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# 1982 - 1992 Monitoring Times Celebrates Ten Years

VOLUME 11 NUMBER 1 BRASSTOWN, NORTH CAROLINA 28602 JANUARY/FEBRUARY 1992

## Space Shuttle Communications Monitoring

### Record-breaking MARS Operator Helps Soldiers Phone Home

With our main to space program now directed toward the reusable aircraft approach, communications monitoring is being used in a new way. NASA uses untested hard copy recording systems and several single channel ground stations with a variety of antenna systems and frequencies. The network will include tracking stations and several ground stations. The regular short range air-to-ground VHF and UHF AM channels are used. Some aircraft with a few hundred miles of the shuttle will be heard on 121.75 and 243.4 MHz, while the spacecraft itself utilizes the S-Band as a primary UHF backup in its 2287 MHz shared down link transmission. Earlier aircraft UHF channels (228.7 secondary backup and 235.5) are used to monitor the shuttle's communications during the maximum of 4 hours and recovery is achieved. The recovery is achieved by using a ground station for UHF. The local Ground Station is used with a conventional aircraft band plan. The radio spectrum together with activity at all times of day or night, all year round. Simple, inexpensive receiving equipment and computers can make this fascinating hobby come alive for you.



### Back to Basics: Rediscovering Good Scanner Habits

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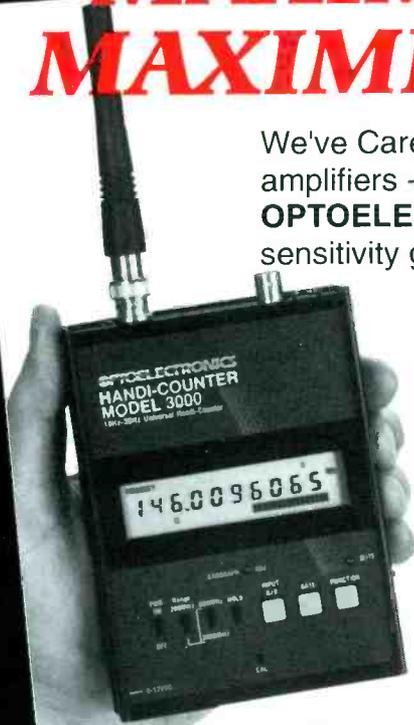
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# MONITORING TIMES



## **AIR is AIRing Overseas**

by Upkar Chopra

8

How can the government's external service communicate "what is Indian" when it represents such a vast and diverse nation? All India Radio's solution is to broadcast equally diverse programming, languages, and lots of music, says this former AIR announcer.

## **Re-Discovering Basic Scanner Operation**

by Wayne Mishler

14

As reports start coming in on your scanner that an emergency is brewing, there's no time to thumb through your scanner directory to find pertinent frequencies or to search your scanner manual for storing frequencies and setting search limits. Brush up on your scanner skills now — before the day you want them to be their sharpest.

## **DXing the Frozen Antarctic**

by Harald Kuhl

18

This feature by Harald Kuhl may represent the most complete frequency listing ever assembled on the international Antarctic bases. These remote outposts sometimes get mail only once a year; radio is their lifeline with the outside world. Tune in some truly exotic and wintry DX.



MT Cover Collage by Harry Baughn

### **✓CHECK YOUR LABEL**

If there is no date next to your name, or if it has expired, this is a sample issue of Monitoring Times; to keep it coming, send in your subscription order today using the handy form on page 21!

# The Future of Digital Audio Broadcasting

by Chuck Rice

22

Technological breakthroughs are invariably greeted with a mixed reception, and digital audio broadcasting (DAB) is no exception. While DAB promises to deliver radio reception with the clarity of a compact disc to the consumer, struggling local stations and equipment manufacturers fear it will put them out of business. *MT* looks at the potential for a smooth transition.

# Helping Soldiers Phone Home

by Paula Geister

26

All amateur radio operators who participate in the MARS (military amateur radio service) program are to be commended for their innumerable phone patches that connect servicemen and women with loved ones at home. But during Desert Storm, only one man — Robert Adams — received the Distinguished Civilian Service Medal for his efforts. Paula Geister tells his story.

# And Much More ....

In this issue we inaugurate a new column — "Computers and Radio." This month John Catalano reviews "Scancat," a database and receiver control program (p. 104).

If you're looking for something to do indoors during these short winter days, it might be time to try your hand at building your first simple receiver (p. 98). Next month DeMaw will give you plans for an S-meter to complete your new project.

Rounding out the spectrum, *MT* will get your 1992 monitoring off to a great start with tips on building a dipole antenna, how to pick up the programming on FM subcarriers, what you can scan at a football game, and much more!

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# LETTERS

January 1992 finds the staff at *Monitoring Times* looking both forward and back. Since our beginning as a fledgling newspaper in 1982, we have evolved through several formats, columnists and editors to our current standing as a recognized authority in the radio hobby. You — our loyal subscribers, monitors, contributors and authors — are to thank for this success, and serving your interests will continue to be our goal into the next ten years as well.

We are also happy to welcome an addition to the monthly technical columns — "Computers and Radios" by John Catalano. John will be screening some of the software and computer aids pertinent to the radio hobby, to help take some of the mystery out of computerizing your shack. A long-time subscriber to *MT*, he is well-versed in both computers and radios, and I think you'll find him a valuable resource.

As we introduce new topics, and perhaps neglect some old ones, we always appreciate your feed-back. Where would you like to see us go in the next ten years? We're all ears.

## Technical Tips

Have you caught the error in the UTC conversion wheel enclosed in the December issue? Lizz Zoucha of Omaha, Nebraska was the first to report it, because she lives in the Central Time Zone. C, M, and P should be labeled on 6, 5, and 4 pm, respectively. See, we told you we understood your problems with UTC!

John Stewart of Colorado sends a thank-you for David Ricker's tip to use an attenuator with his PRO-34 scanner as a cure for overload problems (p.107, November). Says Stewart, who lives across the street from a large hospital complex, "the attenuator seems to have completely eliminated the annoying interference I frequently suffered from the hospital's powerful paging system."

He adds, "Another way of attenuating interference, although to a lesser extent (but at even less cost), is to place some aluminum window screening between the antenna and the source of interference. I had previously found this to be an effective way to greatly reduce pager interference in the 450 MHz frequency range when listening to my local police with a home brew dipole."

Following Bob Kay's advice (p.38, November), Doug Guyer of up-state New York swept the frequencies near his local police department's listed frequencies, and found their tactical channel. "Communication on this frequency was very exciting," he says,

"but traffic was very low."

"I borrowed a friend's portable voice actuated cassette recorder, plugged its AUX input into my scanner's TAPE OUT and sat on my new non-publicized frequency for a few days. Soon I had a tape full of communications not meant for the public to hear!"

Doug says he uses the set-up to sit on channels he's not yet identified, and because it's always wired to his receiver, he's ready to record any other interesting transmission with the push of a button. "Wait until you hear someone call one of those 900-SEX numbers!" says Doug.

Affordable, voice-activated cassette recorders are readily available and "time-shifting your listening" can make your scanner work for you 24 hours a day.

"I live in what might be described as an RF nightmare," says Paula Johnson of San Francisco. "On the second floor of a four-story, all-electric apartment building, it's like a steel-reinforced cage with aluminum window frames. The use of an outdoor antenna is prohibited." Steep, densely populated hills in two directions are added to the obstacles of the business district and two large hospitals nearby!

Paula thought her new Sangean ATS-803A would remain a dust-catcher until she decided she had nothing to lose but money. "MFJ's 1020A Indoor Active Antenna and 752C Audio Filter were purchased and plugged into the hapless radio via Radio Shack adaptors, RG8 coax, etc."

Reports Paula, "Exit hiss, hash and splatter. Immediately, Cairo, the UAE and Vatican Radio's transmission to southwestern Russia came blasting in! Caught SAC plus loads of crystal-clear CW on USB, too."

"RF gain was carefully watched and reduced whenever necessary. So far, no meltdown problems. AC power adaptors are plugged into Radio Shack's attenuated surge protector. Only grounding possible is through another adaptor screwed into a wall outlet.

"Being ignorant of things electronic, I have no way of assessing the antenna's strength. However, that very difficult to find filter is dynamite! It makes an incredible difference in reception of whatever can be received. When necessary, a pair of Radio Shack's amplified portable speakers round out this weird little rig."

Paula concludes, "A pricey experiment to be sure, but lots of fun. Perhaps this information will be useful to other who are plagued by the urban jungle and miserable landlords."

Last, but not least, in these sagas of success is this note from A.P. Schaefer of Ohio. Mr.

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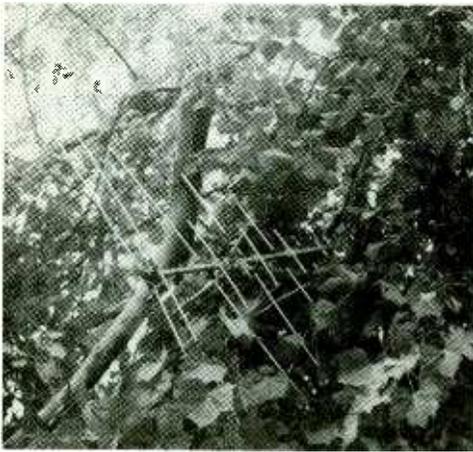
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# LETTERS



Schaefer enclosed this picture of his Grove Scanner Beam after a storm blew out the top 30 feet of his sycamore "tower."

"Initially I was aghast," he says, "but after climbing up to the antenna I found it not only intact but unbent and in nearly new condition after two years."

Congratulations to each of you; we always like to relay solutions that have been put to the test by our "experts in the field."

## Cruising the Canal

**Basement** band columnist, Kevin Carey, wasn't so fortunate. His antennas were hit by a major ice storm last spring, and it took all summer to get them back in operation. "Some of the repairs involved using a propane torch to heat and straighten bent antenna parts — a very tedious process." Repairs done, he and the family finally found time to join the leaf lookers on the Erie Canal.

September's article on Canal DXing came just in time. However, we have an apology to make to Gene Hughes. Several readers discovered errors in a frequency table which gave *Police Call* as its source, and we taxed him with it in our November issue. Well, the errors weren't his; *Police Call* was on the money in each case. If you're a scanner buff, you should have a copy of this excellent reference right next to your radio.

## Spreading the Faith

It is fascinating to hear from readers the many ways they find to share their hobby with others. Space doesn't allow us to do justice to all the letters, but here are some excerpts to let you know what some of you are doing.

The *Marietta Daily Journal* featured Ray Autrey's hobby of SW listening in an impressive write-up, even though he was unsuccessful in getting them to mention *Monitoring Times*.

Of his interest in SWling, Ray told *MT*, "Heck, I came by it natural...in the 1930's and 40's, my grandmother from Hillsboro, Texas, used to carefully tune in WSM Nashville every

Saturday night to listen to Grand Ol' Opry. My grandmother was a BCB-DXer, but she came to Texas in a covered wagon from Tennessee in the late 1800s."

"Anyway," he says, "you can feel good about one newspaper allotting a third of a page to short wave listening."

**Warren** Meinhardt, a Spanish teacher at Southern Illinois University at Carbondale, is a master at using shortwave radio in the classroom. He uses taped broadcasts to pique students' interest, to accustom them to differing accents and idioms, to teach vocabulary, and (on the graduate level) to provide material on culture, literature, history, etc.

**Graduate** student Elliott Mitchell, who studies the use of technology in education at Peabody College in Nashville, Tennessee, wrote, "I recently told two of my classmates, who are Latin teachers, that I used to listen to the weekly news in Latin on shortwave and they immediately became interested in the prospect of using such a broadcast in the classroom. Unfortunately, my search has been fruitless in locating the source of those broadcasts."

Well, you came to the right place. Jeff Chanowitz just forwarded an article on that very subject. It begins: "Nuntios Latinos Radiophoniae Finnicae Generalis vobis in studio Helsinkiensi recitat..."

Kannon Shanmugam provided us with Radio Finland's Latin news schedule as shown in Table 1. To receive Radio Finland's current schedule to North America, call toll-free 1-800-221-9539.

## Over and Under the Waves

**Art** Rideout spent a few weeks in French Polynesia, the lucky soul, and found reception to be quite different from what he expected. With his Sony 2010 he reports excellent reception not only on shortwave, but on the broadcast band. "KFBK on 1530kc out of Sacramento was louder on Bora Bora than it is at home in Southern California. On the night I tuned them in they were reporting on the fires in Oakland," says Art.

"Another surprise was trying to monitor amateur radio AM signals. I heard nothing on the usually active 14.286 and only weak heterodynes on the 10 meter band. The 11 meter band was full of strong AM signals mostly from Texas and Louisiana. Looks like AM kilowatts are not dead after all."

We had a recent request for some information on submarine communications. This is a subject Art also knows about. He says, "The man who developed submarine communications is a Mr. John A. Pierce of Harvard University, now retired. He knows all the secrets but is not talking, however I will. I worked for Jack as an

## The News in Latin from Radio Finland

0955 Sun on 15245, 17800  
1455 Sun on 15400, 21550  
1950 Sun on 6120, 9730, 11755  
2245 Sun on 6120, 9730, 11755  
0245 Mon on 9560, 11755  
0740 Sat on 6120, 9560, 11755  
0955 Sat on 15245, 17800  
1455 Sat on 15400, 21550  
1525 Sat on 6120, 9730, 11755, 15440, 21550

## Table 1

engineer in the late 1950s and I was very involved in the early design of submarine communications."

Watch for an article by Art on the early development of sub communications; if anyone has more to add regarding modern sub comms — what can be heard and how to recognize it — it would make a good addition to this interesting look back.

An "ex-Lieutenant USN" also wrote regarding his involvement with sub comms of about eight years ago. He indicates that even in peacetime, subs basically operate under wartime radio conditions. Most of the communications are both scrambled and of the briefest duration possible (one second or so for typical traffic).

"In short, you stand little chance of monitoring submarine comms. If you get lucky, you may be able to hear them on standard Marine handytalkies as they go in and out of Port Canaveral and use tugs. Subs will ident as 'US Navy submarine' which isn't very satisfying!"

Thanks to both Art Rideout and our ex-Lt. for their contributions; it seems the more one inquires about submarine communications, the more the mystery deepens!

**Technological** breakthroughs occur so fast these days that we may forget the excitement that surrounded radio's pioneering days. To recapture both the genius and the heartbreak of the early days of radio, be sure to check your public-television schedule for "Empire of the Air: The Men Who Made Radio." This two-hour documentary by Ken Burns (of "Civil War" fame) is slated to air in January. Focussing on radio pioneers David Sarnoff, Lee DeForst and Edwin Armstrong, the film is based on a book by Tom Lewis. According to Robert Feder of the *Chicago Sun-Times*, "At certain points, the screen will go dark, forcing the audience to listen to radio material as originally presented without visual accompaniment." [A novel thought!]

Watching this account of radio's beginnings in greed, competition, invention and genius, bear in mind today's new technologies trying to get underway—AM stereo, digital audio broadcasting, Ku band direct broadcast satellites, high definition television, etc. Has anything really changed?

Well, wherever the radio hobby make take us, rest assured that *Monitoring Times* readers will be listening and reporting. Here's looking forward to ten more years of good monitoring times.

Rachel Baughn,  
Editor

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The Philips DC-777 features 50 Watts RMS for superb quality sound with low distortion and extended frequency response. It also has an Audio Super Control (ASC), which makes it possible to compensate for the variation in sound between different radio wavebands and the radio and cassette sections.

### AND A HIGH-END CASSETTE DECK TO BOOT

The DC-777 features an autoreverse cassette deck that gives you the convenience of non-stop cassette play, avoiding the necessity of flipping the cassette over when one side is finished. Autostart sets the tape running as soon as it's inserted and radio reception automatically **CUTS IN** whenever a tape is being rewound or forwarded.

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## Baby Speaks in Morse Code

It's almost too much to believe, but experts have revealed the existence of an infant boy who communicates in Morse code. "When my husband Felix first heard the sounds," Nancy Smith relates, "he thought that the baby was saying 'dada'."

But the Birmingham, Alabama, baby kept making these dit-da-da-dit-dit sounds every moment that he was awake. "Somehow," says the mom, "we sensed that [the baby] was trying to communicate with us."

One day, a radio-operator friend of the Smiths was over for dinner and he "turned white as a sheet" when he heard four-month-old Michael ditting and dahing. The two recorded the baby's Morse cooing and took it to another friend who decoded the dots and dashes.

"Just thinking about what he told us makes my skin crawl," Mrs. Smith told the *Weekly World News*. The baby, she said, told her that he had lived a previous life "as Captain Ernst Wegener of the submarine *Lone Shark*." Wegener, who was charged with raiding U.S. Liberty ships on the high seas, died on March 23, 1942, when he was cut in half by submachine gun fire from a strafing aircraft.

Mrs. Smith says she senses that her son's command of Morse code is already fading and she hopes he'll never have to learn of his brief encounter as a dead U-boat commander.

## Save Me a Seat

Nippon Hoso Kyokai (NHK), the Japanese public broadcasting system, has announced that it is expanding its Hi-Vision HDTV (high definition television) satellite broadcasting to eight hours a day.

Few people will be able to view the programs, however. TV sets capable of receiving the transmissions cost \$30,000. It's not all that bad. If you watch TV for three hours a day, seven days a week for a year, the cost is only a little over \$28.00 an hour.

Take heart, though. Japanese manufacturers are hoping that the price of the sets will drop below \$8,000 within 3 years.

Hi-vision HDTV provides wide-screen resolution five times better than the current U.S. video standard.

## They Will Return

The six-member crew of Radio Caroline was rescued by helicopter amid gale-force winds off the Kent Coast of England. The pirate station's battered vessel, the *Ross Revenge*, threatened to break up after being driven into the Goodwin Sands. Radio Caroline's head of news, Steve Conway, said the station would return.

"We may have lost the *Ross Revenge*," he said, "but Caroline will certainly return in the future in some form."

Perhaps as wreckage.

## Mixed Up McFrequencies

The last time we ran a story like this, customers and staffers at McDonald's were going about their business when suddenly they heard someone huckstering ladies undergarments over the loudspeaker at the drive-in window. Prior to that, the situation was reversed and worshipers at a Catholic church were startled to hear "I'll have a Big Mac and Fries" come out of their sound system.

Now comes the latest yarn, this time from Porterville, California. Says an article in the *Bakersfield Californian*, customers ordering food from the drive-through window were startled to hear rock music blaring out of the order board. Ironically, the song came from the musical "Grease."

The source of the tune was a local theatre group's rehearsal across the street. The lead singer's cordless microphone used the same frequency as the McDonald's drive-through window.

## The Zapping of Seattle?

Two people carrying exotic-looking electrical equipment have begun scouring the streets of Seattle's Capitol Hill. The subject of the search? Radiation from radio and TV antennas.

According to the *Seattle Times/Seattle Post-Intelligencer*, "people have been fearful of the little-known consequences of radiation from powerful television and FM radio transmitters" in the area. To try to find answers, two volunteers have been walking through part of Capitol Hill, carrying a small monitor and a spectrum analyzer!

Should the results of the study, funded under a \$3,000 neighborhood grant, be found to be negative, they are expected to be used as ammu-

munition in an appeal against city approval of a permit to erect a fourth tower on Capitol Hill. Under present Seattle regulations, radiation from broadcast transmitters may not exceed 1,000 microwatts per square centimeter "at any location people are likely to be."

## Big Bill

Richard Smith, a San Jose, California, restaurant equipment salesman, was stunned to find an 85-page, \$19,000 phone bill when he returned from business in Los Angeles. The calls, which took place over a seven day period, went to numbers in Turkey, Colombia, Brazil, Andorra, Pakistan, Israel, Jordan, and Qatar. GTE Mobilnet contacted Smith when it saw the rising bill.

Still, no one seems to know how the calls ended up on Smith's bill — several of which occurred at exactly the same time. As many as eight calls were going out concurrently, every second of the day. "It was a red flag," said GTE spokesperson June Delaney. "It's happened before. It's just not that common." Smith's normal phone bill ran between \$70 and \$100 a month.

## Mass FCC Employee Walk-Out Predicted

Look for a massive FCC employee walk-out in about a year. Labor problems are not the reason. The Commission is reportedly moving from its 300,000 square foot "M" Street office. According to the *W5YI Report*, the General Services Administration is considering four different buildings as possible home for the agency. Rent at the current offices runs some \$9 million.

## New '91 Techies

According to FCC projections at press time, it appears that 23,000 beginners will have entered ham radio at the Technician level during calendar year 1991.

## Museum of Broadcast Communications Moving to a New Home

Chicago's Museum of Broadcast Communications (MBC) will move to the Chicago

# COMMUNICATIONS



Photo courtesy MBC

*The landmark Chicago Cultural Center, new home for the Museum of Broadcast Communications.*

Cultural Center, Michigan Avenue and Washington Street, across from Grant Park and near the Chicago Art Institute. The move should be completed by June 1, 1992.

This is one of the two major broadcast museums in the country with a collection of 6000 TV programs, 8000 TV commercials, and 49,000 radio shows.

A recent agreement with Emerson Radio Corporation will merge the Radio Hall of Fame with the museum. This attraction will join the A.C. Nielsen, Jr. Research Center, a theatre, and working radio and television studios. MBC was founded in 1987 at the present site, 800 South Wells, in the River City section of Chicago. It was featured in a June 1990 *MT* article.

Also featured in that article was New York's Museum of Broadcasting. Now renamed the Museum of Television and Radio, it moved last fall into its new state-of-the-art headquarters at 25 W. 52nd Street. Visits are limited to two hours, however, due to the enormous popularity of the museum, which led to turning people away by 1:30 p.m. at the old facility.

## Sony and Shinwa Cancel New Radios

Just introduced and enjoying brisk sales, the new SW-77 shortwave portable has been taken off the market by Sony for factory upgrades, according to a company spokes person.

An industry source reports complaints of poor sensitivity, AGC "pumping" in the SSB mode, prominent "chuffing" sound when tuning, and undefined power supply.

Owners experiencing any of these problems are advised to contact their Sony service centers or dealers for further instructions. Normal warranty coverage will continue on

units already sold.

Meanwhile, Shinwa has acknowledged disappointment in their luxurious SR001 scanner. Overly-complex operating requirements, poorly written instructions, unusual programming features and strong-signal overload seem to be the biggest complaints.

Information on a special factory liquidation price is available by calling 1-800-627-4722.

## A Happy Ending

Back in November, we told you the story of a wheelchair-bound muscular dystrophy victim whose van was forced over a deep embankment in Glastonbury, Connecticut, by the driver of a flatbed truck who left her for dead. The woman was unable to use her cellular phone to call for help and finally wired her CB up to the battery on her wheelchair and contacted a passing trucker who summoned assistance.

Linda Meyers spent 12 hours trapped inside the van. Unable to afford collision insurance or a new wheelchair, things looked bleak. Last month, area businessmen gathered in nearby Newington and gave the 41 year old woman a birthday cake and the keys to a new van. Because she liked the color red, Maaco did the paint job for free and the Gordon Smith Bus Co. installed a wheelchair lift. Said Ms. Meyers, "there's about a million good people I've heard from."

Credits and thanks: Jack Albert ("U-boat Baby"); Norman Melrose, London, England; Hugh Miller, Woodinville, Washington; Ricardo Molinar, New Jersey; Everett Slosman, Bedford, New Hampshire; John Strand, Caliente, California; Peter Thompson; *W5YI Report*. "Communications" is compiled by Larry Miller.

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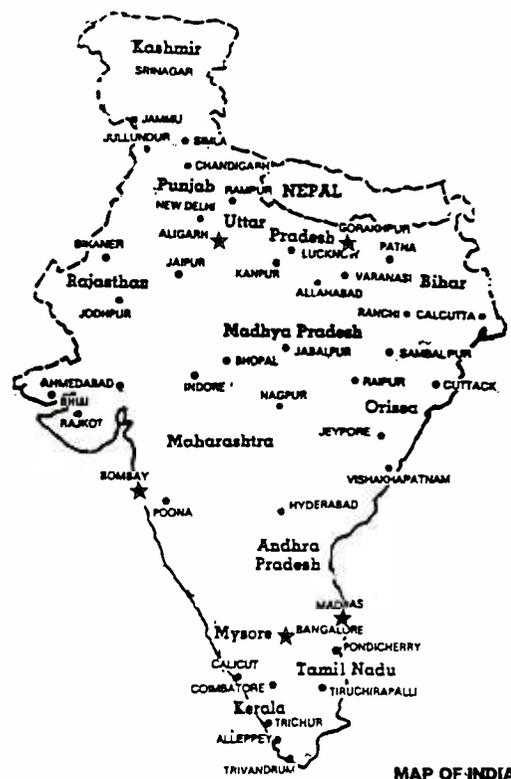
To learn more about the Constitution write: Constitution, Washington, D.C. 20006. The Commission on the Bicentennial of The U.S. Constitution.



# All India Radio:

## A.I.R. is Airing Overseas

By Upkar Chopra



It was 1976, as far as I remember. I went to Ms. Manjula Bhatnagar's office to discuss my first program for All India Radio, External Services Division. At that time she was one of the producers of the external services. Before starting the discussion about the program, Ms. Bhatnagar tried to explain to me that External Services Division of All India Radio was playing the role of "Cultural Ambassador" and kept the people of world in touch with the ethics of India and things that are Indian.

I tried desperately to think. What is Indian?! People, Places, Cultures and Religions - a magnificent melange; home of 850 million people (Hindu 83%; Muslem 11%; Christian 3% and Sikh 2%) and 16 spoken languages; home of world-famous historical sites, e.g., Taj Mahal (Agra), Kutub Minar (Delhi), Eighteenth Century Observatory - Jantar Manter (Jaipur & Delhi); a country of extremely hot climate in the south

desert and near arctic cold climate in the Himalayas. The External Services Division of All India Radio tries to keep their fingers on the pulse of this bubbling cauldron of diversity, so they may inform their overseas listeners.

Indian broadcasting dates back to the twenties during the British period, but its credentials as an organized system began in 1936 with the establishment of All India Radio (AIR). After three years, All India Radio started broadcasting programs for overseas listeners. The language of the first broadcast was in Pushtu and the target area was Afghanistan. Since then this broadcast has expanded to 24 Indian and foreign languages.

The General Overseas Service of All India Radio broadcasts about nine hours in English directed to different parts of the English speaking world. The Indian languages — Hindi, Tamil, Telugu and Gujarati Services — are directed to Indians abroad, while other Indian languages —

Urdu, Bengali, Punjabi and Sindhi Services — are meant for listeners in the Indian Sub-continent as well as across the borders.

The External Services Division (ESD) of All India Radio now broadcasts over 74 hours daily in 16 foreign languages, including English and eight Indian languages, covering about 84 countries of Asia, Africa, Europe, Australia and New Zealand. Although All India Radio does not broadcast specifically to North America and Canada, they can usually hear ESD broadcasts between 2045 to 2330 UTC on 11620 kHz.

Currently, All India Radio transmission facilities consist of four-250 kW transmitters in Aligarh; one-100 kW transmitter in Bombay; six-500 kW transmitters (two on air) in Bangalore; six-100 kW; six-50 KW; two-20 kW and one-10 kW transmitters at two sites in Delhi; one-50 kW transmitter in Gorakhpur; one-20 kW transmitter in Kumseong; and three-300 kW and one-20 kW transmitters in Madras (see map above).



*A view of the  
Broadcasting  
House,  
New Delhi.*

Press Information Bureau

### Programming Policies

India's broadcasting and telecasting industry comes under control of the Ministry of Information and Broadcasting. Basically, All India Radio's political broadcast or telecast policies are set by the ruling party. Since India has not had a stabilized government over the last two or three years, these policies have changed as quickly as the government.

After last year's assassination of former Prime Minister Rajeev Gandhi, for example, the outcome of the aborted election left the country in limbo. So, while the whole country observed 11 days mourning, the External Services Division broadcast only instrumental music, religious talks and news. All other programs were cancelled.



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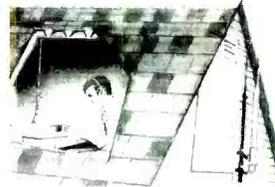
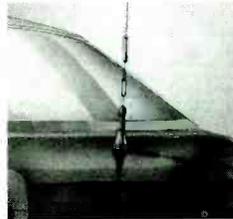
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In fact, music forms a major share of ESD program fare. India produces the largest number of feature films per year in the world, each featuring three to four songs. About 70 percent of the 1200 letters received by All India Radio every day are requests for a favorite musical number, old and new. Listeners from the Middle East, Afghanistan, Pakistan, Russia and many other countries love to hear Indian film music.

Programs also represent the variety of music in India, such as regional folk songs, light music (Gazals), and classical vocal and instrumental music. Traditional instruments — the sitar, tabla (drum), flute, harmonium and sarod, etc. — may be heard alongside modern western instruments such as the violin. Book and Indian movie reviews are also featured in ESD programs.

All India Radio broadcasts 5 to 10 minutes of news on every hour. "News Reel," a popular news program, gives listeners a more in-depth look at current topics. Other programs which interest listeners include: commentary on current events, special events covered by the Indian Press, magazine programs on sports and literature, discussion of socioeconomic and political issues, talks on historical, cultural, scientific and technological subjects.



Musicians record vocal music for air play.

## Does AIR QSL?

The large number of letters received daily from listeners are first routed to the various program producers. Some of the letters (complimentary or critical) are read on the air, others offer helpful ideas for future programming. Tremendously complex governmental bureaucracies exist in India, which extend, unfortunately, into the broadcasting organization. As a result, AIR's QSL verification policy has been inconsistent at best. But according to one AIR official, all such reports are eventually acknowledged either by official letter or by QSL cards.

The All India Radio External Services Division's station identification can be recognized by the following: "This is the General Overseas Service of All India Radio" (English), "Yeh All India Radio Hai" (Hindi), "Idi Akashvani Videsh Sewa" (Tamil) and "Da All India Radio de" (Pushto). AIR's signature tune is an eight second melody (created by violin, cello and tanpura) repeated with intervals of 10 seconds in between.

The External Services Division publishes *India Calling*, a monthly program journal in English for overseas listeners. This journal provides listeners advance information of programs supplemented by some of the best broadcast scripts. In addition, quarterly program folders are published in the following languages: Nepali, Chinese, Tibetan, Burmese, Indonesian, Arabic, Persian, Pushtu, Swahili, and French. These brochures are available free of charge to overseas listeners through either the various Indian Embassies or by writing directly to: Director of External Services, All India Radio, P.O. Box No. 500, New Delhi 110001 (India).

The renowned Indian leader Mahatma Gandhi once said, "I do not want my house to be walled in on all sides and my windows to be stuffed. I want the cultures of all lands to be blown about my house as freely as possible, but I refuse to be blown off my feet by any of them. Mine is not a religion of the prison house. It has room for the least among God's creation but it is proof against insolent pride of race, religion or color." These words are inscribed in marble on a Broadcasting House Wall as the broadcasting ideal of All India Radio.

External Services tries to spread the Gandhian Philosophy - peace, non-violence, friendship and understanding among the people of the world through their programming. Their broadcasts attempt to convey the Indian point of view on current affairs, cultural heritage and the progress and development within a country of enormous diversity.



## Foreign Language Services

SERVICE	DURATION	FREQUENCY (KHz)	TARGET AREA
ARABIC	0430-0530 1730-1945	15135, 17785 9910, 15185	Middle East
BALUCHI	1500-1600	6170, 11620	Afghanistan, Pakistan
BURMESE	0045-0115 1215-1315	9550, 9910, 11880, 15335 11715, 15420	Burma
CHINESE (PU-TONGHUA)	1145-1315	15120, 17705	China
DARI	0300-0345 1330-1430	7225, 9630, 11910 7140, 11960	Afghanistan
FRENCH	1945-2030	9910, 11850, 15185	Africa
INDONESIAN	0845-0945	15175, 17875	Indonesia
NEPALI	0130-0228 0700-0800 1345-1445	6045, 7210, 9550 7110, 9610, 11735, 15165 3945, 6140, 7412	Nepal
PERSIAN	0400-0430 1615-1730	11730, 15135 7265, 9910, 11620	Iran
PUSHTU	0215-0300 1430-1545	9630, 7225, 11910 7140, 11960	Afghanistan
RUSSIAN	1615-1715	11620, 15140	USSR
SINHALA	1300-1500	9700, 15020	Sri Lanka
SWAHILI	1515-1615 0430-0530	11830, 15120 15165, 17805	East Africa
THAI	1115-1200	15365, 17830, 21735	Thailand
TIBETAN	0130-0220 1215-1330	9630, 11940, 15325 7412, 9525	China China

## Indian Language Services

SERVICE	DURATION	FREQUENCY (KHz)	TARGET AREAS
HINDI	2300-0000	9950, 11880, 15165	UK and Europe East Africa, East and North-East Africa Gulf (West-Asia) and South-East Asia
	0315-0415 1615-1700	15165, 17805 11830, 15120	
	1745-2045	7412, 9950, 11620	
URDU	0130-0430 0830-1130 1430-1930	9610 9675, 11770 4860, 6045	Pakistan and Indian sub-continent
TAMIL	0000-0045	4990, 9950, 11815 11880, 15165	South-East Asia and Sri Lanka
	1115-1215	15275, 15335, 17387, 17850	
TELUGU	2245-2315	11745, 15110, 17830	South-East Asia
SINDHI	1230-1500	6165, 11620	Pakistan
GUJARATI	0415-0430 1700-1745	15205, 17805 11830, 15120	East Africa

## General Overseas Coverage (GOS)

SERVICE	DURATION	FREQUENCY (KHz)	TARGET AREAS
ENGLISH	1000-1100 1000-1100	15050, 17895, 21735 15335, 17387	North-East Asia Australia and New Zealand
	1330-1500	9565, 11760, 15420	South-East Asia
	1800-2000	11935, 15360	East Africa
	1845-1945	7412	UK and West Europe
	1830-1930	9950, 11860	West and North Africa
	2045-2230	7412, 9950, 11620	UK and West Europe
	2045-2230	9910, 15265, 11715	Australia and New Zealand
	2315-0115	11745, 15110, 17830	East and South-East Asia
	2315-0115	11715, 15135	North-East Asia

Time is given in Universal Time Coordinated (UTC).

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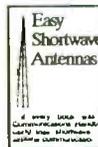
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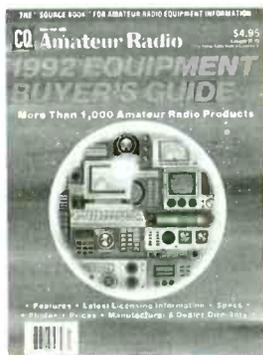
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## Re-Discovering the Basics of Scanner Operation

by Wayne Mishler

*Overhead, the crew of an airliner declares an emergency and circles to burn fuel before attempting a crash landing at your local airport. As fire crews foam the runway, there is growing concern that the aircraft might fall short of the runway and crash into a crowded suburban area. On your scanner, the voices of the crew, air traffic controllers, police and fire officials are calm and professional, but unusually tense. You share their concern.*

*In the city, a police SWAT team closes in on an armed robber who has barricaded himself with hostages inside a bank lobby. The unfolding story crackles from the speaker of your scanner.*

*Meanwhile, an ambulance crew struggles to save the life of a two-year-old victim of a car crash. The voice — and probably the heart — of a young female paramedic breaks as she radios the child's fading vital signs to an awaiting hospital trauma unit. You can hear the paramedic weeping, siren wailing in the background. The emotion is overpowering.*

Such stories of high drama unfold around us every day. The majority of people must wait to see edited versions of these stories on the six o'clock news or read about them in the newspaper. A select few — people who own and know how to use scanners — hear the unedited news as it happens.

Successful scanner operators seldom stumble onto high drama situations. They know how to search for them. They know the best frequencies to monitor. They know how to recognize a breaking story. And they know the language and the code words of the professionals on the scene.

Equally important, they know their scanners. Operating the controls has become second-nature to them. They know how to get the utmost from their scanners, in the same way that musicians know how to get the most from their musical instruments.

Anyone who has observed a skilled scanner operator at work during fast-breaking news prob-

ably watched in awe as the operator punched in dozens of frequencies from memory, simultaneously fingered the controls of several scanners, mentally separated each one, quoted the names of dispatchers simply from hearing the sound of their voices, and blurted in glee at a seemingly routine transmission which suddenly and predictably developed into a high-speed car chase or some other dramatic adventure.

### The First Step

An important step in becoming a successful scanner operator (as opposed to simply a listener) is to really get to know your scanner (or "scanners" if you are fortunate enough to own more than one). Read again the manuals for the scanners that you own. Really get acquainted with them.



Motorola

For example, what frequencies do they cover? Do they have a search mode; if so, how does it work? How do you use the search mode to hunt for new frequencies? How do you quickly change frequencies and memory banks? What is the IF frequency? (More about this later.)

You would do well to invest in a good how-to guide, such as *The Citizen's Guide to Scanning*, authored by Bob Kay, published by DX Radio Supply, and available through the publisher or Grove Enterprises. This is a tool that will help you make sense of your scanner's specifications and special features, as well as help you know where and how to listen for fast-breaking action.

You will also need frequency directories. The *Police Call Radio Guide* for your region is a start. You can get one from Grove, or from your local Radio Shack store which, by the way, can be a valuable source of local frequencies. Some store managers and sales clerks are scanner listeners, collect frequencies, and may share them with you on request. It never hurts to ask.

Other sources for frequencies are too numerous to mention here. You'll find books, magazines, databases, computer bulletin boards, and clubs all dedicated to the scanning hobby. Keep your eyes open as you read *MT*, and you'll find plenty of leads.

### Become a Collector of Frequencies

Start today building your own personal file of frequencies. You can do this on 3 x 5 cards,

or on a computer database. The latter is best, if you have a computer and the necessary software. A computer can find, sort, and print lists of frequencies in various formats, which you can put in a 3-ring notebook and keep next to your scanner for quick reference.

In fact, every scanner operator should keep such a notebook for frequencies and other reference materials, such as police signal codes. Any format will do, as long as you can use it efficiently. When you record a frequency in your card file or computer database, record any additional information that you know about it.

For example, who is the user of the frequency: police, fire and ambulance, airport, military, etc.?

Note the channel designation, if any. When a radio operator switches channels, you can follow, if you know the frequency of the channel.

Is the frequency a repeater input, repeater output, or simplex frequency? Repeaters are remote transceivers that link headquarters with field units. Repeater input frequencies are normally separated from output frequencies by several MHz. Input signals from a handheld or mobile radio may be very weak at your location, and would probably be much louder on the repeater's output frequency.

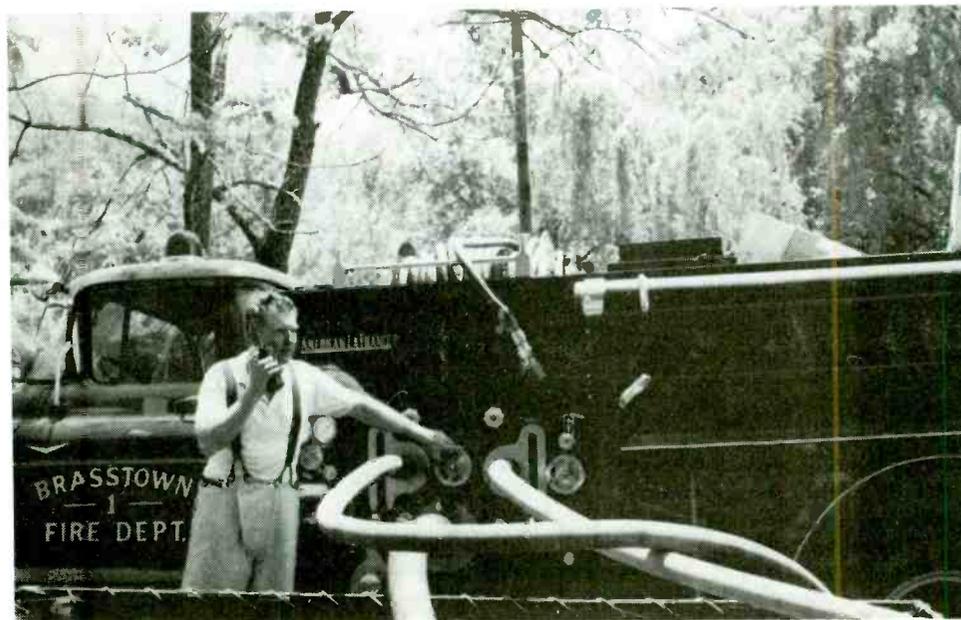
Communications via repeaters are typically more formal and less detailed. On the other hand, simplex frequencies (direct communication between two field radios, for example) are less formal and often much more interesting.

Before entering a frequency in your file, listen to it. Is it active? If not, put it in a separate

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*Successful scanner operators seldom stumble onto high drama situations. They know how to find them and they know their scanners.*

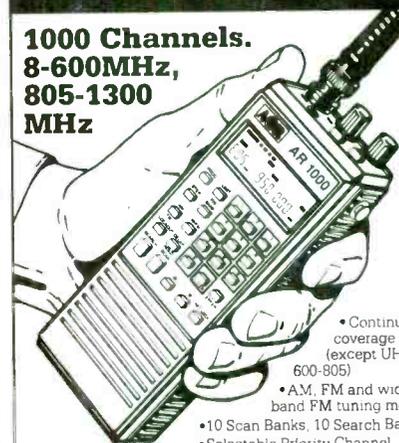
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file for possible future use, but do not keep it in your active frequency file. Avoid relying on frequencies that you have not personally verified.

## Be a Frequency Hunter

Your most important source of frequencies is the search mode of your scanner. In fact, hunting, identifying, and verifying new frequencies can be one of the most enjoyable aspects of the scanner listening hobby. This is especially beneficial for a scanner operator who is new in town, and is not familiar with local frequencies.

For example, suppose you would like to know all the frequencies used by your local police department. Chances are, directories won't list them all. Directories will, however, give you a starting point. Referring to a reliable frequency plan, such as the one listed in *The Citizen's Guide to Scanning*, you note that police often use the UHF high band (450 to 512 MHz). Using your scanner's search mode, you begin searching small segments of this band for active frequencies.

Search segments of about 1 MHz at a time. Start by searching 450 to 451 MHz for a day or so. Then move up to 451 to 452. Continue doing this until you have searched the entire band.

While searching, don't be in a hurry. Savor the discovery of new frequencies. Keep a pencil and paper handy. When you hear a signal, note the frequency and anything else that seems significant. Does it sound like a police transmission? Fire department? Ambulance? Aircraft?

Does the signal sound weak or scratchy? If so, it could be a mobile unit operating simplex. Or it could be the input frequency of a repeater. A full-quieting signal might be from a repeater output or possibly an aircraft flying overhead.

Repeat this search procedure for the VHF segments of the police band. You will probably find several active frequencies that are not listed in current directories.

Keep a log of frequencies that you hear in search mode and check them against frequency directories and other frequency lists. This can help you identify the new frequencies. Identifying and verifying frequencies will test your investigative abilities, and add to the intrigue of frequency hunting and discovery.

Put newly found frequencies in one of the memory banks of your scanner and monitor them on a regular basis. Listen for hints that will help you identify them. If you hear an operator

announce switching to another channel, and then you immediately hear that person on another frequency, you just discovered that frequency's channel designation. Write it down, and enter this new information in your frequency file. The next time the operator switches to that channel, you can follow if you so desire.

As you monitor, you will develop favorite frequencies. If possible, memorize them. If not, at least mark your favorites in the file or database so that you can find them quickly. This will save you valuable time and help you avoid missing chunks of a fastbreaking story.

## Don't Be Surprised at What You Hear

Using the search mode is a great way to find discrete (dedicated) frequencies, such as those used by police officers to discuss details of cases that they are working, or that airline pilots use to communicate between themselves in the air. Some of these conversations can be quite interesting.

In my area, there is a local radio station that uses a helicopter to monitor rush-hour traffic in the city. The helicopter pilot and one of the radio personalities joke with each other on the air. By using the search mode, I discovered a discrete channel that they use to rehearse their jokes and traffic reports before airing them publicly. Oh, what the public is missing!

It is not unusual to hear a transmission seemingly out of band, such as an airline pilot calling the flight control tower on a police frequency. When this happens, the usual cause is that the signal is especially strong and mixes with the scanner's internal IF to produce an image which shows up typically about 20 MHz above the original frequency.

Experienced scanner operators sometimes turn this phenomenon into an asset. By intention-

ally tuning their scanners to pick up images, they can increase the range of frequencies their scanners can receive.

The theory goes something like this. Suppose, for example, that your scanner is not designed to receive frequencies in the 300-400 MHz range but will receive frequencies above 400 MHz. It is theoretically possible to hear a signal transmitted in the upper part of the uncovered range by tuning your scanner between about 400 to 420 MHz.

The formula for calculating image frequencies is: (IF frequency x 2) + fundamental frequency, where the fundamental frequency is that of the original transmitted signal.

To use this formula, first look up your scanner's IF frequency in the specifications listed in the owner's manual. Most scanners have IF frequencies of about 10 MHz. To determine where to listen for the image of a known transmission, multiply the scanner's IF frequency by two, then add this product to the frequency of the original transmission.

For example, assume that you want to listen to the image of a signal that is being transmitted at 390.5 MHz. You check the owner's manual of your scanner and learn that its IF operates at 10.7 MHz. Therefore, you should be able to monitor an image of 390.5 by tuning your scanner to  $(10.7 \times 2) + 390.5 = 411.9$  MHz.

Images vary in strength and quality, depending on a scanner's ability to reject them, and may be unreadable.

A more practical solution would be to own a scanner that receives the frequencies of interest to you. Many serious scanner operators own several, and listen to them all simultaneously by varying the levels of audio. With practice, it is possible to distinguish between the different scanners on the basis of their respective loudness.

Using multiple scanners has other benefits as well. Obviously, a scanner can receive only one frequency at a time, even though it moves very rapidly from one unoccupied frequency to another. When a scanner is monitoring an occupied frequency — for example, a police dispatch frequency — it cannot hear a plea for assistance from an officer in the field on another frequency. A second scanner dedicated to tactical or other types of frequencies can help to alleviate this problem. Each scanner adds to the effectiveness of any monitoring post, if the operator has learned to effectively listen to more than one at a time.

Practice is the key. Time spent learning about the special features of your scanners, locating and verifying active frequencies, learning about signal codes and procedures, and monitoring the local VHF/UHF bands is time well invested. It is an investment that will improve your skills as a scanner operator, and increase the enjoyment that you receive from your hobby.





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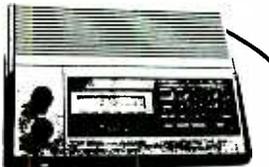


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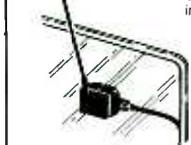
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# DXing the Frozen Antarctic

By Harald Kuhl

**R**adio communications have always been an important part of operations in Antarctica. The early Australian explorer Sir Douglas Mawson recognized the importance of "instant" communications with civilization. As part of the 1911-1913 Australian Antarctic Expedition, he set up a radio relay station at Macquarie Island on his way to Commonwealth Bay.

This relay station began transmissions with Hobart on the Island of Tasmania in 1912. In early 1913, Commonwealth Bay in Antarctica finally experienced the first radio communications between Antarctica and the outside world. During comparatively regular schedules, a rotary-arc transmitter and Morse Code were used to send weather information and personal messages to Hobart via Macquarie Island.

Today, every single research station in Antarctica — and there are lots of them — operates its own HF communications station for either communicating inside Antarctica to other stations or to the HQ in the motherland. Even if some of the traffic is now handled via satellite, there's still a lot of traffic to listen to on shortwave.

Anyone who owns a shortwave receiver has a chance at listening to these communications from the deep South. A good communications receiver with a Longwire antenna is ideal, but even a portable radio with its telescopic antenna is sufficient when conditions are good. All you need for DXing Antarctica are the frequencies and times of transmissions — these are included in this report — along with good reception conditions, some patience, and a little bit of luck.

## QSLing Antarctica

Many stations in Antarctica are quite friendly to DXers sending reception reports. Although some stations answer by detailed letters or by a QSL card, it would be wise to always enclose a PPC (Pre-Prepared Card) with reports if you demand a full data QSL. Some stations enclose photos, viewcards, or maps in their reply.

But be patient! Some stations receive mail only once a year and a reply might take up to two years. On the other hand, if you write at the beginning of the Antarctic summer in November, you might have your Antarctic QSL in hand already by February or March. But now let's



United Kingdom's Faraday Station on Galindez Island

move to the details about radio communications in Antarctica.

The time slots given don't necessarily mean continuous operation, but that the given frequencies are "open" for communications during that time.

Don't forget to send your logs to *MT* to share with other readers interested in this very special and highly fascinating kind of utility DXing.

## Argentina

**Base Belgrano II** (Lat 77°52'S Lon 30°37'W)  
**Call sign: L TS4**

Schedule to stations in Antarctica and Argentina:  
• c/s LTA at 0830-0930 UTC on 14697.5 kHz SSB and at 1130-1230 UTC on 15770 kHz SSB.  
• c/s L TS9 at 0930-1030 UTC on 14402.5 kHz SSB.

• General Pacheco Radio (c/s L RN51) at 1030-1130 UTC on 13290 kHz SSB.  
• HQ Buenos Aires (c/s AZU749) at 1200-1300 UTC on 14440 kHz SSB.  
• General Pacheco Radio (c/s L RB89) at 2000-2100 UTC on 13280 kHz SSB.

Transmitting frequencies: 2455, 3420, 4490, 4468.5, 5365, 7394, 8980, 7634.5, 7910, 10586, 11438.5, 13051, 13270, 13280, 14402.5, 14386.5, 14440, 15762, 15770 and 20273.5 kHz.

Receiving frequencies: 2455, 3420, 4490, 4468.5, 5365, 7394, 7634.5, 7910, 7975, 8980, 10586, 11438.5, 13890, 14368.5, 14440, 14697.5, 15770, 16020 and 20273.5 kHz.

**Base Esperanza** (Lat 63°24'S Lon 56°59'W)  
**Call sign: L TS**

Schedule to stations in Antarctica and Argentina:  
• a temporary summer field camp (c/s L TS9) at 0800-0900 UTC on 14402.5 kHz SSB.

• General Pacheco Radio (c/s L RB89) at 0900-0930 and 1130-1230 UTC on 13280 kHz SSB.  
• General Pacheco Radio (c/s L RN51) at 0930-1000 UTC on 17290 kHz SSB  
• c/s LTA at 1000-1030 UTC on 15770 kHz SSB and at 1800-1930 UTC on 14697.5 kHz SSB.  
• HQ Buenos Aires (c/s AZU749) at 1030-1130 and 1600-1630 UTC on 14440 kHz SSB.

