
2300-0000		Radio Moscow, (N. American Srvc)	7195	7215	7310	9685
			9720	9765	11735	12050
			15405	15245	15425	17605
			17700	17720	21530	
2300-0000		Radio Polonia, Warsaw	5995	6135	7125	7270
2300-0000		Radio Thailand, Bangkok	9655	11905		
2300-0000		Voice of America, Washington, DC	15290	17735	17820	18157
			USB			
2300-0000		Voice of the UAE,	6170	9595	11965	
2300-0000		WCSN, Boston, Massachusetts	9495			
2300-0000		WHRI, Noblesville, Indiana	9770	17830		
2300-0000		WRNO, New Orleans, Louisiana	15420			
2315-2330		BBC, London, England*	11820	15390		
2315-0000		BBC, London, England	5975	6005	6175	6195
			7325	9515	9590	9915
			11945	12095	15260	15435
			17875			
2330-0000	M-A	Radio Budapest, Hungary	6110	9520	9585	9835
			11910	15160		
2330-0000		Radio Kiev, Ukrainian SSR	9765	13240	13645	15180
			15455	17665		
2330-0000		Radio Korea, Seoul, South Korea	15575			
2330-0000		Radio Tirana, Albania	7065	9760v		
2330-0000		Voice of Vietnam, Hanoi	9840	12020	15010	
2330-2355	M-A	BRT, Brussels, Belgium	9925			
2335-2345	M-A	Voice of Greece, Athens	7430	9905		
2345-0000		BBC, London, England*	3915	6080	7180	9580
2345-0000		Radio Berlin Int'l, Eaast Germany	6080	11890		
2348-0000		WINB, Red Lion, Pennsylvania	15145			

Did we miss something?

Let us know your corrections and additions by sending them to frequency manager Greg Jordan at 1855-I Franciscan Terrace, Winston-Salem, NC 27127.

Send us your special QSLs or good photocopies to share with other readers as we have space; We'll copy and return them to you within the month. Send to QSL, P.O. Box 98, Brasstown, NC 28902.

Lawrence Magne

Editor-in-Chief
Passport to World Band Radio

A Preview of the

Grundig Satellit 500

For some years now, Sony has had the high-end of the world band portable market all but cornered with its excellent ICF-2010, which is sold outside North America as the ICF-2001D. This near-monopoly is about to come to a screeching halt.

As of this April -- March in Europe -- the West German firm of Grundig is introducing its new Satellit 500 portable. The '500 is obviously intended to do all the things the Sony '2010 does, but to do them more easily... and sometimes better, too.

We've managed to lay our hands on a pre-production sample of this forthcoming model. Even though Grundig tells us that the final version is to be improved over what we tested, the results already point to a receiver that's opening the door to a whole new generation of world band receivers that are truly portable and easy to operate, yet perform very nearly as well as do complex tabletop communications receivers.

High-Tech Circuit to Reduce Interference

For example, until now there has been no world band receiver except the '2010 in the consumer marketplace with synchronous detection, which can reduce or even eliminate adjacent-channel interference. Now, the '500 has this high-tech circuit, and it's very different from the one on the '2010. We'll get back to this important subject in a moment.

A What's What of Features

The rest of the features read like a radio nut's wish list. There's all the hoped for station-selecting features, from keypad tuning to 42 programmable channel memories -- from scanning to the humble but important tuning knob.

Additionally, there's single-sideband reception, stereo FM, a digital signal-strength indicator, a two-event timer that also turns your tape recorder on and off, two 24-hour clocks, a lock to prevent the power from going on in your baggage... plus separate bass and treble controls to shape the audio. And if you spend your weekends cruising aboard George Bush's runabout, you'll appreciate the pre-tapped screw holes that allow the '500 to be affixed to a solid surface, such as a table or deck.

Power is via four "D" batteries, and should you wish to use NiCd cells, you'll be pleased to find that the '500 has a built-in battery charger. There's also an outboard ac power supply with worldwide 120/240 voltage.

The '500 has other nice little touches, too. For example, a night light illuminates not only the liquid-crystal display, but also the keypad. There's even a smoked-grey Plexiglass dust cover, similar to those used on some IBM PC keyboards, that snaps over the front panel. This doesn't just keep the dust out, it also helps protect the radio from damage when you're toting it about.

Displays Station Name

Of course, you expect a good set -- especially one that's going to list for $599 in the US -- to have goodies like these. But what about a display that not only gives the frequency, channel number and all the usual stuff... but also the name of the station you're listening to?

The '500 actually has this, at least for all the stations you can cram into its 42-channel memory bank. And it's more than a gimmick -- having a real station name instead of a jumble of strange numbers is a practical step forward. This is such an obvious and sensible idea that you can't help but wonder why someone hasn't done it before.

Something else that has rarely been done before is for receiver manufacturers to preset their radios to popular channels. When I talked earlier with Grundig's engineers, they planned to incorporate a read-only-memory (ROM) chip in the "Professional" version of the '500 that's sold in Germany. This chip would allow primary Deutsche Welle frequencies to appear at the touch of a button; but, because these frequencies would be permanently programmed into the ROM, you wouldn't ever be able to change them.

It's too early to tell whether this innovation will actually appear, but there's certainly nothing about it in the '500's instruction manual... and our sample didn't have this feature.

A "Movado Museum" Radio?

One other thing that hasn't been done before is to design a sophisticated world band radio that is genuinely attractive. The Satellit 500 is a real beauty, sleek and elegant -- not at all boxy, "techy" or gadgety like most other world band radios. With the dust cover affixed, it looks for all the world like a radio version of the stylish Movado Museum watch.

Superior Performance

For a set in this price range, performance is the bottom line. Happily, the '500 makes a commendable showing here, as well.

I should preface this by pointing out that the set tested by *Passport*'s laboratory and panel of users is a pre-production unit. It's very nearly the final product, but it is still not fully equal to what we can expect from final production, which will have gotten underway at the Grundig plant in Portugal by the time you read this.

For example, when our pre-production unit was turned back on, it wouldn't return to the last tuned frequency as the production version is designed to do. So our findings on this set should not be taken as The Last Word.

Outperforms Tabletops in Some Respects

We put the '500 through the *Passport* maze of lab tests, and were taken aback to find that in certain respects the '500 outperforms not only all other portables on the market, but even most tabletop communications receivers.

Take ultimate selectivity, for example. Good ultimate selectivity helps you tune in a weak station when it's situated on a channel next to a very powerful station.

We measured ultimate selectivity at between -80 and -85 dB -- a truly remark-

able figure for any set, and nothing short of astonishing for a portable. The $1,295 Japan Radio NRD-525's ultimate selectivity, for example, is only a relatively modest - 65 dB.

Front-end selectivity, which helps prevent internally-generated sources of interference, is also unusually good, thanks to the '500's use of a self-tracking preselector. You expect to find these sorts of things on professional communications receivers costing thousands of dollars; you don't expect to find them on consumer portables costing hundreds.

Most of the rest of our lab measurements of the '500 were clearly above average, with few being average or below. For example, the dynamic range and third-order intercept points of the '500 are generally superior to those of the $7,995 Japan Radio NRD-93 -- although the comparison is somewhat misleading for, as we shall see, there is quite a difference in the sensitivity levels of these two models.

Sensitivity Only Fair with External Antenna

With its built-in telescopic antenna, the '500's "real world" sensitivity -- what you can hear -- is reasonably good, nearly equal to that of the Sony ICF-2010. But it's only fair with an external antenna. This is especially noticeable within the 3.2- 3.4 MHz 90 meter tropical segment, which is much more lively on the '2010 than it is on the '500. Most people don't listen to that band, but DXers do. If you're into serious DX, this may be an important consideration.

Fortunately, this is the sort of thing that can be remedied, if Grundig so chooses, before production gets too far underway.

Two Shortwave Bandwidths

But back to the good stuff. One of the drawbacks of Sony's '2010 is that its wide bandwidth is so broad that it's all but useless for world band listening. Not so with the '500. We measured its wide bandwidth as being 5.5 kHz, as opposed to the '2010's 9.4 kHz.

Your ears quickly appreciate the difference. In effect, the '500 has two useful shortwave bandwidths -- 5.5 and 4.0 kHz -- whereas the '2010 has only one, 4.3 kHz.

Synchronous Detection Foolproof to Use...

Another of the drawbacks of the '2010 is that its particular synchronous detector, although it works very well, is not easy to master. Synchronous detection allows you to listen to just one of a station's two transmitted sidebands, which means that in many cases interference can be reduced or even eliminated altogether.

With the '500's synchronous detector, there are no strange tuning techniques, buttons to push or indicators to watch. Indeed, the '500's synchronous detector circuit, unlike that of the '2010, is always on. (The so-called "synch" button simply acts to change the tuning rate from 1.0 to 0.1 kHz and *vice versa*.)

Making use of the synchronous detector is a snap. If you hear too much noise from a channel adjacent to the station you're trying to pick up, then you simply use the regular tuning knob to detune the receiver away from the interference by a kilohertz or two. That's all there is to it.

Of course, you can do this with any ordinary radio, but you'll get distorted audio and exaggerated "s" sounds. With the '500, when you detune like this you get reduced interference, but no added distortion or other audio dysfunctions.

...but Doesn't Eliminate Fading Distortion

There is a price, besides money, to be paid for this remarkable convenience. Although analysis of the '500's circuitry shows that it does indeed have a genuine synchronous detector, this circuit is arranged such that it acts essentially as a synchro-phase detector.

Veteran listeners may recall that a synchro-phase detector was used in the venerable Drake R-7 and R-7A communications receivers. While the '2010's synchronous detector eliminates the distortion produced by selective fading, a synchro-phase detector -- or the variation of synchronous detection found on the '500 -- doesn't.

Weak Heterodyne Sometimes Audible

As we now know, to take advantage of the benefits of the '500's synchronous detector, you have to tune away slightly from the true operating frequency of the station you're trying to hear. But there's a rub in all this that is hopefully a pre-production phenomenon.

