DECEMBER 1988 VOLUME 7 NUMBER 12
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MONITORING TIMES

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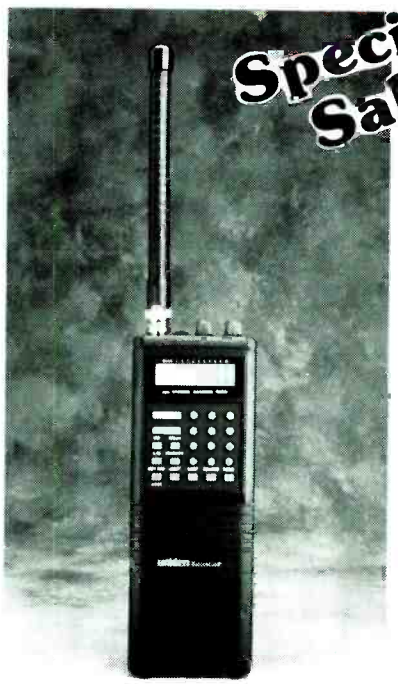

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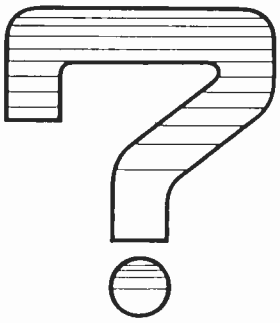
The venerable BBC remains the standard by which all other SW stations are measured - p.6



Bob Grove is the scanner answer man - p.10

Last-minute book-buying for the ham in your life - p.44

Magne on the future of World Band radio - p.87

MT reviews the Realistic PRO-34 plus instructions on restoring cellular service - p.88

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ON THE COVER: What's better than a receiver in the stocking? -- Two receivers ... and a subscription to *Monitoring Times*, of course! *(Photo by Harry Baughn)*

Inside this Issue

It's a common complaint: The programs I hear on shortwave today are the same ones I listened to in 1935. That can be a real tune-out if the program is about copper wire production in Bulgaria. On the other hand, there are things worth keeping. And there's no better station for sorting out the wheat from the chaff in this regard than the BBC. • This month, we take a look at the station that defined, for many, what radio is all about. And it's a perfect time to look back at the BBC because this month, you'll have the oportunity to hear many traditional programs from London, including the Monarch's Christmas Day address.

• War is also a tradition, especially in the Middle East. The conflicts there have spurred a tremendous growth in the number of shortwave stations on the air -- from obscure, low-powered voices to the thunderous belching of 500 kw transmitters from ancient Sultinates. We pored through the pages of the new 1989 edition of *Passport to World Band Radio* for a complete list of stations that we call, "Christmas in the Middle East." • "Christmas in the Middle East" is based on a suggestion from high school senior and *Monitoring Times* reader Stephen J. Price of Conemaugh, Pennsylvania, who did the initial monitoring for this article. We've had the chance to speak with him on a number of occasions and found him to be not only an expert Arabic monitor but all-around great kind of guy -- the kind of person every father wants his son to be -- especially if you want a son that speaks a smattering of Arabic.

• Ever hear something on the radio that sounds like a B-52 bomber in flight? Ever wonder what it was? How about those strange beeps that sound like a three-note musical instrument? Or that hash-hash kind of noise? It's not all jamming, as many people think, It's often very useful information transmitted in non-voice modes. *Beeps and Whirs*, which is reprinted from a small-circulation bulletin called Frendx, attempts to put faces to the sounds. • What are the ten most-asked questions about scanning? Who could write such an article? One person popped to mind immediately: *MT* publisher Bob Grove. After all, not only is Bob a real ambulance chaser, but he owns Grove Enterprises, a firm that sells scanners. If anyone would know the ten most asked questions -- and their answers -- it would be Bob. What are they? You have to turn to page 10 to find out.

• Jean Baker, shown at right in a pensive mood, is one of *MT's* most endearing characters. Not only does she know aero communications inside-out, but Jean has a unique ability to leave you both amazed and amused in less than a three minute phone call. She loves her *Monitoring Times* column, takes her monitoring seriously, but never loses sight of the fact that radio is primarily *fun*. This month, she shares some information on how to verify (QSL) aero stations -- no easy trick sometimes since those that use the aero bands don't understand why anyone would want to listen to them!

• As usual, there's a lot more. Ike Kerschner, *MT's* resident ham radio fanatic, writes up a top-10 book list for the amateur radio operator. Suggests Ike, "Leave the list out somewhere in the house and maybe Santa will pick up the hint!" • Magne also helps out the shopping list with some of the best buys for this holiday season, as well as sharing the latest outlook for world band radio • Finally, we close out the year 1989 with the ever popular *Monitoring Times* annual index of articles for the last twelve months. Granted, it reads like the phone book, but we hope you'll find it useful. • There's much more in this month's 104 pages. Take a moment to explore them. As usual, they're filled with the wonders of radio from the four corners of the world. Enjoy!

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Published by
Grove Enterprises
Publisher
Bob Grove, WA4PYQ
Managing Editor
Larry Miller
Technical Editor
Ike Kerschner, N3IK
Frequency Manager
Greg Jordan
Design and Production
Rachel Baughn
Subscriber Services
Linda Newton
Advertising and Dealerships
Judy Grove
Contributing Editors

Reading RTTY
Jack Albert
Uncle Skip's Corner
T.J. Arey, WB2GHA
Plane Talk
Jean Baker
DeMaw's Workbench
Doug DeMaw
Consumer Electronics
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Bob Kay
On the Ham Bands
Ike Kerschner, N3IK
Magne Tests...
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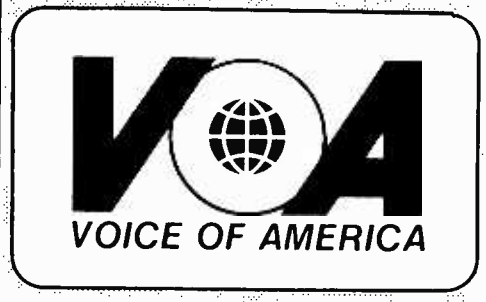
LETTERS



People love to complain about the Voice of America. Take the following letters for example:

E. Candelli of Genova-Voltri, in Italy, says that listening to the VOA is "like listening to a mix of Radio Tirana and the children's hour. Pity you have to feed it with your tax money."

From Peter Knaus in Basel, Switzerland, "I live in a country with a rich heritage of neutrality. From my objective viewpoint -- and I assure you that I am no America-hater -- I see little difference between the VOA and Radio Moscow."

Oklahoman Gordan Kent says, "It is a pity that Armed Forces Radio and TV was taken off shortwave. It represented us to the world in a far more acceptable, more accurate and honest way than any VOA broadcast."

Of course, anger over the loss of AFRTS probably spurred a lot of the letters we received on the subject. Indeed, some argue, AFRTS offered the overseas audience an almost pure representation of America. Its programs, after all, were taken directly from the U.S. networks. People overseas got to hear exactly what we hear.

Kannon Gets Angry

Kannon Shanmugam agrees that the death of AFRTS may play a part in the most recent wave of VOA-bashing letters but not their conclusions. Says Kannon, "It seems that many listeners are quick to heap criticism on VOA just because, since it is a government-run station (as is Radio Moscow, of course), it therefore must be propaganda. Right? Wrong.

"There are indeed many high-quality programs on VOA," says *Monitoring Times'* resident program reviewer. "Willis Conover's distinctive style makes *Now Music USA* a must-listen. And there is no program on the air quite like *The Sound of Soul*, which could actually be called "The Sound of Innovative Pop" due to the immense diversity of tunes presented. The science programs are also top-notch rivaling those of the BBC in terms of content.

"Commentaries on VOA have become more right-wing during the Reagan administration but they are certainly few and far between compared with those even on post-glasnost Radio Moscow. These commentaries, no doubt, give VOA a bad name among hastier listeners but without them, Congress would be hard-pressed to give much-needed money to the U.S. Information Agency, the VOA's mother agency.

"So next time you have some free listening time, why not tune in VOA and judge for yourself? You may be surprised." The frequency schedule for VOA, of course, is in the back of this issue.

Not All So Responsive

Matthew Brown of Cedar Grove, Wisconsin, is less encouraging, although he does not specifically address the VOA. "The lack of response I have been getting from the broadcasters has been particularly upsetting," he says. "I have written several lengthy letters to stations concerning program suggestions but heard nothing from them in return, not even a program schedule."

"It seems incredible to me that these countries can pour millions of dollars into [their technical facilities] and [then] practically neglect them after they are assured they can be heard!

"Ten years ago," he continues, "I was very active in the hobby. I did a regular report aired on Adventist World Radio from Sri Lanka, I was president and monthly editor for one station's North American Listener's Club Bulletin and regularly wrote articles for the clubs. But I became quite discouraged by the lack of station participation. I got few rewards for what I was doing for them.

"One time I even put together a North American tribute to Radio Norway in the form of a booklet. I sent it to them and never heard from them! It seems that any thought provoking or congratulatory work is done without acknowledgment on the station's part."

A Common Complaint

Such non-response on the part of stations is probably one of the most common complaints we receive at *Monitoring Times*. The problem is the chasm between reality and the version of reality cooked up on the air by the broadcaster. Many stations, in an effort to make you feel positively about their country, go absolutely overboard, creating on-air personalities that try very hard to sound like everyone's best friend.

Unfortunately, the stations lack the infrastructure to support the charade and when you write to the station (along with thousands of others), that friendly-sounding announcer, the one who sounded like the type of person you'd want to have over for dinner, doesn't respond. The station lacks the manpower to answer your letter. And the listener is disappointed.

That's not always the case, though. Says bilingual Edouard S. Provencher of Biddeford, Maine, "I recall that last October, I picked up a strong signal from the Voice of Free China in French at the time Taiwan was celebrating the 75th anniversary of the founding of the Chinese republic.

"They were so pleased to receive a reception report in French by an American that along with the QSL, they also enclosed snapshots of the parade that I had described so fully! In addition, they also send my a really nice French-language magazine, *La Chine Libre,* that I receive every two months! Now that's real class!"

I know of a number of people who have been pleasantly surprised by such courtesies. Some are provided free trips to the broadcaster's country -- Glenn Hauser and I went to the People's Republic of China on their tab in 1986 although I suspect our editorships had something to do with that -- and I know of one story about a reader who wrote a complimentary letter to a station in the Middle East about a program they ran on Arabic art. He had long forgotten about the letter when, many months later, a five foot wooden crate arrived, carried to his door by a large number of struggling men. Inside was a solid brass statue from the station.

[More "Letters" on page 100]

COMMUNICATIONS

Eastern Bloc Radio: It Ain't What It Used to Be

Listening to Eastern bloc radio used to mean endless stories about ball bearing factories and happy workers. And if you read one Bulgarian newspaper, for example, you'd read them all -- each carried the same thing. Under *glasnost* though, the East bloc isn't the information vacuum it used to be. And that means more work for Radio Free Europe.

Founded in the chilliest days of the Cold War as an alternative information source for listeners behind the "iron curtain," Radio Free Europe and its related service, Radio Liberty, always had an edge over the Eastern-bloc competition. Never mind that it is openly financed by the United States government -- and run by the Central Intelligence Agency until 1971. Listeners tuned in to the service's native-language broadcasts to fill in the gaps they knew existed in their own news media. But times have changed.

"We don't have a monopoly on hard news anymore," admits Gene Pell, president of Radio Free Europe and Radio Liberty. "Whether it's a ship disaster on the Black Sea or a rail car explosion outside of Gorky, it's being covered more quickly by the Soviets."

Now the Munich-based staff of RFE and Radio Liberty have to pore over a half-dozen different papers just to get a handle on what's going on in Bulgaria. "It used to be enough for us to comb handbooks and come up with an infant mortality rate for the Soviet Union," says Ken Bush, Radio Liberty's head researcher. "But now we have to [find out] why it's so high."

Still, most of RFE/RL's work force -- which includes about 1,000 in the station's Munich headquarters -- has been there for years. And changing old habits isn't easy. The new regime means working weekends and phone calls in the middle of the night. "It almost makes you long for the good old days -- when nothing happened," one harried employee says. **CSM**

No Tower for This Duke

Dale "Doc" Evans is plenty irritated with government officials in Boulder, Colorado. Seems they're stopping the 31 year old ham from pursuing his hobby.

When Evans moved into a semi-rural subdivision southeast of Boulder in 1981, local authorities told him he didn't even need a permit to erect his 60 foot tower. When he moved to a larger lot in the same subdivision, however, he was told that his tower could be no more than 35 feet tall. So far, judges up to the U.S. District Court level have ruled against the ham radio operator. But Evans isn't giving up. The case is now before the U.S. Court of Appeals.

Federal policy mandates that local regulations, such as those imposed by Boulder authorities on Evans, "must be crafted to accommodate reasonably" the needs of amateur radio enthusiasts and must impose "the minimum practicable restriction." **TDP**

Like the End

Getting some interference on the old radio? Strong, really strong interference? Kind of like what you might expect to encounter if you were at ground zero during a nuclear attack? Perhaps what you're hearing is the Navy testing the durability of their ships and equipment during a simulated nuclear blast in Norfolk, Virginia. The tests occur about 15 miles off the Outer Banks, Navy officials say.

The Empress II (wonder whatever happened to Empress I?) barge tests involve the release of one-billionth of a second of electromagnetic energy -- as high as 7 million volts -- through air and water to mimic how a nuclear blast might effect sensitive electronic equipment. **AP**

Hearing Voices

Are you one of those unfortunate people who hear voices on the telephone -- that don't belong there? Assuming that the problem is real and not some form of mental aberration, you may want to check with AT&T. If those voices come from nearby radio transmissions, you may want to buy one of their radio frequency interference (RFI) filter for phones called the Z-100A. It's just $17.50 plus shipping from 1-800-222-3111.

Ham in Space

Now that the U.S. space program is back on track, it won't be long before we'll have another ham (radio operator) in space. According to AMSAT president Vern Riportella, WA2LQQ, the next amateur operator aboard the shuttle will be Ron Parise, WA4SIR. He'll fly aboard the ASTRO-1 mission, now scheduled for March of 1990. **W5YI**

CBer in Jail

According to the FCC, a Niles, Michigan CB operator will be spending some time in jail. The good buddy, whose name was not released, will get 90 days in prison (out of a one year sentence), remain on active probation for three years, pay a fine of $1,025, do community service work and give up his equipment to the government. The crime: illegal overpower operation. **RCMA**

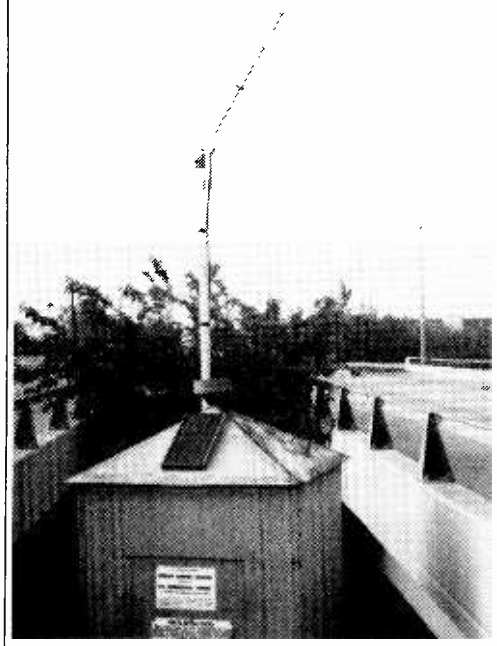
Keeping an Eye on the Environment

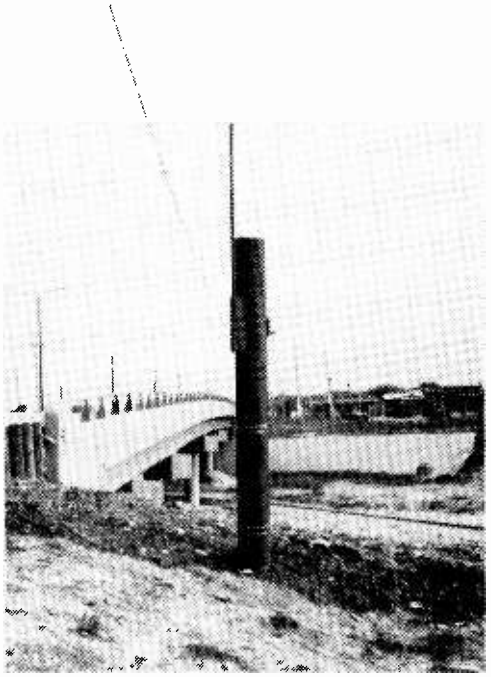
A recent of photos sent in by reader Bobby rose of Rowlett, Texas, prompted a call to the Department of the Interior. Bobby noted that the remote monitoring installations are solar powered.

Shown in the accompanying photo is a cross-phased uplink antenna which prevents signal fading due to Faraday rotation of the spinning GOES satellite to which its instrumentation readings are beamed. Continuous data is transmitted near 400 MHz to remote earth terminals such as those at Wallops Island (Virginia) and Alaska.

The data sensed at these data collection platforms (DCPs) include measurements of seismology, rain gauges, stream gauges, and even dew point and soil moisture to predict the potential of forest fires.

Under NOAA satellite control, approximately 500 DCPs in the Department of Interior network share their data with the Bureau of Land Management (for fire weather reports), National Park Service, Bureau of Reclamation (stream gauges) and U.S. Geological Survey (siesmic and volcanic activity such as Mount St. Helens).





The Lone Whip

The isolated vertical antenna (actually a ground plane antenna not clearly visible in the photo) on the pole in the other photo sends local data of immediate concern (such as rising water) on VHF/UHF links via terminal node controllers (packet switching) and is not generally interfaced with the satellite system.

Thanks to "Sparky" Terry of the Department of the Interior for his courteous and professional attention to our questions concerning this interesting satellite network.

FCC Woodpecker Analysis

The beleaguering "rat-a-tat" of the notorious "Russian Woodpecker" has been widely reported by shortwave listeners and communicators for many years, with complaints registered to the USSR ignored.

Part of the Russian defense system, this over-the-horizon (OTH), backscatter radar system can detect aircraft considerably farther than those detectable by conventional microwave systems because high frequency (HF) radio waves curve over the visual horizon under favorable propagation conditions.

For a one-week period last August, the FCC conducted an intensive analysis of the "woodpecker" signals heard between 7 and 19 MHz, all of which emanate from the Komsomolsk, USSR, site (51 degrees, 24 minutes north; 137 degrees, 42 minutes east) and came up with the following specifications:

Pulse rate, 10.0-10.5 per second; pulse width, 4 milliseconds; bandwidth, variable from 20-800 kHz; most occupied bands, 10.5-11.0, 12.2-13.0, 16.0-17.0 MHz; least occupied bands, 9.7-10.5, 11.0-12.2, 13.0-15.0 MHz; mean bandwidth, 150 kHz; median bandwidth, 75 kHz; standard deviation, 207 kHz; mean air time, 7.7 minutes minimum; median air time, 3.0 minutes minimum; standard deviation, 12.3 minutes.

The data were collected from more than 400 discrete observations and are considered to be definitive and accurate by the FCC.

Several years ago, when the offensive emissions were first obscuring the shortwave bands, it was popular for hams to record the burst, then play them back on the same frequencies, ostensibly forcing the transmitters to shift frequency. Some hams merely pounded a Morse key up and down in approximate synchrony with the woodpecker bursts. The effectiveness of those activist techniques has never been proven!

(See "Beeps and Whistles" feature, this issue, for more on the Woodpeckers and other wierd noises on the airwaves!)

Credits: Associated Press, *Christian Science Monitor*, The Denver *Post* (via Wayne Heinen), RCMA Newsletter, W5YI Report, FCC report via Bob Grove

THE BBC TRADITION

H.M. King George V making his first broadcast to the Empire on Christmas Day 1932.

Dusk had began to settle over London as a light snow chased the wind down deserted streets. The city had a peaceful, satisfied feeling, the kind that comes over you after a good meal and warm company. The year was 1932 and it was Christmas Day.

From Buckingham Palace, a single yellow light shone out onto the street below.

The softness of the light betrayed the excitement going on inside. There, seated at a table in front of the same fireplace that entertained British royalty for hundreds of years, sat His Majesty, King George V.

King George, still dressed from an earlier family gathering, marveled at the two wooden boxes in front of him. Somehow, every word that he said was to be magically, mystically, transmitted across the ether to his subjects in all corners of the world. He cleared his throat nervously, looked up at the waiting technician for a signal, and began to read from the paper in his hands.

Hugh Carleton Greene (later Director-General) was in charge of broadcasts to Germany during the war.

"Through one of the marvels of modern science, I am enabled this Christmas Day to speak to all my peoples throughout the Empire.

"I speak now from my home and from my heart to you all, to men and women so cut off by the snows and the deserts or the seas that only voices out of the air can reach them..." The warmth of his words were magnified by the excitement of what had just occurred and emotion flooded the room.

Only six days earlier, the BBC had officially launched its Empire Service from a transmitter at Daventry, England. At 9:30 that morning, messages from the BBC Chairman, the Director General, the Chief Engineer and the Director of the new service had been read over the air and beamed to Australasia. Later, they would be repeated for listeners in other parts of the world.

Not Well Received

In those early days, broadcasts by the Empire Service were not continuous. They consisted of five separate transmissions of a few hours each. Most of the programming was rebroadcast from the domestic service. When the Empire Service did finally start its own news department, it was hardly well received.

One critic called it "flabby and uninspired" while there were reports of British listeners in India disgustedly turning off their radios in boredom. Officials were puzzled. After all, listeners to the domestic service rarely complained.

The problem was that, at home, there was no competition. The BBC held a monopoly on broadcasting. Overseas, however, the airwaves had begun to swell with others who hoped to gain and hold the attention of listeners.

Catching Up

By the time the Empire Service got on the air, the British were playing a catch-up game. The Russians were already broad-

The scene outside Bush House on June 30th 1944 after a flying bomb had fallen on the corner of Aldwych and Kingsway.

casting in foreign languages. Soon the German Nazis and Italian Fascists would join them with dramatic effect.

In 1935, the Italians opened a shortwave station in Bari, using it as part of the propaganda campaign in support of their invasion of Ethiopia. The station broadcast in Arabic and was often directed towards areas of the Middle East where there were substantial British interests, such as Palestine and Egypt.

What was unique about the programs on the Bari station was that they were designed to simultaneously entertain and persuade. Along with music and drama were blended accounts of alleged British atrocities and such choice phrases as "The Empire of the British is decadent" and "Eden (Anthony Eden, then Foreign Secretary) is a clown in the hands of the freemasons." Three years later, the Germans took up the cause with the ferocity of a hurricane and the skill of a surgeon. So innovative were their methods that many continue to be used to this day.

Propaganda from Zeesen

Propaganda was an essential part of national socialism -- Hitler likened it to an artillery bombardment before an infantry attack -- and radio was his favorite medium.

Soon after coming to power, the Nazis had expanded a shortwave station at Zeesen, some 20 miles south-east of Berlin. Taking the Italian's style of propaganda one step further, they encouraged listeners by organizing contests, giving away program schedules and providing material for rebroadcast on local stations. In some places, particularly Latin America, they bought stations outright.

Everyone was a target for the relentless Zeesen attack. Both Bolsheviks and the "decadent" Western plutocracies were painted in violently picturesque terms. And in the short run, the programs were brilliantly effective.

Retaliating with Truth

In the face of this torrent of abuse, the British authorities decided that they, too, would go into the business of broadcasting in foreign languages, particularly Arabic. A cabinet committee was set up to consider the problem.

Members of the Foreign Service almost salivated at the idea of retaliating with propaganda broadcasts of their own. But John Reith, then director general of the BBC, pointed out that really, only one organization was capable of handling the job -- the BBC.

"Only the BBC would have jeopardised the start of news bulletins by telling the truth."

When Reith opened the Arabic service on January 3, 1938, certain quarters within the diplomatic community were stunned. The first news bulletin contained an item about the execution of an Arab by British authorities for possessing a rifle and ammunition during anti-British riots. This was precisely the sort of item the Foreign office would have tactfully omitted! As historian Asa Briggs later wrote, "Only the BBC would have jeopardised the start of Arabic news bulletins by telling the truth..."

The Beeb and the War

During the first year of World War II, Britain was the only effective opponent of the Axis powers. It was, for millions, the symbol of resistance and the BBC was its voice.

During this time, the BBC was also the voice of many other countries. With the radio stations of all occupied Europe in the hands of the Nazis, the BBC became home to such groups as the Free (later the Fighting) French who were allowed to prepare their own programs. General de Gaulle rallied his soldiers to continue fighting when he spoke from London at the time of the French surrender in 1940. In fact it was through his BBC broadcasts that de Gaulle became well-known to his countrymen. Other nationalities, such as the Dutch, followed suit.

V for Victory

Perhaps the most famous radio campaign of the war, "V for Victory," was created by the Belgian program organizer. He realized that V was the initial letter for the word victory not only in English but also in French (*"Victoire"*) and Flemish (*"Vrijheid"*). He began using it as a rallying emblem and soon its use spread to Holland and

General de Gaulle broadcasting in 1941 to the French people from London

northern France. The campaign was then taken up in the other European services, with a spokesman known as Colonel Britton (actually assistant news editor Douglas Ritchie) playing the part.

It was Colonel Britton who introduced the Morse code signal for V -- three dots and a dash, which has the same rhythm as the opening notes of Beethoven's Fifth Symphony. Before long, Colonel Britton had suggested to his listeners a variety of ways for the people in occupied lands to defy the enemy by incorporating the sound into everyday life -- a schoolteacher clapping her hands to call her students or a customer calling to a waiter in a cafe.

Today in the BBC Listening Room, monitors listen to 50 languages from 120 countries around the clock.

Clandestine messages were also carried on the broadcasts as well as morale builders like "V for Victory." For a period, some broadcasts carried transmissions in Morse code intended to provide material for clandestine newspapers. Toward D-Day, coded messages filled the broadcasts to the point that the French service complained that out of a ten minute news bulletin, ten lines were devoted to these secret sentences.

Effectiveness Questioned

There has been much debate as to the real effectiveness of the BBC in times of war. By the time that peace returned to Europe, the "V for Victory" campaign was generally regarded as a failure, an exercise in irrelevance which may even have unnecessarily cost lives. The Japanese service -- which six months before Pearl Harbor the Ministry of Information solemnly opined could have a sufficiently powerful influence to keep Japan out of the war -- had little impact. After all, no Japanese was allowed to have a shortwave set.

When the war finally drew to a close, however, one thing was clear. The BBC had grown like a child raised on a diet of donuts. Going into the war broadcasting in English and seven foreign languages it exited the conflict a somewhat disorganized and slightly bloated 45 language monster. And while restraints were soon put on the post-war BBC, it did gain the necessary finance to continue and, more importantly, to maintain its independence. For if there was one lesson to be learned from its wartime experiences, it was that the BBC must always be free to tell the truth.

A Model for Others

That lesson was not cheap or easy to learn but was one that paid off again and again in subsequent years.

During the Hungarian revolution, for example, the BBC was thanked for its coverage by the Free Hungary radio station. An American station accused of inciting the Hungarian people, on the other hand, came under heavy criticism. And when the Americans wanted to learn what they had done wrong, they dispatched a team to the BBC.

The BBC World Service is a precious reminder that somewhere there is sanity.

The conclusion: the BBC was trusted because it often reported items which reflected no great credit on Britain. Said TV broadcaster Jonathan Dimbleby, "The BBC World Service [is] a precious reminder that somewhere there is sanity."

This is the reason why so many people of so many different nationalities tune in to London. It is sanity, an anchor in an world otherwise adrift in its own storms. At any given time of the day or night, *somebody, somewhere,* is listening and searching for that anchor in the ether, the sanity of shortwave, the BBC.

The BBC at a glance

For frequencies, look for the corresponding time in the frequency section starting on p.67.

World News

Broadcast daily in the World Service 0200, 0300, 0500, 0700, 0800, 0900, 1100, 1300, 1600, 2000, 2300; 5-Minute News 1400 (Mons-Fris); News summary 0100, 1000, 1200 (Suns only), 1400 (Sats and Suns only), 1700 (Sats only), 1900, 2100.

Newsdesk

A half-hour programme including World News and dispatches from overseas and UK correspondents daily 0000, 0400, 0600, 1800.

Newshour

A comprehensive look at the major topics of the day, plus up-to-the-minute international and British new daily 2200.

Newsreel

News of events as they happen and dispatches from BBC correspondents all over the world daily 0215 (South Asia), 1200 (ex Suns), 1500.

News about Britain

Daily 0309, 1109, 1609.

Twenty-Four Hours

Analysis of the main news of the day daily 0509, 0709, 1309.

British Press Review

Survey of editorial opinion in the Press Daily 0209, 0909.

The World Today

Examines thoroughly one topical aspect of the international scene Mons to Fris 1645 rep 2209, Tues to Fris 0145 (south asia), Tues to Sats 0315, 0545, 0915.

Commentary

Background to the news from a ride range of specialists Mons to Fris 1709,2309.

Outlook

An up-to-the-minute look at people, events and opinions together with the latest UK news, sport and weather Mons to Fris 1400, 1900, Tues to Sats 0100.

Financial News

Including news of commodity prices and significant move in currency and stock markets Mons to Fris 1925, in Newshour 2225, Mons to Sats 0930, Tues to Sats 0125, 0530, brief news Mons to Fris 0025, 0625, 0728, 1328, 1825 approx.

Financial Review

A look back at the financial week Sats in Newshour 2225 approx rep Suns 0530, 0930, brief review in Worldbrief Suns 0445, rep 1345, 2009.

Worldbrief

A 15-minute roundup of the week's news headlines, plus everything from sport and finance to bestsellers and the weather (see page 7) Suns 0445, 134, 2009.

Anything Goes - a variety of music and much more. Write to Bob Holness at World Service Suns 1430 rep Mons 0330, 0830.

Assignment - a weekly examination of a topical issue Weds 2030, rep Thurs 0230, 1001, 1615.

Book Choice - short book reviews with four editions each week - Sats 0145 rep Suns 0940, 1709; Sats 2309 rep Suns 0745; Suns 2309 rep Tues 0455, 1125; Weds 1740 rep Thurs 0140, 1125.

Business Matters - a weekly survey of commercial and financial news Tues 2115 rep Weds 0430, 0815, 1445.

Classical Record Review - Edward Greenfield reviews new releases Sats 0130 rep 1115, 2115.

Composer of the Month - Sats 1830 rep Suns 0030, 1130.

Country Style - with David Allan Weds 0145 rep 0445, 1115.

Development '88 - reflecting aid and development issues Tues 1930 rep Weds 0730, 1330.

Discovery - an in-depth look at scientific research Tues 1001 rep 1830, Weds 0330.

Europe's World - a magazine programme reflecting life in Europe and its links with other parts of the world Mons 2115 rep Tues 0145, 0730.

The Farming World - Weds 1225 rep Thurs 0640, 1940.

Focus on Faith - comment and discussion on the major issues in the worlds of faith Thurs 1830 rep Fris 0330, 1001.

From Our Own Correspondent - BBC correspondents comment on the background to the news Sats 2009 rep Suns 0315, 0730, 1115.

From the Weeklies - a review of the British weekly press Fris 2315 rep Sats 0730.

Good Books - recommendation of a book to read Mons 0315 rep 0915, Weds 2315.

Here's Humph! - all that jazz Sats 0430 rep 1001, Suns 1901.

How It All Began - Keith Parsons looks at the origins of some of the major issues in the world today - Weds 0130 rep 0945, 1945.

In Praise of God - a half-hour programme of worship - Suns 1030 rep 1830, Mons 0030.

Jazz for the Asking - Suns 0630 rep 1715, Weds 1030.

John Peel - selects tracks from newly released albums and singles from the contemporary music scene around the world Tues 0330 rep Thurs 0830, Fris 1330.

A Jolly Good Show - Dave Lee Travis presents your record request, the enquiry desk and the album of the month Sats 0815 rep 2315, Tues 1515.

The Ken Bruce Show - Sats 1401 rep Suns 0230, Mons 1130.

Letter from America - by Alistair Cooke Sats 1015 rep Suns 0545, 1645, 2315.

The Learning World - an international survey of education around the world introduced by John Turtle Mons 2315 rep Tues 0430, Weds 1515.

Mediawatch - monitoring worldwide developments in communications Thurs 0730 rep 1445, 2130.

Megamix - a compendium of music, sport, fashion, health, travel, news and views for young people - Tues 0030 rep 0830, 2130.

Meridian - each week three topical programmes about the world of the arts Sats 0630 rep 1130, 2030; Tues 2030 rep Weds 0630, 1130; Thurs 2030 rep Fris 0630, 1130.

Multitrack - all the latest news and music on the British pop scene Mons, Weds, Fris 1830 rep Mons, Weds, Fris 2330; Tues, Thurs, Sats 1215.

Music Now - presented by Geoffrey Norris Thurs 2315 rep Fris 0815, 1515.

Nature Now - Fris 1445 rep Suns 0915, Mons 0445.

Network UK - looks behind the issues and events that affect the lives of people throughout the United Kingdom. Three editions each week Mons, Weds, Fris 1930 rep Tues, Thurs, Sats 0215, 0745, 1330.

New Ideas - a radio shop window for new products and inventions Sats 0145 rep Tues 0445, Weds 1730, Thurs 1115.

Omnibus - each week a half-hour programme on practically any topic under the sun Tues 1615 rep Weds 0030, 1001.

People and Politics - background to the British political scene Fris 2130 rep Sats 0230, 1030.

Personal View - of topical issues in British life Fris 1945, Sats 0030, 0445, 0945.

The Pleasure's Yours - write to Gordon Clyde for your classical music requests Suns 0815 rep 2115, Thurs 1515.

Recording of the Week - a personal choice from the new releases Sats 0045 rep Mons 0545, Tues 1345, Weds 2145.

Science in Action - Fris 1615 rep 2030, Suns 1001, Mons 0230.

Seven Seas - weekly programme about ships and the sea Thurs 2115 rep Fris 0215, 0945.

Society Today - a weekly look at the changes in Britain Weds 1715, rep Thurs 0145, 0430, 0945.

Sports International - Mons 2130 rep Tues 0230, 1030.

Sports Roundup - Mons-Sats following the 0930 Financial News 1245; daily 1745, 2101, Suns only 1330.

Sportsworld - the weekly sports magazine Sats 1430, 1515, 1615.

Talking From... - profiles from Northern Ireland, Scotland and Wales Thurs 2145 rep Fris 0145, 1115.

Tech Talk - discovering what's new in the world of engineering Mons 1115 rep 1630, Tues 0815 Weds 0215.

The Vintage Chart Show - past Top Ten hits with Jimmy Savile Sats 0330 rep Mons 1030, 2030.

Waveguide - how to hear us better Suns 0750, Mons 0530, Tues 1115, Thurs 0130.

With Good Reason - a round table discussion chaired by George Scott - Suns 1401 rep 2330, Mons 0630,1001.

Words of Faith - people of all faiths share how their scripture gives authority and meaning to their lives daily 0540 rep 0809, 2025.

SCANNING: The Ten Most-Asked Questions

by Bob Grove, WA4PYQ

#1 Which scanner is best?

There are no absolutes. While you generally get what you pay for, there is variability in quality within price groups. Bearcats are the easiest to program; the BC800XLT is a very satisfactory, all-purpose scanner. The BC760XLT is a cost-effective, unobtrusive mobile scanner.

The Realistic PRO2004 has the best intermod rejection and memory capacity, but poorest sensitivity; it is a logical choice for metropolitan applications. The AOR AR2002 is an excellent, wide-frequency-coverage scanner with an S-meter and a tuning knob, but pricey considering its limited 20 channel memory capacity and slow scan/search rate. The AOR AR800 is the highest sensitivity, wide-frequency-coverage hand-held and has excellent dynamic range.

The ICOM R7000 is a high performance, general coverage VHF/UHF receiver with scannable memory, but is not a "scanner" in the traditional sense. Without modification, it scans at only 4 channels per second at highest speed and, even after modification, it pokes along at only 10-12 channels per second.

Worse yet, it has no resume-scan delay after a signal drops out. It will either resume scanning immediately, resume scanning after a preset time even if the signal is still there, or remain on channel permanently each time a signal is encountered unless the scan button is manually pressed.

Scanner hobbyists of the (near) future will probably enjoy faster scan and search rates, wider frequency ranges, signal-strength indicators, tuning dials as well as keypad control, computer interfaces, better signal-handling capability, spectrum display screens, larger memory capacity, new manufacturers' names, and improved wideband antennas.

#2 How can I improve my scanner reception?

Once you own a scanner, you have only half a receiving system; the antenna is a vital component of any installation. While the attachable whip will work for local reception, only an external -- and preferably high, outdoor -- antenna will bring in those distant, weak targets.

Contrary to TV broadcast signals which are horizontally polarized (TV antennas are therefore mounted in a horizontal plane), all two-way VHF/UHF mobile-to-base communications are vertically polarized. Transmitting and receiving (scanner) antennas are correspondingly mounted vertically (pointing up and down).

Antennas are either omnidirectional (respond equally to signals arriving from any compass direction) or directional (beam). They may be simple quarter-wavelength elements (no gain) or have multiple sections (gain). They may be passive (just the metallic elements themselves) or active (contain a built-in amplifier circuit requiring a power source).

#3 Which is the best scanner antenna?

There are good antennas and there are bad antennas, and you don't always get what you pay for. No small antenna will give top performance on low band (30-50 MHz). For local, all-band scanner reception most rooftop antennas will work. For distant omnidirectional reception, the Channel Master 5094 "Monitenna" is a hot performer, as is the Antenna Specialists AV801.

While discones presently hold public attention, they have no gain and do not receive as well as other premium scanner antennas like the Channel Master, Avanti or Grove Scanner Beam. Their main claim to fame is that they remain virtually impedance-flat over a wide frequency range, making them popular for military air-to-ground communications in the 225-400 MHz band.

The ICOM AH7000, Heathkit HA2513 and Diamond D130 are essentially the same, but come with different cables. ICOM includes low-loss RG-8/U while Diamond and Heathkit package lossy RG-58/U, inexcusable for an antenna designed to work through 1300 MHz.

While the Radio Shack discone is advertised to receive 25-1300 MHz, its small dimensions don't allow it to become efficient until above 100 MHz. This is the reason that ICOM, Diamond and Heathkit include a resonant 50 MHz base-loaded whip on the top -- to extend the lower

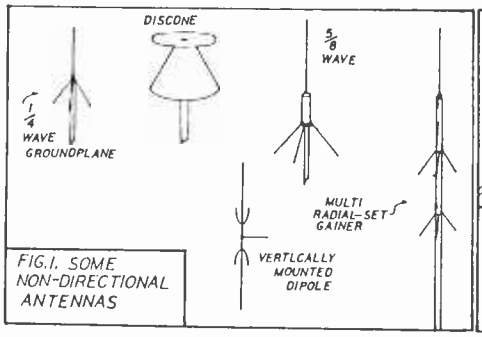


FIG. 1. SOME NON-DIRECTIONAL ANTENNAS

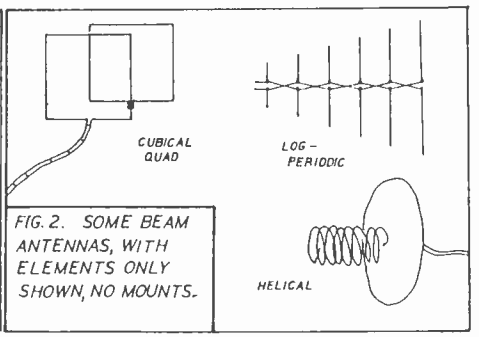
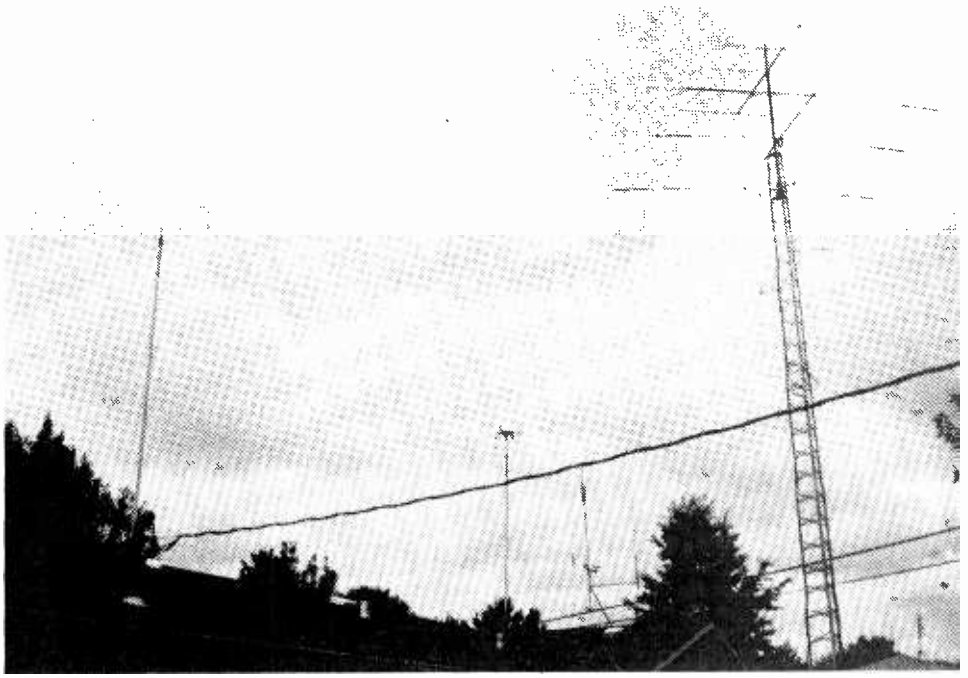


FIG. 2. SOME BEAM ANTENNAS, WITH ELEMENTS ONLY SHOWN, NO MOUNTS.

Antennas are either omnidirectional or directional (illus.by Clem Small). For full coverage, you may need several types of antennas in your "farm" (photo courtesy Jack Forbing)



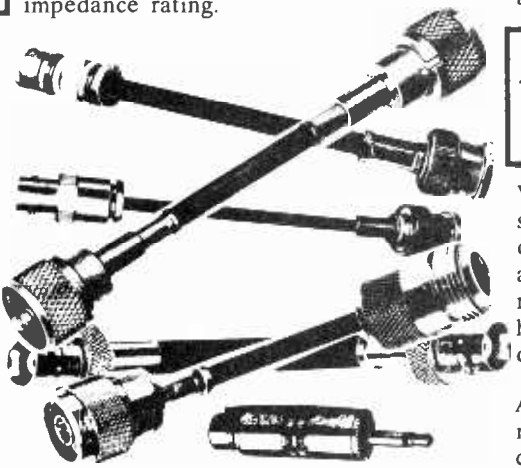
frequency coverage.

#4 Is there a difference in coaxial cable?

Coaxial cable is a trouble spot if not properly selected. For short runs (up to about fifty feet) and in strong signal areas (citywide) you can use inexpensive RG-58/U. For fringe applications or longer runs (100 feet or so) choose a high-grade cable like RG-6/U, foam-dielectric RG-8/U or RG-8/M.

Foam dielectric, foil-shielded RG-59/U is almost as good and in casual receiving applications will probably perform as well. For the most demanding installations (weak signals, 960 MHz reception, long cable lengths) choose Belden 9913 cable.

Some writers still insist on using 50 ohm cable, but there is little theoretical justification for this. No scanner or antenna maintains a 50 ohm impedance over the wide frequency coverage of modern receiving installations. Choose the cable with the best shielding and lowest loss and ignore the impedance rating.



Choose the cable with the best shielding and lowest loss and ignore the impedance rating.

#5 Why are there so many different coax connectors?

Because early car radios were equipped with those flimsy Motorola jacks, early converters which were designed to increase the frequency range of car radios also used Motorola plugs for simple interconnection. Scanners (unfortunately) followed suit. At VHF and UHF, Motorola plugs are erratic.

BNC connectors are far more efficient at transferring signals at these high frequencies and are finding increased use on modern scanners. While F connectors (used on cable TV systems) are efficient and inexpensive, they are only found on some accessories, not on scanners. They require adaptors for interconnection and some adaptors are lossy.

PL-259 (male) and SO-239 coax connectors, also known as UHF connectors, are of intermediate performance. They work well up to about 200-300 MHz, but become lossy at higher frequencies. Still, if your scanner has a Motorola jack, you may wish to stick a UHF/Motorola adaptor into it and attach a PL-259 connector to the coax.

Type N connectors, the most efficient of all at these high frequencies, are also the most expensive and are not found on any scanners or receivers except the ICOM R7000 and mating AH7000 antenna. They are, however, in common use in the land mobile industry for base and mobile transceivers and antenna systems.

#6 Why do hand-held scanners receive so poorly?

While hand-held scanners offer the same sensitivity to weak signals as their larger desktop and mobile counterparts, their antennas are dismal. Connected to a rooftop or mobile antenna, however, a hand-held scanner will stand up to a desktop or mobile scanner.

All shortened "rubber duckies" are compromise antennas, and when the radio is clipped to your belt, the signal absorption

and antenna detuning by your body makes the situation even worse.

Some manufacturers have taken the cue to provide better replacement antennas for scanners. The Grove ANT-8 is a low-cost, extendable whip antenna which may be adjusted to the proper length for the frequency of interest, and Grove reports a new high-performance, all-band flex antenna will be announced shortly. Similar antennas are offered by commercial land-mobile antenna manufacturers like Centurion, Valor, Russell and Signals.

#7 Will an AM/FM car radio antenna work for scanner reception?

Sure, if you don't mind reduced reception such as a citywide area. Splitters made domestically (Antenna Specialists, Grove, Para Dynamics) and offshore (Scanner World) do a reasonable job of separating signals fed to the auto radio and to the scanner, but scanner efficiency suffers because the 31-inch antenna is designed for the 88-108 MHz FM broadcast band.

Several mobile antennas (Radio Shack, Valor, Mid-West) provide good multiband scanner reception, but most models have been around for a long time and were not designed to include 225-400 MHz military aircraft or 806-960 MHz cellular/microwave mobile. The new Grove ANT4 exhibits a large number of efficient frequency matches between 30 and 960 MHz.

#8 Do I need a preamp?

Preamplifiers, as the name implies, amplify signals -- all signals, weak and strong -- before they reach the scanner. Under weak signal conditions out in the country or in an apartment with a poor antenna, preamps can help.

In the city, in the midst of powerhouse signals, preamps -- including active antennas -- cause more harm than good. Since they amplify strong signals as well as weak, they are likely to overdrive scanners (which have notoriously poor dynamic range -- signal-handling capability -- anyway) and may be overdriven themselves, producing spurious signals called "intermod" (intermodulation).

In the city, preamps may do more harm than good.

Overly-strong signals may also cause a reduction in sensitivity as well (desensitization or dynamic compression), so that signals actually become weaker rather than stronger.

The answer is simple: erect the best antenna and feedline you can find; then, if signals are still weak, install a low-noise preamplifier. Effective, wideband preamps are available for a range of prices from the Grove PRE3 ($49) to those from GTI, ARR and others ($150-200).

#9 What frequency ranges do I need on my scanner?

All programmable scanners now manufactured share the basic low, high and UHF bands. In addition, some offer aircraft and microwave mobile ("cellular") coverage. The Realistic PRO2004 and AOR AR2002 offer uninterrupted coverage over wide swaths of spectrum. The ICOM R7000 has total 25-2000 MHz coverage with only a tiny gap at its conversion frequency (1000-1025 MHz).

The VHF/UHF spectrum breaks down like this (frequencies in megahertz):

30-50	Civilian, government low band
50-54	Amateur radio (6 meters)
54-72	TV channels 2-4
72-76	Paging, repeater links mid band
76-88	TV channels 5-6
88-108	FM broadcast
108-136	Civilian aircraft VHF
136-138	Weather satellites
138-144	Military aircraft VHF
144-148	Amateur radio (2 meters)
148-150.8	Military bases
150.8-174	Civilian, government high band
174-216	TV channels 7-13
216-220	Inland waterway navigation
220-225	Land mobile, amateur shared
225-400	Military aircraft UHF
400-406	Weather balloons, telemetry
406-420	Federal government land mobile
420-450	Amateur
450-512	Civilian UHF band
512-806	TV UHF channels
806-960	Cellular, microwave mobile
960-1200	Telemetry, data

#10 What can I legally listen to?

In 1986, the President signed into law the Electronic Communications Privacy Act (ECPA '86) which, briefly, prohibits the uninvited monitoring of mobile telephone conversations (cellular or conventional); encrypted or scrambled transmissions; paid subsidiary carrier authorization (FM SCA); voice paging; or broadcast station remote links.

Virtually anything else may be monitored legally, including cordless telephones, federal government undercover operations, surveillance bugs, police and fire communications, hams and CBers, military operations, ship to shore, air to ground, press and wire services, business communications and, of course, any broadcast intended for general reception.

If a protected service is causing interference, it may be monitored only long enough to determine the source of the interference, but not monitored for informational content.

While violators may face fines and/or imprisonment, there have been no court cases involving the ECPA as of this writing and the Justice Department has formally deposed that they will not enforce it except for the most egregious violations.

Divulging what you hear is another thing -- and another law. The proscriptions of section 705 (formerly 605) of the 1934 Communications Act forbid disclosing to another party any communications overheard over the air, or using that information for personal gain.

Finally, some states have laws forbidding the installation of scanners in motor vehicles. The offense is a misdemeanor and can result in a fine. Licensed radio amateurs are usually exempted.

mt

The Communications Act forbids disclosing any communications overheard over the air.

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HBX-40	40'self supporting [10 sq.ft.]	$226.50
HBX-48	48'self supporting [10 sq.ft.]	$308.00
HBX-56	56'self supporting [10 sq.ft.]	$392.50
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3/16EHS	500' galvanized 7 strand	$40.00
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	HF ANTENNAS Tribands	
TH3JRS	3 element 'Junior Thunderbird'	
TH5MK2S	5 element 'Thunderbird'	
TH2MK3S	2 element 'Thunderbird'	
TH7DXS	7 element 'Thunderbird'	
EXP 14	Explorer 14 triband beam	
QK710	30/40 M conv. Exp 14	
	Monoband	
103BAS	'Long John' 3 element 10 mtr	
105BAS	'Long John' 5 element 10 mtr	
155BAS	'long John' 5 element 15 mtr	
204BAS	4 element, 20 meter	
205BAS	'Long John' 5 element 20 mtr	
7-1S	'Discoverer' rotary dipole 30/40mtr	
7-2S	'Discoverer' 2 elem. 40 meter beam	
7-3S	converts 7-2S to 3 elem. beam	
	Multiband Verticals	
18HTS	'Hy-Tower' 10 thru 80 meters	
14RMQ	roof mt kit for 12 AVQ,14AVQ and 18ATV/WB	
18VS	base loaded, 10 thru 80 meters	
12AVQS	trap vertical 10 thru 20 meters	
14AVQ/WBS	trap vertical 10 thru 40 meters	
18AVT/WBS	trap vertical 10 thru 80 meters	
	Multiband Doublets	
18TD	portable tape dipole 10-80 meters	
2BDQS	trap doublet 40 and 80 meters	
5BDQS	trap doublet 10 thru 80 meters	
	VHF ANTENNAS Beams & Verticals	
23BS	2 meter 3 element beam	
25BS	2 meter 5 element beam	
28BS	2 meter 8 element beam	
214BS	2 meter 14 element beam	
64BS	4 element 6 meter beam	
V-2S	colinear gain vertical 138-174 MHz	
V-3S	colinear gain vertical 220 MHz	
V-4S	colinear gain vertical 430-470 MHz	
GPG2A	base, 2 mtr. ground plane 3 dB	
	VHF & UHF Mobiles	
HR144GRI	figerglass 2 mtr. 6dB gain 3/8-24 mt	
HB144GRI	HyBander 2mtr 6dB gain 3/8-24 mt	
HB144MAG	HyBander 2 meter	
BN86	ferrite balum for 10-80 meters	
	OSCAR LINK ANTENNA	
215S	70cm, 435 MHz	
218S	Complete Oscar link system	

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AP8	8band ¼wave vertical	$152.00
A3	3 element triband beam	$246.00
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A744	7 & 10 MHz add on kit for A4	$81.00
4218XL	18 element 2 mtr, 28.8' boomer	$125.00
R4	10,12,15,20 meter vertical	$204.50
A4S	4 element triband beam	$344.00
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AV5	80-10 mtr. vertical	$111.00
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ARX450B	450 MHz. 'Ringo Ranger'	$39.25
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A144-10T	10 element 2 mtr. 'Oscar'	$54.00
A144-20T	20 element 2 mtr. 'Oscar'	$77.50
215WB	15 element 2 mtr. 'Boomer'	$81.00
220B	17 element FM 'Boomer'	$101.25
230WB	144-148MHz, 30 element	$216.00
32-19	19 element 2 mtr. 'Boomer'	$101.25
424B	24 element 'Boomer'	$81.00
10-4CD	4 element 10 mtr. 'Skywalker'	$124.75
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20-4CD	4 element 14 MHz 'Skywalker'	$310.50

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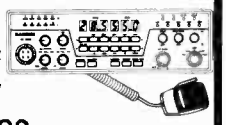
1108	RG8U Mini 8 low loss foam per foot	$0.17
1198	RG8U Columbia superflex 100'	$31.00
1180	RG8U Low loss 100% bonded foil shield 88% tin copper braided sheild -per foot	$0.35

RANGER



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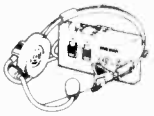

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Superhet w/two power cords carry case, City/Hwy, mini size

BEL

XKR100 ..... **$43.90**
LED alert, tone alert, X & K band, dash/visor.

876 ..... VECTOR $94.90
GAas diodes, sequential LED, City/Hwy, audio alert.

847 ..... **$134.90**
EXPRESS REMOTE, X & K band, Superhet, 2-way filter, LED & audible alerts.

MAXON

RD2A **$46.90**
Superhet, X & K band, audible & visual alert, city/highway setting

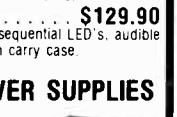
RD3 ..... **$59.90**
Long range dual conversion, X & K band, LED's, audible alert w/volume control, antifalsing, city/hwy, dash/visor.

RD21 ..... **$54.90**
Mini size, audible & visual alert, omni-polarity guard, dash/visor

RD25 ..... **$79.90**
Deluxe mini, same as above with sequential LED's.

RDXL **$129.90**
CORDLESS, X & K bands, anti falsing, sequential LED's, audible alert, city/hwy, dark/mute switch, with carry case.

TENNA PHASE III POWER SUPPLIES



PS3 ..... **$15.90**
Output 13.8V DC - 3 amp constant 5 amp surge, electronic overload protection w/instant auto reset, fuse protected

PS4 ..... **$19.90**
Fully regulated, 13.8 VDC - 4 amps constant with surge protection, overload protection w/instant auto reset.

PS7 ..... **$24.90**
Fully regulated, 7 amp constant,10 amp surge capacity.

PS12 ..... **$34.90**
Fully regulated, 10 amp constant 13 amp surge, electronic overload protection w/instant auto reset

PS20 ..... **$64.90**
Fully regulated, 20 amp surge capacity, 13.8 VDC, 17 amp constant, with meter.

PS25 ..... **$79.90**
Regulated 4.5-15VDC-25 Amp constant 27 amp surge, instant auto reset, dual meter for current & voltage.

PS35 ..... **$99.90**
Same as above except, 35 amp constant, 37 amp surge, adjustable from 10 to 15 volts

uniden Bearcat

BC55XLT
$114.90
10 Channel 10 band, programmable, keyboard lock, 2 digit LCD display, review, channel lockout, battery low indicator, memory backup, built-in delay, direct channel access, track tuning, accepts nicad batteries.

BC800XLT . $239.90
40 Ch 12 band, **800 MHz,** aircraft & weather, priority, track tuning, scan delay, auto search, direct channel access, auto squelch, channel lockout, AC/DC.

BC145XL . . . $92.90
16 Ch 10 band, programmable, 2 digit LED, priority, review, direct Ch access, track tuning, built-in delay, memory backup, Channel lockout, direct channel access, weather, AC/DC.

BC580XLT $189.90
100 Ch 11 mobile, service search, weather, priority, channel lockout, scan delay, auto search, illuminated, programmable, track tuning, direct channel access.

BP55C Battery pack & charger for BC55XL **$29.90**

BC100XLT 100 Ch 11 band hand held **$199.90**
aircraft, ch lockout, auto search, programmable, with battery pack, AC charger, carry case & earphone.

BC200XLT 200 Ch 12 band, hand held **$269.90**
WITH 800MHz band, priority, ch lockout, auto search, track tuning, direct ch access, with battery pack, AC adaptor, carry case.

BC175XL 16 ch. 11 band aircraft **$149.90**
weather, ch lockout, auto search & squelch, delay, track tuning, memroy backup, high/low scan speed, direct Ch access, AC/DC

BC210XLT 40 Ch, 11 band, aircraft & weather **$179.90**
Ch lockout, priority, scan delay, auto search, programmable, track tuning, direct Ch access, AC/Dc with mobile mounting bracket.

BC560XLT 16 Ch 10 band mobile **$99.90**
LED display, review, priority, memory backup, direct Ch access, weather search, built-in delay, track tuning, external speaker jack.

BC760XLT 100 Ch 12 band mobile **$279.90**
WITH 800 MHz, weather & aircraft, base/mobile, priority, service scan, ch lockout, scan delay, auto search, programmable, track tuning, direct Ch access, memory lock, memory backup, ext speaker jack.

BETTY BEARCAT Frequency Directory

BCFB-W ..... Western US **$9.90**
BCFB-E ..... Eastern US **$9.90**

Regency®

INF5 .... $89.90
AC Powered TURBO SCAN®, pre-programmed by state to receive any type of police transmission plus fire and weather, scans at 50 channels per second, digital display, instant weather.

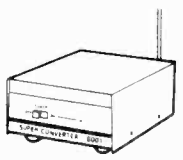
Z45 ..... $99.90
45 Channel 7 band w/aircraft, programmable, 45 preprogrammed channels, search or scan, alarm clock, priority, permanent memory backup, ch lockout, scan delay, AC/DC with both cords.

INF1 ..... $144.90
Preprogrammed mobile, receives all 50 states police, plus instant weather, scans 40 channels per second DC.

R1070 ..... $89.90
10 Ch 6 band, programmable, permanent memory backup, dual level digital display, channel lockout, step control, AC only

SUPER CONVERTER

Installs on any scanner and is designed to receive frequencies between 810 MHz & 912 MHz and convert them down to 410 MHz thru 512 MHz, easy to install.



"The Largest Dealer of Scanners in the World"

SCANNER WORLD, USA®

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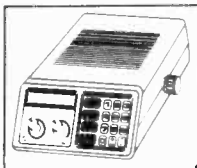


— SPECIAL —

Regency®

MX-3000

Special $164.99

($7.00 shipping)

30 CHANNELS—MOBILE/BASE

—SCANNER WORLD EXCLUSIVE—

Features include simple programming of the following frequency ranges: 30-50 MHz, 144-174 MHz, 440-512 MHz. Digital display, priority, search, lockout, delay, dim control, top mounted speaker, one year factory warranty. Includes AC & DC cords, mobile mounting bracket, telescopic antenna. All for only **$164.99** plus $7.00 shipping (optional extended warranty: 3 years $39.99; 2 years $29.99.) MX3000 Service Manual $5.00.

Regency® Z60

60 Channel

Automatic Programmable Scanner

Includes Public Service and Aircraft Bands

Scanner World Special

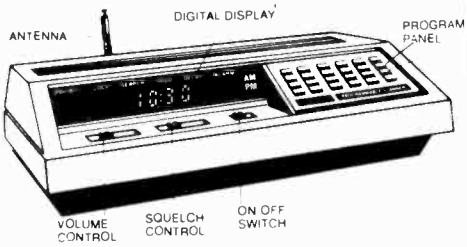
$109.99

(plus $7.00 shipping each)

Optional Accessories:

Cigarette Lighter Plug RGMPC . $4.95

Z Mobile Bracket — ***Special*** . . . $5.99



The Regency Z-60 is a compact, programmable 60 channel, multi band, FM monitor receiver for use at home or on the road. It is double conversion, super heterodyne used to receive the narrow band FM communications in the amateur, public safety and business bands. 30-50, 118-136, 144-174, and 440-512 MHz. Size 10¾"Wx2-7/8"Hx8-3/8"D.

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

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

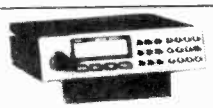
Other features include scan delay, priority and a bright/dim switch to control the brightness of the 9-digit Vacuum-Fluorescent display. The Z60 can be operated on either 120VAC or 12 VDC. Includes one year warranty from Regency Electronics (optional 3 yr extended warranty only $39.99, gives you a total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

Cobra® SR-15

$199.99 *($7.00 shipping)*

100 channel pocket sized hand-held scanner. (6"Hx1"Dx2¾"W), no crystal, portable scanner. 29-54 MHz, 118-174MHz, 406-512 MHz, bank scanning, backlit LCD display, automatic search, lockout, scan delay, priority, key lock, plus much more. Includes rubber antenna, rechargeable Ni-Cad battery pack, AC adapter charger, earphone, and carry case. optional cigarette lighter adapter #15MPC $12.99

BEARCAT 100-XLT Hand-heid 100 Channel	$199.99 (7.00)
BEARCAT 70XLT Programmable Hand-Held	169.99 (6.00)
BEARCAT 55XLT Programmable Hand-Held	119.99 (5.00)
AD100U AC Adapter/Charger for 50 XL/55XLT	12.95 (")
BP55 Ni-Cad Battery Pack for 50XL	13.99 (")
VC001 Carry Case for 50XL/55XLT	11.99 (7.00)
PS001 Cigarette Lighter Adapter for 50XL/100XL/100XLT	12.95 (")
BEARCAT 140 AC Programmable Scanner	94.99 (5.00)
BEARCAT 145XL AC Programmable Scanner	98.99 (5.00)
BEARCAT 175XL AC Digital Scanner	159.99 (5.00)
REGENCY TS-1 Turbo Scan AC/DC	219.99 (7.00)
REGENCY TS-2 Turbo Scan 800 AC/DC	299.99 (7.00)
BEARCAT 210 XLT AC/DC Digital Scanner	189.99 (7.00)
BEARCAT 800 XLT AC/DC Digital Scanner	264.99 (7.00)
REGENCY HX-1500 Hand-Held Scanner	209.99 (7.00)
REGENCY MA-257 Cigarette cord for HX1000/1200	16.99 (7.00)
REGENCY MA-917 Ni-cad Battery for HX1000/1200	24.99 (")
REGENCY HX-CASE Hvy Leath. case for HX1000/1200	19.99 (")
REGENCY MA-549 Drop in charger for HX1000/1200	74.99 (5.00)
REGENCY MX-3000 AC/DC Digital Scanner	164.99 (7.00)
REGENCY Z-30 AC/DC Digital Scanner	99.99 (7.00)
REGENCY Z-60 AC/DC Digital Scanner	109.99 (7.00)
Mobile Mounting Bracket for Z Scanners	5.99 (")
REGENCY RH-256 High Band Transceiver w/Ant.	329.99 (7.75)
REGENCY UC 102 Hi-VHF Hand Transceiver	119.99 (5.50)
REGENCY RH-808B High Band Transceiver w/Ant.	469.99 (7.75)
REGENCY R806 AC/DC Crystal Scanner	79.99 (5.00)
REGENCY INF-3 AC Informant Receiver	139.99 (7.00)
REGENCY INF-5 AC Informant Receiver	119.99 (7.00)
COBRA SR15 100 Channel Hand-Held	199.99 (7.00)
COBRA SR12 Digital Hand-Held Scanner	189.99 (6.50)
COBRA SR10 Digital Hand-Held Scanner	124.99 (6.00)
COBRA SR900 AC/DC Digital Scanner	104.99 (5.00)
COBRA SR925 AC/DC Digital Scanner	109.99 (7.00)
Book "Top Secret Registry of Gov't Frequency" 6th	14.99 (3.00)
Book "Covert Intelligence, Electronic Eavesdropping"	8.95 (")
Book "Betty Bearcat Frequency Directory"	14.95 (")
Book "Rail Scan Directory"	7.95 (")
Book "Air Scan Directory"	12.95 (")
RCD MRP-1 Single Channel Hand-Held	38.99 (3.00)
FANON M8HLU DC Crystal Scanner	89.99 (5.00)
FANON PSK-1 AC Adapted for M8HLU	12.99 (")
FOX BMP-1060 AC/DC Digital Scanner	129.99 (5.50)
FOX Mounting Bracket for BMP-1060	9.99 (")
ANT-1 Magnet Mount Mobile Scanner Antenna	29.99 (3.00)
ANT-8 Base Scanner Antenna w/50' cable	29.99 (3.00)
REGENCY CB-ONE CB Radio	34.99 (5.00)



UNIDEN

Bearcat

BC-600 XLT

$199.99 *($7.00 shipping)*

Digital Programmable 100 Channel Scanner

BC 600 XLT covers the following frequencies: 29-54 MHz, 118-174 MHz, 406-512 MHz. Features compact size of 6-5/16 Wx1-5/8 Hx7-3/8 D, scan delay, priority, memory backup, channel lockout, bank scanning, key lock, AC DC power cords, telescopic antenna, mounting bracket supplied, one year factory warranty, search, direct channel access, track tuning, service search including pre-programmed frequencies by pushing a single button for police, fire, emergency, aircraft, weather, and marine services. Plus exclusive optional features never available on any scanner before. First is an RF receive amplifier for boosting weak signals for only $24.99 plus a CTCSS tone board is available for only $59.99 to make this the number one scanner available in the USA. Optional cigarette lighter plug #600MPC $4.99

BEARCAT BC-950XLT

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

$249.99 *($7.00 shipping)*

BEARCAT 70XLT

20 CHANNEL HAND-HELD SCANNER

Small size 6"Hx1"Dx2¾"W, full digital readout, priority, search, channel lockout, scan delay, key lock. Covers following frequencies: 29-54mhz, 136-174mhz, 406-512mhz. Package includes rubber antenna, rechargeable Ni Cad battery pack, AC adapter/charger, and carry case.