Transmitting frequencies: 2455, 3420, 4490, 4468.5, 5365, 7394, 8980, 7634.5, 7910, 10586, 11438.5, 13051, 13270, 13280, 14368.5, 14402.5, 14440, 15770 and 20273.5 kHz.

Receiving frequencies: 2455, 3420, 4490, 4468.5, 5365, 7394, 7634.5, 7910, 7975, 8980, 10586, 11438.5, 13890, 14440, 14368.5, 14697.5, 15770, 16020 and 20273.5 kHz

**Base Jubany** (Lat 62°14'S Lon 58°40'W)  
**Call signs: J-25 and AZD36**

Schedule to stations in Antarctica and Argentina:  
• HQ Buenos Aires (c/s AZU749) at 0900-1000, 1130-1200, 1330-1400 and 1700-1800 UTC on 14440.5 kHz RTTY and SSB.

• Argentine Navy (c/s TB-1) at 1200-1230 UTC on 14466.5 kHz SSB. -to General Pacheco Radio (c/s L RB89) at 1030-1100 UTC on 13280 kHz SSB

• General Pacheco Radio (c/s L RN51) at 1100-1130 UTC on 13290 kHz A1A and at 2100-2200 UTC on 6040 kHz (6040 is correct!) SSB.



New Zealand's Scott Base

• Antarctic stations at 0800-0830, 1200-1215, 1500-1515, 1800-1815, 2030-2045, 2330-2400, 0300-0315 and 0600-0615 UTC on 2455, 3420, 4490 and 8980 kHz in SSB.

Transmitting frequencies: 2455, 3755, 3420, 4490, 8980, 9333, 13270, 13280, 13290, 14440.5, 14452, 15016 and 18113.5 kHz.

Receiving frequencies: 2455, 3420, 3755, 4490, 8980, 9333, 13890, 13215, 14440, 14452, 15016 and 18113.5 kHz.

**Base Marambio (Lat 64°14'S Lon 56°43'W)  
Callsign: LUU**

Schedule to stations in Antarctica and Argentina:  
• c/s LUL and LUK 24 hours on 4770, 7530, 12230 and 12325 kHz SSB

• General Pacheco Radio (c/s LRB89) at 1230-1330, 1530-1630 and 1900-2000 UTC on 13280 kHz SSB.

• HQ Buenos Aires (c/s AZU749) at 2100-2200 UTC on 14440 kHz SSB.

Working frequencies: 345, 2422.5, 3053, 4490, 4724, 4770, 6700, 7530, 8960, 11237, 12230, 13215, 13230, 13235.5, 13255, 13270, 13280, 14440.5, 14625, 14667.5, 15046, 15096, 18003 and 18425 kHz.

Antarctic weather broadcasts in RTTY on 9950 kHz at 2330 UTC, on 10870 kHz at 0030, 0330, 1830 and 2130 UTC, 10890 kHz at 0020, 0320, 1820 and 2320 UTC, 15619 kHz at 0630, 1230, and 1530 UTC 15720 kHz at 0620, 1220 and 1526 UTC, 19395 kHz at 0920 UTC and 22318 kHz at 0930 kHz.

**Base Matienzo (Lat 64°58'S Lon 60°03'W)  
Callsign: LUM**

Working frequencies: 385, 580, 2422.5, 3053, 4490, 4724, 4770, 6700, 7530, 8960, 11237, 12230, 13215, 13230, 13235.5, 13255, 13270, 13280, 14440.5, 14625, 14667.5, 15046, 15096, 18003 and 18425 kHz

**Base Orcadas (Lat 60°44'S Lon 44°44'W)  
Callsign: LOK**

Schedule to stations in Antarctica and Argentina:  
• General Pacheco Radio (c/s LRB89) at 0800-1000 UTC on 13280 kHz SSB.

• Argentine Navy (c/s TB-2) at 1100-1130(v-1200) UTC on 14466.5 kHz SSB.

-to HQ Buenos Aires (c/s AZU749) at 1530-1600 UTC on 14440.5 kHz SSB.

• Base Marambio (c/s LUU) at 0245-0300, 0545-0600, 0845-0900, 1145-1200, 1445-1500, 1745-1800, 1945-2000 and 2345-2400 UTC on 4490 kHz SSB.

Working frequencies: 500, 2043.5, 2182, 2422.5, 3023.5, 3778, 4234, 4250, 4490, 4788.5, 6454, 6512.5, 6670, 7358, 8195, 8690, 8698, 8818, 9983, 11070, 11147, 13060, 13051.5, 13087, 13270, 13280, 14440.5 and 17223 kHz.

Antarctic weather broadcasts in RTTY on 2422 kHz at 0030, 0330, 0630 and 2030 UTC, on 4492 kHz at 0020, 0320, 0620 and 2020 UTC, on 9985 kHz at 0930, 1230, 1530 and 1830 UTC and on 12660 kHz at 0920, 1220, 1520 and 1820 UTC.

*Germany's antenna system for the "Georg von Neumayer" research station*



Antarctic weather broadcasts in RTTY on 9950 kHz at 2330 UTC, on 10870 kHz at 0030, 0330, 1830 and 2130 UTC, 10890 kHz at 0020, 0320, 1820 and 2320 UTC, 15619 kHz at 0630, 1230, and 1530 UTC, 15720 kHz at 0620, 1220 and 1520 UTC, 19395 kHz at 0920 UTC and 22818 kHz at 0930 kHz.

**Base Petrel (Lat 63°28'S Lon 56°12'W)  
Callsign: LOD3**

Working Frequencies: 2043.5, 2182, 2422, 3023.5, 4234, 4490, 4738.5, 6512.5, 6770, 13051.5, 13060, 13087, 13270, 13280, 14300, 14440.5, 17223 kHz.

**Base Primavera (Lat 64°09'S Lon 60°57'W)  
Callsign: LTS5**

Transmitting frequencies: 2455, 3420, 4490, 4468.5, 5365, 7394, 8980, 7634.5, 7910, 10586, 11438.5, 13051, 14402.5, 14368.5, 15770 and 20273.5 kHz.

Receiving frequencies: 2455, 3420, 4490, 4468.5, 5365, 7394, 7975, 8980, 7634.5, 7910, 10586, 11438.5, 13890, 14368.5, 14440, 14697.5, 15770, 16020 and 20273.5 kHz.

**Base San Martin (Lat 68°08'S Lon 67°04'W)  
Callsign: LTS2**

Schedule to stations in Antarctica and Argentina:  
• c/s LTA at 0930-1030 UTC on 14697.5 kHz SSB.

• c/s LTS9 at 1100-1200 UTC on 14402.5 kHz SSB.

• HQ Buenos Aires (c/s AZU749) at 1300-1330 and 1800-1830 UTC on 14440 kHz SSB.

• General Pacheco Radio (c/s LRB89) at 1330-1430 UTC on 13280 kHz SSB.

• General Pacheco Radio (c/s LRN51) at 1430-1500 UTC on 13290 kHz SSB.

Transmitting Frequencies: 2455, 3420, 4490, 4468.5, 5365, 7394, 8980, 7634.5, 7910, 10586, 11438.5, 13051, 13270, 13280, 14402.5, 14368.5, 14440.5, 15770 and 20273.5 kHz.

Receiving Frequencies: 2455, 3420, 4490, 4468.5, 5365, 7394, 8980, 7634.5, 7910, 7975, 10586, 13390, 11438.5, 14440, 14368.5, 14697.5,

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Note: All frequencies of Argentine stations in Antarctica are varying some 100 Hz. Furthermore, they are changing between USB and LSB from day to day. RTTY might be used at times.

Address for all Argentine stations in Antarctica:

c/o Sr. Director Nacional del Antartico  
Cerrito 1248  
Buenos Aires (1010)  
Republica Argentina

## Australia:

**Mawson Station** (Lat 67°36'5 Lon 62°53'E)  
Callsign: VLV

Schedule for traffic to Antarctic stations:

- Casey (AUS, c/s VNJ) at 0020-0040, 0200-0230, 0620-0640, 0800-0830, 1220-1240 and 1500-1600 UTC RTTY ARQ.
- Moledezhnaya (URS, c/s RUZU) at 0040-0100, 0145-0200, 0640-0700, 1240-1300, 1345-1400 and 1840-1900 UTC RTTY.
- Pretoria Weather Bureau (AFS, c/s ZRO) at 0230-0300, 0500-0530, 0700-0730 and 1430-1500 UTC RTTY AUTOSPEC.
- Kerguelen Islands (F, c/s FJY2) at 0300-0330, 0730-0800 and 1300-1330 kHz RTTY.
- Davis (AUS, c/s VLZ) at 2350-0000, 0110-0120, 0550-0600 and 1200-1210 UTC RTTY AUTOSPEC or CW.
- Syowa (J, c/s JGX) at 0010-0020, 0120-0130, 0610-0620, 1210-1220, 1320-1330 and 1810-1820 UTC RTTY ARQ or CW.
- SANAE (AFS, c/s ZRP) at 0000-0010, 0100-0110, 0600-0610, 1150-1200 and 1750-1800 UTC RTTY AUTOSPEC or CW.

**Casey Station** (Lat 66°17'S Lon 110°32'E)

Callsign: VNJ

Schedules for traffic to Antarctic stations:

- Mawson (AUS, c/s VLV) at 0020-0040, 0200-0230, 0620-0640, 0800-0830, 1220-1240 and 1500-1600 UTC RTTY ARQ.
- Davis (AUS, c/s VLZ) at 0330-0400 and 0500-0530 UTC RTTY.
- Dumont d'Urville (F, c/s FJY3) at 0005-0015, 0140-0200, 0605-0615 and 1205-1215 UTC RTTY.

**Davis Station** (Lat 68°55'S Lon 77°58'E)

Callsign: VLZ

Schedules to Australian Antarctic stations:

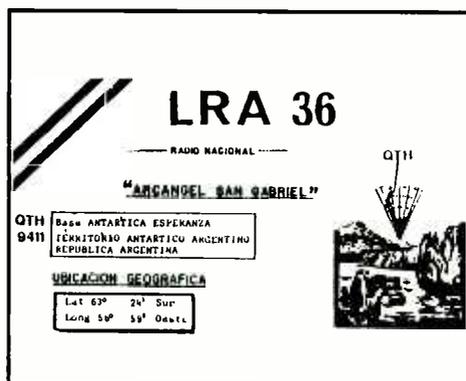
- Mawson (c/s VLV) at 2350-0000, 0110-0120, 0550-0600 and 1200-1210 UTC RTTY or CW.
- Casey (c/s VNJ) at 0330-0400 and 0500-0530 UTC RTTY.

**Macquarie Island** (Lat 54°30'S Lon 159°56'E)

Callsign: VJM

Working frequencies used by all Australian stations: 2720, 3023, 4040, 5400, 6550, 7922.5, 9940, 12255, 14415, 15845 and 19255 kHz CW, SSB or RTTY (mostly ARQ).

Since Australia recently introduced a Satellite system for communications to and between



*QSL from Argentina's base Antarctica Esperanza.*

their stations, some of the listed times may no longer be valid. However, shortwave is still used for non-official traffic between the stations.

Address for all Australian stations in Antarctica:

c/o The Director  
Antarctic Division  
Kingston, Tasmania 7150  
Australia

## Brazil

**Base Comandante Ferraz** (Lat 62°05'S Lon 68°23'W)

Working frequencies: 4143.6, 6218.6, 6997, 8291.1, 9265, 12207, 14365 and 15930 kHz SSB.

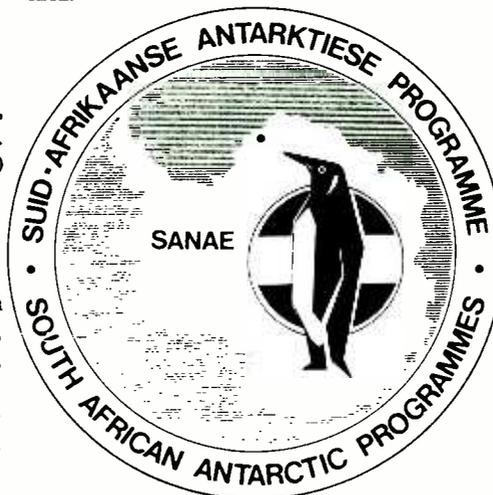
Address:  
c/o SECIRM  
Ministerio da Marinha - 4 andar  
Esplanada dos Ministerios  
70055 Brasilia, DF  
Brazil

## Chile

**Base Presidente Eduardo Frei Montalva** (South Shetland Islands)

Callsign: CAN6D

Antarctic weather broadcasts in CW and RTTY on 5302.5, 11660, 11662.5 and 15470 kHz.



Address:

c/o Departamento Antartico  
Rivas Vicuna 365  
Estacion Central  
Santiago  
Chile

## Germany

**Georg Forster Station** (Lat 70°46'S Lon 11°50'E)

Callsign: Y3ZA (should be "DLA.." now)

Schedule for traffic to Ruegen Radio (c/s DLA):

- 1800-2000 UTC on 12333.1 kHz USB
- 1800-2000 UTC on 16559.2 kHz USB
- 1500-1800 UTC on 22089.9 kHz USB
- 0800-1000 UTC on 22212.0 kHz RTTY
- 1500-1800 UTC on 22212.0 kHz RTTY

**Georg Von Neumayer Station** (Lat 70°36'S Lon 8°21'W)

Callsign: for maritime traffic: DB9020

for traffic to fixed land stations: DLA21

Schedule for simplex traffic:

- Molodezhnaya (URS) at 1145-1200 and 1745-1800 UTC on 13385 kHz CW.
- SANAE (AFS) at 1215-1230 UTC on 4104 kHz USB.
- Mawson (AUS) at 1200-1215 UTC on 11165 kHz CW and at 1140-1745 UTC on 8265 kHz CW.
- Halley (G) at 1330-1400 UTC on 6210/8265/11165 kHz USB.

Address:

c/o Alfred-Wegener-Institute for Polar and Marine Research  
Columbusstrasse  
D-(W)2850 Bremerhaven  
Germany.

## Japan

**Syowa Station** (Lat 69°00'S Lon 39°35'E)

Callsign: JGX

Schedule for traffic to Antarctic stations and to Japan:

- Mawson (AUS, c/s VLV) at 0010-0013, 0120-0135, 0610-0613, 1210-1213, 1320-1335 and 1810-1813 UTC on 8186 kHz CW or RTTY (alternative on 5947, 7771 or 11532.5 kHz).
- Asuka (J, c/s JGY) at 0730-0800 UTC on 3024.5 kHz CW or SSB and 1400-1430 UTC on 4440 kHz CW or SSB.
- Choshi Radio (Japan, c/s JCS) at 1920-1100 UTC on 14895, 18505 and 20265 kHz CW.
- HQ Tokyo at 1820-1920 UTC on 14895, 18505 and 20265 kHz Fax. -Ministry of Education Tokyo at 0930-1030 UTC on 14895, 18505 and 20265 kHz Fax.

**Asuka Camp** (Lat 71°32'S Lon 24°08'E)

Callsign: JGY

Traffic in CW and USB on frequencies 3024.5, 4540, 5947, 7771, 8186, 11532.5, 14895, 18505 and 20265 kHz.

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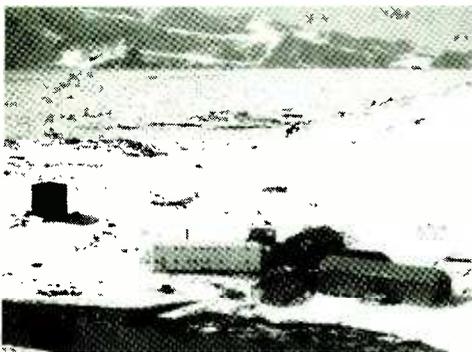
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*United Kingdom's Signy Station on the South Orkney Islands*

**Mizuho Station** (Lat 70°42'S Lon 44°20'E)  
**Callsign: JGX6**

Summer operation only. Frequencies as for Asuka Camp.

Address for all Japanese stations:  
 c/o Director-General  
 National Institute of Polar Research  
 9-10, Kaga 1-chome, Itabashi-ku  
 Tokyo 173  
 Japan

## South Africa

**SANAE Station** (Lat 70°18'S Lon 2°24'W)  
**Callsign: ZRP**

Schedule for traffic to Antarctic stations and South Africa:

- Novolazarevskaya (URS, c/s UDY) at 0600-0615, 1200-1215, 1800-1815 and 2345-0000 UTC on 6264 kHz CW or RTTY.
- Mawson (AUS, c/s VLV) at 0600-0615, 1150-1200, 1750-1800 and 0000-0015 UTC on 11145 kHz CW or RTTY.
- HQ Pretoria (c/s ZRO) at 0120-0130 UTC on 8265 kHz, at 0620-0630 UTC on 12442 kHz, at 0800-1145 and 1245-1600 UTC on 16425 kHz and at 1820-1830 UTC on 9385 kHz RTTY.
- Dakshin Gangotri (IND, c/s VUA) at 1100-1130 UTC on 6275 kHz USB on Tuesdays.
- Georg von Neumayer (D, c/s DB9020) at 1215-1230 UTC on 4104 kHz USB.
- Halley Bay (G, c/s VSD) at 1330-1400 UTC on 6275 kHz USB.

**Gough Island Base** (Lat 40°21'S Lon 9°53'W)  
**Callsign: ZOE33**

Schedule for traffic to South Africa:

- HQ Pretoria (c/s ZRO) at 0100-0130, 0600-0610 and 1810-1820 UTC on 8270 kHz and at 0930-1030 and 1145-1215 UTC on 16552 kHz RTTY AUTOSPEC.
- Tristan da Cunha (c/s ZOE) at 1545-1615 UTC on 6780 kHz CW or USB.

**Marion Island Base** (Lat 46°53'S Lon 37°52'E)  
**Callsign: ZRS**

Schedule to South Africa and Kerguelen:

- HQ Pretoria (c/s ZRO) at 0130-0145 and 1800-1810 UTC on 8265 kHz RTTY AUTOSPEC.

- Kerguelen Islands (F, c/s FJY2) at 0630-0645 UTC on 13402 kHz RTTY.

**Olifantsfontein Radio (South Africa)**  
**Callsign: ZUD**

Transmitting frequencies to Antarctica: 4454, 9385, 11115 and 14402 kHz RTTY and SSB. Receiving frequencies: 4070, 4959, 6264, 6270, 8265, 8365, 11145, 11155, 12392, 12442, 14366, 14375, 16425, 17200, 18975 and 19865 kHz.

Weather Bureau Pretoria ("HQ Pretoria," c/s ZRO) transmits via Olifantsfontein Radio.

Note: South Africa mostly uses the AUTOSPEC-system (68 Baud) for RTTY.

Central address for all South African stations:

c/o The Chief Director  
 Weather Bureau  
 Department of Environment Affairs  
 Private Bag X097  
 Pretoria 0001  
 Republic of South Africa

## Soviet Union

**Molodezhnava Station** (Lat 67°40'S Lon 45°41'E)

**Callsign: RUZU**

Antarctic weather broadcasts in RTTY on 6785 kHz at 1900 UTC, on 9280 kHz at 0100, 0300, 0700, 1300, 1500 and 1900 UTC, on 10140 kHz at 0300 UTC and on 15830 kHz at 0100, 0300, 0700, 1300 and 1500 UTC.

All Soviet Antarctic stations are active on 13385 kHz high speed CW: UGE2 Bellingshausen, UGH9 Druzhnaya, UMA4 Leningraskaya, UUT & UFE Mirnyi, RUZU Molodezhnaya, UDY Novolazarevskaya, UDR3 Russkaya, RKIS & RULE Vostok.

Address for all Soviet Antarctic Stations:  
 c/o Soviet Arctic and Antarctic Research Institute  
 Fontanka 34  
 SU-191104 Leningrad  
 USSR

## United Kingdom

**Bird Island Station** (Lat 54°02'3 Lon 30°02'W)  
**Callsign: ZBH22**

**Signy Island Station** (Lat 60°42'3 Lon 45°35'W)  
**Callsign: ZHF33**

**Faraday Station** (Lat 65°15'S Lon 64°16'W)  
**Callsign: ZHF44**

**Rothera Station** (Lat 67°34'S Lon 60°08'W)  
**Callsign: ZHF45**

**Fossil Bluff** (Lat 71°20'6 Lon 68°21'W)  
**Callsign: "Fossil Bluff"**

**Halley Station** (Lat 71°20'S Lon 26°39'W)  
**Callsign: VSD**



Frequencies used for communications between the British stations for exchanging weather data or for administrative traffic: 4067, 9106 or 11055 kHz USB at around 1130, 1730 and 2330 UTC.

Central address for all British stations in Antarctica:

c/o Postmaster General  
 Port Stanley  
 Falkland Islands

## United States of America

**Palmer Station** (Lat 64°46'S Lon 64°05'W)  
**Callsign: NHG & KWB268**

Schedule:

- for weather broadcasts 4553 kHz at 0100 UTC, 10235 kHz at 2000 UTC and 13553 kHz at 1500 UTC RTTY.
- standing by for calls at 1500-0100 UTC on 4067, 7995 and 11552 kHz RTTY.

All U.S. Antarctic stations (NHG Palmer, NGD McMurdo, NBY Byrd, NPX South Pole, NQU Siple) can be heard on 8997 and 11552 kHz USB at times. South Pole weather broadcast to McMurdo at 0000 UTC on 8997 kHz USB.

USNMARSRADSTA: NNOICE McMurdo, NNNOPA Palmer, NNNONWB South Pole. Often active on 13974 kHz USB.

Address for all U.S. stations in Antarctica:  
 c/o Department of the Navy  
 COMNAVSUPFORANTARCTICA  
 FPO San Francisco, CA 96601  
 USA



Note: The author of this article has been collecting information on HF communications in Antarctica since the mid 80's. If you'd like to contact him, here's the address to write (please enclose return postage): Harald Kuhl, P.O. Box 110 226, D-(W)3400 Goettingen, Germany.

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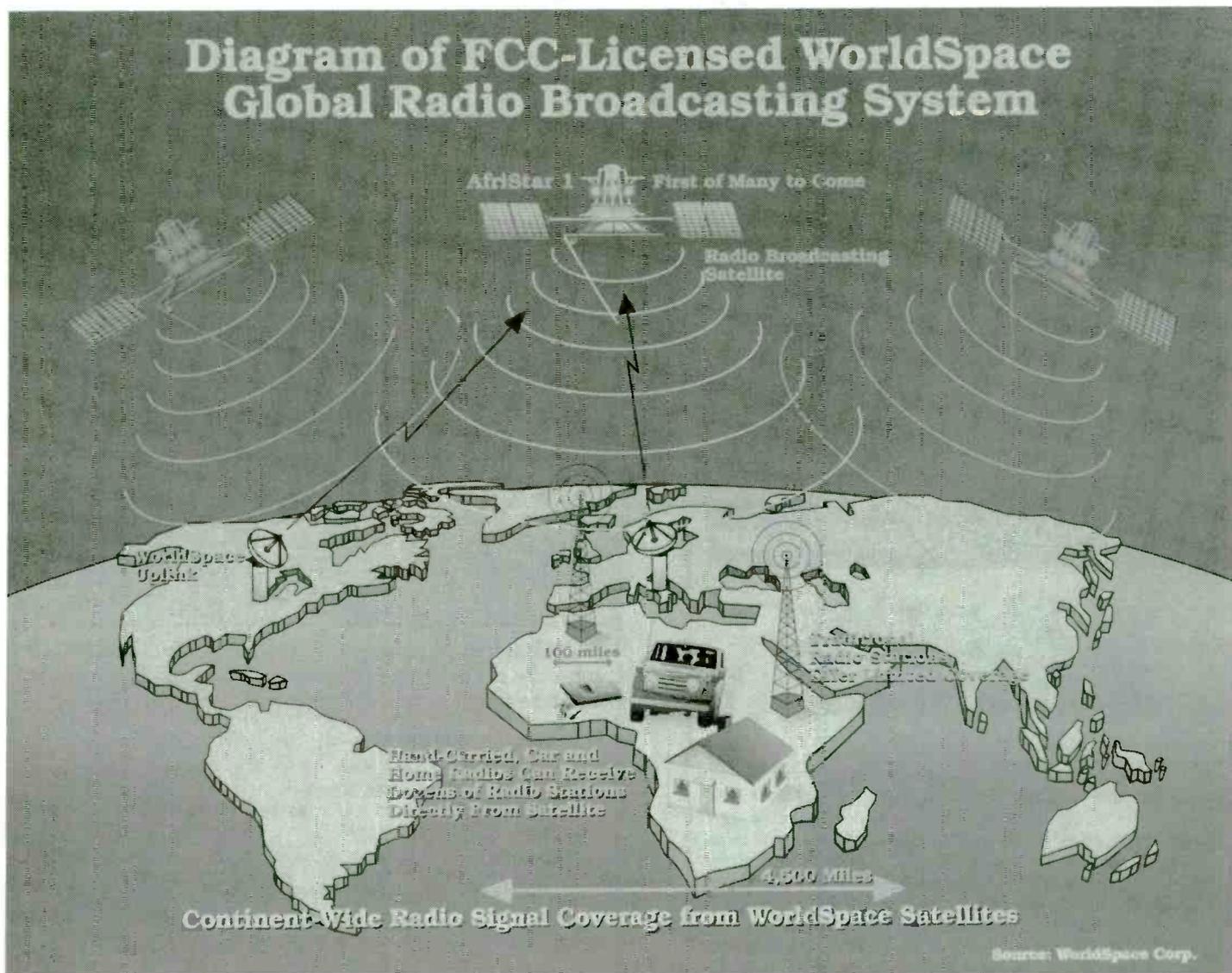
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# Rainbows or Storm Clouds:

## What's the Forecast for Digital Radio?

By Chuck Rice



A new way of listening to the radio is creating static inside the industry and the squabble is threatening to delay the introduction of digital technology to the U-S market. The technology would allow radio stations to broadcast a signal that's comparable to compact disc quality sound. One industry expert says, "Your receiver will be equivalent to a cd player, but instead of putting on a cd, your antenna picks up the digital information and converts it to music."

There are primarily two methods of transmission being proposed for use in the United

States: satellite delivery and terrestrial broadcasting, an over-the-air transmission. Both systems would require special radio receivers.

"The technology to do digital audio transmissions is already here, says FCC engineer Damon Ladson, "It's just a matter of adapting it to either satellite or terrestrial." He says you could start broadcasting tomorrow if the provisions were in place.

The battle is between broadcasters and those who want to transmit via satellite directly to listeners. Satellite delivery has the potential of

covering a much wider listening area than standard over-the-air transmission. A ground station feeds the signal up to the satellite, which then beams the information back to Earth where it's picked up by your radio. The coverage area could be tremendous and troubles broadcasters.

Michael Rau, a senior vice president in charge of science and technology at the National Association of Broadcasters, says, "Broadcasters oppose national satellite delivery of radio programs direct to listeners."



*This Marcor radio, being designed for use in Africa, contains a built-in 2-inch satellite dish.*

"The U.S. has the best developed broadcasting system in the world," he adds, "We have got a very successful system of allowing local stations to determine the proper mix of national and local programming for the community — based on the community's needs."

Rau says satellite networks could potentially destroy local radio stations forcing hundreds on them off the air. "Many stations are living by very slim profit margins as it is," he says, "and if any of these profits are siphoned off — it would be very bad for local broadcasters."

Radio programs delivered via satellite could be heard for thousands of miles — virtually static-free with no fade out. In other words, you could drive from Baltimore to Baton Rouge and listen to the same station.

"That convenience is what will attract listeners," says Robert Briskman, who's developing a portable digital radio receiver. He describes his own frustration with current over-the-air technology: "I drive to the beach, I start listening to a program and, of course, I lose it." He says the nice thing is, "If you have enough of these satellite stations, you can find one you like and be able to virtually drive cross country with it."

Clear channel broadcasters are the only ones that come close to serving an area as large as satellite transmissions would cover. Clear channels are frequencies set aside mainly for one or two stations. WGN in Chicago is one such station. Owned by the Tribune Broadcasting Company, it transmits on 720 kHz; it has a coverage area of 750 miles at night.

Tribune Broadcasting Vice President Wayne Vriesman, who also represents clear channel broadcasters, believes their future rests with satellite-delivery.

"I would like to see the clear channel AM stations of America be able to broadcast into a coverage area similar to what they have today. And that can be done through satellite delivery." At the same time, he says only clear-channel broadcasters should be allowed to use satellites.

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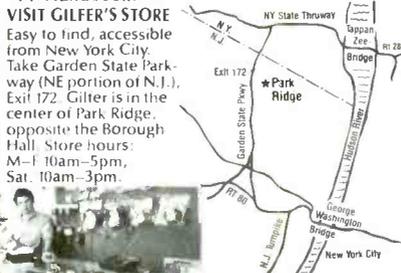
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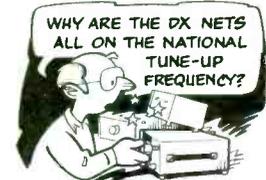
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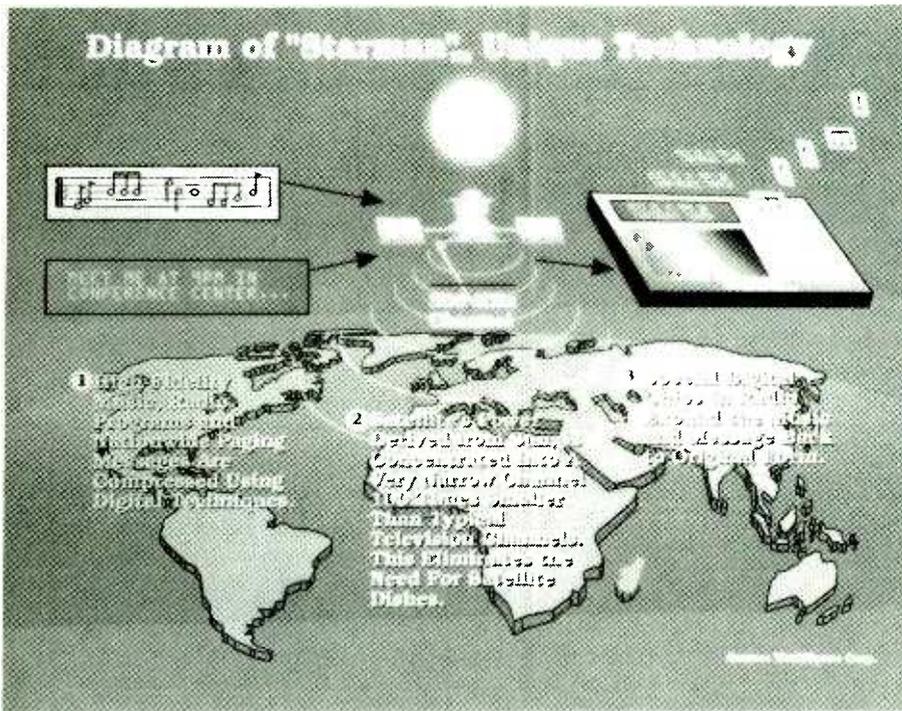
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"I just think that every effort has to be made through this very long process to give stations similar coverage areas to what they have today."

Broadcast stations choosing to transmit digital signals over the air would also increase their coverage area — somewhat. Ladson, with the FCC, says digital signals tend to go further than analog ones. However, he says, once you get outside the coverage area — there's no fade out — you lose the signal completely.

The satellite delivery system has its own frustrations — including drop outs. Just as with satellite TV transmissions, you have to have a good view of the satellite to pick up a clean signal. When you drive through a tunnel, beneath an over-pass, or between tall buildings, you will temporarily lose the signal. Even rain affects satellite transmissions.

Briskman says that most of these problems could be solved by using repeaters — which would pick up the signal from the satellite and "pump it" into the dead spots. At the same time, he concedes, it could be cost prohibitive. "There are a lot of tunnels," he adds.

Rau agrees. "The technical disadvantages are numerous for a satellite," he says. "A great many boosters would be needed to provide service equal to over-the-air broadcasts."

Practically speaking, the best way to hear satellite-delivered programs uninterrupted would be to listen at home. Briskman, who works for Marcor, Inc., is working on a handheld digital receiver that has a built-in two-inch satellite dish. He says it's much simpler than a regular radio — "Just pick the channel you want and punch it in. There's no fine tuning," he adds. You would have to figure out where the satellite is and place the

radio in or near a window so the receiver's antenna can "see" the satellite. The radio itself would cost between \$100 and \$200. Briskman says while the radio would be able to pick up digital broadcasts, the tiny speaker does presents a sound-quality problem. He says a true audiophile may be disappointed even when using headphones. Your best bet he says, is to hook the radio up to an amplifier.

The receiver, being designed for an experimental broadcast on the African continent this year, would use two frequency bands. One is called S-Band, which is around 2300 MHz, the other is L-Band, around 1500 MHz.

The frequencies for commercial use in the United States haven't yet been determined. Ladson says finding enough spectrum space for digital broadcasts is one of the biggest problems. For instance, the L-Band frequencies are currently used by defense contractors to test airplanes and missiles.

Digital broadcast frequencies will be discussed — and a possible decision made on which ones will be used — at the next World Administrative Radio Conference in Spain. The FCC had planned to recommend that both the L and S-bands be used for digital transmissions.

Marcor's radio, which is five inches high by seven inches wide and a half-inch thick, will be able to pick up thirty-six different channels. Briskman says there could be more channels — perhaps two hundred or so — depending on how many frequencies are allocated for digital transmissions, but apparently the Defense Department has prevailed. The U.S. proposal will only include an S-band allocation (2310-2360 MHz).

Ladson says he is uncertain when digital transmissions could begin in the United States. After the frequency issue is settled, he says, the FCC must then determine which delivery system — satellite or terrestrial — to use. He says broadcasters feel "they should have a priority in any new service."

Personally, Ladson says he can see the satellite-delivery system playing a role, but adds "I don't think it will be satellite over terrestrial broadcasting. I think it will be terrestrial with some sort of satellite component." He adds, "satellite delivery is much more expensive than over the air broadcasting."

But terrestrial transmission won't be inexpensive either. It will mean that broadcasters will have to buy all new transmitting equipment. And still another issue that will have to be settled is whether the equipment will be standardized.

Some industry experts fear the FCC may allow the market to pick a standard — just as it did with AM stereo. Many believe the free-market virtually destroyed AM stereo. There was no AM standard. Lack of one left radio manufacturers with too many choices — so most simply didn't built AM stereo receivers.

Briskman, referring to the AM stereo debacle, says, "Occasionally, the FCC gets wrapped around an axle." But Ladson doesn't think that will happen in digital radio's case.

"I can see where, by one means or another, we would have to select a standard," he says. "It wouldn't make a lot of sense to have five or six systems that are incompatible; it would confuse and discourage consumers." In other words, one region of the country might have one standard, while another region might use a different one. You'd need two radios — one for each region.

Whichever system wins out, whether it be satellite or terrestrial, the changes to commercial radio, as we know it, will be dramatic.

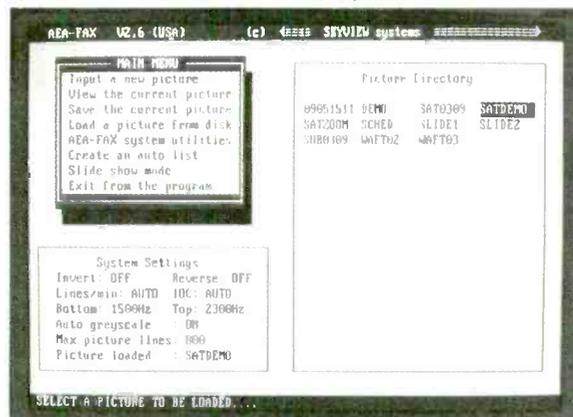
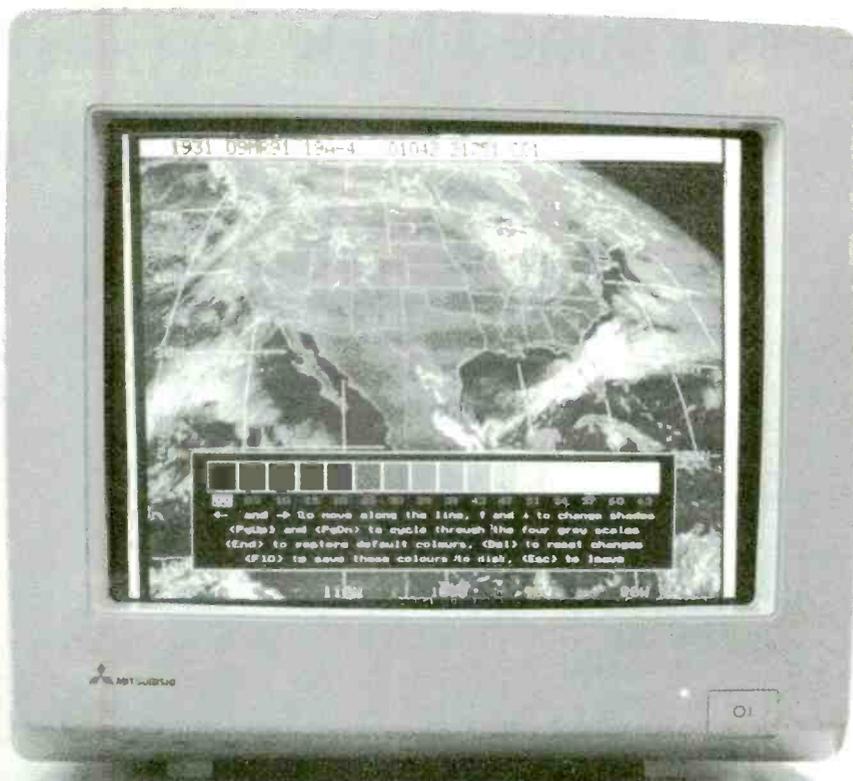
Ladson says there will have to be a phase-in period, in order to give consumers a chance to switch to new receivers.

The broadcast industry, too, supports a gradual approach. Michael Rau, with NAB, envisions local stations broadcasting on new digital frequencies as well as their old ones on AM and FM. "What we are trying to fashion is a kind of evolution to digital technology that would take place over many years," he says. Rau says hopefully terrestrial digital broadcasts will begin by the end of the decade.



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# This Vet Helps Soldiers Phone Home

by Paula Geister

**R**obert Adams, amateur radio operator and disabled Vietnam veteran, remembers what it's like to be a service man waiting in line to call home.

So when the country was on the verge of war in the Gulf, he began work in the basement of his Kalamazoo, Michigan, home as a single operator with the Army Military Affiliate Radio System (MARS). Eating meals while operating and staying up long after others had signed off, Adams helped service people in the Persian Gulf connect with home.

He heard many impassioned words during the months of war in Saudi Arabia, including a marriage proposal. His wife and children were supportive of his efforts and he seemed to always find the energy to keep at it. "How can you say no?" he asks. He was giving, for him, what seemed a needed service.

Then the Army requested a photostat of his logs. "I began to wonder if they could write me up for something," Adams says. "I thought I was in trouble."

It turned out that Adams had, in four months, run more radio communications attempts than were run during the entire Korean War. "I had no idea I'd done what I'd done," he says. "I was so involved in it."

Now he's being honored by various segments of the Army, receiving congratulatory letters and tributes from the State of Michigan and being pursued by the *Guinness Book of World Records* for his accomplishment.

But what he really considers "one hell of an honor" is receiving the Decoration for Distinguished Civilian Service, second only to the Medal of Freedom. "It's rarely given at all," he says, "and never to a radio operator."

"The Adjutant General — the most senior office in the State of Illinois — travels 300 miles to give me a medal," says Adams, "like he's got nothing better to do." He is aptly proud, but says he didn't do it for glory.

"Once things got going," he explains, "I realized there wasn't anybody else. There was an acute shortage of trained operators and such a compelling need." Adams worked at his basement station up to 18 hours a day, many of those hours at night. Such serious involvement prompted



*Robert Adams, WA9ZMO, a single phone patch operator during the Persian Gulf War, was recently decorated with the Distinguished Civilian Service medal.*

questions from his three small children about why he couldn't play with them. He simply explained to them the situation in the Gulf war and his role in it.

## How MARS Works

Service people call home at no charge through a MARS station at their location, and a ham radio operator in the States makes the link to the family back home. A hybrid coupler ties the transmitter and the receiver, independently of each other, into the telephone lines. The two parties converse with the ham controlling the transmissions.

"During the Iraqi war," Adams says, "what we had was a few hundred thousand guys 175 miles from the closest pay phone without any change." They could, he adds, make the phone call at a MARS station if they just knew it existed. MARS could be one of the Army's best-kept secrets, Adams says.

It's also "intellectually, one of the hardest things I've ever done." One has to develop what

Adams calls a cocktail party ear, he says, and just listen for the word over. You really don't do much eavesdropping. "If you listened all the time, you'd go crazy. You can become emotionally involved." There were, he admits, three or four nights when he had trouble sleeping.

"This particular war was so intense. Especially with the constant news coverage. Everybody was scared to death. You could hear it in their voices."

"You run across the greatest slice of society," he says. And even though part of the calling process involves explaining the procedure to each caller, Adams says not all of them could understand that the radio operator would be a presence during the conversation.

"There was one call where the girl must have thought she was on a private line," he recalls. The couple on the line had been married only three weeks when the soldier was sent overseas and the conversation, Adams said, made it obvious she missed him.

"My wife says it's impossible to surprise me," he says, "but I had to take the headset off."

## Looking for MARS

Each branch of the Armed Services has its own Military Affiliate Radio Service (MARS) to boost the morale of its personnel away from home. It is made possible by the volunteer services of amateur radio operators.

MARS communications will be found adjacent to, but not on, the amateur radio bands, since they are Department of Defense frequencies. Although MARS may be found throughout the spectrum, the majority of voice communications can be found between 4 and 21 MHz.

Likewise, the callsigns used are military calls, not found in any book of callsigns and addresses. If you can determine the source of the transmission, some stations may QSL your reception report, especially Navy ships.

To help you identify which branch of MARS you have intercepted, callsigns will begin with the following letters:

AG	Air Force MARS
NNNO	Navy MARS
NNNOC	Navy or Coast Guard ship
NNNOM	Marine Corps land station
NNNON	Naval base or ship
A	Army (AA-- for U.S. sectors)

A comprehensive list of regions, frequencies, ship addresses, and callsigns for each service may be found in the *Shortwave Directory* by Bob Grove.

I'm surprised my antenna didn't melt. All you're really listening for is the word 'over' but when she said 'over,' you couldn't miss it. It was like Marilyn Monroe singing 'Happy Birthday' to Jack Kennedy."

During one conversation, the misunderstanding about his presence on the line prompted threats about the FBI and a lecture about freedom of speech. One woman went into labor while on the phone. Mostly, he heard a lot of "Thank Gods" and "Thank yous."

### How Robb Works

Adams was a radio phone patch operator before his stint in the Army as a Green Beret during the Vietnam War. He was medically retired and continued as a phone patch operator after the war. He's been at it since his high school years, obtaining a First Class Radiotelephone license at the age of 15. He holds a degree in electrical engineering and designs stations all over the world.

He says it amazes him that he pulled off what he did because there were times when he was almost doing it in his sleep. "But when you're in the groove, it's not tiring at all," he says. "It's not even taxing. In fact, if anything, it relaxes me."

Adams ran his first patch of the Desert Storm operation on January 9, 1991, and it just kept getting busier after that. Of 3,300 attempts, Adams made 2,200 connections in 111 days of the 126

days of the Gulf war. He logged over 1,000 hours of patch time. There were times when connections couldn't be made because of solar flares.

"When it was all over, I realized what 'baby blues' are all about," says Adams. "I'm sitting there saying to myself 'Now what do I do?' Suddenly there's no one left out there to talk to."

His system consists of two free-standing towers (80 feet and 60 feet), a Telrec TB-6EM tribander, a 17/12M WARC duobander, a 40M rotatable dipole at 90 feet and a network of wire antennas, accessing nine HF bands plus MARS coverage. The patches were all run with a "bare-foot" Kenwood TS-940S (no internal linear amplifier).

Initially, Adams was offered a job setting up a MARS station in Saudi Arabia. He declined and offered to work stateside. "I told them, 'You guys can't keep the sand out of my bearings,'" he says, referring to the wheelchair.

He points to it saying, "If it hadn't been for that thing, I'd have been there. My outfit was over there; friends of mine were over there."

Another reason he got involved in the Persian Gulf War here at home was his kids. "I wanted to show them what civil responsibility means," he explains. "People talk about civil rights, but they ignore the fact that with rights go obligations."

"My family has fought in nine wars and I wasn't going to let this one go by."



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**AFGHANISTAN** Radio Afghanistan, English at 1800-1900 UTC via USSR on 6145, 7215, direct on 9635 (Wolfgang Bueschel, *Weltweit Hoeren* and Edwin Southwell, England) 0930-1030 on 17720, 15140, 9635 (BBC Monitoring)

**ALBANIA** Radio Tirana, English to Europe shifting one hour earlier in summer: 1830-1900 on 9480, 7120; 2230-2300 on 9725, 7215, both also on 1395. Same time year-round to Africa, 1530-1600 on 11835, 9730; North America, 0230-0300 and 0330-0400 on 11825, 9760 (BBC Monitoring) Frequencies vary, other languages noted on 7167.8 at 1230, 6171.2 at 2030 (Bueschel, Germany, *DSWCI SW News*)

**ANGOLA** Radio Angola, Luanda, 4951.1, not on every evening (Vashek Korzinek, RSA, via Dario Monferini)

Voice of the Resistance of the Black Cockerel, 7100 from 2110 English news and music, 2135 French, 2206 Portuguese to 2320 sign-off (Ernie Behr, Ont.)

**BOLIVIA** 3745-3746 variable, Radio 20 de Diciembre, Culpinas, around 0000 with political talk, dedications.

4181.74, unID facility relaying La Paz FM stations between 2330 and 0500. Perhaps the same heard another evening on 4170.56.

4449.85, Radio Frontera, more regular now until 0200 sign-off, formerly closed at 2300.

4552.42, never parallel to 4181, relaying variety of La Paz stations around 2300 some evenings, perhaps transmitter factory testing.

4864.38, steady frequency for Radio 16 de Marzo around 0000 (Juan Carlos Codina©, Lima, Peru, via Dario Monferini, *World of Radio*)

**CAMBODIA** (& non) Voice of Democratic Kampuchea announced that it would merge with Voice of the National Army of Democratic Kampuchea into a new station called Voice of the Great National Union Front of Cambodia. VONADK frequency 5408 was to be used for this at 2330-0030, from late October (BBCM) However, in late November both former stations were still being heard, VONADK on 5408 at 1100-1600; VODK on 6010 and 9440 at 1300-1400; plus Voice of Khmer on 6325 at 1100-1400 (Victor Goonetilleke, Sri Lanka, Radio Netherlands *Media Network*)

**CANADA** RCI has started packaging elements from domestic CBC programs into *Spectrum*, weekday magazine for overseas, following news on the hour between 1500 and 2200 on 13650 or 13670 (Malcolm Kaufman, MA, *W.O.R.*)

**CANARY ISLANDS** (non) Daily Spanish program from Tenerife via Spain at 2200-2300 now on 6125 (BBCM)

**CHAD** Radio Tchad Libre, a.k.a. Radio Abeche, at 1640-1705 drifting from 5902.6 to 5901.8 (Korzinek, RSA, via Monferini)

**CHINA** Li Dan writes that Radio Beijing English Dept. will have another Get-Together-On-the-Air, New Year's Day, inviting listeners to submit message, poem or song (Bruce MacGibbon, OR, *SW Echo* via Kirk Baxter) English at 1200 back on 9665; 1400 and 1500 on 7405 (MacGibbon)

A private guided tour to China for shortwave listeners is being organized for fall of 1992, probably including Shanghai, Beijing, Xian, and a quiet monitoring spot such as Chengde, 10 days all-inclusive for about \$1400 from San Francisco. If interested, contact Bruce MacGibbon, 2295 NE Juniper Ave, Gresham OR 97030 (*DX Listening Digest* and *W.O.R.*)

Honghe Broadcasting Station, Gejiu, 4931, at 1202-1230, new station (Tom Williamson, Ont., *Fine Tuning*)

China Huayi Broadcasting Co. (CHBC), new station in Fuzhou for

Chinese at home and abroad (Xinhua via BBCM) Found by accident on 6185 (Atsushi Osuka, Radio Japan *DX Corner*) Schedule is 0955-1800 daily (Toru Yamshita, *ibid.*)

Hubei PBS Provincial Service, Wuhan, on 3940 at 0850-1530, 2125-0615. Guangxi PBS, Nanning, on 4915 at 0925-1600, 2150-0515; includes English lessons at 1410-1440, Japanese lesson at 1505-1535; rural Liuzhou dialect at 2330-2350. Sichuan PBS First Program, Chengdu, on 7225, 6060 at 0345-0550, 0945-1515, 2155-0135; Second Program, partly in Tibetan/Yi on 5900 at 0950-1315, 2150-0530. Qinghai PBS Chinese Program, Xining, on 6262.8, 3950 and unconfirmed 4940 at 0925-1535, 2225-2430; Tibetan Program on 6500 at 0355-0540, 1025-1355, 2255-0100. Fujian PBS First Program, Fuzhou, on 5040, 4975, 2340 at 0850-2050, on same but 2340 unconfirmed at 2050-0600; including English lessons at 1330-1400, 0130-0200, 0520-0550; programs for Taiwan at 1400-1700, 0000-0015. Voice of Pujiang, Shanghai, on 4950, 3990, 3280 at 0955-1550 for Taiwan. All one hour earlier during summertime (BBCM)

**COLOMBIA** La Voz del Llano, 6116.5, heard on 6th harmonic 36699 at 1237-1300 (A. Schmidt et al., DX camp in Germany, *Play-DX*)

Around 3500 kHz are three stations, two of which seem to be in Colombia: 3499.94, La Voz del Guainia until closing between 0002 and 0029, from Inirida. And Radio Catolica (see last month) usually on 3580 but nominal 3500 and may have been here instead at 2326 (Codina©, Peru, via Monferini *W.O.R.*) Another date this was definitely on 3579.86 as late as 0420 from Narinyo Dept.