When you detune the receiver in this manner while listening to a strong station, a weak whistle, called a "heterodyne," is sometimes audible. We ran into this phenomenon once before with the initial version of the Drake R-7, but it was cleared up in early production by the manufacturer. Hopefully, we'll find the same thing when we test the production version of the '500 for our forthcoming *RDI White Paper* on the Grundig Satellit 500.

Overall Distortion only about Average...

At *Passport*, we measure overall distortion -- that which results after a signal has passed through *all* the circuits, not just the audio stage.

In the synchronous AM mode, the '500's overall distortion is somewhat higher than we had expected, ranging from as little as 2% at certain audio frequencies to as high

(Cont'd on page 96)

Wilson 1000 Mobile Antenna

I was looking for a decent mobile antenna to hang onto my Uniden 2510, when I saw an advertisement for a "Wilson 1000." The ad said "guaranteed to outperform any CB mobile antenna or your money back." The company claimed the antenna would perform from CB to ten meters -- "no problem." And they said the antenna was ideal with the Uniden 2510.

The name was familiar, because my tri-band yagi is a "Wilson." It's about 16 years old and still going strong. So I figured this antenna had to be worth a try. A quick call to the manufacturer produced real disappointment for they were out of antennas. I placed my order for one and waited impatiently for over three weeks until a UPS truck stopped by and dropped a box about five feet long from "Wilson Antenna Co." at my door!

The Bare Facts

A few rips and a tear or three (along with a lot of grunts) finally laid the "Wilson 1000" bare at my feet! The base mount was an attractive black with a stainless steel tube about four inches long protruding from the center. About a half inch from the top two 10-32 stainless screws hold the whip in place. I had ordered the magnetic mount style antenna (they come in trunk mount and chop-a-hole-in-the-roof style mounts too). The magnet is huge and strong! Use care when you put this baby down on the car because it will be sucked right out of your hand! A twelve foot length of coax is molded into the base and an SO-239 is attached to the other end.

The instructions said that if you want to work the CB band, insert the stainless steel whip one inch into the base and tighten the screws. Additionally, the instruction sheet indicated it was not necessary to check the SWR, but you could if you wanted to. I did! What I found was that the SWR was well under 2:1 on both ends of the Citizens Band.

CB Testing

Since the ad claimed the antenna worked well from CB to ten meters, I called one of my CB friends (Clair Werley) to come over and try the antenna on his mobile CB rig (Cobra). Clair runs a quarter wave whip on CB, so we thought this would be the real acid test. Using the whip, Clair made contact with nine stations he normally works on CB. We parked his pickup in the center of a field and gathered reports from all nine stations. It was found that in order for the signal to be reliable on several of the stations participating in the test, the front of the pickup had to be pointed more or less at the station being worked, when the quarter wave whip was used.

The next step was to remove the quarter wave antenna and mount the "1000" in the center of the truck's roof. Then reports were asked for from all stations. In each case the stations reported from 1 to 5 units superior results from the "1000." This time it did not matter which way the truck was aimed. Not bad! After we had completed testing, a station who had been monitoring the test but did not call in because he could not hear Clair while he was using the whip called him to say his signal was Q5 with the 1000 while it was inaudible with the quarter wave antenna! (Clair ordered a "1000" the same day").

How's It Work on Ten?

Ok, on to ten meters. "Wilson" suggests cutting one inch from the whip (bottom) and adjusting for best SWR between Channel 40 (CB) and 28.5 MHz. Since my interest was in operating above 28.5, I whacked three inches off the bottom and jammed the whip fully into the mount. I expected to do some pruning and messing to get the antenna resonant in the area of interest and was surprised to find that the SWR was under 2:1 across the entire ten meter band!! At 29.7 the Meter showed exactly 2:1 and on the CW end of the band the match was 1:1.

It took about half an hour to hook the Uniden to the battery and attach the antenna. Tuning the ten meter band I heard IK2GDV (Italy). He responded to my first call and gave me a 5 X 6 report. A few minutes later DK8KI (Germany) gave me a similar report. Deciding to see how the rig worked in motion, I drove about fifty miles and in the course of the drive worked VE5RB (Saskatchewan) for about 25 minutes with solid reports each way.

Next came K7JUT/KL7, who was directing traffic for a thousand mile dog sled race in Alaska. I also worked AL7IF, the special events station for the race. Stopping to show a ham friend the new set up, I worked CX5CG (Uruguay), then had a 20 minute QSO with WB0NMA in Colorado springs while on the way to visit still another ham. Leaving his home I chatted with K5REP on FM for another 15 minutes.

By the end of the second day of use, I had worked stations in twelve countries, eight states and four continents. Many mobile to mobile contacts were made and I managed several QSO's of more than half hour with stations in Europe and on the west coast of the USA. This rig sure is making my one hour drive to work seem worthwhile and a heck of a lot of fun!

Why Does It Work So Well?

Wilson has effectively reduced dielectric loss in this antenna by suspending the coil in air. It is supported at four small points 90 degrees apart which in effect eliminates 95% of the plastic from the inside surface of the coil. Resistive losses in the coil were reduced by using ten gauge copper wire and heavily silver plating it (very expensive). The coil is direct matched to the coax; which eliminates lossy matching capacitors. The result is a mobile antenna that will easily handle 1500 watts, presents a terrific match, is strong as an ox and will kick every other antenna of its type in the pants to boot!

I *Like* It

I could not find a single fault with this antenna (except that it has spoiled me for using any other type of antenna). I hope Wilson will continue development along this line and produce mobile antennas for other bands that work like the "1000."

The WILSON 1000 is available from local CB stores. Or you can call Wilson direct at (800) 541-6116 to find out where your nearest dealer is located. Like me, you will like this antenna!

-- Ike Kerschner

The Carolina Windom

The Windom antenna is one of the first multiband antennas designed for amateurs and SWL's. The basic antenna is fed off center to obtain an adequate match across some portion of the short wave bands (amateur). Over the years this antenna has been modified many times in an effort to improve performance. The Radio Works has pretty much re-designed the Windom to produce what is known as the "Carolina Windom."

The only thing these two antennas have in common is the fact that they are both fed off center. The Radio Works has incorporated a matching unit at the antenna and a line isolator at the end of a length of coax to improve the match across the ham bands.

The Radio Works claims this 132 foot long antenna to be as good as a beam antenna on some bands. In an effort to prove this we

erected a "Carolina Windom" at our location.

One end of the antenna was installed at the 75 foot level on my east tower and sloped to 50 feet above ground on the other end, the antenna runs NE/SW.

Initial efforts to load the antenna with the automatic antenna matcher in my Kenwood 940 proved futile except on 20 meters where a decent match was obtained. (Radio Works specifically states that a tuner must be used). Putting my Dentron (manual) tuner in the line allowed the antenna to load nicely on all bands. Several weeks of operation proved the antenna to be a knock-out performer on 40 meters and it did a very good job on 75 meters. Results on 20, 15 and 10 were good to excellent.

On 40 meters WAC was easily obtained in a few days of operation. Three weeks on this band netted a total of 82 countries. Stations all over North America were easily worked on 75 meters. Several European contacts were made and several countries in South America were worked on 75 SSB and 80 CW.

On twenty meters coverage seemed decent to all directions with best results to the north east (Europe). Fifteen meter results were very good with strong lobes into Europe, and Africa and many contacts into Oceania and Asia. Ten meter performance was excellent, strong lobes in many directions allowed me to work over one hundred countries during a one weekend period.

Power to the antenna averaged 100 watts for most contacts. I was a bit fearful of operating at full legal limit as the matching section of coax between the isolator and matcher did not seem heavy enough to carry a full gallon. During a 75 meter QSO I was assured that the antenna would indeed handle the full load so I gave it a try. The antenna did indeed hold up under full power (1500 watts).

I have a two element Hy-Gain tri-band beam mounted on my roof (40 feet above ground) so decided to see how this antenna performed against the Carolina Windom on 20, 15 and 10 meters.

In the favored direction on 20 meters (NE) signals from the windom were roughly equal to the beam, to the south there was little noticeable difference between the two but on signals from Asia and Oceania the windom would be inaudible while the two element yagi would get through.

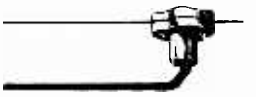
On 15 meters results were quite different with the windom being nearly always equal to the beam on transmit; however, the ability to turn the beam was a distinct advantage on receive.

On ten meters the advantage of the beam's side rejection and front to back ratio was not nearly as noticeable. Signals from all directions seemed to be as strong on the beam as the windom, so the beam was not to any great advantage on ten meters except when it came to long path DX. Most of the time signal reports were superior on the Carolina Windom.

In general the Carolina Windom is an excellent buy and will perform well on all bands if you use an antenna matching unit with it. At a price of $69.95 it is a very good choice for the ham who wants to work DX on the higher frequencies and cannot afford a beam. The Radio Works, Box 6159 Portsmouth VA 23703

-- Ike Kerschner

Grove Ant2 Skywire



True, a random wire strung over a tree will bring in worldwide shortwave reception, but a properly designed antenna will do the job better. What is the difference? A wire is "random" only in the sense that it was not engineered for the job. It still exhibits specific characteristics in terms of resonant frequency, feedpoint impedance and directivity.

There are several excellent wire antennas presently on the market intended for shortwave reception, including the Alpha Delta "Sloper" and the Antenna Supermarket "Eavesdropper." The most recent entry is the economy-priced "Skywire" from Grove Enterprises. Since competitive shortwave antennas are priced as high as $60-80, we were interested in seeing just how well this $19 antenna would work.

The Skywire consists of 66 feet of stranded copper wire soldered to a standard SO239 coax connector housed in a weatherproof insulator. Two porcelain insulators are provided for end support and complete instructions are included. Coax cable is not included.

Unlike trap antennas which are specifically designed to shine on the international broadcast bands, but fall down on other frequency ranges, the Skywire is advertised to receive all shortwave frequencies well.

The comparison antenna was the Grove 134-foot transmitting dipole, basically a Windom configuration elevated at approximately 25 feet and matched for 2-30 MHz transmitting and receiving. The Skywire was elevated at approximately 20 feet and fed with standard RG-58/U coaxial cable.