SPECIAL PACKAGE DEAL **$169.99** ($6.00 shipping each)

SCANNER WORK EXCLUSIVE

UNIDEN BEARCAT BC205XLT

$259.99 *(7.00 shipping each)*

Digital programmable 200 Channel hand-held portable scanner with raised button keyboard for easy programming of the following frequency ranges: 29-54MHz, 118-175MHz, 406-512MHz, 806-956MHz. Features include: Scan delay, memory backup, key pad lock, sidelit liquid crystal display, channel lockout, 10 twenty channel banks, direct channel access, automatic search, full one year factory warranty, 10 priority channels, Ni-Cad battery pack, AC adapter/charger, flexible rubber antenna, carry case are all included. Size is 2-11/16Wx1-3/8"Dx7-1/2" high. (Optional extended 2 yr warranty $59.99, 3 yr extended warranty $79.99).

SCANNER WORLD SPECIAL

COBRA SR-925

$109.99

(plus $7.00 shipping each)

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

ORDERING INFORMATION

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

SHIPPING CHARGES

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

Scanner World, USA®

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Most orders Shipped Same Day Received!

Christmas in the Middle East

On a night near the city of Bethlehem in Judaea, a group of shepherds were watching over their flock. And as they did, an angel came upon them, telling them of a newborn child in swaddling clothes, lying in a manger. "Glory to God in the highest," said the angel, "and on earth peace, good will toward men."

Some one thousand, nine hundred and eighty-eight years later, that same area of the world continues to find peace elusive. Despite occasional signs of promise, the Middle East remains one of the world's most volitile flashpoints.

Today, as Christians around the world celebrate the birth of that child, we offer you the opportunity to experience some of the sounds of this war-torn land. This list, which contains a myriad of voices, includes both very difficult and easy-to-hear stations. All are drawn from the pages of the 1989 *Passport to World Band Radio* during the time period that provides the best opportunities for Middle East listening. Additional monitoring is by Stephen Price.

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a = Alternate frequency. i ≙ Irregular schedule. k = Broadcast of the Holy Koran. v = variable time or frequency. < = Fades in. > = Fades out. Frequencies in italics are jammed. Frequencies in bold carry English programming.

1700-1800 [12:00 PM EST/9:00 AM PST]

1700-1710>	Voice of the Crusader, Eastern Iraq..... *3543, 4529*
1700-1730	Radio Cairo, Egypt..... 9755vk, 9850, 11665, 11750, 11875, 11975, 12050, 15155, **15255**
1700-1730	Radio Iran Toilers, Afghanistan..... 4775, 6125, 6230v, 10870v
1700-1730	Voice of the Islamic Republic of Iran, Iran..... 5995, *7190, 7230*, 9022, 11895, 15084, 15315
1700-1745	Radio Jamahiriya, Libya..... 6185, 9600, 15235, 15415
1700-1745	Kol Israel, Jerusalem..... 5900, *7355, 9010.5, 9385, 9460, 9540, 9815, 9855, 11585*, 11605, *11655, 11700*
1700-1745	Voice of the Martyrs, Near Iran..... 4110vi
1700-1800	Broadcasting Service of Kingdom of Saudi Arabia... 5875, 7150, 7190, 7250, 9560, **9705, 9720**, 9870
1700-1800	Nile Valley Radio, Egypt..... 11785v, 15285
1700-1800	Radio Baghdad, Iraq..... 6100, 9535, 11760
1700-1800	Radio Bayrak, Cyprus..... **6165v**
1700-1800	Radio Iranian Freedom Flag, Egypt..... 7080, 9035, 11315a
1700-1800	Radio Jordan, Jordan..... 7155, 9530, 9540, **9560**, 9575
1700-1800	Radio Kuwait, Kuwait..... 6055, 9840, 9880, 11990
1700-1800	Radio Oman, Oman..... 9735
1700-1800	Radio San'a, People's Democratic Republic of Yemen 4852.7, 5970, 6135, 7190, 9779.3, 11770i
1700-1800	Syrian Broadcasting Service, Syrian Arab Republic 7455a, 9950
1700-1800	UAE Radio, United Arab Emirates..... 9550, 11730, 11955, 15320
1700-1800	Voice of the Communist Party of Iran, Afghanistan. *4480v, 4529va*
1700-1800	Voice of Hope, Lebanon..... 6280.2, 6215.2a
1700-1800	Voice of the Iranian Communist Party, Afghanistan. 3880v
1700-1800	Voice of Lebanon, Lebanon..... 6550v
1700-1800	Voice of the Martyrs, Near Iran..... 3935v, 4165vi, 4250vi
1700-1800	Voice of the UAE, United Arab Emirates..... 5995, 7215, 7280, 9630, 9695
1715-1800	Qatar Broadcasting Service, Qatar..... 11820.6
1730-1800	Radio Cairo, Egypt..... 9755vk, 9850, 9900, 11665, 11875, 11925, 12050, 15155, **15255**
1700-1800	Voice of the Islamic Republic of Iran, Iran..... 5995, *6080, 7190, 7230*, 9022, 9765, 11895, 15084
1745-1800	Kol Israel, Jerusalem..... 5886, 7462, 7385, 9435, 9460, *9815*, 9855, 11585, 11655, 11700
1745-1800	Rashuth Hashidur, Israel..... 7495
1745-1800	Radio Jamahiriya, Libya..... 4155 LSBi, 5705 USBi, 6185, 9600, 15235, 15415

1800-1900 1:00 PM EST/10:00 AM PST]

1800-1815	Voice of Lebanon, Lebanon..... 6550v
1800-1830	Kol Israel, Jeruslalem..... *5885*, 5900, *7355, 7462*, **9385**, 9435, **9460**, *9540, 9815*, 9855, **11585, 11655**, *11700*
1800-1830	Radio Bayrak, Cyprus..... 6165v
1800-1830	Radio Cairo, Egypt..... 9475, 9755vk, 9850, 9900, 11930, 12050, 15155, **15255**
1800-1830	Radio Iranian Freedom Flag, Egypt..... 7080, 9035, 11315a

1800-1830 Rashuth Hashidur, Israel..... 7495
1800-1830 Syrian Broadcasting Service, Syrian Arab Republic 7455a, 9950
1800-1830 Voice of the Crusader, Eastern Iraq..... *3905v*
1800-1830 Voice of the Martyrs, Near Iran..... 3935v, 4165vi, 4250vi
1800-1830 Voice of Palestine, People's Democratic Yemen..... 4852.7i, 5970i, 7190, 9779.3i, 11770i
1800-1830 Voice of the UAE, United Arab Emirates..... 5995, 7215, 7280, 9630, 9695
1800-1900 Broadcasting Service of Kingdom of Saudi Arabia... 5875, 7150, 7250, 7275, **9705**, **9720**, 9870, 15060
1800-1900 Qatar Broadcasting Service, Qatar..... 11820.6
1800-1900 Radio Baghdad, Iraq..... 6100, 7250, 7295, 9535, 9770, 11740, 11760
1800-1900 Radio Jamahiriya, Libya..... 4155 LSBi, 5705 USBi, 6185, 9600, 15235, 15415
1800-1900 Radio Jordan, Jordan..... 7155, 9530, 9540, 9575
1800-1900 Radio Kuwait, Kuwait..... 6055, 9880, **11665**, 11990
1800-1900 Radio Oman, Oman..... 6085, 9735
1800-1900 Radio San'a, People's Democratic Republic of Yemen 4852.7, 5970, 6135, 7190, 9779.3, 11770i
1800-1900 UAE Radio, United Arab Emirates..... 9550, 11730, 11955, 15320
1800-1900 Voice of the Arabs, Egypt..... 9700, 11785v
1800-1900 Voice of the Communist Party of Iran, Afghanistan. *4480v, 4529va*
1800-1900 Voice of Hope, Lebanon..... 6280.2, 6215.2a
1800-1900 Voice of the Iranian Communist Party, Afghanistan. 3880v
1800-1900 Voice of the Islamic Republic of Iran, Iran..... 5995, *6080, 7190, 7230*, 9022, 9765, 11895, 15084
1815-1830 Voice of Lebanon, Lebanon..... **6550v**
1830-1900 Kol Israel, Jerusalem..... 5900, *7355, 7462, 9010.5, 9435*, 9460, *9540, 9815, 9855*, 11585, *11655, 11700*
1830-1900 Radio Bayrak, Cyprus..... **6165v**
1830-1900 Radio Cairo, Egypt..... 9475, 9755vk, 9850, 9900, 11930, 12050, 15155, **15255**, 15375
1830-1900 Radio Iran, Egypt..... *7075, 9400*
1830-1900 Radio Kuwait, Kuwait..... 7120, 9880
1830-1900 Rashuth Hashidur, Israel..... 7495, 9385, 9460, 9925a, 9930
1830-1900 Syrian Broadcasting Service, Syrian Arab Republic 7455a, 9950, 11625, 12085
1830-1900 Voice of the Crusader, Eastern Iraq..... *3930, 3965v, 5995, 6145, 7130*
<1830-1900 Voice of the Islamic Republic of Iran, Iran..... 3778v
1830-1900 Voice of Lebanon, Lebanon..... 6550v
1830-1900 Voice of the UAE, United Arab Emirates..... **5995**, 7215, 7280, 9630

1900-2000 2:00 PM EST/11:00 AM PST]

1900-1930 Qatar Broadcasting Service, Qatar..... 11820.6, 15265.6
1900-1930 Radio Baghdad, Iraq..... 6100, 7295, 9535, 9620, 9770, 11740, 11760
1900-1930 Radio Cairo, Egypt..... 9475, 9755vk, 9850, 9900, 11930, 12050, 15375
1900-1930 Radio Iran, Egypt..... *7075, 9400*
1900-1930 Voice of the Islamic Republic of Iran, Iran..... 3778v, 9022
1900-1945 Voice of Hope, Lebanon..... **6280.2**, **6215.2a**
1900-2000 Broadcasting Service of Kingdom of Saudi Arabia... 5875, 7150, 7250, 7275, **9705**, **9720**, 9740k, 9870
1900-2000 Kol Israel, Jerusalem..... 5900, 7355, *7470, 9010.5*, 9435, *9540, 9855, 11655, 11700*
1900-2000 Radio Bayrak, Cyprus..... **6165v**
1900-2000 Radio Jamahiriya, Libya..... 4155 LSBi, 5705 USBi, 6185, 9600, 15235, 15415
1900-2000 Radio Jordan, Jordan..... 7155, 9530, 9540, 9575
1900-2000 Radio Kuwait, Kuwait..... 6055, 7120, 9880, **11665**, 11990
1900-2000 Radio Oman, Oman..... 6085, 9735
1900-2000 Radio San'a, People's Democratic Republic of Yemen 4852.7, 5970, 6135, 7190, 9779.3, 11770i
1900-2000 Rashuth Hashidur, Israel..... 7495, 9385, 9460, 9925a, 9930, 11585
1900-2000 Syrian Broadcasting Service, Syrian Arab Republic 7455a, 9950, 11625, 12085
1900-2000 UAE Radio, United Arab Emirates..... 9550, 11730, 11955
1900-2000 Voice of the Arabs, Egypt..... 9700, 11665, 11785v
1900-2000 Voice of the Crusader, Eastern Iraq..... *3930, 3965v, 5995, 6145, 7130*
1900-2000 Voice of the Islamic Republic of Iran, Iran..... 5995, *6080, 7190*, 11895, 15084
1900-2000 Voice of Lebanon, Lebanon..... 6550v
1900-2000 Voice of the UAE, United Arab Emirates..... 5995, 7215, 7280, 9630, 9695
1930-2000 Qatar Broadcasting Service, Qatar..... 11820.6
1930-2000 Radio Baghdad, Iraq..... 7295, 9535, 9620, 9770, 11740, 11760
1930-2000 Radio Cairo, Egypt..... 9475, 9755vk, 9850, 9900, 11930, 12050, 15335, 15375
1930-2000 Voice of the Islamic Republic of Iran, Iran..... **3778v**, 6220, **9022**, **9765**
1945-2000 Voice of Hope, Lebanon..... 6280.2, 6215.2a

2000-2100 [3:00 PM EST/12:00 PM PST]

2000-2010> Voice of the Islamic Republic of Iran, Iran..... 5995
2000-2015 Radio Cairo, Egypt..... 9475, 9755vk, 9850, 9900, 12050, 15335, 15375
2000-2030 Kol Israel, Jerusalem..... 5900, **7355**, **7462**, **9010.5**, **9435**, **9855**, *11605*, **11655**, 11700
2000-2030 UAE Radio, United Arab Emirates..... 9550, 11730, 11955
2000-2030 Voice of the Islamic Republic of Iran, Iran..... **3778v**, *6080*, 6210, *7190, 7230*, **9022**, **9765**, 11895, 15084
2000-2100 Broadcasting Service of Kingdom of Saudi Arabia... 5875, 7210, 7250, 7275, **9705**, **9720**, 9740k, 9870
2000-2100 Qatar Broadcasting Service, Qatar..... 11820.6
2000-2100 Radio Baghdad, Iraq..... 7295, 9535, 9620, **9770**, 11740, 11760
2000-2100 Radio Bayrak, Cyprus..... **6165v**
2000-2100 Radio Damascus, Syrian Arab Republic..... **7455a**, **9950**, **11625**, **12085**
2000-2100 Radio Jamahiriya, Libya..... 4155 LSBi, 5705 USBi, 6185, 9600, 15235, 15415
2000-2100 Radio Jordan, Jordan..... 7155, 9530, 9540, 9575
2000-2100 Radio Kuwait, Kuwait..... 6055, 7120, 9880, **11665**, 11990

2000-2100	Radio Oman, Oman	6085, 9735
2000-2100	Radio San'a, People's Democratic Republic of Yemen	4852.7, 5970, 6135, 7190, 11770i
2000-2100	Rashuth Hashidur, Israel	7495, 9385, 9460, 9925a, 9930, 11585
2000-2100	Voice of the Arabs, Egypt	9700, 11665, 11785v
2000-2100	Voice of the Crusader, Eastern Iraq	*3930, 3965v, 5995, 6145, 6175, 7130*
2000-2100	Voice of Hope, Lebanon	6280.2, 6215.2a
2000-2100	Voice of Lebanon, Lebanon	6550v
2000-2100	Voice of the UAE, United Arab Emirates	5995, 7215, 7280, 9630, 9695
2015-2200	Radio Cairo, Egypt	9475, 9755vk, 9850, **9900**, 12050, 15335, **15375**
2030-2100	Voice of the Islamic Republic of Iran, Iran	6210, *7230*, 9765, 15084
2030-2100	Kol Israel, Jerusalem	5900, 7355, 7462, 9010.5, 9435, 9855, *11605*, 11655, 11700

2100-2200 4:00 PM EST/1:00 PM PST]

2100-2115	Radio Kuwait, Kuwait	7120
2100-2115	Radio San'a, People's Democratic Republic of Yemen	4852.7, 6135, 9779.3
2100-2130	Broadcasting Service of the Kindom of Saudi Arabia	7210, 9870
2100-2130	Qatar Broadcasting Service, Qatar	11820.6
2100-2130	Radio Baghdad, Iraq	9770, 11740, 11760
2100-2130	Radio Jordan, Joran	9530, 9540, 9575
2100-2130	Radio Oman, Oman	6085, 9735
2100-2130	Voice of the Crusader, Eastern Iraq	*3930, 3965v, 5995, 6145, 7130*
2100-2130	Voice of the UAE, United Arab Emirates	7215, 7280, 9630, 9695
2100-2145>	Radio Jamahiriya, Libya	4155 LSBi, 5705 USBi, 6185, 9600, 15235, 15415
2100-2200	Kol Israel, Jerusalem	5900, 7355, *7462, 9010.5, 9435, 9855, 11655*
2100-2200	Radio Baghdad, Iraq	**7295**, 9535, 9620
2100-2200	Radio Bayrak, Cyprus	**6165v**
2100-2200	Radio Cairo, Egypt	9475, 9850, **9900**, 12050, 15335, **15375**
2100-2200	Radio Damascus, Syrian Arab Republic	**7455a, 9950, 12085**
2100-2200	Radio Kuwait, Kuwait	6055, 9880, **11990**
2100-2200	Rashuth Hashidur, Israel	7495, 9385, 9460, 9925a, 9930, 11585
2100-2200	Voice of the Arabs, Egypt	9700, 11665, 11785v
2100-2200	Voice of Hope, Lebanon	6280.2, 6215.2a
2100-2200	Voice of the Islamic Republic of Iran, Iran	6210, *9022*, 9765, 15084
2100-2200	Voice of the UAE, United Arab Emirates	5995
2130-2200	Broadcasting Service of the Kindom of Saudi Arabia	7210, 9705, 9720
2130-2200	Radio Baghdad, Iraq	11760
2130-2200	Radio Jordan, Joran	9530, 9540

On the Radio:

BEEPS, WHISTLES, AND DEEDLE-DEEDLES

by Ted Benson, WA6BEJ

The other night I was tuning across the upper portion of the shortwave bands. I was trying in vain to escape the interference generated by by neighbor's broadband transmitting station (an arc-welding setup) and at the same time find something other than the Voice of America or Radio Moscow to listen to.

My attention was drawn to a station broadcasting a rather pleasant-sounding progression of musical notes. After listening for a while it became obvious that the range of notes being played was more limited than a Gregorian Chant. What's more, it didn't appear to follow any pattern. So much for a national anthem or frequency marker, I thought. Then it hit me: I was tuned into one of the so-called piccolo broadcasts, one of many enigmatic sounds available on the shortwaves.

A Very Fast Series of Tones

Many of the signals heard these days are not intentionally designed to prevent interpretation or interception by shortwave listeners. Rather, they are encoded to efficiently transmit a variety of information on such varied conditions as weather, fluid levels, remote equipment, and even the location of wild animal populations. These are telemetry signals.

Telemetry signals can appear on the air for very brief moments at frequent intervals or repeat their message endlessly for long periods of time. Sometimes the pattern of sounds will repeat several times in a transmission to assure the owner that the information is received in spite of fading, interference and so forth.

Most of the transmissions contain digitally-encoded analog information, sent automatically from remote, untended sites. At the receiving end they are decoded and either analyzed by computer or perhaps simply used to sound an abnormal condition alarm. Some rather sophisticated systems are currently in use to automatically track and plot the positions of endangered species of animals as they migrate. Whales and pandas are frequently the source of these signals. [*See sidebar*]

NOAA, the National Oceanographic and Atmospheric Administration of the United States, uses remote telemetry transmitters to gather information about snow levels, tides, rainfall, and even smog levels. Tremendous man-hours are saved by using these remote stations, not to mention the situations when the environment being measured is too hazardous for human personnel.

But don't think for a minute that you and the signal's intended recipient are the only folks listening. Many billions of dollars are spent by the super powers of the world who try to intercept missile test and satellite telemetry data from "the other side." Our own NSA (National Security Agency) maintains huge installations for just such purposes.

What do these signals sound like? Without a recording to play for you it is difficult to describe them. Often they are a very fast series of tones, sometimes in AM but more often on sideband (SSB) modes.

In a network of telemetry stations separate identities of stations are primarily maintained in one of two ways by preamble identification, in which each station begins a transmission with an identifying code, or by utilizing separate frequencies for each station. For obvious reasons, the former method is more popular.

Lights! Camera! (But no action)

Another very common source of odd sounds is radioteletype (RTTY) and facsimile (FAX), which I call "pictures and print" stations. These are primarily news and press services, though large corporations and perhaps even banks use these to send information as well. [*Probably the most well-known facsimile is 8080 kHz, where Naval Station NAM at Norfolk, Virginia, constantly transmits Atlantic Fleet weather maps...ed*]

In radioteletype (text), a series of two alternating tones are decoded to print text, much like a wireless typewriter. The sound made on the air is nothing like the sound the printer makes -- the chunka chunka chunka heard at the opening of new shows on TV. Rather, the sound you will hear is a quick alternation of two tones in a sort of "deedle-deedle" pattern. If you tune these signals in SSB mode, one will appear at 2100 Hertz, the other usually higher.

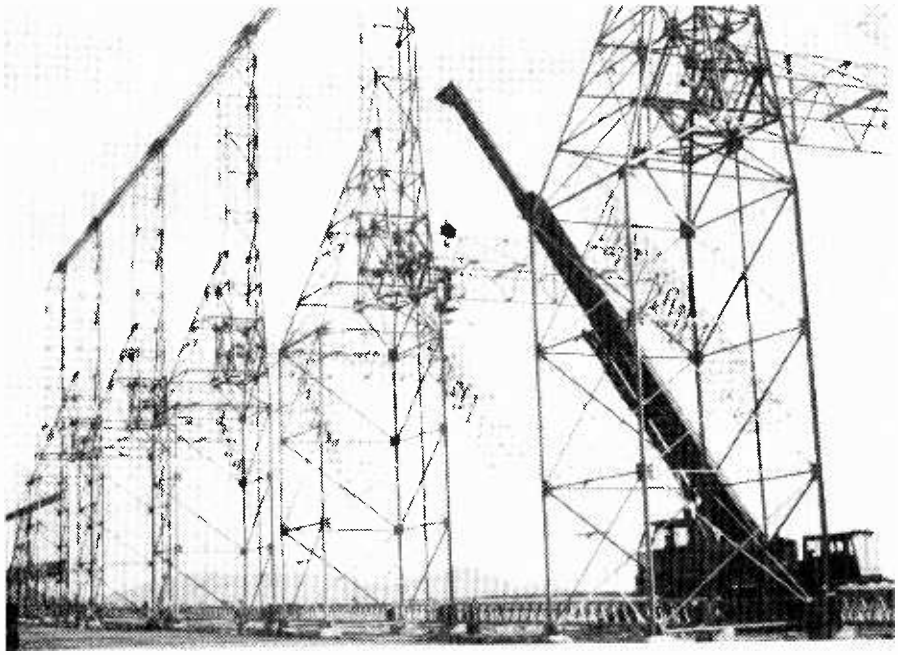
Most modern stations now use totally electronic means to send and receive RTY signals, frequently multiplexing many signals on one carrier (frequency). When this happens, you hear what resembles bagpipe music through waterlogged ears.

Another signal in this category is the facsimile broadcast. In FAX transmissions, pictures or whole pages of printed information are scanned, converted to digital form, and transmitted for reception and decoding some distance away. FAX can be thought of as wireless photocopying. Since documents are scanned and encoded one line at a time (just like a television picture), the characteristic sound is that of a slowly repeating burst of "hash."

Fortunately for the SWL, many inexpensive units are available which allow us to decode and display the information and display both RTTY and FAX signals at home. The exceptions are multiplexed signals and those intentionally scrambled to prevent scrutiny by outsiders.

Musical Spies

Truth is often stranger than fiction and in the case of spy transmissions, this is certainly the case. Among the most curious signals in this genre (other than the often reported "numbers stations") are the so-called "piccolos."



Over the Horizon Backscatter Radar, Moscow, Maine

Piccolos are aptly named because they sounds like a piccolo rapidly playing a random but limited series of notes. It is, in fact, an encoded transmission utilizing an "alphabet" of several tones. This system, among others, has been used by intelligence operations in Great Britain for decades.

$J^{w}_{yy}A_{ug}{}^{y}M^{i}_{gu}M^{ih}{}_{m}E^{j}_{ii}R_{wss}S$

Alas, not every signal on shortwave is intended to send information to anyone. Some are designed to *prevent* people from receiving a message. These are the jammers.

Over the years, Communist bloc countries have excelled at this endeavor, often frequency-budgeting as much for jamming as for regular broadcasting. Favorite targets have included the Voice of America, Radio Liberty, Kol Israel and others.

What does jamming sound like? Believe it or not, there are almost as many ways to jam a broadcast as there are jammer transmitters. One simple method, favored by Cuba, is to simply transmit a powerful propaganda broadcast right on top of someone else's frequency. Other types of jamming are simply raucous noises designed to chase away the listening audience. Bagpipe jamming, for example, sounds like Edward, Duke of Wales, on a bender. Others are composed of repetitious tones, bubbling sounds, and even white noise (the sound your TV makes when a station goes off the air and the set's still turned on).

Woody, the Million Watt Woodpecker

One frequently heard signal, often mistaken for jamming (but which might as well be), is the "Woodpecker." Originally named the "Russian Woodpecker" in honor of this noise's first sponsor, it is not longer the sole province of the Evil Empire. Your friend and mine, dear old Uncle Sam, also does it too.

The woodpecker, which is characterized by loud, rapid and repetitive popping noises -- hence the name woodpecker -- are actually Over the Horizon, Backscatter Radar (OTHER). A type of early-warning system, OTHER enables its operators to obtain useable radar pictures near or even below the horizon, giving a clear edge to defense. Unfortunately, OTHER signals are very broadband and tend to show up at awkward moments in all parts of the shortwave band, (I have heard them all the way down to VLF) obliterating whatever signals lie beneath them. Their only saving grace is that they do not appear to linger long on any one frequency.

Letter Beacons

Letter beacons are perhaps the most mysterious signals to appear in recent history. Although many think they are just another type of telemetry beacon, in the absence of proof, I will deal with them as a separate entity.

Letter beacons appear on many shortwave frequencies. And once they appear on a frequency, they seem to stay there. Many have supposedly been tracked to the interior of the Soviet Union with some even going so far as to say that they are all located near secret military installations. Whatever the case, they all do appear as a slow Morse code rendition of a single letter, sent over and over again.

More to Come

With advances in computer technology, more and more of these sort of mysterious signals are certain to appear with time. As with most, no explanation will be given by those who initiate them. Indeed, they would rather not publicize them at all since they would really prefer that you didn't listen to them. Still, just the same, for every mystery, there is always someone who will take the initiative and try to solve it.

Good listening and happy hunting. mt

The preceding article was reprinted from FRENDX

Wildlife Telemetry

Duckling implant transmitters monitored by the Department of the Interior, Fish and Wildlife Service, operate on the following frequencies (MHz):

164.4375	164.4625	164.4875	164.5125
164.5375	164.5625	164.5875	164.6125
164.6375	164.6625	164.6875	164.7125
166.7375	166.7625	166.7875	166.8125
166.8375	166.8625	166.8875	166.9125
166.9375	166.9625	166.9875	167.0125
167.0375	167.0625	167.0875	167.1125
167.1375	167.1625	167.1875	167.2125
167.2375	167.2625		

Shared government/non-government telemetry bands are 40.66-40.70, 216-220 (216.0-216.1 airborne) MHz on a secondary, non-interference basis with other services. Emission may be pulse, AM or FM, 1 kHz maximum bandwidth. Maximum power output is 1 milliwatt airborne, 10 milliwatts terrestrial.

Dog-tracking collar transmitters operate typically in the 151, 164, 173, 216 and 217 MHz bands.

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Bearcat 100XLT-T **$184.95**
Bearcat 800XLT-T **$249.95**
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Bands: 29-54, 136-174, 406-512 MHz.
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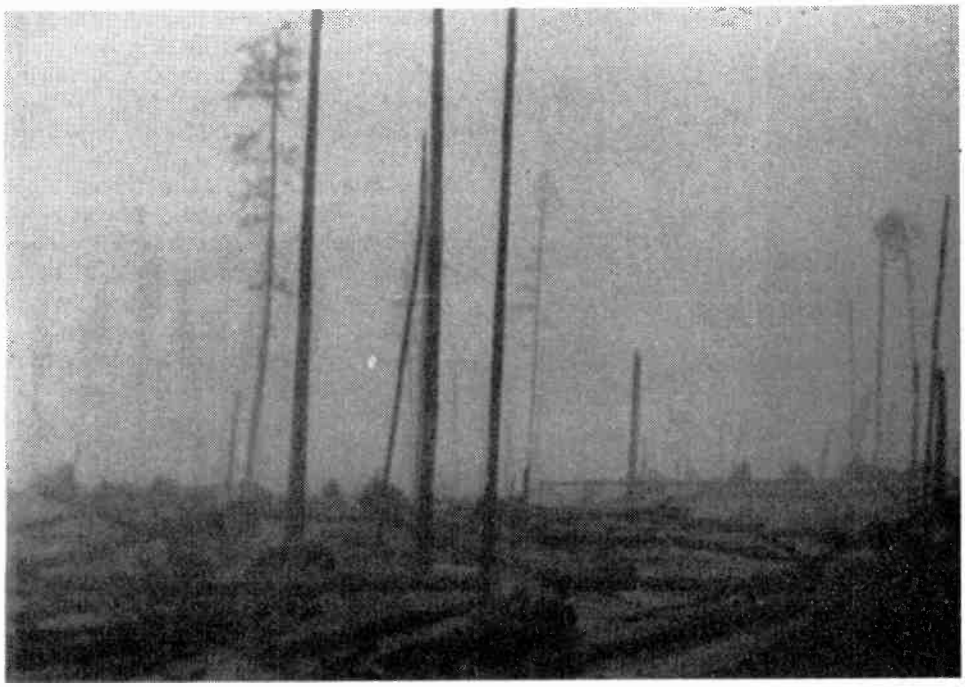
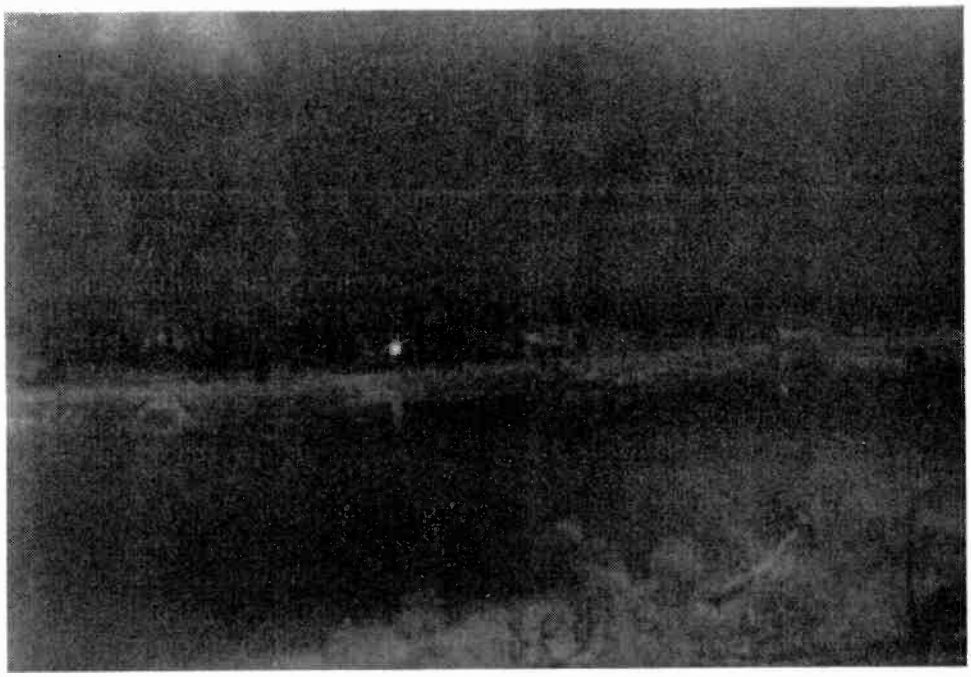
YELLOWSTONE ABLAZE!

by Jon Van Allen





The scene at West Yellowstone was eerie. We hastily packed up and got back in the park just a few minutes before the west entrance was closed. We saw the fire moving along the road ...

Our trip to Yellowstone Park had been planned months in advance. By mid-August the news of fires spreading through the park had us worried. The day before departure, we called Park Headquarters. They informed us that the park was open and visitors quite welcome, but a good knowledge of conditions and restrictions would be valuable if we were considering camping and travel through the park.

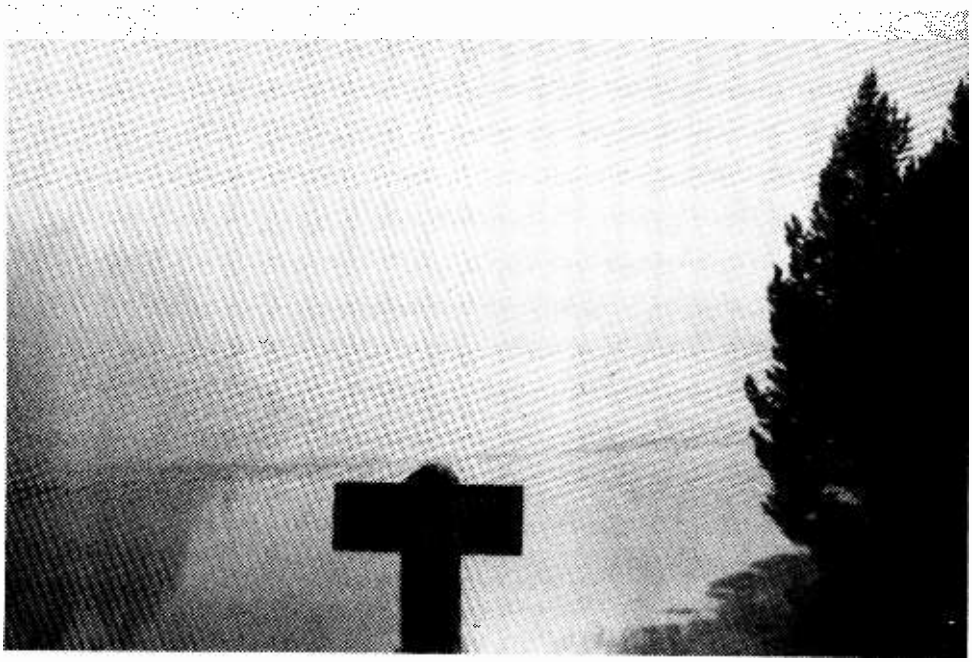
What better way to get that "good knowledge" than to use a scanner or two to tune in the action! Far better to find out for myself from real sources than to rely on untimely and often inaccurate news reports.

The scene at West Yellowstone was eerie. Smoke hung low and thick as far as the eye could see in any direction. Compared to past visits, the town was nearly deserted. The feeling that we were in the middle of something awesome grasped us like nothing we had ever experienced.

We decided to camp at Indian Creek Campground since our favorite spot, Madison Junction Campground, had been taken over by fire crews. The road from the west entrance to Madison was fairly smoky, but no fires were seen yet. A quick check of the park's two main frequencies quickly told us that the fires were to the south and east of Madison Junction at this point.

With the Boise Interagency Fire Cache frequencies programmed in the Realistic Pro-32 and park and aircraft frequencies in the Regency MX-5500, monitoring was easy. Almost immediately, command, logistics, tactical and air tactics channels came to life. With fire crews from many parts of the nation arriving, the main Command Frequency was giving crew commanders operating frequencies for each area.

With several different major fires burning throughout the park, and many frequencies to find, program, and monitor, making the



The feeling that we were in the middle of something awesome grasped us like nothing we had ever experienced.

most of sight-seeing and camping made having the 200 channel Pro-32 handheld a must.

During the week that we visited, each day brought new conditions and monitoring opportunities. Being able to monitor the air and fire crews made the difference in knowing where to avoid and where to go. For instance, while visiting West Yellowstone, we monitored the North Fork Fire Commander requesting that the road from West Yellowstone entrance to Madison be closed because the fire was very close to the road at the Seven Mile Bridge area. So we hastily packed up and got back in the park just a few minutes before the west entrance was closed.

There wasn't enough time for everyone in West Yellowstone to be warned so the scanner saved us the 160 miles we would have had to drive around the park through Bozeman and back to Indian Creek. And we saw the fire moving toward West Yellowstone along the road to Madison Junction.

Later in the day the fire was so close to West Yellowstone that the entire town was nearly evacuated, but luck changed the direction of the flames at the very last moment. Monitoring that hectic, nearly desperate situation was certainly inspiring, if not exciting! The park's T.I.S. 1610 kHz AM 10 W pre-recorded messages provided interesting information that varied from area to area. Some had left the air, perhaps wiped out by fire.

Traveling through the park, each area had its own unique monitoring conditions. While visiting the Canyon area, a BLM fire commander saw that I was carrying a scanner and invited us over to his truck where we looked through his command book to compare notes and offer new frequencies. Then he invited us to watch the fire that was encircling us from his parking lot post as he barked out information on his radio.

From this location we observed twin rotor Vertol choppers dumping water on the fires. Every firefighter and park official was very courteous and helpful when dealing with tourists, and our visit was most memorable.

The air crews also gave very interesting reports, like the many times that aircraft were unable to dump water because of smoke. Aircraft callsigns used were very descriptive like Eagle Base (in park helicopter base at Fountain Flats north of Old Faithful), Hellroaring Air Attack (based at the Bozeman Airport), Blue 1, Ramrod 1, Hotel 45, and so forth.

Each area was assigned a callsign. Most were for fire commanders and reflected the names of the fires they were fighting, such as North Fork, Hellroaring, Clover Mist, Wolf Lake, Thorofare Cabin, etc. Particularly interesting were conversations between air and ground crews as they coordinated crews and equipment. One sad incident happened when a chopper carrying replacement batteries for the Boise Fire Cache repeaters on a park mountaintop crashed, killing the pilot. Other incidents were less disasterous, but could have been.

While monitoring one afternoon, some weary fire crews were taking a lunch break when a healthy looking tree fell without warning, injuring a fire fighter. A Medevac chopper was called on a handheld. Several other calls were heard for ambulance or chopper for smoke inhalation victims during the week.

The wildlife in the park was interesting to observe; we watched four coyotes in a meadow circling like wolves around a smaller animal, while fire was burning in the forest behind them. Elk by the thousands grazed a short distance away. Later at a program given by park ranger/naturalists at our campground amphitheater, we were told that mother animals were teaching their young every trick in the book to find food while the fires were burning some of their feeding area.

Each evening I would put the Yaesu FT 747GX on 7280 kHz, and call my brother, KA7ZFD, on schedule and talk about our daily activities and let him know if we had any problems. The situation of being on the other end of a pile-up after we signed was totally unexpected and exciting! It seemed that every one on the frequency wanted to know what it was like being in Yellowstone because they weren't sure if the news reports were accurate.

Fifteen meters brought the same result after I announced I was portable in Yellowstone. Not surprisingly, a CQ on 146.52 brought some pleasant conversations with several hams including WA7GSN, George, who works for the park service and was stationed on Mt. Sheridan in the southern part of the park. His job included fire watch and taking care of the park's southern frequency repeater as well as the pair of Boise Fire Cache and BLM repeaters flown in for the fire crews.

Table 1

1610 kHz	Park Traveler's Information Service at many points of interest. 10 watts.
119.400	West Yellowstone Airport Tower
122.850	Aircraft air traffic command channel
123.050	Helicopter operations (53 choppers operating in the park)
122.950	Aircraft operations in the park
126.750	Aircraft operations in the park
135.970	Long range aircraft communications (Bozeman, Billings, Livingston, Idaho Falls-based fixed wing water bombers and surveillance craft)
166.375	Park repeater North operation KOF700 (700 Fox) Rangers and park employees Mt. Washburn
165.5875	Park repeater South operations KOF700 (700 Bravo) Rangers and park employees Mt. Sheridan
168.100	Boise Fire Cache Command F-2 repeater on Mt. Washburn site
168.200	Boise Fire Cache Tactical F-2 on Mt. Sheridan
169.150	Boise Fire Cache Air Tactics F-2
168.700	Boise Fire Cache Command F-1
414.650	Boise Fire Cache In camp repeater heard at Eagle Base
515.500	Boise Fire Cache In camp repeater heard at Madison Junction Base
168.075	Boise Fire Cache Command F-3
168.600	Boise Fire Cache Tactical F-3
168.325	U.S. Army Engineers
151.415	Volunteer fire crews inter-crew communications hand-held units
146.520	Amateur radio national simplex calling frequency, several contacts made
166.725MHz	BLM Fire Cache F-1
168.250MHz	BLM Fire Cache F-3
168.400MHz	BLM Fire Cache F-4
168.550	BLM aircraft operations F-8
164.600	Forest Service-service and supply net. Very busy with supply requests
154.740	West Yellowstone police dept.
39.820	Montana State Police also on 39.800, 39.72, and 39.56 MHz
154.385	West Yellowstone Fire Dept
155.325	West Yellowstone Fire Dept
154.995	West Yellowstone Local Gov

Without the ability to monitor, this vacation would have been much less of a success -- not to mention frustrating and even dangerous.

Without the ability to monitor, this vacation would have been much less of a success -- not to mention frustrating and perhaps even dangerous. Table 1 is a list of some of the frequencies we monitored and their locations where known.

These were the most active frequencies heard. Conspicuously absent were U.S. Army communications with their active presence. A thorough search was made from 30-80 MHz and turned up nothing other than the Engineers on 168.325. I was unable to confirm or deny reports of military communications on the SAT-comm birds, but admittedly not much time was spent in monitoring the military UHF band.

Many thanks to George, WA7GSN, on Mt. Sheridan. Preliminary frequency information was found in the Radio Shack *Police Call* 1988 Edition, and Tom Kneitel's 5th Edition of the *"Top Secret" Registry of U.S. Government Radio Frequencies*.

"Every firefighter and park official was very courteous and helpful when dealing with tourists."

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

Shortwave Broadcasting

Glenn Hauser
Box 1684 - MT
Enid, OK 73702

ANDAMAN ISLANDS: All India Radio is testing a new 50-kilowatt transmitter at Port Blair between 0230 and 1130 UTC on 6000, 7180, or 9690 kHz (Supratik Sanatani, India, *Sweden Calling DXers*)

ANTARCTICA: American Forces Antarctic Network has become unreliable again on 6012 kHz, cutting off abruptly, sometimes missing for two weeks at a time (Artie Bigley, TX)

ARGENTINA: Radiodifusion Agentina al Exterior has been using 9690 instead of 11710 at 0200-0300 and 0400-0500. Some of the "micro-programs" (UTC days): Monday, Summary of the Week's news, New Argentine Cinema, Tangos from the Country of the Tango. Wednesday, Musical Instruments of Argentina, Tobacco...or Health. Thursday, DXers Special, Poetry in Popular Music, New Argentine Cinema. Saturday, Mail Bag, Iberoamerica and its Music (Gabriel Ivan Barrera, *Review of International Broadcasting)*

AUSTRIA: Radio Austria International can be heard in English at 1230-1255 on 15450, 13730; 2230-2255 on 9870; 0030-0055 on 9875; 0430-0455 on 6015, 6155. Additional broadcasts on weekends: UTC Sunday 0100 Austrian Shortwave Panorama, 0115 Music for You, 0130, 0400, 1100 and 2200 Coffeetable; Monday 0400 Music for You, 0415 SW Panorama. SW Panorama also airs Sunday at 1235. The mailbag show goes out around 2243 on Sunday 0043, 0443, 1243 on Monday. (*RIB*)

BRAZIL: BBC now has a relay here too, 0900-1100 on 6185 in English, plus another half-hour in Spanish, beamed northwest up the South American coast (*Media Network*)

Radio Guaruja was heard on 17940 kHz, the third harmonic of 5980, at 1719 during football (Daniel Munoz Facciolo, Uruguay, *QSN-Grama*)

CAMBODIA: (non) Voice of Democratic Kampuchea is a well-known clandestine from China, but now there seems to be another service from the same announcers and facilities, identifying differently as Radio Democratic Xampuchea (Withayu Kampuchea' Pracheathiptei) at 1800-1855 UTC on 7590 and 8345 kHz (Shigenori Moki, Radio Japan *DX Corner*, and Nagoya DX Circle via *DX Press*)

CANADA: RCI SWL Digest, including our DX news reports is scheduled through March; Saturday 2137 on 17820, 15150, 11880; Saturday 2208 on 11940, 9760; UTC Sunday 0107 on 5960, 9755; UTC Sunday 0107 on 11940, 11845, 9535 (the latter to Latin America; we hope the time has shifted to half an hour later); Sunday 2307 on 11730, 9755; Tuesday 1333 on 17820, 11855, 9635.

CANARY ISLANDS: (non) The hush-hush program for Canarians abroad transmitted from Spain between 2200 and 2300 has moved to 11775 kHz (Paul Routenburg, Nepean, Ont., *DX Listening Digest*)

COLOMBIA: A church in La Union, Antioquia, puts a microphone on the air Sunday evening for half an hour around 2330 UTC, starting around 3251 kHz, but quickly drifting up to 3265. No IDs, but I call it an "Emisora Parroquial." Once clear of 3251, another similar station is uncovered as late as 0100. These do not seem to be second harmonics, although the 1600+ kHz range is too polluted here to be sure (Richard Stoller, Bogota, NASWA *Listeners Notebook*) We heard stations like this above 1600 kHz several years ago from the Virgin Islands with a long wire pointed toward Colombia.

COSTA RICA: Radio for Peace International was off the air for at least a sesquimonth from mid-September due to transmitter problems and long delays in getting replacement parts shipped in from the U.S. Check 21555, 13660, 7375 to see if they're back.

DENMARK: Radio Denmark has nearly given up trying for a new shortwave site, due to environmentalist opposition. But Radio Norway has agreed to eliminate the 15-minute gap between its transmissions, reduce them to 30 minutes, so it can alternately carry Radio Denmark programs. Now the Danish government has to decide whether to fund this. Otherwise, Radio Denmark will close down shortwave (*Media Network*)

EQUITORIAL GUINEA: This country knows how to play politics with former colonial powers. After making overtures to French language and culture, Spain came through with some radio transmitters to be used exclusively for broadcasts in Spanish. This Emisora Cultural De La Cooperacion Espancia en Guinea Ecuatorial will use 10 kilowatts on 4950 during three three-hour blocks dealing with Hispanic culture, native culture and teaching by radio (Nacolas Barrandian, *Radio-Enlace*) Known for short as Africa Des Mil (*Media Network*)

Radio Malabo is getting a new transmitter of 10 kilowatts for 6250 kHz. Any verifications issued for this outlet by Pierce Communications are mistakes. They QSL only the Radio Africa gospel broadcasts on 9553 (Mitch Sams, KS, *Fine Tuning*)

Radio Africa on 9552.3 is now active seven days a week, until 2205 weekdays, 2305 on Sundays (Ernie Behr, Ont., *SWL Digest*)

ETHIOPIA: Radio Voice of the Gospel, confiscated by the revolutionary government in 1977, has been the subject of continuing claims for compensation by former owners the Lutheran World Federation. Finally this year Ethiopia agreed to pay $600,000 in installments over a three-year period. And the station's archives are to be returned (*KNS Newsdesk* via Ken MacHarg, *RIB*) Maybe time for follow-up reports?

FINLAND: Radio Finland to North America in English: 0330-0355 on 11755 and 9635; Monday-Friday 1200-1225, 1300-1325, 1400-1425. Saturday and Sunday 1400-1500 on 11945, 15400. Other English outsendings: 0515-0530 on 11715, 9635, 6120; 0730-0755 on 11755, 9560, 6120; 0900-0925 except Sunday on 21550, 17795; 0930-0955 on 15245, 11855; 1930-1945 on 11755, 9530, 6170; 2200-2225 (longer on Saturday) on 11755, 9620, 6120 (*RCI SWL Digest*)

FRANCE: Radio France International planned to use 25820 kHz this winter between 1000 and 1500. And to resume relays via China (*Media Network*).

Shortwave Broadcasting

GREECE: Voice of Greece has been adding languages for its newscasts. The latest is Swedish at 1540-1548 on 11645, 15630, 17565, with English moved to 1530 (*Sweden Calling DXers*) That's actually the North American transmission!

GUIANA, FRENCH: Radio Beijing's relay exchange with France should have resumed by now, including Spanish, Chinese and English between 0200 and 0500 UTC (Simson Najovits, RFI, *Media Network*)

HONG KONG: Following up the tests on 9685, Radio-TV Hong Kong has begun a regular service to Vietnam on 7290, at 2300-0100, repeated at 1100-1300 using a 30-kilowatt transmitter, to continue through next June (*SCDX* and *Media Network*)

INDIA: All India Radio Mathura Yrindavan is relayed via Delhi 3365 at 1315-1330, making it the 20th AIR regional to be available on shortwave. Programming is in Brijbhasha, a dialect of Hindi (Supratik Sanatani, India, *Oz-DX*)

INTERNATIONAL WATERS: Radio Newyork International made a comeback in mid-October, heard on 1620 kHz only until 0525 UTC (Mike Peraaho, Nashwauk MN, *World of Radio*) The Coast Guard persuaded RNT to close down after three or four days, but a court challenge is planned.

IRELAND: Radio Dublin is not heard any more in the 6.9-7.0 MHz range, but another Irish outlet is audible on good nights during the window 0645-0745 UTC, Radio Fax on 6205 (Artie Bigley, San Antonio TX, *RCT SWLD*) Legislation may end piracy by yearend.

ITALY: The Italian Radio Relay Service hoped to start by November with dipoles for 41 and 75 meter-bands. For latest info, call 39-2-266-6971; or write P.O. Box 10980 I-20110 Milano (Andy Semmitt, *Media Network*)

NEW ZEALAND: RNZ until 4 March: 1730-2015 on 12045, 15150; 2245-0045 and 0230-0630 (no break on Saturday and Sunday) on 17705, 15150; 0900-1105 on 9850, 12045. The Goon Show should now be heard UTC Saturdays at 0200 (*World of Radio*)

NORWAY: Radio Norway regrets that it can no longer automatically QSL every report. Special features this winter include the Stop the Desert campaign of Norwegian children; and reports on the Church of Norway, which is the same as the state. Regular features are Trends and Traditions, Science Notebook, Listeners' Corner, On the Record, News and Views -- all crammed into half an hour in English per week, Sundays at 1300, 1400, 1600, 1700 and 2000 on 15310. See also DENMARK. (via Kraig Krist, VA)

PAPUA NEW GUINEA: The numerous frequency changes previously reported have been delayed, since new transmitters were supplied with crystals for the old frequencies (Gordon Darling, PNG, Radio Australia *Communicator*)

PERU: Radio Frecuencia Cultural, from somewhere in Cajamarca, is new, heard on 6336.8 varying to 6333.7, not the announced 6570, from 0115 until closing around 0328 (Pedro F. Arrunategui, Lima, *SWL Digest*) Also heard by Rowland Archer, North Carolina.

Radio Voz de Celendin, Cajamarca, says it uses 7610, while Radio La Voz de los Andes, San Miguel de Pallaquez, Cajamarca, is on 5340 at 1130-0400 (*World Radio TV Handbook*)

The station on 5799.5 heard from 0000 past 0030 calls itself Radio Rumbo, Cajamarca not Radio San Ignacio (Richard Stoller, Columbia, SWLD)

SEYCHELLES: BBC's new Indian Ocean Relay is schedule in English: 17885 at 0400-1600; 15420 at 0300-1400, 1500-1530, 1615-1830; 11860 at 1500-1530; 11750 at 0300-0430; 9630 at 1800-2115; 9600 at 0300-0330; 7185 at 1615-1745; 1830-2030, 2115-2300 (*London Calling*, and *BBC Waveguide*) Not all transmissions begin or end with a local ID, but one was heard at 0259 on 11750 (Richard A. D'Angelo, FA, *SWLD*)

SOUTH AFRICA: Radio RSA has added a weekly broadcast in Danish; odd to hear one of the announcers speaking with a regional accent. First it was on Wednesdays at 1600-1615 on 13 meters then moved to 1845-1856 (Ken Mason's roommate, Washington DC, *RIB*) However, it appears in current schedule as Wednesday 1740-1800 on 21535.

A new out-of-band channel is 12010 for Swahili at 1500-1700. Used briefly in the fall was 13660 for Portugese at 2000-2010, but that frequency is no longer on the schedule, good news for Costa Rica. Remember to check for Radio RSA's New Year's Eve call-in between 2200 and 0200.

SWEDEN: Blocked on 17860 as we predicted, Radio Sweden finally moved up 21615 for the 1400 broadcast to North America, parallel 15345, but on one occasion 21615 did not come on until 1438 when Swedish was in progress.

URUGUAY: SODRE on 1050.23 kHz puts out numerous harmonics detected as high as the 28th on 29406 kHz (Daniel Munoz Faccioli, Uruguay, QSN-*Grama*) Not likely to propagate beyond the local area I should think, but: SODRE Heard on 4200.1, tentatively at 1147-1200 (Nobuyoshi Aoi, Tokyo, *Radio Nuevo Mundo*)

Radio Sarandi is back on shortwave 4899.7 heard at 1001 and again 0023-0104 (Gabriel Ivan Barrera, Argentina, *SWLD*)

USA: WSKB, the second Christian Science station, in Cypress Creek, SC, has registered this winter schedule in case they are on the air early in 1989 as projected: 0000-0200 on 11980, 13760 : 0200-0400 on 9745, 13760: 0400-0800 on 6005, 9455; 0800-1000 on 9495; 1000-1200 on 6150, 9495; 1200-1400 on 6150, 13750: 1400-1600 on 11580, 17640, 2000-2200 on 15225, 17750; 2200-2400 on 15205, 17640 (George Jacobs, *WOR*)

World of Radio nominal times on WRNO: Thursday 1630 (sometimes) on 15420; UTC Friday 0000 and 0130 on 7355; Saturday 0400 on 6185; Sunday 0030 on 7355, 2130 on 13760. Sports may preempt or delay (for example UTC Monday after 0000 following a Sunday afternoon game), and some broadcasts may start up to half an hour late, so stay tuned! This season, there should be no cut-offs due to frequency changes.

With AFRTS gone, Perspectives fans must descend to AM-Sundays 1105 UTC on WLS, 890; 1205 on KOA, 850 (*WOR*)

YUGOSLAVIA: Just as the country was falling apart. Radio Yugoslavia began an English service in our evenings: 0100-0145 or 9660, 9620, 5980; also at 2200-2245 on the same plus 7130 (Bruce MacGibbon, *DX Spread*)

Broadcast Loggings

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

English broadcast unless otherwise noted.

0000 UTC on 9630
Spain: Spanish Foreign Radio. News and "Panorama" music/magazine show. Spanish lesson at 0045 UTC and 0100 sign-off. Poor signal quality for parallel frequency 11880 kHz. (Mark Selden, Coral Gables, FL)

0000 UTC on 15450
Libya: Radio Jamahiriya. Arabic. Talk and Arabic music. Station ID at 0030 UTC, and political editorial. (Frank Mierzwinski, Mt. Penn, PA)

0038 UTC on 11805
Brazil: Radio Globo. Portuguese. Evening show of IDs, time checks for Rio, musical commercials, and public service announcements. Lively samba sing-alongs and Brazilian pop tunes. (Rod Pearson, St. Augustine, FL)

0045 UTC on 9875
Austria: Radio Austria International. Interesting report on the annual festivals in Saltzburg. (Bob Fraser, Cohasset, MA)

0050 UTC on 11780
Vatican City: Vatican Radio. Program feature, "The Pope, The Church, and the World". (Harold Frodge, Midland, MI)

0052 UTC on 9600
Portugal: Radio Renascenca. Portuguese. Vocal music tunes and ID as, "Radio Renascenca" (Aboe Nawan Thaliep, Batang, Indonesia) Welcome to MT!

0100 UTC on 15350
Luxembourg: Radio Luxembourg. News and editorial until 0105 UTC. ID and frequency at 0108 UTC. French pop vocals and rock sounds. (Frank Mierzwinski, Mt. Penn, PA)

0120 UTC on 17795
Australia: Radio Australia. Weak signal for news and commentary til 0125 UTC. Louis Armstrong music and weather forcast for the Pacific regions. (Frank Mierzwinski, Mt. Penn, PA) Audible at 1015 UTC on 9580 kHz (Bob Fraser, Cohasset, MA)

0148 UTC on 5567.3
Colombia: Radio Nueva Vida. Spanish. Amateur radio interference making this a tough one to hear tonight. Able to monitor between breaks with evening chat, station ID and frequency. Instrumental music and "canned" station promotional. Sign-off at 0201 UTC, without a national anthem.

0150 UTC on 9540
Czechoslovakia: Radio Prague. Lady announcer presents "News About Czech." "World News Highlights" to 0157 sign-off. (Harold Frodge, Midland, MI)

0200 UTC on 11745
Brazil: Radio Nacional-Bras. National news and weather of Brazil. Lovely Brazilian music to 0300 UTC. (Mark Selden, Coral Gables, FL)

0200 UTC on 9580
South Africa: Radio RSA. Sign-on routine and program schedule. African news and editorial on the Zulu Youth Brigade. Easy-listening music to feature, "Africa Today." (Harold Frodge, Midland, MI) Mark Selden of Coral Gables, FL monitored RSA on 21590 kHz at 1530 UTC.

0209 UTC on 3380
Guatemala: Radio Chortis. Spanish. Let's hear it for bouncy Latin rhythms! Ladies a capella choral music and "esta es Radio Chortis" ID. Classic Guatemalan marimbas back up an ID and 0226 sign-off.

0322 UTC on 15170
Tahiti: RFO Tahiti. Tahitian. Exotic Polynesian music program from alternating announcer duo. (Harold Frodge, Midland, MI)

0330 UTC on 4990.6
Peru: Radio Ancash. Spanish. Multiple IDs and campesino music to 0400 UTC. DXpedition logging. (Guy Atkins, Issaquah, WA)

0335 UTC on 9445
Turkey: Voice of Turkey. Traditional Turkish folk music. Station ID at 0345 UTC, followed by station sign-off. (Ronald Van Campen, Curacao, Netherlands Antilles) Congratulations on your Tahiti QSL, Ronald! -ed.

0420 UTC on 3285
Belize: Radio One-Belize. Extended news coverage on Belizean national monetary and financial status. International news and weather forecast for Belize. Local evening time check and news on Central America. (ed.)

0427 UTC on 6305
Clandestine: La Voz del CID. Spanish. Easy-listening Spanish vocals to ID at 0432 UTC. ID heard as, "esta es Radio Camilo Cienfuegos la cadena radial La Voz del CID." (Harold Frodge, Midland, MI)

0430 UTC on 4880
South Africa: Radio Five. Local Johannesburg commercials, news bits and IDs. Music request/dedication for listeners. Initially strong signal, but fade out by 0450 UTC. (Mark Selden, Coral Gables, FL)

0532 UTC on 4915
Ghana: GBC (Ghana Broadcasting Corp.) Vernaculars. Children's choir music. Drums interval signal and 0600 UTC ID. Very nice signal quality. (Guy Atkins, Issaquah, WA)

0613 UTC on 7215
Cote d' Ivoire: RTV Ivoirienne. French. African pop music and "Ici Cote D'Ivoire" ID. DXpedition logging. (Guy Atkins, Issaquah, WA)

0644 UTC on 15150
New Zealand: Radio New Zealand. ID as "National Radio," into children's program, "Where Dragons Be." Great signal! (Guy Atkins, Issaquah, WA)

0718 UTC on 9545
Solomon Islands: SIBC (Solomon Islands Broadcasting Corp.) English/Pidgin. Local birthday greetings and music request show. Excellent signal with "Radio Happy Isles" ID at 0730 UTC. Parallel frequency 5020 kHz weaker. DXpedition logging. (Guy Atkins, Issaquah, WA)

1000 UTC on 6115
Peru: Union Radio. Spanish. Morning saludos and "atencion" announcements for listeners in several cities. Musical jingle, and Peruvian tunes. (Aboe Nawan Thaliep, Batang, Indonesia)

1025 UTC on 4821.4
Peru: Radio Atahualpa. Spanish. Programming announcements to clear ID at 1030 UTC, and haunting Peruvian flute music.

1030 UTC on 11835
Sri Lanka: SLBC (Sri Lanka Broadcasting Corp.) Discussion on home purchase for the middle income. Asian and U.S. pops. (Timothy Hickman, Baltimore, MD) Welcome to MT!-ed. Monitored on 15425 kHz at 0130 UTC by Harold Frodge, Midland, MI.

1100 UTC on 6576
North Korea: Radio Pyongyang. Station interval signal and anthem. Opening ID and newscast. (Aboe Nawan Thaliep, Batang, Indonesia) George Neff of Tampa, FL monitored Pyongyang at 1127 UTC on 11735 kHz.

1104 UTC on 6025
Dominican Republic: Radio Amanecer. Spanish. News items on the Caribbean. Full ID at 1110 UTC given as "desde Republica Dominicana transmite Radio Amanecer seismil vicente cinco kilohertz en la banda cuarenta onda corta." (Jim Boehm, San Antonio, TX)

1116 UTC on 3250
Honduras: Radio Luz y Vida. Spanish. Canned religious program from the U.S. and invitation for letters at 1131 UTC. Local music introduced by a series of bird calls. (Jim Boehm, San Antonio, TX)

1125 UTC on 4607.3
Indonesia: (Irian Jaya) Radio Republik Indonesia-Serui. Indonesian. Asian music presented by male announcer. Time check at 1130 UTC suffering from slight fading. 4753.3 kHz RRI-Ujung Pandang (Sulawesi) also audible. (Rich Synder, Charlotte, NC)

1129 UTC on 6150
Costa Rica: Radio Impacto. Spanish. News topics on Nicaragua. Replay of speech from Nicaragua's Archbishop, and several station IDs. (Jim Boehm, San Antonio, TX)

1144 UTC on 2410
Papua New Guinea: (New Guinea Territory) Radio Enga. Pidgin. A capella choir music to 1153 UTC. "Ten o'clock" local time check. Station ID weak but audible! DXpedition logging. (Guy Atkins, Issaquah, WA)

1115 UTC on 6020
Netherlands: Radio Netherlands. Health discussion on disorders of the blood, followed by ID. (George Neff, Tampa, FL)

1200 UTC on 15325
Seychelles: FEBA (Far East Broadcasting Association) Religious interval signal tune and FEBA ID. (George Neff, Tampa, FL)

1210 UTC on 3306
Indonesia: (Timur) Radio Republik Indonesia-Dili. Indonesian. Lady with opening announcements and "Song of the Coconut Islands" tune. (Aboe Nawan Thaliep, Batang, Indonesia)

1220 UTC on 15400
Finland: Radio Finland. Discussion on Finland and the U.N. peacekeeping

Shortwave Broadcasting

operations. (George Neff, Tampa, FL)

1226 UTC on 9555
Mexico: La Hora Exacta. Spanish. Brief news items and local time checks with tone signals. Fade-in through sideband splatter. (Jim Boehm, San Antonio, TX)

1235 UTC on 3290
Papua New Guinea: (Papua Territory) Radio Central. Pidgin. Native PNG vocals and country and western music. Slightly muffled audio. (Aboe Nawan Thallep, Batang, Indonesia)

1242 UTC on 6570
Burma: Maymo Defense Forces Broadcasting Unit. Burmese. Nice level of ballads and Asian pop music. Brief announcements including a clear "Thazien" ID. DXpedition logging. (Guy Atkins, Issaquah, WA)

1255 UTC on 11815
Bonaire: TWR (Trans World Radio). Children's programming, station ID and international newscast. Parallel frequency 15345 kHz not heard. (George Neff, Tampa, FL) (Special thanks to C.K. Roswell, the frequency coordinator of TWR, for the helpful station schedules and correspondence. Welcome to MT! -ed.)

1255 UTC on 3905
Papua New Guinea: (New Ireland) Radio New Ireland. Native choral singing by PNG group. Interference from amateur radio operators on frequency. (Aboe Nawan Thallep, Batang, Indonesia)

1308 UTC on 3395
Indonesia: (Sumatera) Radio Republik Indonesia-Karang. Indonesian. Newscast relay from Jakarta network. (Aboe Nawan Thallep, Batang, Indonesia)

1310 UTC on 3355
India: AIR-Kurseong (All India Radio). Hindu. Station announcements and Hindu music. Dominant over co-channel PNG and New Caledonia interference. (Aboe Nawan Thallep, Batang, Indonesia)

1316 UTC on 3385
Papua New Guinea: (New Britain) Radio East New Britain. Island music and ID as "this is the National Broadcasting Commission." Fair signal, with best reception on lower sideband about 50 Hz below RRI-Kupang. (Timur, Indonesia). (Aboe Nawan Thallep, Batang, Indonesia)

1330 UTC on 15575
South Korea: Radio Korea. Commentary and analysis on Soviet/South Korean relations. (Timothy Hickman, Baltimore, MD)

1335 UTC on 11900
Northern Marianas Islands-Saipan: KYOI. North American pops music and IDs after each song. (Aboe Nawan Thallep, Batang, Indonesia)

1345 UTC on 2310
Australia: VLA (Alice Springs) Network programming of men's choir. Heard on parallel frequencies 2325 and 2485 kHz, although weaker in audio quality. (Guy Atkins, Issaquah, WA)

1400 UTC on 4835
Malaysia: RTM Sarawak (Radio TV Malaysia) Bahasa Malaysia. ID and station promotional as "Nasional Radio Malaysia." Mentions of city Kuching into traditional music program. (Guy Atkins, Issaquah, WA)

1542 UTC on 15630
Greece: Voice of Greece. Greek/English. Station ID in Greek following with English newscast until abrupt sign-off at 1549 UTC. Great signal! (Aboe Nawan Thallep, Batang, Indonesia)

1615 UTC on 15600
Liberia: Voice of America. Extended report on the Middle East. (Aboe Nawan Thallep, Batang, Indonesia)

1615 UTC on 15600
Norway: Radio Norway International. Interesting in-depth interview discussing beautiful Norway. Signal fade-out by 1622 UTC. (Mark Selden, Coral Gables, FL)

1700 UTC on 11735
Zanzibar: Radio Tanzania-Zanzibar. Swahili. Time pips and news relay from Dar-es-Salaam. Talk from female announcer, and drum interval signal at 1759 UTC. Good signal! (Aboe Nawan Thallep, Batang, Indonesia) Great log! -ed.

1756 UTC on 15010
Vietnam: Voice of Vietnam. English/Vietnamese. Radio drama to English ID. Program frequency schedules, and regional news. DXpedition logging. (Guy Atkins, Issaquah, WA) Monitored on 9840 kHz at 1330 UTC in English by Aboe Nawan Thallep, Batang, Indonesia.

1843 UTC on 15330
USA: AFRTS. News topics from Gannett's USA Today news service reporter. Sports roundup report and weather for travelers to the U.K. (Larry Van Horn, Orange Park, FL)

1901 UTC on 15690
USA: KUSW Salt Lake City, Utah. Station frequency schedule with ID. Rock music by Huey Lewis and the News, Sting, and John Hyatt. (Rich Snyder, Charlotte, NC)

1920 UTC on 11950
USSR: Radio Moscow. "British Hour" program for the U.K. service. Feature on Uzbeck folk music and "Listener's Club" show. (Bob Fraser, Cohasset, MA)

1935 UTC on 15420
USA: WRNO New Orleans, Louisiana. "Rock, Roll, and Remember" program on early rock music featuring the Beatles' early U.S. tours. Commercial for the Air-Space Smithsonian magazine. (Bob Fraser, Cohasset, MA)

1945 UTC on 11620
India: AIR-New Delhi (All India Radio) English newscast and classic Indian music. (Ronald Van Campen, Curacao, Netherlands Antilles) Bob Fraser of Cohasset, MA monitored AIR on parallel frequency 9910 kHz at this hour.