3930.38, Radio Microfono Civico, third harmonic of listed HJWV, Palermo, 1310

**COSTA RICA** RFPI now has funding for large 30 kW transmitter and new antenna system, on air in 3-5 months; may buy, build or partially build it; also plans for a second RFPI elsewhere in the world (RFPI *Mailbag*)

**CROATIA** (non) WHRI carries a third Croatian program, *Radio Free Croatia*, on 7315 at 0100-0130, announced Monday/Wednesday/Friday from Chicago, (John Mrvica, PA, *Review of International Broadcasting*) Again at 0330-0400, but at UTC Thursday, not Friday (gh) WHRI told RFC they would reach a million listeners; getting hundreds of calls to 989-1101, and fax is 312-989-6838, address Chicago Media Workshop, 4829 N. Talman Ave., 60625 (Hans Johnson, MD, *W.O.R.*)

*Croatian Radio Zagreb*, which is on WHRI 7315 and/or 9495 at 0000-0100 and 0400-0500, can be reached through Mr. George Rudman, Political Affairs Director, Croatian-American Association, 1912 Sunderland Place NW, Washington, DC 20036-1608. He will fax reports to Zagreb, return reply via mail; or you can try faxing direct to 38/41/451 145 (Frank F. Orcutt, *DXLD*)

*Radio Libertas* write they are currently off the air "due to tremendous financial hardships," hope to resume SW soon with 15 or 30 minutes after Radio Zagreb on WHRI (Harald Kuhl, Germany, *Play-DX*)

**CUBA** RHC on new 6180 to Caribbean at 0300 in Spanish, 0400-0600 English; may move (Tom Sundstrom, NJ, *SW Echo* via Baxter) This uses phased dipole, broad beam around 105 degrees (Arnie Coro, RHC *DXers Unlimited*)

**ECUADOR** Strong hissing noise all over the 19m band every evening in early November obliterates many weak signals and is caused by defective HCJB transmitter on 15140 in Spanish from 2200 to 0500 (Behr, Ont., *W.O.R.*) Must be the same "station to the south" RFPI 15030 was complaining about, but later thought was fixed (gh)

# Shortwave Broadcasting

**ESTONIA** Radio Estonia, 5925, has already added English on Thursdays at 2130-2200, emphasizing music and culture, while the Monday program has news of the past week (BBCM)

**ETHIOPIA** Three pro-EPRDF radios now from Addis Ababa: on 8000 and 6940, Voice of the Ethiopian People for Peace, Democracy and Freedom, in Amharic, 0330-0430 and 1500-1600 daily, 1345-1445 Sunday; and Voice of Broad Oromo Masses, 0430-0530 and 1600-1700. On 7820, 7450 and 6770, Voice of Tigray Revolution at 0430-0530 and 1500-1600 daily, 1345-1445 Saturday (BBCM)

(non?) Voice of Oromo Liberation moved from 9540 to 11705 at 1000-1100 and from 1700 (BBCM)

Voice of Broad Masses of Ethiopia at 1620-1640 and 7020.0 and 7490.4 (Korinek, RSA, via Monferini)

**FRANCE** RFO news review for Antarctica is scheduled Mondays at 0805-0835 on 11660 (BBCM)

**GERMANY** Deutsche Welle increases musical content in German programs for holidays, Dec. 24-26, 31, Jan. 1, everything from Xmas services, to folk, requests, dancing in the New Year (*W.O.R.*)

**GUYANA** Voice of Guyana, Demerara, 5950 audible regularly here 0800-1100, 2100-0300 (Ravindranath G. Sewdien, Suriname, DSWCI *SW News*)

**HUNGARY** Denis Herner, founder of Radio Budapest DX Club and program, died in late October. In tribute, Radio Budapest will keep the DX show going (David Hermges, Austrian *SW Panorama*)

**INDONESIA** RRI Jakarta Programa Nasional on new 9525 at 2200-0800, 100 kW parallel 15154 (Aboc Nawan Thaliep, WDXC *Contact*)

**IRAQ** Brussels embassy said Radio Baghdad would resume English in December on 11740 to Europe at 1800-2300, 11830 to North America at 2300-0100 (DX-Antwerp via BRT *Radio World* via RNMN) Kurdish service on 6560; Arabic on 9723 and 4600 or 4610; evenings also 11740, 11755 (BBCM)

(non) Voice of Iraqi Opposition, believed from Saudi Arabia, re-named Voice of the Iraqi People, heard at 0400 on about 9565, 1100 on 15605 (BBCM) On 9568 at 1400 past 1600; also from 1900 on 15602, 17955 until 2320; other days on 17950 or 17960; also on 9995 until 2203, maybe a different site (Behr, Ont., *W.O.R.*) At 1815 on 17955 and 15602, message remains the same: Attention Iraqi Armed Forces: conditions in Iraq have been and continue to be deplorable. Overthrow Saddam Hussein (Hans Johnson, MD)

**IRELAND** Radio Fax 24 hours on 6205 and new winter frequency 3910 (RNMN)

**ISRAEL** On Nov. 3, Israel Radio's London office faxed *MT* that the government had ordered immediate resumption of external services cut Aug. 4, including "prime time" English halfhours at 0000, 0100 and 0200 on 11605, 9435, 7465. However, this had still not happened at the end of the month, although a week later Hebrew home service was extended to all-night on these and other frequencies, with plans to insert English news headlines.

**ITALY** NEXUS/Italian Radio Relay Service replaced 9815 with 7125, Saturday 0800-1000 & 1400-1630, Sunday 0500-1600, Monday-Friday 0600-0800 and irregularly at 1000-1300, daily at 2030-2200, but the evening broadcast may have to move again to an alternate such as 7290 or 7300 (LRRS)

**KAZAKHSTAN** Radio Alma Ata in English; 2230-2300 on 21490, 17730, 17715, 17605, 15385, 15315, 15270, 15215, 11920, 11825, 9705, 9550, 9505, 7320, 7280, 7240, 7235, 7115, 6130, 6125, 6075, 6060, 5985, 5970, 5960, 5945, 5260, 5035, 4395, 3955; and at 0130-0200 on 6135, 5915 (BBCM)

**KURDISTAN** (non?) Voice of Iraqi Kurdistan announced on 5545 and 3970 schedule changed to 1400-1500, repeated 0430-0530 (BBCM)

**LUXEMBOURG** RTL plans a giant on-air party Dec. 29 on 15350, which will be the final night of English on mediumwave 1440 due to declining audience and most DJ contracts are not renewed (RNMN)

**MEXICO** La Voz de Veracruz, 9546.3 from 1200 to fadeout 1330; not heard evenings due to interference, but then goes off around 0100, apparent sign-off (Behr, Ont.)

**MOZAMBIQUE** A Voz da Renamo, clandestine on 9990 USB at 0500-0530 and 1500-1600, reportedly broadcasts from Gorongosa in central Mozambique (BBCM)

**NETHERLANDS** On Wednesdays, January-March, RN has a 12-part documentary *In So Many Words*, on language diversity and cultures in Euro community, threat of English, German comeback, starting Jan. 8 (via Gordon Darling, PNG, *R.I.B.*)

**PAKISTAN** Hamband intruder Radio Pakistan, Sheena service at 1400-1805 still on 7003.9 (Bueschel, Germany, *WWH Weltschau*)

**PAPUA NEW GUINEA** 4890 is on the air with 5 kW from NBC Port Moresby at 1900-1400; also plans to reactivate 3925 with 2.5 kW at 1900-2200, 0700-1400; and 9520 with 10 kW at 2200-0700 (Darling, PNG via Semitt, *SW Echo* via Baxter)

**PERU** 3500.72-3500.88 variable, Radio Chillia carrier comes on as early as 2326 against the Colombian slightly below 3500; anthem from 2354—this is a small one-man station, unlike the pro-sounding Colombian. Another day until abruptly off at 2318 a station on 3501.37 with the start of the Peruvian national anthem. Pirate playing around? 3956.5-3959.5v, Radio Continental, Tungania?, 2330-0330 for 2nd anniversary, Nov. 21-22.

4210.80, Radio Layson (pronounced Laichon), Cajamarca at 0030, 3rd harmonic of 1403.6, so checked 2nd harmonic of 2807.20 where it was better and clearer, like a local though fundamental is blocked here. Don't confuse with Perla del Oriente, Bolivia on 4210.83, or the Ecuadorian slightly higher.

4370.40-4371.30, very distorted station at 0105 past 0205, believed same Radio Campesino as in June in 4300-4400 range, and mid-October around 4330.

4382.97, unID from Puno Dept at 0205, next night 2300-0200, reminds me of Radio Tinajani, which had been inactive on 5863

6280.94, Radio Huancabamba, 0230-0300, later than usual 2330 closing.

6323.35, Estacion C, Moyobamba, also running later to 0100 instead of 2330

8514.20, Radio Amistad, Soritor, 0001-0030 with editorial against privatization of public schools promoted by Pres. Fujimori; station is owned by local teacher, and as leftist is apparently not bothered by MRTA guerrilla attacks in nearby Rodriguez de Mendoza (Codina@, Lima, Peru, via Monferini, *World of Radio*)

7037.7, Radio Azangaro keeps drifting higher, normal sked is 2200-0300, very good signal and modulation. Station confirmed current

## DX LISTENING DIGEST

— much more info in the style of this column.  
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# Shortwave Broadcasting

frequency by phone in mid-November (Rafael Rojas Fbinquinos, Lima, via *ibid.*)

**PHILIPPINES** FEBC in English to South Asia at 1300-1600 on 11995 ex-11680 (Victor Goonetilleke, Sri Lanka, *RNMN*)

**POLAND** Warsaw in English on 9675 at 0630 but continuing long after scheduled close at 0700 (Don Rnodes, Vic., *Australian DX News*)

**QATAR** QBS changed its off-frequency from 11910.7 to 11750.3, at 1707-2130, heard at 2000 (Bueschel, Germany, *DSWCI SW News*)

**RUSSIA** At an appearance in Boston, Vasily Strelnikov of Radio Moscow said there were plans to reduce the number of languages from 69 to just 6. RM's distinct sound easily recognizable even with poor reception is due to wood on the studio walls instead of soundproofing (*NASWA via WDXC Contact*) RMWS in Russian announced no schedules would be provided as its fate is in doubt. TASS reported that national media outlets not listed by Soviet ministries would be abolished Nov. 15 (*BBCM*) Radio Moscow announced that North American service would be absorbed into World Service starting in December, also British service, but this already happened except for separate West Coast service (Richard Measham, *BBCM, RNMN*) *Vasily's Weekend* is on RMWS Saturdays 0730, 1330, 1830, Sundays 0030, 0830, 1530, 2130 (Edwin Southwell, *VDXC Contact*)

We have been appointed by Radio Moscow to market products with the RM logo (Robert Dell, North Atlantic Radio Service, P O Box 1, Marion Bridge, Nova Scotia BOA 1PO, Canada; phone 902-727-2913 or -2727; fax -2659) RMWS heard announcing this address for T-shirts, mugs, pens, etc. (Andy Wallace, *SW Echo via BXR*)

RMWS in Russian heard with a new weekly program for believers, *Programadiya veruyushchikh*, Sundays around 1525 on 21460, including a Baptist sermon, report on Moslem schools (Stewart Morgan, NC)

Murmansk Radio on new 6905 USB at 1720-1730. Russian news and comments (Peter Mueller, Germany, *DSWCI SW News*)

Regional Russian SW frequencies carrying Russia's Radio, usually 22 to 23 hours per day: Bashkir 4485; Krasnoyarsk 5290; Magadan 5940, 7320, 9530, 9600; Mari-El 15165 at 1545-0100; Monchegorsk, Murmansk 5930; Perm 6165 at 0100-1440, 11770 at 1500-2300; Maritime kray 5015; Samara 9550 at 0300-1700, 15215 at 1730-0100; Sakhalin 4050, 11840; Tyumen 4895 and 4520 which is from Khanty-Mansiysk; Khabarovsk 7210, Komsomolsk-na-Amure 4610 (Sem Dney via *BBCM*)

Adygey Radio, Maykop, Fridays 1930-2000 in Adygey on 5905, replaced by 7130 from March 1. Kabardino-Balkar Radio, Nalchik, in Kabardin, Sundays on the same.

All Union Radio-One at 0300-0100 uses 13810-USB and several lower frequencies, mostly A.M.; includes "stations" Novaya Volna, Smena, Yunost.

Dvizheniye (Traffic) station, Yekaterinburg, now uses 7200, 50 kW, Tue/Thu/Sat 1200-1400, says RMWS DX Klub (*BBCM*)

Radio Ekho Moskvy is on 6035 at 0400-0700, 1500-1700 weekends, 1700-2100, and perhaps weekends only also at 2100-0300.

Radio Pamyat, right-wing Russian nationalist station, P O Box 23, Moscow 113535, has *Fatherland, Memory and You* program 0000-0130 on 6145, 1530-1700 on 12040 (*BGM*) Latter replaced by powerhouse 7230 (Bueschel, Germany, *WWH Weltschau*)

Radio Station Pacific Ocean has English news Saturday at 0950-0953 on 17850, 17825, 17695, 17620, 15595, 15535, 11815, 9905-USB, 9825, 9635, 9600, 9530, 7345, 7270, 7260, 7210, 7175, 6175 6035, 5905, 5015, 4485, 4050, 245, 236.

Rezonans, new station for businessmen with ads in several languages, on 11850 at 0500-0700, 1300-1400, 2000-2200 originating at Ostankino; editor-in-chief is Yelena Danilava; address 127427 Moscow, ul. Koroleva 19; phone 215-6456 or 217-9454; fax 215-0174 (*BBCM*)

Radio Ala, revised schedule: 11965 at 0700-1500; 7400 at 0730-

1600; 6155 at 1530-0700; 5040 at 1630-1800, 2200-0700 (Address: Box 159, Moscow 125047 (*BBCM*))

**RWANDA** RRR is on 3330.0, ex-3330.4 and now blocks Comoros here (Korzinek, RSA, via Monferini) New second program on 3330 at 1400-2100 including two hours in English, not parallel to 6055 (*BBCM*)

**SEYCHELLES** FEBA has new out-of-band outlet, 9810 to South Asia at 1400-1500 in vernaculars, English Tuesday-Saturday 1500-1600 (Victor Goonetilleke, Sri Lanka, *RNMN*)

**SOUTH AFRICA** Radio RSA complete English sked, all to Africa: 0400-0500 on 15230, 11900, 7270; 1000-1100 on 15230; 1100-1200 on 11900, 11860, 9555; 1500-1800 on 11880, 7230, joined at 1600 by 15160 (*BBCM*)

(non) ANC's *Radio Freedom* program, no longer carried via Ethiopia, Madagascar or Zambia, is still on Radio Tanzania, 9685 and 1035, Monday/Wednesday/Friday at 1815; Tuesday/Thursday/ Saturday 0415 and 1830 (*BBCM*)

**SPAIN** SER unexpectedly switched from 9630 to 9530 for English to North America at 0000-0200, 0500-0600, gaining adjacent splash from Radio Marti, 9525 (*DX Listening Digest*)

**SUDAN** (non) Radio SPLA, which disappeared as EPRDF forces took Addis Ababa in May, returned in October, at 1300-1400 on 11710 but not 9550, in English and Arabic. Announced they also use 16 Sudanese languages at 0400-0500; the 1300 broadcast was obliterated by jamming after 1307 (*BBCM*)

**TAIWAN** On VOFC *Radio Corner* after presenting lots of interviews from the *MT Convention*, Joanna Fu announced she was leaving the station for personal reasons; for the next few weeks, Wendy Yu took over, UTC Sundays around 0245, Mondays 0345 (*World of Radio*)

(non? see last month) Voice of Taiwan quickly moved to 9910, mainly Japanese but English at 1522-1535 (S. Aoki and T. Kondo, *ABI, Radio Japan DX Corner*)

**UKOGBANI** (non) Those who miss the Beeb's excellent weekday *Caribbean Report* at 2115 on 17715 and 15140 can catch the replay at 0145 on 9590, not listed as it started shortly after the last coup in Haiti. *South Asia Survey* also heard well here at 1700 on 11750 via Singapore (Chuck Albertson, Seattle WA, *W.O.R.*)

**UKRAINE** Radio Kiev in English at 2200-2300 an 7400, 9800; 0100-0200 on the same plus 15180, 17605, 17690; and 0245-0345 on 4825 (Mike Barraclough, England, *WDXC Contact*)

**UNITED ARAB EMIRATES** Contrary to last month's info, Abu Dhabi in English at 2200-2400 is on 11965, 9600 and new 7215 (via Leslie Edwards, PA, *W.O.R.*)

**USA** On a visit to Hilversum, WRNO's Joe Costello was interviewed on *Media Network*. He now feels SW is not commercially viable, due to the ratings system. At times WRNO runs low power; there is no standby transmitter. Needs to be water-cooled, but distilled, not with Mississippi muddy which corrodes. Two finals cost \$24,000 each, are no longer made, and WRNO has to scout for rebuilt ones. WRNO keeps going with lots of Cuban clients, and very lucrative sports programming.

Don't miss our *World of Radio* each week on WRNO, UTC Sundays 0030 on 7355, 2130 on 15420 if not preempted; and on WWCR, Fridays 2300 on 12160 if transmitter trouble allows, and UTC Sundays 0406 on 7435. (non) Also via RFPI Costa Rica, 7375, 13630, 15030 and/or 21465, Sundays 2230, Tuesdays 2030, Fridays 2100, Saturdays 1930, each repeated 6, 12, sometimes 18 hours later.

**UZBEKISTAN** Radio Tashkent's newish English at 0100-0130 is to Asia, not America, on 7265, 7190, 5955, 5930; as are the 1200-1230 and 1330-1400 on 17745, 15470, 9540, 5945 (*BBCM*)

**YUGOSLAVIA** RY has spare transmitters, 96 hours (per week?) available for rent (Andy Sennitt, *RNMN*)

# Broadcast Loggings

Thanks to our contributors -- Have you sent in YOUR logs?  
Send to *Gayle Van Horn*, c/o *Monitoring Times*.  
English broadcast unless otherwise noted.

Welcome to a brand new year of stupendous Broadcast Loggings!

## 0030 UTC on 15155

ECUADOR: HCJB. 90 minute "Musical Mailbag" show broadcasting from downtown Quito's Pancake House. Listener call-ins from North America. (Robert E. Tucker, Savannah, GA) "Ham Radio Today" show with weak, fluttery signal. (Harold W. Bower, Sunbury, PA)

## 0035 UTC on 9630

SPAIN: Spanish Foreign Radio. "Everything Under the Sun" show on "agritourism," that discussed tourist staying with Basque farmers. (No mention of farm chores for the tourist!) (Bob Fraser, Cohasset, MA)

## 0047 UTC on 4695

CLANDESTINE: Radio Patria Libre. Spanish. Tune-in with discussion in progress on Cuba, Sandinistas, and Argentina. Patriotic Latin marches to station ID at 0103 UTC. (David A. Gasque, Orangeburg, SC)

## 0100 UTC on 11800

ITALY: R.A.I. World news with comments on Croatian and Nicaraguan presidential visits to Italy. Parallel news noted on 9575 kHz. (Norm Anderson, Santa Ana, Ca.) (Fraser, Ma.) (Bower, PA)

## 0120 UTC on 11790

USSR-UKRAINIAN SSR: Radio Kiev. Report on a conference about the Babiyar massacre victims. (Fraser, Ma.) Additional monitoring to 0200 UTC on parallel frequencies 11675, 12005, 15180, and 17690 kHz, with fair signal quality. (Gasque, SC)

## 0131 UTC on 9420

GREECE: Voice of Greece. Greek music and English news at 0132 UTC. News featured Greek/Turkish delegates meeting to discuss the problems of Cyprus. Greek service returning at 0142 UTC. (Tucker, Ga.) (Jack R. Davis, Birmingham, AL)

## 0132 UTC on 5960

CANADA: Radio Japan relay. Program of "Pacifico Yokahama" discussing Japanese culture and customs. "Japanese Diary" program featured comments on Japanese translators. (Tucker, GA) Radio Japan audible on 9501 kHz from 1400-1415 UTC. (F. Deutsch, Albuquerque, NM) (Davis, AL)

## 0150 UTC on 17540

EGYPT: Clandestine-Voice of Unity. Listed as a Pro-Afghan rebel station. Male announcer with long discourse in unidentified language to 0158, cut off in mid-sentence. Parallel frequency 15685 kHz continued with text beyond 0200 UTC; however, signal considerably weaker. (Jerry Witham, Keaau, HI)

## 0200 UTC on 11940

CANADA: Canadian BC Corp. CBC announcers Michael Wright and Alan Mason interview Haiti's Minister of Education. (Martin Rubinstein, Santa Barbara, CA) Interesting commentary noting that today's comics are becoming "too relevant," monitored on 9625 kHz at 1150 UTC. (Fraser, MA) (Mark Spat, W. Swanzey, NH)

## 0230 UTC on 7413.5 LSB

PIRATE: Radio USA. Pirate station broadcasting from international waters, with rebroadcast of Glenn Hauser's "World of Radio". Station ID at 0252 UTC and radio skit. Announcer mentioned this had been a three-hour broadcast before sign-off at 1013 UTC. Great signal. (Gasque, SC)

## 0312 UTC on 7305

VATICAN STATE: Vatican Radio. Spanish. Interval signal to "Radio Vaticano" ID. English service heard at 0635 UTC on 11625/15090 kHz. (Witham, HI) (Spat, NH)

## 0358 UTC on 7415

PIRATE: K.X.K.B.I. Instrumental music to station ID, "this is K.X.K.B.I. Radio ... Interplanetary Radio." ID repeated to pop music. Promotional repeated with additional claim "The Speed of Light, Interplanetary Radio" with program sign-off at 0403 UTC. (Nicholas P. Adams, Newark, NJ)

## 0415 UTC on 11455

ZAIRE: Radio Kisangani. French. African regional music to 0445 UTC. Local announcements and ID, with programming extending beyond 0500 UTC. (Witham, HI)

## 0555 UTC on 14917.8

KIRIBATI: Radio Kiribati. Station sign-on with program schedule. Hawaiian music including the "Hilo March" to BBC news relay. Pacific and world news at 0600 UTC. (Witham, HI) Parallel frequency 17917.7 kHz heard at 0555 sign-on to 0910 UTC. (David A. Norcross, Barrigada Heights, Guam) Additional monitoring from 0746-0830. (Gasque, SC)

## 0710 UTC on 9265 USB

ICELAND: I.N.B.S. Ríkisutvarpid. Icelandic. Hollow-sounding music to lady announcer's chatter. Newscast at 0730 UTC to music program at 0735 UTC. Heavy interferences. (Witham, HI) (Spat, NH)

## 0835 UTC on 3945

VANUATU: Radio Vanuatu. Bislama. Local Sunday evening religious service and a cappella choir music. "Vanuatu" ID and time check at 0900 UTC. Emotional sermon to 0930 UTC. Signal interference from Japan's Radio Tampa. (Norcross, Guam)

## 0930 UTC on 5011

ECUADOR: Escuelas Radiofonicas Populares. Spanish. Ecuadorian flute instrumentals to brief canned commercial. Partial station ID noted as, "en Riobamba ... Radiofonicas". (Jeff Leach, Omaha, Ne.) La Voz del Napo audible on 3279.8 kHz at 1003 UTC. Morning "announcements" and public service shorts. News and sporadic music at 1012 UTC. (Gasque, SC)

## 0950 UTC on 3310.3

BOLIVIA: Radio San Miguel. Tune-in with talk and "San Miguel" ID included. Continued morning program to 1000 UTC tune-out. (Gasque, SC) Station monitored on this frequency at 0205-0215 UTC, with folk tunes, ads, and station identification. (Bagwell, MO)

## 0953 UTC on 4790

PERU: Radio Atiantida. Spanish. Rooster crows and Latin march music. Station ID and chat at 1000 UTC. Continued morning sound effects and local commercials. Peru's Radio Altura heard on 3339.9 kHz at 1025 UTC. Futbol promo commercials and IDs. (Gasque, SC)

## 1000 UTC on 21735

INDIA: All India Radio. Excellent signal quality to 1100 UTC sign-off. Newscast audible on parallels 17896, 17387, and 15050 kHz. (Norcross, Guam) Audible on 11620 kHz at 2155 UTC, with sub-continent music. ID and newscast with moderate signal and slight fading. (Bower, PA)

## 1130 UTC on 4830

THAILAND: Radio Thailand. Gong interval signal to announcers identification. Station frequency quote and local Bangkok time. Lady announcer's upcoming program schedule and Asian music to 1135 UTC. World news headlines to pop style music. Audible on parallel frequency 9655 kHz, no sign of 11905 kHz. (Norcross, Guam)

## 1310 UTC on 9555

PHILIPPINES: Radio Veritas Asia. Korean/English. Tune-in as lady announcer chats in Korean. Station ID and address in English at 1325 UTC. Brief interval signal followed by sign-off at 1326 UTC. (Gasque, SC)

## 1314 UTC on 21470

UNITED KINGDOM: BBC. "Newshour" for the World Service. (Tucker, GA) "Word Power" program featuring everyday expressions and their meanings on 9770 kHz at 2150 UTC. (Fraser, MA)

## 1559 UTC on 9560

ETHIOPIA: Voice of Ethiopia. Announcer talk and African music. "Voice of Ethiopia" identification and address in Addis Ababa. Fair signal quality. (Norcross, Guam)

## 1635 UTC on 4050 USB

USSR: Radio Far East Russia. Russian. Lady with long text, to a welcome relief of traditional Russian vocal music at 1650 UTC. Time pips signal at 1700 UTC, and newscast. Signal lost in fade-out. (Witham, HI)

## 1815 UTC on 15190

PHILIPPINES: Radio Pilipinas. Tagalog/English. Mixed text on the origins of Philippine music, with choral interludes and childrens tunes. Station ID at 1840 UTC, and a discussion on the latest developments in resettling the residents living near Mt. Pinatubo. Signal sign-off at 1900 UTC. Good signal. No sign of parallels 17760/17840/21580 kHz. (Witham, HI)

## 1930 UTC on 6035

IRAN: Voice of the Islamic Rep. English programming to Europe. Station IDs and commentary included. Audible at this time, with fair signal quality, on parallel 9022 kHz. Both frequencies noted minimal interferences. (Randall W. Morrison, Manchester, TN) (Wright, MS)

## 2005 UTC on 17575

ISRAEL: Koi Israel. Good signal for international news topics, occasional fading observed. (Bower, PA) "DX Corner" featured a Sony ICF-SW77 profile at 2025 UTC on 11585 kHz. (Fraser, MA) (Jack R. Davis, Birmingham, AL)

## 2100 UTC on 13700

NETHERLANDS: Radio Netherlands. "Mirror Images" program discussing France's plans to restore a 95-year old movie found in the trash! (Fraser, MA) Portuguese service heard on 9895 kHz at 0056-0125 UTC, including a discussion on the outbreak of AIDS in Brazil's State of Bahia. (Arsenio Fornaro, Brooklyn, NY)

## 2138 UTC on 6576

NORTH KOREA: Radio Pyongyang. French. Asian music at tune-in, followed by political commentary. Darth Vader's march music to French station ID at 2145 UTC. (Gasque, SC) World news and music monitored on 15115 kHz at 0000 UTC. (Anderson, Ca.)

## 2205 UTC on 9720

USSR: Radio Moscow. World news suffering co-channel voice interference, and slight fading. (Bower, PA) Additional monitoring at 0103 UTC on 9720, and 1714 UTC on 9600 kHz. Cultural programming, and news updates included. (Tucker, GA) (Hilton, SC) (Eric Stutler, Hot Springs, AR)

## 2220 UTC on 9755

CANADA: Radio Canada International. "Air Farce" comedy series featuring "As The Coffin Turns" skit. Programming audible on parallel 5960 kHz. (Fraser, MA)

## 2300 UTC on 11790

LITHUANIA: Radio Vilnius. Program opening comments, "hello from the independent Republic of Lithuania." Co-channel interference from Asian station. (Tucker, GA)

## 2325 UTC on 9600

CUBA: Radio Havana. Spanish/English. Special Spanish programming test to North America. English service followed with international news, station promotionals, and Latin vocals. "The Jazz Place" music show of Cuban jazz heard on 11950 kHz at 0028 UTC. (Tucker, GA) Fair signal quality observed on 15425 kHz at 0230 UTC, and 17705 kHz at 0712 UTC. (Bower, PA) (Fraser, MA)

# Utility World

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c/o MT, P.O. Box 98  
Brasstown, NC 28902

This time of year most of us have settled down to longer periods in front of the radio for some good-time radio listening. Yep, just tuning around the dials, enjoying the wide world of utility band radio monitoring. Sometimes, however, it seems we just can't seem to find good frequencies to listen to. We tune in frequencies from the different books we accumulate and it just seems we never hear what some of the rest hear and report in their logs.

Believe me, I know the feeling, folks. When I first started out in this hobby those were my thoughts exactly: "I just want to hear some good stuff".

Well, my New Year's gift to you is a "little" frequency list I handed out at last year's MT convention in Knoxville. (Oh, you say you weren't there? Well, maybe this will give you an idea of what you missed, mainly a great time.)

I am not going to sit here and tell you that the minute you tune in one of these frequencies, the speaker will crackle and you will have a scoop for the *New York Times*; however, you will find that these frequencies do have a lot of interesting activity on them from time to time. Post a copy of this list right next to the receiver; when a great news story is breaking one of these frequencies will probably have something to do with it.

Anyway, to start your New Year out on the right foot, Figure 1 is my list of 160 favorite frequencies to monitor on the utility bands. Oh yeah, there is one catch:

If you use this list, I ask that you drop me a line with a list of logs for our logging section, *but* they all must be logs heard on frequencies *other* than those listed in my hot 160. Don't report on anything you have heard on the below list next month. Now that wasn't hard, was it?

## Utility World Top 160 Frequencies

2182 Intl Emergency	4637.5 Offshore Petro	20885 USMAG-Latin America
6927 Mystic Star	9011 USAF A/G channel	5688 USAF A/G channel
13291 International ATC	15025 Canforce channel	11239 USAF A/G channel
2638 USCG Broadcast	4670 Spy numbers	21937 Hurricane Hunters
7335 Canadian Time Stn	9014 USAF A/G channel	5692 US Coast Guard A/G
13906 International ATC	15036 USAF A/G channel	11243 SAC Alpha/S-393
2670 USCG Broadcast	4675 International ATC	23227 USAF A/G channel
7527 US Customs Service	9018 Mystic Star	5696 US Coast Guard A/G
13954 Hurricane Hunters	15041 SAC A/G channel Mike	11246 USAF A/G channel
2716 USN Harbor Common	4722 RAF Flight weather	23287 USN Hicom channel
7635 CAP Primary	9027 SAC Romeo/S-392	5703 USAF tactical A/G
13826 USN MARS channel	15522 USN Hicom channel	11267 USN Hicom channel
3023 USN Tactical	4727 SAC Victor/S-390	23315 USN Hicom channel
7917 Civil Air Patrol	10000 World Time/Freq	5710 USAF A/G channel
13950 USMAG-Latin America	16454 USAF A/G channel	11279 International ATC
3067 USAF A/G channel	4742 Spy numbers	23337 SAC A/G Uniform
8764 USCG weather	10051 VOLMET weather	5812 Spy Numbers
13974 USN MARS channel	17904 International ATC	11282 International ATC
3081 USAF A/G channel	4746 USAF A/G channel	23403 DEA channel
8825 International ATC	10493 FEMA channel	6501 USCG weather
14313 Ham Maritime Net	17907 International ATC	11300 International ATC
3123 USCG/USN aircraft	4747 USAF A/g channel	6577 International ATC
8846 International ATC	10780 NASA A/G channel	11309 International ATC
14325 Ham Hurricane Net	17946 International ATC	6586 International ATC
3130 USN tactical	5000 World Time/Freq	11387 International ATC
8864 International ATC	11176 USAF A/G channel	6604 VOLMET weather
14384.5 CFARS (Canada)	17975 SAC A/G Tango/S-395	11396 International ATC
3144 USAF A/G channel	5015 Corps of Engineers	6673 Hurricane Hunters
8879 International ATC	11179 USAF A/G channel	11398 Hurricane Hunters
14441.5 USN MARS calling	18002 USAF A/G channel	6683 Mystic Star
4426 USCG weather	5302 USAF A/G channel	11494 SAC A/G Lima/S-311
8891 International ATC	11200 RAF Flight weather	6697 USN Hicom channel
14470.0 USN MARS channel	18009 USN Hicom channel	12047.5 USN MARS Afloat
4466 Civil Air Patrol	5320 US Coast Guard	6705 USAF A/G channel
8918 International ATC	11207 USAF A/G channel	13089 USCG weather
14606 USAF MARS channel	18019 USAF A/G channel	6723 USN Raspberry
4469 Civil Air Patrol	5520 International ATC	13181 USN Hicom channel
8964 USAF A/G channel	11214 USAF A/G channel	6738 USAF A/G channel
14686 DEA channel	18027 Canforce channel	13201 USAF A/G channel
4506 Civil Air Patrol	5550 International ATC	6750 USAF A/G channel
8967 USAF A/G channel	11226 USAF A/G channel	13214 USAF A/G channel
14902 USAF MARS/FEMA	18666 DEA channel	6753 Canforce channel
4509 Civil Air Patrol	5598 International ATC	13215 USAF A/G channel
8972 USN Safe for Flight	11228 USAF A/G channel	6756 Mystic Star
15000 World Time/Freq	20000 World Time/Freq	13241 SAC A/G S-394
4517 USAF MAAS	5616 International ATC	6757 USAF A/G channel
8984 US Coast Guard A/G	11233 Canforce channel	13244 USAF A/G channel
15014 USAF A/G channel	20192 Space shuttle audio	6761 SAC A/G Quebec/S391
4582 CAP Emergency	5649 International ATC	13247 SAC-TAC W-109
8989 USAF A/G channel	11234 RAF A/G channel	6802 Spy numbers
15015 USAF A/G channel	20631 SAC A/G Whiskey	13270 VOLMET weather
4593.5 USAF MARS	5680 Search & Rescue	6840 Spy numbers
8993 USAF A/G channel	11236 USAF A/G channel	13282 VOLMET weather
15031 USAF A/G channel		

Figure 1

## Some Air Force Nicknames

New contributor Ron Goff says he has been getting some library time lately and ran across some Air Force nicknames in a book while he was there. This list is from circa 1984.

Nickname	User	Associated Meaning
Giant Arrow	SAC	SAC participation in the TAC's William Tell competition
Giant Beacon	SAC	Operation E-4B aircraft in SAC Airborne Command Post
Giant Net	SAC	SAC support of NEACP (Nat'l Emergency Airborne Command Post)
Giant Shot	SAC	No-notice to PACCS (Post Attack Command and Control System) operational launch
Giant Star	SAC	SAC AFSATCOM Network
Giant Talk	SAC	SAC HF SSB Communications Network

Thanks for the list Ron, and I hope you check in often.

## Speaking of the Air Force

By now most of you probably know that the Strategic Air Command has stood down the bombers and missile as part of our newfound trust of the Soviet Union, or whatever we call them this week.

If you wondered how President Bush's speech concerning the "stand-down" of the SAC force translated into action...check out the transcription in Figure 2.

World-wide SAC bomber, tanker and missile crew members received the same if they were equipped to receive the message. For a long time to come the way that the US Air Force, and SAC in particular, does business will be affected by this one message.

I have noticed somewhat of a reduction in overall traffic on SAC channels, but guess what, folks? SAC didn't quit flying. They are still out there. It's just they aren't flying on alert anymore. Things can still get very interesting — false alarms, Operational Readiness Reviews, etc. Don't throw away your list of SAC frequencies because Bush stood the bombers and missiles down. Things can and do go wrong from time to

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Z TO DINIEM/TO RHWS/JDT/AXC AXC-UNITS+SUB C SADDIN OFFUTT AFB NE  
RHCRSAL/SACLERT  
INFO RUETIAA/DIRNSA FT GEORGE G MEADE MD/S1553///  
FM EXTIDINI/ASIRF 0199 2711535/CINCSAC OFFUTT AFB NE  
281535Z SEP 91 AA PROCOPY MSN 2472 DTG SEP 281536Z N

UNCLAS

SUBJ: TWO DELTA TANGO PAPA VICTOR

TWO DELTA TANGO PAPA VICTOR  
CHARLIE BRAVO ZULU SEVEN FOXTROT CHARLIE  
FOXTROT SIERRA FIVE  
FOUR

1. THE SECRETARY OF DEFENSE HAS DIRECTED, EFFECTIVE IMMEDIATELY, ALL SIOP BOMBERS, THEIR SUPPORTING TANKERS, AND MINUTEMAN II ICBMS ARE RELEASED FROM THEIR IMMEDIATE/MODIFIED RESPONSE SIOP ALERT COMMITMENT.
2. BOMBER/TANKER PROCEDURES: CMFS WILL BE REMOVED AND AIRCRAFT TURNED OVER TO MAINTENANCE NLT OFFICIAL SUNSET AT EACH BASE TODAY. DOWNLOAD AIRCRAFT AND RETURN WEAPONS TO WSA DURING DAYLIGHT HOURS. DOWNLOADED BOMBER AIRCRAFT WILL BE REMOVED FROM THE ALFA ALERT PARKING LOCATIONS WITHIN 72 HOURS OF THE DIG OF THIS MESSAGE, IF PRACTICAL. IF THIS TIME CANNOT BE MET, ADVISE NAF AND HQ/SAC AS SOON AS POSSIBLE.
3. MINUTEMAN II PROCEDURES: UPON RECEIPT OF THIS MESSAGE, CREWS WILL DISSIPATE ENABLE AND LAUNCH CODES IAW T.O. CHECKLISTS NLT OFFICIAL SUNSET AT EACH BASE TODAY. DO NOT DISSIPATE INHIBIT CODES. BOTH CREWMEMBERS IN THE LCC WILL REMAIN ALERT AND AWAKE AFTER CODE DISSIPATION UNTIL NEW PES SEALS ARE INSTALLED ON THE LAUNCH CONTROL PANEL. DURING DAYLIGHT CONDITIONS, SEALED PC DOCUMENTS AND LAUNCH KEYS WILL BE REMOVED FROM LCCS AT THE EARLIEST PRACTICAL TIME, CREWS WILL REMAIN IN LCCS FOR NUCLEAR SURETY, STATUS MONITORING AND SECURITY. MINUTEMAN II LAUNCH FACILITIES ARE TO BE RENDERED NON-LAUNCH CAPABLE THROUGH INSTALLATION OF THE SAFETY CONTROL SWITCH (SCS). SCS INSTALLATION WILL BE ACCOMPLISHED WITHIN 72 HOURS OF THE DTG OF THIS MESSAGE WITH SAFETY BEING PARAMOUNT CONSIDERATION. FOR THE 341MW ONLY: CONTINUE WITH SQUADRON CODE CHANGE IN 12MS. UPON COMPLETION AT EACH LF, LEAVE SCS INSTALLED.
4. EACS AND NEACP OPERATIONS AND THEIR SUPPORT TANKER FUNCTIONS REMAIN UNCHANGED. FOR 28/55 WINGS: 2/4 ACCS ALCS WILL NO LONGER TEST MMII UNITS. ANY DUAL TANKER TASKINGS WILL BE ADDRESSED IN SEPARATE MESSAGE.
5. ALL UNITS WILL REPORT FORCE STATUS PROMPTLY VIA FMIS AS ABOVE ACTIONS ARE ACCOMPLISHED.
6. WINGS UNABLE TO COMPLY WITH THIS MESSAGE, NOTIFY NAF AND HQ/SAC ASAP. ALERT FORCE EXERCISES ARE TERMINATED.

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## Figure 2

time. If you need a list of frequencies, check out the ads in this issue of *MT* for my SAC report.

I think as time goes on and we start getting a clearer picture of today's Soviet Union, my statement in the October issue becomes even more important. The Russian Republics all have Russian nuclear weapons on their soil...Whose hand is on the button today?"

In ten year's time, I hope the question we can ask is... "Where were you when the bombers and ICBMs began 'standing-down' from over forty years of constant alert?"

## Single Letter HF Beacons Still Alive

Several months ago there was a discussion in this column regarding the demise of the Single Letter HF beacons. In fact, we even gave you an inside look at one theory in the November 91 issue. Well, folks, they are not gone from the shortwave scene. A good friend recently provided a list of logs on these intriguing stations. If you are looking for some frequencies for these mono-CW stations, check out the following list:

### Beacon

D,P,C

D,P,C,S

D,P,C,S,F

D,P,C,S

E

S

V

### Frequencies

5305.5 - 5306

13635.5 - 13636

17015.5 - 17016

20991.5 - 20992

14983

5305.5 6801.5 8645.5 10643.5 13635.5

17015.5 20991.5

7394.5 10285

For those of you who might not know, single letter beacons are normally found in clusters throughout the spectrum. I would be interested in your intercepts of these beacons. If you have heard any of them recently, please pass them on to the address in the masthead.

## Russian Military Update

In a recent issue we profiled the Soviet military in conjunction with the attempted coup of Mikhail Gorbachev. One of our overseas listeners, "Robin Hood" has updated that information with some additional frequencies for the Soviet Navy.

You can add the following frequencies to the Soviet Navy frequencies listed in the October 1991 column:

RCV	Moscow	6456 8048 12716 12757 13042 16296 19584 21812
RIT	Vaygach	4244 4807 6776 6934 8600 10888 12064 12745.7 12752 20064
RIW	Khiva, Uzbek	7836 12731 12782 17468 18264 18664
RMP	Kaliningrad	4524.5 6968 9082 10908 13633 16176

Robin Hood would also like to pass along an interesting intercept that he made of RIT on 6776 when the station being called was 'LOXO'. He also has 14492 with RMZA and RMNV calling RIW and RMUQ working UANR and UAHY on 5808.

Long time reporter to this column Sam Ricks has monitored ROT in Moscow several times in the clear transmitting navigational information to commercial shipping. He believes ROT is the Russian equivalent of our Coast Guard. The station coordinates requests for special equipment such as submersible deck ships, crane ships and salvage ships.

Soviet fishing fleets operate with their own 'coast guard' close at hand. Each fleet has several ocean going salvage tugs to assist vessels in distress or for towing duties. These tugs were formerly used to tow and berth whale carcasses to processing ships. They are coordinated by fleet "Poisk" or rescue centers.

Salvage tugs also contact ROT when the situation is beyond their capabilities. For example, during the summer of 1988, ROT dispatched the semi-submersible deck ship Transshelf to the North Atlantic to assist in recovering a damaged stern trawler.

The following are call signs for Soviet Navy research and survey ships:

RMLP	Spaceflight Tracking Ship Marshal Nedelin
RMCK	Oceanographic Ship Nikolai Zubov
RMGC	Naval Survey Ship Andromeda
RMGH	Oceanographic Ship Vizir

Sam says that many of the UF, UH and UM prefix call signs are civilian research vessels including ice breakers.

I want to send along my thanks to both Robin Hood and Sam Ricks for sending along their updates on the Soviet marine and naval scene.

Now to all of you, I present this first month of the New Year's look at what you are hearing in the Utility World...

# Utility World

## Utility Loggings

### Abbreviations used in this column

AFB	Air Force Base	ISB	Independent Side Band
AM	Amplitude Modulation	LSB	Lower Side Band
ARQ-M2	Standard 96 baud ARQ 2 channel	MAC	Military Airlift Command
CANFORCE	Canadian Forces	MARS	Military Affiliate Radio System
CG	Coast Guard	Ops	Operations
CGC	Coast Guard Cutter	QRA	Send name of station.
COE	Corps of Engineers	QSX	Will you listen?
COMSTA	Communications Station	SAR	Search and Rescue
CQ	General call for any station	SITOR-B	FEC data mode
CW	Morse Code	Unid	Unidentified
DE	CW abbreviation meaning 'from'	USAF	United States Air Force
DIPLO	Diplomatic	USB	Upper Side Band
DOE	Department of Energy	USCG	US Coast Guard
EAM	Emergency Action Message	USIA	US Information Service
GCCS	Global Command and Control System	USS	United States Ship
HF	High Frequency	VOA	Voice of America
ID	Identification	VOLMET	French for 'Flying Weather'

All frequencies in kilohertz (kHz), all times in UTC. All voice transmissions in English unless otherwise noted.

379.0 GKQ-Unid NDB beacon heard at 0730. Who? (Mark Clark-Reading, PA) Newark, NJ-Larry.

3130.0 US Navy Sealord (Jacksonville) with chit chat from F5A to L3R, trying to get in the playground. Then went to Black Top 1 "have a good yankee on this frequency". (Novocaine-Baltimore, MD)

3319.0 Navy Glasgow, England with CW "V" marker heard at 2212. (Ary Boender-The Netherlands)

3607.8 GHD2-Gallan Head Radio, England, with SITOR-A phasing (idler) and CW marker heard at 2004. (Boender-Netherlands)

4028.0 Spanish female 5-digit number station in AM at 0600. (Skip Harwood-Beale AFRB, CA)

4223.5 9HD-Valetta Radio, Malta, with "V" CW marker at 2215. (Boender-Netherlands)

4465.0 US Navy MARS net with NNN0AWK net control in USB at 0000. (Mike Starr-Hadley, MI)

4508.0 Civil Air Patrol, Iowa, "Corn State Net" in USB from 0100-0300. (Gregg Beukema-Marquette, MI)

4562.5 JWT-Navy Stavanger, Norway, with "V" CW marker at 1952. (Boender-Netherlands)

5505.0 EIP-Shannon VOLMET, Ireland, in USB at 0122 with aviation weather for European aerodromes. (Mike Hardester-Jacksonville, NC)

5598.0 Gander Aero working various aircraft in USB at 0530. (Clark-PA)

5616.0 Gander Aero working USAir flight in USB at 0610. (Clark-PA)

5629.0 SYN-Israeli Mossad numbers station in AM at 0332. (Hardester-NC)

5696.0 USCG COMSTA Boston working aircraft (Rescue 1500, 1504, 6552, 1718 and others looking for an overdue sailing boat in USB at various times. (Fernandez-MA)

CG 2123 working Miami COMSTA with a malfunction at 0151. (John Miller-Roswell, GA) Welcome to the column John, please report often-Larry.

5762.0 Spanish female 5-digit number station in AM at 0607. (Harwood-CA)

5898.0 Spanish female 5-digit number station in AM at 0200. (Harwood-CA)

5930.0 Spanish female 4-digit number station in AM at 0200. Parallel with 11533 at 0400. (Harwood-CA)

6221.0 Letter-number-letter stations heard in USB at 0200. (Hill-MI)

6223.0 AAC2-Ft. Richie, Maryland, net control with AADW-80 miles east/northeast of St. Simons Island, Georgia and AAV in USB at 0023. Locations? (Hardester-NC) Mike, AAC2 is the Army COE USAV Bunker, AAV-Unknown, and AADW-SAV Broad Run (LCU-2007) all Army COE-Larry.

6375.0 URB2-Klaipeda Radio, Lithuania, with "msgs de URB2" in CW at 2245. (Boender-Netherlands)

6379.0 4XZ-Israeli Naval Radio, Haifa, with V CW marker at 2239. (Boender-Netherlands)

6501.0 NMN-USCG COMSTA Portsmouth, Virginia, working the CGC Reliance and Rescue 1503 on 5696 and 8984 in USB at various times. (Hill-MI)

6507.0 LPL-General Pacheco Radio, Buenos Aires, Argentina, with voice ID marker in USB at 0955. (Hill-MI)

6636.0 L2B and KBM working each other in USB at 0015. Tactical comms. (Fernandez-MA)

6761.0 Chill 11 (B-52) working Tunafish with phone patch to Warriors Den at 0238. Turbo 42 (KC-135) working Crystal Palace talking about bird strike at 0226. Both in USB. (Henry Brown-East Falmouth, MA)

6786.0 Spanish female 5-digit number station in AM at 0600. (Harwood-CA)

6797.0 Spanish female 5-digit number station in AM at 0500. (Harwood-CA)

6826.0 Spanish female 5-digit number station in AM at 0530. (Harwood-CA)

6933.0 Spanish female 5-digit number station in AM at 0300. Spanish female 4-digit number station in AM at 0400, parallel with 10665. (Harwood-CA)

7700.0 DOE Nuclear transport channel 5 active, operator passing to a Staff Sergeant that no demonstrators seen at 1338. (Scott Burke-Tucson, AZ)

7735.0 Spanish female 4-digit number station in AM at 0624. (Mark Ortega-Albuquerque, NM)

7835.0 English female 3/2-digit number station in AM at 0311. (Ortega-NM)

7846.0 Spanish female 5-digit number station in AM at 0600. (Harwood-CA)

7860.0 Spanish female 5-digit number station in AM at 0200. (Harwood-CA)

7888.0 Spanish female 5-digit number station in AM at 0700. (Harwood-CA)

7973.5 SPW-Warsaw Radio, Poland with a CW DE marker at 0100. (Hardester-NC)

8297.0 Cargo vessel Agent [KEHL] working vehicle carrier Cape Lambert with infomart traffic in USB at 2347. (Hill-MI)

8375.0 UISZ-Soviet spaceflight tracking ship NIS Akademik Sergei Korolev with net traffic for UZZV-tracking ship NIS Kosmonaut Georgi Dobrovolski at 0305 in CW mode. Korolev position during re-entry of Progress M-8 was 144 nm WNW of Vigo, Spain. (Ricks-PA)

8391.0 UNVS-Soviet cargo vessel Krasnoye Selo with an urgent position report to URD-Leningrad Radio at 0005 using RTTY. (Ricks-PA)

8395.5 UJZZ-13,600 ton Soviet factory ship PB Polyarnaya Zvezda with weather report to Murmansk weather via URB-2 Klaipeda Radio at 0025 using RTTY. (Ricks-PA)

8398.0 UZRR-Soviet salvage tug MSB Stroptivnyj with traffic for URB-2 Klaipeda Radio at 2230 using RTTY. (Ricks-PA)

8458.0 ROT-Russian Naval Radio, Moscow with CQ CW marker. (Boender-Netherlands)

8465.0 UJY-Kaliningrad Radio, Russian Republic with CQ CW marker at 2153. (Boender-Netherlands)

8471.0 UXN-Arkanglelsk Radio, Russian Republic, with "DE" CW marker heard at 2042. (Boender-Netherlands)

8482.0 SPH-Gdynia Radio, Poland, with "DE" CW marker at 2206. (Boender-Netherlands)

8506.0 UDH-Riga Radio, Latvia, with "CQ" CW marker at 2156. (Boender-Netherlands)

8508.0 RIW-Soviet Naval Radio Khiva, Uzbek, working UHEZ in CW at 2114. (Boender-Netherlands)

8515.0 5AT-Tripoli Radio, Libya, with "V" CW marker at 2250. (Boender-Netherlands)

8532.0 LZV-Varna Radio, Bulgaria, with "DE" CW marker at 2205. (Boender-Netherlands)

8550.0 TBA5-Turkish Naval Radio, Ankara with "V" CW marker at 2244. (Boender-Netherlands)

8571.0 UFN-Novorossiysk Radio, Russian Republic with "DE UFN USY6 TEST QSX 4181.8/89370/12555" in CW at 2252. (Boender-Netherlands)

8578.0 SUH-Alexandria Radio, Egypt with a CW "CQ" marker at 0300. (Hardester-NC)

8580.0 URL-Sevastopol Radio, Ukraine with CW "CQ" marker at 0129. (Boender-Netherlands)

8660.0 UJQ7-Kiyev Radio, Ukraine with "CQ" CW marker at 0142. (Boender-Netherlands)

8687.5 URD-Leningrad Radio, Russian Republic with "DE" CW marker at 2306. (Boender-Netherlands)

8679.0 CFH-Canadian Forces Radio, Halifax, with weather, ice reports, navigation warnings in CW at 0200. (Boender-Netherlands)

8700.0 YUR-Rycka Radio, Yugoslavia, with "V" CW marker at 2230. (Boender-Netherlands)

8710.5 UAH-Tallin Radio, Estonia with "DE" CW marker at 2310. (Boender-Netherlands)

8984.0 CG Rescue 2130 working Boston Ops with SAR ops at 0328 in USB. (Hill-MI)

Diamond Control working COMSTA Portsmouth. Operator mad cause couldn't find call sign in book. Referred to frequency as 4D in USB at 0150. (Preston Sewell-Franklin, NJ)

8989.0 Old Salt (USS Nimitz) with phone patch to the doctor, giving info on body being sent ashore. Doctor on ship said he took urine and other samples from body. Doctor ashore requested SAR personnel fill out forms at 2145 in USB. (Daniel Rich-Tempe, AZ)

9010.0 CANFORCE 115 requesting weather from Trenton Military in USB at 2330. (Starr-MI)

9077.0 English female 5-digit number station in AM at 0703 in AM. (Ortega-NM)

9080.0 Radio operator passing "Hello test check 1,2,3,4 over. Check 1, check 2, check 3, check 4." Never passed any traffic or did anything else. 1511-1530. (Ron Goff-Mt. Vernon, MA) There is a Canadian Telecom net control station in Ontario that I have heard here in the past, maybe them-Larry.