Switching between antennas, signals in the 2-30 MHz spectrum were compared; the Skywire consistently displayed signal strengths close to those delivered by the big Windom. In virtually no cases were signals down more than a few decibels.

Because there are no frequency-limiting coils, traps or transformers in the Skywire, its use may be extended into the VHF range. Connected to a scanner, signals in the 30-50 MHz low band came in much stronger than when heard on a conventional scanner antenna.

Although the antenna is a lightweight, the manufacturer claims that reports of breaking have been exceedingly rare, even during severe storms. Nonetheless, we would recommend that owners of the Skywire and any other suspended wire dipoles leave some minor slack in the line to endure ice and wind loading.

Some Theory

The Skywire is connected directly by coax at the "Windom feedpoint." Loren Windom (recently deceased), W8GZ, developed his antenna in the 1930's, connecting a single-wire feedline to a point 36% of the distance from one end of a half-wave wire antenna.

Impedance is estimated at this point to be approximately 400 ohms at the fundamental frequency and on even harmonics. A 3.5 MHz antenna will work without additional tuning at 7, 14, 21 and 28 MHz, thus the obvious attraction to radio hams.

While it would seem that a 400 ohm antenna connected to 50 ohm coax should create a terrible mismatch, in our tests no signal degredation was noticed. For transmitter applications, however, a tuner (transmatch) is mandatory for such wide frequency excursions.

There is nothing magical about the Grove Skywire. Its design is straightforward and the instructions suggest a number of possible configurations for mounting -- inverted V, flattop, sloper, L, and others as well.

A clever suggestion in the instructions increases signal strengths at frequencies below approximately 3 megahertz. Disconnecting the shield of the coax at the receiver by unscrewing the barrel of the PL259 connector and pulling it slightly away from the SO239, allows the entire feedline to be added to the Skywire elements to increase the effective antenna length. This trick may be used with any antenna.

All manufacturers have their retinue of faithful clients who happily report that their new product is better than anything competitive they have tried, and the Grove Skywire is no exception. Thousands of Skywires are in use and we concur; our test unit performed most satisfactorily.

The ANT2 Skywire is available for $19 plus $2 shipping from Grove Enterprises, PO Box 98, Brasstown, NC 28902.

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

Doug DeMaw

P.O. Box 98
Brasstown, NC 28902

TRANSISTOR AND CRYSTAL TESTERS YOU CAN BUILD

How many times have you wondered if a transistor or crystal you had on hand was defective? The worst time to start worrying is when it's already part of a circuit you're building.

You can avoid that sort of headache by building one of these simple, inexpensive testers. It'll only take a couple of hours and they'll give you years of use if you're the sort of person who likes to experiment or repair your own radios.

A Simple Crystal Tester

A battery-operated crystal test set can be used for a number of applications. Take for example those jaunts through a radio flea market. You chance upon a table that has a box of crystals at a bargain price per unit. Are these crystals OK? As they say, "Let the buyer beware." How convenient it would be if you had a portable crystal tester for checking the crystals you wish to purchase. The circuit in Fig. 1 makes this possible.

Now, let's imagine that we are in our workshop and we want to measure the operating frequencies of some crystals we have purchased. It is a simple matter to pop the crystals into our tester and connect a frequency counter to the test point specified in Fig. 1. Sometimes it's necessary to select two or more crystals that are very close in frequency; e.g., when building homemade IF (intermediate frequency) filters. The test oscillator and frequency counter make this possible. A well calibrated communications receiver may be used in lieu of a frequency counter if you listen to the oscillator signal.

How about other uses for your crystal tester? There are many times when an experimenter needs a signal generator for aligning a receiver. You can insert a crystal of the appropriate frequency in the little tester and proceed with the peaking of your receiver trimmers or adjustable coils. If you are thinking about becoming a ham, you can use the oscillator for code practice by inserting a key jack in the emitter or source lead of the oscillator (depending upon which tester you build). The oscillator signal can be monitored with a receiver when you practice sending the Morse code.

Crystal-Tester Circuit

Fig. 1 shows the circuit for our tester. The diagram at A is for a JFET (junction field-effect transistor) oscillator. Circuit B shows how to use a BPT (bipolar transistor). Both circuits operate as Pierce oscillators. There is no tuned circuit. Therefore any fundamental crystal for, say, 1 to 20 MHz can be checked. Overtone crystals (3rd or 5th) can also be checked. They will oscillate on their fundamental frequencies rather than at the overtone frequency. For example, a 30-MHz 3rd-overtone crystal or "rock" will oscillate at approximately 10 MHz in the tester. The third overtone of a crystal is seldom an exact multiple of the funda-

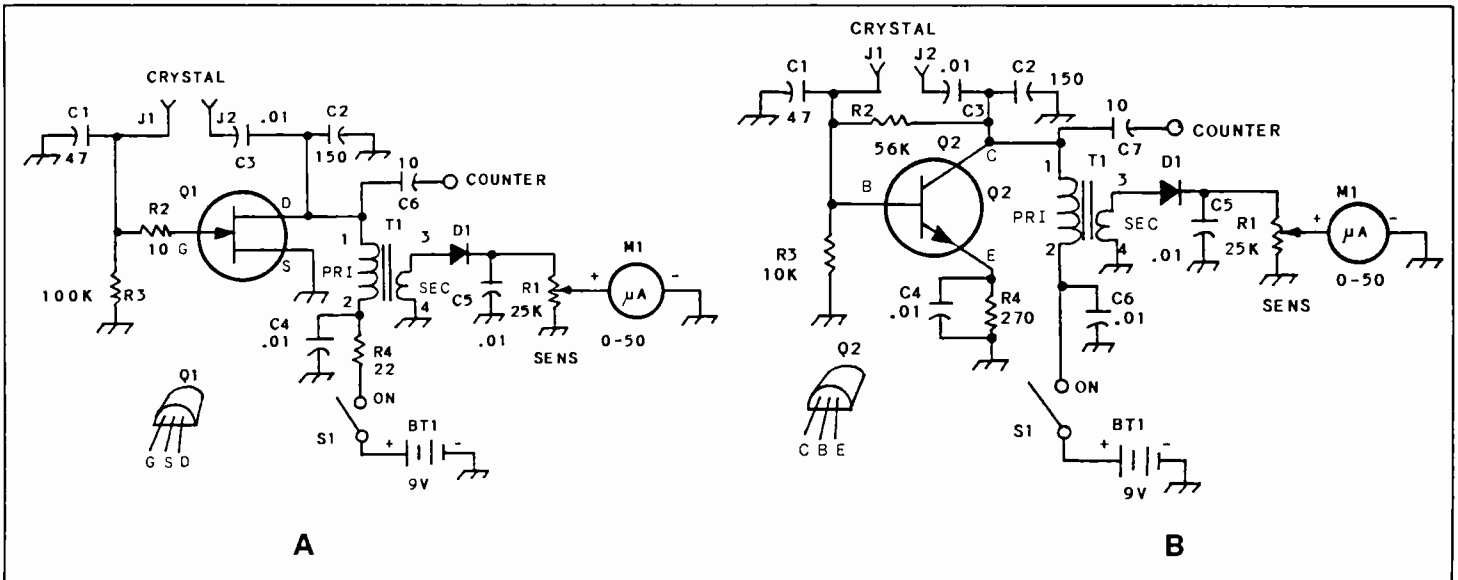


Fig 1 - Schematic diagrams of two crystal testers.

Circuit A uses a JFET and circuit B features a bipolar transistor. Decimal value capacitors are in μF. Others are in pF. Resistors are 1/4 watt carbon composition. All capacitors are disc ceramic. D1 is an 1N34A germanium diode. A 1N914 may be used also. J1 and J2 are binding posts, a crystal socket or two alligator clips mounted near Q1 or Q2. M1 is a 50 or 100 μA dc meter (see text).

Q1 is an MPF102 or 2N4416. Q2 is a 2N3904, 2N2222 or 2N4400. R1 is a panel mount carbon control. An spst toggle or slide switch may be used for S1. T1 has 20 primary turns of no. 26 enamel wire on an Amidon FT-50-61 ferrite toroid (see text). The secondary has five turns of no. 26 wire. BT1 is a transistor-radio battery. A 12-V dc supply may be used without circuit changes.

mental frequency, so don't be alarmed if your mathematics appear incorrect!

C1 and C2 of Fig. 1 provide the feedback that makes the crystal oscillate (vibrate). remember that crystals, when oscillating, vibrate. For example, a 1-MHz crystal goes through 1 million cycles or Hertz per second! You may experiment with the C1, C2 values if for some reason your oscillator doesn't work.

Broadband transformer T1 in Fig. 1 has a primary winding that acts like an RF choke. The secondary (smaller) winding provides a low-impedance take-off point for the output signal. Energy from the secondary winding is rectified by D1 to produce a dc voltage. This voltage causes the meter, M1, to deflect when oscillation takes place, thereby indicating crystal action. Sensitivity control R1 permits you to set the meter needle at midscale. A quality crystal (good activity) will deflect the needle quite high, whereas a sluggish crystal will provide a low reading. Surplus crystals in FT-243 holders may be more sluggish than are the plated crystals in metal holders.

Two circuits are illustrated in Fig. 1. You may use either one. The JFET oscillator has fewer parts, but performance will be about the same for both circuits. Any high-frequency or VHF JFET is suitable for circuit A. You may use an MPF102, 2N4416 or equivalent FET. You may also use a dual-gate MOSFET (40673, 3N211, etc.) at Q1 of Fig. 1A by tying the two gates together and using the device as a JFET. Circuit B may use any bipolar transistor that is specified for use up to the UHF range. Devices like the 2N3904, 2N2222 and 2N4400 are good choices.

Practical Considerations

Our crystal tester can be assembled on a perf board or a PC board. You may also use terminal strips as tie points by soldering the strip mounting lug to a piece of blank PC board. Keep all leads short and direct.