2042 UTC on 11720
Bulgaria: Radio Sofi "Topical Review" feature on the Bulgarian constitution. (Harold Frodr , Midland, MI) Audible at 0300 UTC on 11750 kHz by John Tuchscherer, Jeenah, WI.

2155 UTC on 11830
Liberia: ELWA. Religious programming with spiritual messages. Station ID as "ELWA." (Ronald Van Campen, Curacao, Netherlands Antilles)

2255 UTC on 4830
Gabon: Africa # 1. French. closing ID with city, frequency schedule, and 2302 UTC sign-off. (Bill Traister, Covington, TN)

2255 UTC on 5034
Central African Republic: Radiodiff. TV-CentrAfricaine. French. Station announcements at tune-in. Drum signal and ID from lady. Martial national anthem to 2259 UTC sign-off.

2300 UTC on 12077
Israel: KOL International newscast and interview with Israeli musician. Program feature at 2325 UTC of "Faith to Faith." Interference on parallel frequency 9435 kHz. (Ronald Van Campen, Curacao, Netherlands Antilles)

2301 UTC on 17558 USB
Iceland: ISBS (Iceland State Broadcasting Service) Icelandic. Gong tones and "Utvarp Reykjavik" ID at 2303. More chat with fading signal by 2318 UTC. (Guy Atkins, Issaquah, WA)

2307 UTC on 4805
Brazil: Radio Difusora do Amazonas. Portuguese. Presumed radio drama read by two highly dramatic actors. Easy-listening Brazilian tunes and national news. (Rich Synder, Charlotte, NC)

2309 UTC on 11705
Sweden: Radio Sweden International. Weekday programming that included editorial on Uganda and feature, "Look on the Nordic Scene." Interference observed on parallel frequency 9695 kHz. (Ronald Van Campen, Curacao, Netherlands Antilles)

2310 UTC on 4835
Mali: Radiodiff. TV-Malienne. French. African vocals and U.S. pop tunes. Closing ID to 0000 UTC sign-off. Weaker signal heard on parallel frequency 4783 kHz. (Rod Pearson, St. Augustine, FL)

2318 UTC on 3290
South West Africa/Namibia SW Africa Broadcasting Corp. English/Afrikaans. German polka music and station promotionals. Fair audio for Gershwin's Rhapsody in Blue masterpiece. Monitored at 0003 UTC by Aboe Nawan Thallep, Batang, Indonesia.

2327 UTC on 5047
Togo: Radio Togo. French. Multilingual music selections, easy-listening and 50s show tunes. French African vocals, ID and closing sign-off at 0002 UTC. (Rod Pearson, St. Augustine, FL)

2333 UTC on 3955
South Africa: SABC/Radio Orion. Afrikaans/English. Musical mix of instrumentals, pops and Broadway show tunes. Local Jo'burg time check and ID. (Rich Synder, Charlotte, NC)

2350 UTC on 15335
Morocco: RTM (Radiodiffusion TV-Marocaine) Arabic. Religious music and 0000 UTC ID. Continuous Arabic music until lady announcer at 0013 UTC. (Frank Mierzwinski, Mt. Penn, PA)

2350 UTC on 9640
USSR: (Ukranian SSR) Radio Kiev. Report on the preservation of the national heritage. (Bob Fraser, Cohasset, MA)

Utility World

Larry Van Horn
New Address ⇒ *P.O. Box 1088*
Gretna, LA 70053-1088

New Maritime Band Opens for Business!

Marine band listeners have a new band to monitor. Well, maybe not exactly new -- perhaps "forgotten" is the best way to describe it.

The 2 MHz marine band is usually one of the first casualties of summertime static. Now, though, the thunderstorms have been stilled for the winter and it's a perfect time to travel down the dial for what can be some of the most fascinating listening on the radio. It is here that disasters at sea, Coast Guard rescues, and general marine operations are played out on the snow-swept waters surrounding North America.

In fact, unless you live close to one of the coastal areas, winter is the only season to hear the wide range of activity that occurs on these lower frequencies. High static levels from thunderstorms and propagation conditions make the 2 MHz marine band unusable for all areas except along the immediate coast lines during the summer.

If you live more than 100 miles from shore areas, daylight monitoring of the 2 MHz band (even during the winter) is a waste of time and effort. The reason for this is the "D" layer of the ionosphere. This layer forms around sunrise and is so highly ionized that frequencies below 4 MHz are absorbed instead of reflected. Thus, only the listeners close to the coast within groundwave distance can hear any daylight communications on the lower frequencies.

Around sunset, the "D" layer molecules recombine and this layer now appears transparent to the lower frequencies. After dark these lower frequencies can now reach the F2 layer, bounce off and travel for thousands of miles to your receiver.

These conditions also exist in the summer, but during the summer months the F2 layer is more energetic. This presents a less than ideal reflective surface for radio signals. Combine this with thunderstorm static and the inland monitor is in for some very frustrating hours at the receiver. Hence, the nighttime winter months offer the most ideal conditions to check out the lower HF frequencies.

The 2 MHz marine band is the domain of the local marine operator stations. Most utility listeners are familiar with the 4, 6, 8, 12, 16 and 22 MHz high seas radio frequencies. High seas radio stations work with ships that are far out to sea. Local marine operators on the other hand, handle ships that are in the vicinity of the port areas they serve.

Most of the local marine operator traffic is heard in the form of ship/shore radiotelephone communications. During daylight hours, most of the comms involve privately owned pleasure craft. After dark, pleasure craft communications give way to primarily freighters, liners, tankers, tugs, and occasional naval vessels.

Table 1 is a list of local marine operators.

Table 1
2 MHZ LOCAL MARINE OPERATORS

CALLSIGN/LOCATION	COAST	SHIP
WLO Mobile, AL	2572	2430
WGG53 Cold Bay, AK	2312	2134
WDU26 Cordova, AK	2397	2237
WGG58 Juneau, AK	2400	2240
WGG56 Ketchikan, AK	2397	2237
WDU23 Kodiak, AK	2309	2131
WGG55 Nome, AK	2400	2240
WDU29 Sitka, AK	2312	2134
KOE Eureka, CA	2450	2366
	2506	2406
KLH San Francisco, CA	2450	2003
	2506	2406
KOU San Pedro, CA	2466	2382
	2522	2126
	2566	2009
	2598	2206
WLF Wilmington, DE	2558	2166
WNJ Jacksonville, FL	2566	2390
WDR Miami, FL	2442	2406
	2490	2031.5
	2514	2118
WFA Tampa, FL	2466	2009
	2550	2158
KMV Agana, Guam	2506	2009
KBP Kahuku, HI	2530	2134
WFN Jeffersonville, IN	2086	2086
	2782	2782
WAK New Orleans, LA	2482	2382
	2598	2206
WOU Boston, MA	2450	2366
	2506	2406
	2566	2390
WLC Rodgers City, MI	2514	2118
	2550	2158
	2582	2206
WGK St. Louis, MO	2086	2086
	2782	2782
WAE Pt. Harbor, NC	2538	2142
WBL Buffalo, NY	2514	2118
	2550	2158
	2582	2206
WOX New York, NY	2482	2382
	2522	2206
	2590	2198
WAQ Ocean Gate, NJ	2558	2166
WCM Cincinnati, OH	2086	2086
	2782	2782
KFX Astoria, OR	2442	2009
	2598	2206
KTJ Coos Bay, OR	2566	2031.5
WCT San Juan, PR	2530	2134
WJO Charleston, SC	2566	2390
WJG Memphis, TN	2086	2086
	2782	2782
KCC Corpus Christi, TX	2538	2142
KGN Delcambre, TX	2506	2458
KQP Galveston, TX	2450	2366
	2530	2134
WGB Norfolk, VA	2450	2366
WAH St. Thomas, VI	2506	2009
KOW Seattle, WA	2522	2126

Shore stations usually identify using the port city's name followed by "marine operator." Most of the frequencies in Table 1 are duplex channels with the ships transmitting on one frequency and the shore stations on another. Some of the Mississippi valley stations, however, use a simplex frequency for their communications.

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Table 2
2 MHZ MARINE SIMPLEX CHANNELS

2003	Intership safety	Great Lakes
2082.5	Intership safety	All areas except Great Lakes
2093	Intership safety	All areas except Great Lakes
2103.5	USCG intra-station	All areas
2141	USCG Air/ground ops	Alaska only
2142	Intership safety	Pacific Coast (daytime)
2203	Intership safety	Gulf of Mexico
2230	USCG operations	8th CG District (New Orleans)
2261	USCG Air/ground ops	Continental U.S. only
2512	Intership safety	Alaska
2638	Intership safety	All areas
2659	USCG operations	12th CG District (San Francisco)
2662	USCG operations	3rd CG District (New York)
2667	USCG intra/station	All areas
2670	USCG Marine Info B/C	All areas
2675	USCG operations	5th/11th CG District (Portsmouth/Long Beach)
2678	USCG operations	7th/9th/17th CG District (Miami/Cleveland/Juneau)
2683	USCG operations	8th/14th CG District (New Orleans/Honolulu)
2686	USCG operations	3rd/12th CG District (New York/San Francisco)
2691	USCG operations	7th CG District (Miami)
2694	USCG operations	1st/11th CG District (Boston/Long Beach)
2699	USCG operations	8th/13th CG District (New Orleans/Seattle)
2702	USCG operations	5th/14th CG District (Portsmouth/Honolulu)
2710	USCG operations	1st/13th CG District (Boston/Seattle)
2738	Intership safety	All areas except Great Lakes and Gulf
2748	USCG operations	17th CG District (Juneau)
2782	Intership safety	All areas
2830	Intership safety	Gulf of Mexico

Local marine operators are not the only thing heard on 2 MHz. Some shore stations transmit weather and marine information bulletins. These stations usually belong to the U.S. Coast Guard and U.S. Navy.

Upper sideband is the normal mode of operation heard on the 2 MHz marine band. The Coast Guard and Navy, in addition to voice, utilize RTTY. From time to time you will also hear Morse code (CW) coastal stations sending their markers and ship traffic. These stations are primarily overseas marine coastal CW stations.

Probably the most widely listened to frequency in this part of the spectrum is the international calling and distress channel, 2182 kHz. This channel is a good one to sit on. The U.S. Coast Guard utilizes it to announce marine information broadcasts that will follow on 2670 kHz.

Ships also use this channel to call shore stations then move to the shore station's normal working channel. Any ship in distress will utilize this voice frequency to announce their emergency. This is normally replied to by any ship or shore station that hears the emergency call. If the ship in trouble cannot reply on any other channel, 2182 will be maintained as the primary working channel during the emergency.

The upper sideband frequency 2670 kHz is utilized by the U.S. Coast Guard to transmit marine information bulletins of interest to mariners. As mentioned before, after announcing the broadcast on 2182, shortly after the Coast Guard station will commence the broadcast on 2670 kHz. These broadcasts resemble those of the Coast Guard heard on 4/8/13 MHz but are much more local in nature. Major as well as smaller lesser heard Coast Guard shore stations can be heard making these broadcasts and it affords the ute monitor a chance to hear stations not normally encountered on the higher HF frequencies.

Other 2 MHz frequencies belong to the U.S. Coast Guard. You can hear ship/shore and ship/ship comms between Coast Guard shore and cutters, and other ships. Table 2 will give a breakdown of some of these more interesting channels.

Our own U.S. Navy also utilizes the 2 Mhz band for their harbor common and control frequencies. While 2716 kHz is the most common channel heard, navy units have also been heard on 2150, 2368, 2434, 2586, 2630, and 2836 kHz.

Voice traffic will either be in the clear, with naval vessels using their ship's name as callsigns or tactical using the Alpha-one-alpha type callsigns. Harbor shore stations will utilize their harbor name usually followed by "control" unless tactical.

The Canadians also use the 2 MHz marine band. All coastal stations ID by their city name followed by "Coast Guard radio." The Canadians utilize 2182 kHz the same as their U.S. counterparts and move their marine information broadcasts to 2598 kHz.

Great Aero Source

Tom Roach wrote recently to pass along a good tip for aero band listeners. Tom writes, "I stopped off at a local travel agency office and asked if I could have an outdated Official Airline Guide (more commonly referred to as the OAG). He mumbled something about them all being outdated but gave me both the foreign and domestic July 1988 issues."

The OAG is a very interesting reference. Each issue lists all the airline's addresses and all the flight itineraries listed alphabetically by flight number. While not earth shattering, it adds even more interest to some fascinating listening. There are lots of goodies between the covers of these books.

Another source of interesting information for the same organization is the OAG Cruiseline Guide. This publication gives ship information as well as cruise line addresses. Each ship is identified as per the cruise line it serves, registry, passenger capacity, and tonnage, amongst other information.

The OAG Cruiseline Guide should be available in much the same way Tom got the airline guides. Call your local travel agency and ask for the outdated issues.

Gayle, DXing son Loyd, and I would like to wish you all the best of holiday seasons and a bright and prosperous New Year.

And now on with this month's loggings from the Utility World . . .

Utility World

Utility Loggings

Abbreviations used in this column

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

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

3357.0 NAM-U.S. Navy Norfolk, Virginia, heard with FAX weather charts at 120/576 at 0145. (Tom Sundstrom, Vincetown, NJ) Welcome to the column, Tom, please report often -- Ed.

3430.0 Man giving shipping instructions in Spanish for "Cinco Millones" to be moved from Tegucigalpa to somewhere in Guatemala and "Cinco Pasajeros" (passengers) one by first name. All transmissions in USB and I have heard this previously, but never heard an acknowledgment. Have also heard several different messages some addressed to "Commandante". (Jim Boehm, San Antonio,TX) I have logged this bunch also, Jim; any ideas on who this is from our readers? -- Ed.

4251.5 GKC2-Portishead Radio, England, heard at 0420 with a CW marker. (Mike Pugh, Emporium, PA)

4441.0 309 and 344/Yukon and Northwest Territories heard on this Canadian Mines and Resources channel during their evening schedule at 0220. Stations on the air for about one hour passing messages and ordering groceries using USB. (George Heresco, Hay River, NWT)

4640.0 English female 3/2 digit number station heard at 0025 (Thursday UTC). (Pugh,PA)

5547.0 KMA7-San Francisco Aeroradio working United 40 in USB with a position report at 0612. (Leonard Szalony-Fontana, CA)

5574.0 KMA7-San Francisco aeroradio working American 112 in USB with a position report at 0438. (Szalony,CA)

5616.0 Gander Aeroradio, Newfoundland, working TWA 242 at 1430 in USB with a position report. (Szalony, CA)

5628.0 KUA3-Honolulu Aeroradio at 0130 working Japan Air 62 in USB with a position report. (Szalony-CA)

5680.0 FQHY (aircraft) working Yellowknife and Norman, NWT Aeroradio with international search and rescue channel. (Ed.)

6288.0 71HGE sending RYs via RTTY at 0535. 884/75N. (David Kimpton, Thunder Bay, ON)

6330.0 CFH-Canadian Forces Halifax, Nova Scotia, monitored with a RTTY coded weather broadcast at 1140. 850/75N. Broadcast parallel on 122.5, 4271, 10536, 13510 kHz. (Sundstrom, NJ)

6577.0 Weather recon aircraft using the callsign NOAA-43 heard in USB at 0602 working New York radio requesting clearance back to Miami. Aircraft's position near Putar (near Bahama Islands). There was a tropical depression of the eastern coast of Cuba. (Garie C. Halstead, Saint Albans, WV)

6760.0 SAM 60204 working Andrews with a phone patch to Andrews Metro requesting weather for Dobbins AFB in LSB. (Mark Holmes, College Park, GA) Welcome to the column, Mark.

6761.0 Rhett 47 (KC-135) and Opec 45 (KC-10) with message relays to overflow in USB. (Holmes, GA) This is SAC channel Quebec -- Ed.

6803.0 CW "F" beacon kheard at 1046. (Boehm, TX)

6981.0 CCS-Chilean Naval Radio Santiago, Chile, heard at 1052 with a CW V marker. (Boehm, TX)

7750.0 RAW78-Moscow Meteo, USSR heard at 0230 with FAX weather maps. 120/576 (Sundstrom, NJ)

7819.0 5NK-Kano, Nigeria with RY test tape at 0459. 130/50R. (Kimpton, ON)

7955.0 LRN85-DYN News Service Buenos Aires, Argentina, at 2330 with an RTTY SS news bulletin. 850/75N. (Sundstrom, NJ)

8068.0 Y2V7A-ADN Berlin, East Germany, sending an English news bulletin at 2100 in RTTY. 425/50N. (Sundstrom, NJ)

8070.2 ZRH-Cape Naval Radio Capetown, South Africa, with Rtty RT test tape at 0020, then traffic from Capetown Naval to AMVER Center, New York. (Kimpton,ON)

8379.0 URFB-Soviet M/V Kapitan Lukmanov heard using CW at 0617 with an OBS message for KLB Galveston Radio. Vessel located near Panama's west coast. (Halstead,WV)

8384.0 6ZAW-M/V Filia Star heard in CW at 0648 working HCG with a message for Quito. Message advised arrival in La Libertad. (Halstead, WV)

8396.0 UBRA-Soviet M/V Astrakhan heard in CW at 0427 working OST-Oestende Radio with a message for Pegasus shipping in Antwerp. The message gabve a three day arrival Antwerp. (Halstead, WV)

8411.0 5BTM-Cypriot M/V Largo heard in CW at 0515 working CLA in Cuba with an ETA message for Puerto Padre. Message addressed to Cubasugar/Havana. (Halstead, WV)

8408.0 UOMI-Soviet M/V Adler heard in CW at 0425 with a message for Odessa. Buenos Aires mentioned in the text. (Halstead, WV)

8412.0 UYUV-Soviet M/V Inessa Armand heard in CW at 0507 with an ETA message for Cristobal (Panama). Vessel sailed Havana bound for Peru with a crew of 33. Gave registration number as M-29133 and advised was the sister ship of the M/V Chicherin which had already passed the canal. (Halstead, WV)

8421.0 CZDO-Canadian vessel heard working VCS in Halifax with a message addressed to the "Glass Slipper" in Dartmouth directing them to deliver a basket (gave number of catalog page) to a female in Dartmouth. (He must have a sweetie.) Vessel gave location as Pond Inlet on Baffin Island. Had slight polar flutter. (Halstead, WV)

8571.0 JNA-Tokyo Radio, Japan, with a CW CQ marker at 1440. (Szalony, CA)

8580.0 DZO-Bulacan Radio, Phillipines, heard at 1439 with a CW CQ marker. (Szalony, CA)

8842.0 COL-Aeroflot Havan, heard in CW at 0731 working RFNV (Moscow) advising the landing (QAL) of Cubana 493 in Havana. Perfect CW for a change as if using a keyboard or computer generated CW. (Far cry from the fists I've heard at the key of COL). (Halstead, WV)

8993.0 Sentry 62 (E-3 AWACS) working MacDill AFB in USB with a radio check. (Holmes, GA)

9006.0 UNID Canadian military station working Canadian Military 4942 (aircraft) at 1920 in USB. Giving the aircraft instructions on initiating a search for an ELT beacon transmitting from 47/59.5 North 81/39 West. (Heresco, NWT) This is a Canadian Military Forces and air force channel -- Ed.

10000.0 BPM-Linton, PRC (Time signal station) with time pips (slightly offset from WWV-likely due to propagation considerations), Morse code ID several times, then voice announcement in Chinese by a male announcer. (Aboe Nawan Thaliep, Batang, Indonesia) Welcome to the column, Aboe, and please feel free to join us anytime -- Ed.

10220.0 CML28-RCC Havana, Cuba, with following RTTY message "testing WU World Comm NU RYRY" at 0102. 425/50N. (Kimpton, ON)

10678.5 AP New York, New York, sending a FAX press photo (240/288/L-R) at 2155. (Sundstrom, NJ)

11243.0 Super 08 (KC-10) with a message relay to Headgear in USB. (Holmes, GA) This is a SAC channel "Alpha" -- Ed.

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11246.0 Belga 29 (C-130) working MacDill with a phone patch to Eglin AFB ops in USB. (Holmes, GA)

11396.0 New York Radio heard in USB at 1549 working a Pan American aircraft with a message advising of a noise violation upon takeoff at JFK. Message asked for captain's comments. The captain of the "Clipper" advised he had to make a full power takeoff due to "mixed" engines (whatever that is). (Halstead, WV)

12593.0 KFDV-U.S. registered SS Argonaut heard in CW at 0558 with an AMVER message for NMN. Vessel located in the Mediterranean off Naples, Italy.

12617.0 HNFR-Iraqi vessel M/T Alfarahidi heard in CW at 0656 working FFL in France with messages for Budapest. Messages (all of which had the same text) gave an ETA for Constantza (Romanian port city). (Halstead, WV)

12623.0 FNCV-French vessel Saint Brevin heard in CW at 0610 working SUH in Egypt with an ETA message for Port Said pilot. Advised in text it had no dangerous cargo. (Halstead, WV)

12940.0 LZW-Varna Radio, Bulgaria, heard with CW messages for various personnel aboard the Bulgarian vessel LZDC. Messages were in Bulgarian and of a personal nature. One message addressed to Stoyan Valiev asks: "Kai si sxs zdraweto" (How are you with your health?). (Halstead, WV)

13098.0 WLO-Mobile Radio, AL with an 170/100 ARQ press broadcast at 0200. (Kimpton, ON)

13950.0 Y7K25-ADN/GDR Embassy, Berlin, heard at 1050 with a CW QRA marker. (Sundstrom, NJ)

14436.0 GFE23-Bracknell Meteo, England, sending weather FAX charts at 2230. 120/576. (Sundstrom, NJ)

14497.5 CSY-Santa Marie Aero, Azores, at 1630 with RTTY RYs 850/50R. (Sundstrom, NJ)

14470.0 NNNOXEN working phone patches from the crew of the USS W. S. Sims at 0253 in USB. (Boehm, TX)

14788.0 9PL-AFTN Kinshasa, Zaire, with a 425/50R RTTY transmission sending the following "Zaire centre testing RYRY) at 0142. (Kimpton, ON)

14611.6 PWZ33-Brazilian Naval Radio, Rio de Janeiro, heard at 0152 with a RTTY 850/75N signal. "RPFN de PWZ ZBZ1 RYRY". (Kimpton, ON)

14762.0 NNNOMSD-Navy MARS San Diego, California, sending RTTY Navy MARS grams at 1800. 170/75N. (Sundstrom, NJ)

14932.0 APS News Service, Algiers, Algeria, heard at 1150 with English RTTY news followed by French at 1200. Transmissions are not parallel to 15480. 425/50N. (Sundstrom, NJ)

15024.0 Aeroflot 317 heard in CW at 1443 working COL with a message for RFNV (Moscow). Aircraft gave registration number as 86535. Departed Gander and gave ETA for Washington. (Halstead, WV)

16065.0 YZJ7-Tanjug News Service, Belgrade, Yugoslavia, with English RTTY news at 1100. 425/75R. (Sundstrom, NJ)

16134.1 CNM71-Map News Service Rabat, Morocco, heard with a French RTTY news bulletin at 1030. 425/50N. (Sundstrom-NJ)

16135.0 KVM70-Honolulu Meteo sending weather FAX charts at 0000. 120/576. (Sundstrom, NJ)

17018.0 ZSC44-Capetown Radio, South Africa, heard at 1726 with a CQ CW marker. (Szalony, CA)

17081.6 JFA-Chuo Gyogyo (Matsudo) Radio, Japan Fisheries Station heard at 1421 with a CQ CW marker. (Szalony, CA)

17117.6 PBC317-Goeree Island Naval, Netherlands, with a RTTY 850/75N signal at 2238. (Kimpton, ON)

17408.5 WWD-La Jolla, California, working several NOAA fleet ships in USB 1816. Some of the ships replied on 16494.0 (Heresco, NWT) Interesting, George, this is normally one of their FAX frequencies. Thanks for the tip -- Ed.

18040.5 TCY4-Ankara, Turkey, with Turkish RTTY news bulletins at 1200 and English knews bulletins heard at 1223. 850/50N. (Sundstrom, NJ)

18125.0 RND70-Tass Press Service, Moscow, USSR, heard at 1556 with the following RTTY transmission: "De REB-24/RRQ-20/RND70/REN-30 Tass RYRY"> 425/50N (Kimpton, ON)

18544.0 STK-Khartoum, Sudan, with a RTTY test tape at 1925. 425/50R. (Kimpton, ON)

18635.0 UNID station sending five letter groups in CW at 1255. The operator had a terrible fist. Wonder where he learned code. The transmitter also had a real bad chirp. Worst CW I've ever heard. (Lance Micklus, Essex Junction, VT) Sounds like the Cuban again, Lance. Their operators to to the Fidel school of CW and revolution -- Ed.

18785.0 FTS78-Paris, France, heard at 1512 with a RTTY 425/50R broadcast sending the following information: "QRA de Diplo Paris FTW91 22915 kHz FTU8 20078 kHz FTS78 18785 kHz FZF61 kHz." (Kimpton, ON)

19100.0 FUF-French Naval Radio Fort de France, Martinique, with an ARQ-2B 850/96 transmission. Mostly channel B traffic. (Sundstrom, NJ)

19178.0 IRR31-IINA News Service, Rome, Italy, heard at 1100 with an English news bulletin using RTTY. 425/50N. (Sundstrom, NJ)

19238.0 Y7L36-GDR Embassy, Havana, Cuba, heard with a 425/50 RTTY signal at 1624 sending five letter groups. (Kimpton, ON)

19443.0 Y7A77-GDR Embassy, Berlin, heard at 1710 with a 425/50R RTTY signal. (Kimpton, ON)

19954.75 USAF Ascension Island MUX signal heard between 1800-2000. Noted autovon phone patches (NORAD 3Y21) and personal patches. I like the new frequency. They must have a sense of humor or didn't know. (John Biro, Chelmsford, MA) Welcome to the column, John. I am sure they don't realize they are atop a primary Russian spacecraft frequency used by unmanned COSMOS modules docked to USSR space stations -- Ed.

20472.0 CXR-Montevideo Naval, Uruguay, with a RTTY Quick Brown Fox test tape at 1625. (Kimpton, ON)

22312.0 XSG3-Shanghai Radio, PRC with a CQ CW marker at 0054. (Kimpton, ON)

22408.0 ZLP-New Zealand Naval Radio, Irirangi, heard at 2020 with a CW V marker noted parallel with 17128.4. (Boehm, TX)

The Scanning Report

Bob Kay
P.O. Box 173
Prospect Park, PA 19076

The Kay's celebrate Christmas in a big way, as you can see. So why didn't they put two and two together when Queenie tried to tell them of an intruder in the fireplace....?

It was 2:10 a.m. on Christmas morning when my wife awakened me. "I think there's someone downstairs," she whispered. In the darkness of our bedroom, I raised my head from the pillow and listened -- nothing.

I pulled up the covers and told her to go back to sleep. A few moments later she poked me again. "There's someone in the house!" she insisted.

Tossing the blanket aside, I slipped into my trousers. Fifteen years of marriage had taught me that she wouldn't rest until I checked the entire house.

Walking halfway down the stairs, I stopped and called for Queenie, our old, but protective Golden Labrador. I figured that if Queenie came running happily to the stairs, there couldn't possibly be a burglar in the house. After calling her for the second time with no response, I was worried. Backing cautiously up the stairs, I met my wife at the top landing.

"What's wrong?" she nervously asked. Pulling her back into the bedroom I grabbed my scanner and told her to call the police. Placing the scanner on the top step, I turned up the volume and then went down to investigate.

I knew that homes were often broken into on Christmas Eve and that a serious thief would think nothing of killing a dog. At the bottom of the stairs I slipped my hand around the corner and turned on the dining room light. So far, everything seemed to be in order. I called the dog again -- nothing.

"Car thirty one," the scanner squawked.

"Car thirty one, go ahead."

"One-oh-four Bonsal Avenue... The lady called and said there might be a burglar in her residence. Be advised that her husband is investigating."

"I'm about three minutes away," the patrolman responded.

"Car thirty," the dispatcher called again.

"I'm already rolling radio," the officer began. "I'll take the rear."

If there was someone in the house, hearing the police call would hopefully send them running for a door or window. But the house remained silent, almost too silent. And where was the dog? As each moment passed, my heart beat grew louder in my ears.

"Car thirty to radio, I'm at the front door."

"Ten-four," the control room answered.

"Thirty-one is out at the rear."

For a moment, the knock on the front door was reassuring. Help had arrived. Suddenly, the door of my den flew open, hit me in the shoulder and out came Queenie, dashing ahead of me and barking at the front door.

"Did you call about an intruder, sir?" the police officer asked.

As my face turned a bright red, I explained to the officer that it had been a false alarm. As the second patrolman came around from the back, they both wished me a Merry Christmas and returned to their vehicles.

On locking the front door, I saw Queenie running her nose along the living room rug. It was evident that she had the scent of something, but what? Had someone been in the house?

Back inside my den, she abruptly stopped in front of the fireplace and let out a low whine.

"What's the matter with her?" my wife asked from the doorway.

"I think the crazy dog wants me to build a fire," I said through clenched teeth. Grabbing her by the collar, I pulled her out of the den and closed the door.

"Maybe she's cold," my wife affectionately hinted.

"I'm not going to build a fire for a dog at 2:30 a.m. on Christmas morning," I said firmly. "Besides, she has her own bed in the kitchen."

I was the first to crawl back into bed. My wife slipped in shortly thereafter and as we both waited for sleep to return, the house once again fell silent.

"Car thirty to thirty-one." The scanner startled both of us.

"Go ahead," the other officer responded.

"For a minute there I thought we might be arresting Santa Claus."

The officer who had covered the back door merely clicked his microphone to indicate that he agreed.

The Scanning Report

Turning off the radio, I heard my wife chuckle to herself. "What?" I asked in a gruff tone.

"Maybe old Queenie did see Santa Claus."

I moaned and turned over.

For the next two years Queenie was never quite the same. She refused to sleep in the kitchen. The area in front of the fireplace became her new sleeping quarters. Summer or winter, it didn't matter. It could be 90 degrees outside and she would stand in front of the fireplace and whine.

On Christmas Eve of the third year following the incident and in front of a roaring fire, old Queenie died in her sleep. As I dug into the spot that would become her final resting place, every bit of tuff that was inside of me vanished. With tear filled eyes I placed the last shovel of dirt on top of her and returned to the house.

That night, after my wife and I had placed the kids' presents beneath the tree, we turned out the lights and went to bed.

"I don't care what you say," she whispered from her pillow. "Old Queenie saw something on that night three years ago. She didn't die on Christmas Eve by coincidence."

Maybe you're right," I began. "Maybe the poem, The Night Before Christmas, wasn't fiction after all."

"I wonder if the author had a dog?" my wife asked.

"If he did," I began, "I'll bet it stood in front of the fireplace and whined."

Cordless Gifts

If you're going to give someone a cordless phone as a Christmas gift, consider Southwestern Bell's FF-1700 model. Why? Among 21 other brands and models, the FF-1700 was rated by a leading consumer magazine to have the longest range -- 1500 feet. Combine that with the unit's outstanding speech quality and you have a cordless phone that every scanner buff would just love to monitor!

Canadian Scanning

Here's a list of Canadian federal frequencies that are active in the Vancouver, BC area:

139.17	(input 139.98)	Canadian Security Intelligence Service
139.47	(simplex)	RCMP Passport and Immigration
143.145	(repeater)	Department of Fisheries and Oceans
149.08	(repeater)	Department of Communications
171.15	(repeater)	U.S. Coast Guard (enforcement channel?)
410.25	(input)	Ports -- Canada Police
413.2875	(input)	RCMP at Vancouver Airport
414.59	(input)	RCMP but location unknown
421.44	(input)	RCMP VIP and consular protection
460.21	(input)	Airport operations and fire department
461.6625	(input)	Canada Immigration

According to A. Norman of Vancouver, these frequencies are not widely known and he wanted to share them with *Monitoring Times* readers. If anyone wants to share some of their frequencies, please send them to me at the address at the top of this column.

Canadian and Michigan Frequencies

Hugh Davis from Michigan sent in the following list of frequencies for Michigan and Canada:

33.060	KQE574	Chippewa County Roads
33.100	KQE575	Mackinaw County Roads
34.830	KQC606	U.S. Fish and Wildlife Service
42.060	?	Ontario Province Police/Channel A-base
42.220	?	Ontario Province Police/Channel B-base
42.580	KBG775	Michigan State Police-Base to car
42.680	KBG775	Michigan State Police-Base to base
42.740	KA2255	Michigan State Police-Car to base
44.640	KC4002	Michigan Department of Natural Resources
44.720	KQA721	Michigan Department of Natural Resources
46.820	?	Ontario Department of Natural Resources
142.830	XJF28	Sault Ontario City Police
149.606	?	Sault Ontario Ambulance
153.830	XJK23	Sault Ontario City Fire Department
155.595	XGE251	RCMP Detectives
155.700	XLQ86	RCMP Sault Ontario

The Scanning Report

Flying with the Americans, Canadians and Soviets

An Air Canada passenger jet had to take evasive action to avoid hitting Soviet long range bombers and the two American fighter jets that had been dispatched to intercept them. Apparently, the near disaster took place about 240 miles off the coast of Newfoundland.

The pilot of the Toronto based airline said that he received no warning from the North American Air Defense Command, nor had he received any communications fro the American fighter pilots. Wow! That's what I call being in the wrong place at the wrong time.

Dead Spots Plague San Antonio

The San Antonio Police are back to using their old UHF radios. It seems that their new, nine million dollar 800 MHz system is full of "dead spots." The new system, which became operational in February of this year, is currently being outfitted with a microwave repeater system. Motorola has provided the additional equipment at no cost to the city.

However, the city manager and the police chief say that the officers will continue to use both systems until they are certain that the new 800 system is functioning properly. (Newspaper clipping from the Sunday *Express News*)

My Great Giveaway

A great many readers took advantage of my offer of a ten page frequency list that covered the Grand Forks Air Force Base in North Dakota. Submitted by an anonymous contributor who calls himself DXR 102, requests poured in from every part of the country! As a result, my copying costs sky rocketed. To make matters worse, the postage turned out to be forty-one cents instead of the forty cents I requested.

Well folks, guess what? I have another list. Yep, this one is nine pages with over 200 hand-written frequencies. It was submitted by Roger W. West of Balsam Lake, Wisconsin, and it covers Polk, Croix, Burnett, Chippewa, Hennepin, Ramsey, Eau Claire, Washburn, Pierce, Washington, Barron, Dunn, and many other Wisconsin counties. Here's a brief sampling:

Polk County Sheriff	155.550
Sheriff-car to car	158.850
St. Croix County Sheriff	155.580
Burnett County Sheriff	155.730
Wisconsin State EMS	155.280/155.370/155.400
St. Croix Scenic Riverway	164.250/164.750/411.725/ 411.825
Corps of Engineers	163.410/164.700
National Trans. Safety Board	165.750/165.1755
NOAA Aircraft	122.925
Veteran's Administration	30.170/162.125
U.S. Post Office	163.00/164.2/164.9875/169.850
U.S. Navy REDCOM 16	148.350/148.410/148.950

If anyone is interested in receiving the complete list, be advised that there is a catch. Although this is the time of year for giving, I feel that I did my share already. If you would like to have the list, please send a SASE with forty cents postage and $2.00 to cover copying costs.

Readers interested in the ten page list from DXR 102 are also advised that letters postmarked after November 30 will require two dollars to cover copying costs.

More Million Dollar Trunked Systems

Bill Hayes of Boston, Massachusetts, sent in a newspaper clipping that described Boston's new 20 channel trunked radio system. The cost of the system was eight million dollars. The 650 member police force also has 250 portable radios which cost three thousand dollars a piece. The police chief said that he would like each member of the force to eventually have a portable unit.

The article further stated that the system wasn't going to be completely functional until the end of this year -- anyone care to wager a little bet that the system will require extensive modifications that will delay its scheduled implementation?

Anyway, Bill sent along the new frequencies that the Boston police are supposed to be using:

856.7125/857.7125 856.7375/857.7375 856.9625/857.9625

Federal Roof Tops and Antennas

Back in the September issue, I dared anyone to take a crack at determining the reason for the long wire antenna atop the IRS building in Washington, DC.

Nick Mascelli from Gradyville, Pennsylvania, suggested that the long wire antenna wasn't being used by the IRS. Nick went on to say that the Federal Government will utilize any building or property that they control to erect antenna sites for other federal agencies.

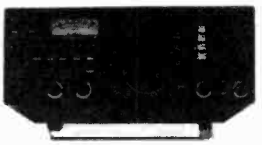
That brings us to another letter by an anonymous reader who suggested the long wire antenna was being used to transmit a "spy numbers station."

And last, but not least, Bill Townsend from Honeybrook, Pennsylvania, suggested that the IRS antenna was part of a top secret plan to snare the sled of Santa Claus -- it seems the IRS wants to check on Santa's excessive charity deductions.

Merry Christmas and Happy New Year to all!

EEB THE NATION'S #1 SWL SUPPLIER
ORDERS 800-368-3270

EEB's all new 1989 SWL Catalog is on its way. Hopefully, you are on our mail list and will receive a copy by 1 November, If you have not received your copy by 1 November, write or call for your "FREE" copy (In U.S.A.), CANADA $1.00, all others $3.00 AIRMAIL.



R71A This is our best seller. ICOM R71A has all the features one expects in a world class receiver. All mode AM, SSB, CW, RTTY, FM (OPT). Complete coverage .1 to 30 MHz. 3 Filter positions, direct keyboard entry. 32 memory channels, PLL tuning in 10 Hz steps for exact frequency. Many ICOM options plus EEB high performance package. (CALL)

ICR71A $849.00 + $12 UPS

R7000 There is nothing to compare with the R7000 under $12,000. This is the most sophisticated V/UHF receiver ever offered to the public. No wonder its our best selling V/UHF receiver. All mode AM, SSB, CW, FMW, FMN - 25 to 2000 MHz (20 kHz to 2 GHz w/NOVEX FC7100), direct keyboard entry, 99 memory channels, full scan, memory scan, program scan, priority scan, many ICOM options plus EEB options and high performance package deal. (CALL)

ICR7000 $1019.00 + $12 UPS

The **KENWOOD R5000** is the new high performance receiver from the leader in communications technology. Designed with the highest performance standards in mind, the KENWOOD R5000 will bring you all the excitement of shortwave listening! 150 kHz to 30 MHz. 100 memories. Keyboard entry. AM, FM, USB/LSB, CW, FSK. VHF 108-174 Opt VC20.

R5000 NEW LOWER PRICE $799.95 + $10 UPS

The **KENWOOD R2000** is an innovative all-mode receiver with a host of features to enhance the excitement of listening to stations around the world. 150 kHz to 30 MHz. 10 memories. AM, FM, SSB, CW. VHF 118-174 MHz opt VC10.

R2000 $629.95 + $10 UPS

A high-class, general coverage receiver with expandability looking to the future. The **NRD-525** will change your shack into a new universe! 0.09 MHz to 34 MHz. Pass band shift. 200 memories. Direct keyboard entry. AM, FM, CW, SSB, RTTY, SSB. Notch filter. V/UHF converter option.

NRD525 $1179.00 + $12 UPS

The **Satellit 650 International** is the ultimate in German crafted portable radios. Along with excellent audio performance the Satellit 650 also has many fine features. 510 kHz to 29.999 MHz. 24 hour clock/calendar. 3 Bandwidths. 60 Memories. AM, FM, SSB, CW. Keyboard Entry. PLL Control. Nicad Battery Option.

Satellit 650 $995.00 + $12 UPS

The **Satellit 400**, with its rounded corners and smooth lines is the obvious "style leader" in personal portables. Beautifully crafted, this portable covers all shortwave bands plus MW and FM. It's unexcelled audio will surprise you! SW 1.812-30 MHz. LW, 148-353 kHz. FM 87.5-108 MHz. MW 513-1611 kHz. 24 Memories. Keyboard Entry. SW 1.612-30 MHz.

Satellit 400 $399.95 + $6 UPS

YAESU now offers the finest receiver in the famous FRG series. The **FRG8800** offers functionality and operating convenience for the serious shortwave listener. 150 kHz to 29.999 MHz. Direct keyboard entry. Dual Clocks/Timers. Wide/Narrow Filter. 12 Memories. AM, SSB, CW, FM. VHF 118-174 MHz option.

FRG8800 $649.95 + $10 UPS

VHF/UHF General Coverage Receiver. The **YAESU FRG9600** is an all mode scanning receiver with many outstanding features. Covers: 60-905 MHz. 100 Memories. Keyboard Entry. SSB, FM, AM. FM/Wide & Narrow. 7 Digit Readout. Video option.

FRG9600 $529.95 + $6 UPS

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ICF2010

ICF2003

ICFSW1S

ICF2010 is the market leader of portables, our best selling portable. Full coverage. .15 to 30 MHz, FM 76-108 MHz, Air Band 118-136 MHz. AM, FM, CW, SSB. Sync Detection. 32 Memories. Keyboard Entry. Many Features. **ICF2010 $349.95** + $6 UPS

ICF2003 delivers most performance of all portables in the mid-size class. .153-30 MHz. AW, CW, SSB. 76-108 MHz FM. 10 Memories. Keyboard Entry. Paperback book size. Optional AC Adapter.

ICF2003 $259.95 + $4 UPS

ICFSW1S. The newest in miniaturization only 2¾" × 4¾". Tests show it as best of sub-compact size, has its own case with, active antenna, world AC Power Pack, head Phone, SWL Book, Travel with the "SYSTEM" or just the Radio, Complete coverage to 30 MHz FM 88-108. Keyboard Entry. LCD Readout/Clock. They're going fast! **ICFSW1S $299.95** + $4 UPS

ICF7601. A late version of the famous 7600. AM-FM All major shortwave bands. **ICF7061 $139.95** + $4 UPS

ICF7700. 15 Memories. All SW Bands 90 thru 11 MT. Digital LCD freq/clock. **ICF7700 $239.95** + $4 UPS

ICF4920. A favorite with the travelers. Shirt pocket size. PW 2 AA. **ICF4920 $99.95** + $4 UPS

PANASONIC with/FREE STAND

RFB60 Top of the line portable .155-30 MHz coverage. 36 Memories. Scan, Rotary Tuning. Direct Keyboard Entry. Clock/Timer. Optional AC Adapter.

RFB60 $249.95 + $4 UPS

RFB40. Full coverage. AM, FM, SW. 27 Memories. Direct Keyboard Entry. Auto scan, digital readout. Optional AC Adapter. **RFB40 $189.95** + $4 UPS

RFB20. AM, FM, LW, SW Coverage. Double super heterodyne for image rejection. Ear phone and carrying case included. **RFB20 $119.95** + $4 UPS

RFB10. Smallest non-digital. Shirt pocket size. 8 Bands - The Traveler's Friend. Optional AC Adapter.

RFB10 $89.95 + $4 UPS

TOSHIBA RPF-11. 11 Bands. AM, FM, 9 SW. One of our leading portables. Easy push buttons for band select. Travel lock. "S" Meter. Optional AC Adapter TAC65 $13.95.

RPF11 $89.95 + $4 UPS

SANGEAN with/FREE STAND

ATS803A. So much HITECH in one package, a super value. Covers all SW Bands. Tunes .150-30 MHz + FM 88-108. 9 Memories Auto Scan. Keyboard Entry. Stereo w/Headset or Line output. AC Adapter included.

ATS803A $189.95 + $4 UPS

SG789. Slightly larger than SONY ICF4920 same coverage plus stereo w/headset. Power 3AA.

SG789 $89.95 + $4 UPS

DIPLOMAT 4950. SAME AS SG789.

CLOSE OUT $49.95 + $4 UPS

MS101. All new mini set similar to Panasonic RFB10. 9 Band, AM, FM, 7SW, Band spread for easy tuning, stereo w/headset, 3 AA. Optional AC Adapter.

MS101 $79.95 + $4 UPS

MS103. Same as MS101, 9 SW Bands.

MS103 $99.95 + $4 UPS

MAGNAVOX

D2999. Excellent performer, great sound (2 SPK) and other HITECH features make this a value packed radio. .146-26.1 MHz FM 88-108. Keyboard entry. 16 Memories. Multi-mode AM, CW, SSB, FM, Scan. 12/24 Hour clock. Loads more.

D2999 $299.95 + $6 UPS

D2935. Rated best value in a portable (IBS). Covers all SW Bands. .146-26.1 MHz. 9 Memories. AM, FM, CW, SSB. Keyboard Entry.

D2935 $179.95 + $5 UPS

D1835. This unit is one of the finest in it's class. 9 SW Bands. AM, FM, LW. Slide controls. Carrying pouch.

D1835 $79.95 + $4 UPS

ANTENNAS

DATONG AD370. HF .1-30 MHz outdoor active, rated #1 by IBS Test Labs. Dipole whips cancel some man-made noise. **AD370 $129.95** + $4 UPS

SONY AN1. HF .1-30 MHz outdoor active. Our #1 Seller for 3 years. Antenna hardware control box 40 ft. cable. **AN1 $79.95** + $6 UPS

EAVESDROPPER. Outdoor passive trapped dipole. 9 SW Bands. 43 ft. long. 100 ft. lead. Everything you need. **SWL $59.95** + $4 UPS

SWLC. Same as above, you furnish coax cable. 25'-$10, 50'-$16, 100'-$26 + **SWLC $59.95** + $4 UPS

EAVESDROPPER SLOPER. Rated among the best by IBS. .5-1.6 best. AM, DX, 2-26 MHz SW. You provide coax as above. **SWLS $49.95** + $4 UPS

ALPHA DELTA SLOPER **DXSWL $69.95** + $5 UPS

TPA. Indoor/Active. .2-30 MHz up to 20 DB Gain. Pre-Selector can reduce interference. 9VDC Optional AC Adapter. **TPA $74.95**

MFJ1024. Indoor/Active. Many features same as above. 9VDC Optional AC Adapter. **MFJ1024 $79.95**

NOVEX NEW PRODUCTS

CRIS 6000. Computer Radio Interface System. The ultimate HITECH computer (IBM PC) system for control, logging, scanning, spectrum analysis. Using most current radios. Free CRIS Newsletter (CALL).

CRIS R7000 **$349.95** + $8 UPS

SDU 8000. Spectrum Display Unit. Perfect mate to ICOM R7000. 10 MHz sweep allows you to see up & down the band for activity on a 3 inch CRT. Free SDU Flyer (CALL).

SDU8000 $595.00 + $8 UPS

RACKMOUNT. Novex RM Series Rackmount hardware for most popular radios ICOM, KENWOOD, YAESU receivers and transceivers.

RM1100 $79.95 + $5 UPS

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703-938-3350

(Just minutes from Washington, DC)

what's new?

All-Band Scanner from ACE

ACE Communications, the aggressive distributor of AOR radios, announces the introduction of a new handheld receiver with complete public service band coverage -- with a price tag of just $199.00.

The 12 ounce AR880 covers police, fire and emergency band plus the new services now available above 800 MHz in 12.5 and 25 kHz increments. Frequency ranges are 30-50 MHz, 118-174 MHz, 436-512 MHz and 800-999 MHz.

Front panel keys allow programming of 20 channels and a pair of upper and lower limits for bands to be scanned can be stored in the separate search memory locations. Extra features include first channel priority, keyboard lockout and BNC antenna connector. It's all packaged in a 5-3/4" (height), 2-1/8" (width), and 1-3/4" (depth) case.

The AR880 comes complete with two antennas and a stainless steel belt clip. For more information, see your favorite radio dealer or contact ACE Communications at 10707 East 106th Street, Indianapolis, Indiana 46256.

100 kHz to 2036 MHz Monitor from AOR

Inventor designer Shigeru Takano used to dream of a radio that was capable of "listening to everything." His dream is now reality and if all goes well, North Americans will benefit from his reverie during the first quarter of 1989. That's when AOR expects to release a yet-unnamed receiver capable of monitoring everything "from submarines to satellites" -- 100 kHz to 2036 MHz -- in SSB, CW, AM, FM wide and narrow modes.

Frequency coverage for the unit is divided into two groups: .1 MHz to 30 MHz and 30 MHz to 2.036 GHz and has separate antenna 50 ohm BNC inputs and separate switchable attenuators. Superior selectivity of up to -70db adjacent channel is assured by the 15 different microprocessor selected band pass filters in the unit. According to AOR, this feature also assures an extremely high level of image rejection -- the most common cause of interference in broad coverage receivers.

The receiver can scan its four banks of 100 channels each at a rate of 20 per second; the search rate is 20 increments per channel. A built-in RS232 interface device allows the radio to be controlled or programmed by any computer with a standard serial port. A suggested retail price of $995.00 has been set for the unit.

For more information, contact ACE Communications at 10707 East 106th Street, Indianapolis, Indiana 46256.

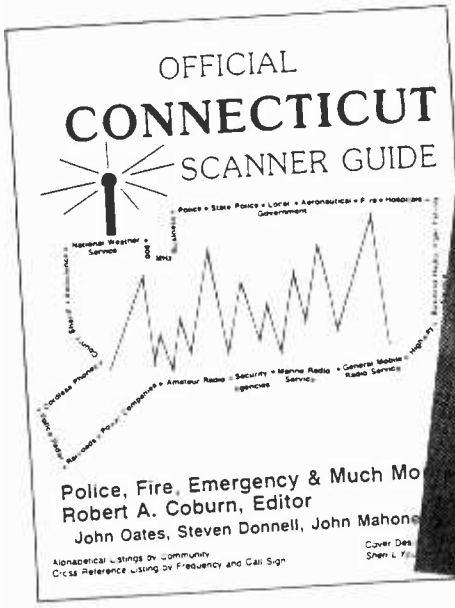
Official Connecticut Scanner Guide

edited by Robert A. Coburn

Concentrating on business, public safety, aircraft, maritime and amateur radio repeaters, this directory of Connecticut scanner frequencies is alphabetized by location and cross-referenced by frequency.

Contributing editors John Oates, Steven Donnell and John Mahoney lend their mutual wealth of listening expertise to make this volume accurate and comprehensive.

(312 pages, 8-1/2" x 11", perfect bound. $14.95 plus $2.05 shipping from PO Box 712, Londonderry, NH 03053)



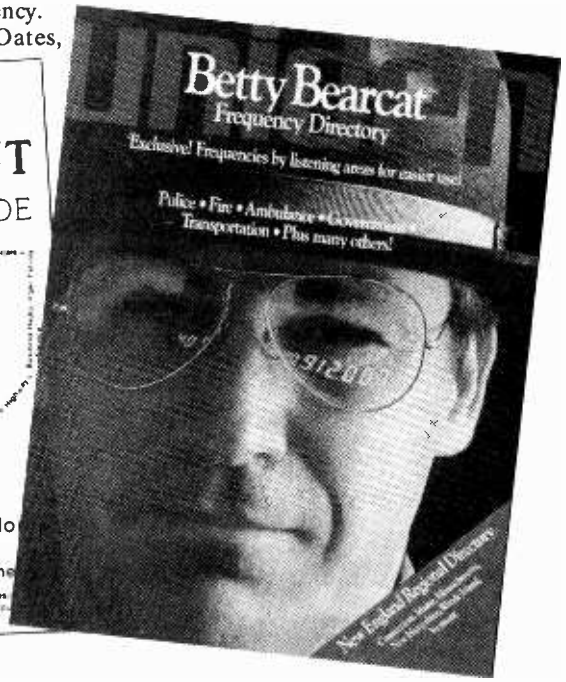
Betty Bearcat Frequency Directory

At one time the Betty Bearcat directories, published by Electra when they were in their heyday producing Bearcat scanners, were compiled from frequency lists voluntarily contributed by their customers. As a result they were rife with errors.

But things have changed. Norm Schrein, former scanner columnist for *MT*, is now the editor of the publications and works directly from FCC database files. Entries are as accurate as the government files (that should be reassuring!).

The four regional volumes are New England (CT, ME, MA, NH, RI, VT); Southeast (AL, AR, FL, GA, LA, MS, NC, SC, TN, Puerto Rico, Virgin Islands); Great Lakes (IL, IN, KY, MI, OH, WI) and Mid-Atlantic (DE, DC, MD, NJ, NY, PA, VA, WV).

Predictably, emphasis is on the services of greatest interest to scanner listeners: public safety and emergency, local government, weather, maritime, aircraft and mobile telephones. Not included are federal or military, amateur, business or industry, land transportation, utilities or press.



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

Organized listings by state are subdivided into service, then alphabetized by location. There is no frequency cross reference.

The directories are available from some scanner dealers or directly from Uniden in Indianapolis.

Free Fun: The Yeary Catalogue

Jim Yeary thinks radio should be fun. You can tell from his catalogue. Leafing through the pages is kind of like discovering an old trunk in the attic filled with radio goodies.

Yeary has taken some of the best "old time" projects and made them available in kit form. For example, ten bucks will get you a "Deluxe Crystal Type Radio" kit -- a very simple to build yet functional radio that operates without batteries (A shortwave version is $15.00). Another radio, the "World War II Fox Hole Radio, which tunes in stations using a razor blade, is just $6.00.

Other kits include a 5 Tube AC-DC "Expanded Chassis" Superheterodyne Receiver Kit for just $39.95 and even a $79.95 ham radio transmitter. There's lots of other great stuff, too. There's copper antenna wire for $2.95 a foot. Surplus NiCad batteries, three for $2.00. Old fashion cloth speaker grill screens, 6 x 6", $1.70 and an assortment of hard-to-find knobs ranging in cost from nineteen to thirty-nine cents.

Rummage through Jim Yeary's attic. Mention *Monitoring Times* and he'll send you a copy of his catalogue for free. His address is 12922 Harbor Blvd, #800, Garden Grove, California 92640.

Spectrum Surveillance Receiver from Grove

With the prototype awaiting FCC certification just after the first of the year, the new Grove SR1000 Spectrum Surveillance Receiver nears production. Offering accurate digital frequency readout, a signal strength indicator and a CRT spectrum display unit, the rugged, commercial-quality intelligence receiver should be ready for the market sometime in first quarter 1989.

While specifications are still being honed, it looks as though the SR1000 will have continuous 100 kHz-1000 MHz frequency coverage, 1024 memory channels (manually selected by keypad or rotating the tuning dial), all-mode reception (AM, wide FM, narrow FM, LSB, USB), a choice of selectivity bandwidths and a bevy of other functions to tweak reception to perfection.

The price? Grove is still hedging on that, admitting that additional features (provision for optional RS232 computer control, wide/narrow filter switching, scanning retrofit, etc.) have been adding costs to the original estimate of $2000, but they still expect it to sell for well under $5000--hopefully, under $3000 ($2995?).

For those serious monitors who are looking for such an agile receiver, request the latest descriptive literature on the SR1000 by writing Grove Enterprises, PO Box 98, Brasstown, NC 28902 or call 1-704-837-9200.

World Monitor

Though not directly radio-related, the Christian Science Monitor's new monthly magazine, *World Monitor*, deserves the attention of anyone who enjoys exploring their world. Shortwave listeners, check this out.

World Monitor paints an objective picture of the world in a masterpiece of words and pictures. Lavishly illustrated with high quality color photography, it is a delight to read, exuding class from every page.

The November issue, for example, examines glasnost-style Soviet television, travels to the Asian paradise of Bali and looks at housing in Denmark. Special reports cover Islamic unrest in the USSR and the Asian economic boom. Other articles take cover items of interest in Scotland, Brazil and France, among others.

World Monitor is a must for anyone interested in our world. And at just $17.70 a year (special introductory price for new subscribers), it's a real steal. (Single copies are $2.95.) To subscribe or for more information, write *World Monitor*, P.O. Box 11267, Des Moines, Iowa 50347-1267. Please tell them that *Monitoring Times* sent you.

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

Cultivating a Habit

I recently discovered that I have spent twenty years in the radio hobby. Oh, I can recall a period of time some years back when my hormones kicked in and the amount of time spent at the radio was inversely proportional to the number of eligible females within spitting distance. Then there was the time when employment kept me hopping and I had a little trouble setting up a permanent listening post. And how can I forget those nights when a hot DX session was interrupted by my number one son's colic?

Get to the point Skip!!!

One of the primary reasons why I can reflect on the aforementioned events is that I have kept a log of my radio exploits. An accurate and detailed log book will not only enhance your day to day listening pleasure, it will give a lot of personal positive regard when you look back on your compiled accomplishments.

Somewhere out there in radio land are log books that go back to the days of Marconi. Your own logs will look pretty neat in a quarter century or so. But only if you get a little creative with them now. This looks like a perfect lead in to... (drum roll please)

Uncle Skip's Guide to Logging

Okay, we have touched on logging as a way to record and generally feel good about our accomplishments. This is a hobby, so having fun is most assuredly the most important reason to do anything. But there are also practical reasons for keeping a log.

Your log entries will recall all the basic information needed to assist you in writing reports in order to obtain QSL cards or verification letters from your contacts. For an amateur operator, callsign, frequency, and signal report, next to the date and time will cover the bases. SW broadcast, utility, MW and VHF monitors will want to keep track of content and conditions as well, but more on this later.

The least considered but perhaps the most important reason for maintaining a comprehensive log is to allow you to plan your listening to get the most for your time. Let me give you an example.

You have attended a few radio conventions and you hear all these folks talking about logging little lumps of rock out in the south Pacific. You notice that a lot of hobbyists seem to be excited about this so you want in on the fun. But you cannot understand how you have never heard Papua New Guinea before. After all, you listen ALL THE TIME.

Wrong, Bunky, very few of us get to listen all the time. In fact, when you look at your log you discover that you listen only after you get home from work, jog a few miles, shower, eat dinner, play with the kids, shmooze the spouse, and read the evening paper. You're settling in for a DX session that is probably beginning around 0100 or 0200 GMT. By then your long desired station is buried in the muck.

Having made this observation from your log book you now decide to go to bed an hour earlier so you can be up by 1000 Zulu and spend an hour listening over your morning coffee. You are now listening during a good window for the South Pacific. Try 4890 kHz. You might decide to do your running in the mornings and get a solid hour in on your rigs as soon as you get home from work. VHF listeners will find their scanners humming with activity catalyzed by the evening rush hour.

Using your log to help you plan your listening will allow you to fit your hobby into your life, not your life around your hobby, if you want to do that you should take up golf!

The Art of Logging

Now that we have shed a little light on why we should log, let us give some consideration to how to go about keeping a log.

Time and Date

I find it helpful to log both local time and date along with GMT time and date. This extra data helps to sort out any confusion about one's listening habits while still giving you the universally recognized figures.

If you have one of those handy-dandy time zone charts, you might want to keep track of local time on the other end. If you're listening to ham radio operators, you can then figure out when they have finished their daily tasks and are most likely to sit down for few hours of radio play.

Frequency

This might sound like stating the obvious but you might want to note things like stations transmitting on frequencies that differ from their normal pattern. Also, it is a common practice for hams working DX to transmit on one frequency while receiving on another. Knowing a rare amateur station's operating habits can make it easier to pick it out of the pile ups.

If you are keeping track of your own ham activity in your log, make sure you record your transmitter power. In all cases make note of emission type: USB, LSB, CW, FM, Am, etc.

Callsign

Or station name. Some folks like to log each new country in red to impress people. Also, note station location so you can keep track of relay sites.

Language

I also make note of the gender of the announcer, it aids QSLing.

Signal Report

SINPO, SIO, RST . . . All are systems and signs of the quality of the signal that is serving to transmit the message to your radio shack. SINPO stands for a signal's Strength, Interference, atmospheric Noise, Propagation disturbance (fading), and Overall merit. Rating a signal from 1 to 5 with 5 being excellent using this system should leave little doubt in anyone's mind as to what you heard on your end. However, when QSLing, don't simply send along a SINPO report. It is entirely possible that the person deciphering your report will have no idea about this system of notation.

Spell out your signal observations. Also, hams don't know from SINPO. A ham wants his or her signal report in RST -- Readability, signal Strength, and (if it is a

CW signal) Tone. Hams rate readability from 1 to 5 with 5 being perfect and sensitivity and tone from 1 to 9 with 9 being perfect. You will hear hams tossing around phrases like "Your signal is twenty over S9". Stick to the RST system because you can always trust your ears but I have run across quite a few liberally calibrated S meters.

Equipment

Many monitors use multiple receivers, antennas and accessories to conduct business. I have found that the easiest way to keep track of what system combination I have used is to assign code numbers to each piece of hardware and note those numbers in the log next to the contact data. I can then discern that I heard Radio Nibi Nibi using receiver number 1, antenna number 3, with the aid of accessories number 7, 9, and 11.

Since I like to be involved in all aspects of radio monitoring I also note a "Hobby number" 1 for SWBC, 2 for amateur radio, 3 for BCB listening, 4 for VHF/UHF etc..

Verification Data

Use your log to keep track of verifications sent for and received. By recording this information with the initial data it makes it easy to pick out the stations you might need to re-QSL in the future. Some people like to note the date a verie was sent out so that they can share the information about the length of time it takes to get a response with other DXers. Some MW listeners prefer to tape station IDs in addition to sending for QSLs so it is good to note the tape number for future reference.

Other Data

On commercially made Log Sheets this space is almost always pitifully small. Yet, your accurate reporting of details of program content are essential to successful QSLing. Don't be afraid to use the next few lines of your log book to record all essential details of the contact. I even like to note things like "Session interrupted by many phone calls," or even something intensely personal such as "Left for hospital to deliver number two son." It's your log, Compadre! If you are making a ham contact it is fun to note some of the things you discussed in the contact so you can jog your memory if you run across the person some time in the future.

Some Thoughts on Log Sheets

There are many folks out there who are willing to sell you commercially printed log sheets. No problem, but if you go this route, you will have to be content with writing any additional dope in the margins. Old Uncle Skip has long opted for "rollin' my own" log sheets. Since the "copy machine" has become a common fixture, it is easy to develop a master log sheet and burn off all the copies your little heart (and pocketbook) desire.

I use 8-1/2" x 14" Legal Size paper laid sideways to cram in all the columns my logging system requires. Any nearby stationery store can sell you an expandable cover that will hold your log together quite nicely. Any of you folks out there who have responded to the "Siren's Song" of the computer might try to modify a data base to suit your particular needs. You could then manage your data in additional ways.

You have probably figured out that Old Uncle Skip recommends that you put a lot of information in your log that might not seem to be called for. Howsomeever!! After twenty years at the dials I have come to find all the extraneous information logged has been useful in imparting my particular brand of radio wisdom. It's also made it all great fun and that is the only reason for turning my rigs on.

One final thought passed on to me by a dear friend W2RBM now, sadly, silent key... WRITE BIG!!! It will save you a lot of squinting when you get on in years. And that is when reading your old log is going to be the most fun.

mt

DATE GMT	DATE LT	TIME GMT	TIME LT	FREQUENCY KHZ RCVD	FREQUENCY KHZ XMIT	EMISSION	XMIT POWER	CALL SIGN OR STATION WORKED	SIGNAL DATA SINPO RST SENT	SIGNAL DATA SINPO RST RCVD	LANGUAGE	STATION LOCATION DATA	OTHER DATA & CONDITIONS	SIGN OFF GMT	HOBBY #	RCVR #	XMIT #	ANT #	ACCES #	QSL SENT	QSL RCVD	TAPE #

It is easy to develop a log sheet that will work for any monitoring need.

Dave Jones

430 Garnor Drive
Suffield, OH 44260

What's on 225-400 MHz?

The monitoring of UHF military aircraft in the 225 to 400 MHz band is one of the more interesting aspects of the hobby above 30 MHz. The amount of Federal File mail received from readers on this subject exceeds all others by a rate of two to one!

One of the two most commonly asked questions is, "What is there to be monitored between 225 and 400 MHz?" The question is asked by both experienced monitors and newcomers so don't feel embarrassed.

It's not that the frequency range is new. Rather, up until recently, few people could monitor it. The debut of the Regency MX-5000 in 1984, however, provided continuous coverage from 25 to 550 MHz with the ability to receive AM, NBFM, and WBFM (Narrow band and Wide band FM respectively) selectively.

Included in its coverage was the UHF military aircraft band -- an additional 175 MHz of the RF spectrum now ripe for monitoring with readily available inexpensive equipment. So now the hobbyist could monitor an area of the RF spectrum that was not readily monitored prior to the MX-5000. It was almost like space, the final frontier, new challenges and the unknown.

The second most commonly asked question is, "What mode (type of modulation) is utilized between 225 and 400 MHz?" This question is most often asked by owners of the Realistic PRO-2004 scanner. The PRO-2004 defaults the mode setting when a frequency is entered into the scanner to which the majority of transmissions are supposed to be for a given frequency range.

The problem here is that the PRO-2004 defaults to NBFM and not AM as it should for monitoring the military UHF band. The default to NBFM confuses many first time users and leads to disappointment when no traffic is heard. Additional modulation schemes are utilized and will be discussed later in this column.

The military is the prime user of the spectrum between 225 and 400 MHz. In addition to the military, several other federal government users may be found operating between 225 and 400 MHz. These include the Coast Guard and NASA. The majority of the assignments are for aircraft and satellite communications and the support of these communications.

Table 1 lists the U.S. government frequency allocations for the range. The table is a general allocation plan and updates are welcome. Table 2 lists UHF frequencies that are relatively common throughout the nation. The frequencies in Table 2 are a good first place to start when initially monitoring the UHF AC band. All the frequencies in Table 2 are confirmed.

Perhaps the toughest to DX and the most interesting frequency in Table 2 is the one assigned to wireless home alarm systems -- 395.000 MHz. The alarm system utilizes remote UHF transmitters to transmit a signal to the base unit when a sensor wired to an individual transmitter is compromised. The system is designed and sold by Universal Electronics of Owning Mills, Maryland. The system was also marketed by Radio Shack until the fall of 1988 under their Safehouse label as well as by several well known mail order firms. The range of system distribution nationwide makes this an ideal optimum DX target for UHF enthusiasts.