9153.0 Spanish female 5-digit number station in AM at 0600. (Harwood-CA)

9220.0 Spanish female 4-digit number station in AM at 0300. (Harwood-CA)

9230.0 Spanish female 5-digit number station in LSB at 0500. (Harwood-CA)

9238.0	Spanish female 5-digit number station in AM at 0400. (Harwood-CA)	12597.0	9VG-Singapore Radio, Singapore, with a CW marker at 1029. (Waters-N.Zealand)
9254.0	German female 3/2-digit number station in AM at 0300. (Harwood-CA)	12597.0	SPB-Szczecin Radio, Poland, with CW marker heard at 0440. (Waters-N.Zealand)
9255.0	Spanish female 5-digit number station in LSB at 0405. (Harwood-CA)	12598.0	SPA-Gyndia Radio, Poland, with CW marker at 0547. WCC-Chatham Radio, Massachusetts, with CW marker at 0544. (Waters-N.Zealand)
9260.0	Spanish female 5-digit number station in AM at 0303. (Harwood-CA)	12599.0	WLO-Mobile Radio, Alabama, with CW marker at 0540. (Waters-N.Zealand)
9331.0	Spanish female 5-digit number station in AM at 0503. (Harwood-CA)	12602.0	XSG-Guangzhou Radio, China, with a CW marker at 1015. (Waters-N.Zealand)
9350.0	VOA USIA broadcast feeder using ISB. Both sidebands active. (Mark Burkhardt-New Orleans, LA)	12604.0	WLO-Mobile Radio, Alabama, with CW marker at 1031. (Waters-N.Zealand)
9430.0	Spanish female 5-digit number station in AM at 0200. (Harwood-CA)	12604.5	WLO-Mobile Radio, Alabama, with CW marker at 1032. (Waters-N.Zealand)
9443.0	Spanish female 5-digit number station in AM at 0530. (Harwood-CA)	12605.5	FFT42-St. Lys Radio, France, with CW marker heard at 0805. (Waters-N.Zealand)
9960.0	Charleston SESEF (U.S. Navy) working USS Inchon testing all their transmitters in all operational modes in USB (and others) at 1837. (Goff-MA)	12606.0	WLO-Mobile Radio, Alabama, with CW marker at 0025. (Waters-N.Zealand)
10001.0	MacDill AFB, Florida, USAF GCCS heard here sending an EAM broadcast at 1359 in USB. Is this a recent and legitimate frequency for MacDill? (Bob Grove-Brasstown, NC) <i>Yep, folks, even Bob Grove drops in here from time to time. Bob, more than likely it is legit and recent. As you know the military can basically go where it wants to-Larry.</i>	12607.5	WNU-Sidell Radio, Louisiana, with CW marker heard at 1038. (Waters-N.Zealand)
10231.5	LYNX-Unid station sending a RTTY marker with a CWID at 2115. (Hardester-NC)	12689.0	UQK-Riga Radio, Latvia, with "DE" CW marker at 0840. (Boender-Netherlands)
10345.0	Spanish female 5-digit number station in AM at 0505. (Harwood-CA)	12690.0	NMN-USCG COMSTA Portsmouth, Virginia, with CW traffic at 1815. (Boender-Netherlands)
10525.0	Spanish female 5-digit number station in AM at 0403. (Harwood-CA)	12691.0	GXH-US Navy COMSTA Thurso, England, with marine warnings in CW at 0840. (Boender-Netherlands)
10538.0	AFRTS broadcast feeder at 0515 in LSB with network news. (Clark-PA)	12707.0	9VG33-Singapore Radio with a CW "V" marker at 2340. (Hardester-NC)
10540.0	Spanish female 5-digit number station in AM at 0400. (Harwood-CA)	12720.0	SVD5-Athens Radio, Greece, with CW "DE" marker at 2345. (Hardester-NC)
10547.0	Spanish female 5-digit number station in AM at 0403. (Harwood-CA)	12740.0	HWN-French Naval Radio, Paris, with "V" CW marker at 1033. (Boender-Netherlands)
10560.0	Spanish female 5-digit number station in AM at 0502. (Harwood-CA)	12803.0	UDK2-Murmansk Radio, Russian Republic, with CW messages at 1850. (Boender-Netherlands)
10600.0	Spanish female 4-digit number station in AM at 0100, parallel with 11533. (Harwood-CA)	12853.5	HKC-Buenaventura Radio, Colombia with a "CQ" CW marker at 1206. (Hardester-NC)
10665.0	Spanish female 4-digit number station in Am at 0200, parallel with 5930. (Harwood-CA)	12855.0	UBF2-Leningrad Radio, Russian Republic, with CW traffic list at 1820. (Boender-Netherlands)
11176.0	Mac 386 working Ascension Island USAF GCCS in USB at 1205. After comms established, switched first to 8996 then to 11244. I don't have any of these in my list. (Jack NeSmith-Deltona, FL) <i>Interesting Jack, I don't think these are Mystic Star frequencies due to the occupants, probably tacticals-Larry.</i>	12856.0	XSG-Shanghai Radio, China, with "CQ" CW marker at 1450. (Boender-Netherlands)
11233.0	1723 working Trenton Military in USB for a phone patch at 2358. (Hill-MI)	13205.0	AF1 and aircraft 9000 working Crown through Andrews at 2154 in LSB. (RJW-MA)
11239.0	Phone patch from Old Salt Man(?) on Old Salt (USS Nimitz) who asked wife if the kids were still eating the puppy poop. Wife said they got rid of the dog because their manager found out. At 2250 in USB. (Rich-AZ) <i>You win the "bizarre log of the month" award Dan, any comment from my Old Salt friend?-Larry?</i>	13244.0	MAC 60129 working MacDill AFB USAF GCCS clearing right after Lajes did an EAM broadcast. All the time the fishing boats were whistling at each other. In fact it got so bad MacDill had to move to 18019. Something should be done about those folks. (Fernandez-MA) <i>I agree, now that the cold war is over maybe we should declare them the enemy to good order and radio communications-Larry.</i>
11279.0	San Francisco Aero working United 108 in USB at 2259. (Todd Dokey-Lodi, CA)	13264.0	Shannon VOLMET, Ireland, in USB with aviation weather for terminals in the UK and western Europe at 2036. (Fernandez-MA)
11462.0	Spanish female 5-digit number station in AM at 0710. (Harwood-CA)	13234.0	V-Single letter HF beacon heard at 0818. (Jackie Haynes-Hawke's Bay, New Zealand)
11511.0	German female 5-digit number station in AM at 0302. (Harwood-CA)	13390.0	Scott Base, Antarctica, working various locations in New Zealand in USB at 0745. (Gordon Trigg-Christchurch, New Zealand)
11545.0	Spanish female 5-digit number station in AM at 0400. (Harwood-CA)	14250.0	English female 3/2-digit number station in AM at 2315. (Maddog-NE) <i>Intruder watch take note-Larry.</i>
11565.0	Spanish female 5-digit number station in AM at 0700. (Harwood-CA)	14605.0	Mac 017 aircraft working unid USAF MARS in USB at 1753. (Trent-Minneapolis, MN)
11634.0	Spanish female 5-digit number station in AM at 0305. (Harwood-CA)	14901.0	TASS RTTY news reports at 1530. (Ricks-PA)
12580.0	Portishead Radio, UK, with report on overdue ocean rover "Ramereve-FKJ236 at 2120 using SITOP-B mode. (Ricks-PA)	14996.0	RTA-Russia/Soviet Union?? (what are we going to call it now, hi) Time station in Novisibirsk with CW ID, time pips, one long pip on the 00 minute followed by a double pip. The station then went into RTTY at 1920. (Fernandez-MA) <i>Interesting-Larry.</i>
12581.0	JCS-Chosi Radio, Japan, with CW marker at 1010. (Eddy Waters-Collinswood, New Zealand)	15457.0	Spanish female 4-digit number station in AM at 0100, parallel with 10665. (Harwood-CA)
12581.5	WLO-Mobile Radio, Alabama, with CW marker at 1020. (Waters-N.Zealand)	16010.0	Alfa 49 working Hotel 71 in USB at 2314. Operator said that the LT (Lieutenant) wanted them to quit jumping around in frequency, settled on 16010 as primary and 18010 was secondary. Passed a situation report via voice from Commander-Sixth Engineer Department to the HSC Com mander. Army Corps of Engineers? (Goff-MA) <i>I guess so Ron, also could be Marine Corps. Anybody want to take a stab-Larry.</i>
12582.0	VIP-Perth Radio, Australia with CW marker at 1153. VIS-Sydney Radio, Australia with CW marker at 0022. (Waters-N.Zealand)	18106.0	FZM62-French DIPO station in New Caledonia with French language news plus test tape using Baudot at 0420. (Burkhardt-LA) <i>So much for those boys being off the air; there are still a few around-Larry.</i>
12582.5	FFT61-St. Lys Radio, France, with CW marker at 0619. (Waters-N.Zealand)	21886.0	Several stations with tactical call signs (Joker, Shark, Bandsaw) talking about bandits in USB at 2228. (Burkhardt-LA)
12583.0	HPP-Panama Radio with CW marker at 1007. (Waters-N.Zealand)	22518.0	WCC-Chatham Radio, Massachusetts, with CW traffic list at 1455. (Boender-Netherlands)
12584.0	VIS-Sydney Radio, Australia with CW marker at 1000. (Waters-N.Zealand)	22543.7	FUM-French Naval Radio, Papeete, Tahiti, with usual "V" CW marker. (Norman Anderson-Santa Ana, CA)
12584.5	WLO-Mobile Radio, Alabama, with CW marker at 1155. (Waters-N.Zealand)	23642.0	KWS78-US Embassy Athens, Greece, with CW "QRA" marker at 0946. (Boender-Netherlands)
12585.5	VPS-Cape d'Anguillar Radio, Hong Kong, with CW marker at 1156. (Waters-N.Zealand)	24850.0	RFLI-French Naval Radio, Fort de France, Martinique, with ARQ-M2 transmission at 2027. (Boender-Netherlands)
12586.0	VIS-Sydney Radio, Australia, with a CW marker at 0536. (Waters-N.Zealand)	25130.0	ROT-Soviet Naval Radio, Moscow, Russian Republic, with "V" CW marker at 0918. QSX 22269.5. (Boender-Netherlands)
12589.0	NMO-USCG Radio Honolulu, Hawaii, with a CW marker at 1010. (Waters-N.Zealand)		
12589.5	WCC-Chatham Radio, Massachusetts, with a CW marker at 0620. (Waters-N.Zealand)		
12590.0	9VG-Singapore Radio, Singapore, with a CW marker at 1011. (Waters-N.Zealand)		
12590.5	KLB-Galveston Radio, Texas, with a CW marker at 1020. EAD-Madrid Radio, Spain, with a CW marker at 0749. (Waters-N.Zealand)		
12591.5	WLO-Mobile Radio, Alabama, with a CW marker at 0617. (Waters-N.Zealand)		
12591.7	UFL-Vladivostok Radio with a CW marker heard at 0752. (Waters-N.Zealand)		
12592.5	NMN-USCG COMSTA Portsmouth, Virginia, with CW marker at 0610. (Waters-N.Zealand)		
12593.0	GKP5-Portishead Radio, England, with CW marker at 0539. (Waters-N.Zealand)		
12593.5	WLO-Mobile Radio, Alabama, with a CW marker heard at 1023. (Waters-N.Zealand)		
12596.0	WLO-Mobile Radio, Alabama, with a CW marker heard at 1027. (Waters-N.Zealand)		

# The Scanning Report

**Bob Kay**

*clo MT, P.O. Box 98  
Brasstown, NC 28902*

## Football Scanning

During the winter months, many scanner buffs become keenly interested in the frequencies used by professional football teams. Although we are headed toward the final game of the season, I want to respond to the hundreds of letters asking me to provide the coach to quarterback frequencies, and the play-by-play news media frequencies. I've also received requests for frequencies for the dishes often seen on the sidelines.

Let us first dispense with the parabolic dishes. According to a CBS technician (who wishes to remain anonymous), the parabolic dishes are merely microphones. The dishes capture the audio from the playing field. The captured audio is then used as background audio for the TV broadcast.

The frequencies used to transmit the audio to the TV technicians can usually be found between 947.00 & 952.00 MHz. If your search doesn't provide the operating frequencies, check the following ranges: 944.00 to 947.00, and 162.00 to 174.00 MHz. It's impossible to provide the exact frequencies because they are constantly changing. Prior to covering a game, TV technicians consult with a local network frequency coordinator who selects the actual frequencies to be utilized.

As most of you know, some hobbyists claim that the coach can talk to his quarterback via a two way radio. Others claim that the coach is in radio contact with his assistant coaches that are on the sidelines. At this writing, I don't have any definitive answers. But I'd be willing to bet that all communications between the coach and his staff are wired. Communications between the coach and his quarterback are verbal. If a coach were broadcasting his play action on a radio frequency, there would be a rack of scanner radios on the sidelines of both teams!

In addition to the sport frequencies, the three major TV networks use a variety of production frequencies. The behind the scenes action on your local TV network can be found by searching through the following ranges: 161.65 to 161.75; 450.00 to 450.925 and 455.00 to 455.925 megahertz. The scanning action on these bands can include live newscasts, traffic reports, technicians setting up equipment, interview rehearsals, and news helicopters coordinating with ground crews. After discovering your local frequencies, it will be possible for you to hear the news long before it's aired on the television networks.

As you search the media bands, keep in mind that most TV networks will utilize a main frequency to dispatch reporters, photographers, and engineers to a scene. The main frequency can also be used for Interruptible Feed Back (IFB), which is the communications that is piped into the reporter's earpiece.

IFB is so named because it can be interrupted by the producer or director located in the main news room. This is how the reporter is given time cues and other vital information during a "live" broadcast. It's not uncommon for some of the communications to be scrambled. This prevents a competitor from monitoring and responding to another's network communications.

Many of the larger networks also use Electronic News Gathering. More commonly referred to as ENG, the system uses live microwave transmissions in the 2 GHz range. Since ENG communications must be "line of sight," the range is limited to approximately 20 miles.

When the field news teams are beyond the workable range of land microwave signals, they utilize a Satellite News Gathering System or "SNG". This type of transmission operates in the Ku-band (14.0 to 14.5 GHz).

*Take your scanner radio to the game, and catch the action on the sidelines.*



When you go to a major league football game, don't forget to take along your scanner radio, and a comfortable set of head phones. It's also a good idea to keep an extra set of batteries in your pocket. If you don't have any luck searching through the 900 MHz range, try searching through the broadcast frequencies that I've listed above. Chances are very good that you'll be able to monitor the TV production crews that are broadcasting the game. To help you get started, here are a few of the frequency assignments that are used by the news media:

450.05	450.20	455.20
450.0875	455.05	455.30
450.10	455.0875	455.35
450.14	455.10	455.4625
450.15	455.15	455.6125
450.1630	455.1630	455.925

The above frequencies are only a fraction of the active frequencies that may be utilized in your area. To find them, simply put your scanner in the search mode. If you're lucky enough to get to the Super Bowl, let me know what you hear!

## Frequency Exchange

Winter in Vermont. Doesn't that sound exciting? Ken Webster, of Newfoundland, certainly thinks so. Here are his favorite frequencies for *Newport, Vermont*.

151.22	New York Forest Rangers
151.28	"
155.430	University of Vermont Police
155.70	Sheriff

- 159.18 Highway Department (Old Frequency - 159.195)
- 159.405 Fish & Game
- 453.40 Danvemora Prison
- 460.025 Vermont State Police
- 460.225 "
- 460.245 "
- 460.50 "

Don't like the cold? No problem. Let's visit with Joe King, in **Phoenix, Arizona.**

- 121.95 Grand Canyon Air Safety Net
- 122.75 "
- 122.85 "
- 153.68 Water Conservation Service
- 154.905 Dept. of Corrections
- 154.92 Adobe Mountain Juvenile Inst.
- 155.475 Police - interagency
- 155.625 Apache Junction Police
- 159.285 Park Rangers
- 163.4875 Luke Air Force Police Dept.
- 469.475 Metrocenter Mall - Security
- 469.70 Danguard Security
- 854.8375 Supershuttle Trans. Service
- 809.8375 "

What? Still not happy? Sh-h-h-h, don't say that too loud, you'll hurt Joe's feelings. How about visiting **Las Vegas**? Todd Shideler lives nearby, and here are his favorite monitoring targets:

**Las Vegas Metro Police**

- 154.755 Training units only
- 154.83 Swat/Vice/Narcotics. Vice calls this channel #12.

**Swat calls it Channel #13.**

- 155.52 Training units
- 155.91 Detectives & Intelligence Div.
- 158.79 Detectives & Rural Patrol
- 158.97 Car to car
- 159.09 South Patrol (south of Sahara, east of Expway)
- 159.15 Wants/warrants/vehicle checks
- 159.21 Supervisors & car to car
- 453.30 Gambling control board
- 453.825 Parking enforcement
- 453.935 Convention security
- 453.95 Las Vegas Transit
- 460.30 University of Las Vegas Security
- 464.55 University of Las Vegas athletics dept.

**Casino/Hotels**

- 461.325 Hilton Hotels
- 461.55 Golden Nugget Hotel
- 461.70 Caesar's Palace Security
- 463.375 Hilton Hotels

If you want Todd's three page list of Casino & Hotel frequencies for Las Vegas, it's free. Send a #10 SASE to the Frequency Exchange, P.O. Box 98, Brasstown, NC 28902. Requests that are postmarked after February 28 should include \$2.00 dollars to cover postage and handling.

For our final visit, I'll give everyone a real winter treat. Let's stop and visit **Lake City, Florida**. Richard Sprau, has provided the forestry tower frequencies.

## GUIDE TO UTILITY STATIONS 1992

10<sup>th</sup> edition • 534 pages • \$ 48 or DEM 70

7500 new coastal and fixed station frequencies!

Our bestseller covers the complete frequency range between 0 and 30 MHz. We are the very first to publish *all* new maritime frequencies worldwide in use since the gigantic global frequency transfer in July 1991 - *now* and not five years later! Latest military and political events such as the impacts of the Gulf War and of the recent and current revolutions in Eastern Europe are covered exclusively by our UTILITY GUIDE. Sophisticated operating methods and regular overseas monitoring missions (1991 for months in India, Malaysia, Mauritius, Reunion, Rodrigues, Surinam and Venezuela) complete this unique book.

The completely revised new edition includes a frequency list with 19136 frequencies, and a call sign list with 3514 call signs. Up-to-date schedules of FAX meteo stations and RTTY press services are listed both alphabetically and chronologically. Abbreviations, addresses, codes, definitions, explanations, frequency band plans, international regulations, modulation types, NAVTEX schedules, Q and Z codes, station classes, telex codes, etc. - this reference book lists everything. Thus, it is the ideal addition to the World Radio TV Handbook for the "special" stations on SW!

Further publications available are *Guide to Facsimile Stations*, *Radio-teletype Code Manual* (11<sup>th</sup> ed.) and *Air and Meteo Code Manual* (new 12<sup>th</sup> ed.). We have published our international radio books for 23 years. They are in daily use with equipment manufacturers, monitoring services, radio amateurs, shortwave listeners and telecommunication administrations worldwide. Please ask for our free catalogue, including recommendations from all over the world. For recent *MT* book reviews see Jack Albert in 5/91 and Larry Van Hoorn in 9/91. All manuals are published in the handy 17 x 24 cm format, and of course written in English.

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- |         |               |         |               |
|---------|---------------|---------|---------------|
| 159.225 | Lake City     | 159.36  | White Springs |
| 159.24  | White Springs | 159.37  | Lake City     |
| 159.27  | Lake City     | 159.375 | Gainesville   |
| 159.285 | Lake City     | 159.390 | South Georgia |
| 159.30  | White Springs | 159.405 | Gainesville   |
| 159.315 | White Springs | 159.60  | Lake City     |
| 159.33  | Lake City     |         |               |

According to Rich, forestry tower frequencies provide up to the minute changes in the air temperature, humidity, wind speed, etc. Rich claims that the tower weather reports are often more accurate than those given by the local weather service.

To invite the Frequency Exchange to your town, simply send in a list of your favorite frequencies to the Frequency Exchange, P.O. Box 98, Brasstown, NC 28902. All requests for anonymity will be granted.

### Congratulations: You're a Winner!

My mail is testimony to the fact that many of you are regular participants in the Treasure Hunt. Each month, hundreds of people send in their entries and hope to win. Unfortunately, I usually only have one or two prizes to give away. For our first Treasure Hunt of the new year, I've got a surprise for everyone. Each and every participant in the January/February Treasure Hunt will win a prize. I've got a truck load of wallet sized frequency allocation cards. Each card contains the frequency increments and agency assignments between 30.0 and 960.0 MHz.

The cards will fit into your wallet or shirt pocket. And they can be used to quickly locate the frequency limits that are assigned to a variety of agencies. Suppose for a moment that you spot a Department of Defense Police vehicle. On the roof top, there's a small, 6" whip antenna. You know from experience that the 6" whip is used to transmit on the UHF band. But would you know exactly where to look? If you had the card in your pocket, it would only take a few seconds to determine that the federal government land mobile frequencies are between 406.00 and 420.00 MHz.

To win your very own frequency allocation card, here are the clues:

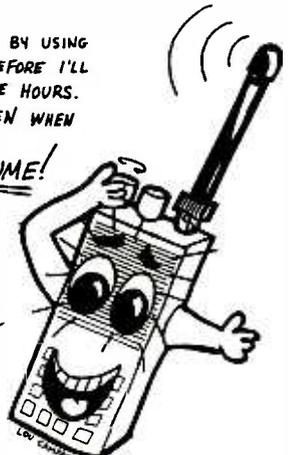
1. The AR3000 scanner radio, has a manual tuning knob. True or False?
2. "Hasta La Vista Baby," is an advertising slogan for what product?
3. In the Ham world, a 144/440 HT, is a dual voltage power supply. True or False?
4. I just purchased fifty feet of Radio Shack #278-1312. What did I buy?
5. Provide the price for the MAX system 46-49 MHz Dipole antenna. (November 91 issue of *MT*).

Send your answers to the Treasure Hunt, P.O. Box 98, Brasstown, NC 28902. For this particular Treasure Hunt, I'm asking everyone to include a #10 SASE with their entry. The envelope and postage will help me to return your prize in a quick, efficient manner. And remember, everyone that enters our January/February Treasure Hunt will win a prize.

Here's the list of other Treasure Hunt winners in 1991:

Month	Prize	Winner
Jan/Feb	OPTO Frequency Counter	John Kaiser Daytona Beach, FL
Mar/Apr	Minolta Camera	Joe Mckavage Wilkes Barre, PA
May/Jun	Grove Scanner Beam	David Smith Clarksville, IN
Jul/Aug	Digitar Weather Station	Matthew Lightner Claysburg, PA
Sep/Oct	Midland Intercom	Walter Detwiler Park Ridge, NJ
Nov/Dec	Capri Tape Saver	To be announced.

CONSERVE MY BATTERY POWER BY USING ME AT REDUCED VOLUME, THEREFORE I'LL BE ABLE TO LAST A FEW MORE HOURS. KEEP MY VOLUME LOW AND THEN WHEN THE NEED ARISES,  
**CRANK UP THE VOLUME!**



*Sammy the Scanner*

**NORTHEAST SCANNING NEWS:**  
P.O. Box 62  
Gibbstown, NJ 08027

## Photo Radar

It's here, it's real, and you'd better slow down. An \$80,000 dollar suitcase-sized device, known as photo radar, has been introduced into the state of New Jersey. Here's how it works: Photo radar can take three pictures a second of sufficient quality to identify the license plate and driver of a speeding vehicle. No roadside stops are required to issue the summons. The tickets are mailed to the owner, whose address is obtained from the vehicle license plate info.

New Jersey lawyers have already begun to ask, "What if the owner of the vehicle wasn't the person driving?" State Officials say owners will have to prove they weren't behind the wheel.

State Police say that they will issue warnings, instead of tickets, until they're sure photo radar functions accurately. After a brief trial period, photo radar tickets will be mailed to your doorstep.

Have you been nailed by photo radar? If so, *MT* readers want to hear about it. Send your comments to the Scanning Report, P.O. Box 98, Brasstown, NC 28902.

## Scanning With the Mayor

In the city of Memphis, Tennessee, Mayor Dick Hackett helped to capture a rape suspect. After hearing a police radio broadcast on his scanner radio, the Mayor drove near the scene, and spotted the suspect.

According to the news clipping, the Mayor has helped the police capture several other suspects in the exact same manner. "I would hope that all our citizens would do the same," the Mayor was reported as saying.

The staff here at *MT* couldn't agree more. Get out your scanner radios gang, and help the Mayor to make the world a safer place.

## Murder on the Airways

In Anchorage, Alaska, there's a UHF radio system that is linked to telephone lines. After shooting his father, a 22-year old was heard talking about the murder to an accomplice. Since the suspect was flying in a private plane, the radio conversation was monitored by a large number of horrified listeners.

Needless to say, the suspect was taken into custody shortly after landing the plane. A "tip of the typewriter" to our readers in Anchorage, Alaska.

Do you have a similar story to share? Have you read any scanner related news articles? If so, why not share them with your scanning buddies at *MT*? Send your news clippings to: The Scanning Report, P.O. Box 98, Brasstown, NC 28902

## Scanner Clubs

If you live in the Northeastern part of the United States, there's a scanning club just for you. "Northeast Scanning News" provides frequency coverage for nearly every state between Maine and Virginia. For further information contact NESN, P.O. Box 62, Dept. MT, Gibbstown, NJ 08027.

Ohio scanner buffs can contact the "All Ohio Scanner Club," 50 Villa Road, Dept. MT, Springfield, Ohio 45503-1036. Both clubs charge a nominal fee for a twelve month membership. When you contact them, be sure to mention *MT*.

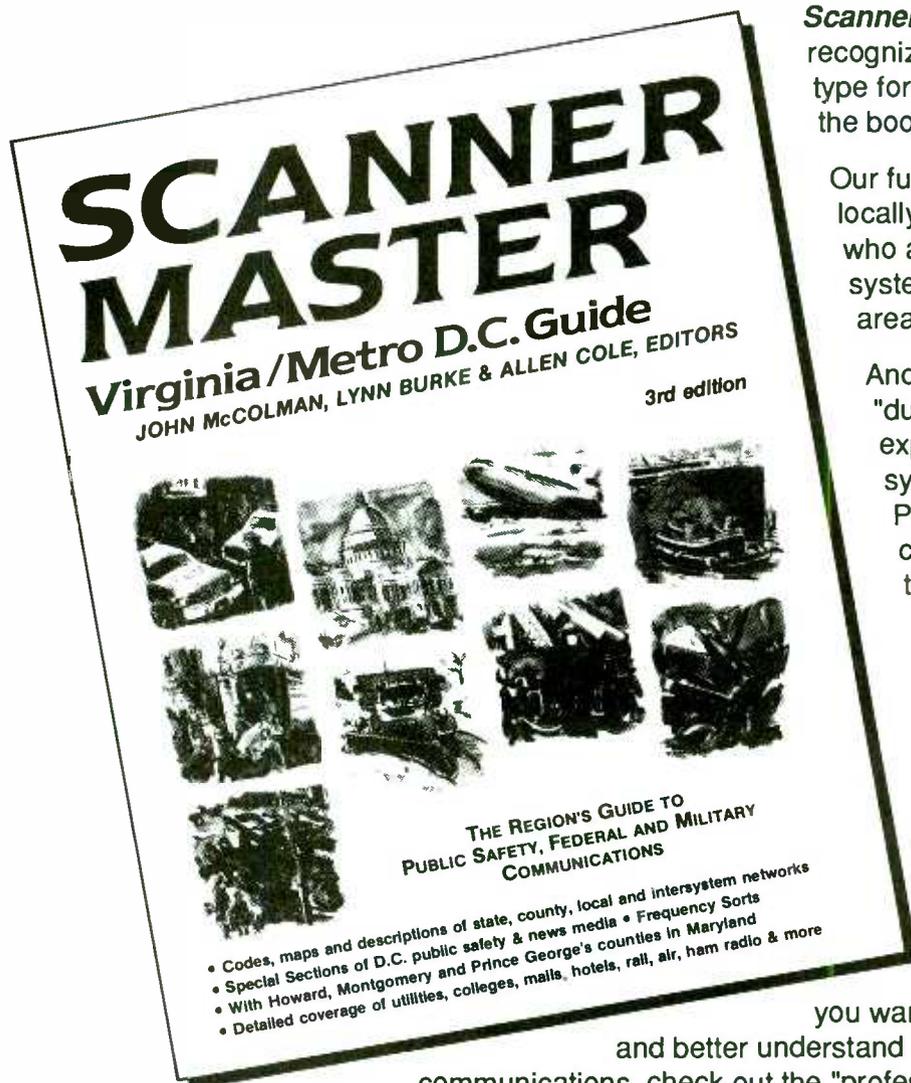
## Next Month...

Will be your last month to win a free prize. So sit down, find the clues, send 'em in, and I'll provide the treasure. Have fun!

# SCANNER MASTER

The Communications Resource of *Professional* Hobbyists

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The full-sized guides, which range from 350 to nearly 600 pages, are all priced at \$29.95. Our pocket guides, handy 4 X 7" 150+ page books, which go great in the car or with a hand-held, are all priced at \$13.95. (Add \$2.00 shipping for each book; residents of MA and CT must add sales tax).

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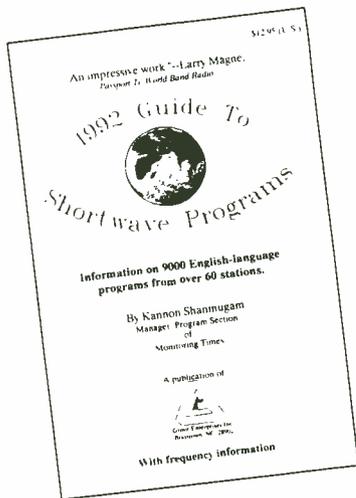
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The best time to reach our offices is Monday to Friday 8 - 12 eastern. If you reach our answering machine at other hours, and would like to place a credit card order, please leave your card number, expiration date, name on the card, address and phone, and your order will be shipped promptly.

SCANNER MASTER P.O. Box 428 Newton Highlands, MA 02161 Phone: 800-722-6701

# what's new?

Larry Miller



## English Language Programming

Monitoring Times' program manager Kannon Shanmugam has finally revolted against the space restrictions imposed on him by the monthly MT Shortwave Guide! In this comprehensive listing, Shanmugam and Grove Enterprises are making available almost the entire English Language shortwave program database.

The 1992 Guide to Shortwave Programs lists 9000 shortwave programs for over 60 stations, for all twenty-four hours. The programs are cross-referenced by time and day of the week, and a list of most used frequencies for each station makes the guide a handy stand-alone reference.

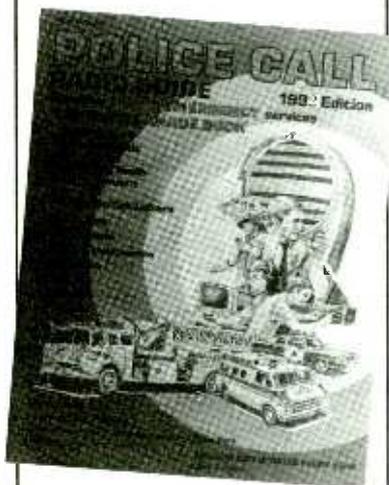
To order, send \$12.95 plus \$2.00 book rate or \$3.50 UPS shipping to Grove Enterprises, P.O. Box 98, Dept. MT, Brass-town, NC 28902, or call 1-800-438-8155.

## New Police Call

The new 1992 edition of *Police Call Radio Guide* is now available. This is the 29th edition of America's best-selling frequency directory. *Police Call* specializes in mobile radio systems operated in the Public Safety sector (police, fire, rescue, etc.) and each of the 275,000 records provides the licensee name, frequency, call sign and other pertinent information.

This year's book, says publisher Gene Hughes, contains information current through October of 1991, and some 9,000 new frequencies have been added. The new edition also contains police radio codes and a revised combined frequency list.

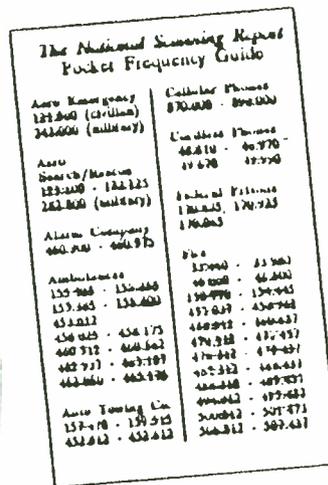
*Police Call* is published in nine regional volumes which include the 48 mainland states and Puerto Rico. Suggested list price for each volume is \$9.95 and they are available from a wide variety of retailers.



## Easy Shortwave Antennas

Shortwave listeners who just aren't getting the results they expected from their antenna may want to consider building their own. Frank P. Hughes' new book, *Easy Shortwave Antennas* (not to be confused with Ed Noll's *Easy-Up Antennas...*) discusses more than 50 antennas from longwires to beams and apartment and other indoor antennas.

The book also contains a wealth of practical information on antenna patterns, interference, and the nuts and bolts of building and putting up an antenna. There are even diagrams on each antenna showing layout or construction points. *Easy Shortwave Antennas*, published by Tiare Publications, P.O. Box 493M-MT, Lake Geneva, WI 53147, is priced at \$9.95, and is available from a wide variety of radio dealers.

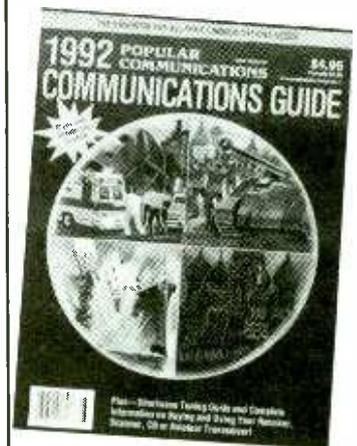


## Pocket Scanner Frequency Guide

For everyone who has ever gotten lost in the UHF/VHF frequencies, *National Scanning Report* has developed the *Pocket Frequency Guide*. The *Pocket*

*Guide* contains official frequency ranges for key services like police, fire, ambulance, cordless and cellular phones, aero and marine emergency, search and rescue operations, federal prisons, railroads, power and water, weather broadcasts and more.

The *Pocket Frequency Guide* is perfect for scanner listeners on the go. It's available for \$2.00 (cash only) and a self-addressed, stamped envelope from National Scanning Report magazine, P.O. Box 360M, Wagontown, PA 19376.



## 1992 Popular Communications Guide

Following in the footsteps of its sister publication, *CQ* (an amateur radio magazine), *Popular Communications* has issued its first annual *Communications Guide*. Billed as "The Handbook for All Your Communications Needs," the 140+ page book is packed with articles, equipment information and lots of full-color ads for the latest equipment.

Roughly half of the book is devoted to articles on shortwave antennas, a shortwave "tuning guide," QSLing, setting up a listening post, RTTY, buying a receiver, pirate radio, utilities, and more.

The second half of the book contains the buyer's guide to radios and accessories, each entry giving a brief description of the product along with the published

specifications and price. Tagged on to the buyer's guide is directory of manufacturers, importers, dealers and so forth.

The whole package is nicely done and nearly guarantees that you'll end up buying *something*. Best of all, the book is only \$4.95 plus \$2.50 shipping and handling from Popular Communications, 76-MT North Broadway, Hicksville, NY 11801-2953.

## Talking on 2 Meters

From time to time Radio Shack has dabbled in amateur radio equipment. Their latest offering, a two-meter handheld, offers many attractive features including a DTMF keypad, CTCSS squelch and 12 channel memory.

Digitally synthesized, the HTX-202 may be programmed to receive or transmit from 144-148 MHz in 5, 10, 15, 20, 25, 50 or 100 kHz steps. Neither the receiver or transmitter frequency range can be expanded. Programmable repeater offsets may be entered. Scan/search rate is approximately 40 steps per second.

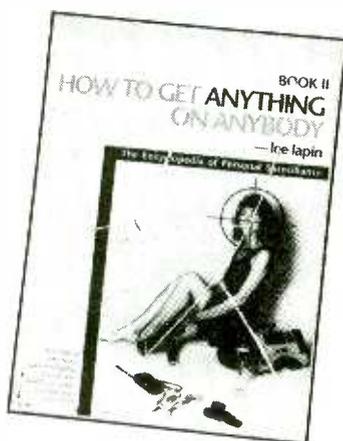
Audio is a gutsy half watt for 2% distortion, while RF output during transmit is 2.5 watts (internal batteries) to 5 watts (external 12 volts). Separate rechargeable and replaceable battery packs are provided. A 1-watt battery saver button is included.

Receiver sensitivity is an impressive 0.2 microvolts with adjacent channel rejection (at 25 kHz separation) and intermodulation attenuation both down 70 dB.

The 6 digit LCD frequency display has a pushbutton-activated five second edgelight for night viewing. With batteries, the husky diecast radio weighs 19 ounces and measures 2-1/2"W x 6"H x 1-1/4"D.

The transceiver comes with flex whip, battery holders, rechargeable nicads, an AC wall adaptor/charger and an easy-to-follow manual which includes a complete schematic.

The HTX-202 is \$259.95 from Radio Shack outlets nationwide.



## How to Get Anything on Anybody

When volume one of Lee Lapin's spook's bible appeared some years ago, it buzzed the popular press and ruffled many feathers in the intelligence community. Now in its second—and extensively revised—edition, Lapin's exhaustive work is guaranteed to buzz more presses and ruffle more feathers than ever before.

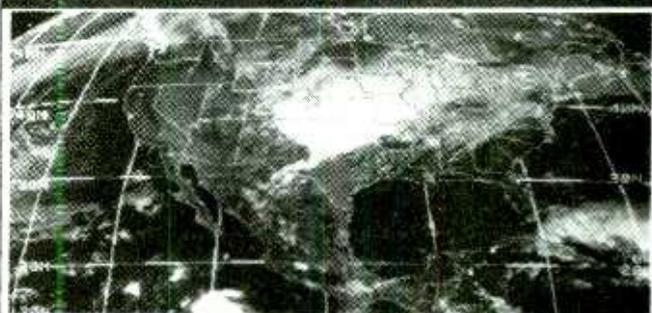
We are in an information age; every aspect of our lives seems to be available to the highest bidder. Our Social Security numbers, credit card account numbers, incomes, taxes—you name it and somebody out there can get it.

Lapin's treatise is written in an informal style, with lots of inaccurate punctuations, but considerable contents. Concentration is on hardware—bugs, countermeasures equipment, tracking devices, video surveillance.

Other chapters home in on computer cracking, phone phreaking and general information gathering. And if you're really serious about all this, there is an excellent list of sources for equipment and services.

*How to Get Anything on Anybody, Book II* is \$38 postpaid from ISECO, Inc., 1228 S. El Camino Real #349-MT, San Mateo, CA 94403-9705.

## PC HF FACSIMILE 6.0 \$99



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Version 6.0 has just been released. This system for the IBM PC is a complete signal processing software package with manual. The software includes the following features:

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- File Transfer
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- Programmable I/O & Interrupts
- Online Broadcast Database
- Image Cropping
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## PC GOES/WEFAX \$250

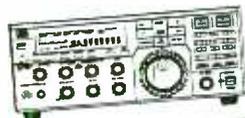
PC GOES/WEFAX 3.0 is our finest fax imaging system. It is compatible with both HF and direct satellite broadcasts from GOES, METEOSAT NOAA, SOVIET APT and C-Band services. It includes all of the above features plus a complete prediction system and advanced multispectral analysis software. Call or write for our catalog of products. Visa & MasterCard welcome.

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## BUYING A USED SHORTWAVE RECEIVER



## Buying a Used Receiver

There's no doubt that certain sectors of the U.S. economy are in "distress." Still, most radio enthusiasts, to the consternation of their spouses, would rather do without food than abandon their hobby. Fred Osterman's latest book offers a solution to the

food-vs-radio problem: Buy a *used* receiver. (We hear that Fred has been nominated for the Nobel Peace Prize this year...)

Osterman discusses the advantages and disadvantages of buying used equipment. (He quotes a salesman at New York's Barry Electronics as saying that you can never go wrong buying a used radio at a flea market... if you take only \$5.00 with you and that includes parking fees.)

The book includes sources for technical and price information on non-current models and it provides pricing information and overall ratings for the top fifty communications receivers and the top twenty digital portables.

Looking for a used receiver without having first read a copy of *Buying a Used Shortwave Receiver* is like going into battle without armor. This valuable guide is just \$3.95 plus \$1.00 shipping from Universal Radio, 1280 Aida Drive, Reynoldsburg, Ohio 43068 or call 1-800-431-3939. Tell 'em MT sent you.



## Worldwide Aero Comms

Not intended as the ultimate air frequency guide, this new pamphlet lists the most commonly heard air-to-ground HF (shortwave) SSB (single side-band) communications frequencies used by civilian, federal government and military intercontinental flights.

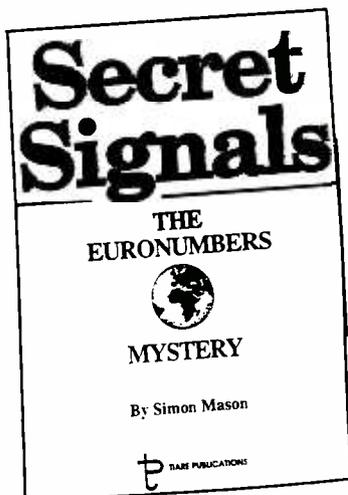
Written for the newcomer to shortwave aeronautical utilities, *Worldwide Aeronautical Communications'* excellent introductory pages answer many of the most commonly asked questions about getting started in effective monitoring.

A closing glossary reveals the meanings of over 200 abbreviations, terms and acronyms likely to be encountered by the aero monitor.

The 42-page *Worldwide Aeronautical Communications* by Robert E. Evans is \$6.95 plus \$1 shipping from Universal Radio Research, 1280-MT Aida Drive, Reynoldsburg, OH 43068.

## The Euronumbers Mystery

According to a leading expert on European "numbers" broadcasts, the ending of the cold war



has not brought about the end to the so-called "spy" transmissions. Simon Mason, the author of the new book, *Secret Signals — The Euronumbers Mystery*, says that the stations are still sending out coded messages "night and day, all over the shortwave bands."

Mason introduces readers to numbers stations known by such monikers as "Bulgarian Betty," "Papa November," The Lincolnshire Poacher," Swedish Rhapsody," "The Russian Man," - many of which can be monitored in North America. The book includes numerous traffic excerpts, identifiers, schedules and clues turned up by hearing mistakes in transmissions.

Also included is a full, by-frequency log with over 300 entries, complete with notes on formats and schedules. *Secret Signals — The Euronumbers Mystery*, provides a much needed fresh look at this fascinating — and sometimes frightening — side of shortwave radio.

The book is available for \$9.95 plus \$2.090 shipping and handling from Tiare Publications, P.O. Box 493MT, Lake Geneva, WI 53147.

## The ARRL on Antennas

It may be hard to improve upon excellence, but the ARRL does it every year as their classic handbooks mature and grow. The

latest *ARRL Antenna Handbook* is a case in point.

In slightly more than a half century since the first volume's inception, it has grown from a mere 142 pages to more than 700. Topics like satellites and moonbounce were still on the horizon, and VHF/UHF directional arrays had yet to be developed.

For the first time the handbook discusses in depth the serious issue of non-ionizing electromagnetic radiation. Just what are the hazards of being near stray radio energy, and how do power lines affect us? The latest findings are discussed in some detail.

Radio direction finding tips, accessories and techniques are presented; an especially useful section on the interferometer approach is included along with charts.

Beams, dipoles, ground planes, Adcocks, phased arrays, Beverages, Windoms, traps, loading, parabolics, horns, log periodics—they're all here and more.

Although the handbook is intended for hams, it must be remembered that antennas are reciprocal—a good transmitting antenna is a good receiving antenna. SWLs and scanner listeners will find a wealth of good design information for their hobbies as well.

To order your *ARRL Antenna Book, 16th Edition*, send \$20 to the American Radio Relay League, 225 Main St., Dept. MT, Newington, CT 06111.

## Computer Aided Scanning

Datametrics, Inc. has announced the availability of version 4.0 of their computer-aided scanning system for the ICOM R9000 and the Radio Shack PRO2006 scanner.

The "Communications

Manager" provides real-time control over radio monitoring, manages databases of frequencies, maintains a log of frequency activity and provides extensive user control over communications through a powerful interface and set of parameters.

The new version includes an improved user interface, including industry standard dialog boxes and mouse support. The hardware interface and software system for the PRO2006 retails for \$349.00. The hardware interface and the software system for the ICOM R9000 retails for \$1,599.

You can get more information by writing Datametrics Inc., 2575 S. Bayshore Dr., #8A-MT, Coconut Grove, FL 33133.

## Up and Coming

Two new firms have appeared on the radio horizon with a promising selection of goods. First is Tejas RF Technology, which is entering the ham market with kits and products for QRP (low-power) operation.

Although prices have not yet been announced, there is a product list. Among the offerings is a simple, direct-conversion ham band receiver with 100 kHz coverage. Additional options will also be available to upgrade the radio. All coils will be pre-wound.

Other items in the product line include a single-band CW 5W transmitter, a single-band CW transceiver, matching antenna tuners, multi-band antennas, solar power supply systems, and more. To get on the mailing list write to Tejas RF Technology, 17 South Briar Hollow, #101MT, Houston, TX 77027.

The second firm is represented by a familiar name, ICOM's Evelyn Garrison. The company is called Oak Bay Technologies and among their products are a rubber duck

window mount that handles 15 watts of power at 50 ohms (\$24.95), a commercial grade low-pass filter that has a 41 MHz upper cutoff (\$69.95) and a heavy-duty 12-volt power strip. It's \$79.95.

For more information, call 206-557-9611 and tell them that *Monitoring Times* sent you.

## Review

### DesignCad 2D

Having had no previous experience with computer aided design (CAD) programs, I was understandably reluctant to sink my teeth into one. DesignCad 2D completely changed my view. Through its ease of use and simplicity in instruction, I have found it to be an indispensable tool.

One of the most interesting of all the features in DesignCAD 2D is its ability to use gravity points — locations on a design that represent an entire object. If you draw a circle, the gravity point would be located anywhere on that circle, but if you draw a line, the gravity point would be the last point on the line. To remove a line, set the gravity point near the line, hit a mouse button and type "E" (erase). Very simple.

Another useful feature is the TEXT command which allows you to type words into a design, in a variety of styles and fonts. These can be adjusted to any size, shape or angle that you would like, even placed in a perfect arc of any radius.

Disks which contain pre-designed art with exacting detail are also provided; these range from electrical symbols (schematics) all the way to house layouts (chairs, tables, beds) and construction (hoists, columns, etc.).

Of course you can create lines, circles, boxes, arcs, even polygons with as many as 100 sides! The program seems to know what you want it to do. It is very easy to use, and is driven by either menus or keyboard strokes. This is everything you could ever want in a CAD program and more.

In August 1991, the U.S. Department of Education rated DesignCAD 2D and DesignCAD 3D clearly over AutoCAD in both the 2D and 3D categories; their programs now dominate 6.3% of the government CAD market (*Government Computer News*, March 4, 1991), making the DesignCAD programs the number one low-cost CAD software in use by government agencies. That's good enough recommendation for us.

For further information or questions on DesignCAD 2D or 3D contact: American Small Business Computers, Inc., One American Way, Pryor, Oklahoma 74361; phone 918-825-4844 or FAX 918-825-4878.

*Bill Grove, Manager,  
Computer Services, Grove Enterprises*

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- CYBERSCAN™ allows scan file tracking control of systems employing frequency hopping techniques.
- Birdie log during frequency search automatically characterizes your R7000, then locks out those frequencies during frequency search operation.
- Custom interface has electronics to allow software control (by channel number) of external tape recorder.