Package the circuit in a small project box if you plan to carry it to flea markets for crystal testing on the spot. A larger enclosure should be fine for your workshop model. Keep in mind that your version of the Fig. 1 circuit need not look like an engineer's masterpiece. It will serve you well, no matter how ugly it looks -- provided it is wired correctly!

M1 of Fig. 1 will yield the best sensitivity if it is a 50 uA (microampere) meter. A 100 uA meter will be suitable also. Most of the surplus edgewise FM tuning and S-meter units that are being sold today are 200 uA types. They can also be used, but it may not be possible to obtain full-scale meter deflection when using them with this circuit.

The toroid core for T1 is available by mail from Amidon Associates, Inc., 12033 Otsego St., North Hollywood, CA 91607 (catalog available). Do not substitute a toroid core of unknown characteristics. The wrong core can prevent the circuit from working. The FT-50-61 core specified is ferrite, 0.5 inch OD and has a permeability of 125, should you want to substitute another brand. Many of the parts for this circuit are available by mail from Oak Hills Research, P.O.B. 250, Luther, MI 49656. Send and SASE to receive a catalog.

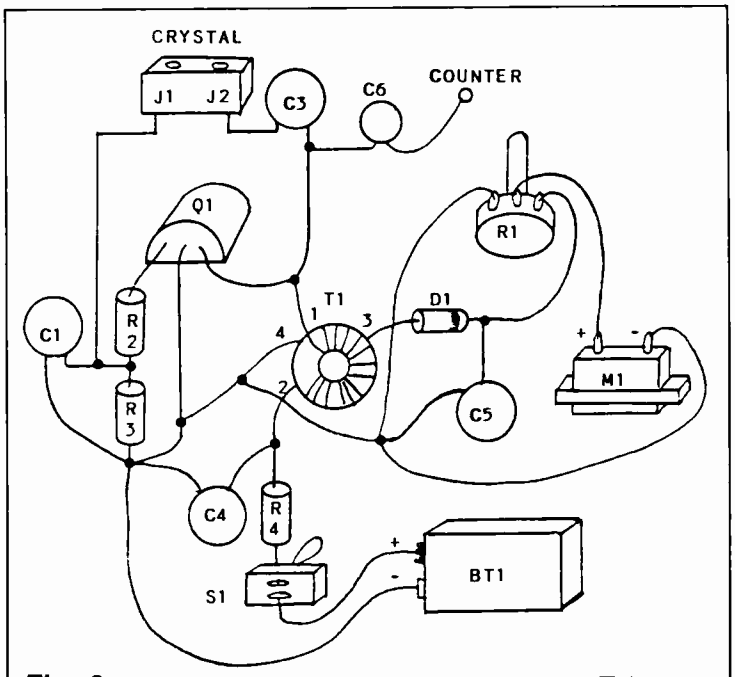


Fig. 2 -- Pictorial diagram of the circuit in Fig. 1A. This shows how the parts are connected together. Keep in mind that the component leads (except for the dc leads) must be kept much shorter than they are depicted here.

Using the Tester as a Transistor Checker

If you want to test small-signal bipolar transistors with the circuit in Fig. 1, you may install a transistor socket at Q1. The TUT (transistor under test) is plugged into the socket for evaluation. If the M1 meter deflects, the transistor is good. You will need to have a crystal plugged into the tester when checking transistors. I suggest that you use an 18 or 20 MHz crystal for this operation. Many low cost surplus crystals are available in this range. As shown, the circuit will check only NPN types of transistors. If you wish to test PNP transistors, merely reverse the polarity of BT1. A reversing switch (DPDT toggle) may be installed at BT1 for this purpose.

You can evaluate the relative gain of TUT's when grading out like-number devices. Observe the deflection at M1 (R1 left in a given position) while plugging various transistors into the tester. The greater the transistor gain the higher the meter reading. This is useful for matching transistor pairs for critical circuits, such as mixers and balanced modulators.

Tag Ends

I feel that this project is within the capability of anyone who can read a circuit or pictorial diagram. Don't be afraid! It's fun and educational.

There is no reason why the shortwave listener shouldn't gain technical knowledge to complement his or her tireless bandscanning! The pride you will experience from constructing a useful gadget cannot be measured in hours or dollars. I hope you'll give this handy tester a try!

One-Tube Receiver for Experimenters

by Chester Beck, K6DFP

This little receiver uses a single 6AH5 or 6HM5 vacuum tube. It works very well and can be operated from batteries or from the power supply circuit in the figure below.

Simple receivers like this were very popular in the '40s and '50s and can provide amazing performance even today. Try building one -- it's lots of fun and easy to construct, too.

Coil data is included for frequencies from 1.6 to 30 MHz. The parts list identifies the parts and suggests sources.

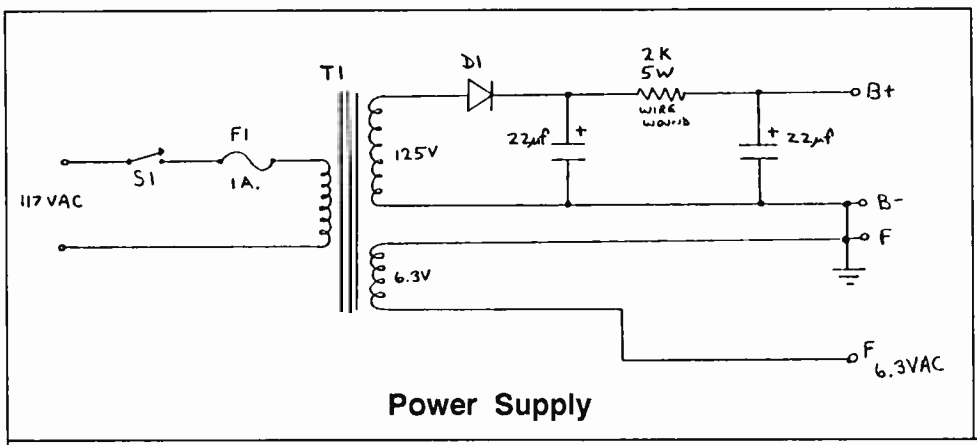
If you like to experiment, the set's performance can be improved by the addition of an RF amplifier stage which will isolate the receiver from the antenna and make it less sensitive to changes such as swaying in the wind and changes in length. An audio amplifier stage can also be added to allow speaker reception.

Monitoring Times invites you to submit your favorite projects for publication. For more information, contact technical editor Ike Kerschner at RD 1, Box 1237, Kunkletown, PA 18058.

Adjust the antenna trimmer carefully and use a short antenna (20 to 25 feet) initally to avoid detuning. The setting of the 100K pot is critical to good operation of regenerative receivers. After the preliminary or final circuit values are determined and the coil tap is set, advance the pot until a hiss is heard, then set for optimum point (threshold or above) for signal heard (AM or CW).

Build the receiver on a breadboard or aluminum chassis. Layout is not critical but do keep leads short. If you use a wooden breadboard for construction, be sure to varnish it well before mounting parts.

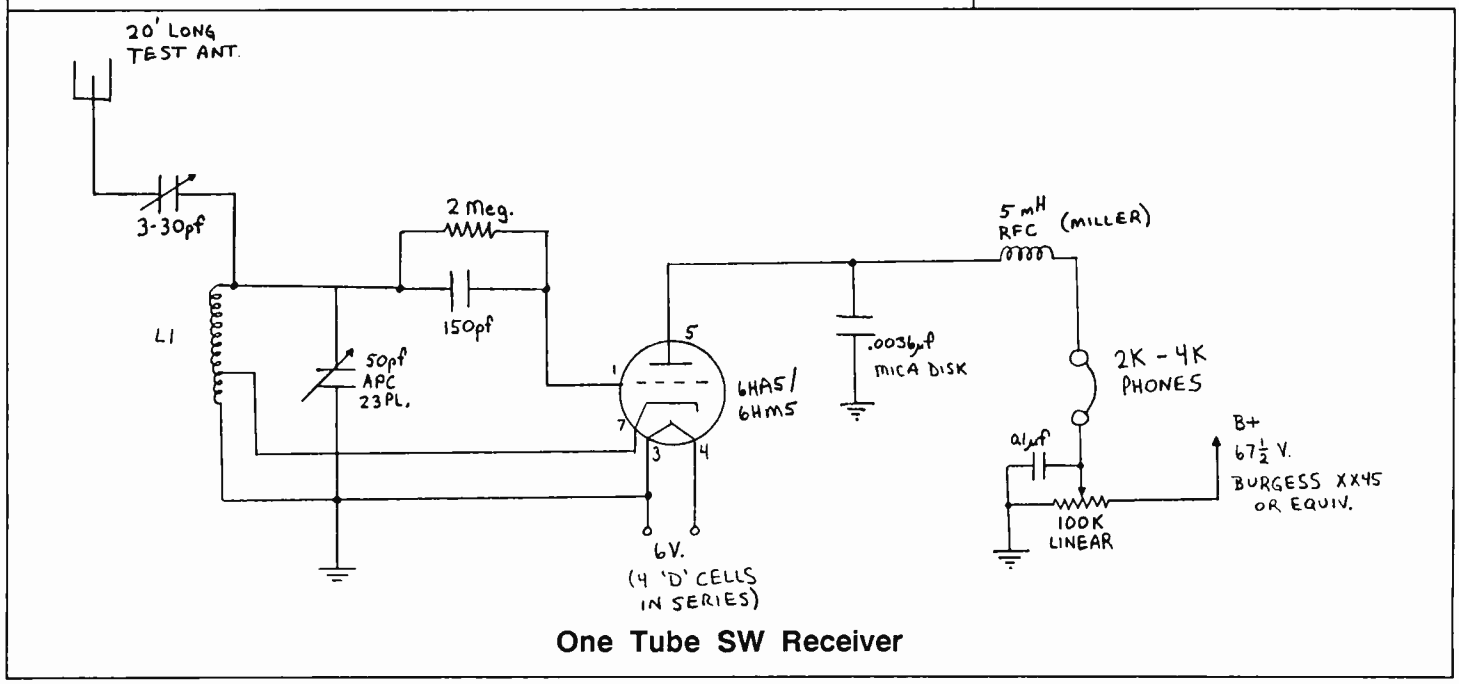
Coil data is given for 1 3/8 inch forms; if you use another diameter it will be necessary to experiment with the coils to get proper operation. Plug in coils are suggested.