The range of a transmitter is listed at 100 meters. The transmitter sends burst of pulses that last approximately two to three seconds. The AM mode is recommended for optimal reception with the best clarity and distance of reception among AM, NBFM, and FM. These pulses will sound more like a digital data burst (tones) than clicks. The transmitters will send each time the sensor loop is broken regardless of the base unit status (armed or unarmed).

So DX your neighborhood one evening while your neighbors come home from work and monitor 395.000 MHz with your squelch set so that receiver noise is heard. Also in this range are other alarm brands and even some garage door openers!

The tower and ATIS frequencies listed in Table 2 have ranges (ground) limited to the general proximity of the base. Range of five to 25 miles is possible of tower frequencies as the tower height assists in the signal clearing local obstacles.

Aircraft and ground stations can be monitored on the remaining frequencies as well as some surface vessels. The range of the aircraft transmissions will vary depending on the aircraft altitude with several hundred mile ranges not being uncommon.

TABLE 1

225.000-328.600	Fixed, land mobile, aircraft
328.600-335.400	Aeronautical radio navigation
335.400-399.900	Fixed, land mobile, aircraft
399.900-400.050	Radio navigation satellites

The United States Coast Guard (USCG) activities on the listed frequencies are primarily their search and rescue operations and air support for S & R missions. The USCG can be monitored operating on the Great Lakes, Gulf of Mexico, and both coasts throughout the year. The law enforcement frequencies utilized by the USCG are not listed in Table 2.

The AM mode is not the only mode to be found in the UHF AC band even though it is by far the most common mode. Narrow band and wide band FM are utilized for some land mobile and aircraft frequencies as well as by satellites. AF-1/AF-2 use a multiplexed scheme on several frequencies where the appearance of several conversations are being held. Try monitoring the following frequencies which have been reported active within the last year: 260.300, 260.900, 305.550, 322.800, 390.000, 392.600, 398.100, and 398.950.

Sources

The frequencies in Table 2 are but just an extremely small amount of active frequencies between 225 and 400 MHz. An excellent starting point for a frequency data base is with the government microfiche file set that was formerly sold by Grove Enterprises and which was also available in print format under the *Federal Frequency Directory* by Grove Enterprises.

The data in the microfiche is several years old; however, personal confirmations from across the United States within the last year show the majority of listings are still active.

TABLE 2

236.600	Military tower common
237.900	USCG-general operations
243.000	UHF "Guard channel"-emergency
255.400	FAA-Flight service stations (FSS)
257.800	FAA-Civilian tower common
272.700	FAA-FSS
273.500	ATIS-Automatic terminal information service
275.200	USAF-Meteorology
277.800	USN fleet common
282.800	USCG/USN-Search and rescue
311.000	USAF-SAC primary command post (CH 9)
321.000	USAF-SAC alternate command post (CH 11)
340.200	USN-Naval air station tower common
344.600	USAF/USN-Meteorology
349.400	USAF-MAC command post
360.200	USN-NAS tower common
372.200	Pilot-to-dispatch
381.300	USAF-TAC command post
381.700	USCG-Air support
381.800	USCG-Primary air support
383.900	USCG-Air support
395.000	Wireless home alarm systems

I have seen the *Federal Frequency Directory* for sale at a few hamventions in the last couple of years but I have never seen the microfiche for sale. If a set or directory comes your way latch onto it, as it is still a very good source.

Several scanner club newsletters contain columns devoted to federal government and military which quite often list and present UHF AC band data and operations. Often detailed individualized frequency lists of a confirmed nature appear as well as tidbits of data. The interested UHF AC band enthusiast is advised to check with the following organizations for additional data. Each organization is recommended by this editor.

All Ohio Scanner Club (AOSC) -- Publishes a bi-monthly newsletter with a separate column for military and federal operations. Each column is nationwide in coverage. Contact AOSC at 50 Villa Road, Springfield, OH 45503-1036.

North East Scanning News (NESN) -- Publishes a monthly newsletter with a combined federal/military column. NESN provides coverage for virtually the entire east coast and NE U.S. Contact NESN at 212 West Broad Street, Paulsboro, NJ 08066.

Radio Communications Monitoring Association (RCMA)-- Publishes a monthly newsletter with a combined federal/military column. RCMA is the only nationwide scanner club. Contact RCMA at P.O. Box 4563, Anaheim, CA 92803.

Let the clubs know where you heard about them. Also some Radio Shack stores located near military bases maintain lists of active frequencies that are usually free for the asking.

Now that sources of data have been discussed the tools to monitor UHF AC band will be briefly discussed. The prime receiver as of this writing is the Realistic PRO-2004, a model which needs no further explanation. The ICOM R-7000 also provides coverage of the UHF AC band, albeit at a high cost. The AOR AR-2002 is another current offering with the correct coverage.

Reviews and/or new product highlights have appeared in *Monitoring Times* on all three of the forementioned receivers. The PRO-2004 and ICOM R-7000 are essentially table top models, each capable of DC operation. The AOR AR-2002 is a mobile/table unit with an external AC/DC adapter. Just because a unit is deemed a table top does not necessarily mean that that is how it will be utilized.

Bill Gillie of Enon, Ohio, made his PRO-2004 into a full coverage portable by utilizing a VCR Nicad battery pack to power his unit. Bill states that a charge lasts eight to ten hours. Some battery packs even have the same DC connector that the PRO-2004 utilizes as well as those of many of the Uniden Bearcats.

The only true portable that provides some coverage of the UHF AC band is the Black Jaguar model 200 handheld scanner available from Electronic Equipment Bank (EEB) of Vienna, Virginia. The BJ200 covers the lower portion of the UHF AC band with coverage into the mid to upper 300 MHz range reported with some models.

The BJ200 coverage may vary from unit to unit according to the owners manual due to factory alignment and adjustment procedures. Several other scanners claim coverage starting at 380 MHz; however, the units only receive NBFM transmissions and not AM or WBFM transmissions as radio communications in that frequency range dictate. A true portable for 225-400 Mhz is severely lacking and would be a best seller. Several discontinued models are currently making their way through the hamvention route that receive the UHF AC band. Among them are the Regency MX-5000, MX-5500, and MX-7000 models.

The next Federal File will start a profile on the New England and east coast area UHF 225-400 MHz band activity. Input and updates are always welcomed. Please include an SASE if a personal reply is desired. Thank you.

mt

MONITORING TIMES columnists want to hear from you ... Write today and give 'em your worth!

Jean Baker, KIN9DD

213 W. Troy Ave. 4C
Indianapolis, IN 46228

Verifying Your Reception

In response to requests from many readers, let's discuss the sending of reception reports to aeronautical communications facilities so that they may result in QSL cards and verification letters.

I've been fortunate in regard to receiving some very interesting cards and letters from both distant and domestic aero communications stations over the years. Although there's been a better response from overseas HF facilities as opposed to that of their domestic VHF counterparts, don't hold back at sending reports to the VHF stations -- especially if you should monitor a long distance "skip" transmission from a ATC tower or enroute center. You may be pleasantly surprised with the results.

Exposition area Indpls Airshow 1988. Wonder how many of these spectators are carrying receivers? (photos by Dale Spurgeon)

In regard to aero UHF communications facilities, however, it is not often that you will receive a response from them as a result of your reception report. This is not too surprising considering the sensitive nature of most of their transmissions.

For many years shortwave broadcast listeners have sent reception reports to stations they've monitored detailing program content, reception conditions under which they received the transmission, as well as other factors which they thought should be included.

The stations to which they'd sent their reports would send in return brightly colored cards, and/or verification letters thanking the listener for these reports. These cards and letters would confirm the sender's reception, time, and other details of programs heard. Since the shortwave broadcasting stations beam their transmissions to listeners intentionally, they encourage letters from listeners describing how and where they received their station's broadcasts.

However, we must keep in mind that aviation communications are not meant for our ears. Therefore, it is very important to remember that the recipient of your report at an enroute facility in Honolulu doesn't really care that someone in Cow Patty, Arkansas, monitored him working a flight over Anchorage, Alaska. He's more concerned that the flight he was working was receiving his transmissions clearly.

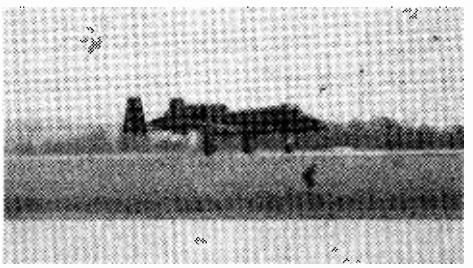
Consequently, if he sends you a verification of reception, he's doing it out of courtesy (sometimes because he's curious as to why anyone would want to monitor aero transmissions for a hobby!). He's not dependent upon your reception report as would be a shortwave broadcast station. A very few aero enroute ground station managers encourage monitors to send in reception reports, but they are very much the exception to the rule. I suspect it is because they, too, are radio hobbyists.

With the above in mind, let's say that you still are determined to start sending reception reports to aviation communications facilities. The contents of your reception report should be simple, yet concise. Remember the old KISS principle -- Keep It Simple, Stupid!

The contents should include the following details, however: Date/time that you heard the transmission (in UTC please), the airline and flight number of the aircraft being worked, the name of the ground station and the frequency to which you were tuned (this is important when monitoring the HF aero bands as it's common for several ground stations to share the same frequency).

It's not necessary to give a SINPO rating; as stated in the above paragraph, aero comms station personnel are not concerned with how well his transmissions are heard by ears other than those meant to receive them. You might include the mode of transmission: Was it VHF AM or HF Upper Side Band?

It's perfectly alright to mention the type of transmission (was it a position report, a request for a SELCAL check, a request for a different altitude, etc.) but whatever it may be, do not reveal the contents of the transmission within your report. A federal law -- Section 605 of the 1934 Communications Act -- is explicit about this. A third party must not reveal the contents of a radio communication which was meant for another party. This writer strongly recommends that anyone who is unfamiliar with this law should make it a point to look it up at your local public library.



"Airboss has cleared us for takeoff," Indy 1988 Airshow

If you wish, you may include the type of receiver and antenna that you have. Also, there's nothing wrong in including something about yourself, like your interest in aviation communications. You may even want to include a picture of yourself with your monitoring equipment! I sent a photo of myself with my receiver along with my reception report to a HF aero enroute ground station last year and the station manager reciprocated by including a photo of some of his staff at their radio consoles -- an unexpected bonus!

Since you are requesting a verification of your reception report(s), it's important to

have positive identification of the flights which you've monitored, as well as that of the ground station to whom you are sending your report. Consequently, it is a good idea to monitor that ground station for at least 15 to 20 minutes. This is where a tape recorder can come in handy to confirm that the ground station and flights it was working are identified correctly when you are preparing your reception report.

Remember that English is the international language of aviation, so even if your report is going to an aero enroute station in a foreign country, they should have no problems understanding your report or its contents.

This writer has noticed that in some instances, foreign stations have a more consistent verification return rate than domestic stations. Foreign stations respond 72 percent of the time while North Americans (including states and territories outside of the mainland) stations have a 65 percent return rate.

As we had previously discussed, always include return postage with your reception reports. Enclose IRCs or mint stamps (if you have access to a source for these) when sending your report to a foreign country, or a 25 cent stamp if the station is located in the United States (but only if you are also living in the U.S.A.).

Since aero enroute stations don't have their own prepared QSL cards, you will have to supply one to be completed by the station manager and then returned to you. It's not too costly to design your own and then have them printed up on postcard stock with your name and return address on one side and reception confirmation information to be filled out by the recipient of your report on the other. (See example of reception report form and prepared QSL card utilized by this writer.)

Make sure that your name and return address is legible on the other side of the QSL card and that you've included your country of residence as well as your street address.

Never handwrite your report. Even if you have to use prepared reception report forms that you've had printed, the only part that should be handwritten is your signature! Keep in mind that the person who may be signing your prepared QSL card shouldn't have to also be trying to decipher your handwriting. If he does, your report may end up in file 13 instead of being verified!

RECEPTION REPORT FORM

DATE: FROM: Your name
Address
City, State, Zip
Country

TO:

REPORTING RECEPTION OF: DATE:

TIME: (from - to) UTC FREQUENCY:

_____

_____

_____

My receiver is a _____ Antenna_____

If my reception report is accurate and confirms the monitoring of this station, I would really appreciate it if you would verify it by filling out the enclosed QSL card and returning it to me. I have enclosed return postage in the form of (IRCs or mint stamps) for this purpose.

Thank you for your time to read and answer my reception report.

Best regards, Your name _____

A PREPARED QSL CARD FORM

CONFIRMING RECEPTION OF:

Ground Station Name Location Call Sign

Date Time Frequency Mode

Antenna Transmitter Power

Name of Station Manager, Air/Ground Operations

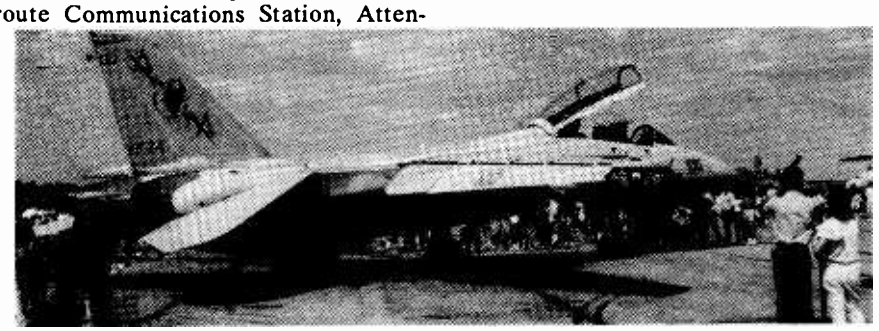
If you are not sure of the address of the aero enroute ground station to which you're sending your reception report, try this: for example, the first time that I sent a report to the aero enroute HF station in Fiji, I had no idea where it should go, so I took a gamble and just addressed it to Manager -- Air/Ground Communications, Aero Enroute Ground Station; Nadi Airport; Nadi, Fiji Islands.

Unknowingly, I had sent it to exactly the right place! So, when you're unsure of the correct address, just make sure that you include the nearest airport name: Aero Enroute Communications Station, Attention: Manager of Air/Ground Communications, Airport Name, City, Country.

Be sure to send and label the envelope "Air Mail" if it's to go overseas; otherwise it will be sent by surface mail and that takes ages to be delivered!

Next time, we'll discuss sending reception reports to airborne stations (flights). This is a bit more complicated, but well worth the effort.

Until next time, 73 and out.



Windsor (Ontario, Canada) 1988 airshow - U.S. Navy F-14 "Tomcat" (photo by Bert Huneault)

Ike Kerschner, N3IK

R.D. 1, Box 181-A
Kunkletown, PA 18058

Happy Ham Holidays

At this time of year our heads dance with visions of new rigs and multi-element rotary antennas! Unfortunately, Santa seems to overlook these goodies for most of us.

Anybody for Books?

What's a lot more practical for Santa to fit into his sleigh is something like a book. Yeah, books! To my way of thinking, books bring us something that can never be taken away from us -- knowledge. Many new amateurs starting out have dozens of questions about gear, antennas and other aspects of our hobby. Books can answer most if not all of these questions.

Here is a review of some of my favorites. Circle the ones you like and leave this issue of *Monitoring Times* laying about open at this page so Santa can see what you want! All of the books on the list are available from any of the amateur radio outlets.

The Authors

The authors of these books are the best of the crop! W1FB, Doug DeMaw has been writing books for amateurs for years, his articles *in QST* and *Monitoring Times* are classics. Doug turns difficult subjects into something the average guy can understand and in doing so shows you how to construct projects that will not only educate, but will give us useful ham gear to boot.

W6SAI, Bill Orr has been around ham radio for many years, his *Radio Handbook* is a standard. Bill's name is known and respected by several generations of amateurs. Without doubt, W6SAI has done more to popularize beam antennas than any other living amateur.

W2LX, Stuart Cowan was formerly the publisher of *CQ* magazine. In addition, he's written many books for the amateur on a wide variety of subjects over the years.

Stan Horzepa, WA1LOU, is the packet radio columnist for *QST*. Stan is recognized world-wide for his expertise in digital communication. He was one of the very first explorers in this exotic mode and his writing reflects his dedication and enthusiasiam.

The Books

Too many amateurs are puzzled, dazzled and perplexed by the many claims, counter claims and old wives tales about antennas. The following list of books will clear away the bunk and let you get into the nitty-gritty of just what antennas are and how they work. If you do not find just the right antenna for you in one of these books it may be best if you take up another hobby!

The Novice Antenna Notebook by Doug DeMaw, W1FB

Without doubt the *best* beginner's antenna book I have ever seen! In chapter one, Doug explains the kinds of wire and tubing that are best, how height and conductive objects near the antenna affect its performance. He then goes on to explain the importance of grounds and antennas with gain.

The second chapter describes construction of a wide variety of useful antennas such as dipoles, shortened antennas, G5RV and other multiband aerials.

Doug then moves on to feedlines, how to choose the correct feedline for your individual need; and how to construct a transmatch that will effectively match the antenna to the output of your transmitter.

Chapter four is devoted to building and using vertical antennas and includes many excellent building projects.

There are entire chapters dedicated to loops and straight wire antennas, beams and towers.

A final chapter on "Hints and Kinks" leads you through the problems of how to splice wire, or get the feedling inside the shack and tells you where to obtain materials.

At a price of $8.00, this book belongs in your shack if you are a novice or grizzled old timer - "its *great*"!

W1FB's Antenna Notebook by Doug DeMaw, W1FB

The companion to W1FB's *Novice Antenna Notebook*, this was actually the first of the two to be published. The book explores antennas in depth and discusses every possible question the newcomer or old timer could have about antennas. As usual, W1FB avoids complex math. Consequently, the book is very easy to read and understand.

The Antenna Notebook is very strong on projects and describes a wealth of antennas. One of the more intriguing chapters describes limited space and invisible antennas. The section on matching techniques is itself worth the $8.00 price of the book. Our SWL friends will learn a lot from the section on receiving antennas.

In all, this is a lot of book for the price and like its companion *The Novice Antenna Notebook*, it too should be on your bookshelf.

Simple Low Cost Wire Antennas for Radio Amateurs by W6SAI Bill Orr, and W2LX Stuart Cowan

Jam packed with neat antenna ideas for 160 through 2 meter bands! Orr and Cowan have created a nuts and bolts type of book for amateurs who want to put up a good working antenna at reasonable cost.

Of special interest to many newcomers is the 5/8th wave vertical antenna project described. The easy to build matching section makes this antenna a snap to get operating properly and it will provide considerable gain

over a conventional 1/4 wave vertical. Ten meter fans should get a lot out of this type of antenna especially now that we are entering into a period of high ten meter activity.

Other projects include antenna tuners, beam antennas, trap dipoles, baluns and folded and shortened antennas for 160, 80 and 40 meters. Check out the CIA Special and Dick Tracy "invisible" antennas too. Price is $7.95 from most radio outlets.

The Radio Amateur Antenna Handbook by Bill Orr, W6SAI and Stuart Cownan, W2LX

Another excellent antenna manual by the Orr-Cowan duo. Everything you need to know about ham antennas written in clear, understandable language. Perhaps of extreme value to the newcomer is the section on evaluating antennas and finding out how to compare various types of antennas. A truth table for antennas lets the novice know exactly what to expect from various types of antennas.

A host of ideas for quads, mini quads, beams, vertical antennas, sloper and multi-band antennas and super DX antennas tantalize the reader from cover to cover. Unique antenna designs pique interest and stimulate ideas for new and better sky wires. The price a piddling $7.95.

All About Vertical Antennas by Bill Orr, W6SAI and Stuart Cowan, W2LX

Here is the book for vertical fanciers. This manual goes into vertical theory and design in a big way. Verticals, slopers, loaded verticals and ground systems are presented in a no nonsense manner.

Considerable space is given to using towers as vertical antennas. If you have a tribander mounted on a small tower, this section will show you how to use the tower as a great vertical on 160,80 or 40 meters.

Phased arrays, Bobtail beams, high efficiency Marconi antennas -- they're all here. More than 25 designs presented in a nuts and bolts text so you can build them yourself. This is *the* book on verticals. Price is 10.95 and worth every penny.

All About Cubical Quad Antennas by Bill Orr, W6SAI and Stuart Cowan, W2LX

The Cubical Quad finds a place in the hearts of many amateurs. Some years ago this antenna was manufactured by several commercial concerns. Today, however, only a few companies continue to manufacture this fine antenna. *All About Cubical Quads* describes in geat detail the methods used to build these super DX antennas.

Gain and comparison against yagi type antennas are presented. Matching, multi-band quads, X-quads are all explained. Tables give dimensions for quads from 40 to 6 meters. And -- most important -- how to handle and install the quad is discussed in detail, as are the shortcomings of the antenna. Price $6.95.

Beam Antenna Handbook by Bill Orr, W6SAI and Stuart Cowan, W2LX

Once more our dynamic duo come through with a book of extreme importance to the amateur fraternity. If you own a yagi type of beam, or want to build one you NEED this book.

Everything from HF to VHF yagis are discussed. Exact construction details for a host of beams are presented, from simple two element wood and wire construction to huge plumbers delight arrays for 40 and 20 meters. Information on feeding, matching and stacking yagis is presented in a simple easy to understand manner. I especially like the section on compact antennas. Several schemes are presented on methods to shrink the size of the yagi while retaining efficency. An ideal manual for all beam users/builders. Price $9.95.

Your Gateway to Packet Radio by Stan Horzepa, WA1LOU

Packet is the hottest new mode to hit ham radio in 30 years and here is a manual that presents packet in simple to understand terms. Author Horzepa does not hide behind buzz words and vague theory! He explains it all so the average ham can understand what this new mode is all about.

I purchased several manuals on packet radio before getting involved myself and found *Your Gateway to Packet Radio* to be the best. Stan takes the reader by the hand and walks him through the bewildering maze of packet terminology and makes sure you understand what is going on at each step.

Chapters on equipment describe the various makes of terminal units on the market and describes the features of each fully making a choice much easier for the newcomer. Sections on traffic handling via packet, frequencies, packet history and theory make this book well worth the $10.00 price.

Solid State Design for the Radio Amateur by Wes Hayward, W7ZOI and Doug DeMaw, W1FB

Wanna learn how them transistors and IC's Work? Or mebbe build a receiver or transmitter or for that matter an entire station? Here is a book that will show you how to do it!

Hayward and DeMaw explain the workings of solid state devices and then go on to show the reader how to use his new found knowledge to build gear. Transmitters, receivers, VFO's, accessories such as antenna matchers, monitors, keyers, test gear and much more are here. Not just simple CW gear, but superb SSB gear is described for all bands from 160 through 2 meters.

Equipment construction techniques help the rank novice become a master builder in no time at all. Not even a college education will help you understand building techniques the way this book will.

Get past the appliance operator stage and buy this book. It will be the best $12.00 you ever spent.

CQ Amateur Radio Buyer's Guide by CQ Magazine

Wow! There are over 600 amateur products covered by this guide. Descriptions of every rig on today's market, specifications, prices, photos -- it's all here. Accessories such as mikes, keyers and power supplies are included in the guide. Nothing has been left out.

With this manual in hand you can make that big decision easier as to what rig to spend your hard earned bucks on.

Sections on buying at flea markets, computers, antennas and upgrading your license are contained in this dandy $3.95 manual. The folks at *CQ* magazine get an A+ on this one. If you intend to purchase any equipment at all, buy this book first!

That's my top ten for this holiday season, more later.

Cosmonauts on the Ham Bands!

Reliable western European sources report that a 2 watt, 2 meter FM rig is aboard the Mir and a 1/4 wave ground-plane has been mounted on the outer surface of the space station.

Mir will reportedly use the call sign U1MIR. Operation should be underway by the time you read this. Split frequency operation is anticipated to keep the down-link free of QRM. Watch your local PBBS or ARRL bulletin station for further details.

Ham Radio on WADB FM

The World of Amateur Radio is being broadcast over FM station WADB, Point Pleasent NJ. Host is Phil Petersen, W2DME, and the time is 11:33 am Saturdays, Sundays and Wednesdays.

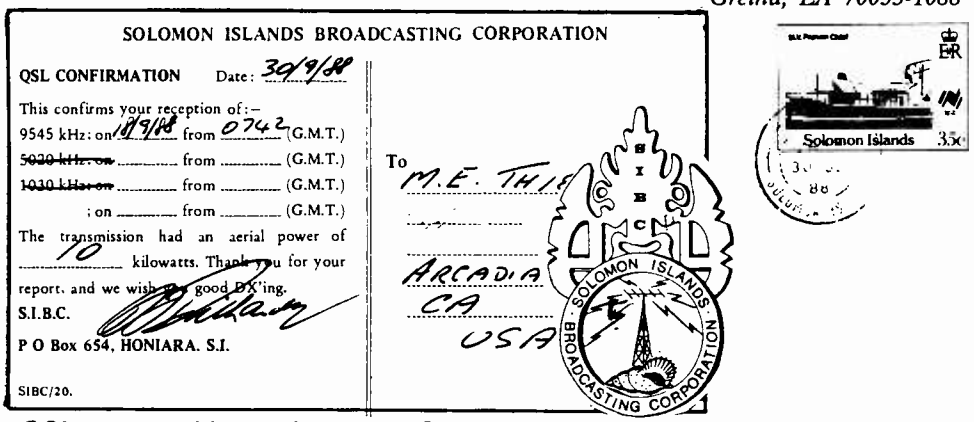
Do you know of any commercial stations carrying programs such as this? If so, please drop me a note with details.

That's all for this month gang, Happy Holidays to all! de N3IK

the qsl report

Gayle Van Horn

New Address ⇨ *P.O. Box 1088*
Gretna, LA 70053-1088


SOLOMON ISLANDS BROADCASTING CORPORATION

QSL CONFIRMATION Date: 30/9/88

This confirms your reception of:—
9545 kHz: on 18/9/88 from 0742 (G.M.T.)
~~5020 kHz: on~~ ..... from ..... (G.M.T.)
~~1010 kHz: on~~ ..... from ..... (G.M.T.)
; on ..... from ..... (G.M.T.)
The transmission had an aerial power of 10 kilowatts. ~~Thank~~ you for your report, and we wish ~~you~~ good DX'ing.
S.I.B.C.
P O Box 654, HONIARA. S.I.
SIBC/20.

To M.E. THIELE
ARCADIA
CA
USA

SOLOMON ISLANDS BROADCASTING CORPORATION

Solomon Islands 35c

QSL received in 12 days from Solomon Is. by Mel Thiele of Arcadia, CA. Mel says SIBC uses only 10 kW; Mel uses a Kenwood 2000!

Antartica

Radio Nacional LRA36, 15474 kHz. Full data QSL on large white logo card. Verification signer, Marcelo Navarro, Jefe Oficina Radiopostal. Station information letter received, and signed by the station staff. Received in 45 days for Argentine mint stamps, and one Spanish follow-up reception report. Total time outstanding was eleven months. Station address: Base De Ejercito, Esperanza, Apartado 9411, Antartica.

Australia

Northern Territory SW Service. VL8K (Katherine) 2485 kHz. Full data QSL on station letterhead. Verification signer, Karen Kane, Broadcast Production Officer. Received in 64 days for two IRCs and an English reception report. Station address: Box 9994, Darwin, Northern Territory, Australia. (Sheryl Paszkiewicz, Manitowoc, WI) Thanks for your contributions, Sheryl! How about it readers -- why not share your QSLs with us?! -ed.

Bangladesh

Radio Bangladesh, 15255 kHz. Partial data Bengali tiger postcard. Verification signer, Director. Received in 48 days for two IRCs and an English reception report. Station address: P.O. Box No. 2204, Dhaka, People's Republic of Bangladesh. (Rich Synder, Charlotte, NC)

Belgium

R.T.B.F., 11660 kHz. Full data QSL card, without verification signer. Received in 21 days for an English reception report. Station address: P.O. Box 202, 1040 Brussels, Belgium. (Sheryl Paszkiewicz, Manitowoc, WI)

Bolivia

Radio Panamericana, 6106 kHz. Full data QSL on station logo card. Verification signer, Daniel Sanchez Rocha. Received in 30 days for one U.S. dollar and a Spanish reception report. Station address: Casilla 5263, La Paz, Bolivia. (Sheryl Paszkiewicz, Manitowoc, WI)

Brazil

Radio Nacional-Porto Velho, 4945 kHz. Full data station QSL card, personal letter, and travel brochures. Verification signer, Eudson Monteiro Lima. Received in 34 days for mint stamps and a Portuguese reception report. Also included a full data QSL card for Radio Nacional-Cruzeiro do Sul, 4765 kHz. Address: 10 Morro da Liberdade, 69073 Manaus, Amazonas, Brazil. (By writing the veri-signer, Mr. Lima, direct, all Nacional stations are verified at a considerably faster rate. As noted in his personal letters, he will accept mint stamps or a U.S. dollar for return postage, and usually includes a small souvenir with his return. -ed.)

Ecuador

La Voz de los Andes - HCJB, 17790 kHz. Full data Ecuadorian scenery card, without verification signer. Received in k20 days for two IRCs and an English reception report. Station address: Casilla 691, Quito, Ecuador. (Rich Synder, Charlotte, NC)

Radio Iris, 3380 kHz. Partial data QSL letter in Spanish. Verification signer, Pilly Naranjo de Villagomez. Received in 94 days for mint stamps ad a Spanish reception report. Station address: Casilla 8, Esmeraldas, Ecuador. (Sheryl Paszkiewicz, Manitowoc, WI)

Ethiopia

Voice of Ethiopia, 7110 kHz. Full data yellow WSL card and personal letter. Verification signer, Meseret Chekol, Acting Head of Audience Relations. Also received tourist brochures, station business cards, program schedules, and large color station sticker. Received in 37 days for mint stamps, one U.S. dollar, and three English follow-up reports. Total time report outstanding was fifteen months. Station address: P.O. Box 654, Addis Ababa, Ethiopia, Africa. (This is a new post office box, and station has dropped their previous name, Voice of "Revolutionary" Ethiopia.)

Ghana

Ghana Broadcasting Corp. (GBC), 4915 kHz. Full data QSL on multicolored card, and personal letter from Station Engineer. Received in 180 days for mint stamps and an English reception report. Station address: P.O. Box 1633, Accra, Ghana, Africa. (Rod Pearson, St. Augustine, FL)

Guinea Republic

Radiodiffusion Nationale, 4900 kHz. Full data QSL included within handwritten personal French letter. Verification signer, Monsier Goussou Diaby, Journaliste Sportif. Received in 30 days for mint stamps, one U.S. dollar, and three French follow-up reception reports. Total time report outstanding was eleven months. Station address: Boite Postal No. 734, Conakry, Guinee Republique, West Africa. (ed.) (Please note, this is a new post office box from that listed in WRTVH 88.)

India

All India Radio -(AIR)- New Delhi. Full data white tiger postcard. Verification signer, Director of External Services. Received in 150 days for two IRCs and an English reception report. Station address: External Services Division, Post Box 500, New Delhi, India. (Rod Pearson, St. Augustine, FL)

Lebanon

The King of Hope, 6280 kHz. Full data Bible scripture QSL card. Verification signer, Scott McDonald. Received in 25 days for two IRCs and an English reception report. Station address: Hotel Arazim, Metulla, Israel. (Rod Pearson, St. Augustine, FL) (This station also can be addressed to: High Adventure, P.O. Box 7466, Van Nuys, CA 91409, however, the Israeli address appears to verify the best. -ed.)

Lesotho

Lesotho National Broadcasting Service, 4800 kHz. Full data logo/national flag colors card, without verification signer. Received in 100 days for two IRCs and an English reception report. Station address: P.O. Box 552, Maseru, Lesotho, Africa. (Rod Pearson, St. Augustine, FL)

Oman

Radio Oman, 9735 kHz. Full data large color palm tree card. Verification signer, Rashid Haroon-Head of Radio Maintenance. Received in 85 days for two IRCs and an English reception report. Station address: P.O. Box 600, Muscat, Sultanate of Oman. (Bill Traister, Covington, TN)

Papua New Guinea

New Britain-Radio East New Britain, 3385 kHz. Full data yellow "NBC" network card, without verification signer. Received in 42 days for two IRCs and an English reception report. Station address: P.O. Box 393, Rabaul, Papua New Guinea. (Rich Synder, Charlotte, NC)

New Guinea Territory-Radio West Sepik, 3205 kHz. Full data QSL on "NBC" network letterhead. Verification signer, Mrs. Leonnie Ramram. Recieved in 30 days for mint stamps and one English follow-up reception report. Total time report outstanding was 150 days. Station address: P.O. Box 37, Vanimo, W.S.P., Papua New Guinea.

Peru

Radio Tropical, 4935 kHz. Partial data station form letter. Verification signer, Luis F. Mori Reategui-Gerente. Received in 40 days for mint stamps and a Spanish reception report. Station address: Casilla 31, Tarapoto, San Martin, Peru. (Bill Traister, Covington, TN)

South West Africa/Namibia

SW Africa Broadcasting Corp., 3290 kHz. Full data scenery card, without verification signer. Received in 50 days for one IRC and an English reception report. Station address: Box 321, Windhoek, 9000 SWA/Namibia, Africa. (Tom Sullivan, New Orleans, LA)

Sweden

Radio Sweden International, 11705 kHz. Full data "Stockholm in May" card. Verification signer, A. Sjoblom. Received in 18 days for an English reception report. Station address: S-105 10 Stockholm, Sweden. (Tom Sullivan, New Orleans, LA)

United States

VOA-Greenville, 9775 kHz. Full data Bicentennial Stamps QSL card, without verification signer. Received in 12 days for an English reception report. Station address: U.S. Information Agency, Washington, DC 20547. (Loyd Van Horn, Orange Park, FL)

USSR

Ukrainian SSR-Radio Moscow, 9610 kHz via Lvov. Full data scenery card, without verification signer. Received in 49 days for an English reception report. Station address: Moscow, USSR. (Sheryl Paszkiewicz, Monitowoc, WI)

Turkmen SSR-Radio Moscow, 17740 kHz via Ashkhabad. Full data Moscow scenery card, without verification signer. Received in 40 days for an English reception report. Station address: Moscow, USSR. (Dave Smith, Philadelphia, PA)

Venezuela

Ecos del Torbes, 4980 kHz. Full data QSL on station letterhead. Verification signer, G. Gonzalez Lovera. Received in 270 days for mint stamps and a Spanish reception report. Station address: Apartado 152, San Cristobal, Tachira, Venezuela. (Dave Smith, Philadelphia, PA)

Jack Albert

203 York Place
New Lenox, IL 60451

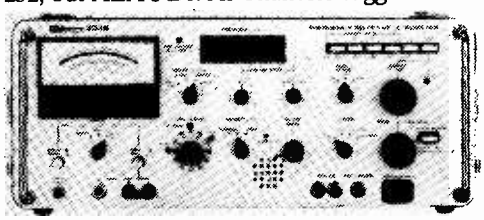
Rock Bottom RTTY

Frequencies from 9 to 16 MHz have been popping with activity. Band openings in this frequency range have even lingered into the late evenings. This is a big improvement from last winter when the band openings were few and far between -- especially in the late evenings.

Getting Down!

During the winter months, I like to monitor the low bands because of the reduced noise activity. I also spend more time reading RTTY below the AM broadcast band. I call it "Low Down" or "Rock Bottom" RTTY.

At 518 kHz, NAVTEXT, which is a severe weather warning system, can be heard using SITOR mode B. Transmitters on the east and west coast time-share the same frequency. You can copy NAVTEXT using the normal SITOR mode but special software may be needed to prevent the printing of special control characters and repeats. AEA (Advanced Electronic Applications) has a special upgrade package available for the PK-232, but AEA's Dr. Al Chandler suggests that you should check the frequency before you order the upgrade. You may not receive it at your QTH.



You can even copy RTTY on equipment like Sierra's 303B voltmeter!

At 121.5 kHz you can copy CFH in Halifax, Nova Scotia, using 75 baud and 170 Hz shift. They also transmit weather maps on FAX. You are probably thinking, "Why would you want to copy CFH on VLF when it's all over the SW bands?" One advantage to VLF listening is that fading is very minimal.

The SLFCS (The Survivable Low Frequency Communications System) can be found at 37.1 and 50.6 kHz. Sometimes they send unclassified test messages using standard 50 baud and a 30 Hz shift. Messages of the "ALFA TWO ROMEO JULIET FOXTROT XRAY" variety can also be copied. The same messages are repeated using HF voice transmissions on SAC frequencies.

Equipment

My good friend and fellow author Bob Parnass once gave me an old *Monitoring Times* article called "Faking the [Icom] R71 to Receive Below 100 kHz." Well, you can fake your R71 into receiving below 100 kiloHertz but actually, the *R70* is a better choice because it dials down to 20 kHz without any problem and it has fewer birdies at 200 to 550 kHz.

Copying signals below 20 kHz requires special equipment and lots of patience. At 15 kHz I copied RTTY late one night using a Sierra 303B selective voltmeter. The 303B is used by phone companies to selectively measure AC signal interference in telephone equipment. It's actually an AM/USB/LSB digital readout receiver with a BFO and a calibrated AC voltmeter. It can tune from 1 kHz to 3.999 MHz and costs $3,000 new. I don't think it's available on the surplus market. However, you can purchase similar equipment from Fair Radio Sales (PO Box 1105, Lima, OH 45802) for under $200.

According to a VLF list, which was given to me by Dave Wilson in Fredricksburg, Virginia, 15 kHz belongs to HWU in Le Blanc, France, running FSK RTTY with 250 KW. If you have VLF equipment and successfully received HWU on 15 kHz, I would like to hear from you. Shift rates lower than 170 Hz are used, so you will need a good TU like the M6000 or M7000.

I should point out, however, that I couldn't get a printout because the signal was buried in the noise -- noise caused by a TV somewhere in the neighborhood generating a horizontal frequency interference at 15.735 kHz.

Where's the Beef?

Most military antenna systems are quite elaborate like the one used by NAA in Cutler, Maine. Here, two umbrella-shaped antennas cover one square mile each and are suspended by a 900 foot tower in the center. This array covers an entire peninsula. NLK in Jim Creek, Washington, uses a big vertical array that is stretched across two mountain ranges. The boom length is over one mile long and the longest element stretches a mile and a half. The antenna points towards the southeast and the signal covers the entire U.S.

You really don't need an elaborate antenna system like the one in Cutler, Maine, or Jim Creek, Washington, to receive VLF. My antenna is an end fed 80 meter dipole at 20 feet. I also use a homebrew tuner which is made from inductors that were taken from surplus telephone equipment PC boards. The antenna does a fine job all the way down to 20 kHz. (That's where the R71 receiver loses sensitivity).

VLF (below 30 kHz)

Freq (kHz)	Call	Power (KW)	Location
15.1	HWU	250	Le Blanc, France
16	GBR	60	Rugby, U.K.
16.4	JZX	100	Noviken, Norway
16.4	DHJ58	10	Flensburg, F.R.G
16.8	FUB	250	Paris, France
16.9	3SA		China
17.1	UMS	1000	Moscow, USSR
17.4	NDT	50	Yosami, Japan
17.8	NAA	1000	Cutler, Maine
19	GQD	500	Anthorn, U.K.
19.6	GBZ	350	Criggon, U.K.
21.4	NSS	400	Annapolis, Maryland
22.3	NWC	1000	Exmouth, Australia
23.4	NPM	600	Lualualei, Hawaii
24.8	NLK		Jim Creek, Washington
26.1		200	Atlantic Tacamo

LF (below 300 kHz)

39.7	XLC*	110	Silver Creek, Nebraska
44	VHB	200	Belconnen, Australia
50.6	FXL*	110	Hawes, California
51.6	NSS		Annapolis, Maryland
51.95	GYA	60	London, U.K.
54.05	NBA	50	Balboa, Canal Zone
55.5	GXH	100	Thurso, Scotland
57.9	NAU	50	Isabella Segun, PR
65.8	GBY20	80	Rugby, U.K.
68.9	XPH	25	Thule, Greenland
82.75	MKL	40	Petreavie, Scotland
88	NSS	50	Annapolis, Maryland
112.15	CII	3	Shilo, Canada
113.2	VER	3	Ottawa, Ontario, Canada
119.85	NPG	50	Dixon, California
122.3	CIF	3	Bordon, Ontario, Canada
122.5	CFH	15	Halifax, Nova Scotia
128.25	NPL	25	San Diego, California
134.9	NAM	100	Norfolk, Virginia
143.5	VDD	3	Debert, Nova Scotia

* The Survivable Low Frequency Communications System

Where's the Steak?

A *Monitoring Times* reader told me at the Dayton Hamvention back in April that he can copy VLF by connecting his coax to two stakes in the ground which were spaced ten feet apart. I asked him, "How did you keep the animals from eating it?" After picking myself off the floor (some people just don't have a sense of humor), he said that it worked very well and he was able to receive NLK in Jim Creek, Washington, on 24.8 kHz from his location on the east coast.

The Gift of the Magi

Well, Christmas is just around the corner and you probably have a gift list prepared, that is, a list of things for yourself. I'm sure, if you were really good this year, the list will include an Icom R71 or a Universal M7000. I found a perfect solution to gift giving during the holidays. It works every time. Buy the equipment that you want. Then buy the wife a gift of equal value like a diamond ring. Give her the ring first and then tell her, "By the way, I bought myself an M7000!" Works every time.

73's, have a Happy Holiday and Happy DX in the New Year! ZCZC

mt

Ken Reitz, KC4GQA

Route 5, Box 156A
Louisa, VA 23093

KU: The Future of Satellite TV

In 1974 Western Union launched Westar I, the first domestic satellite for America. One year later, Home Box Office (HBO) was on it, beaming its programming to cable affiliates. The era of satellite television had begun.

These "Model T" satellites, operating in the C band range (4 GHz), had a total of 12 transponders, each with an output of about five watts. Signals from this bird required a receiving dish of nine meters in diameter.

Compare Westar I with Spacenet III, the latest domestic satellite (see *MT*, August '88). Spacenet III is a hybrid satellite featuring 18 transponders in the C band range and six transponders in the Ku band (12 GHz). The C band channels have an output of 8.5 watts and the Ku band channels put out 16 watts. S III would require a receiving station to use a dish of three meters or less.

The ensuing 14 years have made enormous advances in broadcast technology but the important thing to note here is the drift from C band to Ku band technology.

KU Advantages

Consumers can't tell the difference between pictures delivered via C band or Ku band so what's the big deal? Mostly it has to do with Earth station construction and assembly costs, mobility, and ease of operation. But there are other advantages to consider. In the last 14 years there has sprung up across America vast networks of point-to-point microwave relay towers. Proliferation of these systems was encouraged by the dismantling of Ma Bell when competing long distance companies rushed to establish cross country long distance phone links.

These terrestrial microwave networks also operate in the 4 GHz range and have created an engineering nightmare for satellite broadcasters, cable companies, and other communications entities.

Earth stations, whether operated by cable companies or home dish owners, cannot tell the difference between 4 GHz signals sent by a satellite 22,300 miles away or an MCI tower two miles away. The result is Terrestrial Interference (TI) to the intended signal which can manifest itself by producing a rain of pulsing "sparklies" on your screen or totally wiping out picture.

Ku satellite signals sent at 12 GHz are not affected by such point-to-point microwave and the problem disappears. This is a critical advantage particularly in urban locations where such TI sources abound.

Serving Up DBS in a Small Dish

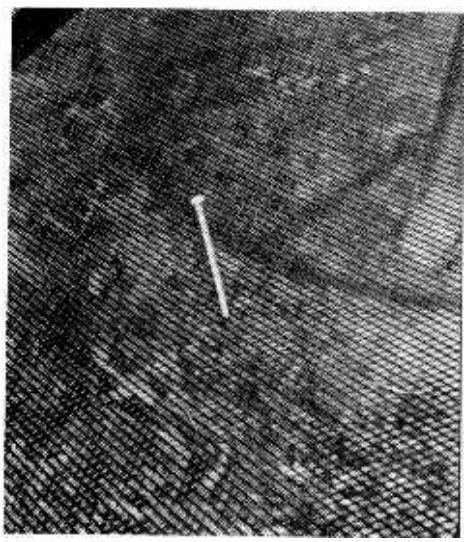
One of the biggest advantages of Ku band has to do with marketability to consumers. Ever since the beginning of the TVRO industry, entrepreneurs sat on the sidelines drooling over the enormous potential profits from the Direct Broadcast Service (DBS). The ability to sell and broadcast programming directly to the home of the consumer without messy cables and unfriendly municipal commissions has always been very attractive.

But there were always obstacles between these entrepreneurs and the consumer's bank accounts. First, the actual installations were too expensive. A TVRO system in the early days (circa 1982) cost between $6,000 and $10,000. Secondly, the dishes were huge and unsightly 16 foot steel or fiberglass monsters which dominated the home landscape. These had to be overcome to make DBS at all practical.

DBS Rises From the Grave

Ku-delivered DBS programming is still a great idea and a very hard one to kill. Technologically, it is superior in every way to C band. In fact, the whole idea of having high-powered transponders beaming to tiny dishes and out of harm's way of ever increasing terrestrial interference remains to this day commercially viable.

We have only to look to the Japanese to find out how it's done. In a Ku pilot program, begun in mid-1987, one channel (run by the government-controlled Nippon Hoso Kyoka-NHK) is beamed from their Sakura BS-2 satellite with a staggering 100 watt output. On the ground, inexpensive satellite systems utilizing dishes as small as one foot in diameter are consumer installed. In the first year of the experiment 300,000 units were sold.



New TI cure? No. This nail through the mesh shows the mesh is tight enough for Ku reception.

By 1990 NHK will offer three channels via its BS-3 satellite. All three will be transmitted in their own HDTV (High definition Television) format. The service at present is free and while it expects to eventually charge for the channels, they will not be scrambled.

U.S. Ku Efforts

Where does the U.S. stand on the frontier of Ku DBS? Not as far behind the Japanese as one might imagine. In typical American fashion the competition is on. Two major players in the American satellite industry are said to be building new generation Ku satellites.

General Electric will launch its K3 and K4 birds as early as 1990. These satellites will feature 16 channels of 60 watts output each.

Not to be outdone, Hughes Communications is also said to be building Ku DBS birds for launch by 1992. These will feature 16 channels each with an output of 180 watts per transponder!

There is no question that within two to four years the face of broadcast television will be forever changed. One foot to three foot dishes will be popping up on patios, balconies, and rooftops by the millions as cable TV gets its first taste of real competition.

Back to Basics:

Receiving Ku: Since we're on the subject of Ku band satellites, let's talk about adding Ku capability to your satellite system.

First, we'll start at the dish. You can use your current C band dish for Ku reception with some provisos. Ku band reception requires a high degree of accuracy. It is not as forgiving as C band of poor dish construction or sloppy alignment. The old, solid dish will work fine for Ku provided it is truly parabolic. The newer mesh antennas are fine provided the mesh is tight enough to prevent the much smaller Ku signals from slipping right through the holes in the mesh. Almost all mesh dishes made today are Ku compatible but in any case the best Ku signals will result from dishes of the highest surface accuracy.

Dish Size is Important: If you are planning on installing your first satellite system and want C and Ku reception, it would be best to buy the biggest dish you can afford -- make it at least ten feet in diameter. Here's the reasoning: For a Ku only system, a properly accurate dish can be as small as three feet in diameter. But that size is useless for C band

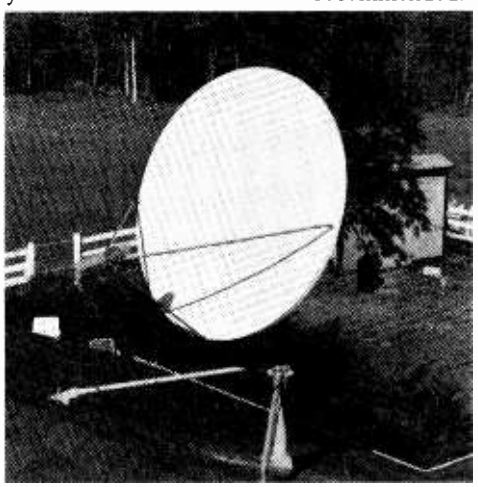
reception even if you live in the center of the footprint. The larger dish will not only give you great C band signals but Ku signals by several dB over the smaller Ku-only dish.

Dish Electronics: If you have a satellite system, it's possible to add Ku with a minimum of expense but sacrifices will be made. In the beginning TVRO systems were C band only. It wasn't until a few years ago the Ku conversions were available. The conversion consisted of mounting a separate Ku feedhorn/Ku Block Down Converter (LNB) to the side of the existing C band feed horn. The problem with that method is that the Ku feed horn isn't directly in the boresight of the dish and the entire dish is not illuminated for Ku.

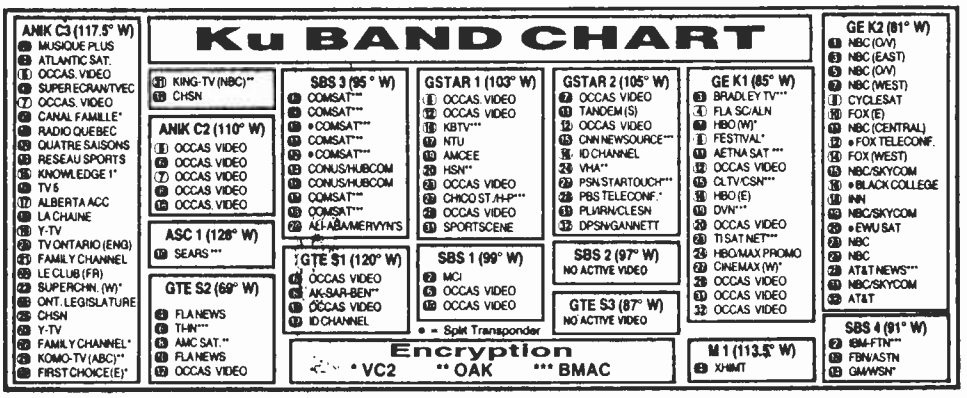
Finally, Chapparel, the grandaddy of the TVRO feed horn manufacturers has come out with their "Co-Rotor" feed horn which combines Ku and C band probes on one servo motor in one feed horn in the center of the boresight. I also note that California Amplifier has a C/Ku "Centerline" feed assembly. You will still need separate Ku and C band LNBs regardless of the feed horn.

Dish Mechanics: Before leaving the dish, there are other things to consider in upgrading an existing system to Ku. The "button hook" feed support is fine on a C band only system, however, the extremely narrow beamwidth of Ku doesn't allow for any movement of the feed horn out at the end of the mount.

Wind at the dish site can cause the feed horn mount to oscillate up to an inch off center. This would be enough to cause serious degradation or complete loss of signal. The addition of the Ku electronics will add to the weight at the end of the feed support and increase its instability. For this reason, a three or four leg support system for the feed horn is recommended.



One Meter USCI DBS dish. Note the high surface accuracy of the one piece dish construction; offset feed heavily braced against feed movement; non-tracking mount; absence of actuator; use of RG/58 cable feed to receiver.



Listing of Ku band sats and transponder leasees. Reprinted from Onsat Magazine (published by Triple D) by permission.

There are, however, retro fit kits made for button hook supports which, through the use of guy-wires, can keep your feed horn in place.

Another problem can be your actuator or dish drive motor and polar mount. Programming the exact center of the signal into your receiver so that the dish stops exactly in the center every time is crucial. Ku signals don't allow for the kind of slop in tracking that C band allows. Therefore, you want an actuator and receiver with the most pulse counts per inch of track. Otherwise it's as if you were trying to measure something to an accuracy of 1/32 inch on a ruler that reads out to only 1/4 inch increments.

The other concern about tracking is that the mechanical adjustments are easily made on site. This will enable you to tweak the tracking performance to its optimum. Getting your dish aligned for peak Ku reception ensures perfect C band pictures.

The Receiver: Even if you have the proper hardware at the dish, your receiver may not be Ku compatible. If you are buying your first system, make sure the receiver is Ku ready. Even if you don't want Ku reception to begin with, you could want it later. Virtually all receivers made today are Ku ready. If you are buying a used system, you should ascertain if it has Ku capability.

The down converter is converting both Ku and C band signals to 950-1450 MHz to the receiver but the receiver must be able to tune up to 40 transponders which the Ku satellites can offer instead of the 24 of the C band birds.

Well, What's Up There, Doc?

Study the accompanying Ku band chart. The first thing to note is that a lot of the Ku birds have little or no programming on them. Secondly, there are at least three different encryption systems used, not including VCI scrambling used by major league baseball during the baseball season. None of the scrambled channels on Ku are available to the TVRO market.

A third note which you won't glean from the chart is that, unlike most C band satellites which have a continental U.S. (CONUS) beam, Ku birds can utilize a spot beam configuration. Here the full power of the transponders is concentrated on certain areas of the continent making for much smaller footprints.

As an example, Telstar 302 (a C band satellite at 85 W has a CONUS beam of 36.3 dBw (dB power relative to one watt) in the center of its footprint. In contrast, SATCOM K1, the Ku bird next door has an east coast spot beam with 50 dBw at its center footprint. The advantage to this is that much smaller dishes can be used for reception without signal loss.

What Does It All Mean?

The upshot is that most of us in the U.S. will not be able to receive Anik C3 or C2, the Canadian Ku birds: parts of Gstar 1 and 2; and K1 and K2 will not be received on east or west coasts of the U.S. depending on which spot beams are used. M1 will not be received north of Mexico. The rest of the satellites either have no active video or are scrambled and unavailable to the home dish market.

What it also means is that you don't need to be in a panic to upgrade to Ku. It will be some time before the Ku picture begins to resemble the activity on C band. Still, there remain several interesting channels in addition to the many news and sports backhauls which will show up unannounced.

For More Information

For further reading about Ku band satellites and their reception on TVRO systems, here are two books of interest.

The Ku-Band Satellite Handbook by Mark Long. Published by Howard W. Sams & Company. $24.95 plus $2.00 shipping and handling.

Ku-Band Satellite TV-Theory, Installation, and Repair. (2nd edition) $29.95 plus $2.00 shipping and handling

Both books are available from the STV Bookstore, P.O. Box 2384, Shelby, NC 28151-2384, or order by credit card: 800-234-0021.

Larry Miller

P.O. Box 98
Basstown, NC 28902

Pulling in the Signal

December can often be a reasonably good time for long-distance FM reception. But even if you don't enjoy pulling those rare and exotic signals out of the ether, there's an inexpensive way to dramatically increase the number of stations you'll be able to enjoy under ordinary conditions. Not only is the cost under $35.00, but anyone with a screw driver, a pair of pliers and a razor blade can do it -- no degree in electrical engineering needed. All parts are available from your local Radio Shack store.

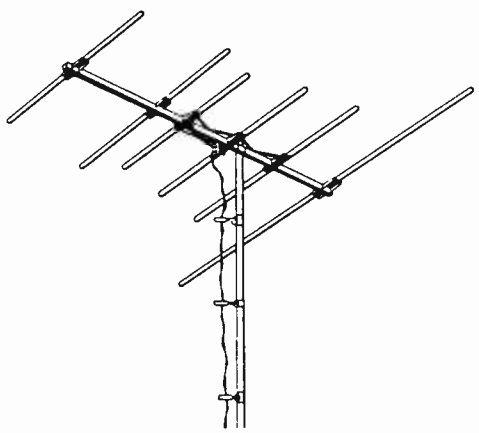
Here's what you need to buy: An Archer six element triple-drive directional FM antenna (part no. 15-1636: $16.95), one length of 5 foot mast (part no. 15-842: $4.95) on which to mount the antenna, a pair of 4" wall mounts (part no. 15-883: $3.99 a pair) to hold the mast to the side of the house (or onto the beams in your attic) and 100 feet of 300 ohm foam cable (part no. 15-1175: $8.95). The total cost for this basic set-up? Just $34.84.

Putting It Together

The antenna fits on the top of the mast and you tighten it up with pliers. Take your razor blade and carefully expose the two wires on one end of the foam cable. Attach these using the wing nuts on the antenna.

Bolt the two mounting brackets to the side of your house. Being careful to avoid power lines, mount the antenna and mast in the brackets. Point the end of the antenna with the shortest elements toward the area you want to hear. Toss the cable through the window (being sure to open the window first) and connect it to your FM receiver. The end. Oh, yes. You may want to consider some sort of lightning protection as well.

If you want to take full advantage of the directional capability of the antenna, you may consider adding a rotor. The rotor allows you to change the direction of the antenna from the comfort of your chair. Radio Shack also stocks the rotor but Dick Robinson at the Electronic Equipment Bank in Vienna, Virginia (1-800-368-3270) has the AR 300XL rotor, complete with control cable, for $59.95 -- $10.00 less than Radio Shack's Archerotor (part no. 15-1225) which does not come with control cable. And you won't have to pay local sales tax at EEB unless you live in Virginia. If you do decide to add the rotor, you'll need another length of mast as well.



Radio Shack's sixteen dollar FM wonder

What's really great about the rotor is that with it you can sometimes hear two, sometimes three and four different stations on the same frequency simply by pointing the antenna in different directions. And even for the full whammy, you're only talking $72.85. If you use it for ten years, your per-day cost is less than 2 cents -- under a penny if you don't get the rotor.

There are better FM antennas available, of course. We're hoping to convince Dick Robinson to allow us to test his 23 element CLP51301 Log Periodic antenna ($239.95), for example. It does double duty for VHF and UHF TV (that's your excuse to the spouse for spending $239.00 on an FM DX antenna) and is described as "excellent [for people who] want to reach out and hear someone." In the meantime, check it out in his new catalogue. If you don't have a copy, call and get one. And be sure to mention *Monitoring Times.*

Around the Dials

• We note with sadness the passing of a very special radio station, WMSP-FM in **Harrisburg**, Pennsylvania. Never preachy -- although owned by a local church -- it chose instead to uplift its listeners through classical music and the arts. There were no commercials and no one got paid. How the station managed to remain on the air for a year, let alone 26, is what the staff warmly referred to as "the miracle."

Certainly, at the heart of that miracle was WMSP's volunteer staff. The fascination of radio and the lure of the classics had attracted an enormous and diverse group of people. Intellectuals, floaters, housewives, retirees, electronics enthusiasts and people who just didn't seem to have anywhere else to go, collected at the studios.

People befriended people they otherwise would have never met and part of the magic of the place was that a genuine love developed among this disparate group. In some cases, WMSP was the only family some of these people had.

One well-educated lady who had fallen on hard times, seemed to have no past. But she was a devoted volunteer, and when she died, alone in her hotel room, the workers at the radio station chipped in to pay for her funeral, bought a headstone, and comprised her family at the graveside service. What can you say about people like these?

Staff of WMSP, Harrisburg, PA, during the late '60s

Today, WMSP is nothing but memory, its legacy abandoned along with its call letters. Now when you tune in 94.9 on the Central Pennsylvania FM dial, you'll find not the proud ghost of the Market Square station, but yet another commercial rock station.

• The nation's capital now has the dubious pleasure of hearing Howard Stern's off-color, intolerably vulgar but incredibly well-executed morning show. Executed might be a good word. Stern initiated his appearance on Washington's WJFK -- named in honor of the assassinated president -- by punctuating mentions of the call letters with the sound of gunfire. According to *Broadcasting* magazine, FCC Commissioner James Quello, while admitting that Stern "has a right to be outrageous," said he "might tune him in for the hell of it, just to see what he's up to." Hope Quello's family knows CPR.

• Jessica Hahn, the Jim Bakker-toppling church secretary-turned *Playboy* centerfold-turned DJ has had her contract with **Phoenix**, Arizona's KOY-FM renewed through the end of this month.

• Two interesting stations were reported to Nancy Hardy's column in *DX News*. John Wilkins heard 960-KNDN in Farmington and 1230 KYVA in Gallup, both **New Mexico**. These stations broadcast in the Navajo language. KYVA plays country and western music with a Navajo DJ and KNDN was heard broadcasting obituaries and other local announcements. Navajo chanting was used to bridge between musical selections. Nice call letters, too. **K-iNDiaN.**

• 1400 KODS in **Visalia, California** picked some nice new calls, too. They're now KHTZ so that when their calls are printed, they also clearly show the station's dial position: 1400 KHTZ (KiloHertz).

• A major battle is shaping up over who will get the official nod to put a station on the air in casino-lucrative **Atlantic City, New Jersey**. Twenty different applications are on file with the FCC for the 107.3 FM frequency.

• KOMA-AM in **Oklahoma City, Oklahoma**, has dropped its three year old Big Band format. Replacing it will be an oldies program featuring hits from the 1950s and '60s -- a throwback to KOMA's years as a top top-40 station.

"Be a BandScan reporter! Send clippings, comments and observations on AM and FM broadcasting in your area to Larry Miller, P.O. Box 98, Brasstown, NC 28902."

Help Wanted

WFSU-FM in **Tallahassee, Florida**, is running a "Help Wanted" ad in *Broadcasting* magazine. Two positions are open. The first is for a news director (who will also host a daily local news program). The second is for a *Morning Edition* host and producer. Ready to pack up and head to Florida's sunny clime in search of your fame? Wait. Consider the pay: $19,610 and $16,691 a year respectively. What? You say your kid makes more slinging dough at Pizza Hut?

In contrast to this, did you notice how many media owners were in *Forbes* magazine's list of the 400 richest people in America? John Werner Kluge, long-time chairman and president of *Metromedia* came in as the second wealthiest man in the country with a net worth of $3.2 billion. (Check out the description of his 6,000 acre estate, Albemarle Farms, in the November *Reader's Digest*.) Others included group station owners Ed Gaylord ($1.4 billion), Oveta Culp Hobby ($650 million) and Joe Allbritton ($590 million), among others. How do you think they got *so* rich?

From the Mailbag

• Jim Wright of **Salina, Kansas**, disputes the "misleading" tone of our debut article on the state of AM radio in last month's *Monitoring Times*. He says that "AM radio stations are far from dying out like dinosaurs" and points to *Duncan's Radio Market Guide*, which shows revenue for the nation's 4,900 AM stations at $1.9 billion for 1987.

Those figures sound good at first glance, Jim, but look again. Divide that $1.9 billion among 4,900 AM stations and you get a very modest average annual *gross* revenue -- before subtracting expenses -- of just $387,755 per station. Compare that to FM's per station average annual gross revenue of just under $1.3 million per station.

• And thanks to everyone who pointed out that the drawing of the radio in last month's American BandScan was set on FM -- despite the fact that the article was about AM radio.

New Stations

1220 Canyon Country, California; 103.5 District of Colombia; 103.9 Quincy, Illinois; 102.5 Mitchell, Indiana; 570 Bethesda, Maryland; 1020 Blythewood, South Carolina; 1600 Dallas, Texas; 98.3 Lyndon, Vermont; 810 Dublin, Virginia; 720 Long Beach, Washington. All courtesy Bruce Elving's *FMedia!* and NRC's *DX News*.

For Sale

Small market 1 kw AM in **Alabama**, $225,000 (Randy Millar 205-734-4888). 100,000 watt northern **California** FM, $2.5 million (Business Broker Associates 615-756-7635). East coast **Florida** FM, $5 million (Hudson Miller 407-466-5086). Stte-of-the-art equipped **North Carolina** AM with FM under construction (Snowden Associates 919-355-0327). KISS-FM, Walla Walla, **Washington**, $625,000 (Roger 209-951-8165).

International BandScan

Anguilla's 690 kHz Caribbean Beacon is up for lease. Says Gary Hayes, "We operate the facility, you provide programming." The 690 channel currently runs 15,000 watts but can go as high as 50,000. Another Carribean Beacon channel, a 50,000 watter on 1610, is often audible in the U.S. In case you're interested in any of this, Gary's number is 303-665-3767.

Up for sale is another offshore station running 50,000 watts on 1570 kHz that "reaches millions of English speaking people." Asking price is $1.2 million. Could this be the Atlantic Beacon on south **Cacos Island**? Speaking of offshore, boat "pirate" Radio Newyork International has been operating on 1620.

The first report of VON, **Nevis Island**, is in CIDX *Messenger*. Jean Burnell of St. John's, Newfoundland, caught the station just before 8:00 PM on 895 kHz. Jean says the station was playing a "mixed bag of reggae, soul, pop and EZ listening music." The address is P.O. Box 196, Bath Village, Nevis, West Indies.

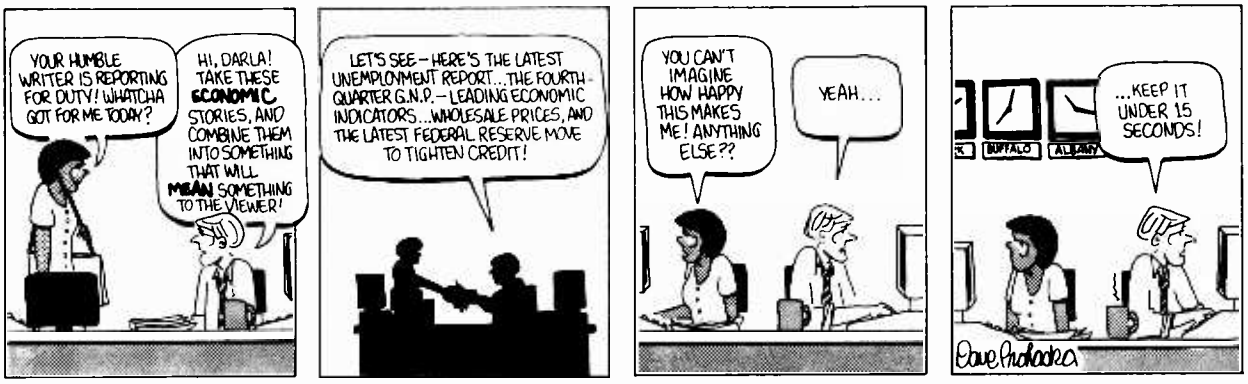
The Far East Broadcasting Company/ **Philippines** is raising money for a new transmitter. DZAS currently runs a paltry 90,000 watts on 702 kHz; management hopes to top 100,000 watts with the new unit. **Cyprus** switch: The Cyprus Broadcasting Corporation has moved their 918-Paphos to 558 on the dial and 1584-Limassol to 1044 kHz. They run 2 and 1 kilowatts, respectively. Radio Free Europe in **West Germany** has moved its Czech service onto 720 kHz AM to escape jamming on shortwave.

Three new All **India** Radio outlets are now on the air: 1530 kHz Agra in Uttar Pradesh (10 kw), 1584 kHz Jamshedpur in Bihar (1 kw) and 1584 kHz Keonjhar in Orissa (1 kw).