### ICOM™ R71 RECEIVER COMMUNICATIONS MANAGER

DELTACOMM™ I-71 Version 4.0 offers read/write control of your R71 receiver's frequency, mode and memory channels. Additional program features include auto log frequency search, scanning, timer/clock event management, data base management, pull-down menu windows, split screen for your Terminal Node Controller (TNC) communication needs and the ability to control an antenna switching system or logging tape recorder.

- Data base management allows definition of frequency, call sign, time schedule, mode, target area, country, 140 character notes field, 69 character TNC command field, QSL status, control relay status and, in addition, displays user defined optimum settings of receiver front panel knob positions.
- Combined with your TNC, DELTACOMM™ I-71's user defined command codes program your TNC for reception and logging of PACKET, AMTOR, RTTY and Morse Code (fully unattended and automatically).

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## Scanning a Crisis

It's not even January 1st yet, but I have probably already broken every single one of my New Year's Resolutions. Except one!

I made a commitment that I would spend a few columns discussing issues from the perspective of beginners who are interested in scanners and scanner monitoring. Actually, that's easy. My much modified and hot rodded Realistic Pro-2005 provides the background "music" for much of my life.

Last month we looked at monitoring a crisis on the shortwave bands. This month we'll look at crisis monitoring on your scanner. Up front in *MT* you'll find a feature article by Wayne Mishler which provides excellent guidelines for getting familiar with your scanner and developing good monitoring habits. Although some of these suggestions will parallel his, my approach is one of geographic familiarity.

### Knowing the Neighborhood

The real key to successful scanning is not simply knowing WHAT is going on but, almost more importantly, WHERE things are going on. Start out with a good old fashioned "Gas Station" map of your state. (Remember when you could get those puppies for free? Boy, am I getting old!)

Get your hands on a drafting compass. You know, one of those things you used in school to draw circles. Using the map's scale as a guide, start with a circle with a ten mile radius, using your home location as the center. Keeping the same center location, draw concentric circles, increasing the radius by ten miles each time.

If you live in an urban environment that is "frequency rich" you may want to draw your circles at five mile intervals. Do this as far out as the compass will allow you to go.

Now sit down and take a good hard look at your modified map. You will want to take notes as you study what you find in the circles. You see, there is so much out there to listen to and get to know in the scanning world that your head will explode if you try to take it all in at once.

Old Uncle Skip would like to suggest this simple (but effective) way of entering into scanner monitoring: Think of each of the circles that you have drawn on your map as a "Sphere of Interest." First you will get to know what is going on within ten miles of home. Once you have an almost intuitive grasp of this area, you will continue to move your study out through the circles until you become a true master of all you survey.

Each widening circle will contain its own potential for crisis listening on which you'll want to gather information.

### Towns, Cities, and Municipalities

The process of getting to know each hamlet in your sphere of interest is greatly enhanced by looking at additional maps of the local area. Municipal maps are usually available in township and city offices or at your local library.

Of course you will want to start out with your home town noting if you have one police force or perhaps more. More than one police force?! You bet, Bunkey. The Township of Cherry Hill, New Jersey, is serviced by no less than five. You may discover that you have multiple forces in your area, too.

In addition to your municipal force you should use your local area map to make note of any colleges, state institutions or federal facilities. All of these are likely to be serviced by separate police forces. Who can forget the first time they were caught "parking" by the Campus Police? If any of your circles overlap into a major city, you might also find housing project and port authority police departments.

You will also want to note the number and locations of the fire departments servicing your circle. Your fire scanning is also likely to be the first thing to take you outside of your circle during a real crisis, as most departments provide mutual aid with large fires.

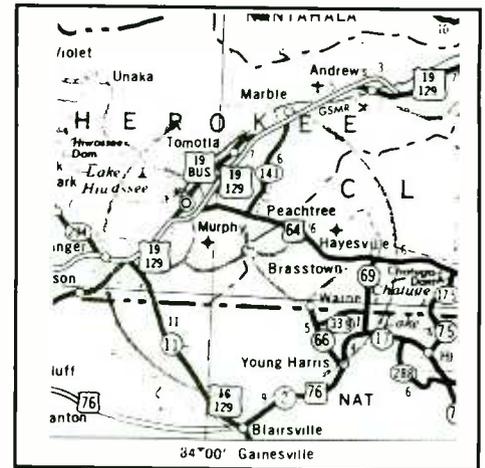
Ambulances, Emergency Medical Services and Mobile Intensive Care Units can operate independently, through fire departments or area hospitals.

### Counties

Two states do not have counties. If you are planning to live in Louisiana, you have Parishes instead of counties. If you ever end up in Alaska like my In-Laws, your counties are called Census Districts. But I digress.

All of the above-mentioned services are often organized into some sort of Emergency Service Plan that is managed on a county or state level for the purpose of addressing major crisis situations. Since this is the most exciting sort of listening, check in advance of a crisis with local officials to see just how things are done in your neck of the woods.

County level listening will also put you in touch with the more crisis responsive public service departments, such as road and bridge commissions. Fuel, gas and electrical services should not be overlooked in a crisis, but don't forget that these can often be city or even regional monitoring opportunities instead of county systems.



### State Stuff

You will want to look at how your particular State Police Department services your circle of interest. This is the point where you will start to discriminate between local, county and state roads on your map. State parks, forests, and game preserves often have their own ranger, police, and sometimes even fire and emergency services worth tracking in any developing local crisis.

### Federal Scanning

I promise that this will be the last section that sounds like a civics lesson. Check inside your circle and see if there are any federal lands. This would include national parks and military installations.

Unaffected by geographic boundaries are such federal agencies as the FBI and DEA (Federal Bureau of Investigation and Drug Enforcement Administration). Also, since we are coming into that time when presidential candidates traipse all over the countryside proving to us that they are voteworthy, you can make note of any stumping likely to be going on in your circle. Be prepared to monitor the Secret Service when that date comes around.

### Getting the Picture?

This might give you an idea why modern scanners give you access to hundreds of channels. There is a lot out there to tune into. Since each scanner's memory organization is different, you will want to organize your frequencies carefully to give you best coverage in a crisis.

Yeah, I know I haven't talked about frequencies yet. Hang in there, Bunkey, we still have a few places you are going to want to get to know more about before you go pushing any buttons.

## Planes, Trains, and Automobiles

If your circles of interest include any airports or rail lines, you will want to make special note since most major crises will often have an effect on their operation. They can even be the source of the crisis. Air emergencies and train derailments can have wide area consequences that will get many frequencies humming.

If you are in or near a metropolitan area you are probably familiar with Traffic Report helicopters and airplanes. I have been led to track several local crises, over the years, that were first spotted by an area traffic chopper. Monitoring the traffic service link frequencies can put you ahead of the loop in crisis listening.

## Water

Rivers, lakes, and even the ocean can all fall within your circles. Commercial and pleasure boat frequencies as well as the Coast Guard and State Marine Police can all come into play. Don't forget that many major cities support fireboats. These are usually on the scene of any waterfront crisis.

While you are checking over your local maps, you might want to get an idea of the flood plain around major water resources. Tides and storms lead to high water and flooding, that can generate significant crisis monitoring in those areas.

## Weather

Okay, since I know some folks are having apoplexy over the lack of frequencies in this article, I will now instruct you to scan through 162.40 - 162.55 MHz and pick up your area's National Weather Service frequency.

Found it? Fine! Now dump it into memory, lock it out and check it every time you expect bad weather. Weather related problems are probably the most common type of emergency. Monitoring the activity during a weather event is good practice for chasing other less frequent crises.

## Otherness

Look for notable industrial areas in your circles. Large industrial installations can be rich sources of monitoring frequencies. The day-to-day communication is likely to be mundane. However, during any local crisis, even business frequencies can provide some excitement.

If there happens to be a nuclear power plant within one of your circles you will want to look for frequencies that will allow you to monitor regular plant emergency drills. The prospect of a nuclear plant accident is not pleasant, but monitoring these drills might give you some notion about how a serious industrial crisis might unfold.

Speaking of drills, don't leave out our Amateur Radio friends. 144-148, 220-225 and 420-450 MHz are scannable sections of the ham radio world where you will find emergency preparedness drills conducted by area hams through the Amateur Radio Emergency Service (ARES) and Radio Amateur Civil Emergency Service (RACES). Hams can also be found operating in conjunction with the community emergency services organizations mentioned earlier.

## So Where are the Frequencies???

All around you, my friends! You can scan and log quite a few that will make sense just by listening. If you have any CB and scanner equipment stores in your area, they often provide local frequency lists. You can even just walk up to folks and ask. But other sources exist to help you out.

Two long-time favorites for most common emergency frequencies remain the *Betty Bearcat Frequency Directory* and Gene Hughes' *Police Call Radio Guide*, available for your area through many of the radio book sellers found in the pages of *MT*. These books are published for various regions of the United States so make sure you purchase the one that covers the part of the country you plan to scan.

As you begin to compile frequencies into lists (and lists and more lists) you will begin to prioritize them into areas of listening interest. Give some thought to organizing lists around those frequencies that are likely to be fruitful for particular crisis situations.

No matter if your scanner can tune 10, 100 or even 1000 frequencies, I suggest you leave a few unprogrammed so that, in the event of a particular crisis, you can quickly enter pertinent frequencies on the fly.

## The Price You Pay for Listening is Involvement

As you grow in your understanding of scanning, do not become hard-hearted to the events you are hearing. Support your local police, contribute to your area volunteer fire and emergency organizations. Maybe you will choose to become a volunteer yourself. Think of it as the rent you pay for all the great listening out there!

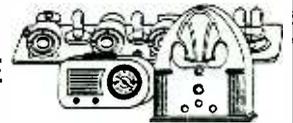


## GOT YOURS YET?

If you haven't received your free sample issue of the "SWL Swapper" yet, you're missing out! It's the only national classified publication that's dedicated to SWL and scanner enthusiasts. Buy, sell or swap scanners, receivers, ham gear, land mobile radios, frequencies, computers, software and more. Helpful hints, tips and articles in every issue with free advertising for subscribers. Subscribe now for only \$10 per year. To get your free sample issue call anytime or write to:

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# Videotext Services and TVRO Info Update

Periodically in this column I like to present an overview of the world of satellite delivered teletext. Through the last two decades, much time and money for research has been spent looking for a cheap, efficient method of transmitting data to homes. The idea has been to be able to deliver what amounts to an electronic newspaper. After many big league players spent millions of dollars developing teletext, we are essentially back where we began.

## Beauty In Simplicity

The real value of teletext is in its inherent simplicity. Here is a simple system of data delivery which transmits the data via the Vertical Blanking interval (VBI) on any given video signal. The information is "read" by an equally simple decoding device which is operated by a handheld infra-red remote control. And, in the case of the "Electra" videotext service, the beauty is further enhanced by the price of the service: it's free.

## What You'll See

The Electra service is produced by Great American Broadcasting in Cincinnati and is available to cable and satellite users via the VBI of TBS Superstation. To access Electra, simply turn your dish to G1, 18 and press the "teletext" button on your teletext remote. The picture on TBS will be instantly replaced with the Top Stories page of Electra. You'll be prompted by that page to turn to various other pages for additional information.

Among the pages available are a national weather map and a city-by-city weather report. A sports index is found on page 121 which will refer you to the top sports stories, scoreboard (including up to the minute scores from college and pro games), league standings, and a sports quiz (the answer to which is found by pressing the "reveal" button on the remote).

In addition, there is a complete Wall Street report available listing the market indexes, most active stocks, and news stories on the business beat. Foreign exchange rates are listed as well as current grain and livestock prices.

There is also a Lifestyle section featuring recipes, a TV listing, and features about people in the news. The Electra service alone is worth the price of the decoder.

*Page 100 from the Electra teletext service. Note top headlines, business headline, and main index menu.*



## But Wait. There's More!

Tempo Text is a stock market quote service which is also available on TBS. Here, over 5000 issues from the NYSE, AMEX, and OTC are listed on a 20 minute delay. The listing includes volume traded and has a little "up" or "down" arrow to indicate how each issue is doing.

While Electra and Tempo Text are advertiser supported and thus available for free, there is at least one other service on TBS, a Vegas-style "tip" sheet for gambling on athletic events, which is encrypted. Subscriptions are available.

There is also a teletext service on F1, 22 Home Shopping Club, which is intended for independent truckers listing the availability of interstate shipments which need drivers.

### Over-The-Air TV Stations Carrying Teletext

- WKRC Cincinnati, OH
- WTVN Columbus, OH
- KOVR Sacramento, CA
- KOIN Portland, OR
- WTSP Tampa-St. Petersburg, FL
- WBSX Ann Arbor, MI

## How To Receive Teletext

There are three ways to receive teletext signals. The first is via your TVRO satellite receiver, as mentioned. The second is via cable (in both instances you'll need to subscribe to TBS Superstation in order to use the decoder). The third is via over-the-air TV in certain locations (see chart).

There are two types of teletext decoders. The most convenient is the built-in decoder which comes with any of the Digital System Three Zenith TV sets. Not only is the decoder built-in to the TV cabinet, but the teletext controls are contained in the handheld remote, so you have one less remote wand on your coffee table. The other decoder is the "stand alone" unit which can be used with any television set. The advantage of the stand alone unit is that it is, by itself, far less expensive than a new Zenith set.

With the Zenith set there are no installation procedures. A simple flick of a switch on the remote control does it all. With the stand alone variety there are connections to be made between the satellite receiver and the decoder. These connections are very easy to do and usually well described in the accompanying printed material.

## The Teletext Scoreboard

This type of data reception is, by comparison with X\*Press X\*Change for example, quite primitive. In a sense, you get what you pay for. There are no fancy PC type computers involved or subscription fees with services such as Electra.

Further, the units are relatively cheap (in the \$200-\$300 range). What's missing is a print-out option, longer text to accommodate more detailed stories, and greater memory capacity for more text storage. It should be clear, however, that building these capabilities into a teletext decoder would dramatically increase the price. Right now, for homes without sophisticated computers to accommodate more sophisticated data reception, the teletext decoder is the cheapest way to go.

## Learning More About Teletext

The best in-depth description of the various types of teletext, including those services described here, can be found in the pages of *Hidden Signals on Satellite TV*, third edition, by Tom Harrington. The teletext section also features a good history on the subject.

For a more technical treatment concentrating on the European teletext market (it's in far greater use overseas), I recommend *World Satellite TV and Scrambling Methods — The Technicians' Handbook* by Frank Baylin, Richard Maddox, and John McCormac. Both books are available from the usual sources, including Shop At Home 1-800-366-4010 which also carries the Astro-Text Teletext decoder.

For Zenith Digital System 3 TVs visit your local Zenith dealer. For more about the Astro-Text 90 teletext decoder, write Astro Products Co., 340-104 Rancheros Drive, Dept. MT, San Marcos, CA 92069 or call 619-471-9930. For more on the Dick Smith teletext decoder, contact American Electronics, 173 E. Broadway, P.O. Box 301, Dept. MT, Greenwood, IN 46142 or call 1-800-872-1373.

## TVRO Publications Of Note

In the past several months, new editions of TVRO related books and other publications have been released which are worth noting. The two books mentioned above are out in new editions and are very much worth the purchase.

The third edition of *World Satellite Almanac* by Mark Long is available. The expanded *Almanac*, in its new 8-1/2" x 11" format, runs 1,072 pages. As before, it is a treasure of satellite nuggets including 300 footprint maps and twenty-six chapters. Topics covered in the *Almanac* include Intelsat, Eutelsat, Intersputnik, Inmarsat, VSATs, and much more. Expect a hefty price hike on this one. The *Almanac* retails at \$100. You can order yours through the usual sources or directly from the publisher, MLE, Inc., P.O. Box 159, Dept. MT, Winter Beach, FL 32971 or call (305) 767-4687.

*Inside Satellite TV* by Karl Fike is published by Fortuna Communications Corp. which also publishes *Satellite TV Week* for which Karl is the

Technical Editor. This 121-page book is a question and answer format covering virtually everything that ever went wrong with a home satellite system. Well indexed, this book has addresses and phone numbers for all manner of TVRO components. Among the topics covered: dishes & feedhorns, receivers, VCII, digital audio, TVRO accessories and older equipment repair. *Inside Satellite TV* is available directly from the publisher for \$8.95 plus \$2.50 shipping via their toll free number: 800-345-8876.

Speaking of Fortuna Communications, don't miss their 1992 *Satellite TV Buyer's Guide*. This 90 page magazine-format publication is filled with interesting, if basic, information on the subject. Designed primarily for newcomers, everyone will find something of interest in the sections on equipment, satellite radio, data, Ku band and accessories. Best of all is the \$4.50 price tag. If no longer available on your local newsstands, the guide may be ordered from the *Satellite TV Week* toll-free number above.

## TVRO News Via Computer Modem

Those of you with personal computers and modems may enjoy accessing the various bulletin board systems (BBSs) which are oriented to the TVRO hobby. Frank Kennedy, a co-moderator for the FidoNet TVRO Echo BBS has put together an extensive list of local TVRO BBSs from around the U.S. However, the list runs two pages single spaced and is far too much to print here, furthermore, he says that a number of the phone numbers are no longer correct. Until a more stable list can be developed, I would advise those interested to check into their local FidoNet and look around for TVRO info.

Another service for dish owners with computers is called Great White North and is run by Gary Bourgeois, WB8EOH, from Marquette, Michigan. According to Gary, "...[GWN] is a USENET member system. As a public service, we are now offering the latest daily news from the network rec. video. satellite newsgroup, a worldwide conference of satellite dish owners and experimenters. This special FREE account will allow you to, call regularly and capture the text from the newsgroup at full data rate with no pauses between articles so you can read the items at your leisure offline."

"Registered system users on GWN have access to a sophisticated newsreading system and also can participate in the discussions. GWN is a non-profit corporation, and membership here is a flat rate of \$30 per year to access over 300 network conferences and over 100 local conference rooms, many with file libraries." To reach GWN call 1-906-228-4399 Login: dish.

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## Satellite Television Sourcebook

by Ken Reitz

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Grove Enterprises	800-438-8155
Shop at Home	800-366-4010
Universal Radio	800-431-3939
VHF Communications	800-752-8813
SNS Communications	908-806-7134

# When the Go-Code is Given

Last month, the Federal file took a look at the Command, Control and Communications (C-3) structure of the U.S. nuclear forces. We also examined some of the radio links used to communicate in the event of a nuclear war.

Although at this point it looks like the chances of an East/West confrontation are unlikely, both sides continue to hold on to their nuclear arsenals. Even with the historic actions of the last few months, the airwaves are still filled with the sounds of strategic forces exercising, training, and flexing their muscles of deterrence.

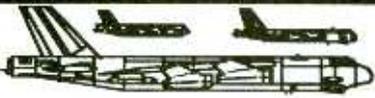
In this, the final installment, we will examine what happens after the alert is given.

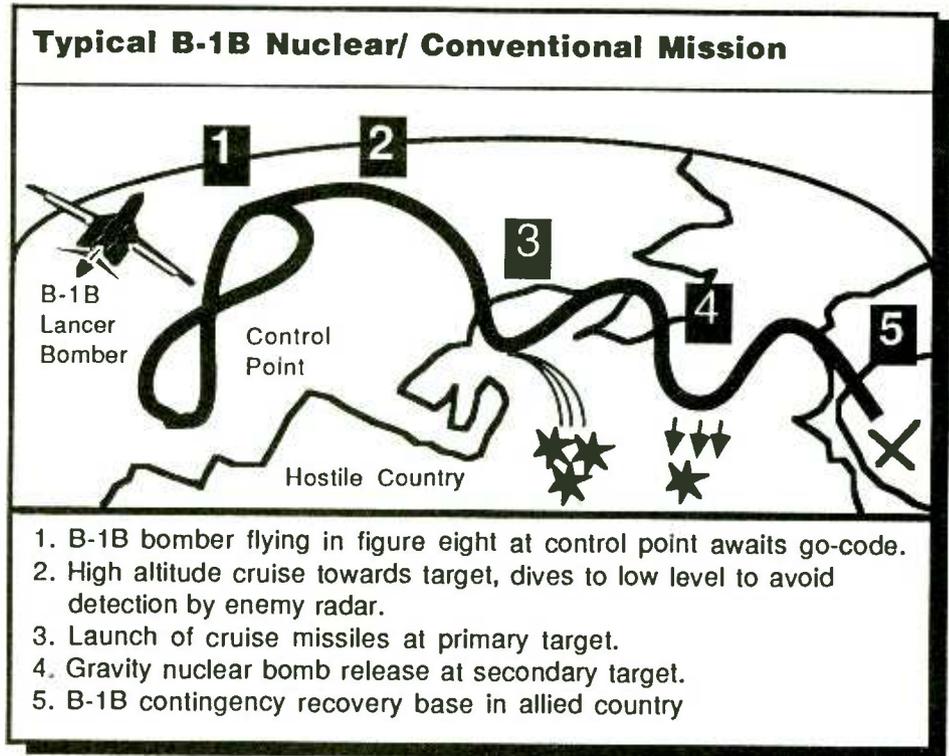
## Scramble The Bombers

Early warning satellites have alerted U.S. forces that a missile launch is imminent. A klaxon sounds and bomber crews race from their alert bunkers and toward their waiting aircraft. DEFCON 1 (Defense Condition One), codename "Cocked Pistol" has been declared, meaning a nuclear attack is imminent.

Not only are bombers scrambled but aerial refueling tankers take to the skies as well. It is their job to keep the fuel-guzzling bombers aloft. B-52s and B-1b strategic bombers come to life as crew members fire up the APUs (auxiliary power units) and bring the massive jet engines up to power.

Soon the skies are filled with dark, ominous smoke trails leading up to the bombers and tankers now disappearing into the distance.

SAC BOMBER CALLSIGNS		
		
Callsign	Type	Base
CHILL	B-52	MINOT AFB
DOOM	B-52	BARKSDALE AFB
GRIFF	B-52	GRIFFIS AFB
GUMBY	B-52	WURTSMITH AFB
HAVOC	B-52	K I SAWYER AFB
HAWK	B-1B	DYESS AFB
KISKA	B-52	ELLSWORTH AFB
LAZER	B-52	CARSWELL AFB
LUGER	B-52	CARSWELL AFB
MOOSE	B-52	LORING AFB
NORSE	B-1B	GRAND FORKS AFB
PYOTE	B-1B	DYESS AFB
SONAR	B-1B	LORING AFB
TIGER	B-1B	ELLSWORTH AFB
TUFF	B-52	CASTLE AFB



Anxious crews on board hope the scramble is just another of a seemingly endless series of practice alerts.

## Skybird, Skybird, Do Not Answer

As the bombers loiter off the airspace of the targeted country, they receive their go-codes. All military monitors are familiar with the "Skybird Skybird, Do Not Answer..." coded messages heard on GCCS (Global Command Communications System) frequencies. If you haven't heard one of these messages tune in on 6.7612, 9.027, 11.243, and 13.247 MHz on the hour.

You might also hear a test EAM (Emergency Action Message). A typical EAM begins: "Delta Whiskey Three Five Zero Standby, Message Follows." The EAM usually consists of 20 or more phonetic letters and numbers followed by an authentication code.

Also at the end of the coded broadcasts you will hear two loud tones. These tones activate remote radio relays that repeat the EAM broadcasts. Sometimes you can hear the EAMs echoing down the line on GCCS frequencies. The EAMs are also rebroadcast on Navy HICOM frequencies as well. Check out 4.040, 6.697, 6.720, 8.972, and 11.267 MHz.

In the event of WW III, it is most likely that the messages would be broadcast on a variety of

## Aerial Refueling Under the Gun

No sooner are the bombers aloft than they start for the tankers waiting to refuel them. The bomb laden aircraft have a long journey ahead and every gallon of fuel counts.

The tankers (KC-135s - KC-10s) fly to their established ARCPs (Aircraft Refueling Control Points) and await the bombers. An ARCP usually consists of an oval shaped aerial refueling track far from any bases that could be the target of a nuclear attack. The bombers join them and quickly top off their tanks. The refueling tankers will stay on station until having passed all their fuel or being ordered to return to base.

All of the refuelings will take place under ENCOM procedures (radio silence), so as not to alert an enemy to the presence of the bomber/tanker force. Enemy fighters using radio direction finding techniques could possibly track down the bombers and destroy them. Maintaining radio silence, the refueled bombers proceed on to their control points (a figure eight course off the border of the targeted country) and await the go-codes.

bands including VLF, HF, VHF, UHF, EHF and SHF and also by land based, aerial, orbital and shipborne transmitters. Submarines would receive the codes via Navy TACAMO aircraft, by VLF or blue-green laser. Missile silos receive their orders via satellite links and land lines.

### To Go or Not To Go..

Whether it be a bomber, submarine or missile silo receiving the EAM, the procedure is the same. A metal box containing the day's go-codes is located somewhere on board. The box has two locks and it takes two separate keys to open it. One key is kept on the person of the highest ranking officer and the other is kept by a subordinate officer. The purpose is to prevent a madman or deranged crew member from launching a nuclear device.

Although the exact contents of the coded messages are secret, some things are known. Part of the code indicates whether it is a test message, letting the crew know if they need to open the box. If indications are that it is not a test, the two officers open up the box and take out their orders, verifying that the seals have not been tampered with. If the message is garbled, the crews then follow certain procedures to get a good copy on other frequencies or channels.

The form of the message indicates whether it has come from the President or another authorized member of the NCA (National Command Authority). If the message is authenticated as valid, the nuclear crews will not take any additional steps to validate it and will not break radio silence by asking for confirmation. Standing orders are to execute their missions immediately.

A valid order will include a multi-digit number that must be entered into a PAL (Positive Enabling Switch) before the nukes can be armed. It is practically impossible for someone to punch in random numbers and arrive at the correct enabling code. It has been deduced that there are at least sixteen million combinations of codes and the chances of a rogue crew arriving at the right one by trial and error are nonexistent.

Bomber and submarine crews execute their orders in basically the same way, but for ground-based missile crews, two keys must be turned simultaneously to launch their weapons. Many have seen this portrayed in popular movies such as "Wargames" and "Dawn's Early Light."

So far, the correct go-codes have not been given, and if man keeps his head and learns to solve the world's problems in other ways, they never will be. But until all nukes are destroyed or relegated to museums, military monitors will be able to listen in as the world stands on alert.

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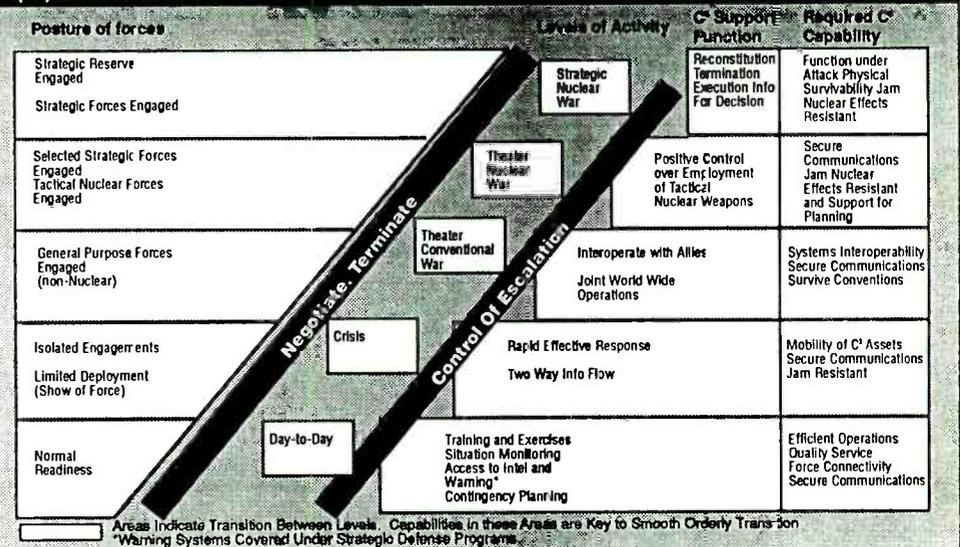
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### The Changing Role of Command, Control and Communications (C<sup>3</sup>) in Escalation Control



### MAILBAG

#### Radio Pirate

Just a short one, folks, because I rambled on and on about C-3.

An anonymous reader sent in a clipping about a Canadian Texas man who has been arrested for stealing up to \$4 million dollars worth of electronic parts from communication

towers in eight states, (Texas, Kansas, Oklahoma, New Mexico, Louisiana, Alabama, Georgia and Florida). The Granbury, Texas resident, (not named) admitted to scaling the towers, stealing antennas and radio equipment and selling them since 1986.

The thief says he has hit over 60 sites in Texas alone. Authorities are investigating the case and say the man may be part of a much larger theft ring.



## Navtex and WARC-MOB-87 Revisited

Back in September, we mentioned that a SITOR (telex) receiver can be used to print Navtex messages, which are navigational weather warnings broadcast on 518 kHz. However, I neglected to mention that the receiver has to be operated in the FEC (forward error correcting) mode. Thanks to C. Brown, radio operator aboard the tanker SS Guadalupe, for pointing out this omission and providing more Navtex updates.

The first identifier in a Navtex message refers to the station origin (see list below). There have been some changes in the second code, which identifies the type of message to follow. "I" is now for both OMEGA (a low-frequency navigation system) and differential OMEGA messages, "J" is used for SATNAV messages, "K" is used for messages regarding other navigational systems, "V, W, X, and Y" are being used for special trials, non-English broadcasts, etc. and "Z" is currently used in the United States to indicate that there is no message on hand.

Below are the scheduled times for Navtex station broadcasts.

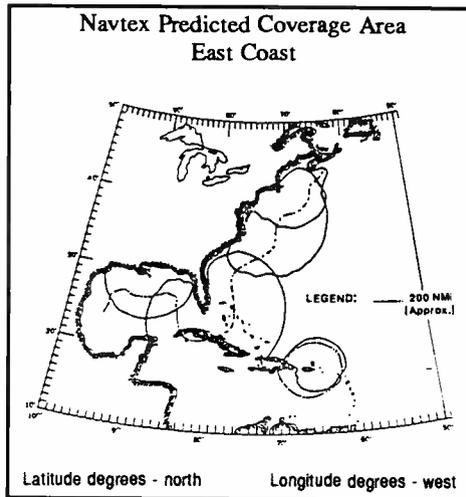


Figure 1

ID	Station	UTC
X	Adak, AK	0000, 0500, 1200, 1745
F	Antalya, Turkey	0050, 0450, 0850, 1250, 1650, 2050
F	Arkhangelsk	0200, 0600, 1000, 1400, 1800, 2200
W	Astoria, WA	0130, 0790, 1330, 1900
F	Azores	0050, 0450, 0850, 1250, 1650, 2050
E	Beringovskiy, USSR	0040, 0440, 0840, 1240, 1640, 2040
G	Bombay, India	0100, 0500, 0900, 1300, 1740, 2100
F	Boston, MA	0445, 1045, 1645, 2245
G	Cullercoats, UK	0048, 0440, 0848, 1248, 1648, 2048
V	Guam	0100, 0700, 1300, 1900
P	Haifa, Israel	0020, 0420, 0820, 1220, 1620, 2020
H	Haerboesand, Sweden	0000, 0400, 1200, 1600, 2000

L	Hong Kong	0200, 0800, 1000, 1400, 1800, 2200
O	Honolulu, HI	0040, 0640, 1240, 1640
H	Iraklion, Greece	0110, 0510, 0910, 1310, 1710, 2110
D	Istanbul, Greece	0030, 0430, 0830, 1230, 1630, 2030
I	Izmir, Turkey	0120, 0520, 0920, 1320, 1720, 2120
K	Kerkyra, Greece	0140, 0540, 0940, 1340, 1740, 2140
B	Kholmok, USSR	0010, 0410, 0810, 1210, 1610, 2010
J	Kodiak, AK	0300, 0900, 1500, 2115
L	Limnos, Greece	0150, 0550, 0950, 1350, 1750, 2150
R	Lisbon, Portugal	0250, 0650, 1050, 1450, 1850, 2250
Q	Long Beach, CA	0445, 1045, 1645, 2245
D	Magadan, USSR	0030, 0430, 0830, 1230, 1630, 2030
O	Malta	0220, 0620, 1020, 1420, 1820, 2220
B	Mariupol, USSR	0100, 0500, 0900, 1300, 1700, 2100
C	Murmansk, USSR	0120, 0520, 0920, 1320, 1720, 2120
A	Miami, FL	0000, 0600, 1200, 1800
G	New Orleans, LA	0300, 0900, 1500, 2100

S	Niton, UK	0018, 0418, 0848, 1218, 1618, 2018
A	Novorossiysk, USSR	0300, 0700, 1100, 1500, 1900, 2300
C	Odessa, USSR	0230, 0630, 1303, 1430, 1830, 2230
C	Petropavlovsk, USSR	0020, 0420, 0820, 1220, 1620, 2020
O	Portpatrick, UK	0130, 0530, 0930, 1330, 1730, 2130
N	Portsmouth, VA	0130, 0730, 1330, 1930
F	Providenya	0050, 0450, 0850, 1250, 1650, 2050
B	St. Georges, Bermuda	0100, 0700, 1300, 1900
E	Samsun, Turkey	0040, 0440, 0840, 1240, 1640, 2040
C	San Francisco, CA	0400, 1000, 1800, 2200
R	San Juan, PR	0415, 1015, 1615, 2215
Q	Split, Yugoslavia	0250, 0650, 1050, 1450, 1850, 2250
J	Stockholm, Sweden	0300, 0730, 1130, 1930, 2330
K	Sydney, NS	0040, 0540, 0940, 1340, 1740, 2140
U	Tallin, USSR	0030, 0430, 0830, 1230, 1630, 2030
M	Trondes, Cyprus	0200, 0600, 1000, 1400, 1800, 2200
B	Valparaiso, Chile	0010, 0410, 0810, 1210, 1610, 2010
J	Varna, Bulgaria	0130, 0530, 0930, 1330, 1730, 2130
A	Vladivostok, USSR	0000, 0400, 0800, 1200, 1600, 2000

Figure 1 is a map which shows the coverage area for the Navtex service on the U.S. east coast. Particularly at night, these stations can be heard considerably further.

### WARC-MOB-87 Frequency Changes

Previously, I promised that I would let you know the rationale behind last July's frequency



C. Brown

## SS Guadalupe

shifts on the HF bands. Essentially, it boils down to three reasons:

- (1) The SSB channel spacing has been changed from 3.1 kHz to 3.0 kHz.
- (2) Specific frequency assignments have been made in the bands which were newly allocated to the maritime mobile service by WARC-79.
- (3) Allocations were rebalanced among the various modes (SSB, CW, RTTY, etc.) to reflect current and expected demands for frequency use.

With the introduction of the Global Maritime Distress and Safety System, and the increased use of satellites, some reallocation of frequencies was necessary — particularly with an increase in fax and RTTY traffic. Not everybody is going to satellite; many ships are simply using more automatic means of transmission and reception.

Along with his letter about Navtex, Mr. Brown also enclosed a photo of his ship, the SS Guadalupe, a 683 foot long tanker which is owned by Sagine Towing and Transportation Co. and chartered to Phillips 66. The ship's regular ports of call include Houston, Texas, Savannah, Georgia, Wilmington, North Carolina, and Las Mareas, Puerto Rico.

The communications equipment aboard might be a typical example of the modern-day ship — an ICOMR-71 A and Drake R-4C receivers, AEA PK-232 data controller, and an IBM compatible computer. The Drake is used for reception of weather facsimile from WLO and there is a Navtex backup. While CW is used as a backup means of communications, the bulk of the communications with the charterer and the owner are by INMARSAT telex.

As always, your comments and suggestions are welcome, so "keep those cards and letters coming," and until next time, good listening.

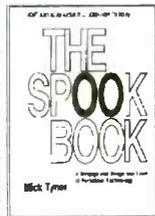


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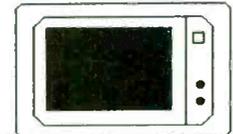
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## Antenna Answers

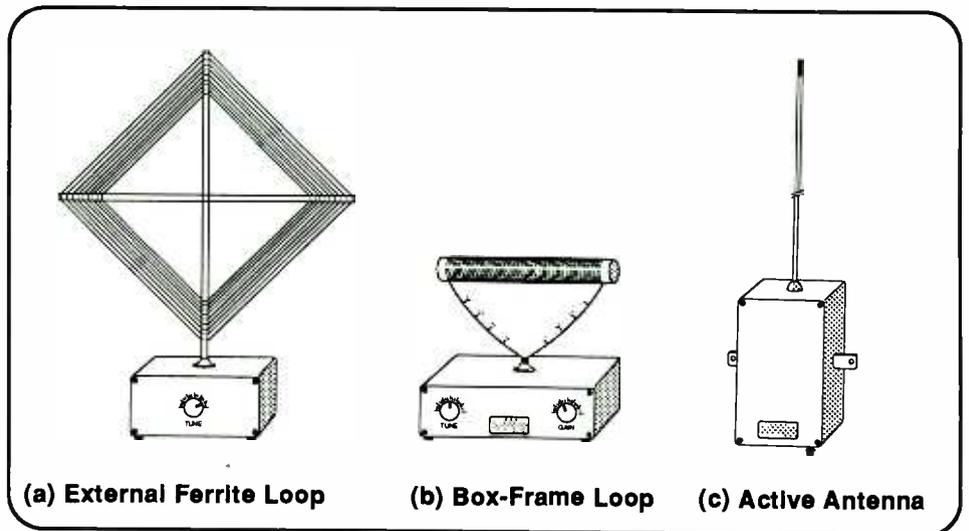
Contrary to what you might expect, bigger antennas are not always better — as far as LF reception is concerned. In fact, some of the best antennas are rather small.

Many LF newcomers start out using the same random wire antenna used on shortwave. While this will work fine for casual listening, wire antennas do have a tendency to bring in lots of noise along with the desired LF signals. The signals may be there, but you won't hear them underneath the high noise levels so common to the longwaves. This month, we'll take a look at three popular alternatives: ferrite loops, box-frame loops, and active antennas (see Figure 1).

### Loops

Anyone who's ever looked inside a transistor radio has probably seen one type of loop antenna — the ferrite loop. This is a bar (or rod) with several turns of fine wire coiled around it. The ferrite bar acts to boost the inductance of the coil, making it ideal for AM broadcast reception. Many worldband portables use just such an antenna for frequencies below approximately 1620 kHz. The loop switches in automatically (in place of the telescopic whip) as you tune below this frequency.

You've probably noticed that rotating a ferrite loop-equipped radio has a big effect on signal strength. This directivity can be a real



(a) External Ferrite Loop

(b) Box-Frame Loop

(c) Active Antenna

benefit when trying to null out noise or separate two "dueling" stations on the same frequency. Maximum response is off the broadside of the ferrite bar (as opposed to the ends). For this reason, it pays to try different positions of the radio as you scan through the band. One listener tells me that he sits in a swivel chair with his portable and just spins around to find the best reception!

Several commercially built, external ferrite loops are also available and can be added to any receiver having an external antenna jack. Many of these include a built-in preamp circuit and provisions for tilting the antenna to any desired angle. These antennas can be used on the table right beside your receiver. Despite their miniature size, ferrite loops often outperform conventional wire antennas, especially where noise is a problem.

A relative of the ferrite antenna is the box-frame loop. A long-time favorite of AM DXers, box-frame loops are also a natural for the longwaves, even when used indoors. This type of antenna lends itself well to homebrew construction although some commercially made units are also available. These loops consist of several turns of closely spaced wire wound on a wooden or other non-metallic frame and include a variable capacitor to tune the loop to resonance at the desired frequency. A preamplifier can be added to further improve sensitivity.

Like the ferrite rod, directivity and low noise reception are the chief advantages of box-frame loops. However, a box-frame design exhibits its strongest response off the plane of the loop, not the broadside. Signals from stations located to the broadside of the loop are greatly reduced or eliminated.

From my upstate New York location, I've used this feature to copy ZBB, Bahamas (396 kHz) with a very strong local beacon operating on 400 kHz. With the loop, I am able to completely null out the local beacon and hear ZBB without difficulty.

### Active Antennas

Active antennas are omni-directional. They consist of a short whip (3-5 ft.) attached to a small box containing a high gain amplifier. They are usually designed for outdoor mounting and require only a light-duty support for installation such as a vent pipe, gutter, or small mast. Because they're so easy to move around, it's wise to try several locations for best reception before choosing a permanent mounting spot. Sometimes a move of just 20-30 feet can make a big difference in noise pick-up.

A drawback with some active antennas is AM broadcast interference. If you live near a broadcast transmitter, this could be a problem unless the antenna has adequate BC band filtering. If at all possible, you should try before you buy. Active antennas have also become popular for shortwave and even VHF listening. Be sure the one you use is designed to cover LF.

If you'd like to try your hand at building one of the antennas described here, Ken Cornell's *The Low and Medium Frequency Scrapbook* is a great place to start. In here you'll find scores of LF construction ideas and info on the license-free 160-190 kHz band. The address for the *Scrapbook* is: 225 Baltimore Avenue, Dept. MT, Pt. Pleasant Beach, NJ 08742.

### A New Merger

A while back, I reported on the *Northern Observer* experimenter's newsletter put out by Herb Balfour of Richmond Hill, Ontario and also *The Lowdown* published by the Longwave Club of America. Effective this month, the two publications have been combined into a new, larger *Lowdown*, according to Bill Oliver of the LWCA. The new dues will be \$18 dollars a year. The address for *The Lowdown* will remain the same: 45 Wildflower Rd., Dept. MT, Levittown, PA 19057.

### Suppliers of LF Antennas

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LF Engineering  
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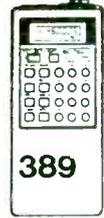
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## The World's Playground

An amazing tale began with a letter in the mail. A cassette dub of an old transcription recording came my way from Michael Csontos in Lima, New York. In the days before recording tape and tape recorders were invented, radio stations used large phonograph discs to record shows and announcements. Michael had a simple request concerning his transcription disk: "When was it recorded?"

Fortunately, his recording contained quite a few clues, including several station identifications. But the "final out" piqued my curiosity the most. *"This concludes our broadcast activities for the present day. Station WPG is owned and operated by The City of Atlantic City...Our station operates on a cleared national channel, with an assigned frequency of eleven hundred kilocycles, as authorized by The Federal Communications Commission...This is Norman Reed speaking for station WPG, Atlantic City..."*

With these clues, the search was off and running, and I had become as curious as Michael. Atlantic City no longer had a station operating on 1100 kHz, or a station with the call letters WPG. An old RCA radio information book of mine, which included a detailed station listing from 1941, showed no sign of the station either. The Federal Radio Commission had become The Federal Communications Commission in 1934, and the sign off announcement mentioned the FCC. Norman Reed's voice was recorded after 1934, but when? The plot thickened!

Every Sherlock Holmes needs a Watson, and I found mine! WPG has disappeared, but another station was built to continue its legacy — WFPG. Bill Cain works at WFPG as an account executive and doubles as the station's historian. Bill told me WPG had been on the air from 1925 through 1939, operated by The City of Atlantic City as a promotional tool for their tourist trade. His files held a wealth of information that filled in all the gaps in the story; and his amazing collection of antique airchecks brought the past back to life! The saga of WPG unfolded, and it was a fascinating one!

WPG was quite a showcase in the 1920s and 1930s. Listeners from all over the country tuned in to hear who was playing at America's premiere vacation resort. Big bands, singers, and variety acts flocked to Atlantic City year 'round; and their first stop would be a visit to the city's radio station. A WPG worksheet, from the summer of 1935, showed remote pickups featuring bands like Alex Bertha's Steel Pier Orchestra and Eddy Morgan's Million Dollar Pier Orchestra, along with almost every celebrity in the country!

But the 50,000 watt clear channel powerhouse was never a financial success. In 1939, the city's government decided to discontinue oper-

ating the station. WPG had become too expensive to operate and was no longer a cost effective means of publicizing Atlantic City.

The station probably could have brought in millions of dollars on the auction block, but it was not sold. Their license was simply returned to the FCC. The frequency was later reassigned to New York City and became the home of WNEW. When the AM broadcast band expanded to 1500 kHz in the early forties, WNEW moved to 1130 kHz where it operates to this day with 50,000 watts.

In 1940, radio station WFPG went on the air with 250 watts at 1420 on the dial. Owned by the Neptune Broadcasting Corporation, the new station wanted to continue the tradition of WPG that was so sorely missed. When radio stations using three letter call signs leave the air their identities are retired forever, so Neptune was granted the closest four letter call available: WFPG, standing for "World Famous Play Ground."

One of their early press releases, distributed in August of 1940, described the station: *"Our facility employs RCA matched equipment from studio microphones to antenna! The unusually strong volume, depth, and clarity of tone are in a great measure due to the fact that the station is over the ocean. Its complete engineering and transmitting facilities have been located on the Steel Pier, with the system grounded deep in the ocean's bed. Sea water has been discovered to be the most perfect conductor of radio waves. WFPG has the distinction of being the only radio station in the world out over the ocean. The success of its operation will no doubt lead to the construction of stations at other coastal points."*

WFPG has been broadcasting on 1450 kHz ever since FCC reallocations took place a few years later.

Situated on the famous Steel Pier, the new WFPG was ready to continue the precedent WPG had started. A large record library was assembled, and remote broadcast lines were installed to several points on the Steel Pier, Hamid's Million Dollar Pier, Chalfonte-Haddon Hall, and many other venues around town. News teletype machines, considered a luxury, provided 24 hour a day reports from the International News Service.

Listeners enjoyed live broadcasts of a wide variety of events in Atlantic City, like the Ice Capades of 1940. Every morning, except Sunday, Albert Lyneer coaxed the city out of bed with his "Rise and Shine" exercise program. If you were ready by eight AM, you could join Albert live on the Steel Pier for fifteen minutes



WFPG studio building. Inset: General Sales Mgr. Tom Reagan.

of calisthenics! Big bands loved being guests at WFPG. Charlie Barnett, Woody Herman, Guy Lombardo, and Sammy Kaye all graced the airwaves on 1450 AM.

When it first signed on the air, WFPG had no network affiliation. Eventually, they signed up with the Red and the Blue Radio Networks, and followed the Blue Network when it became the American Broadcasting Company. In 1950, ABC used the facilities of WFPG for the first nationwide broadcast of The Miss America Pageant, live from the Atlantic City Convention Center. Gears shifted in 1951 when WFPG dropped ABC to become New Jersey's only CBS affiliate, a title it holds to this day.

In 1978, WFPG changed its call letters to what Atlantic City's gamblers love to do: win! Gambling had become legalized at the resort, and the station's owners wanted to continue the station's image as Atlantic City's top radio station. For almost ten years, 1450 AM was known as WIIN. The historic call sign, WFPG, continued to be used by their FM outlet on 96.9 MHz.

As time went by, more and more listeners switched to FM radio. "Lite 95.9" had become a dominant force, presenting a light rock format, enjoyed by a wide and diverse audience. Holding on to AM listeners became difficult. To take advantage of a winning image, WIIN returned to its original call letters in 1987 and, once again, became WFPG.

Today, each station is independently programmed, with WFPG-AM broadcasting beautiful music for a slightly older audience than its FM twin. Last year, 1000-watt WFPG celebrated 50 years of broadcasting to central and southern New Jersey and continues to be the number one station in its area. It was even recently heard in Helsinki, Finland!

So, Michael, it seems WPG's Norman Reed probably sat down to his microphone and recorded your transcription disk sometime between 1934 and 1938. Thanks for a fascinating question! Many thanks to Bill Cain at WFPG, and his friend Ed Davis, author of "The Atlantic City Diary, A Century Of Memories 1880-1980," for all their help unveiling this mystery!

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Quotrak is one of a variety of services that are carried on FM radio stations' subcarriers. Along with regular programming heard in your car or at home, many FM broadcasters transmit up to three additional services of music, voice, or data. (See "Experimenter's Workshop" for more on FM subcarriers.) Stations all over the United States and Canada are transmitting Quotrek's data service as you're reading this article, and should you be out of range, it can be adapted for satellite reception easily. For more information, call Quotrek toll free: 1-800-367-4670.

**Mailbag**

Strangulation caused two months of dead air! The beautiful music abruptly ended at KBRN 1500 AM in Boerne, Texas, when a four-foot-long bull snake wrapped itself around their transmitter. The explosive result resembled a Fourth-of-July fireworks display or a nuclear meltdown! The winner of the battle had to be the snake, who slithered away unscathed.

"That's some snake!" exclaimed KBRN General Manager Jack Moore after seeing the reptile near their transmitter shack. Taking advantage of his misfortune, Jack returned his station to the air with a great promotion! KBRN enticed listeners to join "The Great Snake Hunt," when it came back on the air eight weeks later. All you had to do was sign up for a KBRN snake hunting license, then listen for your name on the air and win a variety of prizes. That sly snake in San Antonio, Jim Boehm, sent us these details.

**New Station Grants**

Here are the latest stations in our nation, as reported by the *M Street Journal*: Martinez, GA 107.7; American Falls, ID 104.1; Hillsboro, IL 99.7; Alexandria, LA 91.7; Hillman, MI 94.9; Cloquet, MN 96.5; Pelican Rapids, MN 104.1; Kill Devil Hills, NC 104.1; Hawley, PA 105.3; Oliver, PA 94.9; Sumter, SC 94.7; Charleston-Belle, WV 90.9; and Seymour, WI 104.3.

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**International Bandscan**

Will Australians ever warm up to FM radio? For the last sixty years or more, the listeners down under have been loyal to their AM radios. Only within the last few years has FM become a serious threat to the good old medium wave broadcast band. Slow action by the Australian government to allocate FM frequencies and the mountainous topography around major cities like Sydney has hampered development.

Getting a license to operate on FM isn't easy, either. Radio stations 2WS and 2UW have each paid over eight million dollars for their FM authorizations in the Sydney area, with no guarantees of covering the entire city or gaining a large audience. No wonder most Australian stations broadcast in AM stereo. In Melbourne, AM station 3MP shot from last place to first place in popularity when 3KZ and 3TT switched to FM broadcasting.

In spite of adverse conditions, Australian radio continues to grow. The Minister for Transport and Communications, Kim Beazley, recently announced that Australia plans to license an additional 25 new stations nationwide. Currently, another 11 licenses have yet to be filled, with 17 new stations appearing on the air in the last twelve months.

**Credits**

Many thanks to Michael Csontos for inspiring our research concerning WFPG. Also thanks to the *M Street Journal*, *Broadcasting Magazine*, the *British DX Club*, and readers Jim Boehm, Malcolm Kaufman, David Parsons, M.L. Cauthon III, and Ron Carruthers. Until next month, happy trails!