Power Supply

Coil data:	Wire size all coils is 24 gauge enamel (26 also works fine).
1.6 to 3.2 MHz	65 turns tap 2 1/8 turns Closewound
3.1 to 7.5 MHz	33 turns tap 1 3/4 turns Closewound
7.0 to 18.5 MHz	9 3/4 turns tap 1 1/3 turns 1/2 inch long (spacewound)
17 to 33 Mhz	3 3/4 turns tap 7/8 turn 1/4 inch long

When the coil is called closewound, that means the wire is wrapped next to the



One Tube SW Receiver

Parts List

Parts	Source
50 MMF (PF) APC cap or equal	Surplus
100 K pot (linear taper	Radio Shack
4 or 5 pin socket baseboard or chassis mount	Surplus or antique electronic supply
4.7 to 5mH RF choke	J.W. Miller or Surplus, any Radio TV parts store equal)
all capacitors and resistors	Most available at Radio Shack.
Power transformer	Surplus
D1 (any 400 volt PIV diode)	Radio Shack

previous turn. Space wound means the distance between each turn is the diameter of the wire. Don't be afraid to experiment with coil turns and diameters.

Note: Surplus sources such as Fair Radio Sales advertise in many radio magazines. It is a good idea to order several catalogs from these dealers so you have parts info on hand at all times.

Use 1/4 or 1/2 watt resistors throughout.

You will also need a pair of sensitive head phones of 2 to 4K impedance; some brands readily available are Cannon-Ball Dixie, Trim, and Dep.

Have fun building and using this nifty one tuber!

mt

Projects for Experimenter's Workshop, while reviewed by our Technical Editor, are submitted by readers and remain experimental.

Grundig Satellit 500

cont'd from p. 89

as 12% at others. That's more or less acceptable by existing world band norms, but it's a far cry from the under 1% distortion we found with the Sony ICF-SW1S portable that came on the market last year.

...but Audio Better than on '2010

Still, this is a Grundig design, and Grundig has a decades-long reputation for having superior audio. As compared with Sony's ICF-2010, the '500 has a speaker that is larger, an audio stage that is stronger, and separate continuously tuned bass and treble controls. So while the '500's audio quality is hardly in the same league as that of its larger Satellit 650 sibling, for program listening it is an audible improvement over the '2010.

Single Sideband Reception Adequate

The '500 receives ordinary single-sideband signals the same thrifty way the '2010 does: by using phasing, rather than dedicated filtering, to reduce the strength of the unwanted sideband -- in this case by only about 15 dB. This technique allows the same two bandwidth filters that are used for AM reception to be used at half width for single-sideband reception, but it does result in distortion within the unwanted sideband. The desired sideband, too, suffers from significant distortion -- from 3-20%, depending on the audio frequency, thanks to overloading of the product detector.

What it comes down to is that the '500's reception of single-sideband signals is adequate, especially by portable standards. However, it is most certainly not in the same league as that of any of the better tabletop communications receivers. Those costly receivers use, among other things, separate high-quality bandwidth filters, rather than phasing, to provide optimum sideband selection.

Very Good Ergonomics

With professional world band receivers costing thousands of dollars, good ergonomics are essential. After all, these radios are intended for use by professional operators who may spend several hours each day manipulating a myriad of specialized controls. If these controls are difficult or uncomfortable to operate, operator fatigue rises and unnecessary mistakes -- perhaps in life-or-death circumstances -- can take place.

With simple, low-tech portables, ergonomics are of little consequence, since there are so few controls to operate. Too, these types of sets are not likely to be used all that often. But as portables get increasingly complex, even non-professional operators can find a maze of poorly laid out or tiny controls to be frustrating. You can get used to it, but why should you have to?

By and large, the '500's controls are very well laid out. Large, generously spaced recessed knobs line both ends of the set. Additionally, on the right side of the front panel are just enough buttons -- and no more -- to do what has to be done.

There are other "human" touches, too, such as a carrying handle that not only works perfectly, but also folds away when not in use. And the night light not only illuminates the liquid-crystal display, but also the keypad. The tuning knob even clicks softly -- you can feel this, too -- for every tuning increment (25 kHz for FM, 1.0 kHz or 0.1 kHz for the other bands). This may sound like a gimmick, but it actually helps make tuning easier in the high-speed (1 kHz) world band setting than it is with the '2010, which lacks this feature.

Too, characters displayed on the set's LCD are large and easy to read. Considering that most world band listeners are over forty -- the age at which eyesight commonly tends to become less keen and flexible -- these large characters are an obvious benefit.

Still, there are some drawbacks. For example, the keys, like those on some German typewriters, require a Teutonic touch to activate, and the on/off button has to be held down for longer than usual to turn the set on. Too, while the '2010's maze of 32 memory pushbuttons may scare some off, they require fewer keystrokes to operate than do the '500's memories. It's also arguably easier to remember a memory position from its visual location, as on the '2010, than simply by a number, as on the '500.

Unlike many other models, including the '2010, the '500 is a two-handed set to operate, as the volume control is on the left and tuning controls on the right. This can be a plus or a minus, depending on your own preference.

But, overall, for a high-tech receiver the '500 is refreshing in its simplicity and the logical, comfortable manner in which it is operated.

Superior FM Performance

Grundig and Panasonic world band radios almost invariably have FM performance that is noticeably superior to that of most other makes.

The '500 is no exception. As compared to the '2010, the '500's FM performance is superior in nearly every respect: capture ratio, selectivity, tone quality and dynamic range. Only if you're out in the hinterland, well away from any nearby FM stations, will the '2010's singular advantage -- very high sensitivity -- make the two models even remotely comparable.

Bottom Line: A Real Winner

Grundig obviously has a real winner in this new generation of receiver, which further blurs the already-shrinking gap in performance between portable and tabletop communications receivers. If the sorts of things our tests found to be only so-so on this pre-production sample are cleaned up before or during early production, the '500 should be the receiver of choice for those world band listeners who have been waiting patiently for a set that functions comparably well both as a portable and as a tabletop communications receiver.

You can hear Larry Magne's equipment reviews the first Saturday of each month, plus PASSPORT editors Don Jensen and Tony Jones the third Saturday, over Radio Canada International's "SWL Digest." For North America, "SWL Digest" is heard at at 8:10 PM ET on 5960 and 9755 kHz, with a repeat Tuesday at 8:30 AM ET on 9635, 11855 and 17820 kHz.

PASSPORT'S "RDI White Paper" equipment reports contain everything found during its exhaustive tests of communications receivers and advanced portables. These reports are now available in the US from Universal Shortwave and EEB; in Canada from PIF, C.P. 232, L.d.R., Laval PQ H7N 4Z9; and in Europe from Interbooks, Stanley, Perth PH1 4QQ, Scotland.

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

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Weybridge, VT 05753

Silence is Golden

Recently, *Monitoring Times* reader Richard Graham wrote me concerning an old 1938 RCA Victor Master-Antenna Kit, which he had bought (unused!) at a yard sale. He sent along a copy of the installation instructions for the antenna, which included the drawing shown in Figure 1. One unusual feature of this antenna is that it has a "counterpose" noise-pickup element.

Why, you may well ask, would we have an element to intentionally pick up noise? Well, the noise picked up by the vertical pickup element, shown in Figure 1, was fed into a coupler and used to cancel out the noise picked up by the horizontal dipole elements of the antenna. At times, when the phase of the noise signal was adjusted properly at the coupling unit, a considerable improvement of signal-to-noise ratio was possible.

In the Good Old Days

Over the years we have had a variety of different attacks on the various kinds of noise that often plague our radio communications. Many hams and shortwave listeners are familiar with the diode-type noise limiters that were popular in shortwave radios in the 30s, 40s, and 50s. And how many of the old-timers among you have built the famous TNS (twin noise squelch) circuit for use with your shortwave receiver?

Another noise limiter that has been developed for the audio section of radio receivers is the noise gate, an old concept which still finds useful application on the shortwave bands, and, believe it or not, in electronic music amplification!

At the forefront of our continuing war against noise, we find that the current crop of top-of-the-line receivers all seem to sport noise blankers -- devices which chop noise bursts right out of the rf on its path through the rig. And, just recently, the Sprague Company has come out with a special IC chip that is totally dedicated to noise cancellation in radio receivers.

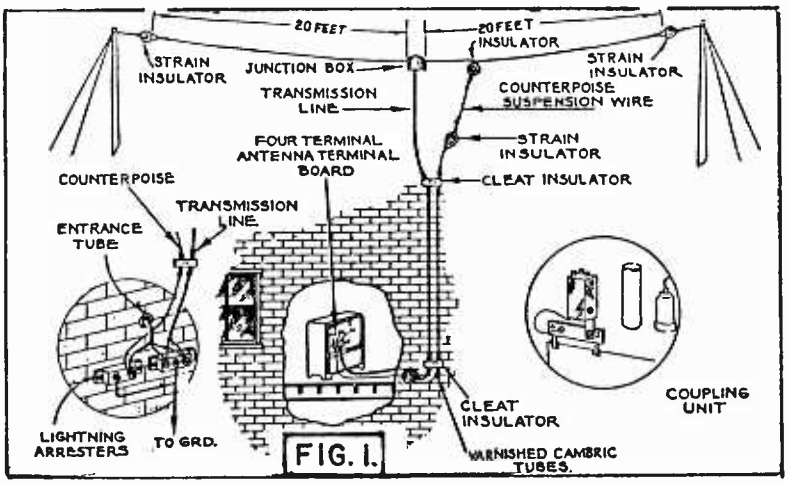

FIG. I.

Where Did that Masked Antenna Go?

But where have the noise-cancelling antennas gone? They were certainly more common in the early days of radio than now. I suppose that they became less necessary as noise-reducing resistor spark-plugs, coaxial lead-in cable, and noise filtering on home appliances became more common.