Radio Euskadi, which is operated by the Basque autonomous government in **Spain**, has added a second transmitter on 1296 kHz. The BBC Monitoring Services estimate the transmitter power at several thousand watts. The original transmitter, located at Vitoria, continues to run 2,000 watts on 1602 kHz. Both identify themselves in Basque as "Euskadi Irratia."

Credits: In addition to our own information, we've included information from thefollowing publications and American BandScan reporters: Special thanks go to BBC Monitoring Service, Broadcasting, DX News (Jerry Starr), CIDX Messenger (Alain Pepin with Gilles Michaud), Ken Millan, Radio World, Religious Broadcasting, Robert Sharp, Sweden Calling DXers (S. Mierzejewski, Walter Olvik, Marcel Rommerts, Manfred Schida), Scott Tawl. For information on how to subscribe to many of these publications, send a SASE and an additional mint 25 cent stamp to American BandScan, c/o this publication.

NEWSROOM



Dr. John Santosuosso

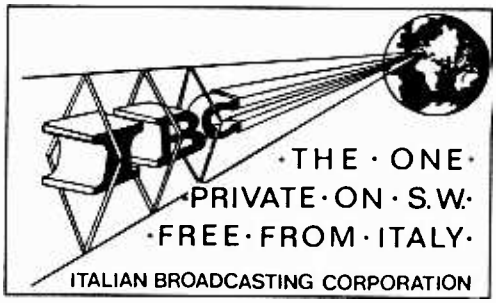
P.O. Box 1116
Highland City, FL 33846

It's Europirate Time!

The heart of the DX season is soon upon us, and that means it is a good time to go after those challenging pirates. You may be amazed at how far some of them can get out on rather low power.

And if you want a real challenge try to bag a Europirate or two. Yes, it takes effort and perhaps a bit of luck. Still, it can be done. One thing that might make it a bit easier for you is if you come across a Europirate testing to North America. In past winters, stations in the Netherlands, Britain, Belgium, and several other countries have attempted these. The results have been pretty good.

The most likely time to run across a trans-Atlantic pirate test would be UTC Sunday. The hour of 0600 has been popular in the past, but anytime between about 0500 and 0800 may turn up something. The best frequencies to try are between about 6210 and 6320, but also check above and below 6900 and the "chief domestic pirate band," which runs from about 7370 to 7500 kHz, or a little higher. Of course, even if you do not happen across a special test you may find you are in the ideal time and place to come across some sort of foreign or domestic pirate activity.

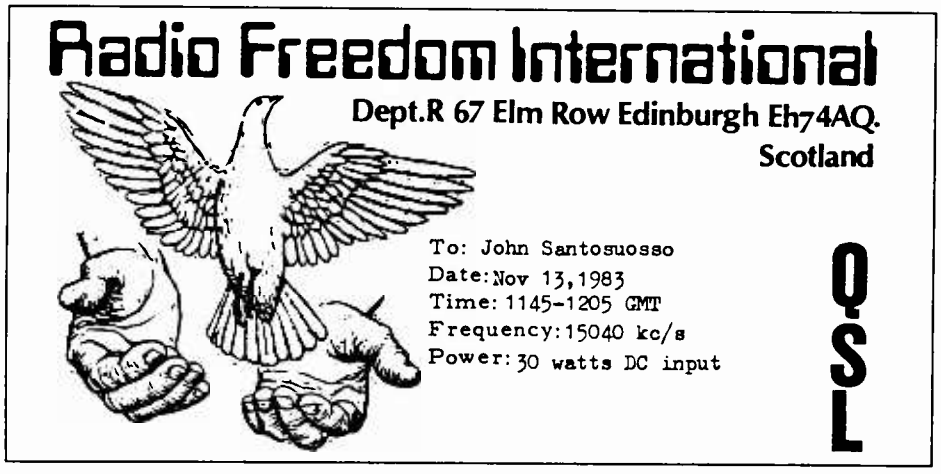


Losing the Irish

One thing has changed this DX season and for the veteran Europirate chaser it is not for the better. In the past, some of the unlicensed Irish stations were among the easiest to log, and they were also among the most willing to schedule tests to North America. However, by the end of this month, they will probably be gone -- most likely forever. The Irish government has passed legislation calling for fines of up to 20,000 Irish pounds and prison terms for broadcasting without a license after the end of December.

No Irish pirate is likely to risk such high penalties. To do so would also cost it a chance at one of the new licenses which will be issued to a limited number of private, nongovernment stations a few months later. Unfortunately, as we have previously reported, there is no current provision in the legislation to license any private station for shortwave.

You just might be able to find some Irish activity before December is over. The most likely is Radio Dublin, which in the past has used 6910 or 6930 kHz. Under ideal conditions it has been logged on the west coast of North America. If you do hear Radio Dublin or some other Emerald Isle broadcaster having a final go at the shortwaves, enjoy it while you can. The glorious days of Irish pirate radio are finally coming to an end. All we can hope for is that stations such as Radio Dublin will be successful in their struggle to obtain licenses for the shortwaves.



Boatcasting

Admittedly, hearing any Europirate is tough work, although some experts such as Connecticut's Gregg Bares, who is a contributor to this column, do it with such regularity that they make it look easy. However, for most of us it is hard work. To get you started we will give you one that is a little easier than most. It is the legend -- the great Caroline.

The birth of ship-based Radio Caroline in the 1960s probably has inspired more pirate broadcasters than any other single event. Caroline also forced government broadcasters such as the BBC to add greater variety to their programming in order to meet the competition. Broadcasting from M.V. Communicator, it is anchored off the southeast coast of England in international waters.

Caroline on Shortwave

As many readers will know, in 1988 Caroline added shortwave to its medium wave (AM) transmissions. Although in the past there were test transmissions relaying Caroline's popular rock and pop music programs, currently much of the shortwave transmitting time on 6215 kHz is leased to religious broadcasters.

Most of it is sold to World Mission Radio, which is far more likely to verify a reception report than is Caroline itself. You can contact World Mission Radio at P.O. Box 346, Corona, California 91719. The Dutch evangelist, Johan Maasbach, who used to be heard on Caroline's currently inactive mediumwave religious service (Viewpoint 963), can also be heard on shortwave.

You should be able to hear the shortwave service by 0400 UTC, perhaps relaying regular Caroline programs. Religious programming normally starts about 0500, but sign on as late as 0600 is possible, and even periods of dead air may be heard. However, if you are persistent you should hear something on Caroline's shortwave service sooner or later.

Unfortunately, Caroline's medium wave service, which included a Dutch service as well as English, was cut back as a result of the destruction of the ship's mast about a year ago. Before this, Caroline had broadcast in English on 558 and the Dutch Radio

Monique service on 819 (previously 963, which was also used for religious programs) kHz. The loss of the mast made possible for the most part broadcasts only on 558 and only at a highly reduced power. Initial attempts to replace the mast were unsuccessful, but hopefully by the time you read this Caroline will have returned to its full 50 KW power on 558 kHz and will have resumed the Dutch service on 819.

Tough Catch on AM

The Dutch service is vital to Caroline's owners for bringing in revenue. It gets more advertising than does the English programming. On rare occasions, under unusually ideal conditions, Caroline's medium wave transmissions have been logged on the east coast of North America. If you are into medium wave trans-Atlantic DXing, you may want to take on the challenge. It will not be easy, but now is the time to try. Our thanks to Ary Boender of the Netherlands for providing some of the above information on Radio Caroline.

So go after those Europirates, and let us know what kind of luck you have!

THE MAILBAG

A little closer to home, Virginia's Steve Rogovich sends along a copy of the unusual computer generated QSL he received from Radio Garbanzo. Not only is the QSL unusual, but any station named after a bean has to be considered off the beaten path! Steve notes this station uses the popular Box 5074, Hilo, Hawaii 96720 maildrop. Remember, as we previously reported, this maildrop recently came under new management, and there may be some delays in forwarding your mail. However, it will get through.

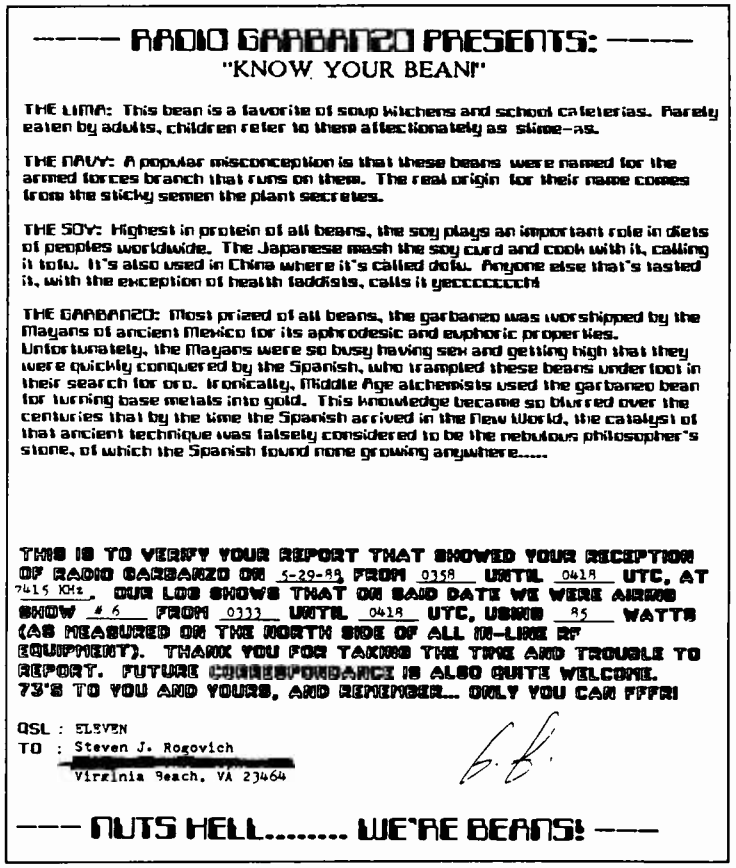
From Connecticut's Bob Doyle comes this unusual logging: on 9990 at 0500 in A3 mode he heard Latin music and Portuguese, apparently shortly before sign-off with a brief national anthem. A Spanish speaking friend interpreted the identification as "Voice of Latin America, Damascus, Syrian Arab Republic." Bob listened the next night but heard nothing. This does not appear to be one of Syria's regular broadcasts on 9950. As we've said before, there is always something new and different on shortwave.

Our faithful contributor, John Demmitt, advises us that the United States Department of State backed out of the agreement it had reached with Cuba which would have limited certain broadcasting activities by both sides. As a result we can probably expect more of those high-power (up to 500 KW) medium wave broadcasts in the evenings. Especially check out 830, 1040, and 1160. Much of this will be in English. You may also hear some French and German as well as the expected Spanish.

Finally, from California, James Kline sends a clipping from the *Christian Science Monitor* noting that an Israeli bombing attack destroyed a PLO station operating in the southern port city of Sidon. The station began broadcasting in June. According to the Israelis, its purpose was "propaganda and incitement" for Palestinians in Israeli-occupied areas.

We have a few additional items we are holding for a bit more research. We will bring them to you next month along with all the latest pirate and clandestine news. Thanks for your contributions and encouragement. Keep those cards and letters coming, folks. They are deeply appreciated.

mt



Joe Woodlock

P.O. Box 98
Brasstown, NC 28902

Keyed Carriers

Morse code is not unique to the low frequency beacons. Coastal stations use it and so do point-to-point fixed stations. There are amateur bands of differing degrees of code capabilities.

Almost all code is transmitted as keyed carrier. This means that the code is sent by interrupting the carrier frequency. The audio sound is a constant tone on the carrier frequency. By interrupting the carrier, the constant tone is broken up into the dits, dahs, and silent periods that we know as Morse code.

Low frequency beacons operate differently. The audio tone is shifted a specified distance from the carrier frequency. It is also a constant tone that is broken up into dits, dahs, and silent periods. *But* the carrier frequency continues constantly without interruption. This is more helpful in radio direction finding (RDF).

Directional tendency goes down as frequency goes up, increasing as frequency goes down.

The beckoning beacon

If you have ever noticed the effect of turning a loop antenna when tuning in a broadcast band station, you have discovered that the radio waves in the broadcast band are very directional. This is not true as you move up frequency into the shortwave bands. Directional tendency goes down as frequency goes up, increasing as frequency goes down. Thus, low frequency beacon transmissions are extremely directional. This also makes low frequency beacons very useful in RDF work.

A constant, unmodulated carrier can be used to adjust a loop antenna to maximum signal strength and sharpening the bearing direction, while identifying the beacon from the audio tone on a different frequency. In the United States, most audio tones are 1020 Hertz away from the carrier. In Canada, some are 1020 Hertz away but far more are separated by only 400 Hertz.

Picking up (or picking out) the signal

Most beacons have an audio tone above the carrier frequency, with many also having a second audio tone an equal distance below the carrier. These are double side-band beacons. There are some beacons in other parts of the world that do use a keyed carrier for transmission. These are referred to as A-1 type modulation.

What does all this mean to you as a listener? It affects how and where you hear things on the dial and it offers you some opportunities to hear additional beacons under crowded conditions at a given frequency.

Listening to Morse code in the AM mode is usually unsatisfactory. In most modern receivers, the AM mode passband frequency width is usually much greater than that for CW or side band modes. Too many signals come in simultaneously in the low frequency band where beacons are only one to three kHz apart, or even on the same frequency. And AM mode lacks the tone from the beat frequency oscillator that sharpens the sound of code. You get the BFO tone by using either the CW mode or one of the sidebands.

If you use the CW mode and tune to the carrier frequency of a beacon, you will not hear the ID. The audio tone is not at the carrier frequency. You will hear the ID as you tune toward the audio frequency, peaking at the most natural sound when you reach the audio frequency. Below the audio frequency the tone will be too high and above it, too low. If you use the upper sideband (USB) and tune to the carrier frequency, you will hear the upper audio signal. If you switch to lower sideband (LSB) you will hear the lower audio sideband, if there is one.

It is probably most convenient to use USB when scanning the beacon ranges in the low frequencies. Most beacons have an upper audio band. And when you bring in a signal, you are on the carrier frequency and this helps to identify the beacon -- until you come across a beacon that doesn't exist on the carrier frequency, but does exist two kHz higher.

For example, you hear "AC" and the carrier frequency is 246. There is no AC on 246 but there is one at Nantucket on 248. What happened? Nantucket is a double sideband beacon and you heard the lower sideband. The upper sideband for AC is at 249.02 and the lower sideband is at 246.98. You are tuned to 246 and are looking for an upper sideband around 247. That is almost the exact spot of the lower sideband for AC. The same thing could have happened if you were using LSB mode and had tuned to 250.

The use of double sideband beacons was probably a major factor in the spacing of U.S. beacons three kHz apart in frequency. While some U.S. beacons do appear on most frequencies, there is a definite bunching or crowding of beacons at frequencies that are three kHz apart, such as 239, 242,245, 248, 251, 254, etc. The lower sideband of a beacon on 245 will not interfere with the upper sideband of a beacon on 242. If the beacons were less than the three kHz apart, this could happen.

If you are on a crowded frequency, try switching from USB to LSB. Many beacons do not have double sidebands, so you may be able to identify what is there. I recall one DXer who found very crowded conditions on 400 kHz. He switched to LSB and was delighted to find that only BGA from Bucaramanga, Colombia, had a lower sideband. From impossible conditions to a great catch with a change in mode.

Canadian beacons are usually upper sideband only, and many use only a 400 Hertz shift. A switch to LSB will eliminate them, if the other beacon(s) has a lower sideband. Shifting the USB frequency to 400 Hertz higher (i.e. 341.4) will also reduce the volume of the Canadian ID. This can help uncover a weak background signal and provide a new catch.

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The complete resource to public safety and business licenses in the two southern New England states. Extremely in-depth coverage of state and regional communications networks, including discussions of the history behind many radio systems. Exact usage shown for public safety listings. **300 pgs. $19.95**

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It was here in the Bay State that Scanner Master got its start, and the quality and quantity of data is how we got our reputation. Our Massachusetts Guide has become the communications resource of the police, fire, rescue and news media community, who not only swear by our book at work, but also contribute mightily so that every official in the Commonwealth who relies on a radio may benefit. With business licenses, comprehensive reports on all state, county, local and intercity radio nets, a frequency sequence sort and much, much more. **300 pages. $23.95.**

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Bill Mauldin, General Editor
Radio Communications Monitoring Assoc.
(September 1988 issue, page 11)

❒ **New Hampshire & Vermont Guide**
Mountainous northern New England demands unusually complex radio systems -- and exactly describing these systems and frequencies is where *Scanner Master* excels. Hilltop receivers, uplinks and downlinks, national forests and large fish & game agencies, whatever the issue, we present you the facts you need to monitor properly. We include full details of state, county and regional nets -- such as the Lakes Region Fire system -- and the important repeater systems of the populous counties. **330 pages. $17.95.**

❒ **Maine Guide**
See the description above for an idea of the scope of this manual. Like the NH & VT guide, much of the state and regional network data was verified by the radio officials of northern New England. This book also includes a frequency sort and business listings plus our latest update sheet. **280 pages. $17.95.**

❒ **Public Safety/Communications Magazine**
This bi-annual magazine updates all our northeastern books with articles by our editors on the make-up and functions of major public safety agencies. Write for details. **$7.50 single issue. $24 for 4 issues.**

❒ **California Government Radio Systems**
An absolute stunner of a communications guide, written by an expert in the field. This book goes into exacting detail on California state, local, county, and federal radio nets and lists frequencies with PL tones, as well as crucial system data. **256 pgs. $25.00.**

❒ **Compendium of American Railroad Radio**
The 8th edition of this handbook is a must not only for any railfan or others who travel, but also the meticulous detail of railroad frequency usage has made this book the only reliable communications resource for the railroad industry. From the largest to smallest road, with even theme park train channels, this guide will educate you on RR operations. **60 pgs. $9.00.**

❒ **Haruteq Quebec Canada Guide - Oct.'88**
A superior guide containing province-wide listings for public safety, business, ham-radio and more. Indexed by frequency and city for easy reference, with ten-codes, AM-FM radio and the like, Haruteq guides provide great insight into the radio systems of Canada. Includes a fun helpful hints section. **116 pgs. $14.95.**

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The provincial brother to the Quebec guide. **$14.95.**

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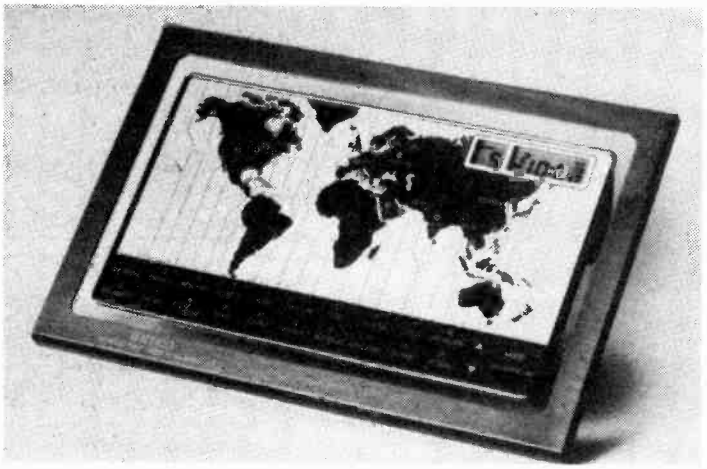
It's About Time ...

It happens sooner or later to any dyed-in-the-wool radio fanatic -- you're sitting there, listening to (or chatting with) some faraway place, and suddenly the thought strikes you: I wonder what time it is there?

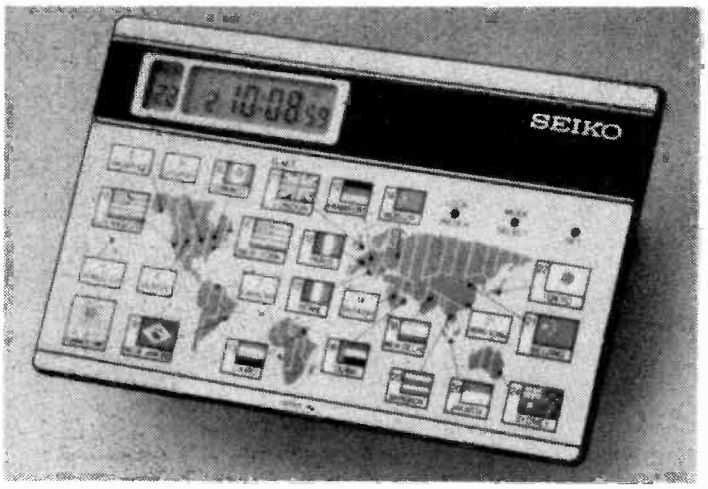
Recently, I have run across some interesting gadgets to answer that question.

The Seiko World Time Voice Alarm will tell you, literally, what time it is. Touch any of the 19 time zones on the city panel and the clock will announce the city name and time. In addition, a city or time zone not shown on the panel can be set by using a special optional button. It also provides the date, time, and time zone in digital display and has a special daylight saving time feature. Suggested retail is $125.



A similar unit from Seiko, the World Time Touch Sensor, allows you to touch any city or time zone on the world map covering the face of the unit, and the clock instantly displays time, day and date. Time can be digitally displayed on a 12 or 24-hour basis, with a daylight saving time button and 27 different time zones. Suggested retail is $95.

On a more modest scale, Seiko's World Time Alarm shows a world map with flags and city names. Touch a flag or city name, and the clock instantly displays local time and date in any of 24 cities (18 time zones). Pick from 12 or 24-hour time, with a daylight saving time feature. The alarm can be set to ring in any of the featured cities. Suggested retail is $39.50.



Sharp Electronics has also introduced the EL-470, a calculator-sized unit that features an alarm, a clock that keeps track of two time zones, and a calculator that is specially set up to perform currency conversion calculations. Suggested retail is $34.95.

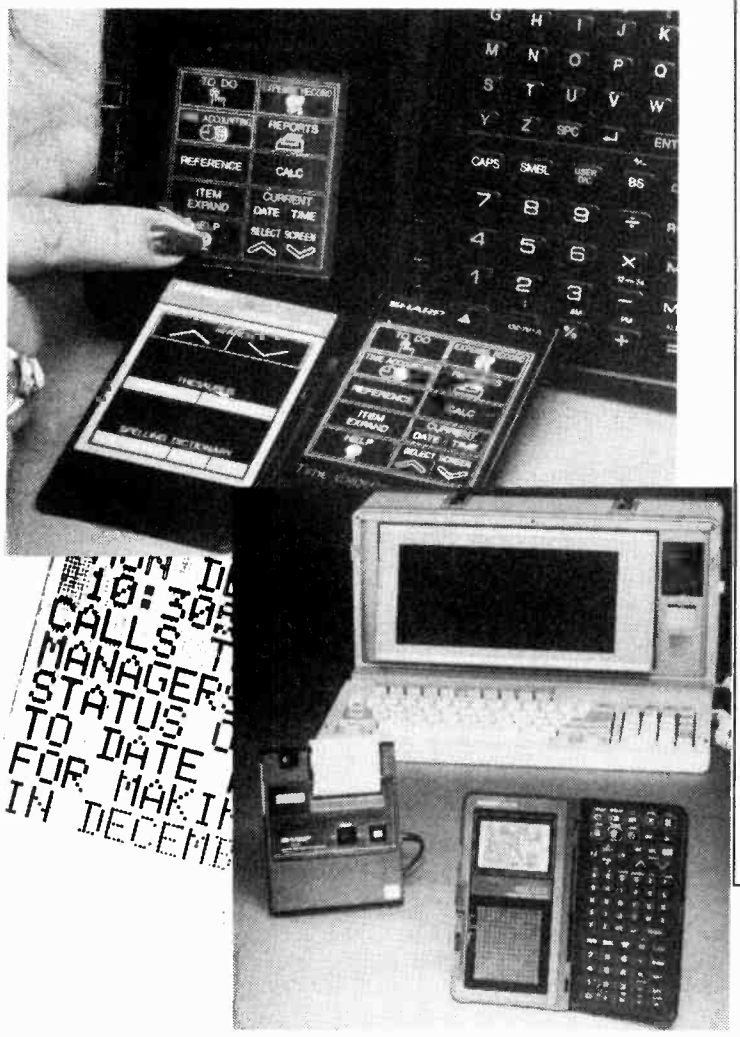
*Super*gadget

Also capable of keeping track of time, as well as many other things, is Sharp's brand new "WIZARD," which packs high-powered computing capability into a pocket organizer.

The WIZARD features seven easy to use disciplines with specific keypad symbols including:

- o Calendar mode: with the touch of a key, a monthly calendar with 200 year memory, weekly events, and daily events.
- o Schedule mode: describes specifics for monthly, weekly, and daily calendar activities. You can even set a beeper to remind you of an upcoming event.
- o Telephone mode: you can store names, addresses, and phone numbers and retrieve them as you wish.
- o Local and world time mode: 12 or 24-hour time, pre-programmed with almost 100 international city times.
- o Calculator mode: for number crunching.
- o Secret function: password protection of confidential information.

Suggested retail for the WIZARD is $299, but there's more. You can also buy add-on software cards for a time management program, a thesaurus dictionary, or an eight-language translator. The cards cost $99.99 to $129.99 each, and more will be introduced in the future.



But that ain't all, the WIZARD can also be connected to the CE-50P printer for outputting hard copies of schedules, expense reports, memos, etc. for $169.99, and a dubbing cable allows information to be copied from one WIZARD to another. In addition, later this fall, Sharp will introduce a hardware link-up for connecting the WIZARD to a PC.

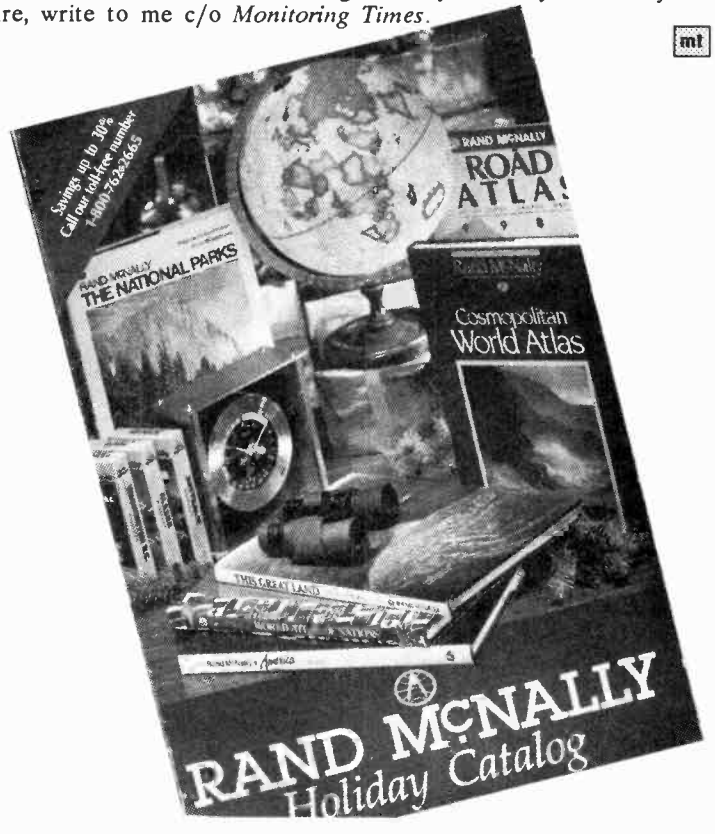
The only problem with the WIZARD is cost. If you add up all the goodies that are currently available for this product, including the basic unit, you could easily afford a full-blown home computer for the same price. Of course, that wouldn't include all the software, and you couldn't stick it in your pocket. On balance, the WIZARD sounds like an interesting idea that could be very popular if the price drops.

Where in the World?

If you have more than a passing curiosity about the places you are hearing, let me commend to you the Rand-McNally Holiday Catalog. It's loaded with maps, atlases, clocks, travel videos, globes, even a world band radio. Call 800-762-2665, and they'll send you a copy. It might even help you solve some of your Christmas shopping problems.

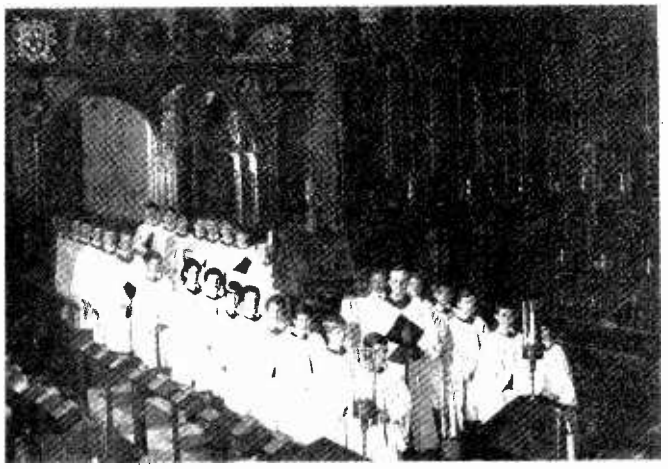
Until the next time, if something strikes your fancy or raises your ire, write to me c/o *Monitoring Times*.

mt



Program Review

The Holiday Season on Shortwave



The boys choir at King's College, Cambridge, prepares for song during the "Festival of Nine Lessons and Carols" (BBC)

Program of the month:

FESTIVAL OF NINE LESSONS AND CAROLS

The holiday season is upon us, and virtually every shortwave station has programs to suit the occasion. Of all these, however, the BBC's *Festival of Nine Lessons and Carols* is by far the best.

For many listeners, the festival is a holiday tradition. Broadcast from the chapel at King's College, Cambridge, the festival is this year celebrating the sixtieth anniversary of the first radio broadcast from King's.

As usual, the program is a mix of carols from the Chapel choir, and nine religious lessons read from the Old and New Testaments of the Bible. The service, though Anglican in nature, caters to those of many religions.

The program begins with the processional "Once in Royal David's City" and includes many familiar carols known by everyone. However, there are always one or two unknown carols to delight.

While the BBC has been known for its superlative Christmas programming, the *Festival of Nine Lessons and Carols* outdoes them all and is all but a requirement for listeners everywhere.

Rating: *****
Content: *****
Presentation: *****

(BBC World Service, December 24 at 1500, rep December 25 at 0030, 0930. Also on many National Public Radio Stations, December 24 at 1500. Check also PBS-TV listings in your area.)

THE WORLD AT SIX

The World at Six is one of several venerable home service programs which have found their way onto shortwave. It is also one of the best.

This Canadian Broadcasting Corporation (CBC) production is thirty minutes worth of national and international news. It quickly brings to mind comparisons with American network news shows.

Indeed, the presenters are as smooth as Tom Brokaw or Peter Jennings. And there is more substance to *World at Six* than most network news productions ... there are no human interest pieces.

Unfortunately, the emphasis on national news is rather irrelevant to most shortwave listeners, save expatriate Canadians. And since one can't separate the wheat from the chaff in this case, this is the one bad aspect of *World at Six*.

Nevertheless, the program compares favorably with similar broadcasts on the air, most notably the BBC's *Newsdesk*. And its timing is most favorable for North American listeners who are tired of Dan Rather. Thus, *The World at Six* is highly recommended.

Rating: **** 1/2
Content: ****
Presentation: *****

(Radio Canada International, five times weekly; Mondays through Fridays, 2200; rep Tuesdays through Saturdays, 0000.)

READER COMMENTS

Leslie Edwards of Doylestown, Pennsylvania, writes in with these comments on *the Christian Science Monitor's Letterbox* program:

> The letterbox segment of some shortwave radio programs continues to be of great interest. With the thought of shortwave radio as a global communicator, letters add the dimension of one-on-one conversation. The letter is not only to the radio station but also to the individual listener, a form of friend-to-friend discussion.
>
> One such program of special interest is "Letterbox" on WCSN and KYOI. Letters have been read from people around the globe -- from European, Asian, South American, and African countries, from the Soviet Union, China, New Zealand, Australia, Canada, and the United States. Letters have even been read from places as remote as Iceland and Fiji.
>
> At last count the World Service of the C.S.M. has received well over 15,000 letters from 140 countries.

I might add that *Letterbox* may be one of the two best letter programs on the air, along with RCI's *Listener's Corner*. All this at a time when stations like the BBC have cancelled their letterbag shows.

The program airs at approximately 38 minutes after the hour, during the second hour of each WCSN/KYOI broadcast. Check the frequency section for details.

Next month we'll look at the new BBC program line-up with reviews of several new offerings.

If you have comments on a particular program which you've heard on shortwave, we invite you to send them to Kannon Shanmugam at the address on page 59.

Your Guide to Shortwave Listening in December

How to Use This Section

This is your daily guide to the programs being broadcast on the international bands. Wherever possible, actual advance program details for the listed stations are included. To use this section, simply look up the day on which you are listening, check the time, and decide which program interests you. Then go to the frequency section in order to locate the frequency of the station/program on the dial.

All days are in UTC. Keep in mind that the new UTC day begins at 0000 UTC. Therefore, if you are listening to the shortwave at 7:01 PM [EST] on your local Thursday night, that's equal to 0001 UTC and therefore *Friday* UTC.

We invite readers to submit information and reviews about their favorite programs. These must be in UTC day and time and can be sent to program manager Kannon Shanmugam.

We also invite broadcast stations to submit advance program details for publication in *Monitoring Times*. Copy deadline is the 1st of the month preceding publication [i.e. details for programs to be broadcast in January must be received by Kannon Shanmugam by December 1st. Information can be FAXed via 1-704-837-2216 and should indicate clearly that it is to be submitted to the *Monitoring Times* program guide.

Program Manager:
Kannon Shanmugam
4412 Turnberry Drive
Lawrence, KS 66046

Key to Program Ratings:
***** -outstanding
**** -excellent
*** -good
** -fair
* -a waste of your time

BBC - BBC, London, England
KNLS - KNLS, Anchor Point, Alaska, USA
RF - Radio Finland, Helsinki
RJL - Radio Jamahiriya, Tripoli, Libya
VOA - Voice of America, Washington
VOFC - Voice of Free China, Taipei, Taiwan

Sunday

December 4th, 11th, 18th, 25th

0000 **BBC**: Newsdesk
0030 **BBC**: Composer of the Month [ex 18th: Play of the Week, 25th: Festival of Nine Lessons and Carols - ***** (see Sat 1502)]
0100 **BBC**: News Summary [ex 18th, 25th]
0101 **BBC**: Play of the Week [ex 25th]
0200 **BBC**: World News
0200 **VOFC**: News and Commentary
0209 **BBC**: British Press Review [ex 25th]
0210 **VOFC**: Main Roads and Byways
0215 **BBC**: Gospel Explorations [ex 25th: My Grandfather]
0230 **BBC**: The Ken Bruce Show (music mix and entertainment news) [ex 25th: A Host of Angels]
0230 **VOFC**: Mailbag Time
0235 **RF**: Focus
0247 **RF**: Walkabout
0250 **VOFC**: Let's Learn Chinese
0300 **BBC**: World News
0300 **VOFC**: News and Commentary
0309 **BBC**: News About Britain
0310 **VOFC**: Republic of China Today
0315 **BBC**: From Our Own Correspondent - **** - Good in-depth news stories.
0330 **BBC**: Just a Minute [4th, 11th]; Hancock's Half Hour (vintage radio comedy) [18th, 25th]
0330 **VOFC**: Chinese Old Songs
0350 **VOFC**: Let's Learn Chinese
0400 **BBC**: Newsdesk
0430 **BBC**: From Old Time to New Country (country music) [ex 4th: Stand by Studio (recording studios)]
0435 **RF**: Focus
0445 **BBC**: Worldbrief (week's news)
0447 **RF**: Walkabout
0500 **BBC**: World News
0509 **BBC**: Twenty-Four Hours (news magazine)
0530 **BBC**: Financial Review
0540 **BBC**: Words of Faith (religion)
0545 **BBC**: Letter from America - ***** - Alistair Cooke's distinctly British view of America [ex 25th: Letter from Australia].
0600 **BBC**: Newsdesk
0630 **BBC**: Jazz for the Asking
0635 **RF**: Focus
0647 **RF**: Walkabout
0700 **BBC**: World News
0700 **VOFC**: News and Commentary
0709 **BBC**: Twenty-Four Hours (news magazine)
0710 **VOFC**: Main Roads and Byways
0730 **BBC**: From Our Own Correspondent - **** (see Sun 0315)
0730 **VOFC**: Mailbag Time
0745 **BBC**: Book Choice
0750 **BBC**: Waveguide - ** - DX program geared toward neophyte listeners.
0750 **VOFC**: Let's Learn Chinese
0800 **BBC**: World News
0800 **KNLS**: Country Music
0809 **BBC**: Words of Faith (religion)
0815 **BBC**: The Pleasure's Yours (classical music requests)
0815 **KNLS**: Let's Talk
0830 **KNLS**: American Music Spotlight
0835 **RF**: Focus
0847 **RF**: Walkabout
0900 **BBC**: World News
0909 **BBC**: British Press Review
0915 **BBC**: Nature Now
0930 **BBC**: Financial Review [ex 25th: The Queen's Christmas Message]
0935 **BBC**: Festival of Nine Lessons and Carols (see Sat 1502) [25th only]
0939 **BBC**: Book Choice [ex 25th]
0945 **BBC**: Poems by Post [ex 25th]
1000 **BBC**: News Summary [ex 25th]
1001 **BBC**: Science in Action [ex 25th]
1030 **BBC**: In Praise of God [ex 25th]
1100 **BBC**: World News
1105 **RF**: Focus
1109 **BBC**: News About Britain
1115 **BBC**: From Our Own Correspondent - **** (see Sun 0315)
1117 **RF**: Walkabout
1130 **BBC**: Composer of the Month [ex 18th: Play of the Week]
1200 **BBC**: News Summary [ex 18th]
1201 **BBC**: Play of the Week
1205 **RF**: Focus
1217 **RF**: Walkabout
1300 **BBC**: World News
1305 **RF**: Focus
1309 **BBC**: Twenty-Four Hours (news magazine)
1317 **RF**: Walkabout
1330 **BBC**: Sports Roundup [ex 25th]
1345 **BBC**: Worldbrief (week's news)
1400 **BBC**: News Summary
1401 **BBC**: With Good Reason [ex 4th: Globe Theatre]
1410 **RF**: Focus
1417 **RF**: Walkabout
1430 **BBC**: Anything Goes (odd recordings) [ex 4th]
1500 **BBC**: Newsreel [ex 25th: The Queen's Christmas Message]
1500 **KNLS**: Faith for Today
1505 **BBC**: World News [25th only]
1515 **BBC**: From Britain's Music Festivals
1515 **KNLS**: Bible Reading
1530 **KNLS**: Swingin' Years
1600 **BBC**: World News
1600 **KNLS**: Country Music
1609 **BBC**: News About Britain
1615 **BBC**: Feature
1615 **KNLS**: Let's Talk
1630 **KNLS**: American Music Spotlight
1645 **BBC**: Letter from America - ***** (see Sun 0545) [ex 25th: Letter from Australia]
1700 **BBC**: World News
1709 **BBC**: Commentary
1715 **BBC**: Jazz for the Asking
1745 **BBC**: Sports Roundup [ex 25th]
1800 **BBC**: Newsdesk
1800 **KNLS**: Faith for Today
1815 **KNLS**: Bible Reading
1830 **BBC**: In Praise of God

1830 KNLS: Swingin' Years
1835 RF: Focus
1847 RF: Walkabout
1900 BBC: News Summary
1901 BBC: Here's Humph! (jazz music) [ex 4th: Globe Theatre]
1915 BBC: Feature [ex 4th]
2000 BBC: World News
2009 BBC: Worldbrief (week's news)
2025 BBC: Words of Faith (religion)
2030 BBC: Back to Square One [ex 25th: Masterbrain - **** - great quiz show.]
2100 BBC: News Summary
2101 BBC: Sports Roundup [ex 25th]
2105 RF: Focus
2115 BBC: The Pleasure's Yours (classical music requests)
2117 RF: Walkabout
2200 BBC: Newshour
2200 VOFC: News and Commentary
2210 VOFC: Republic of China Today
2230 VOFC: Chinese Old Songs
2250 VOFC: Let's Learn Chinese
2300 BBC: World News [ex 25th: The Queen's Christmas Message]
2305 BBC: World News [25th only]
2309 BBC: Book Choice [ex 25th]
2315 BBC: Letter from America - ***** (see Sun 0545) [ex 25th: Letter from Australia]
2330 BBC: With Good Reason

Monday

December 5th, 12th, 19th, 26th

0000 BBC: Newsdesk
0030 BBC: In Praise of God
0100 BBC: News Summary
0101 BBC: Feature
0145 BBC: Mario Lanza (opera music) [ex 5th]
0200 BBC: World News
0200 VOFC: News and Commentary
0209 BBC: British Press Review
0210 VOFC: Taiwan Economic Report
0215 BBC: Andy Kershaw's World of Music (innovative music)
0230 BBC: Science in Action
0230 VOFC: Jade Bells and Bamboo Pipes
0235 RF: Enterprise Finland
0247 RF: Voice of Finland
0250 VOFC: Let's Learn Chinese
0300 BBC: World News
0300 VOFC: News and Commentary
0309 BBC: News About Britain
0310 VOFC: Main Roads and Byways
0315 BBC: Good Books - **** - Detailed opinions on specific books.
0330 BBC: Anything Goes (odd recordings)
0330 VOFC: Mailbag Time
0350 VOFC: Let's Learn Chinese
0400 BBC: Newsdesk
0430 BBC: Through the Looking Glass [5th, 12th]; Five William Stories [19th, 26th]
0435 RF: Enterprise Finland
0445 BBC: Nature Now
0447 RF: Voice of Finland
0500 BBC: World News
0509 BBC: Twenty-Four Hours (news magazine)
0530 BBC: Waveguide - ** (see Sun 0750)
0540 BBC: Words of Faith (religion)
0545 BBC: Recording of the Week
0600 BBC: Newsdesk
0630 BBC: With Good Reason
0635 RF: Enterprise Finland
0647 RF: Voice of Finland
0700 BBC: World News
0700 VOFC: News and Commentary
0709 BBC: Twenty-Four Hours (news magazine)
0710 VOFC: Taiwan Economic Report
0730 BBC: Feature
0730 VOFC: Jade Bells and Bamboo Pipes
0750 VOFC: Let's Learn Chinese
0800 BBC: World News
0800 KNLS: American Magazine
0809 BBC: Words of Faith (religion)
0815 BBC: Through the Looking Glass [5th, 12th]; Five William Stories [19th, 26th]
0815 KNLS: World Radio Broadcast
0830 BBC: Anything Goes (odd recordings)
0830 KNLS: Jazz "E"
0835 RF: Enterprise Finland
0847 RF: Voice of Finland
0900 BBC: World News
0909 BBC: British Press Review
0915 BBC: Good Books - **** (see Mon 0315) [ex 26th: A Host of Angels]
0930 BBC: Financial News [ex 26th]
0940 BBC: Sports Roundup [ex 26th]
0945 BBC: Andy Kershaw's World of Music (innovative music)
1000 BBC: News Summary
1001 BBC: With Good Reason
1030 BBC: The Vintage Chart Show
1100 BBC: World News
1105 RF: Enterprise Finland
1109 BBC: News About Britain
1115 BBC: Tech Talk [ex 26th: Health Matters]
1117 RF: Voice of Finland
1130 BBC: The Ken Bruce Show (music mix with entertainment news)
1200 BBC: Newsreel
1205 RF: Enterprise Finland
1215 BBC: Back to Square One [ex 26th: Masterbrain - **** (see Sun 2030)]
1217 RF: Voice of Finland
1245 BBC: Sports Roundup [ex 26th: The World Today]
1300 BBC: World News
1305 RF: Enterprise Finland
1309 BBC: Twenty-Four Hours (news magazine)
1317 RF: Voice of Finland
1330 BBC: Feature
1400 BBC: World News
1405 BBC: Outlook - **** - A very good magazine-format program.
1410 RF: Enterprise Finland
1417 RF: Voice of Finland
1445 BBC: Gospel Explorations [ex 26th: My Grandfather]
1500 BBC: Newsreel
1500 KNLS: American Magazine
1515 BBC: Feature [ex 26th: Sportsworld]
1515 KNLS: Bible Reading
1530 BBC: Classical Record Review [5th only]
1530 KNLS: Swingin' Years
1600 BBC: World News
1600 KNLS: American Magazine
1609 BBC: News About Britain
1615 BBC: Through the Looking Glass [5th, 12th]; Five William Stories [19th]; Sportsworld [26th]
1615 KNLS: World Radio Broadcast
1630 BBC: Tech Talk [ex 26th]
1630 KNLS: Jazz "E"
1645 BBC: The World Today (news feature) [ex 26th]
1700 BBC: World News
1709 BBC: Commentary
1715 BBC: Just a Minute [5th, 12th]; Hancock's Half Hour (vintage radio comedy) [19th, 26th]
1745 BBC: Sports Roundup
1800 BBC: Newsdesk
1800 KNLS: American Magazine
1815 KNLS: Bible Reading
1830 BBC: Multitrack 1: Top 20 - **** - Interesting British pop trends here.
1830 KNLS: Swingin' Years
1835 RF: Enterprise Finland
1847 RF: Voice of Finland
1900 BBC: News Summary
1901 BBC: Outlook - **** (see Mon 1405)
1925 BBC: Financial News [ex 26th]
1930 BBC: Network UK (feature)
1945 BBC: Poems by Post
2000 BBC: World News
2009 BBC: The World Today (news feature)
2025 BBC: Words of Faith (religion)
2030 BBC: The Vintage Chart Show
2100 BBC: News Summary
2101 BBC: Sports Roundup
2105 RF: Enterprise Finland
2115 BBC: Europe's World
2117 RF: Voice of Finland
2130 BBC: Sports International
2200 BBC: Newshour
2200 VOFC: News and Commentary
2210 VOFC: Main Roads and Byways
2230 VOFC: Mailbag Time
2250 VOFC: Let's Learn Chinese
2300 BBC: World News
2309 BBC: Commentary

2315 BBC: The Learning World
2330 BBC: Multitrack 1: Top 20 - **** (see Mon 1830)

Tuesday

December 6th, 13th, 20th, 27th

0000 BBC: Newsdesk
0030 BBC: Megamix (program for teenagers)
0100 BBC: News Summary
0101 BBC: Outlook - **** (see Mon 1405)
0125 BBC: Financial News
0130 BBC: Poems by Post
0145 BBC: Europe's World
0200 BBC: World News
0200 VOFC: News and Commentary
0209 BBC: British Press Review
0210 VOFC: People at Work
0215 BBC: Network UK (feature)
0230 BBC: Sports International (feature)
0230 VOFC: Spotlight
0235 RF: Airmail
0250 VOFC: Let's Learn Chinese
0300 BBC: World News
0300 VOFC: News and Commentary
0309 BBC: News About Britain
0310 VOFC: Taiwan Economic Report
0315 BBC: The World Today (news feature)
0330 BBC: John Peel (progressive rock music)
0330 VOFC: Jade Bells and Bamboo Pipes
0350 VOFC: Let's Learn Chinese
0400 BBC: Newsdesk
0430 BBC: The Learning World (education)
0435 RF: Airmail
0445 BBC: New Ideas
0455 BBC: Book Choice
0500 BBC: World News
0509 BBC: Twenty-Four Hours (news magazine)
0530 BBC: Financial News
0540 BBC: Words of Faith (religion)
0545 BBC: The World Today (news feature)
0600 BBC: Newsdesk
0630 BBC: Acker's Away (music) [ex 27th: Rock 'n' Roll Christmas]
0635 RF: Airmail
0700 BBC: World News
0700 VOFC: News and Commentary
0709 BBC: Twenty-Four Hours (news magazine)
0710 VOFC: People at Work
0730 BBC: Europe's World
0730 VOFC: Spotlight
0745 BBC: Network UK (feature)
0750 VOFC: Let's Learn Chinese
0800 BBC: World News
0800 KNLS: Country Music
0809 BBC: Words of Faith (religion)
0815 BBC: Tech Talk [ex 27th: Health Matters]
0815 KNLS: Sound Words
0830 BBC: Megamix (program for teenagers)
0830 KNLS: All That Jazz
0835 RF: Airmail
0900 BBC: World News
0909 BBC: British Press Review
0915 BBC: The World Today (news feature)
0930 BBC: Financial News [ex 27th]
0940 BBC: Sports Roundup
0945 BBC: Mario Lanza (opera music) [ex 6th: C P E Bach]
1000 BBC: News Summary
1001 BBC: Discovery (science)
1030 BBC: Sports International (feature)
1100 BBC: World News
1105 RF: Airmail
1109 BBC: News About Britain
1115 BBC: Waveguide - ** (see Sun 0750)
1125 BBC: Book Choice
1130 BBC: Citizens - **** - innovative serial with travails of five fictional Britons.
1200 BBC: Newsreel
1205 RF: Airmail
1215 BBC: Multitrack 1: Top 20 - **** (see Mon 1830)
1245 BBC: Sports Roundup
1300 BBC: World News
1305 RF: Airmail
1309 BBC: Twenty-Four Hours (news magazine)
1330 BBC: Network UK (feature)
1345 BBC: Recording of the Week
1400 BBC: World News
1405 BBC: Outlook - **** (see Mon 1405)
1410 RF: Airmail
1445 BBC: Mario Lanza (opera music) [ex 6th: C P E Bach]
1500 BBC: Newsreel
1500 KNLS: American Magazine
1515 BBC: A Jolly Good Show (rock music) [ex 27th: The Gift]
1515 KNLS: Bible Reading
1530 KNLS: Swingin' Years
1600 BBC: World News
1600 KNLS: Country Music
1609 BBC: News About Britain
1615 BBC: Omnibus (topical feature)
1615 KNLS: Sound Words
1630 KNLS: All That Jazz
1645 BBC: The World Today (news feature)
1700 BBC: World News
1709 BBC: Commentary
1715 BBC: Citizens - **** (see Tue 1130)
1745 BBC: Sports Roundup
1800 BBC: Newsdesk
1800 KNLS: American Magazine
1815 KNLS: Bible Reading
1830 BBC: Discovery (science)
1830 KNLS: Swingin' Years
1835 RF: Airmail
1900 BBC: News Summary
1901 BBC: Outlook - **** (see Mon 1405)
1925 BBC: Financial News
1930 BBC: Development '88
2000 BBC: World News
2009 BBC: The World Today (news feature)
2025 BBC: Words of Faith (religion)
2030 BBC: Meridian (arts feature)
2100 BBC: News Summary
2101 BBC: Sports Roundup
2105 RF: Airmail
2115 BBC: Business Matters
2130 BBC: Megamix (program for teenagers)
2200 BBC: Newshour
2200 VOFC: News and Commentary
2210 VOFC: Taiwan Economic Report
2230 VOFC: Jade Bells and Bamboo Pipes
2250 VOFC: Let's Learn Chinese
2300 BBC: World News
2309 BBC: Commentary
2315 BBC: From Britain's Music Festivals

Wednesday

December 7th, 14th, 21st, 28th

0000 BBC: Newsdesk
0030 BBC: Omnibus (topical feature)
0100 BBC: News Summary
0101 BBC: Outlook - **** (see Mon 1405)
0125 BBC: Financial News
0130 BBC: How It All Began
0145 BBC: Country Style - ** - British country music?
0200 BBC: World News
0200 VOFC: News and Commentary
0209 BBC: British Press Review
0210 VOFC: Journey into Chinese Culture
0215 BBC: Tech Talk [ex 28th: Health Matters]
0230 BBC: Citizens - **** (see Tue 1130)
0230 VOFC: The Weekly
0235 RF: Sports Features
0250 VOFC: Let's Learn Chinese
0300 BBC: World News
0300 VOFC: News and Commentary
0309 BBC: News About Britain
0310 VOFC: People at Work
0315 BBC: The World Today (news feature)
0330 BBC: Discovery (science)
0330 VOFC: Spotlight
0350 VOFC: Let's Learn Chinese
0400 BBC: Newsdesk
0430 BBC: Business Matters
0435 RF: Sports Features
0445 BBC: Country Style - ** (see Wed 0145)
0500 BBC: World News
0509 BBC: Twenty-Four Hours (news magazine)
0530 BBC: Financial News
0540 BBC: Words of Faith (religion)
0545 BBC: The World Today (news fea)

Your Guide to Shortwave Listening in December

0600 BBC: Newsdesk
0630 BBC: Meridian (arts feature)
0635 RF: Sports Features
0700 BBC: World News
0700 VOFC: News and Commentary
0709 BBC: Twenty-Four Hours (news magazine)
0710 VOFC: Journey into Chinese Culture
0730 BBC: Development '88
0730 VOFC: The Weekly
0750 VOFC: Let's Learn Chinese
0800 BBC: World News
0800 KNLS: American Magazine
0809 BBC: Words of Faith (religion)
0815 BBC: Business Matters
0815 KNLS: Let's Talk
0830 BBC: Just A Minute [7th, 14th]; Hancock's Half Hour (vintage radio comedy) [21st, 28th]
0830 KNLS: Classical Music
0835 RF: Sports Features
0900 BBC: World News
0909 BBC: British Press Review
0915 BBC: The World Today (news feature)
0930 BBC: Financial News
0940 BBC: Sports Roundup
0945 BBC: How It All Began
1000 BBC: News Summary
1001 BBC: Omnibus (topical feature)
1030 BBC: Jazz for the Asking
1100 BBC: World News
1105 RF: Sports Features
1109 BBC: News About Britain
1115 BBC: Country Style - ** (see Wed 0145)
1130 BBC: Meridian (arts feature)
1200 BBC: Newsreel
1205 RF: Sports Features
1215 BBC: Ireland - Naturally [ex 28th: Just the Job (people with odd jobs)]
1225 BBC: The Farming World
1245 BBC: Sports Roundup
1300 BBC: World News
1305 RF: Sports Features
1309 BBC: Twenty-Four Hours (news magazine)
1330 BBC: Development '88
1400 BBC: World News
1405 BBC: Outlook - **** (see Mon 1405)
1410 RF: Sports Features
1445 BBC: Business Matters
1500 BBC: Newsreel
1500 KNLS: American Magazine
1515 BBC: The Learning World (education)
1515 KNLS: Bible Reading
1530 BBC: Lines from My Grandfather's Forehead [ex 7th: The Million Pound Radio Show (comedy)]
1530 KNLS: Swingin' Years
1600 BBC: World News
1600 KNLS: American Magazine
1609 BBC: News About Britain
1615 BBC: Acker's Away (music) [ex 28th: Rock 'n' Roll Christmas]
1615 KNLS: Let's Talk
1630 KNLS: Classical Music
1645 BBC: The World Today (news feature)
1700 BBC: World News
1709 BBC: Commentary
1715 BBC: Society Today
1730 BBC: New Ideas
1740 BBC: Book Choice
1745 BBC: Sports Roundup
1800 BBC: Newsdesk
1800 KNLS: American Magazine
1802 RJL: Koran
1803 RJL: Headlines
1808 RJL: The Privilege of Human Rights
1815 KNLS: Bible Reading
1818 RJL: Happy Music
1830 BBC: Multitrack 2 - *** - Pop music and news.
1830 KNLS: Swingin' Years
1835 RF: Sports Features
1837 RJL: The Scourge of Imperialism
1847 RJL: News
1900 BBC: News Summary
1901 BBC: Outlook - **** (see Mon 1405)
1925 BBC: Financial News
1940 BBC: Book Choice
1945 BBC: How It All Began
2000 BBC: World News
2009 BBC: The World Today
2025 BBC: Words of Faith (religion)
2030 BBC: Assignment
2100 BBC: News Summary
2101 BBC: Sports Roundup
2105 RF: Sports Features
2115 BBC: Acker's Away (music) [ex 28th: Rock 'n' Roll Christmas]
2145 BBC: Recording Of The Week
2200 BBC: Newshour
2200 VOFC: News and Commentary
2210 VOFC: People at Work
2230 VOFC: Spotlight
2232 RJL: Koran
2233 RJL: Headlines
2238 RJL: From Oppression to Dignity
2250 VOFC: Let's Learn Chinese
2300 BBC: World News
2305 RJL: Revolutionary Thought
2308 RJL: Jamahiriya Insight
2309 BBC: Commentary [ex 7th: Sportsworld]
2313 RJL: Happy Music
2315 BBC: Good Books - **** (see Mon 0315)
2330 BBC: Multitrack 2 - *** (see Wed 1830)
2330 RJL: News
2340 RJL: The People's Mobilization
2355 RJL: Anthology for a Revolution

Thursday

December 1st, 8th, 15th, 22nd, 29th

0000 BBC: Newsdesk
0030 BBC: Lines from My Grandfather's Forehead [ex 1st: Two Cheers for November; 8th: The Million Pound Radio Show (comedy)]
0100 BBC: News Summary
0101 BBC: Outlook - **** (see Mon 1405)
0125 BBC: Financial News
0130 BBC: Waveguide - ** (see Sun 0750)
0140 BBC: Book Choice
0145 BBC: Society Today
0200 BBC: World News
0200 VOFC: News and Commentary
0209 BBC: British Press Review
0210 VOFC: Horizons
0215 BBC: Network UK (feature)
0230 BBC: Assignment
0230 VOFC: Countdown
0235 RF: Arts Review
0250 VOFC: Let's Learn Chinese
0300 BBC: World News
0300 VOFC: News and Commentary
0309 BBC: News About Britain
0310 VOFC: Journey into Chinese Culture
0315 BBC: The World Today (news feature)
0330 BBC: Back to Square One [ex 1st: World AIDS Day Feature; 29th: Masterbrain - **** (see Sun 2030)]
0330 VOFC: The Weekly
0350 VOFC: Let's Learn Chinese
0400 BBC: Newsdesk
0430 BBC: Society Today
0435 RF: Arts Review
0445 BBC: Andy Kershaw's World of Music (innovative music)
0500 BBC: World News
0509 BBC: Twenty-Four Hours (news magazine)
0530 BBC: Financial News
0540 BBC: Words of Faith (religion)
0545 BBC: The World Today (news feature)
0600 BBC: Newsdesk
0630 BBC: Ireland - Naturally [ex 29th: Just the Job (people with odd jobs)]
0635 RF: Arts Review
0640 BBC: The Farming World
0700 BBC: World News
0709 BBC: Twenty-Four Hours (news magazine)
0730 BBC: Mediawatch
0745 BBC: Network UK (feature)
0800 BBC: World News
0800 KNLS: Country Music
0809 BBC: Words of Faith (religion)
0815 BBC: Gospel Explorations [ex 29th: My Grandfather]
0815 KNLS: Let's Talk
0830 BBC: John Peel (progressive rock music)
0830 KNLS: Jazz "E"
0835 RF: Arts Review
0900 BBC: World News
0909 BBC: British Press Review

0915 BBC: The World Today (news feature)
0930 BBC: Financial News
0940 BBC: Sports Roundup
0945 BBC: Society Today
1000 BBC: News Summary
1001 BBC: Assignment
1030 BBC: Lines from My Grandfather's Forehead [ex 1st: Two Cheers for November; 8th: The Million Pound Radio Show (comedy)]
1100 BBC: World News
1105 RF: Arts Review
1109 BBC: News About Britain
1115 BBC: New Ideas
1125 BBC: Book Choice
1130 BBC: Citizens - **** (see Tue 1130)
1200 BBC: Newsreel
1205 RF: Arts Review
1215 BBC: Multitrack 2 - *** (see Wed 1830) [ex 1st: World AIDS Day Feature]
1245 BBC: Sports Roundup
1300 BBC: World News
1305 RF: Arts Review
1309 BBC: Twenty-Four Hours (news magazine)
1330 BBC: Network UK (feature)
1345 BBC: Jazz Scene UK [1st, 15th, 29th]; Folk in Britain [8th, 22nd]
1400 BBC: World News
1405 BBC: Outlook - **** (see Mon 1405)
1410 RF: Arts Review
1445 BBC: Mediawatch
1500 BBC: Newsreel
1500 KNLS: American Magazine
1515 BBC: The Pleasure's Yours (classical music requests)
1515 KNLS: Bible Reading
1530 KNLS: Swingin' Years
1600 BBC: World News
1600 KNLS: Country Music
1609 BBC: News About Britain
1615 BBC: Assignment
1615 KNLS: Let's Talk
1630 KNLS: Jazz "E"
1645 BBC: The World Today (news feature)
1700 BBC: World News
1709 BBC: Commentary
1715 BBC: Citizens - **** (see Tue 1130)
1745 BBC: Sports Roundup
1800 BBC: Newsdesk
1800 KNLS: American Magazine
1802 RJL: Koran
1803 RJL: Headlines
1808 RJL: The Killer Squad
1815 KNLS: Bible Reading
1820 RJL: Happy Music
1830 BBC: Focus on Faith - **** - News on both modern and traditional views of many religions.
1830 KNLS: Swingin' Years
1831 RJL: The Human Rights Lie
1835 RF: Arts Review
1842 RJL: With the Leader - Moammar Gadhafi
1847 RJL: News
1900 BBC: News Summary
1901 BBC: Outlook - **** (see Mon 1405)
1925 BBC: Financial News
1930 BBC: Ireland - Naturally [ex 29th: Just the Job (people with odd jobs)]
1945 BBC: The Farming World
2000 BBC: World News
2009 BBC: The World Today (news feature)
2025 BBC: Words of Faith (religion)
2030 BBC: Meridian
2100 BBC: News Summary
2101 BBC: Sports Roundup
2105 RF: Arts Review
2115 BBC: Seven Seas
2130 BBC: Mediawatch [ex 1st: World AIDS Day Feature]
2145 BBC: Profile [ex 1st]
2200 BBC: Newshour
2300 BBC: World News
2309 BBC: Commentary
2315 BBC: Music Now (modern classical music) [ex 22nd: What Sweeter Music]
2340 BBC: Images of Britain [ex 1st: English: A Language for the World; 29th: Ghost Stories by H G Wells]

Friday

December 2nd, 9th, 16th, 23rd, 30th

0000 BBC: Newsdesk
0000 VOA: News
0030 BBC: Best on Record [ex 23rd: Music for a Midsummer Christmas]
0100 BBC: News Summary
0101 BBC: Outlook - **** (see Mon 1405)
0125 BBC: Financial News
0130 BBC: Jazz Scene UK [2nd, 16th, 30th]; Folk in Britain [9th, 23rd]
0145 BBC: Profile
0200 BBC: World News
0209 BBC: British Press Review
0215 BBC: Seven Seas
0230 BBC: Citizens - **** (see Tue 1130)
0235 RF: Perspectives
0300 BBC: World News
0309 BBC: News About Britain
0315 BBC: The World Today (news feature)
0330 BBC: Focus on Faith - **** (see Thu 1830)
0400 BBC: Newsdesk
0430 BBC: Poems by Post [ex 2nd: Short Story]
0435 RF: Perspectives
0445 BBC: Jazz Scene UK [2nd, 16th, 30th]; Folk in Britain [9th, 23rd]
0500 BBC: World News
0509 BBC: Twenty-Four Hours (news magazine)
0530 BBC: Financial News
0540 BBC: Words of Faith (religion)
0545 BBC: The World Today (news feature)
0600 BBC: Newsdesk
0630 BBC: Meridian (arts feature)
0635 RF: Perspectives
0700 BBC: World News
0709 BBC: Twenty-Four Hours (news magazine)
0730 BBC: Reith Lectures [ex 23rd and 30th: Alpine Winter]
0800 BBC: World News
0800 KNLS: American Magazine
0809 BBC: Words of Faith (religion)
0815 BBC: Music Now (modern classical music) [ex 23rd: What Sweeter Music]
0815 KNLS: Let's Talk
0830 KNLS: All That Jazz
0835 RF: Perspectives
0845 BBC: Images of Britain [ex 2nd: English: A Language for the World; 30th: Ghots Stories by H G Wells]
0900 BBC: World News
0909 BBC: British Press Review
0915 BBC: The World Today (news feature)
0930 BBC: Financial News
0940 BBC: Sports Roundup
0945 BBC: Seven Seas
1000 BBC: News Summary
1001 BBC: Focus on Faith - **** (see Thu 1830)
1030 BBC: Best on Record [ex 23rd: Music for a Midsummer Christmas]
1100 BBC: World News
1105 RF: Perspectives
1109 BBC: News About Britain
1115 BBC: Profile
1130 BBC: Meridian (arts feature)
1200 BBC: Newsreel
1205 RF: Perspectives
1215 BBC: Reith Lectures [ex 23rd, 30th: Alpine Winter]
1245 BBC: Sports Roundup
1250 BBC: Sports Interview [23rd only]
1300 BBC: World News
1305 RF: Perspectives
1309 BBC: Twenty-Four Hours (news magazine)
1330 BBC: John Peel (progressive rock music)
1400 BBC: World News
1405 BBC: Outlook - **** (see Mon 1405)
1410 RF: Perspectives
1445 BBC: Nature Now
1500 BBC: Newsreel
1500 KNLS: American Magazine
1515 BBC: Music Now (modern classical music) [ex 23rd: What Sweeter Music]
1515 KNLS: Bible Reading
1530 KNLS: Swingin' Years
1600 BBC: World News

Your Guide to Shortwave Listening in December

1600 KNLS: American Magazine
1609 BBC: News About Britain
1615 BBC: Science in Action
1615 KNLS: Let's Talk
1630 KNLS: All That Jazz
1645 BBC: The World Today (news feature)
1700 BBC: World News
1709 BBC: Commentary
1715 BBC: Best on Record [ex 23rd: Music for a Midsummer Christmas]
1745 BBC: Sports Roundup
1750 BBC: Sports Interview [23rd only]
1800 BBC: Newsdesk
1800 KNLS: American Magazine
1802 RJL: Koran
1803 RJL: Headlines
1808 RJL: Libya and the International Press
1815 KNLS: Bible Reading
1823 RJL: Postbag
1830 BBC: Multitrack 3 - **** - Sarah Ward presents innovative rock music.
1830 KNLS: Swingin' Years
1835 RF: Perspectives
1847 RJL: News
1900 BBC: News Summary
1901 BBC: Outlook - **** (see Mon 1405)
1925 BBC: Financial News
1930 BBC: Network UK
1945 BBC: Personal View (topics in British life)
2000 BBC: World News
2009 BBC: The World Today (news feature)
2030 BBC: Science in Action
2100 BBC: News Summary
2101 BBC: Sports Roundup
2105 BBC: Sports Interview [23rd only]
2105 RF: Perspectives
2115 BBC: From Old Time to New Country (country music) [ex 2nd, 9th: Stand by Studio (recording studios)]
2130 BBC: People and Politics
2200 BBC: Newshour
2300 BBC: World News
2309 BBC: Commentary
2315 BBC: From The Weeklies (press review)
2330 BBC: Multitrack 3 - **** (see Fri 1830)

Saturday

December 3rd, 10th, 17th, 24th, 31st

0000 BBC: Newsdesk
0030 BBC: Personal View (topics in British life)
0045 BBC: Recording of the Week
0100 BBC: News Summary
0100 VOA: News
0101 BBC: Outlook - **** (see Mon 1405)
0125 BBC: Financial News
0130 BBC: Classical Record Review
0145 BBC: Book Choice
0150 BBC: New Ideas
0200 BBC: World News
0200 VOA: News
0209 BBC: British Press Review
0215 BBC: Network UK (feature)
0230 BBC: People and Politics
0235 RF: Compass North
0300 BBC: World News
0309 BBC: News About Britain
0315 BBC: The World Today (news feature)
0330 BBC: The Vintage Chart Show
0345 BBC: Business Matters
0400 BBC: Newsdesk
0430 BBC: Here's Humph! (jazz music)
0435 RF: Compass North
0445 BBC: Personal View (topics in British life)
0500 BBC: World News
0509 BBC: Twenty-Four Hours (news magazine)
0530 BBC: Financial News [ex 24th]
0540 BBC: Words of Faith (religion)
0545 BBC: The World Today (news feature)
0600 BBC: Newsdesk
0630 BBC: Meridian (arts feature)
0635 RF: Compass North
0700 BBC: World News
0709 BBC: Twenty-Four Hours (news magazine)
0730 BBC: From The Weeklies (press review)
0745 BBC: Network UK (feature)
0800 BBC: World News
0800 KNLS: Country Music
0809 BBC: Words of Faith (religion)
0815 BBC: A Jolly Good Show (rock music) [ex 24th: A Radio Christmas Card]
0815 KNLS: Let's Talk
0830 KNLS: American Music Spotlight
0835 RF: Compass North
0900 BBC: World News
0909 BBC: British Press Review
0915 BBC: The World Today (news feature)
0930 BBC: Financial News [ex 24th]
0940 BBC: Sports Roundup
0945 BBC: Personal View (topics in British life)
1000 BBC: News Summary
1001 BBC: Here's Humph! (jazz music)
1015 BBC: Letter from America - ***** (see Sun 0545) [ex 24th: Letter from Australia]
1030 BBC: People and Politics
1100 BBC: World News
1105 RF: Compass North
1109 BBC: News About Britain
1115 BBC: Classical Record Review
1130 BBC: Meridian (arts feature)
1200 BBC: Newsreel
1205 RF: Compass North
1215 BBC: Multitrack 3 - **** (see Fri 1830)
1245 BBC: Sports Roundup
1300 BBC: World News
1305 RF: Compass North
1309 BBC: Twenty-Four Hours (news magazine)
1330 BBC: Network UK (feature)
1345 BBC: From Old Time to New Country (country music) [ex 3rd: Stand by Studio (recording studios)]
1400 BBC: News Summary
1401 BBC: The Ken Bruce Show (music mix with entertainment news) [ex 31st: The Year is Going]
1410 RF: Compass North
1430 BBC: Sportsworld [ex 24th, 31st]
1445 BBC: Sportsworld [31st only]
1500 BBC: Newsreel [ex 24th: News Summary]
1500 KNLS: American Magazine
1502 BBC: Festival of Nine Lessons and Carols [24th only] - ***** - a must listen for the holiday season.
1515 BBC: Sportsworld [ex 24th]
1515 KNLS: Bible Reading
1530 KNLS: Swingin' Years
1600 BBC: World News [ex 24th]
1600 KNLS: Country Music
1609 BBC: News About Britain [ex 24th]
1615 BBC: Sportsworld [ex 24th]
1615 KNLS: Let's Talk
1630 BBC: A Host of Angels [24th only]
1630 KNLS: American Music Spotlight
1700 BBC: News Summary
1701 BBC: Sportsworld [ex 24th: A Radio Christmas Card]
1745 BBC: Sports Roundup
1800 BBC: Newsdesk
1800 KNLS: American Magazine
1802 RJL: Koran
1803 RJL: Headlines
1808 RJL: Victims of Capitalism
1815 KNLS: Bible Reading
1818 RJL: U.S. Terrorism around the World
1829 RJL: Weekend Melody
1830 BBC: Composer of the Month [ex 17th: Play of the Week]
1830 KNLS: Swingin' Years
1835 RF: Compass North
1847 RJL: News
1900 BBC: News Summary [ex 17th]
1901 BBC: Play of the Week
2000 BBC: World News
2009 BBC: From Our Own Correspondent - **** (see Sun 0315)
2025 BBC: Words of Faith (religion)
2030 BBC: Meridian (arts feature)
2100 BBC: News Summary
2101 BBC: Sports Roundup
2105 RF: Compass North
2115 BBC: Classical Record Review
2130 BBC: Reith Lectures [ex 23rd, 30th: Alpine Winter]
2200 BBC: Newshour
2300 BBC: World News
2309 BBC: Book Choice
2315 BBC: A Jolly Good Show (rock music) [ex 24th: A Radio Christmas Card, 31st: The Year is Going]

frequency SECTION

MT Monitoring Team

EAST COAST:

Greg Jordan, Frequency Manager

1855-I Franciscan Terrace
Winston-Salem, NC 27127

Joe Hanlon, PA

WEST COAST:

Bill Brinkley, CA

Dave Kammler, CA

0000 UTC [7:00 PM EST/4:00 PM PST]

0000-0015		Voice of Kampuchea, Phnom-Penh	9693	11938		
0000-0030		BBC, London, England	5975	6005	6175	7325
			9515	9580	9590	9915
			11955	12095	15260	17875
0000-0030		Kol Israel, Jerusalem	7460	9435	9855	
0000-0030		Radio Canada Int'l, Montreal	9755	11730		
0000-0030		Radio Korea, Seoul, South Korea	15575			
0000-0030	M	Radio Norway Int'l, Oslo	9620	11850		
0000-0030		Radio Sofia, Bulgaria	9700	11950		
0000-0045		WINB, Red Lion, Pennsylvania	15145			
0000-0050		Radio Pyongyang, North Korea	15115	15160		
0000-0055		Radio Beijing, PR China	9665	9770	11715	
0000-0100		All India Radio, New Delhi	6055	7215	9535	9910
			11715	11745	15110	
0000-0100		CBC Northern Quebec Service	6195	9625		
0000-0100		CBN, St. John's, Newfoundland	6160			
0000-0100		CBU, Vancouver, British 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
			15395	17750	17795	
0000-0100		Radio Baghdad, Iraq	9515	11810		
0000-0100		Radio Havana Cuba	9655			
0000-0100		Radio Luxembourg	6090			
0000-0100		Radio Moscow	7370	9790	9840	12045
			15170	15295	17570	17655
			17675	17850	17860	17880
			21790			
0000-0100		Radio Moscow N. America Service	6000	6170	7115	7165
			7195	9530	9720	9765
			9890	12050	13605	15245
			15405	15420	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 Foreign Radio, Madrid	9630	11880		
0000-0100	T-S	Superpower KUSW, Utah	15580			
0000-0100		Voice of America, Washington	5995	6130	7170	7200
			7280	9455	9775	9815
			11580	11695	11740	15205
			17735	17820		
0000-0100	T-A	Voice of Nicaragua, Managua	6100			
0000-0100		WCSN, Boston, Massachusetts	9850			
0000-0100		WHRI, Noblesville, Indiana	7365	9495		
0000-0100		WRNO, New Orleans, Louisiana	7355			
0000-0100		WSHB, Cyprus Creek, S. Carolina	11980			
0000-0100		WYFR, Oakland, California	5950	9505		
0030-0045		BBC, London, England*	6195	7235	9570	11820
			15435			
0030-0055	M-A	BRT, Brussels, Belgium	9675	9925		
0030-0100		BBC, London, England	5975	6005	6175	7325
			9515	9580	9915	9590
			12095	15260	17710	
0030-0100		HCJB, Quito, Ecuador	9720	11775	11910	15155
0030-0100		Radio Austria Int'l, Vienna	9875			
0030-0100	T-S	Radio Budapest, Hungary	6110	9520	9585	9835
			11910	15160		
0030-0100		Radio Canada Int'l, Montreal	5960	9755		
0030-0100		Radio Kiev, Ukrainian SSR	7205	7400	9640	9800
			13645	15180	15455	
0030-0100		SLBC, Colombo, Sri Lanka	6005	9720		

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!