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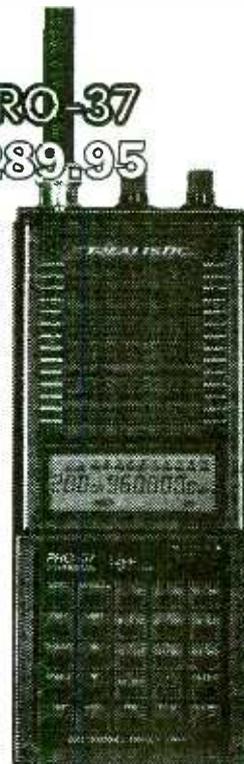
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## Breaking the Rules

There is not much chance of working a lot of DX, if you don't have a beam — everyone knows that. That truth has been around since the early 30's when high gain antennas were developed. If you have a big beam, you can work DX with flea power, but if the antenna is modest, you should run at least a full gallon (legal power limit). That truth, too, has been around for too long.

Without question, a good directional array mounted high on a tower will often give the amateur an advantage. And generally speaking, any directional antenna will provide some advantage at any height above ground over a simple antenna at the same height.

### All That Glitters is Not Gold

Some time ago, as I was going through my stacks of QSL cards, something caught my eye. Roughly half of my DX contacts were with amateurs running a lot less than a hundred watts. For awhile, I felt pretty smug because I had two towers and beams for 20 through 2 meters; so I knew I had the advantage over a lot of hams. True, the station never ran over 100 watts, but I could aim my signal at any portion of the earth I desired, and everyone knew that was the secret to success!

A move to a new home eliminated the beams temporarily, but the desire to be on the air was still there. On the roof of the new home was a TV antenna mounted on top of two ten-foot mast sections. A quick trip to the roof soon turned that TV antenna into a twenty foot vertical fed with RG 58. There was only one radial about 25 feet or so long, but I figured, "what the heck; all I want to do is work some locals."

Running the coax into my old matchbox, the rig loaded up just fine into the makeshift antenna, so I called CQ on 20 meters and promptly worked a handful of stations in Europe. Over the next several weeks, stations on all continents were worked with no more trouble than I had with the beam. I was sure something was wrong because the rig was a DX-20 and only ran 35 watts. The results with this simple antenna on 40 meters blew me away! My first contact was with a station in New Zealand.

### Maybe the Sages Were Wrong?

As my temporary station continued to work DX on a regular basis, I was assured by the local DX sages that I had an exceptional location, and when the beams went back up, W3AZR (my call in those days) would really tear up the bands. Well, the beams went back up the following spring, and they did make a difference (sometimes), at other times, the 20 footer was actually better than the beam!

### So what are you trying to say, Ike?

The message is that you don't need a beam to work a lot of DX and enjoy the hobby of ham radio. What you need is an antenna that is matched! (Oh yes, you knew there was a catch!) How the sam hill do you match an antenna?

Well, some antennas use loading coils, or resonators, some use wire extensions to make the antenna longer physically. But, the easiest way is to use a transmatch, or antenna tuner, as they are sometimes called. A transmatch is quite simple to build — every amateur handbook has a few circuits for them — or just go out and buy one. There are many units on the market, and all work in pretty much the same way. MFJ is one manufacturer that comes to mind; they have a wide variety of transmatch units which work well. MFG is located at Box 494, Dept. MT, Mississippi State, MS 39762 — Send for a free catalog.

### Save Money

One of the best simple antennas I have ever used is a 24 foot long vertical, fed at the base with 50 ohm coax via a transmatch. If the antenna is ground mounted, try to put in as good a ground system as possible. Although a single ground rod 4 to 6 feet long will permit you to make a lot of contacts, try to put down at least four radials 20 to 50 feet long (don't worry if they are not evenly spaced).

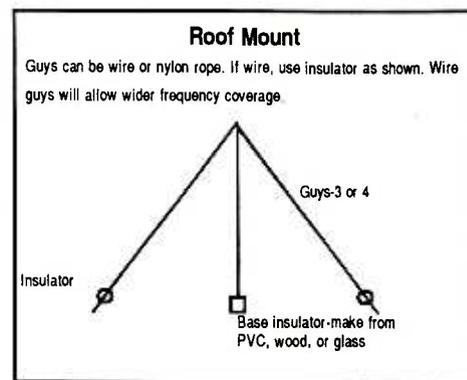
If the antenna is mounted ten feet or more above the ground, two radials 20 to 30 feet long will work well. You should be able to get out fine on all bands from 10 to 40 meters, and in most cases the antenna will work on 80 meters, too.

You can make this antenna from aluminum tubing, wire, old soup cans, or anything that will conduct electricity. If you can't put it up vertically, use it horizontally; it will work. Mount it on the eave of your house if possible, or on the roof up as high as you can get it. Use eave mounts and insulate the antenna with PVC pipe.

No, twenty-four feet is not a magic number, it is simply a length which I have found easy to load on the HF bands from ten to 40 meters. If all you have is ten feet or six, use it. Chances are it will work well, at least on the higher bands.

I have recently put a 190 foot loop antenna up on my city lot. The bottom half of the antenna is underground (one or two inches). It is not resonant on any ham band, and is bent at right angles at one point, but it works well on 160 and 80 as well as 40 through 15. It is a quiet antenna (being grounded), and allows me to work all HF bands, thanks to using a transmatch.

Using a transmatch I have successfully loaded and used a wide variety of conductors as antennas. Naturally, longer is better, but if longer can't be had, use whatever you have available.



A while ago, I had a chance to use a highly publicized commercial antenna. The price of this unit is over \$200, and it works well! The manufacturer has provided the amateur with a smooth working antenna that does not require a transmatch and will cover the bands from 10 through 20 plus 12 and 17 meters. When compared against the twenty-four foot vertical, however, not a single station indicated any difference between the two antennas. The twenty-four foot vertical costs twenty-five bucks to build.

Yes, I know a transmatch will cost \$75 to \$150, but it will be useful in many situations and save your bacon over and over again. Don't be misled by well meaning friends who tell you simple antennas won't do the job. Get a transmatch, learn to use it and have a blast working the world with whatever antenna you can put up.

There is a lot more to the simple antenna story, and future columns will illustrate other types of simple but useful radiators.

### VOA on the Ham Bands?

During February, the VOA is celebrating fifty years on the air with a contest in the ham bands. All amateurs and SWLs are eligible to receive awards and QSL cards.

Work or hear Club Station K3EKA and receive a special 50th anniversary QSL card.

### Station Designations

VOA amateur stations in the USA will sign their call as / (slash) VOA and stations outside the USA will announce they are VOA 50th anniversary stations.

Each station will tell you what his point value is (it is decided by the VOA club). You can only work the station on one band; there are no multipliers.

An exchange will consist of callsign, signal report, QTH (state, province, territory, or country), and point value.

Send your log to VOA Amateur Radio Club, K3EKA, 330 Independence Ave. SW, VOA Mail Room-Code 73, Washington, DC 20547, before April 30, 1992.

Logs should contain VOA station worked (heard) report sent and received, QTH sent and received, and the point value.

# Rob Swindia

## Ham DX Tips

Hope that everyone had happy holidays and that your New Year is a pleasant one. A new year calls for new DX opportunities, and here are a few:

**BAHAMAS** C6AA (Donald D. Thompson, Box F, 1660 Freeport, Grand Bahama Island, Bahamas) has been keeping RTTY fans happy by appearing on or near 14085 kHz at 0015 UTC most days.

**BALERIC ISLANDS** EA6ZY (Stanley Ingram, Box 89, Santa Eulalia, 07840 Ibiza, Balearic Islands, Spain) has been meeting friends on 24975 kHz at 1530 UTC daily.

**COCOS KEELING IS** VK9YJ has been showing on 14195 kHz at 1300 UTC just about every day. QSLs and reports go to his QSL manager: P.R. James, Box 60, Lara 3212, Victoria, Australia.

**ENGLAND** G3PQA (John P. Rogers, Dromore, Strande Castle Lane, Cookham, England, UK) has been on CW and SSB on 1833 kHz trying to work N. Americans and other Europeans at 0342 UTC most days.

**GUAM** KH2D (James D. Kehler, P.O. Box 445, Agana, GU 96910) has been keeping CW fans happy on 3510 kHz daily at 1200 UTC.

**KUWAIT** 9K2ZZ has been keeping the following schedule: 2200 UTC on 14200 kHz. 0330-he can be found on either 10105 to 10110 kHz CW or 14250 SSB, at 1530 UTC he can be found on 24895 kHz.

**NAVASSA** 17 to 23 January will see an all band, all mode DX-pedition from here by K5MK/KP1, KW2P/KP1, WA4DAN/KP1, and N0TG/KP1, the noted Caribbean hopping crew. Look for them on or near 1830, 3795, 7070, 14195, 21295, and 28495 kHz SSB; and 1811, 3505, 7005, 14025, 21025, and 28025 kHz CW; for RTTY fans, check 7090, 14090, 21090, and 28090 kHz. QSL to: Randy Rowe, N0TG, 2120 Reverchon Dr., Arlington, TX 76017.

**NORWAY** LA6WEA (Kaare Olufsen, Sigurd Hersesgt 18, N-8800 Sandnessjoen, Norway) 3795 kHz at 1400 UTC most days, as he looks for pacific and west coast of North America contacts.

**PITCAIRN ISLAND** My friend, Tom Christian, VR6TC (Yes, he is a direct descendant of Fletcher Christian of Mutiny on the Bounty fame) appears on 21250 kHz at 0130 UTC nightly. If you are lucky enough to work Tom or hear him describe the daily life of this remote Pacific island, you can send your QSL requests to: W6HS, Charles M. Moser, 10861 Langdon Ave., Mission Hills, CA 91345. W6HS is Tom's QSL manager.

**SOUTH COOKS** ZK1XC (located on Rarotonga Island) inhabits 28480 kHz at 0100 UTC. His QSL manager is K6PBT, Charles E. Stobel, P.O. Box 73, Lockford, CA 95237.

**SRI LANKA** JJ1VKL/4S7 is a low band enthusiast and is trying to contact as many countries, from here, on 160 meters as he can. He waits around 1829 kHz daily at his sunrise to call for contacts. If you hear or work him, (his signals will probably be CW,) QSL to: Mitsuru Haraoka, C/O KHK J.V., Box 1, Belihuloya, Sri Lanka.

Remember, it may be cold outside, but you can travel far without leaving the warmth of your home via amateur radio. Happy New Year and 73's de Rob.

Awards will be to high scoring ham/SWL in each DXCC country, US state, and US or Canadian territory or province.

Suggested frequencies are: SSB 3920, 7260, 14316, 21416, and 28416. CW frequencies are: 3550, 3725, 7050, 7125, 14050, 21050, 28050, and 28150.

### Hams on an Upswing

The FCC has released amateur licensing figures for the end of September, the end of the federal fiscal year. Result: "The pendulum has swung strongly toward the Technician license being the gateway of choice into amateur radio," ARRL Vice President Dave Sumner, K1ZZ, said.

In the twelve months beginning October 1990, there were 38,363 new amateur licenses

issued and 30,825 upgrades. Both figures represent increases over past years. For comparison, in the twelve months beginning October 1989, there were 26,134 new licenses issued and 29,699 upgrades.

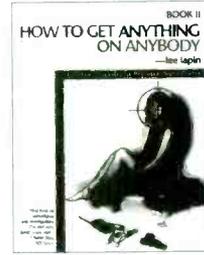
During September, there were only 679 first-time Novice licenses issued, compared with 1680 Technicians. In all, 2,407 new amateurs joined the ranks during the month, the lowest number since February.

"However, the backlog of unprocessed applications at the FCC in Gettysburg grew by more than 1200 during the month, suggesting that the dip is more the result of that than of flagging interest," Sumner said.

That's all for January, folks, Happy New Year one and all!

73 de Ike, N3IK

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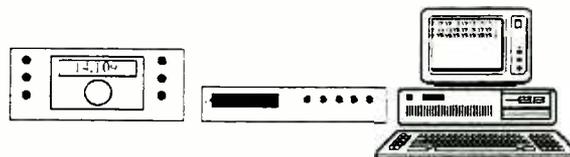
21 Garfield Street Newington, CT 06111



### MOVING?

Send notification of your new address as soon as you know it so you won't lose a single issue — or have your 2nd class mail forwarded.

## New Software and Hardware Enhances the Hobby in '92



There are several programs which enable the IBM PC or compatible computers to receive RTTY and other modes. Unfortunately, commercial software can cost anywhere from \$50 to \$100. A software package to decode RTTY requires a simple connector that plugs into the serial port on the rear of the computer. The software uses a technique called zero crossing detection to decode the RTTY. The hook-up is easy and the circuit is inexpensive to build; however, the performance of these commercial packages on noisy HF frequencies is poor. The detector doesn't rely on filter circuits (such as those used in an M7000 or Wavecom W4010) to clean up the signal and to give error free text.

In other words, you can pay more than \$50 and get something that doesn't work very well or you may have to spend big bucks to get a decent unit. But, what if you later decide you would rather listen to Voice of America than to watch RYRY's or QUICK BROWN FOXES? You're stuck with a big investment!

### HAMCOM

Cheer up; some of these problems may be a thing of the past. I just received the latest copy of *HAMCOM*, which is a public domain program. Like the commercial software, it allows you to copy RTTY using an IBM PC. It also uses a zero crossing detector, but this one works and if the program doesn't fit your needs, you only lost a few bucks!

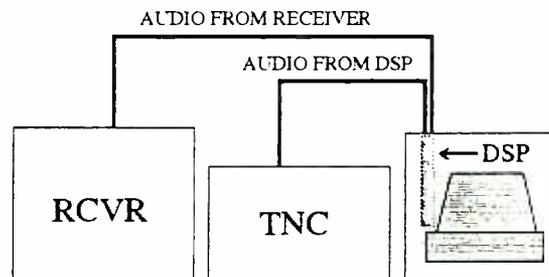
The software is a Windows-like program that has pulldown menus, and it can both send and receive RTTY. You can use it with your PC and ham rig with a simple interface that's explained in the pulldown help window. There's even a schematic in the window that shows you how to build it.

Another clever feature is an on screen tuning meter that allows you to tune in the mark/space tones without touching the receiver. If you want a "high tech" display, you can select the scope function that looks and feels like a digital storage tuning scope. But that's not all!

There's a spectrum analyzer that allows you to see audio signals from about 300 to 3,000 Hz. According to the developer of the display, it's a serious spectrum analyzer, but I just enjoy watching it!

**Figure 2:** DSP circuits similar to this one will be available this year. They will enhance the hobby and open a new technology in data communications.

**Figure 1:** The DSP plugs inside the computer and requires a simple audio hook-up.



The software can copy CW, RTTY, and ASCII modes; you can capture text, create and send user files, call CQ or send a QBF test message.

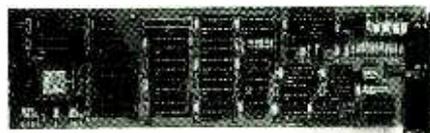
In spite of the zero crossing detector, the software does a fair job copying RTTY in noisy conditions, much better than some commercial software. If you want perfect copy, you can interface the computer with your favorite decoder like the MFJ interface or even an M7000. The hook-up doesn't require the ZC detector. However, you may need an interface that will convert the M7000's decoder output on J2 pin 8 to an RS232 level.

If you would like a copy of Hamcom, send \$7.00 (to cover the cost of the disk, disk mailer, and postage) to: Jack Albert, 203 York Pl., New Lenox, IL, 60451. I can also be reached via the packet radio mailbox system. Send your error reports and other comments to "DL5YEC@DB0BQ". If you have access to e-mail try "uunet!nixbur!schroeder.pad" or "jwa@tellab2.tellabs.com". Via Usenet you can post HamCom related questions to newsgroup "rec.ham-radio".

### More DSP Updates

I can't help talking about the latest developments in the Digital Signal Processor project in which I'm involved. It's coming along slowly but surely since the last report in October! We have developed several modems and are working on more software. The best part of the project is the excitement of pioneering a new concept in DSP design for hams and SWLs.

The modems that we have just finished can do some amazing things. Remember, in this case a "modem" is a computer program that runs the DSP. They are actually files that are known as



binary or "BIN" files, created by the software engineer. Unless you have seen or heard a DSP you can't really appreciate all it can do.

If you're a RTTY hobbyist, you already know what problems you have when the band gets noisy. First, let's say you're copying RTTY and the band goes to the dogs! You load up the DSP software, press a few keys on your computer and bingo! The noise is gone... completely gone!

That's the magic of a DSP. My setup connects between the packet TNC's audio input and my receiver's audio output so the DSP works as a filter. I also have a Radio Shack 277-1008 speaker amplifier to monitor the DSP's audio output.

The software that we have can completely eliminate the noise on a channel by regenerating the FSK signal. Of course, there are limitations. If the noise is very high, the DSP will still regenerate the signal and you will get errors. But the errors will be fewer and the improvement will be about 10 dB. That's the equivalent of the transmitting station doubling their power twice (from 1000 watts to 4000 watts).

The DSP will also allow you to select audio filters that can greatly enhance RTTY if you don't want to use the regenerate mode. The same filters can also be used for CW operation. A second filter that's built into the DSP software can clean up the signal so well that the noise seems to completely disappear. This mode is not the same as the regeneration mode; it's just a very good filter!

Other features control the DSP's AGC (Automatic Gain Control), set the fixed gain, or transmit parameters and allow you to tune the filters. The tune control changes both filters together in 10 Hz steps. All of the controlling is done using the software and on-screen menus.

I have the DSP connected to my PK232 for HF packet operation. It allows me to copy twice as many packets and I can copy signals that are in the noise. In fact, most of the time, I copy everybody's retries!

As I have said before, "The DSP will be the technology of the 90's" and in 1992 you will probably have one hooked up to your packet or RTTY equipment.

## Attention QSL Collectors!

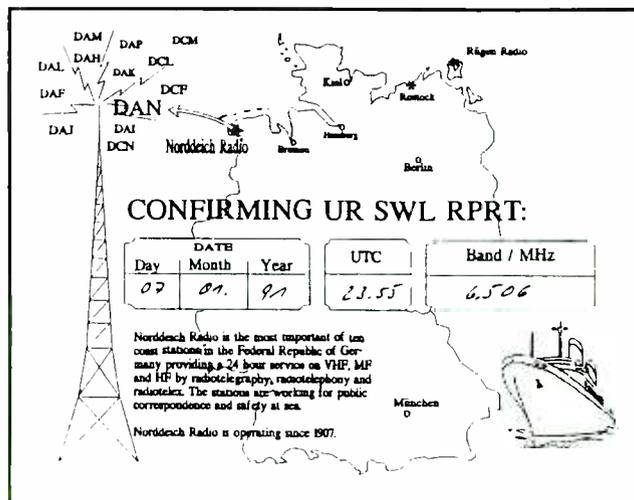
1992 is here and time for resolutions ... go after those QSLs and make this your best year yet. We'll be printing some QSL tips from time to time to help you out. Good luck!

USPS are you listening? QSLs from Radio Sweden are being received here in the US in a record eight days! Let me know if you beat the record from S-105 10 Stockholm, Sweden. Their sunrise scenery card is a knockout.

Deutsche Welle continues to send out full data cards with transmitter sites noted. Send your reports to P.O. Box 10 04 44, W-5000 Cologne 1, Germany.

Voice of America, Bethany, Ohio is also directly QSLing frequencies. Send your program details to Bethany Relay Station, VOA, P.O. Box 227, Mason, OH 45040

*Preston Sewell of Franklin, NJ received this QSL from Norddeich Radio confirming his reception.*



## AIRCRAFT TRAFFIC

GETTY 05, 13.5325 MHz. (USAF KC-135Q Stratotanker). Full data prepared QSL card verified by LTC Gregory J. Aaim. Received in 18 days for an English utility report and mint postage. Aircraft address: Air Refueling Group, 380th Bomb Wing, Plattsburgh AFB, NY 12903. (Patrick O'Connor, Hinsdale, NH)

KLM Amsterdam-Flight # 787, 17940 kHz. Full data letter and souvenirs, verified by Peter Andriess. Received in 133 days for an English follow-up report, and 2 IRCs. Airline address: KLM Royal Dutch Airlines, Postbus 7700, 1117 ZL, Luchthaven Schiphol Airport, Netherlands. (Bill Battles, East Kingston, NH)

MOTLEY 51, 33.8200 MHz. (USMC Reserve A-4M). Full data prepared QSL card verified by Maj. R.W. Ghignia-Executive Officer VMA-322. Aircraft address: 49th MAG USMCR, South Weymouth Naval Air Station, MA 02190. (O'Connor, NH)

## BRAZIL

Radio Bras, 17755 kHz. Full data QSL on Bras letterhead, verified by the station Director. Received in 30 days for an English report. Station address: P.O. Box 08840, Brasilia, DF, Brazil. (Arsenio Fornaro, Brooklyn, NY)

## FRANCE

Radio France Int'l., 17850 kHz. Full data QSL card, unsigned. Received in 28 days for an English report. Station address: 116 Ave du Pres. Kennedy, 75016 Paris, France. (Edward J. Ahern, Wheaton, IL)

## GERMANY

Norddeich Radio, 6506.4 kHz USB. Full data letter with map and decal. Received in 23 days for an English report, prepared QSL card, and one IRC. Station address: Norddeich Marine Radio, Postfach 1190, D-2980, Norden 1, Germany. Preston O. Sewell Jr., Franklin, NJ

## GREECE

Voice of Greece, 9420 kHz. Full data "Aegean Sea" QSL card, unsigned. Received in 24 days for an English follow-up report. Station address: Messogion 432 Str.-Ag Paraskevi, Athens 153 42, Greece. (Ed Mayberry, Cedar Park, TX)

## GREENLAND

XPH-13201, USAF Global Command Control System Thule, 13.201 MHz. Full data QSL card verified by Robert E. Kilburn- Communications Operation Supervisor. Received in 52 days for an English Utility report and mint postage. Station address: FELEC Services Inc., BMEWS Site 1, Box 5, APO New York, NY 09023. (O'Connor, NH)

## GUAM

KTWR, 11805 kHz. Full data QSL of Production Staff photo, verified by Kathy Gregowske. Received in 27 days for an English report and mint U.S. postage. Station address: P.O. Box CC, Agana, Guam 96910. (Sam Wright, Biloxi, MS)

## IRAN

Voice of the Islamic Rep., 6035/9022 kHz. Full data QSL on station letterhead and schedule. Also received a seven volume set of books on the Islamic culture and laws. Received for an English report and a personal letter. Station address: External Services, P.O. Box 3333, Tehran, Islamic Rep. of Iran. (Randall W. Morrison, Manchester, TN) *Judge Morrison also had his letter read over their edition of 'Listener's Special'.* - ed.

## MALAYSIA

Radio TV Malaysia-Sarawak, RTM-Sibu, 5005 kHz. Full data verified letter, signed by Clement Stia. Received in 434 days after one follow-up English report, and mint postage. Station address: Divisional Controller, Broadcasting Dept., Jabatan Penyiaran, Bangunan Penyiaran, 96009 Sibu, Sarawak, Malaysia. (Mike Hardester, Jacksonville, NC)

## NORWAY

Radio Norway, 9615 kHz. No data QSL # 17, unsigned, with schedules, and station decals. Received in 25 days for an English report and 2 IRCs. Station address: N-0340, Oslo 3, Norway. (Sewell, NJ)

## PIRATE

Radio Mauser World Wide, 7495 kHz USB. Full data QSL card, unsigned. Received in 12 days for an English report, and an SASE. Station address: P.O. Box 55553, Trenton, NJ 08638. (Sewell, NJ)

## SHIP TRAFFIC

PAN TIDE-D8ZP, 12.576 kHz (Bulk Carrier). Full data prepared QSL card verified by Bag Su Beom-Radio Officer. Received in 79 days for an English Utility report and one IRC. Ship address: c/o Panobulk America Inc., 9th Floor, 65 Broadway, New York, NY 10006. (O'Connor, NH)

PACIFIC HUNTER-D5TT, 12.590 kHz (Product Oil Tanker). Full data prepared QSL card verified with an illegible signature. Received in 85 days for an English Utility report and mint postage. Ship address: 1114 Avenue of the Americas, New York, NY 10036. (O'Connor, NH)

MAGLEBY MAERSK- OUSH2, 156.65 MHz (Container). Full data verified letter. Received in 23 days for an English Utility report and one U.S. dollar. Ship address: Moller, AP- Esplanaden 50, DK-1098 Copenhagen K., Denmark. (Hank Holbrook, Dunkirk, MD)

## SOUTH AFRICA

Radio RSA, 11900 kHz. Full data scenery card, with illegible signature and personal note. Received in 48 days for an English report. Station address: Piet Meyer Bldg., Henley Rd., Broadcasting Centre, Johannesburg 2000, South Africa. (Scott Billingsley, Camden, AR)

## SPAIN

Spanish Nat'l Radio, 9630, 11880 kHz. Full data card of the Picasso Museum, with illegible signature. Received in 32 days for an English report. Station address: English Service for N.A., Apartado 156.202, 28080 Madrid, Spain. (Nicholas P. Adams, Newark, NJ)

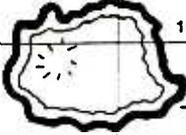
## TURKEY

Voice of Turkey, 9445 kHz. Full data QSL card of Castle Harbour, unsigned. Received in 32 days for an English report. Station address: Turkish Radio-TV Corp., P.K. 333-06, 443, Yenisehir Ankara, Turkey, (Adams, NJ)

## The New War?

A State Department friend tells me people in Washington have been spotted wearing buttons that read "Veteran of the Cold War." Well, if the Soviets no longer bear such careful watching that doesn't mean Western intelligence agencies are at rest! Believe it or not, we recently received an anonymous report that British Intelligence, MI-5, had closed down the Cambridge, England, maildrop of Scottish pirate Weekend Music Radio. Should we now consider pirate broadcasters the new adversary of the NATO alliance?

We understand Jack Russel of Weekend Music Radio continues to broadcast. You might find him UTC Sundays on 15043 or 6240. He also has a new address, and if you catch one of his transmissions Jack will let you know where to send your report. He is an excellent verifier.

170° W	<b>The voice of Gilligan</b>
	10° S
<p>Best wishes from The Skipper Gilligan The Professor Marianne Ginger Thurston Howell III Mrs. (Looney) Howell</p>	<p>This will verify your reception of <i>The Voice of Gilligan</i>, free radio from the South Pacific.</p> <p>Date: <u>8/25/91</u> Time: <u>0400-0405 UTC</u> Freq: <u>7415 KHZ</u> Power: <u>250 W</u> Comments: <u>THANKS FOR YOUR FINE RPT</u> <u>GLENN.</u></p>
<p>QSL Nr. <u>6</u></p>	<p><u>Capt Harry</u> Capt. Harry Bush      <u>1st Mate Jim Shooz</u></p>

## Radio Caroline

Offshore Europirate Radio Caroline remains off the air, but news of the station continues. Bob Thomas writes that he has heard a strong rumor that Caroline's ship the ROSS REVENGE may be about to become involved in a new venture. Rock artist Bob Geldorf is allegedly involved, and a license to legally transmit will be sought from a non-ITU member nation.

England's Martin Lester notes two companies in England by the names Radio Caroline, Ltd., and Radio Caroline U.K., Ltd., are not connected with the offshore broadcast operation. However, both are now expected to bid for local and national commercial radio franchises when they are advertised. Even if the original Caroline never returns, it sounds as if others hope to cash in on its former popularity.

## God Needs a License!

So says the Canadian Radio-Television and Telecommunications Division along with the Department of Communications. These officials are unhappy about several fundamentalist pirate TV stations that have popped up in Alberta, British Columbia, Ontario, and one Indian reservation in the West. About half a dozen stations currently transmit. Most, like Channel 15 in Lethbridge, Alberta, appear to be retransmitting programs of the Trinity Broadcasting Network which they can pick up by satellite.

So far the devout TV pirates have ignored CRTC orders to cease. They say it is their duty to continue. The CRTC seems reluctant to get caught in the difficult situation of issuing fines to churches. Our thanks for Gerry Watt of Nova Scotia for sending the report on this from Canada's *Globe and Mail*.

## Catch Them While You Can:

You never know how long a pirate is going to be around. Many voluntarily leave the air.

Glenn Waber added a Voice of Gilligan QSL to his collection.

Others fall victim to the FCC. With the exception of a few major metropolitan areas, FM pirates are especially difficult to hear because of their short range. However, in Texas Karen Cruse caught about three minutes of a combined broadcast for KROX and KFRE. She heard a clear ID and a little bit of Judas Priest from her location south of Odessa.

And she was quite fortunate! As we reported last month, these two FM pirates were raided by the FCC. Apparently the operators had big plans for the future. They had hoped to put a third station featuring news and commentary on 88.1 MHz. A low-power TV station was also on the drawing board. However, the broadcasters say their career in radio is now at an end.

## Haiti:

Bob Thomas says there have been a considerable number of clandestine broadcasts from the Dominican Republic directed against the military government of Haiti which overthrew that country's first legally elected president. We have no further details at this time. Bob also notes most Haitian hams appear to be hiding their gear, fearing government confiscation. A few brief transmissions do continue using portable transmitters and partial calls or designation numbers.

## Black Liberation Radio:

Kantako's station in Springfield, Illinois, on 107.1 MHz continues despite new and serious harassment. While Kantako was broadcasting a live telephone interview on the subject of white supremacy, a bullet from a .357 Magnum smashed through his window missing his head by inches. He resumed broadcasting within minutes, but the Springfield Police, who have a substation in the housing projects near Kantako's apartment,

allegedly failed to investigate, although they monitor and tape Kantako's unlicensed transmissions daily. Thanks go to Mike Townsend, publisher of the *BLR Newsletter*, for this information.

## Enquiring Minds Want to Know:

Readers of the November *MT* learned about the recent legal problems of radio writers Chuck Robertson and Don Bishop. It is not surprising that this editor is also frequently asked whether he has ever taken to the airwaves illegally. The answer is no. If you doubt me, request a copy of my government file under the Freedom of Information Act. One exists for nearly everyone who writes about shortwave (MI-5 doesn't have a monopoly on paranoia).

But a warning is in order! Your Freedom of Information Act request will result in the creation of a government file on you!

## Loggings:

We got an abundance of them! Here is a selection of those recently received:

- In Pennsylvania Ron Kearns found the ever popular **Radio USA** on 7415 LSB at 2340. Radio USA said they plan transmissions on frequencies between 6240 and 6270. Richard Ciccotosto of Pennsylvania also spotted Radio USA on 7415.

- Our friend the "Shortwave Ape" came across a **Voice of Laryngitis** marathon at his California location. He found twelve different shows on the frequencies of 7415, 7418, 7420, and especially 15050 kHz. I suspect this is a record...a costly one, as the transmitting station was subsequently located by the FCC. The original VOL has been silent for quite a few years. It was one of the most creative and enjoyable pirates to ever take to the airwaves.

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DATE: 12-24 TIME: 2000-UTC

ENGINEER: Dr. Selwyn

Preston Sewell now owns a Radio Mauser QSL.

• In New Hampshire WYMN, with its all female staff, was logged by Guy Chouinard on 15050 at 1440. Meanwhile in the nation's capital William Schmitz found Radio Free Massachusetts testing on 7415 USB at 2355. The Irish European Radio Fax turned up on 6205 at 0520 UTC. WCYC World's Craziest Youth Council appeared on 7410 USB at 2330.

• Iowa's Gary Beyer heard a XERK transmission on 7415 at 0604 UTC. Due to the previous closing of XERK by the FCC, this most likely was a tape.

• In Arkansas Scott Billingsley has had considerable success. He got a QSL from the Car Show and also came across that VOL marathon. Scott found one station on 15052 at 1902 UTC that may have been identifying as "RSN."

• Joe Leach of Ohio logged a Radio USA relay of Radio Garbanzo on 7415 LSB at 0100. Out in California Charles Horan discovered KMCR Magic Carpet Radio at 3209 on 7415. It was followed by Radio Freedom at 0251. In West Virginia Dwight Weidman monitored KXKV Interplanetary Radio on 7415 at 0319.

• I was delighted to meet Kentucky's Brian Baker at the MT convention in Knoxville. After returning home Brian bagged several pirate logs. Among these was Action Radio on 7415 at 0100. Be sure to listen to Radio For Peace International. You should hear Brian's music show "A New Age."

• Virginia's Wilfred Gregson found Radio USA on 7415 at 0250 with a spoof of Radio New York International. Minnesota's Alan Masysga is a frequent reporter to this column, and Alan seems to be a frequent monitor of Radio USA. He had no less than four logs of the station in recent weeks!

• Skip Harwood checks in from California with several logs, including one of Magic Carpet Radio on 7415 at 0210 with DJs Mike and Wanda. Also in California Norman Alexander heard Radio Free Yesteryear on 7420 with Captain Kilohertz. In New Jersey Preston Sewell was delighted to find a Radio Mauser QSL in his mail box.

Finally we note that Glenn Waber has had lots of success up in Wisconsin. QSLs include The Voice of Gilligan, RFM, and Canada's Radio Beaver. Among his logs was WGNK Radio Free New England on 7415 at 0030 UTC.

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<30° LNB (25°-29°)	-	199
1.3db LNB Ku 12GHz	S&H \$6	\$109
1.2db LNB	-	119
1.1db LNB	-	129
1.0db LNB	-	139
0.9db LNB	-	159
0.8db LNB	-	249
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45° LNA	-	139
40° LNA	-	149
35° LNA	-	159
30° LNA	-	179



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### The Last Word:

• BBC Monitoring Service claims Iran's Flag of Freedom organization was able to make two antigovernment clandestine TV broadcasts from inside the country. Voice of the People of Kurdistan has been observed on 3930 and now claims 10 kW. Possible times for this are 0400, 1600, and 1830 UTC. An 1800 transmission identifies as Radio Iraqi Turkmen. The BBC also reports Voice of Iranian Kordestan (sic) in the 41 and 75 meterbands. Times include 0430, 0900, 1000, 1530, 1630, and 1730 UTC.

According to the BBC, rebel soldiers have twice occupied Radio Togo recently and made their own protest broadcasts.

• Voice of Bano wrote to say that since they are having difficulty obtaining relays, they currently are not being heard. However, they hope to resume broadcasting in the future.

• Bob Thomas says Soviet Georgia now broadcasts in English.

Among the times and frequencies are 0330-0400 on 11850 and 0600-0630 on 12050 and 12070. Lithuania's Radio Centras has a DX program the fourth UTC Saturday of the month at 0700 on 9710. Reports go to Box 1792, Viinius, Lithuania.

See you again next month!

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*New Mexico*

**Tammy Wells**  
*Maine*

**Jim Frimmel**  
*Texas*

**How to Use the Shortwave Guide****1: Convert your time to UTC.**

Eastern and Pacific Times are already converted to Coordinated Universal Time (UTC) at the top of each page. The rule is: convert your local time to 24-hour format; add (during Standard Time) 5,6,7, or 8 hours for Eastern, Central, Mountain, or Pacific Time, respectively.

Note that all dates, as well as times, are in UTC: for example, the BBC's "Ken Bruce Show" (0030 UTC Sunday) will be heard on Saturday evening (7:30 PM Eastern, 4:30 PM Pacific) in North America, not on Sunday.

**2: Choose a program or station you want to hear.**

Some selected programs appear on the lower half of the page for prime listening hours. If it's news you're interested in, check out the complete "Newsline" listing, which begins on the next page.

Occasionally program listings will be followed by "See X 0000." This information indicates that the program is a re-run, and refers to a previous summary of the program's content. The letter stands for a day of the week, as indicated below, and the four digits represent a time in UTC.

S: Sunday	H: Thursday
M: Monday	F: Friday
T: Tuesday	A: Saturday
W: Wednesday	

**3: Find the frequencies for the program or station you want to hear.**

Look at the page which corresponds to the time you will be listening. Comprehensive frequency information for English broadcasts can be

found at the top half of the page.

The frequency listing uses the same day codes as the program listings; if a broadcast is not daily, those day codes will appear before the station name.

**4: Choose the most promising frequencies for the time, location, and conditions.**

Of course, every station can't be heard all the time. To help you find the right frequency, we've included information on the target area of each broadcast. Frequencies beamed toward your area will generally be easier to hear than those beamed elsewhere, even though the latter will often still be audible. Every frequency is followed by one of these target codes:

am: The Americas	me: Middle East
na: North America	as: Asia
ca: Central America	au: Australia
sa: South America	pa: Pacific
eu: Europe	va: various
af: Africa	do: domestic broadcast
me: Middle East	om: omnidirectional

Consult the propagation charts. To help you further find the right frequency, we've included propagation charts at the back of this section, which take into account conditions affecting the audibility of shortwave broadcasts. Simply pick out the region in which you live and find the chart for the region in which the station you want to hear is located. The chart indicates the optimum frequencies for a given time in UTC.

## newsline

"Newsline" is your guide to news broadcasts on the air. ■ All broadcasts are world news reports unless followed by an asterisk, which means the broadcast is primarily national news. ■ All broadcasts are daily unless otherwise noted by the day codes.

**0000 UTC**  
**(7:00 PM EST, 4:00 PM PST)**

BBC  
 CBC, Northern Quebec [A]  
 Christian Science Monitor  
 Kol Israel  
 Radio Australia  
 Radio Beijing  
 Radio Canada Int'l [S-M]  
 Radio Finland [M-F]  
 Radio Havana Cuba [T-S]  
 Radio Korea  
 Radio Luxembourg  
 Radio Moscow  
 Radio New Zealand Int'l [M-A]  
 Radio Prague Int'l  
 Radio Thailand  
 Radio Vilnius  
 Spanish Foreign Radio  
 Voice of America  
**0005**  
 Radio Pyongyang  
**0010**  
 Radio Beijing\*  
**0030**  
 BRT, Brussels  
 Christian Science Monitor (Asia) [M]  
 Christian Science Monitor [T-F]  
 HCJB  
 Radio Havana Cuba [T-S]  
 Radio Netherlands [T-S]  
 Radio New Zealand Int'l [M-F]  
 Voice of America (Americas, East Asia) (Special English) [T-S]  
 Voice of America (East Asia) (Special English) [M]  
**0045**  
 Radio Korea (News Service)  
 0055  
 WRNO [W, F]

**0100 UTC**  
**(8:00 PM EST, 5:00 PM PST)**

All India Radio  
 BBC  
 CBC, Northern Quebec  
 Christian Science Monitor  
 Deutsche Welle  
 FEBC Radio Int'l, Philippines  
 Kol Israel  
 Radio Australia  
 Radio Belize  
 Radio Canada Int'l [S-M]  
 Radio Havana Cuba [T-S]

Radio Japan  
 Radio Kiev  
 Radio Luxembourg  
 Radio Moscow  
 Radio New Zealand Int'l [M-A]  
 Radio Prague Int'l  
 Radio Thailand  
 Radiotelevisione Italiana  
 RAE, Buenos Aires [T-A]  
 Spanish Foreign Radio  
 Voice of America  
 Voice of Indonesia  
 WWCR [T-A]  
**0115**  
 Radio Havana Cuba\* [T-S]  
**0130**  
 Christian Science Monitor (Asia) [M]  
 Christian Science Monitor [T-F]  
 Radio Austria Int'l  
 Radio Havana Cuba [T-S]  
 Voice of Greece [M-A]  
**0155**  
 Voice of Indonesia  
 WRNO [W, A]

**0200 UTC**  
**(9:00 PM EST, 6:00 PM PST)**

BBC  
 CBC, Northern Quebec [S-M]  
 Christian Science Monitor  
 Deutsche Welle  
 FEBC Radio Int'l, Philippines  
 Kol Israel  
 Radio Australia  
 Radio Canada Int'l [T-A]  
 Radio Havana Cuba [T-S]  
 Radio Luxembourg  
 Radio Moscow  
 Radio New Zealand Int'l [M-F]  
 Radio Romania Int'l  
 Radio Thailand  
 Swiss Radio Int'l  
 Voice of America  
 Voice of Free China  
 Voice of Myanmar  
 WWCR [T-A]  
**0215**  
 Radio Cairo  
 Radio Nepal  
**0230**  
 Christian Science Monitor (Africa, Europe) [M]  
 Christian Science Monitor [T-F]  
 HCJB  
 Radio Havana Cuba [T-S]  
 Radio Moscow

Radio Pakistan (Special English)  
 Radio Portugal [T-A]  
 Radio Tirana, Albania  
 Radio Yugoslavia  
**0245**  
 Radio Korea (News Service)

**0300 UTC**  
**(10:00 PM EST, 7:00 PM PST)**

BBC  
 CBC, Northern Quebec [T-S]  
 Christian Science Monitor  
 Deutsche Welle  
 Radio Australia  
 Radio Bahrain  
 Radio Beijing  
 Radio Belize  
 Radio Budapest  
 Radio Havana Cuba [T-S]  
 Radio Japan  
 Radio Moscow  
 Radio New Zealand Int'l [M-F]  
 Radio Prague Int'l  
 Radio Thailand  
 Voice of America  
 Voice of Free China  
 WWCR [T-A]  
**0309**  
 BBC\*  
**0310**  
 Radio Beijing\*  
**0315**  
 Radio Cairo  
 Radio Havana Cuba\* [T-S]  
**0330**  
 BBC (Africa)\*  
 Christian Science Monitor (Africa, Europe) [M]  
 Christian Science Monitor [T-F]  
 Radio Bahrain  
 Radio Havana Cuba [T-S]  
 Radio Netherlands [T-S]  
 Radio Tirana, Albania  
 UAE Radio, Dubai  
**0340**  
 Voice of Greece [M-A]  
**0350**  
 Radio For Peace Int'l [T-A]  
 Radio Yerevan  
 Radiotelevisione Italiana  
**0355**  
 Radio Japan [M-F]  
**0400 UTC**  
**(11:00 PM EST, 8:00 PM PST)**  
 BBC

CBC, Northern Quebec  
 Christian Science Monitor  
 Deutsche Welle  
 Radio Australia  
 Radio Bahrain  
 Radio Beijing  
 Radio Canada Int'l  
 Radio Havana Cuba [T-S]  
 Radio Moscow  
 Radio New Zealand Int'l [M-F]  
 Radio Prague Int'l  
 Radio Romania Int'l  
 Radio RSA  
 Radio Sofia  
 Radio Tanzania  
 Radio Thailand  
 Swiss Radio Int'l  
 Voice of America  
 Voice of Turkey  
 WRNO [F]  
 WWCR [T-S]  
**0405**  
 Radio Pyongyang  
**0410**  
 Radio Beijing\*  
**0425**  
 Radiotelevisione Italiana  
**0430**  
 Christian Science Monitor (Africa, Europe, NE Asia) [M]  
 Christian Science Monitor [T-F]  
 Radio Bahrain  
 Radio Botswana  
 Radio Havana Cuba [T-S]  
**0450**  
 Radio RSA  
**0455**  
 WYFR (Network) [T-A]  
**0500 UTC**  
**(12:00 AM EST, 9:00 PM PST)**

BBC  
 CBC, Northern Quebec [T-S]  
 Christian Science Monitor  
 Deutsche Welle  
 HCJB  
 Kol Israel  
 Radio Australia  
 Radio Bahrain  
 Radio Beijing  
 Radio Havana Cuba [T-S]  
 Radio Japan  
 Radio Lesotho  
 Radio Moscow  
 Radio New Zealand Int'l [M-F]  
 Radio Thailand  
 Spanish Foreign Radio  
 Voice of America

**0510**  
 Radio Beijing\*  
 Radio Botswana  
**0515**  
 Radio Canada Int'l [M-F]  
 Radio Havana Cuba\* [T-S]  
**0530**  
 BBC (Africa)\*  
 Christian Science Monitor (Africa, Europe, NE Asia) [M]  
 Christian Science Monitor [T-F]  
 Radio Austria Int'l  
 Radio Havana Cuba [T-S]  
 Radio Moscow (World Service)  
 Radio Romania Int'l  
 Radio Thailand  
 UAE Radio, Dubai  
 Voice of Nigeria  
**0550**  
 Radio For Peace Int'l [T-A]

**0600 UTC**  
**(1:00 AM EST, 10:00 PM PST)**

BBC  
 CBC, Northern Quebec  
 Christian Science Monitor  
 Deutsche Welle  
 Radio Australia  
 Radio Bahrain  
 Radio Havana Cuba [T-S]  
 Radio Korea  
 Radio Moscow  
 Radio New Zealand Int'l [M-A]  
 Voice of America  
**0605**  
 Radio Pyongyang  
**0610**  
 Voice of Malaysia  
**0615**  
 Radio Korea (News Service)  
**0630**  
 BBC (Africa)\*  
 Christian Science Monitor [M-F]  
 Radio Havana Cuba [T-S]  
 Radio Moscow (World Service)  
 Radio Polonia  
 RTV Congolaise, Brazzaville [M-F]  
 Swiss Radio Int'l  
 Voice of Nigeria  
**0640**  
 Radio Prague Int'l  
**0645**  
 Radio Romania Int'l

## newsline

**0700 UTC**  
**(2:00 AM EST, 11:00 PM PST)**

BBC  
 Christian Science Monitor  
 Radio Australia  
 Radio Havana Cuba [T-S]  
 Radio Japan  
 Radio Moscow  
 Radio New Zealand Int'l [M-F]  
 SLBS, Freetown, Sierra Leone  
 Voice of Free China  
 Voice of Myanmar  
**0705**  
 Radio Pyongyang  
**0715**  
 Radio Havana Cuba\* [T-S]  
**0730**  
 BBC (Africa)\* [M-A]  
 BRT, Brussels  
 Christian Science Monitor [M-F]  
 HCJB  
 Radio Austria Int'l  
 Radio Finland [M-A]  
 Radio Havana Cuba [T-S]  
 Radio Moscow (World Service)  
 Radio Netherlands [M-A]  
 Radio Prague Int'l  
 Swiss Radio Int'l  
**0755**  
 Radio Japan [M-F]

**0800 UTC**  
**(3:00 AM EST, 12:00 AM PST)**

BBC  
 Christian Science Monitor  
 Radio Australia  
 Radio Bahrain  
 Radio Korea  
 Radio Moscow  
 Radio New Zealand Int'l  
 Radio Pakistan  
 SLBS, Freetown, Sierra Leone  
 Voice of Indonesia  
**0805**  
 Radio Pyongyang  
**0810**  
 Voice of Malaysia  
**0830**  
 Christian Science Monitor [M-F]  
 Radio Moscow (World Service)  
 Radio Netherlands [M-A]  
 Swiss Radio Int'l  
**0840**  
 Voice of Greece [M-A]  
**0855**  
 Voice of Indonesia

**0900 UTC**  
**(4:00 AM EST, 1:00 AM PST)**

BBC  
 Christian Science Monitor  
 Deutsche Welle  
 Radio Australia

Radio Bahrain  
 Radio Beijing  
 Radio Finland [M-F]  
 Radio Japan  
 Radio Moscow  
 Radio New Zealand Int'l [S-F]  
 Voice of Nigeria  
**0910**  
 Radio Beijing\*  
**0915**  
 Radio Korea (News Service)  
**0930**  
 Christian Science Monitor [M-F]  
 Deutsche Welle (Africa)\* [M-F]  
 Radio Finland [T-A]  
 Radio Moscow  
**0950**  
 Radio For Peace Int'l [T-A]  
**0955**  
 Radio Finland [M-F]  
 Radio Japan [M-F]

**1000 UTC**  
**(5:00 AM EST, 2:00 AM PST)**

All India Radio  
 BBC  
 BRT, Brussels [M-A]  
 Christian Science Monitor  
 HCJB  
 Radio Australia  
 Radio Bahrain  
 Radio Beijing  
 Radio Moscow  
 Radio New Zealand Int'l  
 Radio Tanzania  
 Swiss Radio Int'l  
 Voice of America  
**1010**  
 Radio Beijing\*  
**1030**  
 Christian Science Monitor [M-F]  
 Radio Austria Int'l [M-F]  
 Radio Korea  
 Radio Moscow  
 Radio Netherlands [M-A]  
 UAE Radio, Dubai  
 Voice of Nigeria  
**1040**  
 Voice of Greece [M-A]  
**1055**  
 All India Radio

**1100 UTC**  
**(6:00 AM EST, 3:00 AM PST)**

BBC  
 Christian Science Monitor  
 Deutsche Welle  
 Kol Israel  
 Radio Australia  
 Radio Bahrain  
 Radio Beijing  
 Radio Japan  
 Radio Korea  
 Radio Moscow

Radio New Zealand Int'l  
 Radio Pakistan  
 Radio RSA  
 Swiss Radio Int'l  
 TWR, Bonalre [M-F]  
 Voice of America  
**1105**  
 Radio Pakistan (Special English)  
 Radio Pyongyang  
**1109**  
 BBC\*  
**1110**  
 Radio Beijing\*  
 Radio Belize [T-A]  
 Radio Botswana [M-F]  
**1115**  
 Radio Korea (News Service)  
 Radio Nepal  
**1125**  
 Radio Belize [M]  
 Radio Botswana [A-S]  
**1130**  
 Christian Science Monitor [M-F]  
 Deutsche Welle\* [M-F]  
 Radio Austria Int'l [M-F]  
 Radio Lesotho  
 Radio Moscow  
 Radio Netherlands [M-A]  
**1135**  
 Radio Thailand

**1150**  
 Radio For Peace Int'l [T-A]  
 Radio RSA  
**1155**  
 Radio Japan [M-F]

**1200 UTC**  
**(7:00 AM EST, 4:00 AM PST)**

BBC  
 CBC, Northern Quebec [A-S]  
 Christian Science Monitor  
 Radio Australia  
 Radio Bahrain  
 Radio Beijing  
 Radio Bras, Brasilia [M-A]  
 Radio Canada Int'l [M-F]  
 Radio Jordan  
 Radio Moscow  
 Radio New Zealand Int'l [S-F]  
 Radio Polonia  
 Radio Romania Int'l  
 Radio Tashkent  
 Radio Thailand  
 Voice of America  
 WWCR [M-F]  
**1210**  
 Radio Beijing\*  
**1215**  
 Radio Korea  
**1230**  
 BRT, Brussels [S]  
 Christian Science Monitor [M-F]  
 Radio Cairo  
 Radio Finland [T-F]  
 Radio France Int'l

Radio Moscow  
 Radio Yugoslavia  
 TWR, Bonalre [A]  
**1235**  
 Voice of Greece