But radio communications is still plagued with noises from a variety of sources, and some of our new hi-tech appliances (light dimmers, speed controls, etc.) generate noises that weren't even on the airwaves in the 1930s. So let's take a quick trip back to those thrilling days of yesteryear, and noise-cancelling antenna systems.

Straight from the Horse's Mouth

The Jones noise-balancing circuit[1], used in the 1930s, is shown in Figure 2. The circuit in the RCA antenna system mentioned earlier is probably similar to this one. The Jones circuit is said to be useful in reducing power line noise, hash-type interference from appliances, and other continuous, buzzing noises. The noise antenna is oriented for maximum noise pick-up, and should be run parallel (but not too close!) to wiring in the house. A receiving antenna which provides a good signal level should be used for the signal antenna.

The center-tapped coil shown in Figure 2 is wrapped around the tuning coil of the first stage of your receiver. A four-turn, two inch diameter coil is recommended for the lower-frequency end of the shortwave band, with only two turns recommended for 10 and 20 meters. Your receiver input coil may be smaller than the older ones were, and you may want your coil diameter smaller than two inches. With the iron-core coils in use today, two to four turns may still be enough, even on the smaller forms we now use.

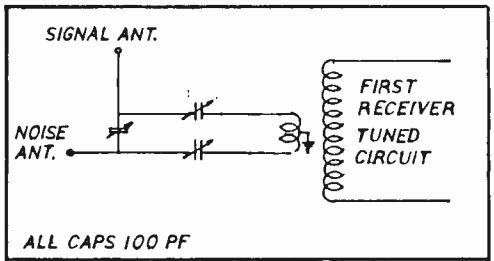

FIG. 2. JONES NOISE-BALANCER

If you don't want to dig into the innards of your rig, this circuit should also work with its center-tapped coil positioned around the tuning coil in your antenna tuner, if you happen to use one. Experimenting with the number of turns and coil placement is likely to improve performance of the circuit. One note of encouragement: patience and perseverance are said to be essential when working with noise-balancing circuits.

Antenna Farming

My friend Walt, W1KVK, says that winter always produces good antenna-weather, and I have to agree with him -- I always seem to get more antenna work done in the cold, snowy months! Anyhow, I did manage to get two antennas from the Ant Farm tested during the colder months: the G5RV and the Sky Raider. They are both excellent antennas. The materials and workmanship are first-rate and the performance is also top-notch. The G5RV, being larger, gave better signal-strength than the Sky Raider on many signals, however, both antennas give a very good account of themselves.

RADIO RIDDLES

Last Month: Last month I asked if you could tell what was the particularly revolutionary feature of the John Kraus's W8JK beam. This beam was the first of the compact, short-boom beams, represented today more frequently by the Yagi-Uda and cubical quad designs.

Well, that special feature was simply the shortened boom length itself. Boom length is the length of the antenna from the first element to the last element. Krause, after reading George Brown's article which predicted high performance for short boom beams, designed the beam which still bears his callsign as its name. This antenna, which was subsequently constructed by many, many hams the world over, was our introduction to the concept of today's smaller, short-boom beams.

This Month: There are two relatively common ways of reducing noise pickup by the way in which you use ordinary antennas. And there is another common trick for reducing noise pickup from the antenna lead-in, by the proper choice of cable. Can you give these three common antenna-related noise reduction techniques?

Find these answers, and much more, next month in your copy of *Monitoring Times*. Til then, Peace, DX, and 73.

REFERENCES
[1] *The Radio Handbook*, fifth edition, W.W. Smith, editor, Radio Limited. Los Angeles, California, 1938, pp. 161-162

ask bob

Bob Grove, WA4PYQ

P.O. Box 98
Brasstown, NC 28902

***Q.** Are there any nationwide weather services similar to local National Weather Service broadcasts which can be monitored on a scanner or shortwave radio? (Greg Reid, Hayward, CA)*

A. Not really. The closest thing to it would be VOLMET broadcasts (flying weather information) and marine weather broadcasts for coastal areas. These services are covered in detail in the Grove *Shortwave Directory*.

***Q.** I know that I'm supposed to connect an external antenna to my Sony ICF2010 through the appropriate jack, but when I connect it with an alligator clip to the whip antenna I receive many more signals. How come?*

A. This is a common delusion. You are being fooled by the receiver's inability to handle strong signals through the whip. Unfortunately, those additional signals aren't really there; they are spurious products -- intermodulation (intermod) -- manufactured by an overloaded "front end" (RF amplifier transistor).

Every receiver presently on the market costing under approximately $700 will exhibit intermod when connected to a reasonably long outside antenna. A passive preselector like the Grove TUN-3 MiniTuner (not an antenna tuner, preamplifier or signal "booster") is mandatory to prevent overloading in such radios.

Preselectors act like adjustable frequency "gates," allowing desired signal frequencies through while attenuating undesired off-frequency signals. This suppresses those off-frequency "powerhouses" which cause such massive interference on receivers with poor or moderate RF selectivity and dynamic range.

Q. Each month my *MT* arrives soggy and wet. Can it be protectively wrapped? (Donald Michael Choleva, Euclid, OH)

A. *MT* can be mailed out first class rather than second class (magazine rate). The additional cost to us -- and thus to you -- is $20 per year, bringing the subscription up to $38. It is much simpler -- and less expensive -- to complain to the US Postal Service through your local Post Office.

Q. My 4-watt CB radio interferes with neighbors' telephones. What can I do? (Carey Luse, La Mesa, CA)

A. Improper grounding is a common cause of such interference. Since your apartment is far from actual ground, an electrical counterpoise will probably help. A counterpoise is a quarter wavelength wire connected to the chassis of your CB radio; the other end is unconnected. It may lie under a rug or against a baseboard out of the way. For CB, the wire would be 104 inches in length.

If this doesn't solve the problem, install a low-pass filter between your rig and the antenna. This will remove any harmonics which may be heard on nearby receiving equipment (such as cordless telephones). Be sure your antenna is correctly installed and cable is properly connected.

If, after all this is done, your neighbors still complain of interference, their 'phones are probably at fault, suffering from signal saturation, the result of inadequate design.

Q. Where can I purchase that book on Spanish language spy numbers stations? (David Huey, Silver Springs, FL)

A. *Uno, Dos, Quatro* by Havana Moon is available for $13.95 plus $1 book rate shipping from Universal Shortwave, 1280 Aida Drive, Reynoldsburg, OH 43068 or direct from the publisher, Tiare Publications, PO Box 493-G, Lake Geneva, WI 53147.

Q. I have two rooftop antennas separated by 30 feet for my two Regency TS1 scanners, yet the scanners still interact with each other. Will snap-on interference chokes help? (Brian Cassidy, Hatboro, PA)

A. I doubt it. Your antennas and cables are efficiently doing exactly what they are supposed to do: couple received signals to your scanners. Unfortunately, the oscillator radiation from the two scanners is strong enough to be heard by each other.

First, unplug the two antenna cables and let the units scan to be sure that the lock-up you are experiencing is really because of mutual antenna coupling rather than oscillator radiation from one scanner going through its plastic cabinet into the other.

Try swapping frequencies which cause lock-up from one scanner to the other. Another trick would be to subtract 5 kHz from the entered frequency on one scanner, and add 5 kHz to the other, thus separating their respective oscillators 10 kHz.

For example, if a loud, local police frequency is on 154.875 MHz, you would enter it as

Hints

ICF2010 Control Lockup

Early models of the Sony ICF2010 portable shortwave radios were vulnerable to static electricity. The problem would manifest itself many ways, most commonly causing the pushbutton control to lock up, preventing correct operation and ignoring commands.

The simplest fix is to remove the two AA cells used for microprocessor control, then reinsert them after a few seconds. This causes the microprocessor to reinitialize -- it thinks it is being powered up for the first time and assumes its original factory preset commands.

Preventing recurrence is difficult to prescribe. In our age of polyester fabrics, static discharges are very common in cool, dry weather. Try discharging your hand against a metal ground (file cabinet, radiator, wall plate screw, etc.) before touching the radio.

Reading UNIDEN Manufacturing Date Codes

Ever wonder when your scanner was made? Check the product identification and certification label on the back. A cluster of four letters is the code date, based upon the sequence of months in the year (January=A, etc.).

The first letter is probably O; if the second is "I", then it was made in September, the ninth month of the year (I is the ninth letter in the alphabet). What year? The last two letters tell you that: HG would be '87, HH '88, HI '89.

154.870 on one scanner and 154.880 on the other. This will cause reduced signal strengths and may cause some distortion, so it is sometimes only partially successful.

Be sure that the squelch knobs are set "loose" enough that weak signal radiation isn't triggering them.

Another possibility, other than physical separation of the two antennas by a much greater distance (my receiver hears my neighbors' scanner oscillators a quarter mile away!), would be to use directional antennas to reduce interaction between them.

Finally, consider replacing one scanner with a competitive model which uses a different intermediate frequency, such as a Bearcat. Since it uses a different frequency-multiplying scheme, you may miss combinations common to the Turboscans.

Q. My radio has a "BFO pitch" control. What is it and how is it used? (Charley Thomason, Longview, TX)

A. BFO stands for beat frequency oscillator (a modern variation is called a product detector), a circuit which permits reception of single sideband, Morse code, radioteletype and facsimile signals.

When used in combination with a narrow selectivity filter, reduced-interference AM signal reception is also possible, a technique commonly known as exalted carrier selective sideband (ECSSB).

Whether listening to single sideband voice communications or ECSSB-AM, the procedure is the same: Tune in the signal first for greatest strength, then adjust the BFO knob for clarity.

Q. While anyone can hear cordless and mobile telephones, is it possible to pick up regular telephones on a scanner or shortwave receiver? (Bob Rossini, Tiltonsville, OH)

A. No. Fiber optics and cables carry wireline conversations. Only when they are long-distance relayed by microwave towers and earth satellites could they be intercepted, but those frequencies are way above the ranges of shortwave and scanning receivers. If you hear a neighbor's voice on your scanner and he's not talking over a cordless or mobile phone, he's bugged!