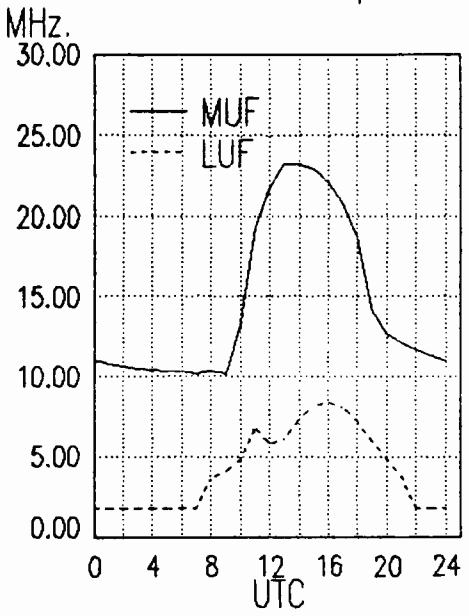
frequency SECTION

0035-0040		All India Radio, New Delhi	3925	4860			
0045-0100		Radio Berlin Int'l, E. Germany	6080	9730			
0045-0100	A	Radio New Zealand, Wellington	15150	17705			
0048-0100		WINB, Red Lion, Pennsylvania	15145				
0050-0100		Vatican Radio, Vatican City	6150	9605	11780		

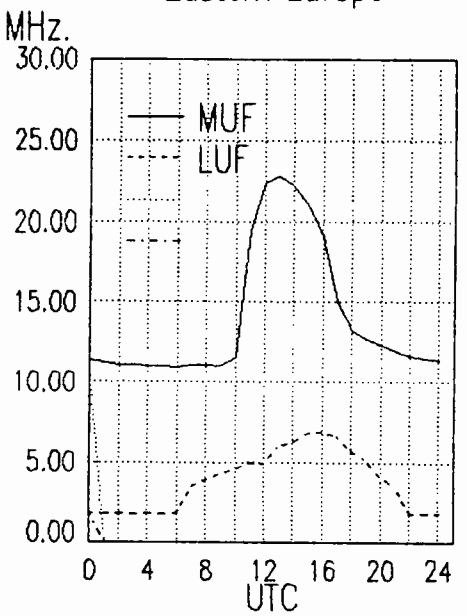
0100 UTC [8:00 PM EST/5:00 PM PST]

0100-0103	S	Port Moresby, Papua New Guinea	3295	4890	5960	5985	
			6020	6040	6080	6140	
			9520				
0100-0110		Vatican Radio, Vatican City	6150	9605	11780		
0100-0115		All India Radio, New Delhi	6055	7215	9535	9910	
			11715	11745	15110		
0100-0120		RAI, Rome, Italy	9575	11800			
0100-0130		Kol Israel, Jerusalem	7460	9435	9855		
0100-0130		Radio Berlin Int'l, East Germany	6080	9730			
0100-0130		Radio Canada Int'l, Montreal	5960	9755			
0100-0130		Radio Japan, Tokyo	15280	17810	17835	17845	
0100-0130		Laotian National Radio	7113v				
0100-0130	S,M	WINB, Red Lion, Pennsylvania	15145				
0100-0145		Radio Yugoslavia, Belgrade	5980	9620	9660		
0100-0150		Deutsche Welle, West Germany	6040	6085	6145	9565	
			9735	11865			
0100-0150		Radio Baghdad, Iraq	9515	11810			
0100-0155	S	Radio Austria Int'l, Vienna	9875				
0100-0200		BBC, London, England	5975	6005	6175	7325	
			9410	9515	9590	9915	
			12095	15260			
0100-0200		CBC Northern Quebec Service	6195	9625			
0100-0200		CBN, St. John's, Newfoundland	6160				
0100-0200		CBU, Vancouver, British 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	11775	11910	15155	
0100-0200	T-A	KVOH, Rancho Simi, California	13695				
0100-0200		KYOI, Saipan	15405				
0100-0200		Radio Australia, Melbourne	15160	15180	15240	15320	
			15395	17715	17795		
			17750	21740			
0100-0200		Radio Havana Cuba	9655				
0100-0200		Radio Japan, Tokyo	11815	17810			
0100-0200		Radio Luxembourg	6090				
0100-0200		Radio Moscow	11845	17570	17675	17850	
			17860	17880			
0100-0200		Radio Moscow, N. American Service	6000	6170	7115	7165	
			7195	9720	9765	9890	
			12050	13605	15245	15405	
			15425	17700			
0100-0200		Radio New Zealand, Wellington	15150	17705			
0100-0200		Radio for Peace, Costa Rica	13660				
0100-0200		Radio Prague, Czechoslovakia	5930	6055	7345	9540	
			9630	9740	11990		
0100-0200		Radio Thailand, Bangkok	9655	11905			
0100-0200		SBC Radio One, Singapore	5010	5052	11940		
0100-0200		SLBC, Colombo, Sri Lanka	6005	9720	15425		
0100-0200		Spanish Foreign Radio, Madrid	9630	11880			
0100-0200	T-S	Superpower KUSW, Utah	11695				
0100-0200		Voice of America, Washington	5995	6130	7205	9455	
			9740	9775	9815	11580	
			11740	15205			
0100-0200		Voice of Indonesia, Jakarta	9680	11790			
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				
100-0200		WYFR, Oakland, California	5950	9505	15440		
0130-0140	T-S	Voice of Greece, Athens	7430	9420	11645		
0130-0200		Radio Budapest, Hungary	6110	9520	9835	11910	
			15160				
0130-0200	S,M	Radio Canada Int'l, Montreal	5960	9755			
0130-0200		Radio Veritas Asia, Philippines	15330	15365			
0130-0200		WINB, Red Lion, Pennsylvania	15145				

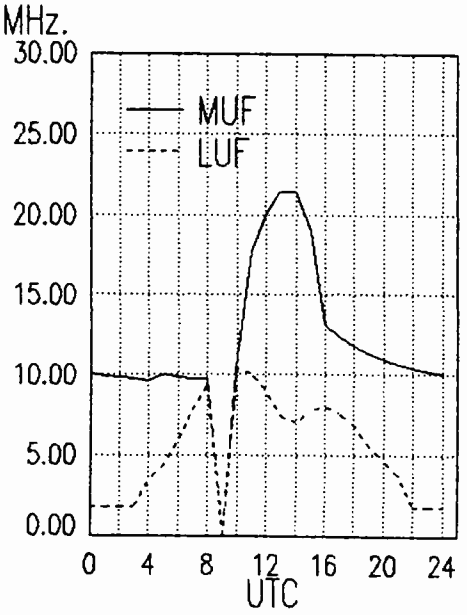
East Coast To
Western Europe



East Coast To
Eastern Europe



East Coast To
Middle East

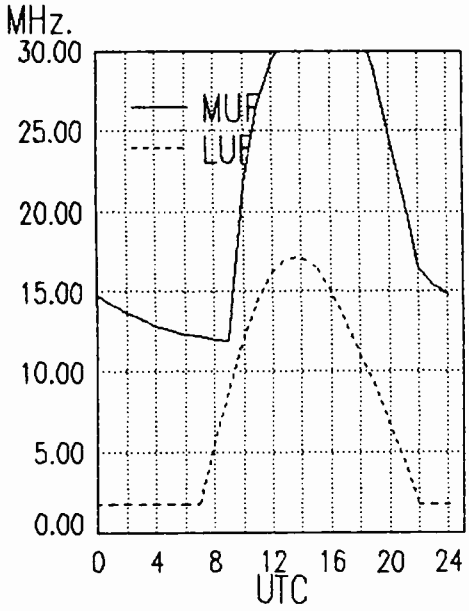


frequency SECTION

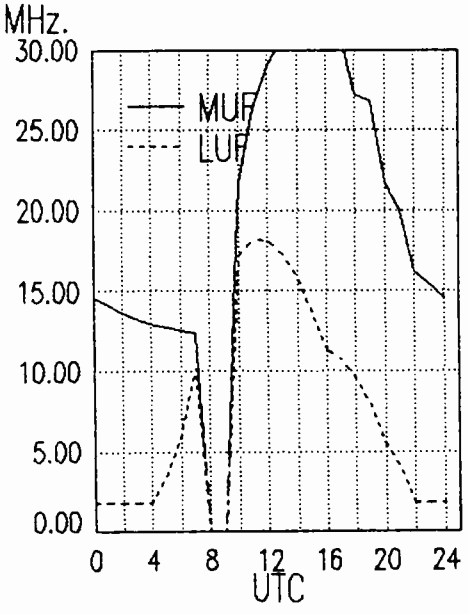
0200 UTC [9:00 PM EST/6:00 PM PST]

0200-0215		Vatican Radio, Vatican City	6145	7125	9650	
0200-0225		Kol Israel, Jerusalem	7460	9435	9855	
0200-0230		BBC, London, England	5975	6005	6175	7325
			9410	9515	9590	9915
			12095	15260		
0200-0230		Burma Bcasting Service, Rangoon	7185			
0200-0230	W,A	Radio Budapest, Hungary	6110	9520	9585	9835
			11910	15160		
0200-0230		Swiss Radio Int'l, Berne	6135	9725	9885	12035
			17730			
0200-0230		WINB, Red Lion, Pennsylvania	15145			
0200-0245		Radio Berlin Int'l, E. Germany	6080	9730		
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		
0200-0255		RAE, Buenos Aires, Argentina	9690	11710		
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		KSDA, Guam	17865			
0200-0300	T-A	KVOH, Rancho Simi, California	13695			
0200-0300		KYOI, Saipan	17780			
0200-0300		Radio Australia, Melbourne	15320	17715	17795	
0200-0300		Radio Cairo, Egypt	9475	9675		
0200-0300	S,M	Radio Canada Int'l, Montreal	9755	11845	11940	
0200-0300		Radio Havana Cuba	6140	9655		
0200-0300		Radio Japan, Tokyo	5960			
0200-0300		Radio Luxembourg	6090			

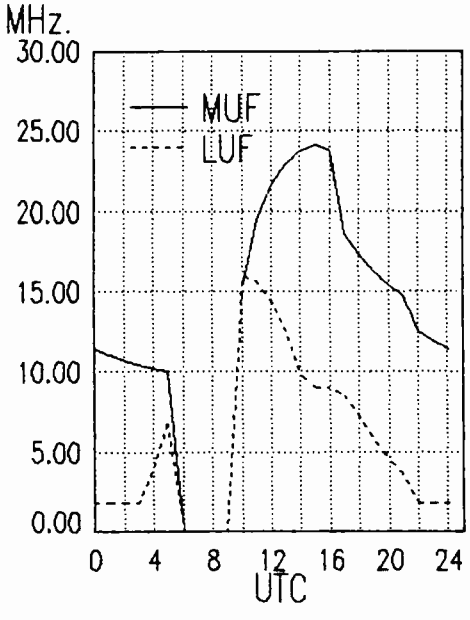
East Coast To Western Africa



East Coast To Central Africa



East Coast To East Africa



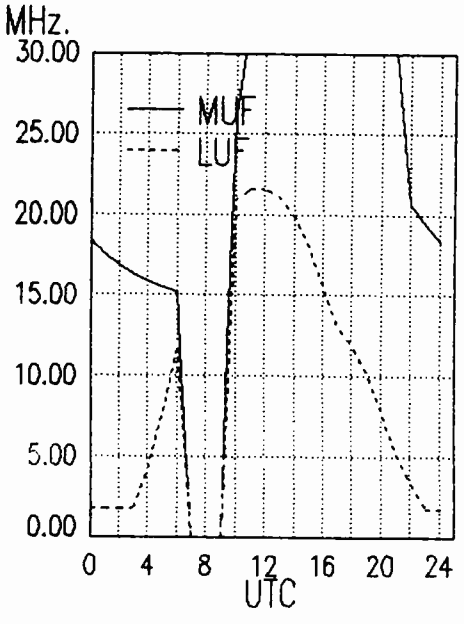
frequency SECTION

0200-0300		Radio Moscow, USSR	6000	6170	7115	7165
			7195	9765	9890	12050
			13605	15405	15245	15425
			15425	17700		
0200-0300		Radio Moscow World Service	11845	12010	17675	17850
			17570	17860	17880	
0200-0300		Radio Orion, South Africa	3955			
0200-0300		Radio for Peace, Costa Rica	13660			
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		Voice of America, Washington	5995	6130	7205	9740
			9775	11580	15205	
0200-0300		Voice of Asia, Taiwan	7285			
0200-0300		Voice of Free China, Taiwan	5985	9680	11740	
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	7405	9495		
0200-0300		WRNO, New Orleans, Louisiana	7355			
0200-0300		WSHB, Cyprus Creek, S. Carolina	9745			
0200-0300		WYFR, Oakland, California	15440			
0200-0300	T-S	WYFR Satellite Net, California	5950	9505		
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	TWFS	Radio Budapest, Hungary	6110	9520	9835	11910
			15160			
0230-0245		Radio Pakistan, Islamabad	7010	11570	15115	15580
			17660			
0230-0300		BBC, London, England	5975	6005	6175	7325
			9410	9515	9915	12095
			15260	15420		
0230-0300		Radio Netherland, Hilversum	6020	6165	9590	9895
0230-0300	T-A	Radio Portugal, Lisbon	6060	9600	9635	9680
			9705	11840		
0230-0300		Radio Sweden, Stockholm	9695	11705	17840	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 Berlin Int'l, E. Germany	6080	9620	9730	11785
0245-0300		Radio Korea, Seoul, South Korea	7275	15375		

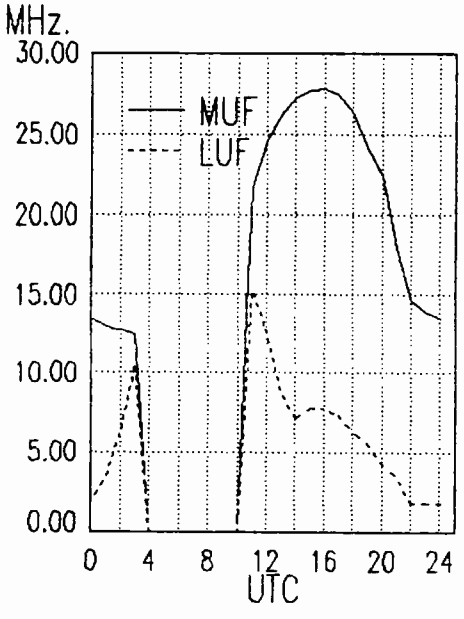
0300 UTC [10:00 PM EST/7:00 PM PST]

0300-0330		Radio Berlin Int'l, E. Germany	6080	9620	9730	11785
0300-0330		Radio Kiev, Ukrainian SSR	7150	7205	7400	13645
			15180	15455		
0300-0330		WINB, Red Lion, Pennsylvania	15145			
0300-0307		Radio Pakistan, Islamabad	5090	5930	7095	
0300-0310		CBC Northern Quebec Service	6195	9625		
0300-0325		Radio Netherland, Hilversum	6020	6165	9590	9895
0300-0330		BBC, London, England	3955	5975	6005	6155
			6175	6195	7210	7325
			9410	9515	9915	12095
			15260	17815		
0300-0330		Radio Cairo, Egypt	9475	9675		
0300-0330		Radio Japan, Tokyo	11870	15195	17810	17825
			21610			
0300-0345	A	Radio New Zealand, Wellington	15150	17705		
0300-0350		Deutsche Welle, West Germany	6010	6085	6130	9545
			9605	9700		
0300-0355		Radio Beijing, PR China	9770	11715	11860	15180
			15290	15455		
0300-0356		Radio RSA, South Africa	9580	9615	11760	
0300-0400		CBN, St. John's, Newfoundland	6160			
0300-0400		CBU, Vancouver, British Colombia	6160			
0300-0400		CFCF, Montreal, Quebec	6005			
0300-0400		CFCN, Calgary, Alberta	6030			
0300-0400		CHNS, Halifax, Nova Scotia	6130			
0300-0400		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			

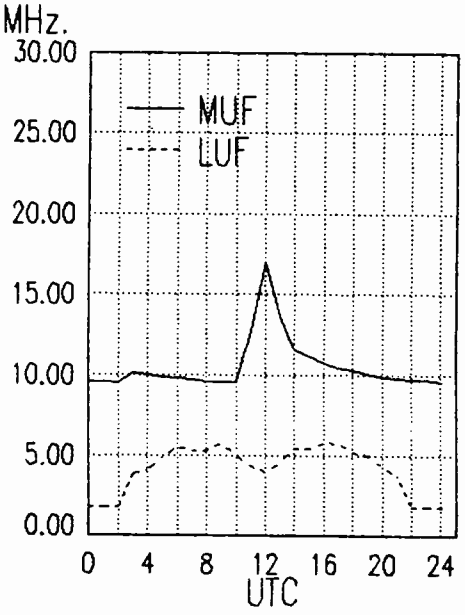
East Coast To South Africa



East Coast To Indian Ocean



East Coast To Central Asia



Did We Miss Something?

Find a frequency we've missed? A new broadcast? Let us know! Write to frequency manager Greg Jordan at 1855-I Franciscan Terrace, Winston-Salem, NC 27127.

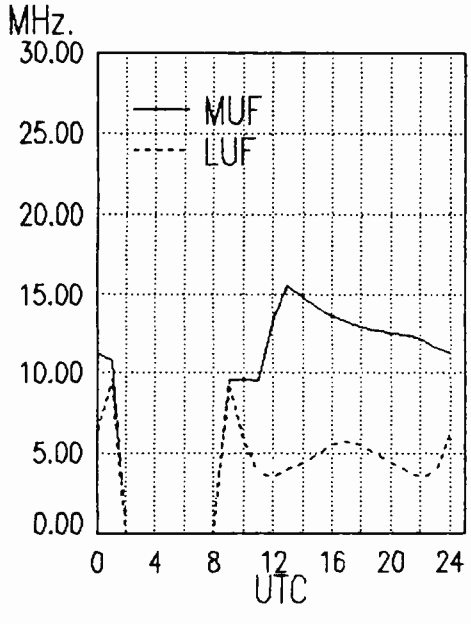
frequency SECTION

0300-0400		La Voz Evangelica, Honduras	4820			
0300-0400		Radio Australia, Melbourne	11945	15160	15240	15320
			15395	17715	17795	
0300-0400	T-A	Radio Canada Int'l, Montreal	9755	11845	11940	
0300-0400		Radio for Peace, Costa Rica	13660			
0300-0400		Radio Havana Cuba	9655	6140	9770	
0300-0400		Radio Moscow, USSR	6000	6170	7115	7165
			7195	7290	9600	9700
			9890	13605	15405	15425
			17700			
0300-0400		Radio Moscow World Service, USSR	11845	17570	17675	17850
			17860	17880		
0300-0400	T-S	Superpower KUSW, Utah	11695			
0300-0400		WHRI, Noblesville, Indiana	7405	9495		
0300-0400		WRNO, New Orleans, Louisiana	7355			
0300-0400		WSHB, Cyprus Creek, N. Carolina	9745			
0300-0400		WYFR, Oakland, California	15440			
0300-0400		WYFR Satellite Net, California	5950	9505		
0300-0400		Radio Prague, Czechoslovakia	5930	6055	7345	9540
			9630	9740	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		Trans World Radio, Bonaire	9535			
0300-0400		Voice of America, Washington	6035	7200	7280	9525
			9550	11835		
0300-0400		Voice of Free China, Taiwan	5985	9680	11740	15345
0300-0400		Voice of Kenya, Nairobi	6045			
0300-0400		Voice of Nicaragua, Managua	6100			
0300-0400		WCSN, Boston, Massachusetts	9850			
0300-0400		WSHB, Cyprus Creek, N. Carolina	9745			
0310-0330		Vatican Radio, Vatican City	6150			
0313-0400		Radio France Int'l, Paris	3965	7135	7175	
			9550	9790	9800	11670
			11700	11995		
0330-0340	S-F	Port Moresby, Papua New Guinea	3925	4890	5960	5985
			6020	6040	6080	6140
			9520			
0330-0400		BBC, London, England	3955	5975	6005	6155
			6175	6195	9410	9915
			12095	17815		
0330-0400		Radio Berlin Int'l, E. Germany	6125	6165	11750	
0330-0400		Radio Finland, Helsinki	9635	11755		
0330-0400	S,M	WINB, Red Lion, Pennsylvania	15145			
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	11940	15435	17890	21700
0335-0340		All India Radio, New Delhi	3905	4860	9610	11830
			11870	11890	15305	
0340-0350	M-A	Voice of Greece, Athens	7430	9395	9420	
0350-0400		RAI, Rome, Italy	9710	11905	15330	17795
0355-0400		Radio Yerevan, Armenian SSR	13645	15180	15455	

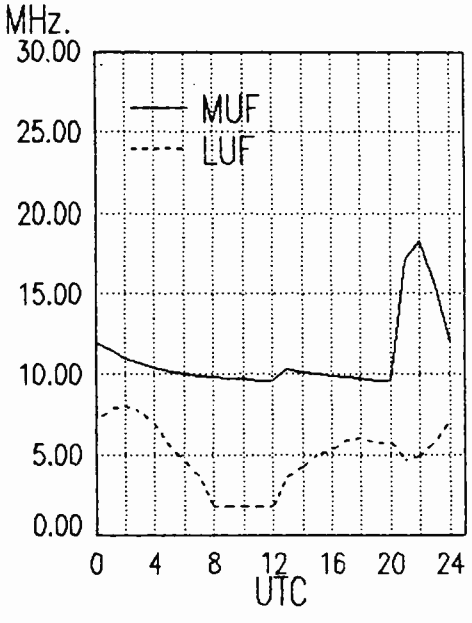
0400 UTC [11:00 PM EST/8:00 PM PST]

0400-0405		Radio Uganda, Kampala	4976	5026		
0400-0410		Radio Thailand, Bangkok	9655	11905		
0400-0410		RAI, Rome, Italy	9710	11905	15330	17795
0400-0415		Radio Berlin Int'l, E. Germany	6125	6165	11750	
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	7210	9850		
0400-0430		BBC, London, England	3955	5975	6005	6155
			6275	6195	7120	7160
			7185	7260	9410	9580
			9600	9915	12095	15070
			15420	17815		
0400-0430		La Voz Evangelica, Honduras	4820			
0400-0430	S,M	Radio Austria Int'l, Vienna	6015	6155	15450	
0400-0430	M	Radio Norway Int'l, Oslo	9650	11760		
0400-0430		SLBC, Colombo, Sri Lanka	6005	9720	15425	
0400-0430		Radio Tanzania, Dar es Salaam	9684			
0400-0430		Swiss Radio Int'l, Berne	6135	9725	9885	12035
0400-0430		Trans World Radio, Bonaire	9535			
0400-0430	S,M	WINB, Red Lion, Pennsylvania	15145			
0400-0445		Radio Berlin Int'l, E. Germany	9620	11785		
0400-0450		Deutsche Welle, West Germany	7150	7225	9565	9765

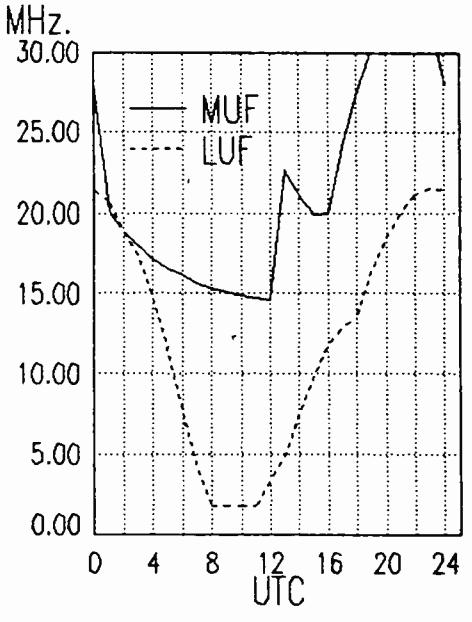
East Coast To
Southeast Asia



East Coast To
Far East



East Coast To
Pacific



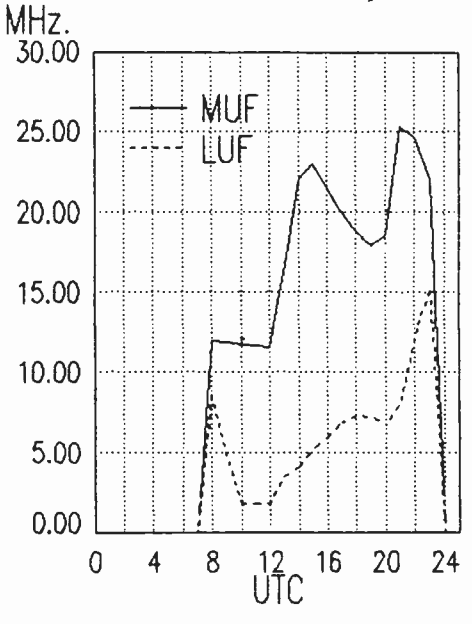
frequency SECTION

		11765				
0400-0450	Radio Pyongyang, North Korea	15160	15180			
0400-0450	Voice of Turkey, Ankara	9445	17760			
0400-0455	Radio Beijing, PR China	9645	11980			
0400-0455	RAE, Buenos Aires, Argentina	9690	11710			
0400-0500	CBC Northern Quebec Service	6195	9625			
0400-0500	CBN, St. John's, Newfoundland	6160				
0400-0500	CBU, Vancouver, British 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	KVOH, Rancho Simi, California	11960				
0400-0500	KYOI, Saipan	17780				
0400-0500	Radio Australia, Melbourne	11910	11945	15160	15240	
		15320	17715	17795		
0400-0500	Radio for Peace, Costa Rica	13660				
0400-0500	Radio Havana Cuba	5965	6035	6140	9655	
		9770				
0400-0500	Radio Moscow, USSR	6175	7130	7215	7290	
		7310	7370	9765	9880	
		9885	11710	15170	15260	
		15420	15460	15480	17560	
		17570	17590	17600	17655	
		17775	17765	17825	21565	
		21690	21790			
0400-0500	Radio New Zealand, Wellington	15150	17705			
0400-0500	Radio Sofia, Bulgaria	7115				
0400-0500	SBC Radio One, Singapore	5010	5052	11940		
0400-0500 T-S	Superpower KUSW, Utah	11695				
0400-0500	Voice of America, Washington	3980	5995	6035	7170	
		7200	7280	9525	9575	
		11835	11925	15205		
0400-0500	Voice of Free China, Taiwan	5985	9680	11740		
0400-0500	Voice of Kenya, Nairobi	6045				
0400-0500	WCSN, Boston, Massachusetts	9870				
0400-0500	WHRI, Noblesville, Indiana	7405	9495			
0400-0500	WRNO, New Orleans, Louisiana	6185				
0400-0500	WSHB, Cyprus Creek, S. Carolina	9455				
0400-0500	WYFR Satellite Net, California	5950	9505			
0425-0440	RAI, Rome, Italy	5980	7275	15330		
0430-0455	Radio Austria Int'l, Vienna	6015	6155	9875	15410	
0430-0500	BBC, London, England	3955	5975	6005	6015	
		6155	6195	7120	7185	
		9410	9510	9580	11945	
		12095	15070	15420	17815	
0430-0500	BBC, London, England*	7210	9750	11945		
0430-0500	Radio Tirana, Albania	9480	11835			
0430-0500 S,M	Trans World Radio, Bonaire	9535				
0430-0500	Trans World Radio, Swaziland	3205	7205			
0432-0500 A,M	FEBA, Seychelles	15325	17820	(irr)		
0445-0500	Radio Berlin Int'l, East Germany	9620	11785			

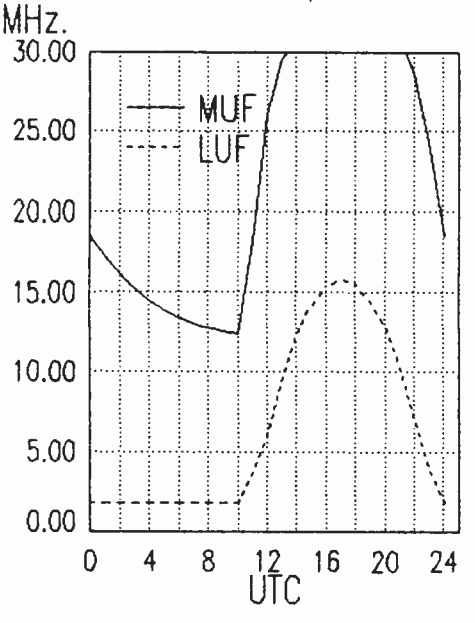
0500 UTC [12:00 AM EST/9:00 PM PST]

0500-0510	Radio Lesotho, Maseru	4800				
0500-0510 M-A	Radio Zambia, Lusaka	3345	6165			
0500-0515	GBC, Accra, Ghana	4915				
0500-0515	Kol Israel, Jerusalem	9435	11590			
0500-0515	Vatican Radio, Vatican City	9645	15190			
0500-0530 A	FEBA, Seychelles	15325	17820	(irr)		
0500-0530	Radio Berlin Int'l, East Germany	5965	9620	11785		
0500-0530 M	Radio Norway Int'l, Oslo	11745	15175			
0500-0530 S,M	Trans World Radio, Bonaire	9535				
0500-0530	Trans World Radio, Swaziland	3205	5055	7210		
0500-0550	Deutsche Welle, West Germany	5960	6120	6130	9635	
		9700				
0500-0555	Radio Beijing, China	9690				
0500-0600	BBC, London, England	5975	6175	6195	7105	
		7120	7160	7185	9410	
		9510	9580	9600	12095	
		15070	15420	17120	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				

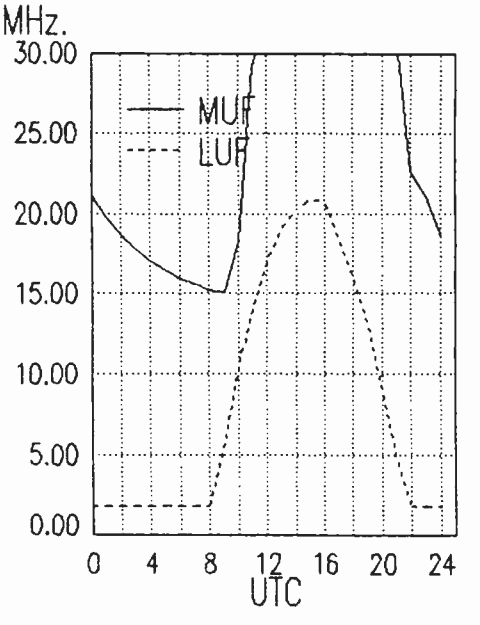
East Coast To
Australia & Malaysia



East Coast To
Central America/Caribbean



East Coast To
South America



Join the Monitoring Team!

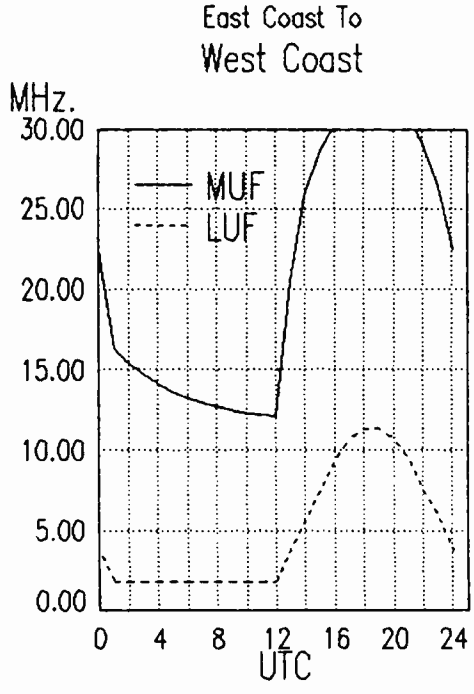
Right now, there are a limited number of monitoring positions available at Monitoring Times. Knowledge of the shortwave bands, adequate time to complete a schedule of monthly monitoring and the ability to meet deadlines are a must. For more information, contact Managing Editor Larry Miller at Box 98, Brasstown, NC 28902.

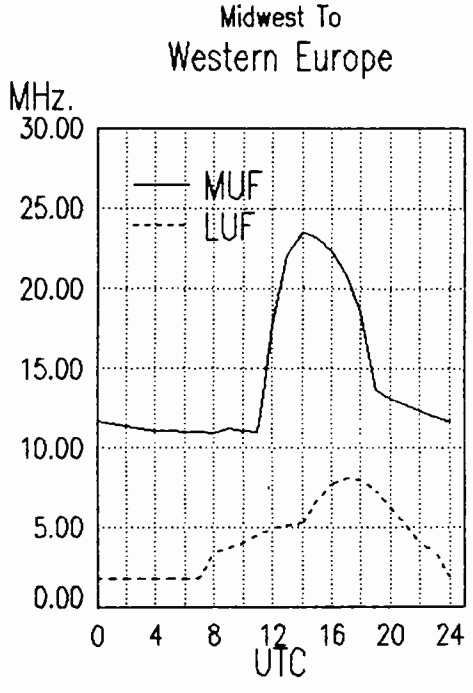
frequency SECTION

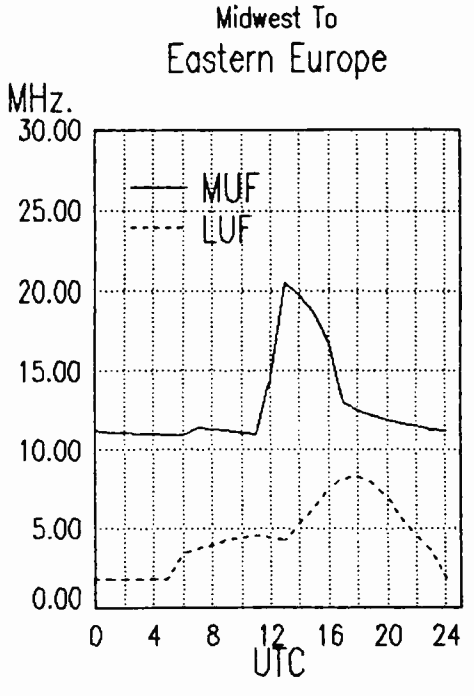
0500-0600		CKWX, Vancouver, British Colombia	6080			
0500-0600		CFRB, Toronto, Ontario	6070			
0500-0600		(US) Far East Network, Tokyo	3910			
0500-0600		FEBC, Manila, Philippines	11850			
0500-0600		HCJB, Quito, Ecuador	6230	9720	11775	
0500-0600		KVOH, Rancho Simi, California	11960			
0500-0600		KYOI, Saipan	17780			
0500-0600		Radio Australia, Melbourne	11910	15160	15240	17795
0500-0600		Radio for Peace, Cost Rica	13660			
0500-0600		Radio Havana Cuba	5965	6035	9655	9770
0500-0600		Radio Japan, Tokyo	11870	17810		
0500-0600		Radio Kuwait	15345			
0500-0600		Radio Moscow, USSR	6175	7130	7215	7310
			9765	11785	12055	15350
			15455	15460	15480	17560
			17570	17590	17635	17655
			17675	17775	17825	21690
			21790			
0500-0600		Radio New Zealand, Wellington	15150	17705		
0500-0600		Radio Thailand, Bangkok	9655	11905		
0500-0600	S	Radio Zambia, Lusaka	11880			
0500-0600		SBC Radio One, Singapore	5010	5052	11940	
0500-0600		Spanish Foreign Radio, Madrid	9630			
0500-0600	S	Superpower KUSW, Utah	6175			
0500-0600	S	Swaziland Commercial Radio	6155	9705		
0500-0600		Voice of America, Washington	3980	5995	6035	7170
			7280	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	7405	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			
0510-0520		Radio Botswana, Gaborone	3356	4820	7255	
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 Finland, Helsinki	6120	9635	11715	15185
0530-0600		Radio Netherland, Hilversum	6165	9715		
0530-0600		Radio Tirana, Albania	7300			
0530-0600		Trans World Radio, Swaziland	5055	7210		
0530-0600		UAE RAdio, United Arab Emirates	15435	17775	21700	
0555-0600		Ghana Broadcasting Corp., Accra	4915			
0555-0600		Voice of Malaysia, Kuala Lumpur	6175	9750	15295	

0600 UTC [1:00 AM EST/10:00 PM PST]

0600-0615		Radio Ghana, Accra	3366	4915		
0600-0615	M-A	Radio Zambia, Lusaka	6165	7235		
0600-0620		Vatican Radio, Vatican City	6185	9645		
0600-0625		Radio Netherlands, Hilversum	6165	9715		
0600-0630	F	FEBA, Mahe, Seychelles	17820			
0600-0630		Laotian National Radio	7113			
0600-0630		Radio Australia, Melbourne	11910	11945	15160	15240
			15315	15395	15425	17715
			17750			
			17795			
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	6115	9645	11810
			13610			
0600-0645	S	Radio Cameroon, Yaounde	4850			
0600-0650		Radio Pyongyang, North Korea	9530	15160	15180	
0600-0700		BBC, London, England	3955	5975	6175	6195
			7105	7150	7185	9410
			9600	9640	12095	15070
			15280			
0600-0700		CBC Northern Quebec Service	6195			
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		Deutsche Welle, West Germany	11765	13790	15185	17875





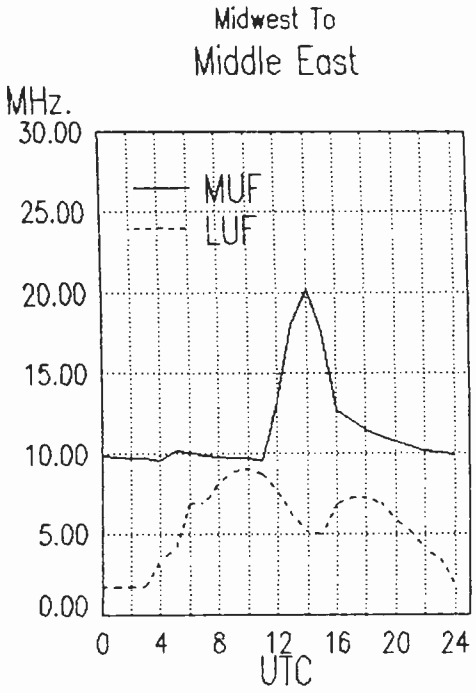


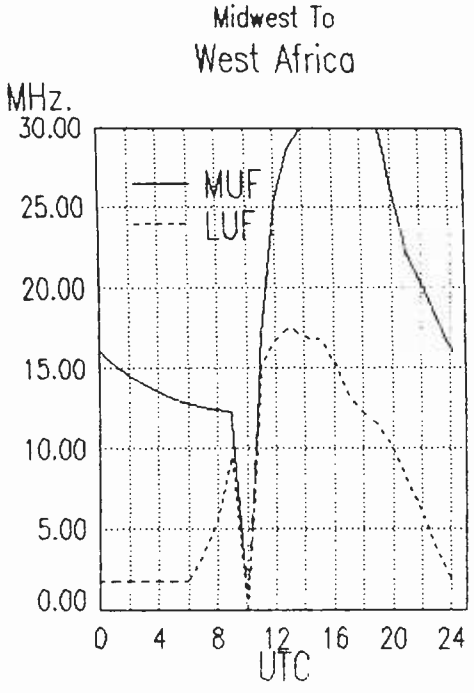
frequency SECTION

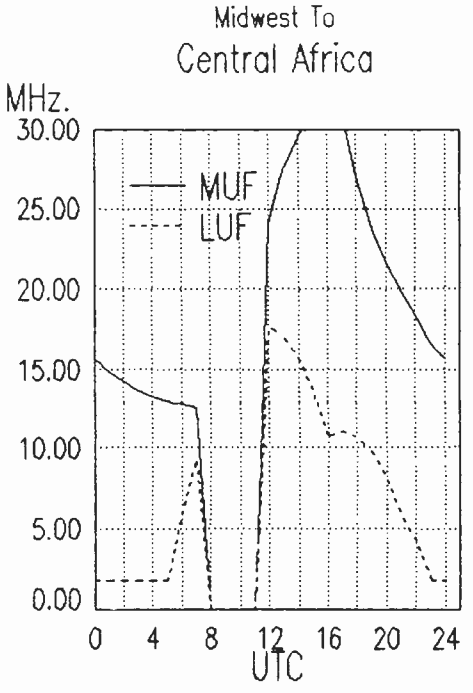
0600-0700		HCJB, Quito, Ecuador	6230	9720	11775	
0600-0700		(US) Far East Network, Tokyo	3910			
0600-0700		King of Hope, South Lebanon	6215			
0600-0700		KVOH, Rancho Simi, California	11960			
0600-0700		KYOI, Saipan	17780			
0600-0700		Radio Havana Cuba	11760			
0600-0700		Radio Korea, Seoul, South Korea	6060	7275	9570	
0600-0700		Radio Kuwait	15345			
0600-0700		Radio Moscow, USSR	7130	7195	7225	7310
			7370	9450	11785	12010
			12055	13650	15350	15420
			15455	15460	15465	15470
			15480	17560	17570	17590
			17600	17625	17635	17655
			17675	17735	17775	17825
			17880	21680	21690	21790
0600-0700		Radio New Zealand, Wellington	12045	17705		
0600-0700	A,S	Radio Thailand, Bangkok	9655	11905		
0600-0700	S	Radio Zambia, Lusaka	11880			
0600-0700		SBC Radio One, Singapore	5010	5052	11940	
0600-0700	S	Superpower KUSW, Utah	6175			
0600-0700		Voice of America, Washington	3980	5995	6035	6080
			6095	6125	7170	7200
			7280	7325	9530	9540
			9550	11915	11925	
0600-0700		Voice of Asia, Taiwan	7285			
0600-0700		Voice of Malaysia, Kuala Lumpur	6175	9750	15295	
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	9520		
0615-0630	M-F	Radio Canada Int'l, Montreal	15245			
0615-0630	M-A	Vatican Radio, Vatican City	15190	17730		
0615-0700		Radio Berlin Iny'l, E. Germany	15240	17775		
0625-0700		Trans World Radio Monte Carlo	7105			
0630-0700		AWR, Forli, Italy	7125			
0630-0700	A	CPBS-1, China*	11330	15550	15590	17605
0630-0655		Radio Netherland, Hilversum	9895	11930		
0630-0700		Radio Australia, Melbourne	11945	15160	15240	15315
			15395	15425	17715	17750
			17795			
0630-0700		Radio Bucharest, Romania	21600			
0630-0700		Radio Polonia, Warsaw, Poland	6135	7270	15120	
0630-0700		Radio Tirana, Albania	7205	9500		
0630-0700		Swiss Radio Int'l, Berne	3985	6165	9535	12030
			15430	17570		
0630-0700		Trans World Radio, Swaziland	5055	6070	7210	9725
0630-0700	A,S	Voice of Kenya, Nairobi	7270			
0645-0700		BBC, London, England*	6150	7260	11945	
0645-0700		Radio Berlin Int'l, East Germany	15240	17880	21540	21645
0645-0700	M-F	Radio Canada Intl, Montreal	15245			
0645-0700		Radio Ghana, Accra	6130			
			11705	11800		
0645-0700		Radio Bucharest, Romania	11940	15250	15335	17790
			17805	21665		

0700 UTC [2:00 AM EST/11:00 PM PST]

0700-0703		Port Moresby, Papua New Guinea	3925	4890	5960	5985
			6020	6040	6080	6140
			9520			
0700-0710		Radio Bucharest, Romania	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	7150
			9410	9600	9640	11825
			11860	12095	15070	15105
			15400			
0700-0730		Burma Bcasting Service, Rangoon	9730			
0700-0730		Radio Australia, Melbourne	5995	9655	15160	15240
			15395	17715	17750	
0700-0730		Radio Berlin Int'l, East Germany	15240	17880	21540	21645
0700-0730		Radio Bucharest, Romania	21600			
0700-0730		Radio New Zealand, Wellington	12045	15150		
0700-0730	S	Radio Zambia, Lusaka	11880			
0700-0745		Radio Berlin Int'l, East Germany	5965	11810		
0700-0750		Radio Pyongyang, North Korea	15340	17795		
0700-0800		ABC, Perth, Australia	15425			





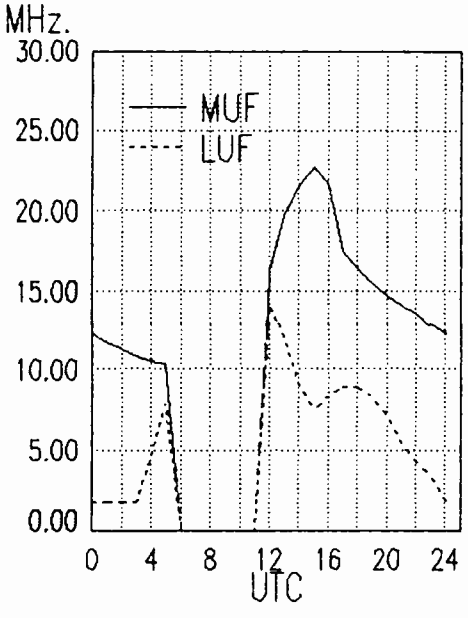


0700-0800		AWR, Forli, Italy	7257			
0700-0800		CBU, Vancouver, British Colombia	6160			
0700-0800		CFCF, Montreal, Quebec	6005			
0700-0800		CFCN, Calgary, Alberta	6030			
0700-0800		CHNS, Halifax, Nova Scotia	6130			
0700-0800		CKWX, Vancouver, British Columbia	6080			
0700-0800		CFRB, Toronto, Ontario	6070			
0700-0800		ELWA, Monrovia, Liberia	11830			
0700-0800		(US) Far East Network, Tokyo	3910			
0700-0800		HCJB, Quito, Ecuador	6130	9610	9745	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 Japan, Tokyo	5990	15195	15270	15325
			17810	21695		
0700-0800		Radio Korea, Seoul, South Korea	6060	7275	9570	
0700-0800		Radio Kuwait	15345			
0700-0800		Radio Moscow, USSR	11770	12030	12060	12065
			13710	15135	15150	15170
			15260	15420	15520	17600
			17635	17675	17765	17775
			17810	17880		
0700-0800	A,S	Radio Thailand, Bangkok	9655	11905		
0700-0800		SBC-1, Singapore	11940			
0700-0800		Soloman Islands Broadcasting Corp	9545			
0700-0800	S	Superpower KUSW, Utah	6155			
0700-0800		Trans World Radio, Monte Carlo	7105			
0700-0800		Trans World Radio, Swaziland	6070	9725		
0700-0800	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, Pennsylvania	9455			
0700-0800		WSHB, Cyprus Creek, S. Carolina	9455			
0700-0800		WYFR, Oakland, California	6065	7355	9680	
0700-0800		WYFR Satellite Network	5950			
0715-0730		Radio Korea, Seoul, South Korea	13670	15575		
0715-0730	M-A	Vatican Radio, Vatican City	11725	15190		
0715-0735	S	FEBA, Mahe, Seychelles	15115	17785		
0720-0730	M-A	Vatican Radio, Vatican City	6248	9645	11740	
0730-0800		ABC, Alice Springs, Australia	2310	[ML]		
0730-0800		ABC, Katherine, Australia	2485			
0730-0800		ABC, Tennant Creek, Australia	2325	[ML]		
0730-0800		Radio Australia, Melbourne	5955	9655	11720	15240
0730-0800		Radio Finland, Helsinki	6120	9560	11755	15270
0730-0735		All India Radio, New Delhi	5990	6010	6020	7110
			7205	9610	9675	11850
			11935	15235	15250	17705
0730-0745		BBC, London, England*	3975	6010	7230	9915
0730-0800		BBC, London, England	3955	5975	7150	9410
			9600	9640	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		
0745-0800		Radio Prague, Czechoslovakia	6055	7345	9505	

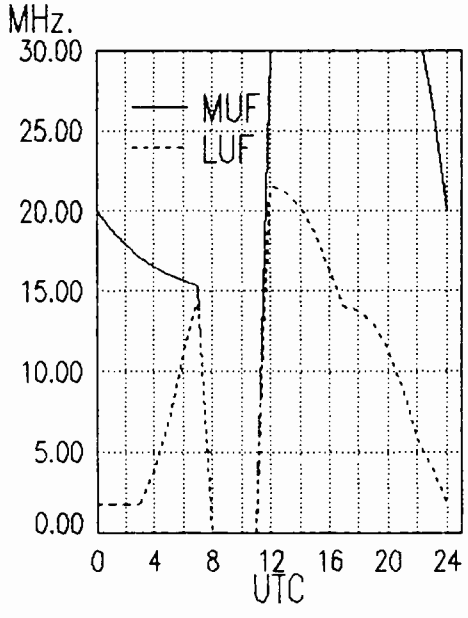
0800 UTC [8:00 AM EST/12:00 AM PST]

0800-0805	M-F	Port Moresby, Papua New Guinea	3925	4890	5960	5985
			6040	6040	6080	6140
			9520			
0800-0805		Soloman Islands Broadcasting Corp	9545			
0800-0815	M-A	Radio Zambia, Lusaka	6165	7235		
0800-0825	M-F	BRT, Brussels, Belgium	11695	21815		
0800-0825		Radio Netherland, Hilversum	9630	9715		
0800-0825		Voice of Malaysia, Kuala Lumpur	6175	9750	15295	
0800-0830		HCJB, Quito, Ecuador	6130	9655	9745	11925
0800-0830	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	9480			
0800-0850		Deutsche Welle, Koln, W. Germany	9770			
0800-0850		Radio Pyongyang, North Korea	9530	11830	15160	15180

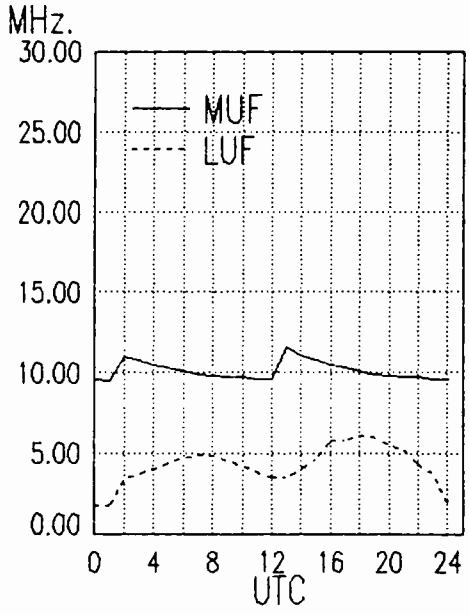
Midwest To
East Africa



Midwest To
South Africa



Midwest To
Central Asia



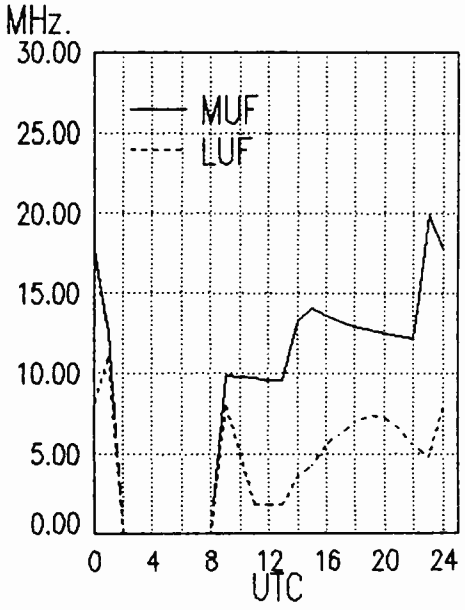
frequency SECTION

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	7150	9600
			11860	12095	15070	15360
			15400			
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		KTWR, Guam	11805			
0800-0900		KYOI, Saipan	11900			
0800-0900		Radio Australia, Melbourne	5995	6080	9580	9655
			9710	11720	15285	15395
0800-0900		Radio Moscow, USSR	7270	7310	11845	12010
			12030	13710	15135	15155
			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 Free China, Taiwan	5985			
0800-0900		Voice of Indonesia, Jakarta	11790	15105		
0800-0900	A,S	Voice of Kenya, Nairobi	7270			
0800-0900		WHRI, Noblesville, Indiana	7355			
0800-0900		WSHB, Cyprus Creek, S. Carolina	9495			
0800-0900		WYFR, Oakland, California	9680	11580		
0800-0900		FR Satellite Network	6065			
0815-0845	M-F	Voice of America, Washington DC	7175	9575	9750	11710
			11915	15600	17715	21500
			[ML]			
0815-0900	A,S	Radio Berlin Int'l, East Germany	6040	7185	9730	21465
			21540			
0830-0840		All India Radio, New Delhi	5960	5990	6010	6020
			6050	6065	6100	6140
			7110	7140	7160	7250
			7280	7295	9610	11850
			15235	15250	17705	
0830-0855		Radio Austria Int'l, Vienna	6155	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	11925	
0830-0900		Radio Beijing, China	9700	11755	15440	
0830-0855		Radio Finland, Helsinki	6120	9560	11755	
0830-0900		Radio Prague, Czechoslovakia	11685	17840	21705	
0830-0900		Radio Sofia, Bulgaria	9700	11720		
0830-0900		Swiss Radio Int'l, Berne	9560	9885	13685	17830
			21695			
0830-0900		Voice of Nigeria, Lagos	15120			
0840-0850	M-A	Voice of Greece, Athens	9855	15630		
0840-0900	S-F	Trans World Radio, Monte Carlo	9480			
0845-0900		Radio Prague, Czechoslovakia	6055	7345	9505	
0850-0900		All India Radio, New Delhi	5960	5990	6010	6020
			6050	6065	6100	6140
			7110	7140	7150	7160
			7250	7280	7295	9610
			11850	15235	15250	17705

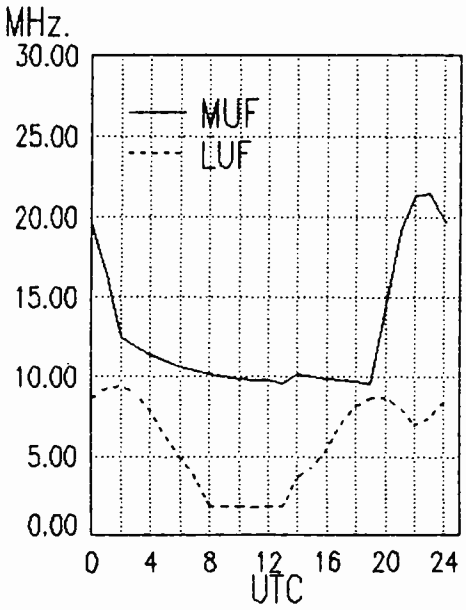
0900 UTC [4:00 AM EST/1:00 AM PST]

0900-0905		Africa No. 1, Gabon	7200	15200		
0900-0910		All India Radio, New Delhi	5960	5990	6010	6020
			6050	6065	6100	6140
			7110	7140	7150	7160
			7250	7280	7295	9610
			11850	15235	15250	17705
0900-0910		Port Moresby, Papua New Guinea	3295	4890	5960	5985
			6020	6040	6080	6140
			9520			
0900-0910	S	Trans World Radio, Monte Carlo	9480			
0900-0910		Voice of Lebanon, Beirut	6548			
0900-0925	M-A	Radio Finland, Helsinki	17795	21550		
0900-0930		FEBC, Manila, Philippines	11850	15350		
0900-0930		Nippon Broadcasting Corp.	3925			
0900-0930		Radio Beijing, China	9700	11755	15440	
0900-0930	A,S	Radio Prague, Czechoslovakia	11685	17840	21705	
0900-0950		Deutsche Welle, West Germany	6160	17765	17780	17875