**1300 UTC**  
**(8:00 AM EST, 5:00 AM PST)**

BBC ("Newshour")  
 CBC, Northern Quebec [A-S]  
 Christian Science Monitor  
 Radio Australia  
 Radio Bahrain  
 Radio Beijing  
 Radio Belize  
 Radio Canada Int'l [S]  
 Radio Moscow  
 Radio Romania Int'l  
 Radio Tanzania [A-S]  
 Swiss Radio Int'l  
 TWR, Bonalre [S-F]  
 Voice of America  
 WWCR [M-F]  
**1305**  
 Radio Pyongyang  
**1310**

Radio Beijing\*  
**1325**  
 HCJB [M-F]  
**1328**  
 Radio Cairo  
**1330**  
 All India Radio  
 Christian Science Monitor [M-F]  
 FEBC Radio Int'l, Philippines  
 Radio Austria Int'l  
 Radio Canada Int'l  
 Radio Finland [M-F]  
 Radio Korea (News Service)  
 Radio Moscow  
 Radio Tashkent  
 Swiss Radio Int'l  
 UAE Radio, Dubai  
 Voice of America (Special English)  
 Voice of Turkey  
**1346**  
 All India Radio (UN News) [A]  
**1355**  
 WYFR (Network) [M-F]

**1400 UTC**  
**(9:00 AM EST, 6:00 AM PST)**

BBC  
 BRT, Brussels [M-A]  
 CBC, Northern Quebec  
 Christian Science Monitor  
 Radio Australia  
 Radio Bahrain  
 Radio Beijing  
 Radio Belize [M-F]  
 Radio Canada Int'l  
 Radio Finland [A]  
 Radio France Int'l  
 Radio Japan

Radio Jordan  
 Radio Korea  
 Radio Moscow  
 Voice of America  
 WWCR [M-F]  
**1410**  
 Radio Beijing\*  
**1415**  
 Radio Nepal  
**1425**  
 HCJB [M-F]  
**1430**  
 Christian Science Monitor [M-F]  
 FEBC Radio Int'l, Philippines  
 Kol Israel  
 Radio Austria Int'l [M-F]  
 Radio Finland [S-F]  
 Radio Moscow  
 Radio Netherlands [M-A]  
 Radio Polonia  
**1445**  
 BBC (East Asia) (Special English) [M-F]  
 Voice of Myanmar  
**1455**  
 All India Radio

**1500 UTC**  
**(10:00 AM EST, 7:00 AM PST)**

BBC  
 CBC, Northern Quebec [A-S]  
 Christian Science Monitor  
 Deutsche Welle  
 Radio Australia  
 Radio Bahrain  
 Radio Beijing  
 Radio Belize [M-A]  
 Radio Canada Int'l  
 Radio Japan  
 Radio Moscow  
 Radio Romania Int'l  
 Radio RSA  
 Voice of America  
 WWCR [M-F]  
**1505**  
 Radio Finland  
 Radio Pyongyang  
**1510**  
 Radio Beijing\*  
**1530**  
 Christian Science Monitor [M-F]  
 Deutsche Welle\* [M-F]  
 FEBA, Seychelles  
 FEBC Radio Int'l, Philippines  
 Radio Moscow  
 Radio Tirana, Albania  
 Swiss Radio Int'l  
 Voice of Greece [M-A]  
 Voice of Nigeria  
**1545**  
 Radio Korea (News Service)



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IN U.S.A.: 430 Park Avenue (2nd Floor), New York, NY 10022  
Tel.: (212) 355-1180 FAX: (212) 319-5227 Telex: 961114 JAPAN RADIO NYK

CIRCLE 123 ON READER SERVICE CARD

## newsline

**1600 UTC**  
**(11:00 AM EST, 8:00 AM PST)**

BBC  
 CBC, Northern Quebec [A-S]  
 Christian Science Monitor  
 Deutsche Welle  
 Radio Australia  
 Radio Bahrain  
 Radio Beijing  
 Radio Canada Int'l  
 Radio France Int'l  
 Radio Jordan  
 Radio Korea  
 Radio Lesotho  
 Radio Moscow  
 Radio Pakistan  
 Radio Polonia  
 Radio Portugal [M-F]  
 Radio RSA  
 Radio Tanzania  
 Voice of America  
 Yemen Radio  
**1609**  
 BBC\*  
**1610**  
 Radio Beijing\*  
 Radio Botswana [M-F]  
**1615**  
 Radio Pakistan (Special English)  
**1630**  
 Christian Science Monitor [M-F]  
 Radio Austria Int'l  
 Radio Moscow  
 Radio Netherlands [M-A]  
 Radio Polonia  
 UAE Radio, Dubai  
 Voice of America (except Africa)  
 (Special English)

**1700 UTC**  
**(12:00 PM EST, 9:00 AM PST)**

BBC  
 CBC, Northern Quebec [A]  
 Christian Science Monitor  
 Radio Australia  
 Radio Bahrain  
 Radio Beijing  
 Radio Belize [M-F]  
 Radio Canada Int'l  
 Radio Japan  
 Radio Jordan  
 Radio Moscow  
 Radio RSA  
 Voice of America  
 WWCR [M-F]  
**1705**  
 Radio Pyongyang  
**1709**  
 BBC (Africa)\* [A-S]  
**1710**  
 Radio Beijing\*  
**1715**  
 Radio Korea (News Service)

**1725**  
 Radio Surinam Int'l [M-F]  
**1730**  
 Christian Science Monitor [M-F]  
 Radio Moscow  
 Radio Romania Int'l  
 WYFR (Network) [A]  
**1735**  
 WYFR (Network) [M-F]  
**1740**  
 BBC (Africa)\* [M-F]  
**1750**  
 Radio RSA

**1800 UTC**  
**(1:00 PM EST, 10:00 AM PST)**

All India Radio  
 BBC  
 CBC, Northern Quebec [A]  
 Christian Science Monitor  
 Kol Israel  
 KVOH  
 Radio Australia  
 Radio Bahrain  
 Radio Belize [M-F]  
 Radio Bras, Brasilia [M-A]  
 Radio Canada Int'l  
 Radio Korea  
 Radio Moscow  
 Radio New Zealand Int'l [S-F]  
 Radio Prague Int'l  
 Radio Tanzania  
 RAE, Buenos Aires [M-F]  
 Voice of America  
**1803**  
 Radio Cote d' Ivoire, Abidjan [M-A]  
**1815**  
 Radio Cote d' Ivoire, Abidjan [M-A]  
**1825**  
 WYFR (Network) [A]  
**1830**  
 BRT, Brussels  
 Christian Science Monitor [M-F]  
 Radio Belize  
 Radio Moscow  
 Radio Netherlands [M-A]  
 Radio Polonia  
 Radio Sofia  
 Radio Tirana, Albania  
 Swiss Radio Int'l  
 Voice of America (Special English)  
**1840**  
 SLBC, Sri Lanka  
 Voice of Greece  
**1855**  
 BBC (Africa)\* [M-F]

**1900 UTC**  
**(2:00 PM EST, 11:00 AM PST)**

All India Radio

BBC  
 CBC, Northern Quebec [M-F]  
 Christian Science Monitor [M-A]  
 Deutsche Welle  
 HCJB  
 KVOH  
 Radio Australia  
 Radio Beijing  
 Radio Canada Int'l  
 Radio Havana Cuba [M-A]  
 Radio Japan  
 Radio Moscow  
 Radio New Zealand Int'l [S-F]  
 Radio Tanzania  
 SLBS, Freetown, Sierra Leone  
 Spanish Foreign Radio  
 Voice of America  
 WWCR [A]  
**1910**  
 Radio Beijing\*  
 Radio Botswana  
**1920**  
 Voice of Greece  
**1930**  
 Christian Science Monitor [M-F]  
 Deutsche Welle\* [M-F]  
 Radio Austria Int'l  
 Radio Finland  
 Radio Havana Cuba [M-A]  
 Radio Moscow  
 Radio Prague Int'l  
 Radio Romania Int'l  
 Radio Yugoslavia  
 Voice of Nigeria  
**1935**  
 Radiotelevisione Italiana  
**1945**  
 Radio Korea (News Service)  
**1955**  
 WYFR (Network) [M-A]

**2000 UTC**  
**(3:00 PM EST, 12:00 PM PST)**

BBC  
 Christian Science Monitor  
 Kol Israel  
 KVOH  
 Radio Australia  
 Radio Bahrain  
 Radio Beijing  
 Radio Belize [M-F]  
 Radio Havana Cuba [M-A]  
 Radio Moscow  
 Radio New Zealand Int'l [S-F]  
 Radio Polonia  
 SLBS, Freetown, Sierra Leone  
 Swiss Radio Int'l  
 Voice of America  
 Voice of Indonesia  
 Voice of Nigeria  
**2005**  
 Radio Pyongyang  
**2010**  
 Radio Beijing\*  
**2025**

Radio Havana Cuba\* [M-A]  
 Radiotelevisione Italiana  
**2030**  
 Christian Science Monitor [M-F]  
 Radio Havana Cuba [M-A]  
 Radio Korea  
 Radio Moscow  
 Radio Netherlands [M-A]  
**2045**  
 Radio Korea (News Service)  
 Radio Sofia  
**2055**  
 Radio Finland  
 Voice of Indonesia

**2100 UTC**  
**(4:00 PM EST, 1:00 PM PST)**

All India Radio  
 BBC ("Newshour")  
 CBC, Northern Quebec [S-F]  
 Christian Science Monitor [M-A]  
 Deutsche Welle  
 KVOH  
 Radio Australia  
 Radio Bahrain  
 Radio Beijing  
 Radio Belize [M-F]  
 Radio Canada Int'l  
 Radio Japan  
 Radio Moscow  
 Radio New Zealand Int'l [S-F]  
 Radio Portugal [M-F]  
 Radio Prague Int'l  
 Radio Romania Int'l  
 SLBS, Freetown, Sierra Leone  
 Spanish Foreign Radio  
 Swiss Radio Int'l  
 Voice of America  
 Voice of Turkey  
**2110**  
 Radio Beijing\*  
**2125**  
 WYFR (Network) [M-F]  
**2130**  
 Christian Science Monitor [M-F]  
 Radio Cairo  
 Radio Canada Int'l  
 Radio Moscow  
 WYFR (Network) [A]  
**2150**  
 Radio For Peace Int'l [M-F]

**2200 UTC**  
**(5:00 PM EST, 2:00 PM PST)**

All India Radio  
 BBC  
 BRT, Brussels  
 CBC, Northern Quebec [S-F]  
 Christian Science Monitor  
 Radio Australia  
 Radio Beijing  
 Radio Budapest

Radio Canada Int'l  
 Radio Havana Cuba [M-A]  
 Radio Kiev  
 Radio Moscow  
 Radio New Zealand Int'l  
 Radio Polonia  
 Radio Portugal [M-F]  
 Radio Prague Int'l  
 Radio Yugoslavia  
 Radiotelevisione Italiana  
 SLBS, Freetown, Sierra Leone  
 Voice of America  
 Voice of Free China  
 WWCR [M-F]  
**2208**  
 Voice of America (Caribbean)\*  
 [M-F]  
**2210**  
 Radio Beijing\*  
**2225**  
 Radio Havana Cuba\* [M-A]  
**2230**  
 Christian Science Monitor [M-F]  
 Kol Israel  
 Radio Finland  
 Radio Havana Cuba [M-A]  
 Radio Moscow  
 Radio Tirana, Albania  
 Swiss Radio Int'l  
 Voice of America (Special English)  
 WYFR (Network) [M-F]  
**2245**  
 Radio Sofia  
 Voice of Greece  
**2255**  
 WYFR (Network) [M-A]

**2300 UTC**  
**(8:00 PM EST, 3:00 PM PST)**

BBC  
 CBC, Northern Quebec [M-F]  
 Christian Science Monitor [M-A]  
 Radio Australia  
 Radio Belize [M-F]  
 Radio Canada Int'l  
 Radio Japan  
 Radio Moscow  
 Radio New Zealand Int'l  
 Voice of America  
 Voice of Turkey  
**2305**  
 Radio Pyongyang  
**2315**  
 All India Radio  
**2320**  
 Radio Thailand  
**2330**  
 Christian Science Monitor [M-F]  
 Radio Moscow  
 Radio Vilnius  
**2350**  
 Radio For Peace Int'l [M-F]  
**2355**  
 Radio Japan [M-F]

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**0100 UTC**

**[8:00 PM EST/5:00 PM PST]**

**FREQUENCIES**

0100-0200	ABC Brisbane	4920do	9660do		
0100-0200	ABC Perth	9610do			
0100-0115	All India Radio, Delhi	9535as	9910as 1	1715as	11745as
		15110as			
0100-0200	BBC London	5965as	5975na	6005sa	6175na
		7135as	7325na	9580as	9590na
		9915na	11750sa	11955as	12095na
		15260sa	15280as	15360pa	21715as
0100-0200	CFCX Montreal	6005do			
0100-0200	CFRX Toronto	6070do			
0100-0200	CKZU Vancouver	6160do			
0100-0200	CSM World Svc, Boston	7395na	9850na	13760na	17555na
0100-0150	Deutsche Welle	6040na	6055na	6085na	6145na
		9515na	9565na	9610na	9640na
		9770na	11865na		
0100-0200	FEBC Manila	15450as			
0100-0200	HCJB Quito Ecuador	9745am	15155am	21455am	
0100-0130	Kol Israel, Jerusalem	7465am	9435am	11605am	
0100-0200	KTBN Salt Lake City	7510na			
0100-0130	Nat'l Radio of Laos	7112as			
0100-0200	R. for Peace Int'l	7375na			
0100-0200	Radio Australia	11880va	11930va	15160va	15240va
		15320va	15365va	17630va	17750va
		17795va	21525va	21740va	21775va
0100-0200	Radio Havana Cuba	11950am			
0100-C200	Radio Japan	11840na	15195am	17810am	17835as
		17845am			
0100-C200	Radio Kiev	7400na	9800na	15180na	17605na
		17690na			
0100-0200	Radio Moscow World Svc	6000am	6045am	7110as	7115am
		7135as	7150am	7160au	7255as
		7275as	7310am	7390as	9625as
		9665am	9715as	9725am	9745as
		9790au	9855am	11985am	12025as
		12045as	12050am	15295am	15350am

		15420am	15425as	15505as	17610am
		17655as	17665as	17700am	17720as
		17775as	17825am	17890am	21480am
		21690as	21790au		
0100-0125	Radio Netherlands	6020am	6165am	11835am	
0100-0200	Radio New Zealand Int'l	17770pa			
0100-0130 sm	Radio Norway	9605na			
0100-0130	Radio Prague	5930na	7345na	11685na	
0100-0130	Radio Sweden	9695as	9795na	11705na	
0100-0130	Radio Tashkent	5930as	5995as	7190as	7265as
0100-0200	Radio Thailand	4830as	9655as	11905as	
0100-0120	RAI, Rome	9575am	11800am		
0100-0130 twhfa	RCI Montreal	5960am	9755am		
0100-0200 sm	RCI Montreal	9535am	11845am	11940am	13720am
0100-0200 smtwh	RTM Malaysia	7295do			
0100-0200	SBC Radio 1, Singapore	5010do	5052do	11940do	
0100-0200	SLBS, Sierra Leone	3316do			
0100-0200	Spanish Foreign Radio	9530na			
0100-0200	Sri Lanka B'casting Corp.	6005as	9720as	15425as	
0100-0200	VOA	5995am	6130am	7405am	9455am
		9775am	11580am	15120am	15205am
		7205as	9740as	11705as	15250as
		17735as	21550as		
0100-0200	Voice of Indonesia	7125as	9675as	11752as	11785as
0100-0130	VOIRI Teheran	9022na	9765na	15260na	
0100-0200	WHRI Noblesville	7315am			
0100-0200	WINB Red Lion, Penn.	15145na			
0100-0200	WRNO New Orleans	7355na			
0100-0200	WWCR Nashville	7435na	7490na		
0100-0200	WYFR	6065am	9505am	15440am	
0130-0200	WYFR	4975do	5040do		
0130-0200 mwf	R. Alma Ata, Khazakhstan	5915do	6135do		
0130-0200	RAI Vienna	9870sa	9875na	13730na	
0130-0200	UAE Radio, Dubai	11795na	13695eu	15320eu	15435eu
0130-0150 mtwhfa	Voice of Greece	9395na	9420na	11645na	
0145-0200	Vatican Radio	7125au	9650au		

**SELECTED PROGRAMS**

**Sundays**

- 0101 BBC: Play Of The Week. This month's drama: "Yabuhara: The Blind Master Minstrel" (5th, 12th); "84 Charing Cross Road" (19th, starts at 0030 UTC); "Successful Strategies" (26th).
- 0107 Radio Canada Int'l: The Inside Track. A sports feature magazine.
- 0130 HCJB: Musical Mailbag. A musical look at listener letters.
- 0130 Radio Austria Int'l: Report From Austria. A magazine program, covering all aspects of Austrian life and events in the news, and opening with the latest news bulletin.
- 0130 Radio Canada Int'l: Media File. The ethics, responsibilities, and performance of the media.

**Mondays**

- 0101 BBC: Feature/Drama. Women in Japan — are they "Acting Up"? (6th); politics in America, including chats with William Weld, Ann Richards, and Tom Foley, are featured on "The Power And The Glory" (through February 10th).
- 0107 Radio Canada Int'l: The Inside Track. See S 0107.
- 0130 HCJB: The Sower. Michael Guido presents music and inspiration.
- 0130 Radio Austria Int'l: Report From Austria. See S 0130.
- 0130 Radio Canada Int'l: Royal Canadian Air Farce. A humorous look at the land up north.
- 0145 BBC: Classical Music. "The Mozart Phenomenon" looks at the artist's amazing success (through February 3rd).
- 0145 HCJB: Youth Time Radio. Interviews and music for college students.

**Tuesdays**

- 0100 HCJB: Dateline '90. Jan Shober looks at issues of the decade.
- 0105 BBC: Outlook. See M 1405.
- 0130 BBC: Folk In Britain. Ian Anderson is the host, folk music is the fare.
- 0130 HCJB: Open Line. Ken MacHarg hosts a phone-in program that covers subjects from Christianity to shortwave — just dial 011+593+2+241+560.
- 0130 Radio Austria Int'l: Report From Austria. See S 0130.
- 0145 BBC: Health Matters. New medical developments and methods of keeping fit.

**Wednesdays**

- 0100 HCJB: Happiness Is. Interviews, books, travel logs, and more, presented by Dee Baklenko.
- 0105 BBC: Outlook. See M 1405.
- 0130 BBC: Talks. This month, "That's The Way It Was" profiles has-been pop groups (1st); "It Made Our World" profiles inventions that have shaped our civilization (through April 1st).
- 0130 HCJB: Focus On The Family. See M 1330.
- 0130 Radio Austria Int'l: Report From Austria. See S 0130.
- 0145 BBC: Country Style. David Allan profiles the country music scene on both sides of the pond.

**Thursdays**

- 0100 HCJB: Ham Radio Today. John Beck presents news about the amateur radio hobby.
- 0105 BBC: Outlook. See M 1405.
- 0130 BBC: Waveguide. See M 0530.

- 0130 HCJB: Focus On The Family. See M 1330.
- 0130 Radio Austria Int'l: Report From Austria. See S 0130.
- 0140 BBC: Book Choice. A short review of a recently released book.
- 0145 BBC: The Farming World. Agricultural news and technological innovations for farmers.

**Fridays**

- 0100 HCJB: Happiness Is. See W 0100.
- 0105 BBC: Outlook. See M 1405.
- 0130 BBC: Seven Seas. Malcolm Billings presents news about ships and the sea.
- 0130 HCJB: Focus On The Family. See M 1330.
- 0130 Radio Austria Int'l: Report From Austria. See S 0130.
- 0145 BBC: Global Concerns. An update on environmental issues.

**Saturdays**

- 0100 HCJB: Musica Del Ecuador. A mix of Ecuadorian and Latin music, hosted by Jorge Zambrano.
- 0105 BBC: Outlook. See M 1405.
- 0130 BBC: Short Story (except 4th: Seeing Stars). See S 0430.
- 0130 HCJB: Focus On The Family. See M 1330.
- 0130 Radio Austria Int'l: Report From Austria. See S 0130.
- 0145 BBC: Jazz Now And Then. George Reid presents a weekly mix of new releases, old tracks, and interviews.













0900 UTC [4:00 AM EST/1:00 AM PST]

1000 UTC [5:00 AM EST/2:00 AM PST]

## FREQUENCIES

0900-1000 s	AWR Italy (via Portugal)	9670eu			
0900-0930	BBC London	1170as	5975eu	6045eu	6180u
		6190af	6195as	7325eu	9410eu
		9660eu	9740as	9750eu	9760eu
		11760me	11860af	11940af	12095eu
		15070va	15400af	17640va	21660af
0900-0930	BBC London	15190sa	15280as	15310as	15360as
		15420af	15575me	15590me	17705eu
		17790af	17830as	17885af	21470af
		21660af	21715as		
0900-1000	BBS Bahrain	6010me			
0900-1000 s	BBS Bhutan	6035do			
0900-1000	CFCX Montreal	6005do			
0900-1000	CFRX Toronto	6070do			
0900-1000	CKZU Vancouver	6160do			
0900-1000	CSM World Svc, Boston	9455va	9840va	13710va	13760va
		17555va			
0900-0950	Deutsche Welle	6160as	9565af	11915as	15410af
		17780as	17820as	21465as	21600af
		21650as	21680as		
0900-1000	FEBC Manila	9800as	11685as		
0900-1000	HCJB Quito	9745va			
0900-1000 a	IRRS Milan, Italy	7125eu			
0900-1000	King of Hope, Lebanon	6280me			
0900-0927	KTWR Guam	15200as			
0900-1000	KTWR Guam	11805as			
0900-0910	Malawi B'casting Corp.	5995do			
0900-1000 sa	R. E. Africa, Eq. Guinea	9585af			
0900-0930	R. for Peace Int'l	7375na	15030na		
0900-0905	Radio 1, Accra, Ghana	4915do			
0900-0905 f	Radio 2, Accra, Ghana	3366do			
0900-1000	Radio 2, Zambia	6165do	7235do		
0900-1000	Radio Australia	7140va	9580va	11800va	13605va
		15160va	15170va	17750va	25750va
0900-1000	Radio Beijing	11755au	15440au	17710au	
0900-0950	Radio Finland	15245as	17800pa		
0900-1000 ra	Radio Japan	15270au	17890au		
0900-1000	Radio Japan	11840as	21610as		
0900-1000	Radio Moscow World Svc	5960eu	7130eu	7310am	9535eu
		11705me	11765me	11920eu	11975me
		12010me	12055me	13705as	15295eu
		15345as	15350as	15420am	15435as
		15455as	15465am	15470as	15500as
		15530as	15545as	15550eu	15580as
		17570eu	17580as	17605eu	17610am
		17635eu	17655as	17665as	17610am
		17675eu	17690am	17700am	17710as
		17765as	17775as	17790as	17810am
		17870am	17880as	21680as	21690as
		21725as	21785as	21790au	21845as
0900-1000	Radio New Zealand Int'l	9700pa			
0900-1000	Radio Nigeria	3326do	4990do		
0900-1000	Radio Tanzania	5985af	9685af	11765af	
0900-0915	Radio Voice of Lebanon	6550me			
0900-1000	RTM Malaysia	7295do			
0900-1000	SBC Radio 1, Singapore	5010do	5052do	11940do	
0900-1000	SLBS, Sierra Leone	3316do			
0900-1000	TWR Monte Carlo	9480eu			
0900-1000	VOA	11735eu	15160eu	15195me	21455me
		21570eu			
0900-1000	Voice of Kenya	4935do			
0900-1000	Voice of Nigeria	7255af			
0900-1000	WWCR Nashville	7435am			
0900-0930 mtwhf	ZLXA New Zealand	3935do			
0905-1000	Cameroon Radio-TV	4850do			
0905-1000 mtwhf	R. 2 Schools Prg., Ghana	7295do			
0905-1000 sa	Radio 1, Accra, Ghana	4915do			
0905-1000 sa	Radio 2, Accra, Ghana	3366do			
0910-0940 smwha	Ulaanbaatar R., Mongolia	11850pa	12015pa		
0915-0939	Al-Quds Radio (cland.)	5900om	5990om		
0915-0930	Radio Korea World News	9570am	13670eu		
0920-1000	BFBS British Forces	15245me	17830me	21745me	
0925-0955	Radio Finland	15245as	17800au		
0930-1000	BBC London	6045eu	6180eu	6190af	6195as
		9410eu	9660eu	9760eu	11750as
		11760af	11940af	12095eu	15070va
		15420af	15575me	15590me	15310as
		15420af	15575me	15590me	15400af
0930-1000	BBC London	15190sa	17640va	17705eu	
0930-1000	Radio Afghanistan	4940as	9635as	15140as	17720as
0930-1000	Radio Netherlands	11895pa			
0930-0940	RTV Togo	7265do			
0950-0953 a	R. Sta Pacific Ocean Vladivostok	5905do	6035do	6175pa	7175pa
		7270pa	7345pa	9530pa	9600pa
		9905pa	11815pa	15535pa	15595pa
		17825pa	17850pa	4050do	4485do
				5015do	7260pa
				9825pa	17695pa

## FREQUENCIES

1000-1100	All India Radio, Delhi	15050as	15335as	17387as	17865as
		21735as			
1000-1030	BBC London	5975eu	6045eu	6180eu	6190af
		6195as	9410eu	9660eu	9740as
		9750eu	9760eu	11750as	11760me
		11940af	12095eu	15070va	15190sa
		15310as	15400af	15420af	15575me
1000-1030	BBC London	17640eu	17705eu	17790af	17885af
		21470af	21660af	21715as	
1000-1100	BBS Bahrain	6010me			
1000-1025 mtwhf	BRT Brussels	9855eu	13675eu	21815af	
1000-1100	Cameroon Radio-TV	4850do			
1000-1100	CFCX Montreal	6005do			
1000-1100	CFRX Toronto	6070do			
1000-1100	CKZU Vancouver	6160do			
1000-1100	CSM World Svc, Boston	9455va	9495va	13625va	
		17555va			
1000-1100	FEBC Manila	9800as	11665as		
1000-1100	HCJB Quito	9745pa	11925pa		
1000-1100	KSDA Guam	11980as			
1000-1100 mtwhf	R. 2 Schools Prg., Ghana	7295do			
1000-1100 sa	R. E. Africa, Eq. Guinea	9585af			
1000-1100	R. for Peace, Int'l	7375na	15030na		
1000-1100 sa	Radio 1, Accra, Ghana	4915do			
1000-1100 sa	Radio 2, Accra, Ghana	3366do			
1000-1100	Radio 2, Zambia	6165do	7235do		
1000-1030	Radio Afghanistan	4940as	9635as	15140as	17720as
1000-1100	Radio Australia	9580pa	11800pa	15160va	15170va
		25750va			
1000-1100	Radio Beijing	11755au	15440au	17710au	
1000-1100	Radio Moscow World Svc	6000am	7130as	7245as	9535eu
		9780eu	9855eu	11705me	11765me
		11920eu	11975eu	12010me	12055me
		13705as	15175am	15280as	15295eu
		15345am	15350am	15435as	15455as
		15465as	15470as	15490eu	15500eu
		15530as	15540as	15550as	15580eu
		15595me	17565as	17570as	17605as
		17610eu	17635as	17665am	17670as
		17675as	17690am	17695as	17710am
		17765as	17775as	17790as	17810am
		17870as	17880as	21680as	21690as
		21725as	21785as	21800au	21845as
1000-1025	Radio Netherlands	11895pa			
1000-1025	Radio Netherlands	11895pa	21485as		
1000-1100	Radio New Zealand Int'l	9700pa			
1000-1100	Radio Nigeria	4990do	7285do		
1000-1100	Radio RSA, Johannesburg	15230af			
1000-1030	Radio Tanzania	5985af	9685af	11765af	
1000-1100 mtwh	RTM Malaysia	7295do			
1000-1100	SBC Radio 1, Singapore	5010do	5052do	11940do	
1000-1100	SLBS, Sierra Leone	3316do			
1000-1030	Swiss Radio International	9560as	13685as	17670as	21695as
1000-1100	TWR Costa Rica	9725ca			
1000-1015	TWR Monte Carlo	9480eu			
1000-1100	VOA	5985as	11720au	15425au	
		6095am	9590am	11915am	
		11735eu	15160af 1	5195eu	21455eu
		21570eu			
1000-1100	Voice of Kenya	4935do			
1000-1100	Voice of Nigeria	7255af			
1000-1030	Voice of Vietnam	9840as	15010as		
1000-1100	WWCR Nashville	7435na			
1000-1100	WYFR	5950am			
1030-1100	BBC London	5975eu	6045eu	6180eu	6190af
		6195as	9410eu	9660eu	9740as
		9750eu	9760eu	11750as	11760me
		11940af	12095eu	15070va	15190sa
		15310as	15400af	15420af	15575me
		17640va	17705eu	17790af	17885af
		21470af	21660af		
1030-1040 mtwhf	Malawi B'casting Corp.	5995do			
1030-1100	Radio Korea	11715na			
1030-1100 sa	Radio Tanzania	5985af	9685af	11765af	
1030-1100	Radio Zambia Int'l	9505af	11880af	17895af	
1030-1100	Sri Lanka B'casting Corp.	11835as	15120as	17850as	
1030-1100	UAE Radio, Dubai	13675eu	15320eu	15435as	21605as
1040-1050 mtwhfa	Voice of Greece	15650as	17525as		
1055-1100	TWR Bonaire	11815am	15345am		

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1300 UTC

[8:00 AM EST/5:00 AM PST]

## FREQUENCIES

1300-1400	ABC Brisbane	4920do			
1300-1400	ABC Brisbane	4920au			
1300-1400	ABC Perth	9610			
1300-1330	BBC London	5975eu	6045eu	6180eu	6190af
		6195ca	9410eu	9515na	9660eu
		9740as	9750eu	9760eu	11750as
		11760me	11820as	11940af	12095eu
		15070va	15310as	15420af	15575me
		7180as	15220na	17640va	17705eu
		17790af	17885af	21470af	21660af
1300-1400	BBS Bahrain	6010me			
1300-1400	CFCX Montreal	6005do			
1300-1400	CFRX Toronto	6070do			
1300-1400	CKZU Vancouver	6160do			
1300-1400	CSM World Svc, Boston	9495as	13625pa	13710pa	13760eu
1300-1400	FEBC Manila	11685pa			
1300-1400	FEBC Manila	11995as			
1300-1400	HCJB Quito	11925am	15115am	17890am	21455am
1300-1400	KNLS Alaska	7355as			
1300-1400	KTBN Salt Lake City	7510			
1300-1400 sa	R. E. Africa, Eq. Guinea	9585af			
1300-1400	R. for Peace, Int'l	15030na	21465na		
1300-1330	R. SPLA (Sudanese cland.)	11710om			
1300-1400	Radio 1, Accra, Ghana	4915do			
1300-1400	Radio 2, Accra, Ghana	7295do			
1300-1400	Radio Australia	5995va	6080va	7240va	9580va
		9710va	11720va	21720va	
1300-1400	Radio Beijing	11600pa			
1300-1400	Radio Beijing	9715as	11600as		
1300-1330	Radio Cairo	17595as			
1300-1330 mtwhf	Radio Douala, Cameroon	4795do			
1300-1315	Radio Korea, Seoul	9750na			
1300-1400	Radio Moscow World Svc	4810do	5940eu	5950eu	5960eu
		7130eu	7160eu	7245as	7260as
		7380as	9560as	9705as	9780eu
		9855eu	9885eu	9895as	11705me
		11765me	11840am	11920as	12025me
		13705me	15280me	15345am	15480as
		15535as	17570me	17605me	17635as
		17655me	17665as	17690am	17700am
		17780me	17790as	17810am	17840as
		17860as	17870as	21680as	21725as
		21785as	21800au		
1300-1400	Radio Nigeria	4990do	7285do		
1300-1330 as	Radio Norway	9590eu	25730eu		
1300-1350	Radio Pyongyang	9345eu	9640eu	13650as	15230as
1300-1400	Radio Romania Int'l	11940eu	15365eu	17720eu	21665eu
1300-1400	Radio SPLA, Sudan	11710af			
1300-1400 sa	Radio Tanzania	5985af	9684af	11765af	
1300-1400 mtwhf	RCI Montreal	9635am	11855am	17820am	
1300-1400	RTM Malaysia	7295do			
1300-1400	SBC Radio 1, Singapore	5010do	5052do	11940do	
1300-1400	SLBS, Sierra Leone	3316do	5980do		
1300-1400	Sri Lanka B'casting Corp.	6075as	9720as		
1300-1330	Swiss Radio Int'l	6165eu	9535eu	12030eu	
1300-1330 as	TWR Bonaire	11815am	15345am		
1300-1330	TWR Boniare	11815am	15345am		
1300-1330	VOA	6110as	9760au	11715as	15155au
		15425au			
1300-1325	Voice of Kenya	4935do			
1300-1400	Voice of Nigeria	7255af			
1300-1400	WHRI Noblesville	9465	11790		
1300-1400	WWCR Nashville	15690			
1300-1400	WYFR	5950am	7355am	9705am	11830am
		17760am	11550as		
1315-1330	Radio Voice of Lebanon	5me	6549.5		
1320-1400	Radio Jordan	9560na			
1325-1400 mtwhf	Voice of Kenya	4935do			
1330-1400	All India Radio, Delhi	9565as	11760as	15335as	
1330-1400	BBC London	5975eu	6045eu	6180eu	6190af
		6195ca	9410eu	9515na	9660eu
		9740as	9750eu	9760eu	11750as
		11820as	11940af	12095eu	15070va
		15220na	15310as	15420af	15575me
		7180as	17640va	17705eu	17790af
		17885af	21470af	21660af	
1330-1400	Fujian PBS, China	2340do	4975do	5040do	
1330-1400	Nat'l Radio of Laos	7112as			
1330-1400	Radio Douala, Cameroon	4795do			
1330-1350 mtwhf	Radio Finland	15400na	21550na		
1330-1345	Radio Korea World News	7275as	11740as		
1330-1400 a	Radio Republik Indonesia	3385do	6070do		
1330-1400	Radio Sweden	17740as	21570as		
1330-1400	Radio Tashkent	5945as	9540as	15470as	17745as
1330-1400	RAI Vienna	11780as	15450as		
1330-1357	RCI Montreal	6095as	6150as	9535as	9700as
1330-1400	Swiss Radio Int'l	7480as	11690as	13635as	15505as
		17830as	21695as		
1330-1400	UAE Radio, Dubai	13675eu	15320eu	15435as	21605as
1330-1400	VOA	6110as	9760as	15155au	15425au
1330-1400	Voice of Turkey	9675eu			
1330-1400	Voice of Vietnam	9840as	12020as	15010as	
1345-1400	Vatican Radio	9600au	15090au	17525au	

## SELECTED PROGRAMS

## Sundays

- 1300 HCJB: Adventure Club. A weekly adventure program on Christianity for children.
- 1315 HCJB: The Word Today. A discussion of Biblical themes.
- 1330 HCJB: Telling The Truth. Stuart Briscoe presents a religious program.
- 1330 Radio Austria Int'l: Report From Austria. See S 0130.
- 1337 Radio Canada Int'l: Open House. The effect of religion on politics, social justice, and personal relations.

## Mondays

- 1300 HCJB: Stories Of Great Christians. Details not available at press time.
- 1313 Radio Canada Int'l: Open House. See S 1337.
- 1315 HCJB: Our Daily Bread. Details not available at press time.
- 1330 HCJB: Insight For Living. See M 1130.
- 1330 Radio Austria Int'l: Report From Austria. See S 0130.
- 1337 Radio Canada Int'l: As It Happens. A detailed look at the people and events making news in Canada and abroad.

## Tuesdays

- 1300 HCJB: Stories Of Great Christians. See M 1300.
- 1313 Radio Canada Int'l: As It Happens. See M 1337.
- 1315 HCJB: Our Daily Bread. See M 1315.
- 1330 HCJB: Insight For Living. See M 1130.
- 1330 Radio Austria Int'l: Report From Austria. See S 0130.
- 1337 Radio Canada Int'l: As It Happens. See M 1337.

## Wednesdays

- 1300 HCJB: Stories Of Great Christians. See M 1300.
- 1313 Radio Canada Int'l: As It Happens. See M 1337.
- 1315 HCJB: Our Daily Bread. See M 1315.
- 1330 HCJB: Insight For Living. See M 1130.
- 1330 Radio Austria Int'l: Report From Austria. See S 0130.
- 1337 Radio Canada Int'l: As It Happens. See M 1337.

## Thursdays

- 1300 HCJB: Stories Of Great Christians. See M 1300.
- 1313 Radio Canada Int'l: As It Happens. See M 1337.
- 1315 HCJB: Our Daily Bread. See M 1315.
- 1330 HCJB: Insight For Living. See M 1130.

- 1330 Radio Austria Int'l: Report From Austria. See S 0130.
- 1337 Radio Canada Int'l: As It Happens. See M 1337.

## Fridays

- 1300 HCJB: Stories Of Great Christians. See M 1300.
- 1313 Radio Canada Int'l: As It Happens. See M 1337.
- 1315 HCJB: Our Daily Bread. See M 1315.
- 1330 HCJB: Insight For Living. See M 1130.
- 1330 Radio Austria Int'l: Report From Austria. See S 0130.
- 1337 Radio Canada Int'l: As It Happens. See M 1337.

## Saturdays

- 1300 HCJB: Adventures In Odyssey. Lively children's dramas from the "Focus on the Family" team.
- 1330 HCJB: Children's Bible Hour. Songs and stories for children.
- 1330 Radio Austria Int'l: Austrian Coffeetable. See A 1130.
- 1337 Radio Canada Int'l: Media File. See S 0130.



## 1500 UTC

[10:00 AM EST/7:00 AM PST]

## FREQUENCIES

1500-1530	BBC London	3915as 6190af 9740na 11775na 15310as 7180as 17790af 21490af 6010me	5975eu 6195eu 9750eu 11940af 15400af 15260na 17860af 21660af	6045eu 6195as 9760eu 12095eu 15420af 17640va 17880af	6180eu 9410eu 11750as 15070va 15575me 17705eu 21470af	1500-1525	Radio Netherlands	5955eu 17605eu	13770eu	15150eu	17575eu
1500-1600	BBS Bahrain	6010me				1500-1600	Radio Nigeria	4990do	7285do		
1500-1600	Cameroon Radio-TV	4850do				1500-1530 as	Radio Norway	11870na			
1500-1600	CFCX Montreal	6005do				1500-1550	Radio Pyongyang	9325va	9640va	9977va	11705va
1500-1600	CFRX Toronto	6070do				1500-1530	Radio Romania Int'l	11775as 17720as	11940as 17745as	15250as	15335as
1500-1600	CSM World Svc, Boston	9530pa 21670pa	13625pa	13760pa		1500-1600	Radio RSA, Johannesburg	7230af	11880af		
1500-1550	Deutsche Welle	9735af 17735af 11865af	11965af 17765af	13610af	15145af	1500-1530 sa	Radio Tanzania	5985af	9684af	11765af	
1500-1555	FEBA Seychelles	11865af				1500-1530	RCI Montreal	9555eu	11915eu	11935eu	13650eu
1500-1600 tw/ha	FEBA Seychelles	9810as	15330af			1500-1600 s	RTM Malaysia	11955am			
1500-1600	FEBC Manila	11995as				1500-1600	SBC Radio 1, Singapore	7295do	5010do	5052do	11940do
1500-1600	HCJB Quito	11925na	15115na	17890na	21455na	1500-1600	SLBS, Sierra Leone	3316do	5980do		
1500-1600 a	IRRS Milan, Italy	7125eu				1500-1600	Sri Lanka B'casting Corp.	6075as	9720as		
1500-1600	KNLS Anchor Point, Alaska	9615as				1500-1515 smwha	Ulaanbaatar R., Mongolia	7260as 6110as	13780as		
1500-1600	KTBN Salt Lake City	15590na				1500-1600	VOA	15395as 9700eu	15325eu	17820eu	21545eu
1500-1600	KTWR Guam	11650as				1500-1600	Voice of Ethiopia	7165af	15205me		
1500-1600	R. for Peace Int'l	15030am	21465am			1500-1600 mtwhf	Voice of Kenya	4935do			
1500-1600	Radio 1, Accra, Ghana	4915do				1500-1600	Voice of Myanmar	5990do			
1500-1600	Radio 2, Accra, Ghana	7295do				1500-1600	Voice of Nigeria	7255af			
1500-1600	Radio Australia	5995va 9710va 12000va	6080va 9770va 13755va	7240va 9860va	9580va 11720va	1500-1600	WHRI Noblesville	15105na	21840sa		
1500-1600	Radio Bangladesh	4880do				1500-1600	WRNO New Orleans	15420na			
1500-1600	Radio Beijing	7405am				1500-1600	WWCR Nashville	15690am	17525am		
1500-1600	Radio Beijing	11815as	15165as			1500-1600	WYFR	11830am	15215am	17760am	
1500-1600	Radio Japan	9505am				1505-1530	Radio Finland	6120eu 21550eu	9730af	11755eu	15440me
1500-1600	Radio Jordan	9560na				1522-1535	Voice of Taiwan	9910as			
1500-1600	Radio Moscow World Svc	4810do 7135eu 7260as 7380as 9725eu 9795as 11705me 11840am 15345as 15465as 17605as 17670as 17870as	5905eu 7170as 7315as 7420as 9735as 9855as 11765me 12025me 15395am 15480as 17610am 17690as 21615au	5960eu 7195as 7330eu 9675eu 975eu 9895eu 11780as 12035me 15420am 15520as 17655am 17790as	6055eu 7245as 7345as 9705eu 9760as 11655as 11830as 13705as 15450as 15535as 17665am 17810am	1522-1535	R. Veritas Asia, Manila	15140as			
						1530-1600	BBC London	6190af 9410eu 11775na 15260as 17705eu	6195eu 9740na 11940af 15310as 17880af	6195as 9750eu 12095eu 15400af 21470af	7180as 11750as 15070va 17640va 21660af
						1530-1600	Radio Sweden	17870na	21500na		
						1530-1600	Radio Tanzania	5985af	9684af	11765af	
						1530-1600	Radio Tirana	9730af	11835af		
						1530-1600	Radio Zambia Int'l	9505af	11860af	17895af	
						1530-1600	RAI Vienna	6155eu	11780as	13730eu	21490va
						1530-1600	Sudan Nat'l B'casting Cor	9540do	9550do	11635do	
						1530-1600	Swiss Radio Int'l	13685af	15430af	17830af	21630af
						1530-1540 mtwhfa	Voice of Greece	11645eu	15550na	17525na	
						1545-1600	Radio Korea World News	7275va			
						1545-1600	Vatican Radio	15090au	17865au		

## SELECTED PROGRAMS

## Sundays

- 1500 HCJB: Urban Alternative. A program for inner-city America.
- 1507 Radio Canada Int'l (North America): Sunday Morning. See S 1413.
- 1507 Radio Canada Int'l: The Best of Morningside. Program details not available at press time.
- 1515 BBC: Concert Hall. Classical music recordings from the world's great concert halls.
- 1530 HCJB: Heaven And Home Hour. Christian messages of inspiration.
- 1530 Radio Austria Int'l: Austrian Shortwave Panorama. See S 1130.

## Mondays

- 1500 HCJB: Key Life. See M 1200.
- 1507 Radio Canada Int'l: The Best of Morningside. See S 1507.
- 1515 BBC: Feature/Drama. See M 0101.
- 1515 HCJB: Gateway To Joy. Contemporary women's issues from a Biblical perspective.
- 1530 HCJB: Back To The Bible. A daily Bible study.
- 1530 Radio Austria Int'l: Report From Austria. See S 0130.

## Tuesdays

- 1500 HCJB: Key Life. See M 1200.
- 1507 Radio Canada Int'l: The Best of Morningside. See S 1507.
- 1515 BBC: A Jolly Good Show. Dave Lee Travis presents listener rock music requests.
- 1515 HCJB: Gateway To Joy. See M 1515.
- 1530 HCJB: Back To The Bible. See M 1530.
- 1530 Radio Austria Int'l: Report From Austria. See S 0130.

## Wednesdays

- 1500 HCJB: Key Life. See M 1200.
- 1507 Radio Canada Int'l: The Best of Morningside. See S 1507.
- 1515 BBC: Talks. See M 2315.
- 1515 HCJB: Gateway To Joy. See M 1515.
- 1530 BBC: Comedy/Drama. Hear a humorous look back in "Two Cheers For 1991" (1st); short dramas are the fare in "Today's Date" (8th), "Reasons For Dancing" (15th), and "Sugar For Shock" (22nd); another look back ends the month, "Two Cheers For January" (29th).
- 1530 HCJB: Back To The Bible. See M 1530.
- 1530 Radio Austria Int'l: Report From Austria. See S 0130.

## Thursdays

- 1500 HCJB: Key Life. See M 1200.
- 1507 Radio Canada Int'l: The Best of Morningside. See S 1507.
- 1515 BBC: Music With Matthew. Brian Matthew with classical music selections.
- 1515 HCJB: Gateway To Joy. See M 1515.
- 1530 HCJB: Back To The Bible. See M 1530.
- 1530 Radio Austria Int'l: Report From Austria. See S 0130.

## Fridays

- 1500 HCJB: Key Life. See M 1200.
- 1507 Radio Canada Int'l: The Best of Morningside. See S 1507.
- 1515 BBC: Music Review. See H 2315.
- 1515 HCJB: Gateway To Joy. See M 1515.
- 1530 HCJB: Back To The Bible. See M 1530.
- 1530 Radio Austria Int'l: Report From Austria. See S 0130.

## Saturdays

- 1500 HCJB: Living Word. Details not available at press time.
- 1507 Radio Canada Int'l: Media File. See S 0130.
- 1515 BBC: Sportsworld. See A 1430.
- 1530 HCJB: Radio Reading Room. See S 0400.
- 1530 Radio Austria Int'l: Austrian Coffeetable. See A 1130.

## 1600 UTC

## [11:00 AM EST/8:00 AM PST]

### FREQUENCIES

1600-1630	BBC London	1540af	3915as	5975as	6190af	6190af				
		6195eu	9410eu	9630af	9740me					
		9750eu	11750as	11775na	11940af					
		12095eu	15070eu	15400af	17640va					
		17695eu	17705eu	17860af	17880af					
		7180as	15260na	15310as	21470af					
		21660af								
1600-1700	BBS Bahrain	6010me								
1600-1700	BSKSA Saudi Arabia	9705eu	9720eu							
1600-1700	CFCX Montreal	6005do								
1600-1700	CFRX Toronto	6070do								
1600-1700	CSM World Svc, Boston	11580as	13625as	21640af						
1600-1650	Deutsche Welle	6170as	7225as	7305as	9615as					
		11785as	15105as	15415as	15595					
		11865as								
1600-1615 a	FEBA Seychelles	11865as								
1600-1630	HCJB Quito	11925am	15115am	17890am	21455am					
1600-1630 a	IRRS Milan, Italy	7125eu								
1600-1700	KSDA Guam	13720as								
1600-1700	KTBN Salt Lake City	15590am								
1600-1635	KTWR Guam	11650as								
1600-1610	Malawi B'casting Corp.	3381do								
1600-1700	R. for Peace, Int'l	15030na	21465na							
1600-1700	Radio 1, Accra, Ghana	4915do								
1600-1700	Radio 2, Accra, Ghana	7295do								
1600-1700	Radio Australia	5995va	6060va	6080va	7240va					
		9580va	9860va	11910va	12000va					
		13605va	13755va							
1600-1700	Radio Beijing	11575af	15130af	15170af						
1600-1700	Radio France Int'l	6175eu	11705af	12015af	15530me					
		17620af	17795af	17850af						
1600-1700	Radio Korea	5975om	9870af							
1600-1610	Radio Lesotho	4800do								
1600-1700	Radio Moscow World Svc	6055eu	7170eu	7220eu	7260eu					
		7290eu	7315eu	7345eu	7390eu					
		9575eu	9725eu	9755as	9795as					
		9885as	9895eu	11705me	11725am					
		11840am	12035me	13705as	15395as					
		15420am	15450as	15465as	15480as					
		15485as	17605as	17610am	17655as					
		17670as	17690am	17775as	17780as					
		17810am	17870as	21615as	21785au					
1600-1700	Radio Nigeria	4990do								
1600-1630 as	Radio Norway	15230me	21730me							
1600-1630	Radio Pakistan	11570me	13665me	15560me	17555af					
		17725af	21480me							
1600-1630	Radio Polonia, Warsaw	6135eu	9540eu							
1600-1700	Radio RSA, Johannesburg	7230af	11380af	*5160af						
1600-1700	Radio Tanzania	5985af	9684af	11765af						
1600-1700	Radio Zambia Int'l	9505af	11880af	17895af						
1600-1700 s	RCI Montreal	11955am								
1600-1605	SBC Radio 1, Singapore	5010do	5052do	11940do						
1600-1700	SLBS, Sierra Leone	3316do	5980do							
1600-1700	Sri Lanka B'casting Corp.	6075as	9720as							
1600-1700	TWR Swaziland	9600af								
1600-1640	UAE Radio, Dubai	11795af	13675eu	15320eu	15400af					
		21605eu								
1600-1615	Vatican Radio	15090au	17865au							
1600-1630	VOA	9700eu	15205me							
		6110as	7125as	9645as	9760as					
		15395as								
		9575af	11920af	15410af	15580af					
		17800af	21625af							
1600-1700 mtwhf	Voice of Kenya	4935do								
1600-1700	Voice of Nigeria	7255af								
1600-1700	Voice of the Somali Peopl	6320do								
1600-1630	Voice of Vietnam	9840eu	12020eu	15010eu						
1600-1700	WHRI Noblesville	15105am	17830am							
1600-1700	WRNO New Orleans	15420								
1600-1700	WRCR Nashville	15690am								
1600-1700	WYFR	11830am	15215am	15355am	17760am					
		21525eu	21615af							
1610-1615 mtwhf	Radio Botswana	5955af	7255af							
1615-1700	Swiss Radio Int'l	9885eu								
1630-1700	BBC London	3915as	5975as	6190af	6196eu					
		9410eu	9630af	9740me	11750as					
		11775na	11940af	12095eu	15070eu					
		15260na	15310as	15400af	15420af					
		17640va	17695eu	17860af	17880af					
		21470af	21660af							
1630-1700	HCJB Quito, Ecuador	15270eu	21455eu	21480eu						
1630-1700	Radio Cairo	15255af								
1630-1700 mtwhfa	Radio Netherlands	6020af	15570af							
1630-1657	RCI Montreal	7150as	9555as							
1630-1700 mtwhf	RTV Morocco	15335af	15360af	17595af						
1630-1700	RTV Rwandiase	3330	6055							
1630-1700	VOA	6180eu	9700eu	9760me	11710me					
		15205me	15245me							

### SELECTED PROGRAMS

#### Sundays

- 1607 Radio Canada Int'l (North America): Sunday Morning. See S 1413.
- 1607 Radio Canada Int'l: The Best of Morningside. See S 1507.
- 1615 BBC: Feature. See S 0230.
- 1630 HCJB: Quito Calling. Dee Baklenko presents a variety of programming beamed at the Middle East.
- 1637 Radio Canada Int'l: Open House. See S 1337.
- 1645 BBC: Letter From America. See S 0545.