Q. When the American fighter jets shot down the two Libyan aircraft last January, what frequencies were they using? Were communications scrambled? (Jon Lawson, Philadelphia, PA)

A. It is virtually certain that they were using 225-400 MHz AM, probably unscrambled. Tactical frequencies like these continually change to evade enemy monitoring.

Q. Is there an extensive list of U.S. Air Force tactical call signs which I hear when monitoring the channels listed in Grove's *Shortwave Directory*? (David Parson, Chalfont, PA)

A. No. The vast majority of military callsigns, especially those overheard during missions, are temporary, rotating and arbitrarily assigned, often by NSA computer. The most commonly heard permanent callsigns are listed in the *Shortwave Directory*.

DAYTON HAMVENTION 1989

This year some 25,000 eager hams, SWL's, computer buffs and scanner enthusiasts are expected to invade the Hara Arena in Dayton, Ohio, the last weekend of the month (April 28, 29 and 30). Again this year, ANARC will host the SWL/Monitor's forum from 9:30-11:30 AM Sunday in room 5.

Featured speakers and their topics include MT's Bob Grove (Designing the Ideal Receiver); ANARC's Robert Horvitz (Listening and the Law); Universal Shortwave's Fred Osterman (New Frontiers in Shortwave Listening); and MT writer Don Moore (Broadcasting in Central America).

Grove Enterprises is expected to unveil their long-awaited SR-1000 Spectrum Surveillance Receiver at booth 333. All in all, this will be quite a convention!

Q. In the future can a satellite dish antenna be used for international broadcast reception? (Carlos Rocca, E. Chicago, IN)

A. While it is possible that some international programming might be sent over the satellites, a TVRO dish antenna cannot be used for reception in the shortwave frequency range. It would have no gain or directivity at those longer wavelengths.

Q. I am trying to find a source for the Channel Master 5094A Monitenna. Can you help? (Arnold Stroud, Cedaredge, CO)

A. We contacted Channel Master's main facility, but they would not release a list of their distributors. They did say that if customers wished to call them, they would send literature as well as a list of dealers in the appropriate area. Phone them at 919-934-9711.

Questions or suggestions sent to MT are printed in this column as space permits. If you prefer a reply by return mail, you must include a self-addressed, stamped envelope.

LETTERS

continued from page 3

"Is there some way we can encourage television story writers to include or even feature a heroic character who uses radio scanning or ham radio equipment?" asks Jill Wilson of Cleveland, Ohio. "Perhaps you would print the names and addresses of television story production groups so that *Monitoring Times* readers could flood them with letters to show that an audience exists."

Nice idea. Imagine the excitement: Lights. Camera. Action. "The Glenn Hauser Story!" I'll play Glenn.

Less exciting but still encouraging is news that the Boy Scouts have expanded their ham radio merit badge to include shortwave listening activities. So says ANARC who notes that the ham-only merit badge attracted little attention from the scouts.

Pointless Engraving

"As one who buys and sells used cameras, I can tell you that this notion of engraving your Social Security number on your equipment is not a good one." So says D.M. Gunn of Oakland, California.

"First, the thief steals first, and examines later, so the number will not prevent theft. Second, all my cameras and radio gear possess serial numbers already. If you can show that you bought Gizmo #1234 from Radio Shack on February 31st, what more proof of ownership do you need?

"Third, when you go to sell your stuff, and you will, those damned numbers will drastically reduce its value. I will probably never sell a very nice camera that I bought from Roger Bibb because I can't find another person of that same name and address, who wants it.

"Fourth, the police cannot trace your Social Security number. The SS folk won't tell them who has any given number. If you must deface your belongings, then use your state driver's license number. Make it small and unobtrusive. That, too, is a lousy idea, but better thann John Hancocking your things."

Good advice, Mr. Gunn. Many thanks for passing it along.

On February 7th at 8:54 PM, John K. Barrette of Birmingham, Alabama, was watching "one of those Turner news channels."

"Those of you who are, say, nervous or sensitive," says John, may have noticed something unusual at about the time that they were showing the man with the cobras. Five to ten seconds later, there was a near-total descramble authorization (COMSAT type).

"I am certain that something with a weak, 'upwards astral projection effect' hit me *before* the picture broke up; that it must have come instantaneously -- rhymonically from an off-earth source."

Ah, 10-4, good buddy.

MT How-to's

"Unlock my creativity and allow it to fly free. Tell me how I might get published in *Monitoring Times*," says Ken Clarke of New York City.

How to write for *MT*, I'll tell you. First, start thinking of a topic. Preferably, it should be something about which you have at least a passing knowledge.

Second, send us a brief letter telling us what this idea is.

Third. Wait for our response.

Our response will include a copy of the official *Monitoring Times* writers guide. And even if your article does not get published, we virtually guarantee that your life will be fuller and richer for having tried. As for the "flying" part, you'll have to talk with Mr. Barrette.

John Delisle of Juno, Florida, has a question about our QSL column. In that column, some readers say that they have received QSLs "in 'X' amount of time for IRCs, mint stamps, and so forth. My question is, what type of mint stamp are they referring to? Are they United States Postal Service stamps or stamps of the country the report is going to?"

The purpose of sending a mint stamp along with your reception report is to provide the station with return postage so they can send a QSL back to you. Therefore, you would want to, say, include a Ecuadorian stamp with a reception report sent to an Ecuadorian station. Please also note that this practice is not necessary when QSLing the larger stations.

"Would you please place all radio propagation charts for each location (east coast, midwest, west coast) on the front and back of one sheet of *Monitoring Times*. We users could then tear out the sheet for our location, enclose it in plastic for ready access, and use it with the frequency section.

"As it is now, the charts are seldom used as it is a pain to flip through many pages looking for the appropriate chart. Think about it. You would make a chart-user out of me if you did." That suggestion, from Fred Charleston of Sedro Wooley, Washington, has been echoed many times. So let's take a vote. Drop us a note and let us know how you feel: leave the charts the way they are (part of the frequency section) or put them all together in one section.

Clearly Stated!

"I just could not resist writing you to tell you of a communication I recently monitored on a local Drug Enforcement Agency (DEA) frequency here in Tampa, says a Florida reader. The communication was between the home Tampa base and a field agent.

"The field agent was very matter of factly explaining the finer points of how to wire tap a telephone. He was telling Tampa base how to unscrew the headset 'and put the silver piece inside.' The guy at base said, 'Yeah, I think I know what you're talking about.' Hilarious. And the whole thing was *in the clear!!!* What do these guys talk about when they go scramble? Their Pac Man scores?

I'll let you in on a little secret. They talk about the last issue of *Monitoring Times*.

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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WANTED: MT issues 8/86, 5/85, 6/85, 7/85 - Box 2991, Glen Ellyn, IL 60138.

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SCANNER CRYSTALS traded/sold, send SASE state needs -- list frequencies or equipment you have for sale/trade: Box 1239, Charleston, SC 29402.

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ICOM R-71A $700; AH-7000 $55; RF-3100 $175; AR800 scanner $200; Jerry [513] 779-4409.

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For Sale: 200 channel REALISTIC PRO-2021 scanner in excellent condition $165.00, BEARCAT 101 scanner in very good condition - a real collectors item $65.00. Call Bob [216] 854-6216.

INFORMATION PLEASE: Are there any SW listening clubs or other listeners in the Greater Boston/Metro West area? Please correspond with P.Werlin, 24 John St., Newton, MA 20159.

CONVENTION CALENDAR

Date	Location	Club/Contact Person
Mar31-Ap2	Kansas City,MO	Midwest Div/ Chuck Miller WA0KUH 7000 NE 120th St., Kansas City, MO 64166
Apr 1	Grandville, MI	STARS ARA/ S.T.A.R.S. 1714 Havana SW, Wyoming, MI 49509
Apr 2	Madison, OH	Lake Co ARA/ Scott Farnham KO8O 10418 Briar Hill, Kirtland, OH 44094
Apr 2	Milton-Freewtr,OR	Walla Walla Vly ARC/ Jack Babitt WA5ZAY 1401 Pleasant, Walla Walla, WA 99362
Apr 7-9	Orlando, FL	N.FL Sect Conv/ John Lenkerd W4DNU 1046 Turner Rd, Winter Park, FL 32789
Apr 8	Little Rock, AR	AR State Conv/ Dale Temple W5RX 1620 Tarrytown Rd, Little Rock, AR 72202
Apr 8	Up Saddle R,NJ	Chestnut Ridge RC/ John Meagher W2EHD 27 Fourth St, Closter, NJ 07624
Apr 9	Framingham, MA	Framingham ARA/ Marc Stern N1BLH 5554 Worcester Rd, Framingham, MA 01701
Apr 15	Birmingham, AL	Birmingham ARC/ James Pilman KA4ZQA P.O. Box 603, Birmingham, AL 35201
Apr 15	Fergus Falls,MN	Lake Region ARC/ Keith McKay Rt 1 Box 46, Battle Lake, MN 56515
Apr 15	Flemington, NJ	Cherryville RA/ Marty Grozinski NS2Kj 6 Kirk Bride Rd, Flemington, NJ 08822
Apr 15	Charleston, WV	Charleston ARC/ Jack Kibler K8WMX 182 Monterey Dr, Albans, WV 25177
Apr 15-16	Spokane, WA	Spokane RA/ Ivan Brown N7BPO West 728 Spofford Ave, Spokane, WA
Apr 16	Sullivan, IL	Moultrie ARC/ Vernon Jack K9SWY 916 W Strain, Sullivan, IL 61951
Apr 16	Lebanon, PA	Appalachian ARG/ Homer Luckenbill WA3YMU 105 Walnut St, Pine Grove, PA 17963
Apr 16	Raleigh, NC	Raleigh ARS/ Chuck Littlewood K4HF 2005 Quail Ridge Rd, Raleigh, NC 27609
Apr 16	Southington,CT	Southington ARC/ Chet Bacon KA1ILH 138-1/2 Summit St, Plantsville, CT 06479-1125
Apr 22-23	Augusta, GA	Augusta ARC/ Carroll Norton NA4I 2704 Lumpkin Rd, Augusta, GA 30906
Apr 28-30	Dayton, OH	Dayton Hamvention/ Hara Arena Conf & Expo 1001 Shiloh Springs Rd, Dayton, OH 45415
May 5-6	S.Sioux Cty,NE	3900 Club & Sooland ARA/ Robt Pitner W0FZO 2931 Pierce St, Sioux City, IA 51104
May 6	Cedarburg, WI	Ozaukee ARC/ E.J. Bauer W9WQ N 5415 Crystal Springs, Fredonia, WI 53021
May 6	Brewster, NY	Putnam Emerg ARL/ Richard Brummer KC2TF RFD 6 Box 1283, Mahopac, NY 10541
May 6-7	Birmingham, AL	AL State Conv/ Frank Blanchard Jr AA4LB 3450 Kildare Dr, Birmingham, AL 35226
May 6-7	Greenville, SC	Blue Ridge ARS/ John Chism ND4N Rt 6, 203 Lanewood Dr, Greenville, SC 29607
May 7	Stirling, NJ	Tri-Co RA/ Herbert Eldert KA2DAU 1850 North Gate Rd, Scotch Plains, NJ 07076
May 14	Medina, OH	Medina M2M Club/ Bill Green 256 Rustic Rook Dr, Chippewa Lake, OH 44215
May 19-21	Rochester, NY	Atlantic Div/ Harold Smith K2HC 300 White Spruce Blvd, Rochester, NY 14623
May 20	Knoxville, TN	TN State Conv/ L.B. Cebik W4RNL 2414 Fair Dr, Knoxville, TN 37996
May 20	Godfrey, IL	Lewis & Clark RC/ Harold Elmore KC9GL 5203 Dixon Dr, Godfrey, IL 62035
May 21	Peotone, IL	Kankakee ARS/ Frank DalCanton KA9PWW RR 1 Box 361, Chebanse, IL 60822
May 21	Randolph, OH	Portage ARC/ Joanne Solak KJ3O 9971 Diagonal Rd, Mantua, OH 44255
May 21	Tamaqua, PA	Tamaqua TS & Anthracite RA/ Allen Breiner W3TI 212 Race St, Tamaqua, PA 18252
May 21	Wheeling, WV	Triple States ARC/ Ralph McDonough K8AN Box 240 RD 1, Adena, OH 43901
May 21	Wrightstown,PA	Warminster ARC/ Chris Dahl NI3J 3417 Stafford Place, Holland, PA 18966