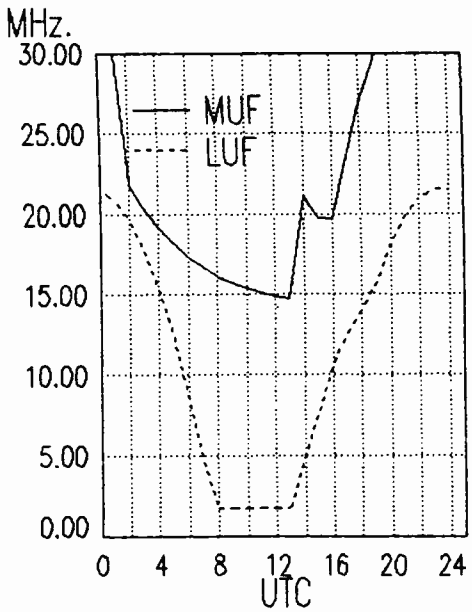
Midwest To
Southeast Asia



Midwest To
Far East



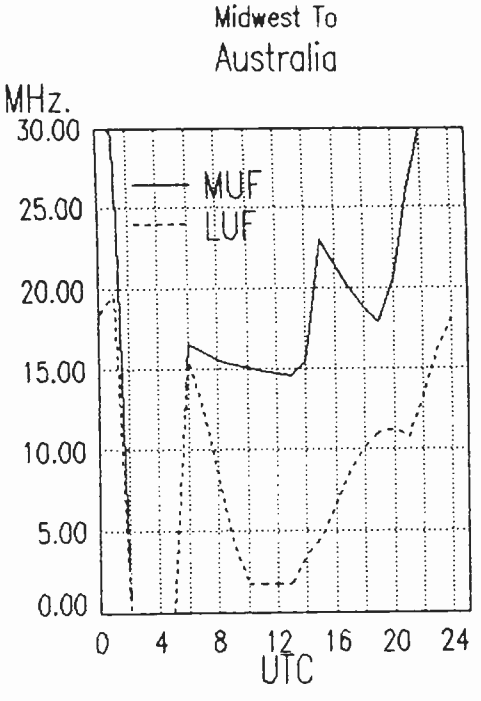
Midwest To
Pacific

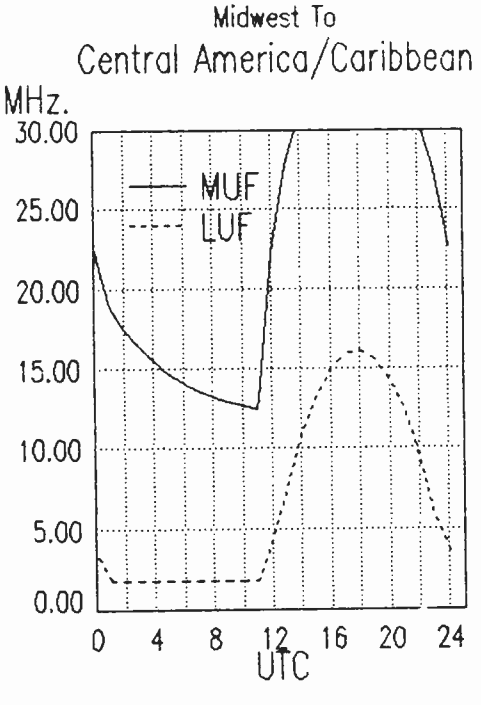


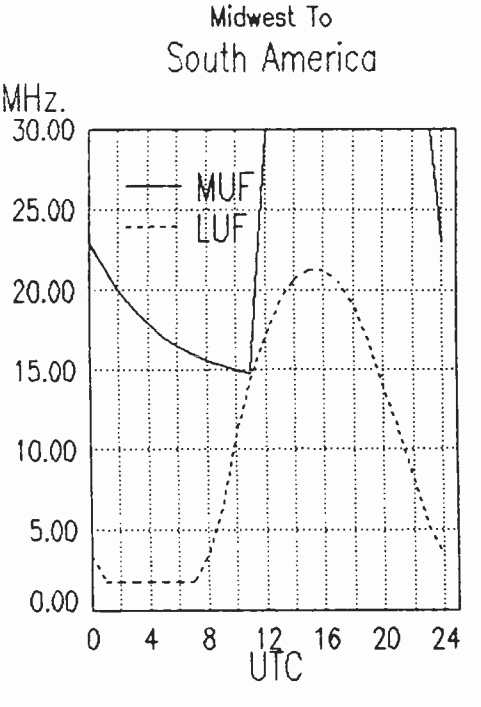
			21500	21600	21680	
0900-1000		ABC, Alice Springs, Australia	2310	[ML]		
0900-1000		ABC, Katherine, Australia	2485			
0900-1000		ABC, Tennant Creek, Australia	2325	[ML]		
0900-1000	S	Adventist World Radio, Portugal	9670			
0900-1000		BBC, London, England	5975	7160	7325	9410
			9750	9760	11750	11860
			11955	12095	15070	15400
			15360	17790	18080	
0900-1000		CFCF, Montreal, Quebec	6005			
0900-1000		CFCN, Calgary, Alberta	6030			
0900-1000		CHNS, Halifax, Nova Scotia	6130			
0900-1000		CKWX, Vancouver, British Colombia	6080			
0900-1000		CFRB, Toronto, Ontario	6070			
0900-1000		(US) Far East Network, Tokyo	3910			
0900-1000		HCJB, Quito, Ecuador	6130	9745	11925	
0900-1000		King of Hope, South Lebanon	6215			
0900-1000		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	15415	
0900-1000		Radio Japan, Tokyo	11840	11885	15270	17810
0900-1000		Radio Korea, Seoul, South Korea	7550	13670		
0900-1000		Radio Moscow, USSR	9580	11845	12030	13680
			13710	15135	15155	15230
			15460	15520	15540	17645
			17680	17765		
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 Kenya, Nairobi	7270			
0900-1000		Voice of Nigeria, Lagos	7255	15120	15185	
0900-1000		WHRI, Noblesville, Indiana	7355			
0900-1000		WYFR, Oakland, California	11580			
0915-0930		Radio Korea, Seoul, South Korea	9570			
0915-0950	M-A	Radio Ulan Bator, Mongolia	9615	12015		
0930-0935		All India Radio, New Delhi	5960	5990	6010	6020
			6050	6065	6100	6140
			7110	7140	7160	7250
			7280	7295	9610	11850
			15235	15250	17705	
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 Finland, Helsinki	11855	15245		
0930-1000		Radio Sweden Int'l, Stockholm	15390			
0945-1000		BBC, London, England*	5995	7180	9725	11955
0945-1000	M-A	Radio Prague, Czechoslovakia	6055	7345	9505	

1000 UTC [5:00 AM EST/2:00 AM PST]

1000-1025		BRT, Brussels, Belgium	17595	21810		
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	15180	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	9840	15010		
1000-1045		Radio Berlin Int'l, East Germany	21465(A,S)	21540		
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	6185	9740	9750	11750
			12095	15070	15400	17705
			17790	18080		
1000-1100		CBN, St. John's, Newfoundland	6160			
1000-1100		CFCF, Montreal, Quebec	6005			
1000-1100		CFCN, Calgary, Alberta	6030			
1000-1100		CHNS, Halifax, Nova Scotia	6130			
1000-1100		CKWX, Vancouver, British Colombia	6080			
1000-1100		CFRB, Toronto, Ontario	6070			
1000-1100		(US) Far East Network, Tokyo	3910			







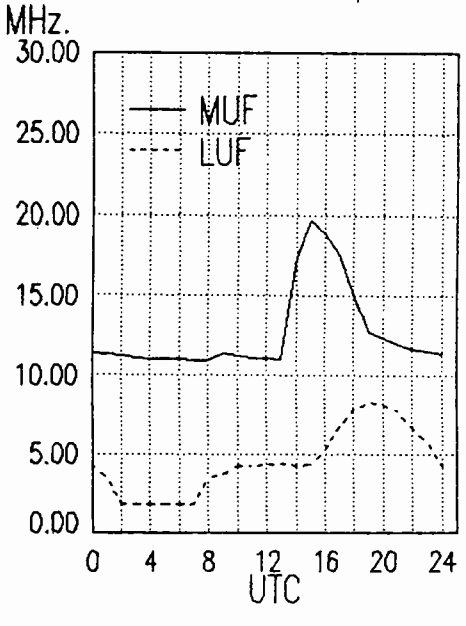
frequency SECTION

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	15150	15225	
			15260	15405	15420	15460	
			15490	15560	15595	17600	
			17745	17765	17810	17890	
			21680	21725	21800		
1000-1100		Radio New Zealand, Wellington	6100	9850			
1000-1100	S	Radio Prague, Czechoslovakia	6055	7345	9505	[ML]	
1000-1100		SBC Radio One, Singapore	5010	5052	11940		
1000-1100	S	Superpower KUSW, Utah	6135				
1000-1100		Voice of America, Washington	6030	5985	6165	9590	
1000-1100		Voice of Kenya, Nairobi	7270				
1000-1100		Voice of Nigeria, Lagos	7255	15120			
1000-1100		WHRI, Noblesville, Indiana	7355				
1000-1100		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				
1030-1100		BBC, London, England*	7180	9660	9725		
1030-1100		HCJB, Quito, Ecuador	6130	11925			
1030-1100		Radio Netherlands, Hilversum	6020	9505			
1030-1100	A,S	Radio Tanzania, Dar es Salaam	7165				
1030-1100		SLBC, Colombo, Sri Lanka	11835	15120	17850	[ML]	
1030-1100		UAE Radio, United Arab Emirates	15435	17865	21605		
1030-1100		Voice of America, Washington*	11965				
1040-1050	H	Radio Free Europe, Munich*	5985	7115	9695	9725	
			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				

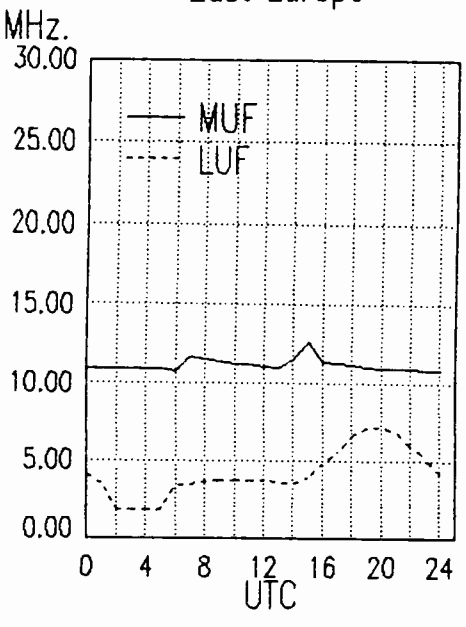
1100 UTC [6:00 AM EST/3:00 AM PST]

1100-1105		Radio Pakistan, Islamabad	6090	7290			
1100-1105	A	Port Moresby, Papua New Guinea	3295	4890	5960	5985	
			6020	6040	6080	6140	
			9520				
1100-1110	S	Port Moresby, Papua New Guinea	3295	4890	5960	5985	
			6020	6040	6080	6140	
			9520				
1100-1115		Radio New Zealand, Wellington	6100	9850			
1100-1120		Radio Pakistan, Islamabad	15606	17760			
1100-1125		Radio Netherland, Hilversum	6020	9505			
1100-1130		BBC, London, England*	7120				
1100-1130		HCJB, Quito, Ecuador	6130	11925			
1100-1130		Kol Israel, Jerusalem	9385	11700	15485	15640	
			15650	17635	17685	21625	
1100-1130		KTWR, Guam*	9820	11665			
1100-1130	S	Radio Austria Int'l, Vienna	13730	15450			
1100-1130		Radio Japan, Tokyo	6120	11815			
1100-1130		Radio Mozambique, Maputo	9525	11818	11835		
1100-1130		SLBC, Colombo, Sri Lanka	11835	15120	17850	[ML]	
1100-1130		Swiss Radio Int'l, Berne	11935	13685	15570	17830	
1100-1130		Voice of Vietnam, Hanoi	7430	9732			
1100-1150		Deutsche Welle, West Germany	15410	17765	17800	21600	
1100-1150		Radio Pyongyang, North Korea	6576	9600	11735		
1100-1155		Radio Beijing, China	9665	15110	17715		
1100-1200		ABC, Alice Springs, Australia	2310	[ML]			
1100-1200		ABC, Katherine, Australia	2485				
1100-1200		ABC, Perth, Australia	9610				
1100-1200		ABC, Tennant Creek, Australia	2325	[ML]			
1100-1200		BBC, London, England	5965	6195	9510	9740	
			11750	11775	12095	15070	
			15360	17705	17790	18080	
			21710	21470	25750		
1100-1200		CBC Northern Quebec Service	6195	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	11705	11800	
1100-1200		Radio Moscow, USSR	9600	13680	13710	15460	

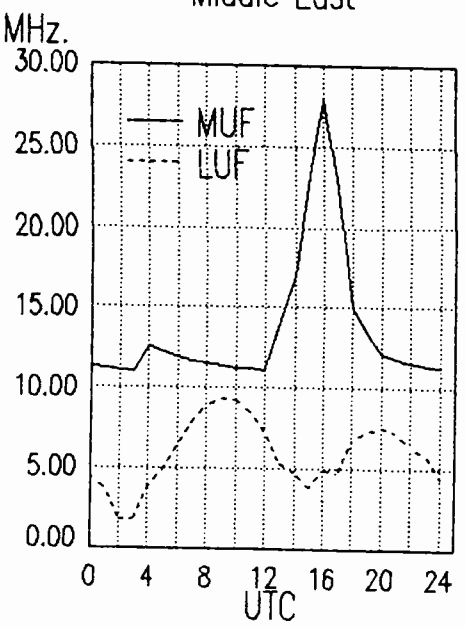
West Coast To
Western Eroupe



West Coast To
East Europe



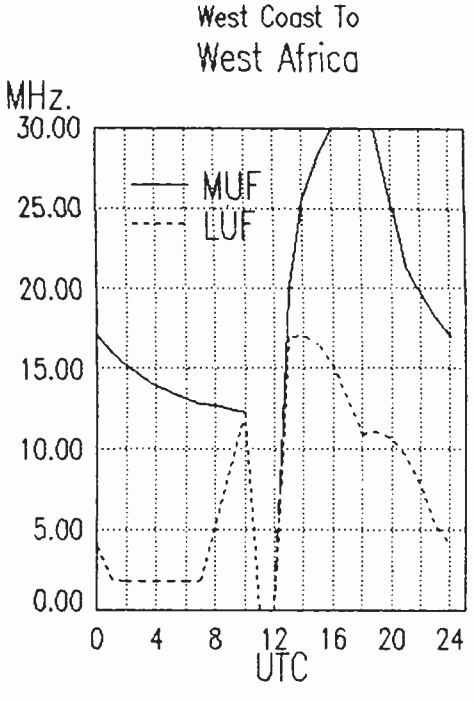
West Coast To
Middle East

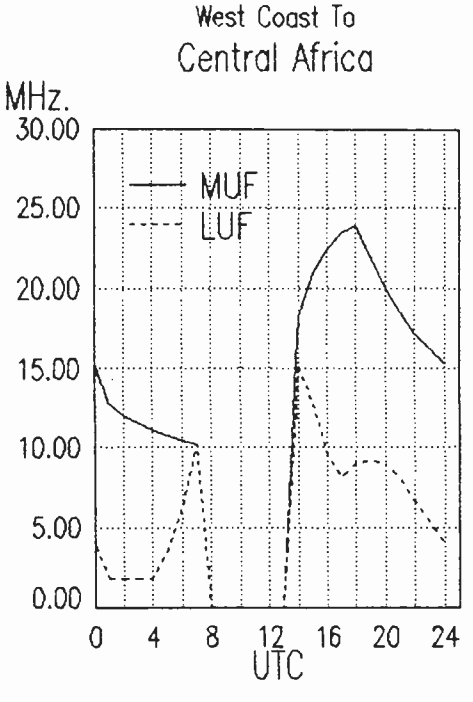


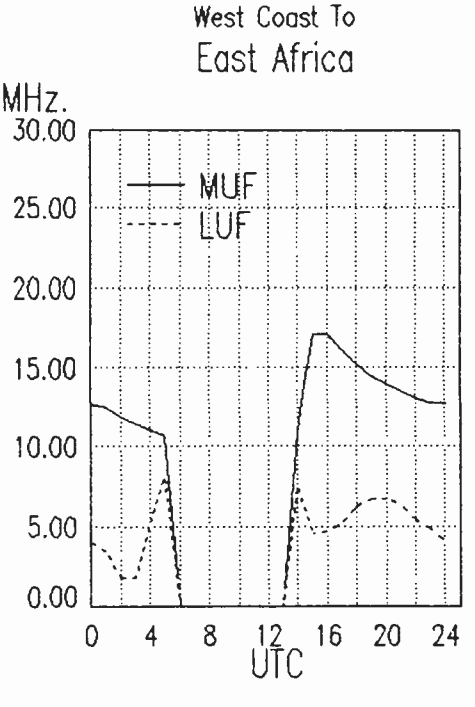
			15335	15475	15490	15500
			15550	17595	17645	17820
1100-1200		Radio RSA, South Africa	11900	17755	21590	
1100-1200	A,S	Radio Tanzania, Dar es Salaam	7165			
1100-1200	S	Radio Zambia, Lusaka	11880	[IRR]		
1100-1200		SBC-1, Singapore	5010	5052	11940	
1100-1200	S	Superpower KUSW, Utah	6130			
1100-1200		Voice of America, Washington	5985	6030	6110	6165
			9590	9760	11715	15160
			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	5995	11790		
1100-1200		WSHB, Cyprus Creek, S. Carolina	9495			
1100-1200		WYFR, Oakland, California	5950	7355	9600	
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 Japan, Tokyo	6120	11815		
1130-1200		Radio Netherland, Hilversum	5995	9715	15560	17575
			17605	21480		
1130-1200		Radio Thailand, Bangkok	9855	11905		
1130-1200		Radio Tirana, Albania	9480	11855		
1130-1200		Voice of Islamic Republic Iran	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		
1145-1200		Radio Bangladesh, Dakha	15255	17740		
1145-1200		Radio Prague, Czechoslovakia	6055	7345	9505	

1200 UTC [7:00 AM EST/4:00 AM PST]

1200-1205	M-A	Port Moresby, Papua New Guinea	3295	4890	5960	6020
			6040	6080	6140	9520
1200-1215		BBC, London, England*	3915	6065	7275	
1200-1215		Radio New Zealand, Wellington	6100	9540	9850	
1200-1215		Vatican Radio, Vatican City	15190	17865		
1200-1215		Voice of Kampuchea, Phnom-Penh	9693	11938		
1200-1220		Radio Bucharest, Romania	17720	21665		
1200-1225		Radio Polonia, Warsaw, Poland	6095	7285		
1200-1230		Radio Finland	11945	15400		
1200-1230		Radio Netherland, Hilversum	9715	15560	17575	17605
			21480			
1200-1230		Radio Somalia, Mogadishu	6095			
1200-1230		Radio Tashkent, Uzbek, USSR	7275	9540	9600	15470
			11785			
1200-1230		Radio Thailand, Bangkok	9655	11905		
1200-1230	S	Radio Zambia, Lusaka	11880	[IRR]		
1200-1235	M-A	Radio Ulan Bator, Mongolia	9615	12015		
1200-1236		HCJB, Quito, Ecuador	6075			
1200-1255		Radio Beijing, China	9665	11600	15110	
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			
1200-1300		BBC, London, England	5995	6195	7180	9510
			9740	11750	11775	12095
			15070	17705	17790	18080
			21470	21710	25750	
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	6060	6080	7205	7215
			9580	9710	9770	11800
1200-1300		Radio Moscow, USSR	13680	13710	15135	15460
			15490	15500	17595	17680
			17820	17860		
1200-1300	A,S	Radio Tanzania, Dar es Salaam	7165			
1200-1300		SBC Radio One, Singapore	5010	5052	11940	





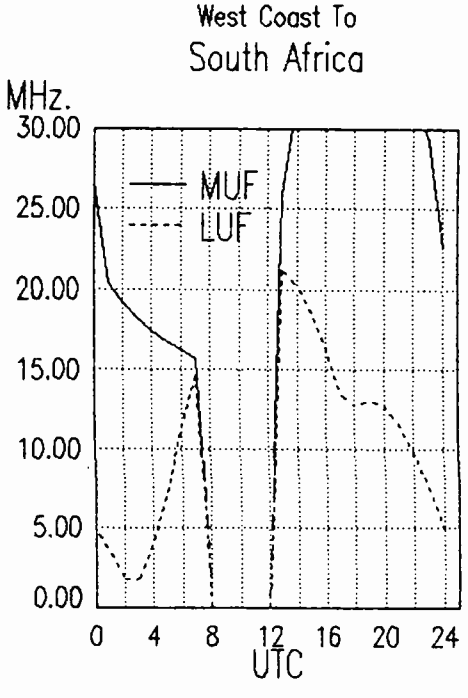


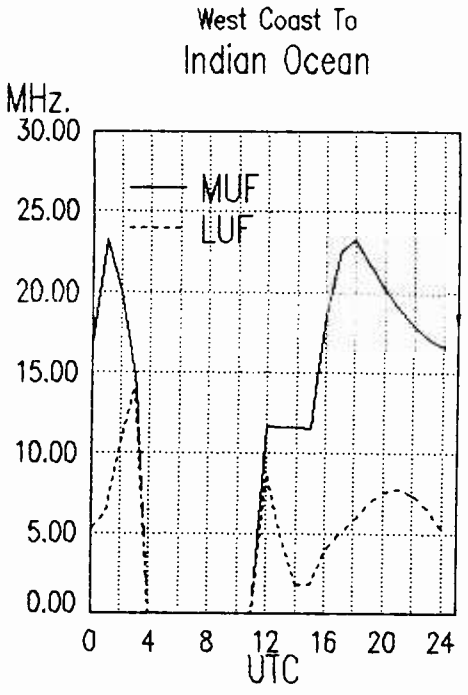
frequency SECTION

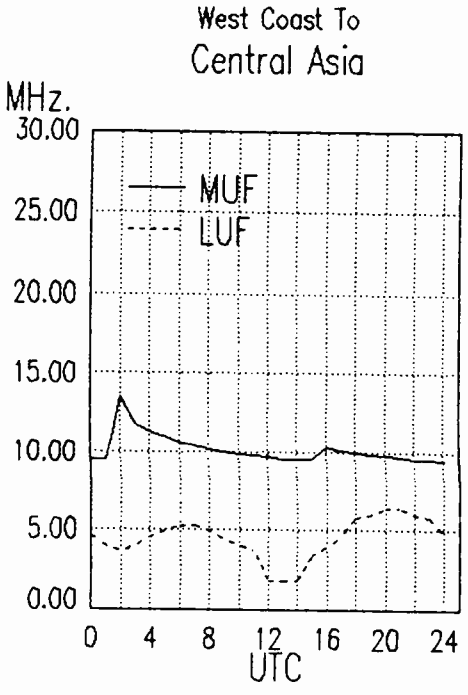
1200-1300	S	Superpower KUSW, Utah	6130
1200-1300		Trans World Radio, Bonaire	11815 15345
1200-1300		Trans World Radio, Sri Lanka	11920
1200-1300		Voice of America, Washington	9760 11715 15160 15425
1200-1300		Voice of Kenya, Nairobi	7270
1200-1300		Voice of Nigeria, Lagos	7255 15120
1200-1300		WCSN, Boston, Massachusetts	5980
1200-1300		WHRI, Noblesville, Indiana	5995 11790
1200-1300		WSHB, Cyprus Creek, S. Carolina	13760
1200-1300		WYFR, Oakland, California	5950 7355 9600
1215-1245		Radio Korea, Seoul, South Korea	7275 11740
1215-1300		Radio Cairo, Egypt	17595 17675
1230-1235		All India Radio, New Delhi	3905 4800 4920 7280 9565 9615 11620 11735 15120
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 Berlin Int'l, E. Germany	15440 17880 21465 21540
1230-1300		Radio Sweden, Stockholm	9565 11810 15190 15430 17780 21570
1240-1250	M	Radio Free Europe, Munich*	5985 7115 9695 9725 11895 15355
1245-1300		Radio France Int'l, Paris	11670 17720 21645

1300 UTC [8:00 AM EST/5:00 AM PST]

1300-1305		Port Moresby, Papua New Guinea	3295 4890 5960 5980 6020 6040 6080 6140 9520
1300-1310		Radio France Int'l, Paris	11670 17720 21645
1300-1315		Radio Berlin Int'l, E. Germany	15440 17880 21465 21540
1300-1325		Radio Bucharest, Romania	9690 11940 15405 17720
1300-1325	M-F	Radio Finland, Helsinki	11945 15400
1300-1330		BBC, London, England	5995 6195 7180 9410 9510 9740 9750 11775 12095 15070 15420 17790 18080 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 7175 9600 9795 13680 13710 15320 15460 15490 15530 15500 17595 17645 17860 21630
1300-1330	S	Radio Norway Int'l, Oslo	6035 9590 15310 21705
1300-1330		Radio Yugoslavia, Belgrade	11735 15325 15380
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 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	9625 11720
1300-1400		CBN, St. John's, Newfoundland	6160
1300-1400		CBU, Vancouver, British Colombia	6160
1300-1400		CFCF, Montreal, Quebec	6005
1300-1400		CFCN, Calgary, Alberta	6030
1300-1400		CHNS, Halifax, Nova Scotia	6130
1300-1400		CKWX, Vancouver, British Colombia	6080
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 11855 17820
1300-1400		Radio Jordan, Amman	9560
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





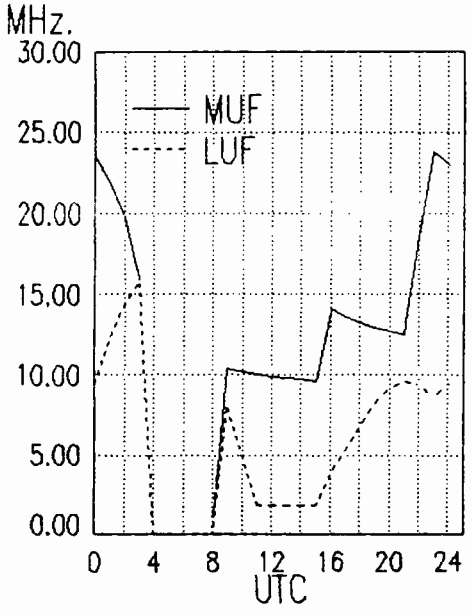


1300-1400		Voice of Malaysia	7295			
1300-1400		Voice of Nigeria, Lagos	7255	15120		
1300-1400		WCSN, Boston, Massachusetts	5980			
1300-1400		WHRI, Noblesville, Indiana	9455	11790		
1300-1400		WSHB, Cyprus Creek, S. Carolina	13760			
1300-1400		WYFR, Oakland, California	5950	5990	9600	11550
			13695	15055		
1305-1315		Radio France Int'l, Paris	6175	9790	9805	11670
			11845	15155	15195	15300
			15315	15365	17620	17720
			17850	21645		
1315-1400		Radio Berlin Int'l, E. Germany	15240			
1330-1345		Radio Korea, Seoul, South Korea	7275	11740		
1330-1355	M-A	BRT, Brussels, Belgium	17555	21815		
1330-1355		Radio Austria Int'l, Vienna	15320			
1330-1400		BBC, London, England	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	M-A	Bhutan Bcasting Service, Thimpu	6035			
1330-1400		Laotian National Radio	7113			
1300-1400		Radio Tashkent, Uzbek, USSR	5945	7275	9540	9600
			11785			
1330-1400		Swiss Radio Int'l, Berne	11695	13685	15135	15570
			17830	21695		
1330-1400		UAE Radio, United Arab Emirates	15435	17865	21605	
1330-1400		Voice of Islamic Republic Iran	9525	9685	9770	
1330-1400		Voice of Kenya, Nairobi	6100			
1330-1400		Voice of Turkey, Ankara	15255			
1330-1400		Voice of Vietnam, Hanoi	9840	15010		
1332-1400	A	Trans World Radio, Bonaire	11815	15345		
1345-1400		Radio Berlin Int'l, E. Germany	15440	17880	21465	21540

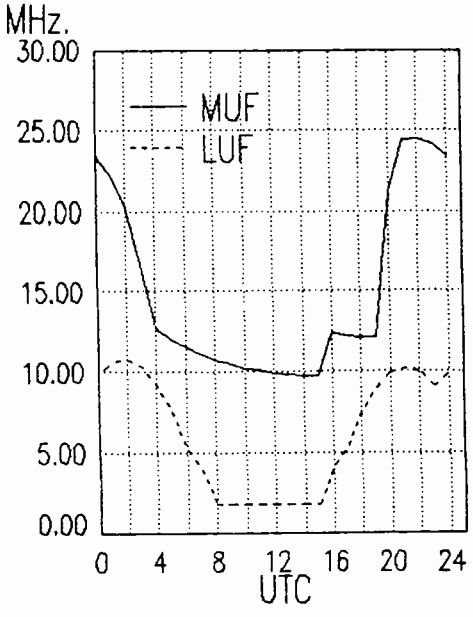
1400 UTC [9:00 AM EST/6:00 AM PST]

1400-1427		Voice of Nigeria, Lagos	15120			
1400-1430		ABC, Alice Springs, Australia	2310	[ML]		
1400-1430		ABC, Tennant Creek, Australia	2325	[ML]		
1400-1430		Radio Berlin Int'l, E. Germany	15440	17880	21465	21540
1400-1430		Radio Finland, Helsinki	11945	15400		
1400-1430	S	Radio Norway Int'l, Oslo	15190	15250	15310	21700
1400-1430		Radio Peace and Progress, USSR	17645	17765		
1400-1430		Radio Polonia, Warsaw, Poland	6095	7285		
1400-1430		Radio Sweden, Stockholm	15345	17860		
1400-1430		Radio Tirana, Albania	9500	11985		
1400-1430		Voice of Ethiopia, Addis Ababa	9550	11710		
1400-1450	T	Radio Free Europe, Munich*	5985	7115	7695	9725
			11895	15355		
1400-1450		Radio Pyongyang, North Korea	6576	11735		
1400-1455		Radio Beijing, China	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
			15260	17705	17790	18080
			21710	21470	25750	
1400-1500		CBN, St. John's, Newfoundland	6160			
1400-1500		CBC Northern Quebec Service	9625	11720		
1400-1500	M-A	CBU, Vancouver, British 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	15115	17890	
1400-1500		KYOI, Saipan	11900			
1400-1500		Radio Australia, Melbourne	5995	6035	6060	6080
			7205	9580		
1400-1500		Radio Beijing, China	11600			
1400-1500	S	Radio Canada Int'l, Montreal	9625	11720	11955	15440
			17820			
1400-1500		Radio Japan, Tokyo	9695	11780	11815	
1400-1500		Radio Korea, Seoul	9570	9750	15575	
1400-1500		Radio Moscow, USSR	11840	13680	13710	15135
			15460	15480	15500	15530
			17595	17645	17860	21630
1400-1500		Radio RSA, South Africa	11925	17755	21535	21590

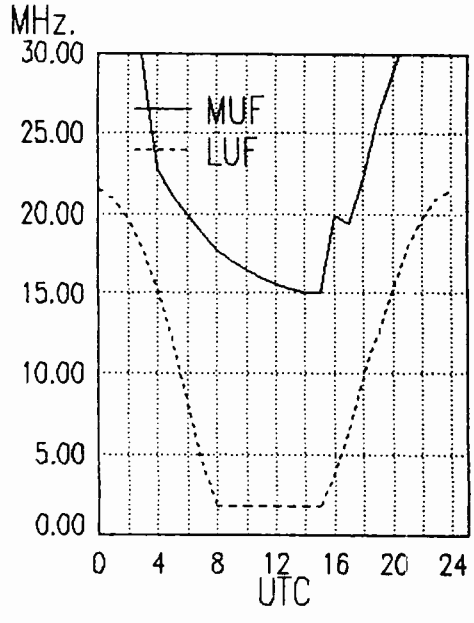
West Coast To
South East Asia



West Coast To
Far East



West Coast To
Pacific



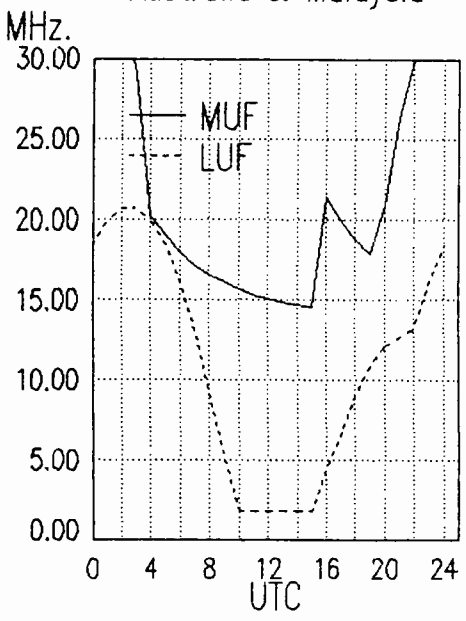
frequency SECTION

1400-1500	A,S	Radio Tanzania, Dar es Salaam	7165				
1400-1500		SBC Radio One, Singapore	5010	5052	11940		
1400-1500	S	Superpower KUSW, Utah	9850				
1400-1500		Voice of America, Washington	9645	9760	11920	15160	
			15205	15425			
1400-1500		Voice of Kenya, Nairobi	6100				
1400-1500		Voice of Malaysia, Kuala Lumpur	4950				
1400-1500		Voice of Mediterranean, Malta	11925				
1400-1500		Voice of Nigeria, Lagos	7255				
1400-1500		WCSN, Boston, Massachusetts	13760				
1400-1500		WHRI, Noblesville, Indiana	9455	11790			
1400-1500		WSHB, Cyprus Creek, S. Carolina	17640				
1400-1500		WYFR, Oakland, California	5950	9600	11550	15055	
			17612.5				
1400-1500		WYFR Satellite Net, California	5950	5990	9600		
			13695				
1415-1420		Radio Nepal, Kathmandu	3230	5005			
1430-1500	F	ABC, Alice Springs, Australia	2310	[ML]			
1430-1500	F	ABC, Tennant Creek, Australia	2325	[ML]			
1430-1500		Burma Broadcasting Service	5985				
1430-1500		King of Hope, Southern Lebanon	6280				
1430-1500		KTWR, Agana, Guam	9780				
1430-1500		Radio Australia, Melbourne	6060	9580			
1430-1500		Radio Netherland, Hilversum	11735	13770	15560	17575	
1430-1500		Radio Prague, Czechoslovakia	9605	11685	13715	15110	
			15155	17705	21505		
1430-1500		Voice of Turkey, Ankara	15255				
1445-1500	M-A	Radio Ulan Bator, Mongolia	9575	15305			

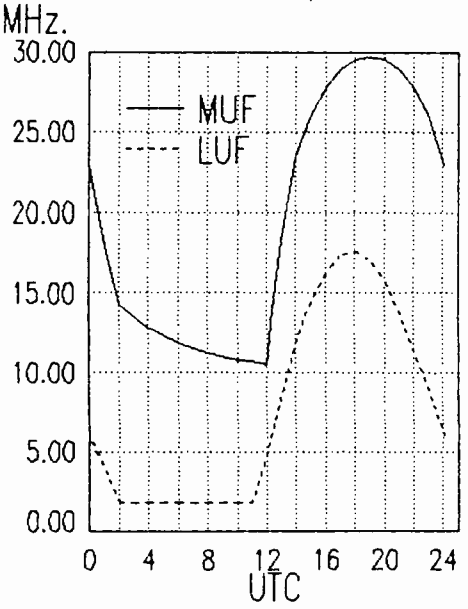
1500 UTC [10:00 AM EST/7:00 AM PST]

1500-1505		Africa No. 1, Gabon	7200	15200			
1500-1510		Vatican Radio, Vatican City	11960	15090	17870		
1500-1515		FEBA, Mahe, Seychelles	15325				
1500-1520		Radio Ulan Bator, Mongolia	9575	15305			
1500-1525		Radio Bucharest, Romania	9510	9690	11775	11940	
			15250	15335			
1500-1525		Radio Netherland, Hilversum	11735	13770	15560	17575	
1500-1530		Radio Finland, Helsinki	9560	11715	15185		
1500-1530	A,S	Radio Tanzania, Dar es Salaam	7165				
1500-1530		Radio Veritas Asia, Philippines	9770	15215			
1500-1550		Deutsche Welle, West Germany	9735	11965	17810	21600	
1500-1550		KTWR, Agana, Guam	9820				
1500-1550		Radio Pyongyang, North Korea	6576	9325	9345	9640	
			9977				
1500-1555		Radio Beijing, China	11600	15165			
1500-1600	F	ABC, Alice Springs, Australia	2310	[ML]			
1500-1600		ABC, Perth, Australia	9610				
1500-1600	F	ABC, Tennant Creek, Australia	2325	[ML]			
1500-1600		AWR, Alajuela, Costa Rica	15460				
1500-1515		BBC, London, England	5995	6195	7180	9410	
			9740	11750	11775	12095	
			15070	15260	15400	17790	
			17885	18080	21470	21710	
			25750				
1500-1600		Burma Broadcasting Service	5985				
1500-1600		CBC Northern Quebec Service	9625	11720			
1500-1600		CBN, St. John's, Newfoundland	6160				
1500-1600		CBU, Vancouver, British 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		KSDA, Agat, Guam	9830	11980			
1500-1600		KYOI, Saipan	11900				
1500-1600		Radio Australia, Melbourne	5995	6035	6060	6080	
			7205	7215	9580		
1500-1600	S	Radio Canada Int'l, Montreal	11955	17820			
1500-1600		Radio Japan, Tokyo	9505	9695	11815	21700	
1500-1600		Radio Jordan, Amman	9560				
1500-1600		Radio Moscow, USSR	5905	6050	7160	7265	
			7345	9875	11840	12030	
			13680	13710	15135	15480	
			15460				
1500-1600		Radio RSA, South Africa	9655	15125	17755	21590	
1500-1600		SBC Radio One, Singapore	5010	5052	11940		

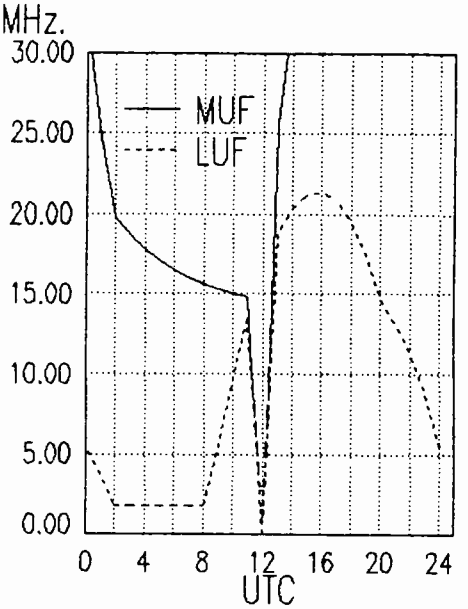
West Coast To
Australia & Malaysia



West Coast To
Central America/Caribbean

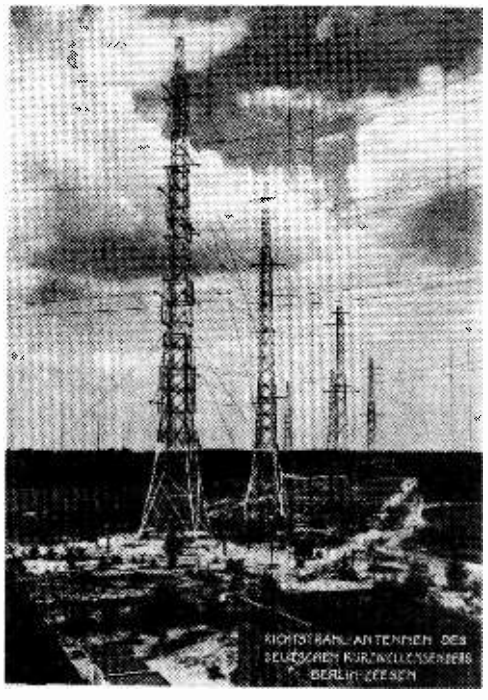


West Coast To
South America



frequency SECTION

1500-1600	S	Superpower KUSW, Utah	9850			
1500-1600		Voice of America, Washington	6110	9575	9700	9760
			15205			
1500-1600		Voice of Ethiopia, Addis Ababa	7165	9560		
1500-1600		Voice of Indonesia, Jakarta	11790	15150		
1500-1600		Voice of Kenya, Nairobi	6100			
1500-1600		Voice of Malaysia, Kuala Lumpur	4950			
1500-1600		Voice of Mediterranean, Malta	11925			
1500-1600		Voice of Nigeria, Lagos	7255	11770		
1500-1600		WCSN, Boston, Massachusetts	13760			
1500-1600		WHRI, Noblesville, Indiana	9455	15105		
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	
1515-1600		BBC, London, England	5995	6195	7180	9410
			9740	11750	11775	11750
			12095	15070	15260	15400
			17885	18080	21470	21710
1515-1600		FEBA, Mahe, Seychelles	11865	15325		
1530-1545		All India Radio, New Delhi	3905	3925	4860	6160
			7160	7412	9545	9950
1530-1600		Radio Berlin Int'l, E. Germany	15430	17780		
1530-1600		Radio Prague, Czechoslovakia	6055	9605	11665	11990
			13715	15110	15155	15165
			17730	21505		
1530-1600		Radio Sofia, Bulgaria	7245	9740	11735	
1530-1600		Radio Tanzania, Dar es Salaam	9684			
1530-1600		Radio Tirana, Albania	9480	11835		
1530-1600		Swiss Radio Int'l, Berne	13685	15570	21630	
1530-1600		Voice of Asia, Taiwan	5980	7445		
1530-1600		Voice of Nigeria, Lagos	15120			
1540-1550	M-A	Voice of Greece, Athens	9855	11645	15630	
1545-1600		Radio Berlin Int'l, East Germany	15240	17880		
1545-1600		Radio Canada Int'l, Montreal	9555	11915	11935	15315
			15325			
			15305	17820		
1545-1600		Vatican Radio, Vatican City	11810	15120	17730	
1550-1600	H-S	KTWR, Agana, Guam	9780			



A voice out of the past: A QSL from Nazi Germany from Harold Bower of Sunbury, PA

1600 UTC [11:00 AM EST/8:00 AM PST]

1600-1610		FEBA, Mahe, Seychelles	11865	15325		
1600-1610		Radio Lesotho, Maseru	4800			
1600-1610		SBC Radio One, Singapore	5010	5052	11940	
1600-1625		Radio Prague, Czechoslovakia	6055	9605	11665	
			11990	13715	15110	15155
			15165	17730	21505	
1600-1630		ELWA, Monrovia, Liberia	11830			
1600-1630		Radio Berlin Int'l, E. Germany	15240	17880		
1600-1630	S	Radio Norway Int'l, Oslo	11760	15310	21705	
1600-1630		Radio Pakistan, Islamabad	7365	9465	9785	11615
			11625	15125		
1600-1630		Radio Polonia, Warsaw, Poland	6135	9540		
1600-1630	M-F	Radio Portugal, Lisbon	15245			
1600-1630		Radio Sofia Bulgaria	7245	9560	11735	15310
1600-1630		SLBC, Colombo, Sri Lanka	6075	9720		
1600-1630		Trans World Radio, Swaziland	5055	9525		
1600-1630		Voice of Asia, Taiwan	5980	7445		
1600-1630		Voice of Vietnam, Hanoi	9840	15010		
1600-1645	H-A	KTWR, Agana, Guam	9820			
1600-1645		Radio Nacional Angola, Luanda	7245	9535	11955	
1600-1645		UAE Radio, United Arab Emirates	11955	15435	17775	
1600-1650		Deutche Welle, Koln, W. Germany	6170	7200	13790	15105
			15595	17825	21680	
1600-1655		Radio Beijing, China	9570	11600	11715	
1600-1700	F	ABC, Alice Springs, Australia	2310	[ML]		
1600-1700		ABC, Perth, Australia	9610			
1600-1700	F	ABC, Tennant Creek, Australia	2325	[ML]		
1600-1700		AWR, Alajuela, Costa Rica	15460			
1600-1700		BBC, London, England	9410	9740	11750	11775
			12095	15070	15260	15400
			17885	18080	21470	
1600-1700		CBC Northern Quebec Service	9625	11720		
1600-1700		CBN, St. John's, Newfoundland	6160			
1600-1700		CBU, Vancouver, British 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			
1600-1700		HCJB, Quito, Ecuador	17890			
1600-1700		KNLS, anchor Point, Alaska	7355			
1600-1700		Radio Australia, Melbourne	5995	6035	6060	6080
			7205	7215	9580	
1600-1700		Radio Beijing, China	15130			
1600-1700	S	Radio Canada Int'l, Montreal	11955	17820		
1600-1700		Radio France Int'l, Paris	11705	15360	17620	
1600-1700		Radio Jordan, Amman	9560			
1600-1700		Radio Korea, Seoul, South Korea	5985	9870		
1600-1700		Radio Malawi, Blantyre	3380	5995		
1600-1700		Radio Moscow, USSR	7160	7265	7345	9640
			9875	11840	12010	13680
			15135	15460	15550	
1600-1700		Radio Riyadh, Saudi Arabia	9705	9720		
1600-1700		Radio Tanzania, Dar es Salaam	9684			
1600-1700	S	Superpower KUSW, Utah	15650			
1600-1700		Voice of America, Washington, DC	9575	9645	9760	11920
			15410	15445	15205	15580
			15600	17785	17800	17870
1600-1700		WCSN, Boston, MA	21640			
1600-1700		WHRI, Noblesville, Indiana	15105	15760		
1600-1700		WRNO, New Orleans, Louisiana	15460			
1600-1700		WYFR, Oakland, California	5950	9600	17612.5	
1600-1700		WYFR Satellite Network	11830	13695	15375	
1600-1700		Radio Zambia, Lusaka	9580			
1615-1630	M,H	Radio Budapest, Hungary	7220	9585	9835	11910
			15160	15220		
1615-1630		Voice of Vietnam, Hanoi	10011			
1615-1700		Radio Berlin Int'l, East Germany	6115	7295	9730	
1630-1655	M-A	RT, Brussels, Belgium	17585	21810		
1630-1700		Radio Netherlands, Hilversum	6020	9540		
1630-1700		RTM Morocco	17595	17815		

frequency SECTION

1645-1700		Radio Korea, Seoul, South Korea	7275	9870		

1700 UTC [12:00 PM EST/9:00 AM PST]

1700-1705		Radio Uganda, Kampala	4976	5026		
1700-1715	M-A	Voice of Namibia (Angola)	11955			
1700-1725		Radio Budapest, Hungary	6110	9585	9835	11910
			15160			
1700-1725		Radio Netherland, Hiiversum	6020	9590		
1700-1730		Radio Australia, Melbourne	5995	6060	6080	7205
			9580			
1700-1730		Radio Japan, Tokyo	9505	11705	11815	
1700-1730	S	Radio Norway Int'l, Oslo	9655	15310	21700	
1700-1730		Swiss Radio Int'l, Berne	3985	6165	9535	
1700-1745		BBC, London, England	9410	9740	11750	11775
			12095	15070	15260	15400
			17885	18080	21470	
1700-1750		Radio Pyongyang, North Korea	7290	9325	9640	9977
1700-1755		Radio Beijing, China	9570	11600		
1700-1800	F	ABC, Alice Springs, Australia	2310	[ML]		
1700-1800		ABC, Tennant Creek, Australia	2325	[ML]		
1700-1800		AWR Africa, Gabon	9625			
1700-1800		CBC Northern Quebec Service	9625	11720		
1700-1800		CBN, St. John's, Newfoundland	6160			
1700-1800		CBU, Vancouver, British 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	7265	7345	7365	9875
			11840	12015	13680	15135
			15460	15550		
1700-1800		Radio Riyadh, Saudi Arabia	9705	9720		
1700-1800		Radio Tanzania, Dar es Salaam	9684			
1700-1800		Radio Zambia, Lusaka	9580			
1700-1800		RTM Morocco	17815			
1700-1800		SBC Radio One, Singapore	5052	11940		
1700-1800		Superpower KUSW, Utah	15650			
1700-1800	A,S	Swaziland Commercial Radio	6155			
1700-1800		Voice of Africa, Egypt	15255			
1700-1800		Voice of America, Washington	9575	11760	15205	15410
			15445	15580	15600	17785
			17800	17870		
1700-1800		Voice of Kenya, Nairobi	6100			
1700-1800		Voice of Nigeria, Lagos	11770			
1700-1800		WCSN, Boston, Massachusetts	21640			
1700-1800		WHRI, Noblesville, Indiana	13760	15105		
1700-1800		WINB, Red Lion, Pennsylvania	15295			
1700-1800		WRNO, Louisiana	15420			
1700-1800		WYFR Satellite Net	13695			
1700-1800		WYFR, Okeechobee, Florida	11870	15170	15375	15440
			21525			
1715-1745		Radio Canada Int'l, Montreal	5995	7235	15325	17820
1715-1745		BBC, London, England*	3975	6185	7165	
1718-1800		Radio Pakistan, Islamabad	6210	7835		
1725-1740		Radio Suriname Int'l, Paramibo	7835v			
1725-1800		Radio New Zealand, Wellington	11780	15150		
1730-1735		All India Radio, New Delhi	4840	4860	4920	6160
			7412	9950		
1730-1755		Radio Bucharest, Romania	7105	9530	9685	11790
			11940			
1730-1800		Radio Australia, Melbourne	5995	6035	6060	6080
			7205	9580		
1730-1800		Radio Polonia, Warsaw, Poland	6135	9540		
1730-1800		Radio Prague, Czechoslovakia	9605	11685	11990	13715
			15110	15165	21505	
1730-1800		RAE, Buenos Aires, Argentina	15345			
1734-1800		FEBA, Mahe, Seychelles	11760			
1745-1800		BBC, London, England	9410	9740	12095	15070
			17885	21470		
1745-1800		SLBC, Colmbo, Sri Lanka	11800			

1800 UTC [1:00 PM EST/10:00 AM PST]

1800-1805	A	SBC Radio One, Singapore	11940			
1800-1815		Kol Israel, Jerusalem	9385	9640	9925	11588
			13750	LSB		
1800-1815		Radio Cameroon, Yaounde	3970	4750	4795	4850
			5010			
1800-1815		SLBC, Colombo, Sri Lanka	11800			
1800-1825	A,S	FEBA, Mahe, Seychelles	11760			
1800-1825		Radio Prague, Czechoslovakia	9605	11685	11990	13715
			15110	15165	21505	
1800-1825		RAE, Buenos Aires, Argentina	15345			
1800-1830		BBC, London, England	9740	11750	12095	15070
			15400	15420	17885	
1800-1830	S	Radio Bamako, Mali	4835	5995		
1800-1830	M-F	Radio Canada Int'l, Montreal	15260	17820		
1800-1830		Radio Mozambique, Maputo	3265	4855	9618	
1800-1830		Radio Prague, Czechoslovakia	5930	7345	13715	
1800-1830		Radio Sweden, Stockholm	6065	11845		
1800-1830		Voice of Africa, Egypt	15255			
1800-1830		Voice of Vietnam, Hanoi	9840	15010		
1800-1845		Radio Abidjan, Ivory Coast	7215			
1800-1845		Trans World Radio, Swaziland	9525			
1800-1850		Radio Bras, Brasilia, Brazil	15265			
1800-1856		Radio RSA, South Africa	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	7265	9560	9890	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	M-A	Superpower KUSW, Utah	15650			
1800-1900	A,S	Swaziland Commercial Radio	6155			
1800-1900		Voice of America, Washington	9575	9760	11760	11920
			15205	15410	15445	15580
			15600	17785	17800	17870
			21485			
1800-1900		Voice of Ethiopia	9662			
1800-1900		Voice of Kenya, Nairobi	6100			
1800-1900		Voice of Nigeria, Lagos	11770	15120		
1800-1900		WCSN, Boston, Massachusetts	21640			
1800-1900		WHRI, Noblesville, Indiana	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	11855	13760	15170	
1800-1900		WYFR Satellite Net, California	11830	13695		
1815-1900		Radio Bangladesh, Dhaka	6240	7505	11510	
1830-1855		Radio Austria Int'l, Vienna	5945	6155	12015	15175

Did We Miss Something?

Find a frequency we've missed? A new broadcast? Let us know! Write to frequency manager Greg Jordan at 1855-I Franciscan Terrace, Winston-Salem, NC 27127.

frequency SECTION

1800-1855		Radio Polonia, Warsaw, Poland	5995	6135	7125	7285	
			9525	11840			
1815-1830		Radio Korea, Seoul, South Korea	9870	15575			
1830-1855		BRT Brussels, Belgium	5915	11695			
1830-1900		BBC, London, England	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	
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 [2:00 PM EST/11:00 AM PST]

1900-1903		Africa No. 1, Gabon	15475				
1900-1905	M-A	Vatican Radio, Vatican City	6190	6248	7250	9645	
1900-1915		Radio Bangladesh, Dhaka	6240	7505	11510		
1900-1915		Radio Berlin Int'l, E. Germany	9665	13610	15145	15255	
1900-1915		Radio Tanzania, Dar es Salaam	9684				
1900-1925		Radio Netherland, Hilversum	6020	15175	17605	21685	
1900-1925		Voice of Islamic Republic Iran	9695				
1900-1930	F	ABC, Alice Springs, Australia	2310	[ML]			
1900-1930	F	ABC, Tennant Creek, Australia	2325	[ML]			
1900-1930		Radio Afghanistan, Kabul	7160	7310	9640		
1900-1930		Radio Japan, Tokyo	9505	11705			
1900-1930		Radio Kiev, Ukrainian SSR	5915	7205	7240	9600	
1900-1930	S	Radio Norway Int'l, Oslo	6015	15225	15310		
1900-1930	M-F	Radio Portugal, Lisbon	11870	15250			
1900-1930		Radio Sofia Bulgaria	7245	7155	9700		
1900-1930		Voice of Vietnam, Hanoi	12020	15010			
1900-1950		Deutsche Welle, Koln, W. Germany	13790	15390			
1900-1955		Radio Beijing, China	6860	9470			
1900-2000		All India Radio, New Delhi	7412	11620	11935	15360	
1900-2000		BBC, London, England	9410	15400	12095	15070	
			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	11790	15270	17790		
1900-2000		KNLS, Anchor Point, Alaska	11650				
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	
			9765	9825			
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		
1900-2000		Radio Zambia, Lusaka	9580				
1900-2000		Spanish Foreign Radio, Madrid	11790	15375	15395		
1900-2000	M-A	Superpower KUSW, Utah	15650				
1900-2000	A,S	Swaziland Commercial Radio	6155				
1900-2000		Trans World Radio Swaziland	3205				
1900-2000		Voice of America, Washington	9700	11760	15205	15410	
			15445	15580	15600	17785	
			17800	17870			
1900-2000		Voice of Ethiopia, Addis Ababa	9595				
1900-2000		Voice of Kenya, Nairobi	6100				
1900-2000		Voice of Nigeria, Lagos	7255	11770			
1900-2000		WCSN, Boston, Massachusetts	21640				
1900-2000		WHRI, Noblesville, Indiana	13760	17830			
1900-2000		WINB, Red Lion, Pennsylvania	15295				
1900-2000	S-F	WMLK, Bethel, Pennsylvania	9465				
1900-2000		WRNO, New Orleans, Louisiana	15420				
1900-2000		WYFR, Oakland, California	11855	15170	17750		
1900-2000		WYFR Satellite Net, California	11830	13695	15375		
1910-1920		Radio Botswana, Gaborone	3356	4820			
1920-1930	M-A	Voice of Greece, Athens	7430	9395	9425		
1930-1940		Radio Togo, Lome	5047				
1930-1945		Radio Finland, Helsinki	6120	9530	11755		
1930-2000		ABC, Katherine, Australia	2485				
1930-2000		Radio Beijing, China	6955	7480	9440		
1930-2000		Radio Bucharest, Romania	7145	9690	9750	11940	
1930-2000		Radio Budapest, Hungary	6110	7220	9585	9835	
			11910	15160			
1930-2000	M-F	Radio Canada Int'l, Montreal	9555	11945	15325	17875	
1930-2000		Radio Finland, Helsinki	6120	9550	11755	15185	
1930-2000		Radio Sofia Bulgaria	9700	11720			
1930-2000		Radio Yugoslavia, Belgrade	5980	9620	9660		
1930-2000		Voice of Republic of Iran	9022	9770			
1930-2000		WINB, Red Lion, Pennsylvania	15185				
1935-1955		RAI, Rome, Italy	7275	7290	9575	11800	
1940-2000	M-A	Radio Ulan Bator, Mongolia	9575	11870			
1945-2000		All India Radio, New Delhi	9755	11860			
1950-2000		Vatican Radio, Vatican City	6190	7250	9645		

2000 UTC [3:00 PM EST/12:00 PM PST]

2000-2005	S-F	Port Moresby, Papua New Guinea	3295	4890	5960	5985	
			6020	6040	6080	6140	
			9520				
2000-2005		Radio Zambia, Lusaka	3345	6165			
2000-2010	A	Radio Zambia, Lusaka	3345	6165			
2000-2010		Voice of Kenya, Nairobi	6100				
2000-2015		Radio Togo, Lome	3220	5047			
2000-2015	M-A	Radio Ulan Bator, Mongolia	9575	11870			
2000-2015		Trans World Radio, Swaziland	3205				
2000-2025		Radio Beijing, China	6955	7480	9440		
2000-2025		Radio Bucharest, Romania	5990	6105	7145	7195	
			9570	9690	11940		
2000-2030		KNLS, Anchor Point, Alaska	11650				
2000-2030		Kol Israel, Jerusalem	9435	9855	11605	11650	
2000-2030		Radio Australia, Melbourne	6035	7205	7215	9580	
			9620				
2000-2030		Radio Berlin Int'l, East Germany	9665	11920	15255		
2000-2030		Radio Ghana, Nairobi	3366	4915			
2000-2030		Radio Norway International, Oslo	15310				
2000-2030		Radio Polonia, Warsaw, Poland	7125	7145	9525		
2000-2030		Radio Sofia, Bulgaria	7245	9560	11735	15310	
2000-2030		Swaziland Commercial Radio	6155				
2000-2030		Voice of Nigeria, Lagos	7255				
2000-2030		Voice of Republic of Iran	9022				
2000-2045		All India Radio, New Delhi	7412	9755	9910	11620	
			11860				
2000-2050		Radio Pyongyang, North Korea	6576	9345	9640	9977	
2000-2056		Radio RSA, South Africa	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	6005	6175	6180	
			9410	9515	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				

frequency SECTION

2000-2100		King of Hope, Southern Lebanon	6280				
2000-2100		KYOI, Saipan	9465				
2000-2100		Radio Baghdad, Iraq	9770	15230			
2000-2100		Radio Havana Cuba	11800	11950			
2000-2100		Radio Kuwait, Kuwait	11665				
2000-2100		Radio Malabo, Equatorial Guinea	9553v				
2000-2100		Radio Moscow, USSR	9655	9825	9875	9895	
			11840	12050			
2000-2100		Radio Moscow (British Service)	7240	7370	7380	9630	
			9890				
2000-2100		Radio New Zealand, Wellington	12050	15150			
2000-2100		Radio for Peace, Costa Rica	21555				
2000-2100		Radio Riyadh, Saudi Arabia	9705	9720			
2000-2100		Radio Zambia, Lusaka	9580				
2000-2100	M-A	Superpower KUSW, Utah	15650				
2000-2100		Voice of America, Washington	9700	11760	15205	15410	
			15445	15580	15600	17785	
			17800	17870			
2000-2100		Voice of Nigeria, Lagos	11770				
2000-2100		WCSN, Boston, Massachusetts	9495				
2000-2100		WHRI, Noblesville, Indiana	13760	17830			
2000-2100		WINB, Red Lion, Pennsylvania	15295				
2000-2100	S-F	WMLK, Bethel, Pennsylvania	9465				
2000-2100		WRNO, New Orleans, Louisiana	15420				
2000-2100		WSHB, Cyprus Creek, S. Carolina	17750				
2000-2100		WYFR, Oakland, California	11855	15170	15566		
2000-2100	M-A	WYFR Satellite Net, California	11830	13695	15375		
2005-2100		Radio Damascus, Syria	12085	15095			
2010-2100	A,S	Voice of Kenya, Nairobi	6100				
2015-2100		ELWA, Monrovia, Liberia	11830				
2015-2000		Radio Berlin Int'l, E. Germany	9665	13610	15255		
2015-2100		Radio Cairo, Egypt	9900				
2025-2045		RAI, Rome, Italy	7235	9575	9710	11800	
2030-2055		Radio Polonia, Warsaw, Poland	6095	7285			
2030-2100		BBC, London, England	5975	6005	6175	9410	
			11785	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	9540	9895	11740	15560	
2030-2100	M-F	Radio Portugal, Lisbon	7155	9740			
2030-2100		Radio Tirana, Albania	9480	11835			
2030-2100		Voice of Africa, Cairo, Egypt	15375				
2030-2100		Voice of Vietnam, Hanoi	9840	12020	15010		
2045-2100		All India Radio, New Delhi	7412	9550	9910	11620	
			11715				
2045-2100		IBRA Radio, Malta	7110				
2045-2100		Vatican Radio, Vatican City	9625	11700	11695	15120	

2100 UTC [4:00 PM EST/1:00 PM PST]

2100-2105		Radio Damascus, Syria	12085	15095			
2100-2105		Radio Zambia, Lusaka	3345	6165			
2100-2110		Vatican Radio, Vatican City	6190	7250	9645		
2100-2110	A,S	Voice of Kenya, Nairobi	6100				
2100-2115		IBRA Radio, Malta	7110				
2100-2125		Radio Beijing, China	6955	7480	9440	9745	
			11790				
2100-2125		Radio Bucharest, Romania	5990	6105	7145	7195	
			9690	11940			
2100-2125		Radio Netherland, Hilversum	9540	9895	11740	15560	
2100-2130	S	Radio Austria Int'l, Vienna	5945	6155	9585	9870	
2100-2130		Radio Budapest, Hungary	6110	7220	9585	9835	
			11910	15160			
2100-2130		Radio Japan, Tokyo	5965	7140	7280	17835	
2100-2130		Radio Korea, Seoul, South Korea	6480	7550	15575		
2100-2130		Radio Sweden, Stockholm	9655	11845			
2100-2130		Swiss Radio Int'l, Berne	9885	12035	15570		
2100-2135		ELWA, Monrovia, Liberia	11830				
2100-2145		Radio Cairo, Egypt	9670				
2100-2145		WYFR, Oakland, California	9852.5	11855	15170	15566	
			21525	21615			
2100-2200		WYFR Satellite Net	11830	13695	15375		
2100-2150		Deutsche Welle, West Germany	7130	9765			
2100-2150		Voice of Turkey, Ankara	9825				
2100-2155		Radio Beijing, China	6860	9470	9860		
2100-2200	M-A	ABC, Alice Springs, Australia	2310	[ML]			
2100-2200		ABC, Katherine, Australia	2485				
2100-2200	M-A	ABC, Tennant Creek, Australia	2325	[ML]			
2100-2200		All India Radio, New Delhi	9550	9910	11620	11715	
2100-2200		BBC, London, England	3995	5975	6005	6175	
			6180	7325	9410	11785	
			12095	15070	15260	15400	
			17760	17885			
2100-2200		CBC Northern Quebec Service	9625	11720			
2100-2200		CBN, St. John's, Newfoundland	6160				
2100-2200		CBU, Vancouver, British 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	15240	15395	17795		
2100-2200		Radio Baghdad, Iraq	9770				
2100-2200		Radio Moscow, USSR	5980	6055	7150	7170	
			7290	9505	9515	9590	
			9620	9625	9730	9765	
			9780	9790	9800	9820	
			9840	9885	11840	12030	
			12050	15405	17605	17720	
2100-2200		Radio for Peace, Costa Rica	21555				
2100-2200	A,S	Radio Malabo, Equatorial Guinea	9552.5				
2100-2200	A,S	Radio Zambia, Lusaka	9580				
2100-2200		Spanish Foreign Radio, Madrid	9765	11790			
2100-2200	M-A	Superpower KUSW, Utah	15650				
2100-2200		Voice of Africa, Cairo, Egypt	15375				
2100-2200		Voice of America, Washington	9700	11760	15205	15410	
			15445	15580	15600	17785	
			17800	17870			
2100-2200		Voice of Nigeria, Lagos	15120				
2100-2200		WCSN, Boston, Massachusetts	9495				
2100-2200		WHRI, Noblesville, Indiana	9770	17830			
2100-2200		WRNO, New Orleans, Louisiana	13760				
2100-2200		WSHB, Cyprus Creek, S. Carolina	17750				
2103-2200		WINB, Red Lion, Pennsylvania	15295				
2110-2200		Radio Damascus, Syria	12085	15095			
2125-2155	S	Radio Austria Int'l, Vienna	9870				
2130-2145		BBC, London, England*	5965	7160			
2130-2200		BBC, London, England*	6030	7230	9635		
2130-2200		HCJB, Quito, Ecuador	15270	11790	17790		
2130-2200	A,S	Radio Canada Int'l, Montreal	11880	15150	17820		
2130-2200		Radio Sofia Bulgaria	7115	7155	9700	11720	
2130-2200		Swiss Radio Int'l, Berne	6190				
2135-2150	S-F	ELWA, Monrovia, Liberia	11830				
2150-2200	M-F	ELWA, Monrovia, Liberia	11830				

2200 UTC [5:00 PM EST/2:00 PM PST]

2200-2205	M-F	ELWA, Monrovia, Liberia	3993	11830			
2200-2205		Radio Damascus, Syria	12085	15095			
2200-2210	M-H	Port Moresby, Papua New Guinea	3925	4890	5960	5985	
			6020	6040	6080	6140	
			9520				
2200-2210		Radio Sierra Leone, Freetown	5980				
2200-2215	M-A	ABC, Alice Springs, Australia	2310	[ML]			
2200-2215	M-A	ABC, Tennant Creek, Australia	2325	[ML]			
2200-2215		BBC, London, England*	5965	7160			
2200-2215	M-F	Voice of America, Washington	9640	11740	15120		

frequency SECTION

2200-2225		BRT Brussels, Belgium	5915	9675			
2200-2225		Radio Finland, Helsinki	6120	9670	11755		
2200-2225		RAI, Rome, Italy	5990	9710	11800		
2200-2225		Vatican Radio, Vatican City	6015	9615	11830		
2200-2230		ABC, Katherine, Australia	2485				
2200-2230		All India Radio, New Delhi	9550	9910	11620	11715	
2200-2230		CBC Northern Quebec Service	9625	11720			
2200-2230	F	Radio Budapest, Hungary	6110	9585	9835	11910	
			15160				
2200-2230	S	Radio Norway Int'l, Oslo	9605	11850			
2200-2230		Radio Prague, Czechoslovakia	6055				
2200-2245		BBC, London, England	5975	6005	6175	6180	
			6195	7325	9410	9590	
			9915	11785	12095	15070	
			15260	15400			
2200-2245		Radio Berlin Int'l, East Germany	6125				
2200-2245		Radio Cairo, Egypt	7710	9900			
2200-2245		Radio Yugoslavia, Belgrade	5980	7130	9620	9660	
2200-2250		Radio Baghdad, Iraq	9770	15230			
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				
2200-2300		Radio for Peace, Costa Rica	21555				
2200-2300		Radio Havana Cuba	7140				
2200-2300		Radio Moscow, USSR	4795	4860	5980	6055	
			7115	7150	7170	7230	
			9505	9515	9590	9620	
			9625	9780	9790	9820	
			9840	9625	12050	15405	
			15425	17570	17605	17700	
2200-2300		SBC Radio One, Singapore	5010	5052	11940		
2200-2300	M-A	Superpower KUSW, Utah	15580				
2200-2300		Voice of America, Washington	15120	15185	15290	15305	
			15320	17735	17740	17820	
2200-2300		WCSN, Boston, Massachusetts	9495				
2200-2300		WHRI, Noblesville, Indiana	9770	17830			
2200-2300		WINB, Red Lion, Pennsylvania	15185				
2200-2300		WRNO, New Orleans, Louisiana	13760				
2200-2300		WSHB, Cyrus Creek, S. Carolina	17640				
2200-2300		WYFR, Oakland, California	9852.5	11830	11855	13695	
			15170	15375	15566	17845	
2215-2230		BBC, London, England*	11820	15390			
2230-2300	A,S	CBC Northern Quebec Service	9625	11720			
2230-2300		Kol Israel, Jerusalem	9435	9010	11605		
2230-2300		Radio Austria Int'l, Vienna	9870	11780			
2230-2300		Radio Beijing, China	3985	6165			
2230-2300		Radio Mediterran, Malta	6110				
2230-2300		Radio Polonia, Warsaw, Poland	5995	6135	7125	7270	
2230-2300		Radio Sofia, Bulgaria	9700	11950			
2230-2300		Radio Sweden, Stockholm	11925	SSB			
2230-2300		Radio Tirana, Albania	7215	9480			
2230-2300		Radio Vilnius, Lithuanian SSR	6100				
2245-2300		All India Radio, New Delhi	6055	7215	9535	9910	
			11715	11745			
2245-2300		BBC, London, England	5975	6005	6175	7325	
			9410	9590	9915	11785	
			12095	15260	15400	17875	
2245-2300		Radio Berlin Int'l, E. Germany	6125				

2300 UTC [6:00 PM EST/3:00 PM PST]

2300-2315		BBC, London, England	5975	6005	6175	6195	
			7325	9410	9515	9590	
			9915	11785	12095	15070	
			15260	15435	17875		
2300-2330	S	KGEI, San Francisco, California	15280				
2300-2330		Radio Berlin Int'l, E. Germany	6125				
2300-2330		Radio Canada Int'l, Montreal	5960	9755			
2300-0000		Radio Luxembourg	6090				
2300-2330		Radio Mediterran, Malta	6110				
2300-2330		Radio Sofia, Bulgaria	9700	11950			
2300-2330		Radio Vilnius, Lithuanian SSR	7105	7400	9640	9800	
			13645	15180	15455		
2300-2330	M-A	Superpower KUSW, Utah	15580				
2300-2345		WINB, Red Lion, Pennsylvania	15185				
2300-2345		WYFR, Oakland, California	11830	11855	13695	15170	
			15440	17845			
2300-2350		Voice of Turkey, Ankara	7160	9445	9685	17760	
2300-0000		All India Radio, New Delhi	6055	7215	9535	9910	
			11715	11745			
2300-0000		CBC Northern Quebec Service	6195	9625			
2300-0000		CBN, St. John's, Newfoundland	6160				
2300-0000		CBU, Vancouver, British Colombia	6160				
2300-0000		CFCF, Montreal, Quebec	6005				
2300-0000		CFCN, Calgary, Alberta	6030				
2300-0000		CHNS, Halifax, Nova Scotia	6130				
2300-0000		CKWX, Vancouver, British Colombia	6080				
2300-0000		CFRB, Toronto, Ontario	6070				
2300-0000		(US) Far East Network, Tokyo	3910				
2300-0000		KVOH, Rancho Simi, California	17775				
2300-0000		KYOI, Saipan	15405				
2300-0000		Radio Australia, Melbourne	15160	15240	15320	15395	
			17795	21740			
2300-0000		Radio Canada Int'l, Montreal	9760	11945			
2300-0000		Radio for Peace, Costa Rica	21555				
2300-0000		Radio Japan, Tokyo	11800	15195	17810		
2300-0000		Radio Moscow	7295	7370	9625	9790	
			9840	15295	15420	17570	
			17655	21790			
2300-0000		Radio Moscow, (N. American Srvc)	6170	7115	7165	7195	
			9530	9720	9765	9890	
			12050	13605	15405	15245	
			15425	17700			
2300-0000		Radio Polonia, Warsaw	5995	6135	7125	7270	
2300-0000		Radio Thailand, Bangkok	9655	11905			
2300-0000		Voice of America, Washington, DC	17735	17820			
2300-0000		WCSN, Boston, Massachusetts	9495				
2300-0000		WHRI, Noblesville, Indiana	9770	17830			
2300-0000		WRNO, New Orleans, Louisiana	13760				
2315-2330		BBC, London, England*	11820	15390			
2315-0000		BBC, London, England	5975	6005	6175	6195	
			7325	9515	9590	9915	
			11785	12095	15260	15435	
			17875				
2330-0000		Radio Korea, Seoul, South Korea	15575				
2330-0000		Radio Tirana, Albania	7065	9760v			
2330-0000		Voice of Vietnam, Hanoi	9840	12020	15010		
2335-2345	M-A	Voice of Greece, Athens	7430	9395			
2345-0000		BBC, London, England*	3915	6080	7180	9580	
2348-0000		WINB, Red Lion, Pennsylvania	15145				

Send us your special QSLs and we'll copy and return them promptly, to be used as space permits (QSL editor, PO Box 98, Brasstown, NC 28902).

magne tests...

Lawrence Magne

Editor-in-Chief
Passport to World Band Radio

Best Value Stocking Stuffers

With world band listening, there's not a whole heck of a lot to spend your devalued dollars on. Once you've got a radio, all you need is information -- that includes a subscription to *Monitoring Times* and at least a dozen copies of *Passport to World Band Radio* -- on when and where to find stations, and you're all set.

Three Great Supersets...

If you want to treat yourself to a shortwave superset, there's the superb Kenwood R-5000, which not only digs out tough catches, but also has above-average audio quality. Or the well-made Japan Radio NRD-525, if audio quality is of secondary importance. If your interests center around DXing, rather than listening to music and such over world band, then the ICOM IC-R71A can also make an excellent choice.

The problem with any of these three gems is that they cost good money. Sometimes a kilobuck or more.

...and Four Interesting Portables

Among portables, though, the choices are kinder to your wallet. The General Electric World Monitor, as we indicated in last month's *Monitoring Times*, is a whale of a bargain from Electronic Equipment Bank at only $129.95 ... while they last (this final shipment of 700 radios was to have arrived by Thanksgiving). Another great buy is the Magnavox D2935, which performs similarly to the GE, but is somewhat more modern and sells for about $50 more.

Among better portables, times are a-changin'. The *Passport* crystal ball sees a handsome new superportable in some folks' future ... perhaps yours. If you've been contemplating a costly portable, try being patient a few months longer.

Looking for something really cheap? Then try the Magnavox D1835. It's no Kenwood, but it does a much better job than its price tag would suggest. We recently received Universal Shortwave's catalog, where the D1835 is featured at an incredible $49.95! This is $20-40 under the usual selling price, making this little unit the hands-down winner in the stocking-stuffer category.

That is, unless the stock market blessed you with some of its scarce profits. Sony's new ICF-SW1S, which Universal's catalogue shows for sale at $279.95, is the best performer among mini-portables. It also comes with a caseful of accessories, including an active antenna, stereo earpieces and a worldwide ac adaptor.

Antennas Make Affordable Stocking Stuffers

Today's technology makes outboard antennas unnecessary. Indeed, with portables outboard antennas can do more harm than good. The best bet, if you feel the need for additional signal pickup, is to run 20 feet or so of insulated wire to a nearby tree.

But if you have a tabletop model, a really good antenna will let your radio truly strut its stuff. Eavesdropper makes two models, a trap dipole and sloper, plus Alpha Delta turns out its own venerable sloper design for shortwave listening. Pennsylvania's Ant Farm also turns out a wide variety of outdoor antennas.

No room for a long outdoor antenna? Try Datong's AD-370 active antenna, which *Passport/89* gives highest marks to. It's available for around $150 from Electronic Equipment Bank and Gilfer Shortwave in North America or, if you're in Europe, directly from the manufacturer in England.

England? Well, now, that means wassail, crackling fireplaces and all-around good cheer. Which is what all of us on the *Passport* editorial team wish for you throughout the holiday season and into the decade's closing year!

Passport's "RDI White Paper" equipment reports contain everything -- laboratory measurements, "hands-on" panel findings and user comments -- found during *Passport's* tests of communications receivers and advanced portables. RDI White Papers are available in the US from EEB and Universal Shortwave; in Canada from PIF Book-by-Mail, C.P. 232, L.d.R., Laval PQ H7N 4Z9; and in Europe from Interbooks, Stanley, Perth PH1 4QQ, Scotland, and the Swedish DX Federation.

A free catalogue of the latest editions of these reports may be obtained by sending a self-addressed stamped envelope these firms or to Publications Manager, International Broadcasting Services, Ltd., Box 300, Penn's Park PA 18943 USA.

You can hear Larry Magne's equipment reviews the first Saturday of each month, plus Passport editors Don Jensen and Tony Jones the third Saturday, over Radio Canada International's award-winning SWL DIGEST. For North America, SWL DIGEST is heard at 8:10 PM EST on 5960, 9535, 9755, 11845 and 11940 kHz, with a repeat the following Tuesday at 8:30 AM EST on 9625, 11855 and 17820 kHz.

A Special Report

Where is World Band Radio Headed?

Next to politics, world band radio is surely as good a candidate as any for "The Least Understood Phenomenon of 1988." World band is all washed-up, declare some; broadcasting's new frontier, insist others. Supporting facts, alas, have been as scarce as bullfrogs in the Sahara.

Understandably, at *Passport to World Band Radio* we have more than a passing interest in this subject. And so do any number of others, including legions of international broadcasters and shortwave equipment manufacturers.

Who Are We, Anyway?

In the past several months, we've been taking a look at world band with an eye to seeing what its basic dynamics are. Who listens? What do they listen to? Is listenership growing or declining?

We've pored over the survey work of others, plus done some checking on our own. Here, in a nutshell, is what we're finding, especially among newcomers -- those who commenced listening in late 1987 or early 1988.

Receiver Sales Up Around 25%

First, in the US -- and possibly Canada, as well -- sales of world band receivers appears to have grown around 25% this year alone. More important, the *rate* of growth has been increasing each year since 1984.

As to actual sales of world band radios for 1988, from what we can tell it appears that sales in North America are in the ballpark of very, very roughly a quarter million units per year.

Mature Males Predominate

As to listener characteristics, there is no mystery. They are overwhelmingly male, nonblack, and middle aged or older. They strongly prefer to listen evenings to the more powerful and obvious stations: the BBC -- a consistent favorite -- Radio Moscow, Radio Canada International, and so forth. Nearly all listen to programs in English, but a substantial minority also listens to a wide variety of second languages.

It also appears -- again, judging from *Passport* readers -- that the dearth of younger listeners does not mean that world band listening is, like a pig in an anaconda, limited to those born before, say, the Sixties. Rather, the interest in world band listening develops, like wisdom and grey hair, as maturity sets in. Given the age distribution pattern in North America, and the fact that interest in world band listening increases with age, the audience for world band broadcasts appears likely to rise nicely for some years to come.

News and Fresh Perspectives

The overwhelmingly favorite type of program is news, with "radio hobby" or "media" programs not even in the running among newcomers. On the other hand, among active radio enthusiasts, including customers of Universal Shortwave, as surveyed by Kim Elliott of the Voice of America, some radio hobby shows are quite popular.

As to why people decide to listen, the chief reason is that world band radio offers a fresh perspective. Perhaps surprisingly, few have any great quarrel with the quality of programs they hear.

Loyal Listeners

A major finding, at least among readers of *Passport to World Band Radio*, is that new listeners are remarkably loyal to the medium. Perhaps it's because they have *Passport* as a reference to guide them through the thicket of world band stations and channels. But in any event, *Passport*'s survey of readers shows a remarkable resistance to "dropping out" on the part of those who first became listeners nearly a year earlier. This suggests that world band listening is neither a fad nor a passing fancy, even though quite a number complain of various reception difficulties they have encountered.

In Europe, the situation, for now, is completely different, even though world band radio sales are comparable to those of North America. Listenership in Europe is stagnant, as it has been for decades, with world band receiver sales probably around a quarter-million units per year, mainly in Central Europe.

Whatever we know now about world band -- and it's much more than we knew until recently -- it's still a far cry from what we need to know if broadcasters and others in the field are to make intelligent long-term decisions. A lot more digging needs to be done, and probably will be done in due course. But, in the meantime, world band appears to be alive and very much on the move in North America.

-- *Lawrence Magne*

Larry Wiland

292 S. Turner Rd.
Youngstown, OH 44515

Realistic PRO-34 200-Channel Handheld Programmable

One of the newest additions to the Radio Shack line of scanners for 1989 is the Pro-34 200-channel handheld model. Featuring expanded standard frequency and 800 MHz coverage, the Pro-34 has a lot to offer both to the first-time scanner buyer and seasoned monitoring enthusiast.

The Pro-34 is a compact (6-1/2" x 2-3/4" x 1-13/16"), well-designed radio with crisp audio and light weight (only 14 oz. sans batteries). Couple the features below with Radio Shack's remerging reputation for reliability and quality, and you have a handheld worthy of consideration by even the most finicky user. At $329.95, it is definitely worth checking out.

What It Is...

The Pro-34 has 200 user-programmable channels, each one capable of being set up with its own two-second delay time (to prevent missed replies to radio traffic or being locked out of the scanning sequence). Ten banks of 20 channels allow the user to assign banks individually to various radio services or to quickly lock out groupings of channels or services not of immediate interest.

A programmable priority feature lets the operator assign any one of the 200 channels as priority channel which is sampled during the scanning sequence when the priority feature is activated (once every two seconds). Selectable scanning speed is a rather sluggish eight channels per second fast or four channels per second slow. Search speed (16 channels per second fast and eight channels per second slow) is a little better.

Searching between two specified frequency limits is possible with the search feature, and a separate "monitor" bank of ten channels allows one to temporarily (until they are entered into permanent memories or otherwise utilized) store up to ten frequencies of possible interest discovered while searching. These can also be monitored individually without actually memorizing them in the programmable scan sequence.

The Pro-34 is housed in an attractive black plastic case and features a two-tone color-coded keypad. A grey background is used behind the scanner's function keys with blue designating the digits 1 thru 0. A top-lit LCD display is provided for frequency and function readouts and is one of the few which is readable in all lighting conditions, including complete darkness.

Well Thought Out

In addition to the well-thought-out positioning of the scanner's controls, a front-mounted keypad lock switch is provided to prevent accidental or unwanted entry of frequency or digital information.

On top of the scanner is located the volume and squelch control knobs and an earphone jack (for "silent" listening with an accessory earphone or headset); a BNC connector for the Pro-34's rubber duck all-band antenna; and separate buttons for remote fingertip control of manual channel control and scanning.

Separate jacks for 9 volts input power (to actually run the radio) and for charging the required 6 AA NiCad or regular batteries are located on the side of the radio. An outboard accessory powerpack (wall charger) is also available under R.S. part number 273-1455, and sells for $7.95. It may be used to power the scanner and recharge the batteries (if NiCads are chosen).

Neither is furnished with the scanner and must be bought separately. An optional soft carrying case may be purchased for $9.95 under R.S. number 20-004 and is a great improvement over the plastic belt clip furnished with the Pro-34.

It is logical to compare the PRO-34 with its closest competitor, the Uniden BC200XLT, which comes equipped with AC adapter/charger, NiCad battery pack and leather holster for fifty dollars less. Buying these accessories to similarly equip the PRO-34 means a price difference of some $80.

What It Does...

The Pro-34 has very good frequency range coverage, with low-band limits of 30-54 MHz, aircraft AM band coverage of 108-136 MHz, VHF high band limits of 136.005-174 MHz, UHF band coverage of 380-512 Mhz, and "800" band coverage from 806-823.9375, 851.1125-868.9375, 896.1125-960.00 MHz. Cellular coverage is restorable (see isdebar article).

Audio is crisp and clear (but a bit low at only 200 mw) although it is adequate for most situations.

The rubber keyed frequency entry/function keys are spaced well and have good feedback in use. The radio is easily carried in the palm of the hand, and appears to be well-made and durable for normal everyday usage.

And Performance...

The Pro-34 performs well in actual use. Audio from the scanner's 1-3/4" speaker is very clear and well-defined, and not "muddy" sounding like many handheld scanners, even under nearly full volume. While intermod is not totally nonexistent (perhaps due to the outer

plastic casing of the radio), it is no more so than found in most other scanners and presents no real problem under normal operating conditions.

Reception on all bands ranges from very good to excellent. Squelch action is good and opens easily, even on weak signals. The top-mounted scan/manual step buttons are a nice feature which allows the user to start and stop scanning, even if the Pro-34 is in a case or has the keypad lock activated.

Sensitivity in the 800 MHz ranges is very good, although the scanner can definitely handle a better, all-band antenna to totally utilize its built-in effectiveness. The supplied "duckie" is adequate for general use, but an adjustable whip like the Grove ANT-8 for the various bands of interest will really "wake-up" this radio.

The outer plastic case, while of consumer grade quality and adequate for normal usage, would be much improved if made of metal or aluminum. Not only would performance be improved (and intermod reduced), but the shiny keypad and rear case half quickly fingerprint, and looks "smudgy" after a short period of handling. Not that this affects the performance, but appearance *is* a consideration to most enthusiasts, especially those who just spent 329 dollars on a radio. A side benefit would be additional durability, although this radio is built quite rugged as it is.

Stations up to 45 miles away (on VHF) were received with ease on the test unit, and performance is excellent on other bands. Adding an outside antenna makes this unit comparable to (and better than) several base-type scanners currently on the market today. All in all, the Pro-34 is a very fine handheld scanner. It is easy to program, easy to carry and easy to use. This one ranks with the best of them; Radio Shack has done their homework.

mt

CELLULAR RESTORATION

With the prospect of scanner labeling in the future, Uniden and Tandy both are taking a hard look at cellular deletion. To cover all bases (just in case labeling becomes law) both companies continue to make cellular frequency ranges restorable in their programmable scanners.

In the case of the PRO-34, several diode positions are already marked on the board for various worldwide frequency schemes. D9 enables 66-88 MHz coverage (RF realignment is required), but at the loss of 30-54 MHz. D10 enables 896.1125-960 MHz and is installed at the factory. D11 disables 825-855.1 (cellular mobiles) and 870-896.1 MHz (cellular bases) and is installed at the factory. D12 disables 136-146 MHz (disallowed in some countries).

For our purposes, then, only the removal of D11 is of interest since it permits uninterrupted 806-960 MHz frequency coverage with 30 kHz channel spacing. This modification could revoke your warranty and MT assumes no liability for damage or warranty cancellation.

We would like to thank Robert Kelty of Mobile Radio Resources for the procedure from which the following steps are extracted to restore cellular coverage to the PRO-34.

The following procedure is relatively complicated and should not be attempted by anyone unfamiliar with soldering small circuit boards. A complete service manual (stock no. 20-135/9135) for the PRO-34 is available from Radio Shack.

1. Remove the battery cover and battery, four black screws from the rear cover, and volume and squelch knobs.
2. Remove the rear cover, lifting back and upwards to clear the control shafts (do not remove belt clip or circuit board screws).
3. Unplug the brown volume control connector (green, yellow, black cable) and white squelch cable connector (white, black, red cable) from the linear circuit board.
4. Unsolder the ground lead from T111 (at the corner of the linear circuit board above the external power connectors). Unsolder the two power switch leads from the back of the volume control. Unsolder the antenna connector center pin and ground leads from the linear circuit board.
5. Unscrew the four combination screws that hold the linear circuit board and held the rear cover screws. Grasp the linear circuit board at the top and lift it straight away from the front case, unplugging the 16-pin connector.
6. Remove the three screws holding the metal frame assembly which held the linear circuit board to the front panel. Unplug the red-black power lead and lay the frame aside (it is still connected to the battery contacts).
7. Locate diodes D9-D12 on the volume control side of the logic circuit board under T1; D10 and D11 are marked. Clip one lead of D11, separating the gap slightly (it may be resoldered later if desired).
8. Reassemble the board by reversing the disassembly procedure outlined above.

Doug DeMaw

P.O. Box 98
Brasstown, NC 28902

How Low Can You Go?

With respect to shortwave listening, many of you aren't equipped to listen below the standard broadcast band. Many commercially-made receivers don't include the 550-1600 kHz AM broadcast band, let alone those interesting frequencies below 550 kHz! For example, 500 kHz is an international distress frequency. Also, you can hear numerous ADF (aircraft direction finder) and other radio-location beacons below 500 kHz.

Of a more personal interest is the segment between 160 and 190 kHz. Here we may find beacon signals from amateur and nonamateur experimenters who are taking advantage of the provisions in Part 15 of the FCC rules. It's possible that you many have a low-frequency experimenter in *your* neighborhood.

You can build a converter that will enable you to monitor the frequency range from 100 to 500 kHz. It must be used in combination with a tunable receiver that covers the MF (medium frequency) spectrum. This article describes a simple crystal controlled converter that you can build. More about that later.

How Converters Work

A converter is used to provide frequency coverage that is not possible with an existing receiver. You can use a VHF or UHF converter with an HF (high frequency) receiver, and you can employ an LF converter with a receiver that is designed for frequencies above the LF spectrum. This is known as "down converting" and "up converting," respectively.

The main receiver becomes the *tunable IF* (intermediate frequency). In this situation your main receiver is tuned to cover the desired range of the converter. The converter oscillator remains on the same frequency, since it is crystal controlled. However, you may build a tunable converter that can be used with your main receiver. In this situation the main receiver is tuned to a specific fixed frequency. The converter main tuning is then used to cover the band of interest.

A converter receives the desired incoming signal, process the signal in a mixer, which is supplied also with energy from a local oscillator. The sum or difference of the two frequencies in the mixer creates an *intermediate frequency*. This resultant frequency is fed to the main receiver, which acts as a tunable IF. For example, if we feed a 1700 kHz oscillator signal into a mixer, along with a 300-kHz LF signal, the IF becomes 1400 kHz.

The 1750-Meter Band

Earlier I mentioned an experimenter's band in the LF spectrum. This is the segment from 160-190 kHz. It has been set aside by the FCC for remote-control signal use. However, one need not have a license to operate there, provided there is conformity with the regulations. Specifically, we can't use more than 1 watt of dc input power to the last stage of the transmitter. Furthermore the antenna (inclusive of feed line) is restricted to a maximum length of 50 feet.

This does not apply during receive. When receiving, you may use any antenna you wish. Ken Cornell, W2IMB, is the grand marshall of the "Lowfers' Band."[1] You may want to contact him about obtaining a copy of his *Low Frequency Scrapbook*. It contains a collection of data and circuit diagrams of interest to LF experimenters.

Many experimenters operate 1-W beacon transmitters that transmit around the clock. Others actually communicate via CW. Some operators use their initials for call signs. The FCC does not want us to use our amateur radio call signs in the LF band.

This Month's Project

If you have followed this series (copies of past articles in the series are available from Grove Enterprises for $2 plus SASE), you should be ready to tackle the circuit in Fig. 1. It enables the user to tune 100 to 500 kHz while using a standard AM broadcast receiver as the tunable IF. Tuning is done from 1200 to 1600 kHz on the main tuning dial of the receiver.

If you converted the transistor AM radio in accordance with my article in last month's *Monitoring Times*, you can use this converter with that receiver. If you have not modified a transistor radio previously, you may simply wind a 6-turn link on the ferrite

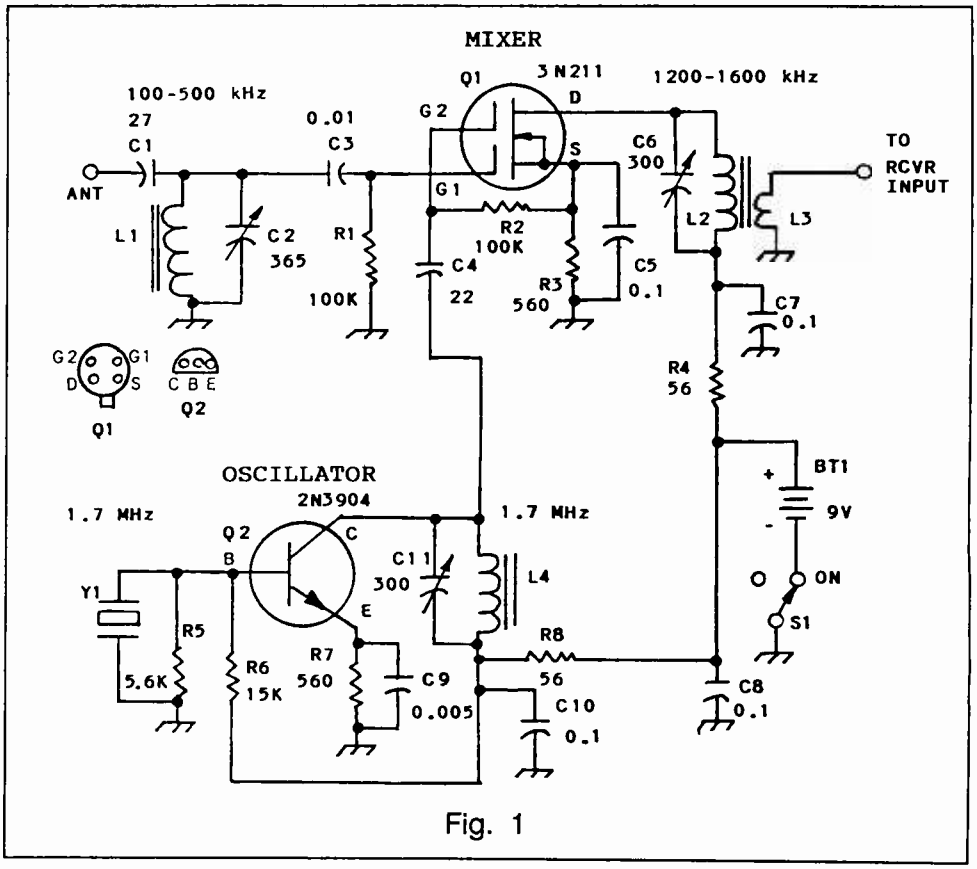


Fig. 1

loop antenna of the radio to accommodate the 50-ohm output (L3) of Fig. 1.

Your AM radio will need to be contained in a metal box to which an earth ground or cold-water pipe is connected. This will prevent the AM radio from picking up local broadcast stations that would otherwise interfere with reception of LF signals. This will require the addition of an extension shaft for the main tuning of the AM radio. You will also need to relocate the volume/on-off control so that it is accessible from the outside of the metal cabinet.

Two transistors are used in the simple converter of Fig. 1. Q1 is a dual-gate MOSFET that functions as a mixer. You may use an RCA 40673 or a 3N211 for this circuit. L1 and C2 form a high-Q tuned input circuit. C1 is used to lightly couple the wire antenna to L1. A slightly higher C1 capacitance value may increase the sensitivity at the cost of reduced tuned-circuit Q (degraded selectivity), since the antenna will tend to load the input circuit.

Q2 is the oscillator. It uses a fundamental crystal that has a 30 pF load capacitance. C9 is a critical value, since it is part of a feedback divider. The remaining half of the divider is represented by the Q2 emitter-base internal capacitance. You may need to experiment with the value of C9 to ensure reliable oscillation. It will depend upon the activity of your particular crystal.

The 1.7-MHz oscillator energy is combined (mixed) with the incoming 100-500 kHz signal at Q1 to develop an IF of 1200 to 16000 kHz. L4 is tuned to 1.7 MHz and L2 is tuned to 1400 kHz-- the center of the IF tuning range. L3 provides a 50 ohm output impedance for the converter.

Builder's Notes

The basic rules for building RF circuits apply to this converter. Keep the leads as short and direct as practicable. Avoid locating L1 near L2 or L4. All of the toroidal coils need to be at least 1-1/2 inches away from one another.

If you are familiar with PC-board layout and fabrication, by all means build your converter on a circuit board. If you aren't skilled at making PC boards you may construct the Fig. 1 circuit on perforated board or on a piece of single-sided PC board that has numerous square islands. This may be done by cutting a grid of lines with a hacksaw or Moto Tool.

Alternatively, you can glue numerous PC-board squares to a blank PC board to form islands. Epoxy cement may be used to affix the islands to the main board. Point-to-point wiring may then be done by using the islands as junctions for the components that are soldered together.

C2 is a single-section broadcast type of tuning capacitor. Look for these at flea markets and in discarded older radios. You may use two or three section variables of lower capacitance per section. Simply place the sections in parallel to form a high-capacitance variable.

Use care when soldering Q1 into the circuit. Its internal gate insulation can be punctured easily by static charges. Mount all of the parts before adding Q1. It should go on the board last. Ground the tip of your pencil iron (clip lead) before soldering Q1 in the circuit. Avoid excessive heat on the Q1 leads.

Using Your Converter

You can expect good sensitivity when you use this converter with a properly performing AM radio. Q1 of Figure 1 yields a conversion gain of approximately 10 dB. This is the same as increasing the strength of the incoming signal by 10 dB.

Use a long piece of wire as the antenna -- the longer the better. The length is not critical, nor is the height. An earth ground or the cold-water pipes in your house may be connected to the ground bus of the converter to enhance signal reception.

Connect L3 of Figure 1 to the low-impedance input of your AM broadcast radio by means of a short length of 50-ohm coaxial cable, such as RG-58 or miniature RG-174/U. A short piece of shielded audio cable is suitable in place of the coax.

Set your AM radio dial near 1400 kHz and tune it until you hear a beacon signal. Adjust C2 for maximum signal, then do the same by adjusting C6. C11 is set for reliable oscillator starting when S1 is turned off and on a few times.

Backward tuning results from this frequency scheme. In other words, 100 kHz will appear at 1600 kHz on the radio dial. Similarly, 500 kHz will appear at 1200 kHz.

With the circuit values given you may use any operating voltage up to 13, should you perfer an AC-operated dc power supply. The current drawn by this circuit (9-V operation) is approximately 12 mA.

Notes

[1] Ken Cornell, W2IMB, 225 Baltimore Ave., Point Pleasant, NJ 08742.

Fig. 1 Schematic diagram of the LF converter. Decimal value capacitors are in uF and are disc ceramic. Others are in pF. Resistors are in ohms and are 1/4-W carbon units. K=1000.

C2 Broadcast type of air variable capacitor (see text).

C6, 11 Mica compression trimmer, 300 pF maximum. ARCO no. 427 or equivalent.

L1 60-uH toroidal coil. Wind 29 turns of no. 24 enam. wire on an Amidon FT-50-61 ferrite toroid.

L3 6 turns of no. 24 enam. wire over L2 winding.

L4 44-uH toroidal coil. Wind 25 turns of no. 24 enam. wire on an Amidon FT-50-61 ferrite toroid.

S1 SPST toggle or slide switch.

Y1 Fundamental HC-6/U crystal, 30 pF load capacitance.

Alkaline Battery Pack for Bearcat 200/250XLT Scanners

by Dave Buda

I love my Bearcat 250/XLT. In fact, it's the best scanner I have ever owned. There is only one problem with this teriffic little unit. The nicad battery pack simply does not last long enough and it takes overnight to fully recharge and a second pack is extremely expensive. I solved the problem by building an alkaline pack for it. Since alkaline batteries last a long time a single pack is good for many weeks of use.

Begin the project by obtaining an Icom BP-20 alkaline battery pack. Icom uses this pack on its handy talkies so you know it is a rugged long lasting device. Now let's see how we can modify this battery pack for use on the 250.

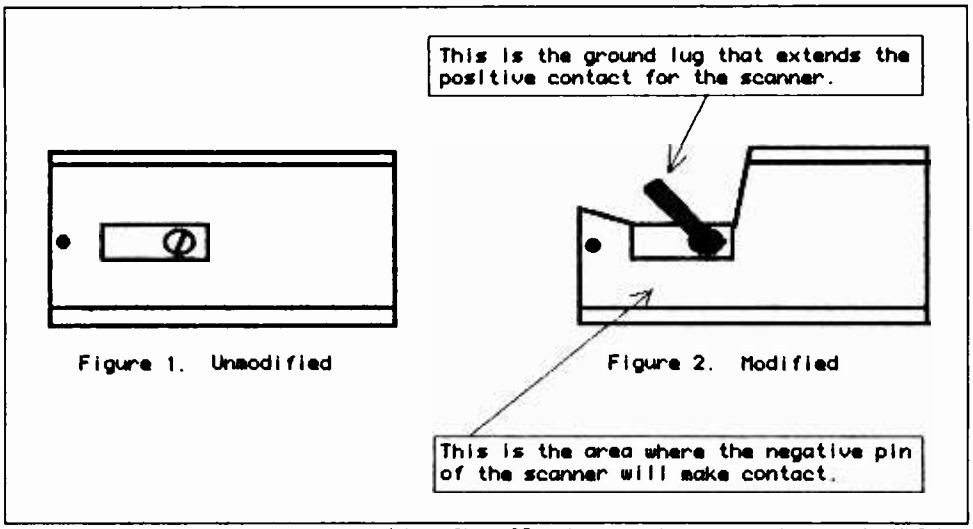


Figure 1. Unmodified

Figure 2. Modified

Before we start, slide the battery pack onto the scanner (there should be no batteries in pack at this point), it will be a bit tight the first time so be careful. Get the feel of what the pack feels like a few times. Yes, I know it looks funny, but this is a practical modification. It doesn't have to look pretty!

Do not install batteries in the BP-20 till the modifications have been completed. Take the BP-20 apart as if you were going to install batteries. On top of the pack is a metal track that connects the pack to the radio. This track is held in place by one screw. Remove the screw and slide the track off the top of the plastic case. Take a look at figure one; this shows you what the track looks like before it is modified.

Figure two illustrates the appearance of the track after modification. Modification is accomplished by removing metal from the track as shown in figure two. Use a small saw or file. (The saw should have very fine teeth.) Be careful not to crimp the track while cutting it. Now reassemble the track back onto the top of the plastic case. Note: do not overtighten the retaining screw! Use a small (size 0) Phillips head screwdriver to remove and tighten the screws.

Now, remove from the battery pack the screw that acts as the positive contact and install a small solder lug (number 2 should be large enough). Take a look at the position of the lug as shown in figure two; now tighten it down. Make sure the lug does not shift while tightening or you will have a short when you install the batteries. You may have to file the lug a bit after you position it so it makes contact with the positive pin of the scanner when it is slid on. If the lug is up too high above the battery pack it won't join properly with the scanner so take your time. The plastic around the scanner pins is easily damaged if the lug is positioned incorrectly.

Ok. Now we've made all the cuts and added the lug extension. Slide the battery pack onto the scanner and check that everything is lined up properly. Also check to be sure the lug is not shorted to the metal track. When you are sure everything is aligned, install the batteries into the pack.

Now be sure the scanner is *turned off!* Slide the battery pack back onto the scanner and again check to be sure everything lines up properly (check alignment every time you install pack to be certain nothing has shifted). Now turn on the scanner and enjoy listening sessions with the knowledge the pack won't go dead in the middle of an exciting event.

Cool Off Your Bearcat

by Robert Watkins

Adding a heat sink, as mentioned in a previous issue of *MT*, helped keep my BC250 *[and would perhaps work on similar Bearcats]* working longer between shut-offs. But the heat sink got so hot that you could not touch it, so I added another fix and it seems to have stopped overheating.

The case on the 250 is of heavy metal with no way to breath. I got two small speaker grills (Radio Shack #40-1291). The grills are the molded type with lots of holes for

good air flow. The case will take the grill as-is on the bottom. To fit the case top, cut the flange off of the grill. To remove the metal in top and bottom, drill four lines of holes in a square (see figure).

Also the feet are too short. I drilled a hole in the bottom of four 35mm film cases (they're 2" high) and bolted them on four feet. This lets air get to the bottom grill for better ventilation. I used film cases because this is what I had handy. It's been several months now and no trouble.

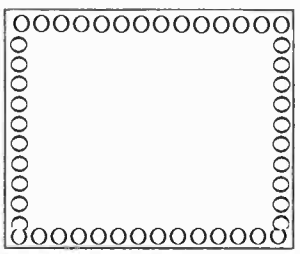
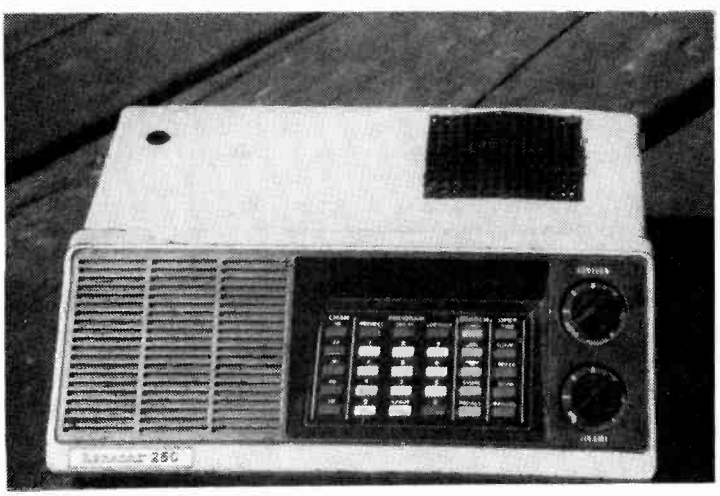
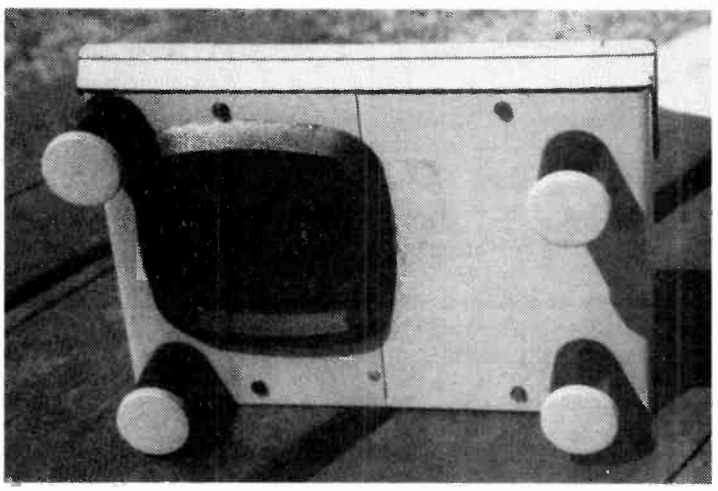


Fig. 1

Monitoring Times invites you to submit your favorite projects for publication. For more information, contact technical editor Ike Kerschner at RD 1, Box 181A, Kunkletown, PA 18085.

Projects for Experimenter's Workshop, while reviewed by our Technical Editor, are submitted by readers and remain experimental.





W. Clem Small, KR6A, CET

Rt. 1 Box 64A
Weybridge, VT 05753

You can build it

Four Antennas for the Price of One?

In today's hi-tech world you'd have to be an electronics whiz to build yourself a state-of-the-art communications receiver or scanner. But there are still some areas of communications technology where you don't have to be a genius to build your own equipment. Doug DeMaw's column, as well as a number of others which appear right here in the pages of *Monitoring Times*, give some good examples of interesting projects that can still be constructed and enjoyed by the average radio buff.

In particular, the field of antennas offers the radio enthusiast an opportunity to get involved in the construction of their own communications equipment. And generally, the "home-brew" antennas which you construct, if carefully made, will work just as well as commercially available products -- and save you a bundle of cash! So, why not try this month's design and see for yourself.

An Old Standby

Let's look at variation on an old friend and perennial favorite, the dipole antenna. The dipole antenna has, no doubt about it, provided more communications in more situations than any other single type of radio antenna. And not only does a dipole work great on the band for which it was designed, but it also works well on the band which is three times higher in frequency than the fundamental design band.

This means that our antenna, with conductor elements cut for the 75 meter band will also work well on 25 meters, or that one cut for 49 meters should also perform well on the 16 meter band. Either of those would be a two-for-the-price-of-one antenna!

But what if we put them both in one package? A four band antenna, you say? Right you are! Of course, as with most attempts to put several things into one package, there are some trade-offs. But the resulting antenna should give good reception on all four of its bands. And to top that off, it's almost as easy to build as a single dipole.

If you find that the length of the antenna shown is too long for your yard, you can bend it down towards the ends, or even sideways to make it fit. Or, by use of the formula given in Figure 1, you can design a shorter one for a higher set of bands. So, if you'd like an antenna with some guaranteed listening fun, why not give it a try?

LET'S MAKE AN ANTENNA

Here's a list of materials you will need to build the antenna as shown in Figure 1:

- 120 feet of twinlead cable. Make sure that it is a good quality line, with no skimping on the copper.
- A length of coaxial cable (52 or 75 ohm), long enough to run from the antenna to your receiver.
- A center insulator, and two end insulators.
- Support ropes to tie the ends of the antenna up to some elevated points (trees, poles, or buildings).
- Sealer for the coax.
- If you live in "lightning country," don't forget some form of lightning protection. Disconnecting and grounding the antenna when it is not in use is a good way, if you can remember to do it! And never operate the antenna during thunderstorms.

The length of twinlead indicated is one and a half feet longer than needed for the elements. The extra length is to allow for wrapping the conductors around the insulators. You will need to cut two 60 foot legs of twinlead. Take each leg and strip the insulation off one end for a length long enough to attach the two wires to the center insulator you are using, as shown in Figure 1. Wrap both of the two wires together to form one wire, before you put them into the end of the insulator.

Now prepare and attach the coaxial cable to the twinlead wires at the center conductor as shown. The braid of the coax can go to either leg of the antenna, and the center conductor goes to the remaining leg. Make sure that the center conductor and the braid of the coax do not contact each other.

Then solder the connections, and cover the coax well with coax sealer to keep out moisture. Black plastic tape can also be used, but it is not as certain to seal, nor as long lasting as coax sealer.

Some coax braid-wire does not solder well. This is especially true of CATV line. If

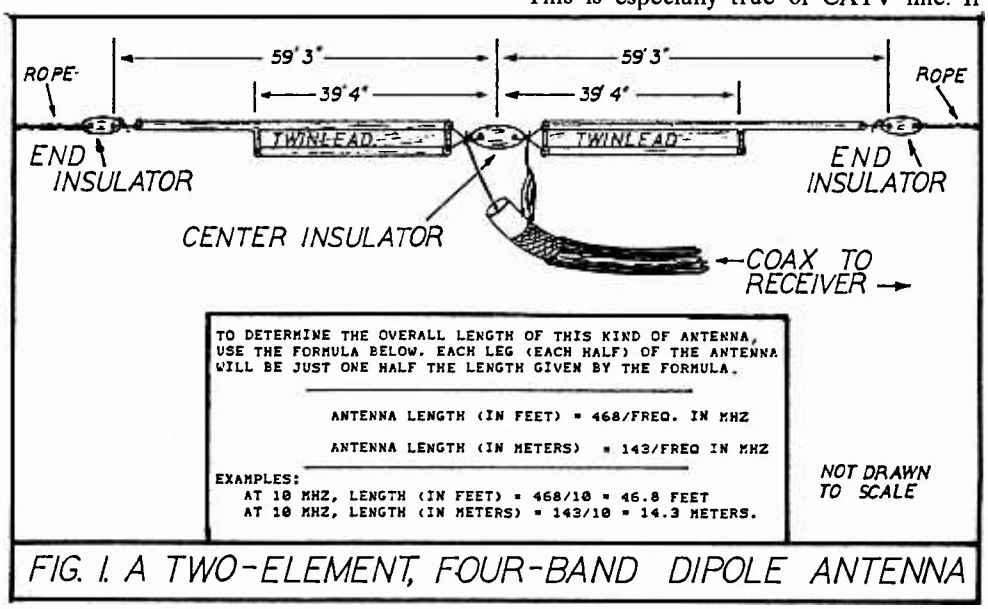


FIG. 1. A TWO-ELEMENT, FOUR-BAND DIPOLE ANTENNA

yours won't solder, make the connection mechanically stable and then wrap it completely with some heavier wire and crimp the wire hard with pliers. This isn't as good or long-lasting as soldering, but it will get you "on the air."

If you prefer to use the type of center insulator which has a coax socket mounted on it, you will solder wires from the center elements to the socket, rather than directly to the coax end. In either case, seal the connection to keep moisture out of the coax line.

Next, lay the antenna out straight on the ground, and measure from the center the appropriate length for the shorter element of each antenna leg, and cut one wire (either one) in each leg to be that length. Pull (rip) the unused portion of this wire (the length which runs from the cut, on out to the end of the twinlead) out of its plastic jacket and discard it.

At this point, remove the insulation from the end of the long twinlead wire in each leg such that the end-insulators can now be attached at a point that will give the antenna the proper length for each leg. That length is 59 feet, 3 inches for the antenna shown in Figure 1. It's best to solder these wires where they wrap around themselves at the end insulators, to make the connection strong. But you needn't insulate them as you have done for the connections at the center insulator.

All that remains now is to attach support ropes (halyards, as the antenna professionals call them) to the end insulators and mount the antenna as high and in-the-clear as you can conveniently do.

A Cautionary Note

Here are a couple of things to watch out for. One is to avoid running the antenna's length in the direction of a station you particularly want to hear. This is because there are nulls off the ends of a dipole antenna. Usually you will not be aware that the nulls exist, but they can reduce the strength of a station if pointed right at it. Also, watch that you do not get either the antenna or the lead-in near power lines.

After you have covered all the steps given above, run the lead-in to your monitoring post, and enjoy those signals rolling in!

RADIO RIDDLES

Last Month: Last time we met, I asked you "What U.S. president was known as the 'radio president,' and why?" Some old-timers out there may recall that it was Franklin Delano Roosevelt, our thirty-second president, who had this nickname. F.D.R., as he was often called, was noted for his over-the-radio "fireside chats," or informal talks, to the American people. He was the first U.S. president to make extensive use of radio in this way, and he had such an excellent "radio" personality that he became known as the "radio president."

This Month: Would you agree that, to some extent, almost every antenna can be said to be a "beam" antenna? Think it over, and find the answer right here next month.

ask bob

Bob Grove, WA4PYQ

P.O. Box 98
Brasstown, NC 28902

Q. *Can I search more than one range at a time on my PRO2004 scanner? Although I can program several search ranges, I have to manually select one at a time to search. (Doug Ferrell, Tallahassee, FL)*

A. We are unable to find a method to command the PRO2004 to automatically search more than one frequency bank at a time. For example, if you wished to search 40-40.5 and 120-120.5 MHz, you would have to do it in two banks (we'll select 5 and 6) as follows:

Press PROGRAM, 5, LIMIT, 40.0, ENTER, LIMIT, 40.5, ENTER; then PROGRAM, 6, LIMIT, 120.0, ENTER, LIMIT, 120.5, ENTER. By pressing the upward arrow key, you will search bank 6 (120.0-120.5 MHz); if, during the search sequence, you press 5, the search will immediately switch to bank 5 (40.0-40.5 MHz).

You can program ten different search limits into channels 1 through 0, switching to any range of your choice by pressing the appropriate channel number during the search sequence. You can also start the initial search range of your choice by pressing MANUAL, then the bank number, MANUAL again, and the upward arrow key.

It sounds complicated the first time you read it, but after you've done it, the procedure is actually a simple routine.

Q. *Is Hallicrafters Company still in business? Where can I get a wiring diagram of an S40B receiver, and where can I get it repaired? (C. J. Everhardt, New Orleans, LA)*

A. Hallicrafters, a venerable manufacturer of communications equipment from 1932-1972, is no longer in business. A circuit diagram for the S40B is available as set 122-4 from Sams Photofacts (if you don't know of a distributor in your area, call 1-800-428-SAMS). A manual reprint is available for $7.25 from HI Manuals, PO Box 802, Council Bluffs, IA 51502.

For repairs, try contacting your local amateur radio club or a friendly ham with the expertise and the time. You may wish to send $2 for a sample copy of an excellent monthly publication, Antique Radio Classified, PO Box 2, Carlisle, MA 01741. Well illustrated, it is a goldmine of information for the collector of vintage electronic equipment.

Q. *If car stereos and scanners can have backlit displays and illuminated keypads and knobs, why don't CB radios have night-viewable panels? (Greg Reid, San Jose, CA)*

A. Good question. The answer is probably that CB radios typically sell for a fraction of the cost of scanners and car stereos and thus don't offer the slightly costlier amenities.

Q. *With VHF weather satellites gradually being phased out in favor of high resolution microwave satellites, will converters become readily available for receivers like the ICOM R7000 to receive the new ones? (Doug Chandler, W. Sedona, AZ)*

A. Probably not -- at least not readily available. Even with an appropriate frequency downconverter, the bandwidth required to produce a good facsimile picture would be different from that in a receiver. Either the filter would have to be changed in the receiver or a separate IF stage would be needed to handle the converted image frequency.

For those dedicated WEFAX watchers, there are specialized receivers and converters already on the market.

Q. *What is a simple way to receive good shortwave from my metal mobile home with a CB antenna already on a mast? (Bob Kenyan, Tombstone, AZ)*

A. You sound like a prime candidate for an active antenna. Be sure to choose one with frequency tunability, however; without that, you are sure to overload your receiver and suffer intermod interference.

Probably the least expensive answer would be to run the CB antenna into a Grove TUN-3/ANT4 "Hidden Antenna" system. The result will equal approximately 100 feet of wire antenna, and it will be tunable to boot.

Q. *Where can I find a hands-on review, not just a lab test report, on the JRC NRD525 receiver? (Sol Hoffman, Los Angeles, CA)*

A. Larry Magne's "White Papers" discuss various receivers with expertise, breadth and aplomb. There is one available on this receiver for $4 from the publisher, International Broadcasting Services, PO Box 300, Penn's Park, PA 18943, as well as from *MT* advertisers like Universal Shortwave and EEB.

ALIGNMENT ON THE GRE 800 MHz CONVERTER

Robert Edler of Westerly, Rhode Island, wrote to tell us that when he purchased the GRE 8001 converter in order to receive the 800 MHz band on his PRO2021 scanner, it came with hand-written instructions that the actual conversion frequency may vary.

The instructions say to add 400 MHz to the scanner display in order to know what 800 MHz frequency you are receiving, but Robert discovered that his 8001 was off about 12.5 kHz. By setting his adjustable 12 volt power adaptor to 9 volts, the frequency error corrected itself without notable loss in signal level.

Chances are that there is an internal trimmer on the converter's crystal oscillator to allow the correct setting as well, but alignment should not be attempted without instruments or a signal of known frequency.

Robert plugs a Radio Shack Y-adaptor (part # 12-1313) into his antenna jack with his normal VHF/UHF antenna connected to one side and the converter (with its antenna) connected to the other side in order to hear both normal and converted scanner frequencies simultaneously.

Q. *Are mobile scanners allowed in Georgia and North Carolina? (Billy Estes, Irmo, SC)*

A. Yes. At our last information, the following states do not allow mobile scanners without a permit: Florida, Indiana, Kentucky, Michigan, Minnesota, New Jersey, New York, North Dakota and South Dakota.

Q. *What is a logical way to program 100 or 200 memory channels in a scanner? (Greg Reid, San Jose, CA)*

A. Scanners with large memory capacities organize their channels into banks, usually of 20 or 30 channels. Use the first bank for those channels you commonly monitor (probably public safety and emergency), using up any extra channels in that bank by repeating the most important frequencies in them; this will reduce the chance of missing a transmission during the scan sequence.

Other banks might include surveillance frequencies used during drug busts, aircraft frequencies, conservation agencies active during forest fire season, cordless telephone frequencies, and so on. I find it convenient to group them into events, so that if a particular situation should arise, I'm ready to scan for action!

Q. *Is it true that North Carolina's mysterious Brown Mountain emits strange radio signals, that helicopters can't fly nearby without crashing, the forests have quicksand, that flying saucers have been seen there, and weird lights have been reported? (David Michael Choleva, Euclid, OH)*

A. Weird lights have been reported.

Q. *My shortwave radio dial is marked in MHz; how do I tune in frequencies expressed in kHz? (Robert J. Hollis, Tyler, TX)*

A. Megahertz and kilohertz are simply large and small units for measuring frequency just like yards and inches are large and small units for measuring length. There are 1000 kHz in 1 MHz, so you merely need to move the decimal point 3 places to change units. For example, 5950 kHz is the same as 5.950 MHz, and 11785 kHz is the same as 11.785 MHz.

Q. *Can my BC200XLT be programmed to receive out-of-band frequencies? (Wayne Townsend, Greenville, SC)*

A. No. Early model Regency (and some Bearcat) products could be extended beyond their advertised limits by a simple keyboard command ("MANUAL, 9, CLEAR" in the original "Touch"; ".", then frequency entry later), this was by design, not accident, as a factory alignment expedient.

Now scanner manufacturers have abandoned the keypad frequency expansion provision in favor of an alignment procedure done while the unit is still disassembled at the factory.

Q. *Are there any converters or transverters for shortwave receivers or transceivers in order to receive 30-50, 144-174 or 450-480 MHz? (Larry D. Shaunce, WD0AKX, Hollandale, MN)*

A. Not to our knowledge. There are two dominating factors: (1) a transverter (converts receiver and transmitter to another range) would be illegal to use for transmitting outside of the ham bands and (2), the VHF/UHF modes would all be FM, unreceivable on many HF receivers and transceivers not suitably equipped for that mode.

Since programmable scanners are extremely economical to buy, it is unlikely that manufacturers will consider such a conversion device.

Q. *Is a quadruple conversion superheterodyne circuit better than a double conversion superheterodyne for world band DXing? (Donald Michael Choleva, Euclid, OH).*

A. While all receivers are superheterodynes (more than one conversion), there are many ways to achieve single-signal reception in the mire of interference across the spectrum.

Although quadruple conversion may provide certain selectivity advantages, it also adds more "spurs" -- bogus, unmodulated carriers produced by the oscillators which can add interference of their own.

Double conversion adds fewer spurs, but often suffers from image interference -- signals reappearing at a second frequency (usually higher) than where they should be heard. Since multiple images will be more pronounced than discrete oscillator spurs, quadruple conversion usually wins out and is the standard for high-end, communications-grade receivers.

Questions or suggestions sent to MT are printed in this column as space permits. If you pefer a reply by return mail, you must include a self-addressed, stamped envelope.

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Domestic Broadcasting: Impossible DX
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LETTERS

continued from page 3

Betraying HCJB?

"I'm a new subscriber to *Monitoring Times* and the September issue was excellent. In fact, I enjoyed all of it except the poor review of HCJB's *DX Party Line*. I heard about your publication on that program!" That note comes from Brian Cassidy of Hatboro, Pennsylvania.

Brian, I personally regret the poor review of *DX Party Line*. Although often criticized for being to simplistic, it has long been a favorite of mine. I remember with great fondness programs by John Beck and before that, Clayton Howard and his delightful wife, Helen. In fact, over the years I've come to know a number of *DX Party Line* hosts and have found them to be some of the finest people I've ever had the privilege of knowing. But, as editor, it would be unfair of me to subject readers only to material I find agreeable. And thus we allow our writers a great deal of freedom in their work.

Most magazines live in fear of this sort of thing. Say anything bad about a product or show and you'll lose their advertising dollars or support. When I came on board here, however, I was given two mandates from publisher Bob Grove: The readers come first and tell the truth as best you can -- no matter what the cost. No, we don't get the advertiser support of some magazines but there's a positive flip side to that: you can always rest assurred of getting an unvarnished bottom line. If we were like most magazines, you wouldn't find such things as the comments on Sony radios, below.

On Sony

"I wouldn't call myself an experienced DXer -- I'm not very technically minded," says Tudor Davies of Anglesey, Gwynedd, North Wales in the United Kingdom. "I use mainly Sony portables and have three altogether, a Sony AIR-7, a Sony 7600D and a recently purchased Sony PRO-80."

"I was wondering," he asks, "if you have had any letters from your readers criticizing Sony portables as there is an aspect to them which disappoints me. I think that they could remove many of the 'extras' and in turn could knock up to US$100.00 off the recommended price.

"I'm talking about the AIR-7 mainly, where on the VHF marine band, there are buttons marked 'memory scan,' 'priority scan,' 'delay' and 'program,' most of which I've never used and never will because they are not really necessary."

C. Ralph Stertzer of Columbus, Ohio, has written such a letter. "Your articles praising the Sony 2010 led me to buy one. Boy -- was I disappointed! This has to be just about the worst 'user designed' radio on the market today. Didn't Sony ever make a prototype of this thing?"

"Please note the following," says Ralph. "Shoulder strap -- stupid. I made a short hand strap. The slide controls -- dumb. The gain, power, tone, etc. are flush with the case, requiring sturdy fingernails to move them. The controls and jacks on each end of the radio have their logograms printed upside down which means that you must turn the set bottom side up or use a mirror to read them. The tone control is a dummy. Move it and nothing happens. And if you don't rest the set on a down pillow, you risk losing the memories you programmed in."

"The Sony does have one good feature, says Mr. Stertzer, "and that is the 32 memories. But I wouldn't trade that for my DX-400, which has rotary controls, a tone control that works and a jim-dandy carrying case."

I also own a '2010, agree with you on the shoulder strap but found that the controls eventually loosened up. And my tone control works. As for the "touchiness" of the memories, a small pad of foam placed between the main batteries and the AA cells that maintain the memories helps hold them more firmly in place and often cures the "touchiness" of the memory.

Sony 2010 Repair -- Bravo!

"Praise for Jack Albert's article in which he addressed the problem of possible damage to the '2010's RF amplifier due to electrical discharges entering the unit via the external antenna jack during thunderstorms." That letter from R.V. McGarrah of Peoria Heights, Illinois. "As I read the article, I recognized the symptoms as ones my own '2010 was suffering from. I ordered both the manual and the suspect transistor from Joseph Electronics and within two weeks I had successfully repaired my receiver. The value of this article alone was worth more to me than the entire cost of my subscription to *Monitoring Times.*"

A Radio West Board?

Steve Miller (no relation to the editor) of Radio West dropped us a line about reader Pete Haas' article on improving selectivity on any 455 kHz Receiver in the September "Experimenter's Workshop." Says Steve, "*MT* is a great magazine, always has been, always will. But I do have a bone to pick with you. If you are going to use one of Radio West's commercial filter modifications, please give credit where credit is due. The figure #1 schematic is a direct copy of one from Radio West's Collins mechanical filter modification. The top right picture is of Radio West's 3.8 kHz Collins filter modification on our custom amplifier board."

Having never seen any material from Radio West's modification, we here at *Monitoring Times* were simply not aware that Pete based his experiment on an existing modification. Says Pete, "What I did was experiment with a ECG FET instead and tweaked the resistors to squeeze out the most gain. I had originally used a solderless breadboard to find what I felt were the best values. I apologize for any misunderstanding." The board was indeed from Radio West, confirms Pete.

The oversight was unintentional and we apologize. And readers can see for themselves by getting a copy of Radio West's catalogue by sending a buck to Steve Miller at 850 Anns Way Drive, Vista, California 92083.

More on Wood Article

Pete Wahlquist of Reseda, California, takes us to task for running the George Wood article on Nicaraguan radio a couple of issues back. "I tried to control my rage over the past months but can no longer. Why would *Monitoring Times* stop so low as to publish something by Wood? During the Vietnam war, Wood fled this country, turning his back on it when it needed him.

"Everyone knows someone who served this country who didn't flee. Many made the ultimate sacrifice, paying with their lives. What sacrifice did Mr. Wood make? We must never let these *** traitors rest."

If I recall correctly, Mr. Wood wrote of himself in *The Shortwave Book* (circa 1983) that he was a draft resistor. He had already lived in Sweden before the war as an exchange student and returned, I believe, with the intent of doing master's work in journalism. At a time when even National Guard duty (as an alternative to service in Vietnam) has been called into question (but not resolved) it remains a matter of conscience for every American to decide. And, as you might suspect -- and I am not trying to be a wise guy at all -- we do not do background checks on prospective authors. We do, however, respect your views as we do those of all *MT* readers. mt

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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For Sale: Pink condition JRC type NRD-525 with speaker $800. Also Pink ICOM R-71A with remote control and speaker $760. Each in original shipping carton. Prices plus COD UPS charges (estimate $45.00). Jose A. Fernandex, P.O. Box 2362, Hato Rey, P.R. 00919.

Wanted: ZENITH Trans-Oceanic 7000 11 or 12 Band, 1000, 1000-I, 1000-D, 3000, 300-I, Sony ICF 5900W. Harald Herp, 6615 Michele Ct., Huntingtown, MD 20639 [301] 855-7071.

KENWOOD R-1000 with manual, excellent condition, best offer. Charles Pringle, 4322 Apple Way, Boulder, CO 80301 [303] 442-9012.

PANASONIC RF-2600 6 band portable with manual and carrying strap. Seldom used. Selling from estate. I will ship UPS - $125. [716] 833-5762.

For Sale: COBRA SR15 excellent condition, all accessories, original box - $150. Tom Klimas, 7813, Carrleigh Pkwy., Springfield, VA 22152 [202] 274-6773.

For Sale: BC 210XL - $80. Good condition, all accessories included. Call David [407] 847-9994 weekdays between 9 and 5.

For Sale: YAESU FRG-7700 SW receiver complete with memory unit, clock, DC power pack, FRT-7700 antenna tuner and FRV VHF converter; used for stand-by only, like new. Cashiers check only. Perry KG5EH [214] 552-3218.

BEARCAT 100 16-channel hand-held programmable scanner for sale. Antenna, case, manual, charger $75. H. Corkran [214] 363-4865.

VHF TWO-WAY, 25 watt, 6 channel, older model with microphone, new antenna, crystals installed for RCC mobile telephone channel #1 (TX 158.490 RX 152.030) plus several marine channels, good working condition $50.00 [803] 723-5061.

POLICE RADAR two-piece X-band unit complete with all mounting brackets, cables, plugs in cigarette lighter 12VDC, manual included $65.00 [803] 723-5061.

UNITROL 800 Series 1250 watt siren with alternating-flasher (wig/wag) unit; yelp, wail, hi/lo, PA, radio rebroadcast, recently overhauled: new output transistors, new output transformer, etc., speaker included: $175.00 [803] 723-5061.

WILSON WH-2516 VHF mobile, 16-channel, 25-W, new in box - $325. BC-950XLT scanner $250. INFO-TECH M-600, no manual, excellent shape $200. John Miller [907] 248-4456 AK time.

Sell PRO-2004 cellular $325. SONY 2010 $276. Box, manuals. REALISTIC TRC-216 $125. GROVE ANT-III $20. All great shape. [419] 536-7579.

Wanted: REALISTIC PRO-2004 scanner. Steve Sorenson, P.O. Box 230, Lonsdale, MN 55046-0230.

For Sale: RADIO SHACK PRO-32 scanner with service manual $195. Call Earl [317] 463-0172.

REGENCY MX5000 w/GROVE Fastscan modification - excellent condition $225; HX1200 - like new $170; HX650 - never used $50; all incl. accessories and manuals. Christner, 306 Woodview, Cortland, OH 44410.

DRAKE SPR4, 5NV noise blanker, AL4 VLF loop antenna and preamp, calibrator, AC & DC power cords, 24 extra crystals and all manuals, very clean - $350 shipped. AEA CPL with SWLTEXT, MBATEXT, MBATOR & AIRDISK all books and cables - $125. BEARCAT III and BEARCAT IV scanners $38 each. HW16 & HG10B VFO $85.

WANTED: TENTEC Trighton IV, SP180 and SP230 speakers, MFJ CWF-2 filter, KENWOOD R1000. David, P.O. Box 6463, Mobile, AL 36660 [205] 478-8823.

For Sale: BEARCAT DX-1000 Communications Receiver covering 100 kHz to 30 MHz, good condition, $275. MFJ-1224 RTTY/CW demodulator with Microlog AIRDISK (for C64) $64. Tom Howey, WB1FPA [603] 497-3539 after 6PM EST.

Sell: CW-RTTY-ASCII-PACKET station, PK-64 w/HFM, Commodore 64C, all cables, manuals, cartons. Absolutely mint, used 4 hours. $325. YAESU FT-109RH, 220 MHz, 5 watt handheld, new, never used, $300. Package deal, $575. Prepaid includes UPS. [716] 366-8595. Curt Dunn, Box 584, Dunkirk, NY 14048.

INFORMATION PLEASE: I need information on "World Star" multi-band receiver. Anyone knowing who distributed this radio in the U.S. or has manuals or schematic diagrams on this radio, please write: E.E. Dye, Box 581, Russellville, AR 72801.

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Date	Location	Club/Contact Person
Dec 3	Okeechobee,FL	Okeechobee ARC/ J.P. Paxton KB4RLL 6333 N.E. 120 St., Okeechobee, FL 34972
Dec 3-4	Apache Jct, AZ	Superstition ARC/ Bill Glaze KA7SUF 7809 E. Javalina, Mesa, AZ 85208
Jan 21	Fort Myers, FL	Fort Myers ARC/ Egon Loeckel N8EL 237 S.E. 20th Ct., Cape Coral, FL 33990
Jan 21	Ponchatoula,LA	SELARC Hamfest/ Joe Farris 390 Piney Woods, Ponchatoula, LA 70454
Jan 28	San Antonio,TX	San Antonio ARC/ Melvin Anderson WB5NOL 8932 Saddle Trail, San Antonio, TX 78255

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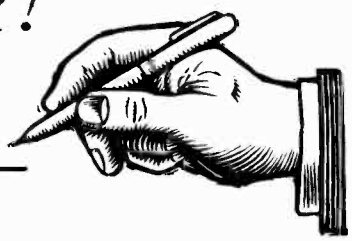

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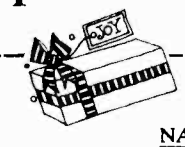

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The IC-R71A is a shortwave listener's delight. Its **32 tunable memories** store frequency and mode information, and they are single-button reprogrammable **independent of VFO A or VFO B's operations!** This HF reception is further enhanced by a dual width and level adjustable noise blanker, panel selectable RF preamp, selectable AGC, **four scan modes,** and all-mode squelch.

The IC-R7000 is a high band monitor's masterpiece. Its **99 tunable memories** are complemented by **six scanning modes**. It even scans a band and loads memories 80 to 99 with active frequencies without operator assistance! Additional features include selectable scan speed and pause delays, wide/narrow FM reception, and high frequency stability. Many professional services use IC-R7000's as calibration references.

Options. IC-R7000: RC-12 remote control, EX-310 voice synthesizer, CK-70 DC adapter, MB-12 mobile bracket. IC-R71A: RC-11 remote control, EX-310 voice synthesizer, FM module, CK-70 DC adapter, MB-12 mobile bracket, FL-32A 500Hz, FL-63A 250Hz, and FL-44A filters.

See the IC-R7000 and IC-R71A at your local authorized ICOM dealer.

* Specifications of IC-R7000 guaranteed from 25-1000MHz and 1260-1300MHz. No coverage from 1000-1025MHz

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ICOM America, Inc., 2380-116th Ave. N.E., Bellevue, WA 98004 **Customer Service Hotline (206) 454-7619**
3150 Premier Drive, Suite 126, Irving, TX 75063 / 1777 Phoenix Parkway, Suite 201, Atlanta, GA 30349
ICOM CANADA, A Division of ICOM America, Inc., 3071 - #5 Road Unit 9, Richmond, B.C. V6X 2T4 Canada