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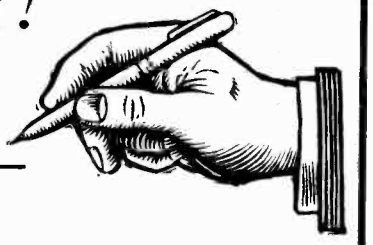

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A couple of comments from *MT* readers:

Received last September: "The ultimate compliment: I missed most of the Cleveland Brown's vs NY Giants football game on last night 'cause my September copy of MT arrived yesterday." - John Cassidy, Connecticut

"I find MT more oriented to serious DXers than [another publication] and it actually saves me money; MT makes the other magazines redundant." - W. Farmerie, Massachusetts

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Closing Comments

The Future of Amateur Radio

Whither away ... or wither away?

U.S. amateur radio is stagnant, possibly dying. Its miracle growth in the late 1970s was a direct result of CB's meteoric success. Novice enhancement has been a flop. In a letter published in the February issue of *Ham Radio*, Harry Helms, AA6FW, points out several poignant perspectives, many of which disagree with widely-held preconceptions.

✓ While high cost is blamed as a deterrent, ham gear has always been costly. High-quality, used tube-type gear is readily available at very low cost.

✓ Disinterest in amateur radio is certainly not due to waning interest in technology; hobbyists are flocking to home computers in numbers never seen in ham radio, many of whom -- like Apple's Steve Wozniak -- have left amateur radio for the "new wave." Here at *MT* we frequently hear from disenchanted hams who find far more enjoyment through recreational monitoring of the spectrum.

So why is U.S. amateur radio threatened with extinction? Harry offers a number of reasons which we have freely expanded upon.

✓ Radio communications is no longer mysterious or exciting. Youngsters now grow up with satellite TV, CB and cordless telephones. Electrical and electronics hobby magazines once fluorished; as the technology became commonplace the magazines died out as did the fad of home experimenting. Amateur radio may be suffering the same fate.

✓ The average age of a ham is 50, many of whom are curmudgeons who express open indifference -- or even hostility -- toward youth. Many of them oppose growth, resenting intruders into "their" bands. "Elmers" -- selfless, dedicated hams who start clubs, invite curious youngsters into the shack, and volunteer to demonstrate ham radio to schools and the public -- are, quite literally, a dying breed.

✓ Amateur dealers do not get involved with the hobby; they are merchandisers. Visit your local computer shop and you will receive hands-on instruction, learn about bulletin boards and be referred to hobby support groups. Now visit an amateur outlet and ask how to become a ham.

✓ The necessity to learn Morse code is considered by candidates as an absurdity, an anachronism in an age of high-tech communications when even the the last bulwark of CW -- maritime radio -- has finally announced abandonment of that low-tech mode.

Tom Kneitel, K2AES, editor of *Popular Communications* magazine, in his March editorial equated the Morse mandate with the telephone company's early requirement that telephone operators had to know how to roller skate to quickly move from station to station.

MT writer Jock Elliott, KB2GOM, points out that U.S. ham ranks are growing at just over 1% per year, merely reflecting the U.S. population growth of 1% per year. Worse, since the FCC records do not purge deceased or inactive hams, amateur radio may not be merely stagnant, but declining; tragic when friendly, grass roots communications among citizens of many countries has never been more available nor more important.

Jock agrees that the major obstacle to new hams is the code, a mode best left as an option along with other specialties like radioteletype, slow-scan TV, satellite communications and packet radio. But since it is not a primary mode for communications, it should not be a stipulation for licensing -- at least at the entry level.

Jock's "Almost Infallible Rule of Human Behavior" observes: People do what they want to do. Most new hams who survive the code test abandon that mode as soon as their licenses arrive in the mail. In Japan, where they have a no-code, "Voice Class" license, amateur radio is growing at a phenomenal rate. Still there are many skilled CW operators. Why? Because they enjoy it, not because they were forced to do it. So it is in the U.S.; hams use CW on the air because they enjoy it, not because they were forced to do it.

CB freeband is another example of people doing what they want to do. These tens of thousands of worldwide radio operators risk arrest and fines because they don't want to take the amateur exam. Many of them are so technically competent that they build their own equipment, even operating packet radio networks in Europe. Eliminate the code requirement and many of these excellent operators would become hams. Are presently-licensed hams any better?

We'd like to make a prediction. We believe that there is such growing vocal support that an entry-level, no-code license will be forthcoming -- and soon. If we are wrong, American amateur radio will fade softly into history along with spark-gap interrupters, galena detectors and Marconi coherers -- mercifully taking with it Morse code by default.

Bob Grove WA4PYQ

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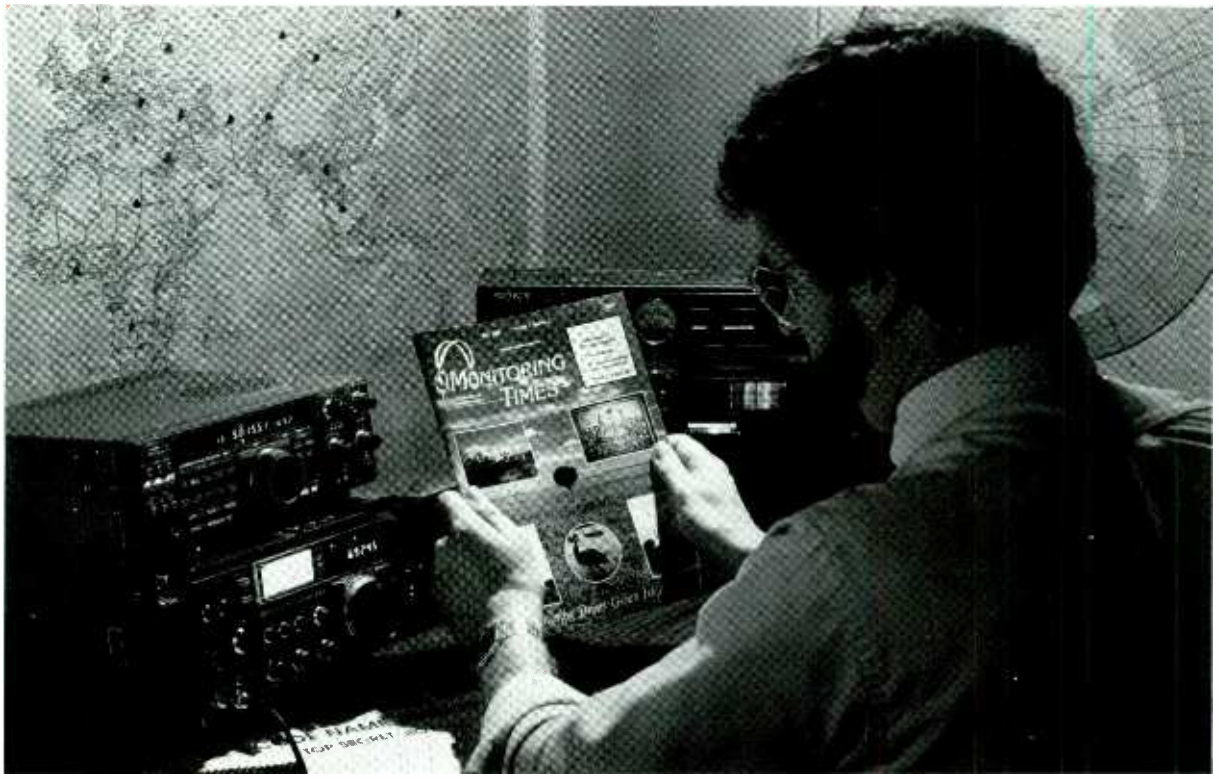

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