#### Mondays

- 1607 Radio Canada Int'l: As It Happens. See M 1337.
- 1615 BBC: New Ideas. Innovative developments in technology and new products.
- 1635 BBC: Talks. "What Makes A Poem?" (6th/13th); if that doesn't interest you, maybe three months of "Trees" will (through April 6th)!
- 1637 Radio Canada Int'l: As It Happens. See M 1337.
- 1639 HCJB: Current Affairs. News, features, and interviews from HCJB correspondents.
- 1640 Radio Netherlands: Newslines. See S 0040.
- 1645 BBC: The World Today. A look at a topical aspect of the international scene.
- 1654 Radio Netherlands: The Research File. See M 1154.

#### Tuesdays

- 1607 Radio Canada Int'l: As It Happens. See M 1337.
- 1615 BBC: Megamix. See T 1130.
- 1637 Radio Canada Int'l: As It Happens. See M 1337.
- 1639 HCJB: Current Affairs. See M 1639.
- 1640 Radio Netherlands: Newslines. See S 0040.
- 1645 BBC: The World Today. See M 1645.
- 1654 Radio Netherlands: Mirror Images. See T 1154.

#### Wednesdays

- 1607 Radio Canada Int'l: As It Happens. See M 1337.
- 1615 BBC: Rock/Pop Music. See T 0630.
- 1637 Radio Canada Int'l: As It Happens. See M 1337.
- 1639 HCJB: Current Affairs. See M 1639.
- 1640 Radio Netherlands: Newslines. See S 0040.
- 1645 BBC: The World Today. See M 1645.
- 1654 Radio Netherlands: Feature. See W 1154.

#### Thursdays

- 1607 Radio Canada Int'l: As It Happens. See M 1337.
- 1615 BBC: Network UK. Issues and events affecting people across the UK.
- 1637 Radio Canada Int'l: As It Happens. See M 1337.
- 1639 HCJB: Current Affairs. See M 1639.
- 1640 Radio Netherlands: Newslines. See S 0040.

- 1645 BBC: The World Today. See M 1645.
- 1654 Radio Netherlands: Media Network. See H 1154.

#### Fridays

- 1607 Radio Canada Int'l: As It Happens. See M 1337.
- 1615 BBC: Science in Action. The latest news about scientific innovations.
- 1637 Radio Canada Int'l: As It Happens. See M 1337.
- 1639 HCJB: Current Affairs. See M 1639.
- 1640 Radio Netherlands: Newslines. See S 0040.
- 1645 BBC: The World Today. See M 1645.
- 1654 Radio Netherlands: 1992. See F 1154.

#### Saturdays

- 1607 Radio Canada Int'l: Media File. See S 0130.
- 1615 BBC: Sportsworld. See A 1430.
- 1630 HCJB: Quito Calling. See S 1630.
- 1637 Radio Canada Int'l: Media File. See S 0130.
- 1640 Radio Netherlands: Newslines. See S 0040.
- 1654 Radio Netherlands: Airtime Africa. Music, discussion with studio guests, and analysis of the issues that concern both Europe and Africa.

## 1700 UTC [12:00 AM EST/9:00 AM PST]

### FREQUENCIES

1700-1730	BBC London	3255af 21660af	7160me	15260na 21470af	
		3915as 6190af 9740eu 15070eu 17640va	5975as 6195eu 11750as 15310as 17695eu	6005af 6180eu 9410eu 12095eu 17880af	6180eu 9630af 12095eu 15420af 17880af
1700-1800	BBS Bahrain	6010me			
1700-1800	BSKSA Saudi Arabia	9705eu	9720eu		
1700-1800	CFCX Montreal	6005do			
1700-1800	CFRX Toronto	6070do			
1700-1800	CSM World Svc, Boston	11580as	13625as	21640af	
1700-1800	HCJB Quito	21455am	21480am	25950na	
1700-1730	HCJB Quito, Ecuador	15270eu	21455eu	21480eu	
1700-1800	KSDA Guam	13720as			
1700-1800	KTBN Salt Lake City	15590			
1700-1800	R. E. Africa, Eq. Guinea	7190af			
1700-1800	R. for Peace, Int'l	15030na	21465na		
1700-1800	Radio 1, Accra, Ghana	4915do			
1700-1705	Radio 2, Accra, Ghana	7295do			
1700-1800	Radio Australia	5995va 9580va 13605va	6060va 9860va 13755va	6080va 11910va 12000va	7240va 12000va
1700-1710	Radio Bafoussam, Cameroon	4000do			
1700-1800	Radio Beijing	7405af	9570af	11575af	
1700-1800	Radio Cairo	15255af			
1700-1800	Radio Japan	7140as	9505am	11815na	15345me
1700-1800	Radio Moscow World Svc	5905eu 7260eu 7420eu 9730eu 9830as 11840am 15485am	6055eu 7330eu 9575as 9755eu 9895as 12030af 17670am	6175eu 7345eu 9685eu 9720eu 11630af 13670am 15450am	7170eu 7370eu 9795as 9795as 11730af 15450am
1700-1725	Radio Netherlands	6020af	15570af		
1700-1800	Radio Nigeria	3326do	4990do		
1700-1730 as	Radio Norway	9655eu			
1700-1800	Radio Pakistan	11570eu	15550eu		
1700-1730 mtwhf	Radio Portugal	15425me			
1700-1750	Radio Pyongyang	9325va	9640va	9977va	11705va
1700-1800	Radio RSA, Johannesburg	7230af	11880af	15160af	
1700-1800	Radio Tanzania	5985af	9684af	11765af	
1700-1800	Radio Zambia Int'l	9505af	11880af	17895af	
1700-1730	RCI Montreal	5995eu 17820eu	7235eu 21545eu	13650eu	15325eu
1700-1800 mtwhfa	RTV Morocco	15335af	17595af	17815af	
1700-1728	SLBS, Sierra Leone	3316do	5980do		
1700-1730	Sri Lanka B'casting Corp.	6075as	9720as		
1700-1730	TWR Swaziland	3200af	9520af		
1700-1730	VOA	3980eu 15205me 9575af 17800af 6110as	6040me 11920af 21625af 7125as	9700eu 15410af 9645as	9760me 15580af 15395as
1700-1800 mtwhf	Voice of Kenya	4935do			
1700-1800	Voice of Nigeria	7255af			
1700-1800	WHRI Noblesville	15105	17830		
1700-1800	WMLK Bethel	9465eu			
1700-1800	WRNO New Orleans	15420			
1700-1800	WWCR Nashville	17525			
1700-1800	WYFR	21500va			
1706-1800	Radio 2, Accra, Ghana	3366do			
1715-1745	BBC London	9560ca	21660ca		
1715-1730	Radio Buea, Cameroon	3970do			
1715-1730	Radio Korea World News				
1728-1800	SLBS, Sierra Leone	3316do			
1730-1800	BBC London	3255af 3915as 6190af 9740me	7160me 5975as 6195eu 11775na	21470af 6005af 9410eu 12095eu	21660af 6180eu 9630af 15070eu

1730-1745	Radio Bayrak, Cyprus	6150va			
1730-1745 a	Radio Douala, Cameroon	4795do			
1730-1800	Radio Romania Int'l	11790af	15340af	15365af	17720af
1730-1800	TWR Swaziland	3200af			
1730-1800	Vatican Radio	11625af	15090af	17730af	
1730-1800	VOA	6040eu 9575af 17800af	9700eu 11920af 21625af	9760eu 15410af	15205eu 15580af
1740-1800	Cameroon Radio-TV	4850do			
1745-1800 mtwhfa	Radio Douala, Cameroon	4795do			
1745-1800	RTV Madagascar	3232do	3286do	5005do	

## 1800 UTC [1:00 PM EST/10:00 AM PST]

### FREQUENCIES

1800-1900	All India Radio, Delhi	11935af			
1800-1830	BBC London	3255af 6190af 9410eu 12095eu 17640eu	3955eu 6195eu 9600af 15070eu 17880af	5975as 7160me 9740me 15310as 15400af	6180eu 7325af 11750as 15400af
1800-1900	BBS Bahrain	6010me			
1800-1900	BSKSA Saudi Arabia	9705eu	9720eu		
1800-1900	Cameroon Radio-TV	4850do			
1800-1900	CFCX Montreal	6005do			
1800-1900	CFRX Toronto	6070do			
1800-1900	CSM World Svc, Boston	13625as	15665am	21640af	
1800-1830	Georgian Radio, Tbilisi	12070me			
1800-1815	Kol Israel	11587na	11675eu	15590af	17575sa
1800-1900	KTBN Salt Lake City	15590			
1800-1810	Malawi B'casting Corp.	3381do			
1800-1900	R. E. Africa, Eq. Guinea	7190af			
1800-1900	R. for Peace Int'l	13630am	15030am		
1800-1900	Radio 1, Accra, Ghana	4915do			
1800-1900	Radio 2, Accra, Ghana	7295do			
1800-1900	Radio Afghanistan	6145eu	7215eu	9635am	
1800-1900	Radio Australia	5995va 9580va 13605va	6060va 9860va 13755va	6080va 11910va	7240va 12000va
1800-1900	Radio Baghdad, Iraq	11740eu			
1800-1840 w	Radio Bertoua, Cameroon	4750do			
1800-1830	Radio Cairo	15255af			
1800-1845 mtwhfa	Radio Douala, Cameroon	4795do			
1800-1900	Radio Ivory Coast, Abidjn	11920af			
1800-1900	Radio Korea	15575eu			
1800-1900	Radio Moscow World Svc	7170eu 7370as 9685am 9795af 11630af	7260eu 7420as 9720eu 9830af 11840am	7330eu 9540eu 9755af 9860af 13670am	7345as 9575as 9765af 9895eu
1800-1900	Radio Mozambique	3265af	4855af	9618af	
1800-1900	Radio New Zealand Int'l	15120pa			
1800-1900	Radio Nigeria	3326do	4990do		
1800-1900	Radio Tanzania	5985af	9684af	11765af	
1800-1900	Radio Zambia Int'l	9505af	11880a	17895af	
1800-1900	Radiobras, Brasilia	15265eu			
1800-1830 mtwhf	RCI Montreal	13670af	15260af	17820af	
1800-1900 as	RCI Montreal	13670me	15260me	17820me	
1800-1830	RTV Congolaise	3265af	4765af		
1800-1900	SLBS, Sierra Leone	3316do			
1800-1845	TWR Swaziland	3200af	9600af		
1800-1900	VOA	6040eu 9575af 17800af	9700eu 11920af 21625af	9760me 15410af	15205me 15580af
1800-1900	Voice of Ethiopia	9662af			
1800-1900 mtwhf	Voice of Kenya	4935do			

## 1800 UTC continued

1800-1830	Voice of Vietnam	9840eu	12020eu	15010eu			
1800-1900	WHRI Noblesville	13760na	17830sa				
1800-1900	WMLK Bethel	9465eu					
1800-1900	WRNO New Orleans	15420na					
1800-1900	WWCR Nashville	15690na	17525na				
1800-1900	WYFR	21500va					
1815-1900	Radio Bangladesh	12030as	15255as				
1815-1830	Radio Voice of Lebanon	5me	6549.5				
1830-1900	BBC London	3255af	3955eu	6005af	6180eu		
		6190af	6195eu	7325eu	9410eu		
		9600af	11750as	12095eu	15070eu		
		15400af	17880af				
1830-1900 a	Lativan Radio, Riga	5935eu					
1830-1900	Radio Netherlands	6020af	15570af	17605af	21685af		
1830-1855	Radio Polonia, Warsaw	5995eu	6135eu	7285eu	9525eu		
1830-1900	Radio Sofia, Bulgaria	6035eu	9560eu	9700af	11680eu		
		11720af	11735af				
1830-1900	Radio Tirana	7120eu	9480eu				
1830-1900	RAI Vienna	5945eu	6155eu	12010me	13730af		
1830-1900	Sri Lanka B'casting Corp.	9720eu	15120eu				
1830-1900	Swiss Radio Int'l	9885af	11955af				
1840-1850 mtwhfa	R National de Venezuela	9540om					
1840-1850 mtwhfa	Voice of Greece	11645af	12105af	15650af			
1845-1900	Ghana B'casting Corp.	6130af					
1845-1900	RTV Guinea	4900af	7125af				
1845-1900 s	RTV Mali	4783do	4835do	5995do	7285do		
1845-1900	TWR Swaziland	3200af					

## 1900 UTC continued

1900-2000	Radio Nigeria	3326do	4990do				
1900-2000	Radio Sofia, Bulgaria	6035eu	9560eu	9700af	11680eu		
		11720af	11735af				
1900-1915	Radio Tanzania	5985af	9684af	11765af			
1900-2000	Radio Zambia Int'l	9505af	11880af	17895af			
1900-2000	RAE Buenos Aires	15345eu					
1900-1930 mtwhf	RCI Montreal	13670me	15260me	17820me			
1900-2000 s	RTV Morocco	15335af					
1900-2000	SLBS, Sierra Leone	3316do					
1900-2000	Spanish Foreign Radio	9530eu	9675eu	9685af	9875eu		
1900-2000	Sri Lanka B'casting Corp.	9720eu	15120eu				
1900-2000	TWR Swaziland	3200af	3240af				
1900-2000	VOA	6040eu	9730eu	9760eu	11710eu		
		15205eu	9525as	11870as	15180au		
		9575af	11920af	15410af	15580af		
		17800af	21625af				
1900-2000 mtwhf	Voice of Kenya	4935do					
1900-2000	Voice of Nigeria	7255af					
1900-1930	Voice of Vietnam	9840eu	12020eu	15010eu			
1900-2000	WHRI Noblesville	13760	17830				
1900-2000	WMLK Bethel	9465eu					
1900-2000	WRNO New Orleans	15420					
1900-2000	WWCR Nashville	15690					
1900-2000	WYFR	15355eu	21615af				
1910-1915	Radio Botswana	3356af					
1920-1930	Radio Buea, Cameroon	3970do					
1920-1930 mtwhfa	Voice of Greece	9395eu	11645eu				
1930-2000	BBC London	3255af	3955eu	6005af	6180eu		
		6190af	6195eu	7160me	7325eu		
		9410eu	9600af	9630af	11750pa		
		12095eu	15070eu	15400af	17880af		
		21660af					
1930-2000 tes	KFBS Saipan	9475af					
1930-1940 irr	Radio Burkina Faso	4815af	7230af				
1930-2000	Radio Federal Yugoslavia	6100eu	15140af				
1930-2000	Radio Finland	6120eu	9730af	11755af			
1930-2000	Radio Prague	6055eu	7345eu				
1930-2000	Radio Romania Int'l	5990eu	6105eu	7145eu	7195eu		
		9690eu					
1930-2000	Radio Sweden	6065eu	9655eu	15270eu			
1930-2000	Radio Sweden	6065va	9655va	15270va			
1930-2000	VOIRI Teheran	6140eu	9022eu				
1935-1955	RAI, Rome	7275eu	9710eu	11800eu			
1935-1945	RTV Togo	5047af					
1940-2000 smwha	Ulaanbaatar R., Mongolia	11850eu	12015eu				
1945-2000	Radio Korea World News	6135as					
1950-2000	Sudan Nat'l B'casting Cor	9540do	9550do	11635do			

## 1900 UTC [2:00 PM EST/11:00 AM PST]

### FREQUENCIES

1900-2000	All India Radio, Delhi	11935af					
1900-1930	BBC London	3255af	3955eu	6005af	6180eu		
		6190af	6195eu	7160me	7325eu		
		9410eu	9600af	9630af	11750pa		
		12095eu	15070eu	15400af	17880af		
		21660af					
1900-2000	BBS Bahrain	6010me					
1900-1930	BRT Brussels	5910eu	9905eu	15515af			
1900-2000	BSKSA Saudi Arabia	9705eu	9720eu				
1900-1945	Cameroon Radio-TV	4850na					
1900-2000	CFCX Montreal	6005do					
1900-2000	CFRX Toronto	6070do					
1900-2000	CSM World Svc, Boston	13625as	15665am	21640af			
1900-1950	Deutsche Welle	9765af	11765af	11785af	11905af		
		13790af	15350af	17810af			
1900-2000	Ghana B'casting Corp.	6130af					
1900-2000	HCJB Quito	15270eu	17790eu	21455eu	21480eu		
1900-2000	KTBN Salt Lake City	15590					
1900-2000	KVOH Los Angeles	17775am					
1900-2000	R. E. Africa, Eq. Guinea	7190af					
1900-2000	R. for Peace Int'l	13630am	15030am				
1900-2000	Radio 1, Accra, Ghana	4915do					
1900-2000	Radio 2, Accra, Ghana	7295do					
1900-2000	Radio Algiers	9510me	9535me				
1900-2000	Radio Australia	5995va	6060va	6080va	7240va		
		9580va	9860va	11910va	12000va		
		13605va	13755va				
1900-2000	Radio Baghdad, Iraq	11740eu					
1900-2000	Radio Beijing	6955af	9440af				
1900-2000	Radio Havana Cuba	17705eu					
1900-1930	Radio Japan	9505am	9640am	9645au	11850af		
1900-2000	Radio Moscow World Svc	7260eu	7330eu	9540eu	9630eu		
		9685am	9725as	9755af	9765af		
		9780am	9795af	9855af	9860eu		
		9875am	9895af	11630af	11685eu		
		11745af	11840am	12050af	12055af		
1900-1925	Radio Netherlands	6020af	15570af	17605af	21685af		
1900-2000 smtwhf	Radio New Zealand Int'l	15120pa					



Radio Beijing staff

## 2000 UTC [3:00 PM EST/12:00 PM PST]

## FREQUENCIES

2000-2030	BBC London	3255af	3955eu	5975eu	6005af				
		6180eu	6190af	6195eu	7160me				
		7180pa	7325eu	9410eu	9600as				
		9630af	11750pa	12095eu	15070eu				
		15260sa	15340pa	15400af	17880af				
2000-2100	BBS Bahrain	6010me							
2000-2100	BSKSA Saudi Arabia	9705eu	9720eu						
2000-2100	CFCX Montreal	6005do							
2000-2100	CFRX Toronto	6070do							
2000-2100	CSM World Svc, Boston	9455as	13625pa	13770am	15665eu				
		17555eu							
2000-2100	Georgian Radio, Tbilisi	12015me							
2000-2100 tes	KFBS Saipan	9475af							
2000-2100	King of Hope, Lebanon	6280me							
2000-2030	Kol Israel	7465am	9435am	11587am	11605am				
		11675eu	17575af	17630as					
2000-2100	KTBN Salt Lake City	15590							
2000-2100	KVOH Los Angeles	17775am							
2000-2010 w	Malawi B'casting Corp.	3381do							
2000-2100	R. E. Africa, Eq. Guinea	7190af							
2000-2100	R. for Peace Int'l	13630na	15030na						
2000-2100	Radio 1, Accra, Ghana	4915do							
2000-2100	Radio 2 Accra, Ghana	7295do							
2000-2100	Radio Australia	5995va	6060va	6080va	7240va				
		9580va	9860va	11910va	11930va				
		12000va	13605va	13755va					
2000-2100	Radio Baghdad, Iraq	11740eu							
2000-2100	Radio Beijing	9440af							
2000-2100	Radio Beijing	9920eu	11500eu						
2000-2100	Radio Beijing	11715af	15170af						
2000-2100	Radio Havana Cuba	15135af	17705eu						
2000-2100	Radio Moscow World Svc	7170eu	7330eu	9540eu	9685am				
		9710am	9720am	9725af	9765af				
		9795eu	9855af	9860am	9875af				
		9895eu	11630af	11685af	11840am				
		12050af	12055eu	12060me	15425me				
2000-2100 smtwhf	Radio New Zealand Int'l	15120pa							
2000-2100	Radio Nigeria	3326do	4990do						
2000-2030 as	Radio Norway	17730af	17730sa						
2000-2055	Radio Polonia, Warsaw	6135eu	7270eu	9525eu					
2000-2030 mtwhf	Radio Portugal	11740eu							
2000-2050	Radio Pyongyang	6576me	9345eu	9640eu	9977af				
2000-2030	Radio Romania Int'l	5990eu	6105eu	7145eu	7195eu				
		9690eu							
2000-2030	Radio Sweden	6065eu	9655eu	15270eu					
2000-2030	Radio Sweden	6065eu	9655eu	15270eu					
2000-2100 s	Radio Zambia Int'l	9505af	11880af	17895af					
2000-2030	RCI Montreal	5995eu	7235eu	11945eu	13650eu				
		15140eu	15325eu	17875eu					
2000-2100	SLBS, Sierra Leone	3316do							
2000-2030	Swiss Radio Int'l	3985eu	6165eu	9535eu					
2000-2100	TWR Swaziland	3200af	3240af						
2000-2010 smwha	Ulaanbaatar R., Mongolia	11850eu	12015eu						
2000-2030	Vatican Radio	9645af	11625af	15090af					
2000-2100	VOA	6040eu	9700eu	9760eu	11710eu				
		15205eu							
2000-2100	Voice of Indonesia	7125as	9675as	11752as	11785as				
2000-2010 mtwhf	Voice of Kenya	4935do							
2000-2030	Voice of Nigeria	7255af							
2000-2030	VOIRI Teheran	6140eu	9022eu						
2000-2100	WHRI Noblesville	13760af	17830sa						
2000-2100	WRNO New Orleans	15420							
2000-2100	WWCR Nashville	15690	17525						
2000-2100	WYFR	7355eu	15566eu	17750af	21525eu				
2005-2100	Radio Damascus	12085na	15095na						
2010-2100 sa	Voice of Kenya	4935do							
2015-2030	V. de la Rev., Benin	4870af	5025af						
2015-2045 sth	V. of the Black Cockerel	9700af							
2025-2045	RAI, Rome	7235me	9575me	11800me					
2030-2100	BBC London	3255af	3955eu	5975ca	6005af				

2030-2100	IRRS Milan, Italy	6180eu	6190af	6195eu	7180pa				
		7325eu	9410eu	11750pa	12095eu				
		15070eu	15260sa	15340pa	15400af				
2030-2100	Radio Cairo	7125eu							
2030-2100	Radio Korea	15375af							
2030-2100	Radio Netherlands	6480eu	7550af	15575eu					
2030-2100	RCI Montreal	9895af	11660af	13700af					
		6010eu	7230eu	9650eu	11945eu				
		13650eu	15140eu	15325as	17875as				
2030-2100	Voice of Vietnam	9840eu	12020eu	15010eu					
2045-2100	All India Radio, Delhi	7412eu	9665eu	9910eu	11620eu				
		11715eu	15265eu						
2045-2100	Radio Korea World News	5975as							
2045-2100	Radio Sofia, Bulgaria	9560eu	11680af	11735af					
2050-2100	Vatican Radio	5935eu	7250eu						

## 2100 UTC [4:00 PM EST/1:00 PM PST]

## FREQUENCIES

2100-2130	BBC London	6195as	5975ca	6005af	3255af				
		3955eu	6180eu	15340pa	11750pa				
		12095eu	15070na	15260sa	15400af				
		9590na	9410eu	7325eu					
2100-2106	BBS Bahrain	6010me							
2100-2200	CFCX Montreal	6005do							
2100-2200	CFRX Toronto	6070do							
2100-2200	CSM World Svc, Boston	9455as	13625pa	13770am	9820pa				
		15665eu	17555sa						
2100-2150	Deutsche Welle	6185as	9670as	9765as	11785as				
		15350as	15350as						
2100-2130	Georgian Radio, Tbilisi	11760eu							
2100-2200	IRRS Milan, Italy	7125eu							
2100-2130	King of Hope, Lebanon	6280me							
2100-2200	KTBN Salt Lake City	15590							
2100-2200	KVOH Los Angeles	17775							
2100-2110	Malawi B'casting Corp.	3381do							
2100-2200	R. E. Africa, Eq. Guinea	7190af							
2100-2200	R. for Peace Int'l	13630na	15030na						
2100-2200	R. Nacional de Angola	3355af	9535af						
2100-2200	Radio 1, Accra, Ghana	4915do							
2100-2200	Radio 2, Accra, Ghana	7295do							
2100-2200	Radio Australia	6060va	11880va	11930va	13605va				
		13705va	15320va	21740va					
2100-2200	Radio Baghdad, Iraq	11740eu							
2100-2130	Radio Beijing	11715af	15170af						
2100-2200	Radio Beijing	9920eu	11500eu						
2100-2200	Radio Budapest	6110eu	9835eu	11910eu					
2100-2200	Radio Cairo	15375af							
2100-2105	Radio Damascus	12085na	15095na						
2100-2200	Radio Japan	11815me	11840eu	15430eu	17810as				
		17890as							
2100-2130	Radio Korea	6480eu	7550af	15575eu					
2100-2200	Radio Moscow World Svc	5950eu	5960eu	6175eu	7170eu				
		7240af	7255af	7330eu	7340af				
		7390af	9450eu	9695eu	9710am				
		9720am	9725af	9765af	9795af				
		9855af	9860eu	98654am	9895eu				
		11685eu	11840am	12050me	12055me				
		12060as	15425as	21480as					
2100-2125	Radio Netherlands	9895af	11660af	13700af					
2100-2200	Radio New Zealand Int'l	15120pa							
2100-2200	Radio Nigeria	3326do	4990do						
2100-2130 as	Radio Norway	9590eu							
2100-2130 mtwhf	Radio Portugal	17740eu							
2100-2130	Radio Prague	5930eu	6055eu	7345eu	9605eu				
2100-2130	Radio Romania Int'l	5990eu	6105eu	7145eu	7195eu				
2100-2130	Radio Sofia, Bulgaria	9560eu	11680af	11735af					
2100-2200	Radio Zambia Int'l	9505af	11880af	17895af					
2100-2200	SLBS, Sierra Leone	3316do							

## 2100 UTC continued

2100-2200	Spanish Foreign Radio	9875eu			
2100-2200	Sri Lanka B'casting Corp.	15120as			
2100-2130	Swiss Radio Int'l	9885af	12035af	13635af	15525af
2100-2115	TWR Swaziland	3240af			
2100-2110	Vatican Radio	5935eu	7250eu		
2100-2200	VOA	6040eu	9700eu	9760me	11710me
		11960me	15205me		
		11870pa	15185pa	17735pa	
		15410af	15580af	17800af	21485af
		21625af			
2100-2200	Voice of Turkey	9445eu			
2100-2200	WHRI Noblesville	13760	17830		
2100-2200	WRNO New Orleans	15420			
2100-2200	WWCR Nashville	15690	17525am		
2100-2200	WYFR	7355eu	15566eu	17750af	21525eu
2110-2200	Radio Damascus	12085na	15095na		
2115-2130 mtwhf	BBC London Caribbean Rpt.	15140ca	17715ca		
2115-2130 s	R. Republik Indonesia	6070do			
2115-2200	Radio Cairo	9900eu			
2130-2200	BBC London	3255af	3955eu	5975ca	6005af
		6180eu	6195as	7325eu	9410eu
		9590na	11750pa	12095eu	15070na
		15260sa	15340pa	15400af	
2130-2200	BBC London Falkland Is Sv	13660sa			
2130-2200	HCJB Quito	17790eu	21455eu	21480eu	
2130-2200 smtwhf	King of Hope, Lebanon	6280me			
2130-2145	Radio Buea, Cameroon	3970do			
2130-2200 mh	Radio Estonia, Tallinn	5925eu	9560eu		
2130-2200	Radio Sweden	6065eu			
2130-2200	RAI Vienna	5945eu	6155eu	9870af	
2130-2200	RCI Montreal	11880af	15150af	17820af	
2140-2150 mtwhfa	R Nacional de Venezuela	9540			
2145-2200	Cameroon Radio-TV	4850na			

## 2200 UTC continued

		6175eu	7115am	7150am	7185eu
		7240af	7255af	7295af	7330af
		7340af	9520as	9720am	9725eu
		9755af	9765am	9790eu	9855af
		9860af	9870am	9890eu	12050as
		12055af	15130as	15425as	17605au
		17655au	17665au	17700am	17720am
		21480am			
		17770pa			
2200-2300	Radio New Zealand Int'l	3326do	4990do		
2200-2300	Radio Nigeria	5995eu	6135eu	7270eu	
2200-2255	Radio Polonia, Warsaw	5930eu	6055eu	7345eu	9605eu
2200-2230	Radio Prague	3385do	4805do		
2200-2230 a	Radio Republik Indonesia	6065eu			
2200-2230	Radio Sweden	9505af	11880af	17895af	
2200-2215	Radio Zambia Int'l	5990as	9710as	11800as	
2200-2225	RAI, Rome	5995eu	7180eu	13650eu	
2200-2230	RCI Montreal	11705as			
2200-2230	RCI Montreal	9760eu	11945eu		
2200-2300 smtwha	RTM Malaysia	7295do			
2200-2218	RTV Congolaise	4765do	5985do		
2200-2300	SBC Radio 1, Singapore	5010do	5052do	11940do	
2200-2300	SLBS, Sierra Leone	3316do			
2200-2300	UAE Radio Abu Dhabi	7215na	9600na	11965na	
2200-2300	V. of Free China, Taiwan	9852eu	11580eu		
2200-2230	VOA	9530eu	11905me	11960me	15225me
		15445me	17885eu		
		7120as	9770as	11760as	15185au
		15290au	15305au	17735au	17820au
2200-2300	WHRI Noblesville	13760na			
2200-2300	WRNO New Orleans	13720na			
2200-2300	WWCR Nashville	15690na			
2200-2300	WYFR	7355eu	21525eu		
2230-2300	Kol Israel	7465am	9435am	11585am	11605am
		11675sa	17575eu		
2230-2300	R. Alma Ata, Kazakhstan	11825as	11920as	15215as	15270as
		15315as	15385as	17605as	17715as
		17730as	21490as		
		3955as	4395as	5035as	5260as
		5945as	5960as	5970as	5985as
		6060as	6075as	6125as	6130as
		7115as	7235as	7240as	7280as
		7320as	9505as	9550as	9705as
2230-2300	Radio Finland	6120af	9730eu	11755as	
2230-2300	Radio Tirana	7215eu	9725eu		
2230-2300	Radio Vilnius, Lithuania	9675eu	9710eu		
2230-2300 mtwhf	RTV Congolaise	4765do			
2230-2300	Swiss Radio Int'l	6035eu	6190eu	9680eu	
2230-2300	VOA	9530eu	11905me	11960me	17885me
2240-2250 smtwhf	Voice of Greece	11645au			
2245-2300	Radio Sofia, Bulgaria	9595am	9700na	11660eu	11680na
		11720eu	11950na		
2245-2300	Vatican Radio	7305au	9600au	11830au	

## 2200 UTC [5:00 PM EST/2:00 PM PST]

### FREQUENCIES

2200-2230	All India Radio, Delhi	7412eu	9665eu	9910eu	11620eu
		11715eu	15265eu		
2200-2300	BBC London	5975na	6195as	9410eu	9570pa
		9590na	9915ca	11750sa	11945as
		11955as	12095na	15070na	15260sa
		15340as	15400af	17830as	
2200-2230	BRT Brussels	5910eu	9905eu	15515af	
2200-2215	Cameroon Radio-TV	4850na			
2200-2300	CFCX Montreal	6005do			
2200-2300	CFRX Toronto	6070do			
2200-2300	CSM World Svc, Boston	9465na	13625as	13770af	15405as
		17555af			
2200-2230	Georgian Radio, Tbilisi	11760eu			
2200-2230 s	KGEI San Francisco	15280sa			
2200-2300	KTBN Salt Lake City	15590			
2200-2300 sa	R. E. Africa, Eq. Guinea	7190af			
2200-2300	R. for Peace Int'l	13630ca	15030ca		
2200-2300	Radio 1, Accra, Ghana	4915do			
2200-2300	Radio 2, Accra, Ghana	7295do			
2200-2300	Radio Australia	11880va	11930va	13605va	13705va
		15160va	15320va	15365va	17795va
		21740va			
2200-2210	Radio Bafoussam, Cameroon	4000do			
2200-2300	Radio Baghdad, Iraq	11740eu			
2200-2230	Radio Beijing	3985eu			
2200-2300	Radio Beijing	7170eu	9880eu		
2200-2245	Radio Cairo	9900eu			
2200-2210	Radio Damascus	12085na	15095na		
2200-2245	Radio Federal Yugoslavia	6100eu	9505eu		
2200-2300	Radio Havana Cuba	9710eu			
2200-2300	Radio Kiev	7400eu	9800eu		
2200-2300	Radio Moscow World Svc	5950eu	5960eu	6045am	6055eu



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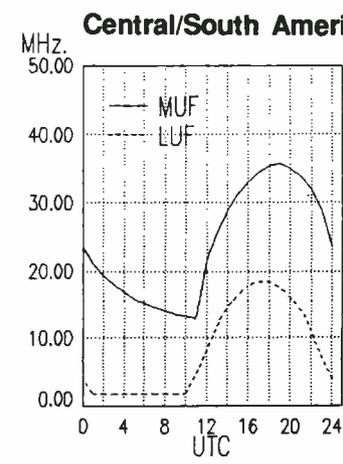
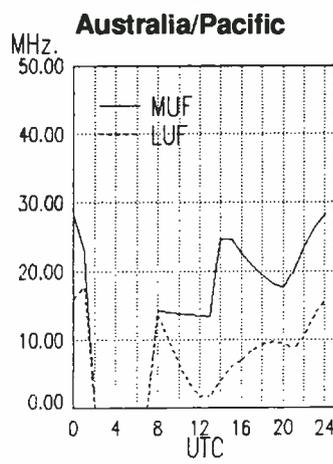
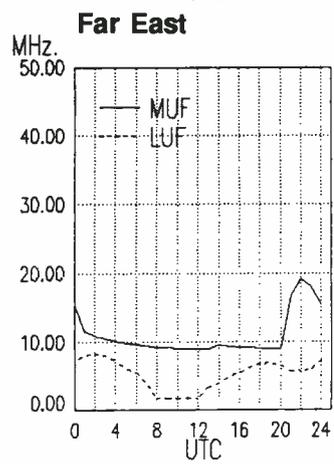
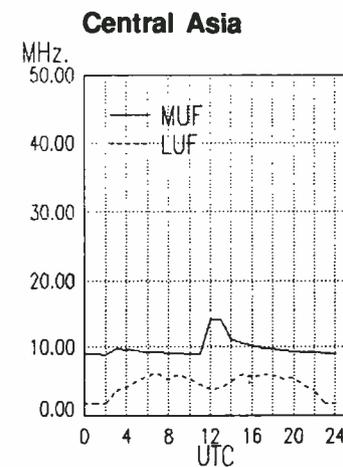
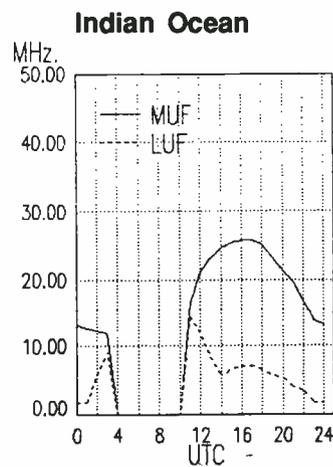
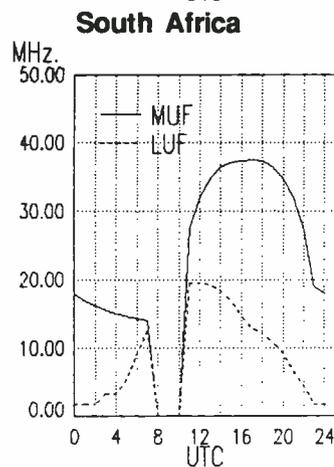
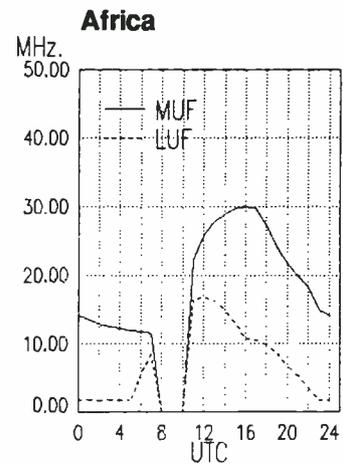
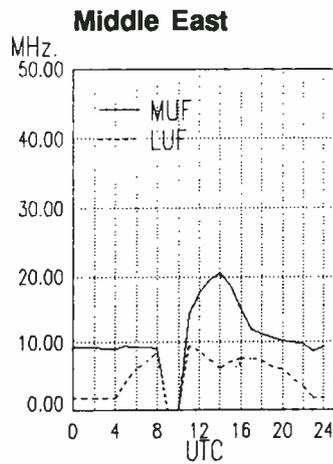
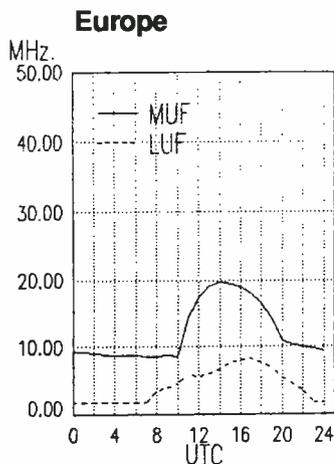
# shortwave guide

## 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.

Then look for the one most closely describing the geographic location of the station you want to hear.

## Conditions for areas EAST of the Mississippi and ...



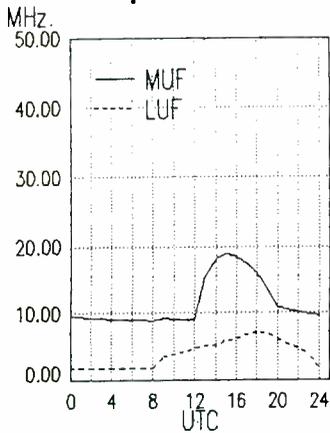
# shortwave guide

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 Usable Frequency (MUF) and the lower line the Lowest Usable Frequency (LUF) as indicated on the vertical axis of the graph. The strongest signals will be near the MUF.

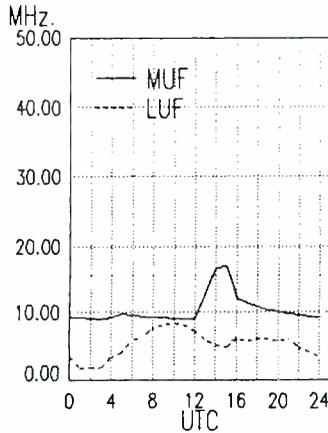
While there are exceptions to every rule (especially those regarding shortwave listening), you should find the charts helpful in determining the best times to listen for particular regions of the world. Good Luck!

## Conditions for areas WEST of the Mississippi and ...

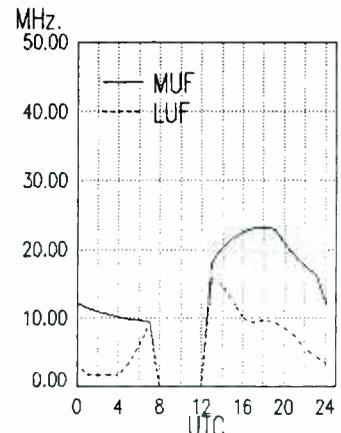
**Europe**



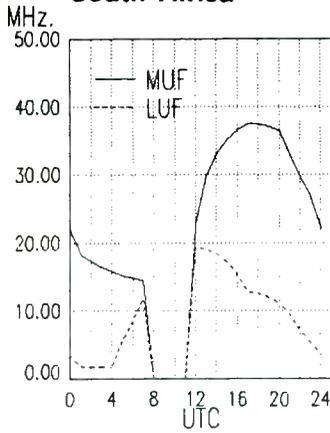
**Middle East**



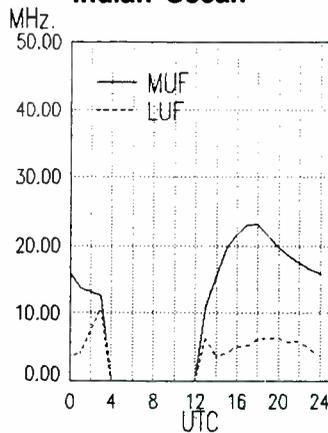
**Africa**



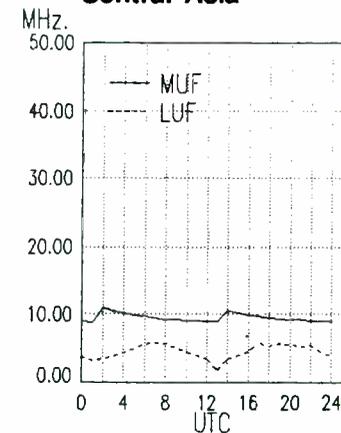
**South Africa**



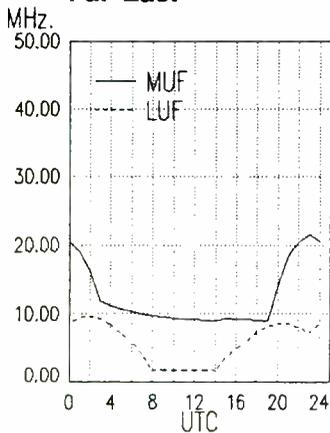
**Indian Ocean**



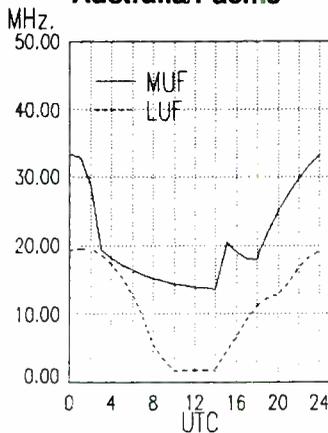
**Central Asia**



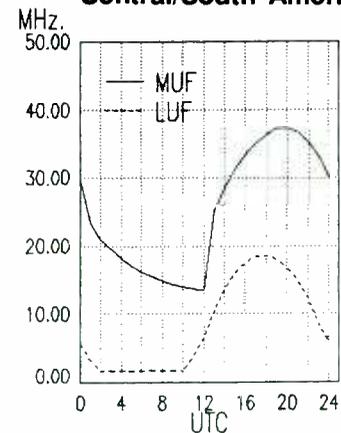
**Far East**



**Australia/Pacific**



**Central/South America**



## Panashiba FX-928



You've probably already seen it on late-night TV: On comes a sultry ad for a 900-number "love line," followed by — what's this? — a world band radio. You've never heard of it, much less the firm selling it, but if the ad is to be believed you should chuck out your Drake R8 and replace it with this latest wonder of science and technology.

All for \$29.95 plus shipping, of course.

### Trading on Borrowed Signs

With the growth in world band radio over the past several years — especially during the Gulf War — these sorts of radios have been promoted with maximum hyperbole in the mass media. Among them is the Panashiba FX-928, made in the People's Republic of China and advertised in the United States as being "the voice of the world."

Where have you heard that before? Look at any Realistic radio; it is a "Voice of the World," and you'll also see that that's a Tandy trademark. "Pana," of course, reminds us of "Panasonic," and "shiba," of "Toshiba." Look at the instruction sheet, and you'll find another trademark being "borrowed."

And where do you find it? The Panashiba is sold by one "U.S. Consumer" of Milford, Connecticut. "U.S." as in you-know-what, "Consumer" as in Consumer Reports and other trustworthy folk.

### Radar Love

Still not wary? Peruse the ad for this \$29.95 analog gem: "a startling breakthrough in sophisticated electronic tuner design" with a genuine built-in "radar" antenna. The ad also tells you the

times and frequencies that allegedly allow you to hear 22 specific countries in the North American Eastern Time Zone "with crystal-clear reception and sound."

In reality? Even with an R8 and an Eavesdropper outdoor antenna, you'd be lucky to hear just a few — none "crystal clear." On the Panashiba, we picked up only one.

We wanted to interview these new kids on the block, but when we tried reaching "U.S. Consumer" by telephone, directory assistance for Milford, Connecticut, informed us that this firm is unknown to them.

### Long on Waves...

In any event, we purchased a Panashiba and found few surprises — none good. It covers FM, plus AM up to around 1620 kHz, so it misses the upper eight channels of the forthcoming expanded AM band in the Americas. Shortwave coverage runs from roughly 5830-6240, 7000-7520, 9420-10000, 11430-12010, 15090-15530, 17470-18000, and 21450-22000 kHz. That's acceptable for the price, but the radio does miss the new 22 meter band, plus the upper 85 kHz or so of the de facto 25 meter band. However, travelers will appreciate that it covers the European longwave band.

The Panashiba is a bandspreaded analog compact portable, with a single, virtually useless, LED "glow light" signal-strength indicator. The frequency readout is off by as much as +/-85 kHz, which makes tuning pretty much a hit-and-miss affair. Although the tuning mechanism feels tight when you're turning it, there's some play before the radio actually begins changing frequency.

### ... but Short on Performance

Performance? Poor, overall — especially sensitivity and selectivity. Indeed, strong stations 10 kHz away sometimes interfere with the station you're trying to hear. CW and other interference from images abounds. And if you turn up the volume very much, distortion rises to extremes.

The telescopic antenna, which for some reason is quite short, swivels, but doesn't rotate, so you can't place the radio on its back with its antenna sticking straight up — the proper position for listening to shortwave and, to a lesser degree, FM. This lack of rotation also makes the antenna more prone to breakage.

The volume is adjusted by a slider control that's sensitive to adjust, so it's hard to keep the radio from being either too loud or too soft. This is made worse by the miserable AGC, which forces you to keep adjusting the volume more than you do on most other radios, especially when you're bandscanning. Too, the set can drift off frequency if you move where your hand is located when you're holding the set.

The Panashiba's batteries are frustrating to install, as they tend not to stay put, and the battery cover is flimsy. We have no reliability data on this model, but other cheap Chinese-made sets tend to act up more than most.

U.S. Consumer claims you can return the Panashiba for a full refund within 14 days. After that, you're on your own, as the Panashiba comes with no written warranty.

### The Bottom Line ... and an Alternative

Many of us keep an el cheapo portable around for listening on trips, or outdoors where rain, mud and other droppings would be an unwelcome addition to a higher quality device. Yet, there are better alternatives — even for \$30. The Pomtrex we reviewed earlier springs to mind. It's no prize, but for the money is the best we've tested to date. It is available for \$33.95, postpaid, from "For the People," Telford Hotel, 3 River Street, White Springs FL 32096; telephone 904/397-1000.

Incidentally, "For the People" claims that a number of models of other radios they sell for the same price "are the same inside" as the Pomtrex. This we haven't been able to confirm, or proceed with due caution when ordering. If you have any further information on non-Pomtrex models sold by "For the People," I would be grateful if you would drop me a note at the usual MT address, or fax the Passport to World Band Radio editorial office at 215/598-3794.

## Sony's New ICF-SW77 Temporarily Discontinued



At Passport to World Band Radio, we are frequently asked for our opinion as to how a new model of receiver we haven't tested may perform, or what our initial impression is of a unit we may have used only briefly, but not fully tested.

Our policy has always been not to speculate along these lines, as to do so could be misleading. Aside from general descriptions of forthcoming models, such as the Lowe HF-150 described below, our comments are confined to the results of thorough testing and analysis.

Here's a recent example of why we follow this policy. The innovative new Sony ICF-SW77, a premium-priced portable, had been shown in late August at the Berlin Electronics Show, and again in October at the Monitoring Times Convention, among others. The overall reaction of those who played with the radio was quite favorable, and, based on this and advertising from Sony and its dealers, a number of people purchased the unit.

However, our tests of the SW77 revealed certain significant performance shortcomings. Because these were so out of keeping with what we would normally expect from a model of this caliber, we raised our concerns with officials at Sony of America.

Mark Viken, Vice President of Sony's General Audio Division, responded by fax, "We also became aware of the same issues you brought to our attention. At this date (11/15/91), we have decided to temporarily discontinue sales of this model until these issues can be resolved to Sony's high performance standards."

Nothing was said about the disposition, if any, of units already sold to the public, nor is it yet known which serial numbers were assigned to those units. However, Sony's Customer Information Hotline (201-930-1000 or 800-222-7669) is supposed to be able to provide answers by the

time you read this, or shortly thereafter. Alternatively, Sony suggests calling a local Sony authorized service center.

The more innovative the product, the greater the chance for startup problems of this sort — it comes with the territory, and is the unwanted stepchild of technological advance. Sony's approach of owning up to problems, then correcting them, is commendable. One wishes more manufacturers would do this, rather than stone-wall or make excuses.

When the improved version of the SW77 becomes available, we will put it through our usual test hoops and report back to you on our findings.

## Lowe HF-150 Tabletop Receiver Now in Production

England's Lowe Electronics, manufacturers of the robust Lowe tabletop models HF-225 and HF-235, are expanding their line to include the smaller, lower-cost HF-150. Compact and straightforward, the chief points of interest in the manufacturer's specifications are modest price (about \$530), small footprint (7-1/4 x 6-1/4 x 3-1/4 inches), and new synchronous detector.

In the costlier '225 and '235 models, the synchronous detector, which reduces fading problems, could be used only in the double-sideband mode, not in the single-sideband mode which is so useful for reducing adjacent-channel interference. However, on the '150, the sync circuit works in both the single- and double-sideband modes — a significant improvement, assuming it performs as it should.



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PASSPORT'S "RDI White Paper" equipment reports contain virtually everything found during IBS' exhaustive tests of premium receivers and antennas. These reports are available in the U.S. from Universal Shortwave, EEB and DX Radio Supply; in Canada from PIF Books by Mail, Box 888, Hawkesbury, Ontario K6A 3E1; in the United Kingdom from Lowe Electronics Limited, Chesterfield Road, Matlock, Derbyshire DE4 5LE, England; and in Japan from IBS-Japan, 5-31-6 Tamanawa, Kamakura 247. For a complete list, please send a self-addressed stamped envelope to RDI White Papers, Box 300M, Penn's Park PA 18943 USA.

## ICOM IC-2SRA HT/Scanner Combo



Just when we thought that Japanese manufacturers had crowded every function possible into their hand-held radios, ICOM has released their IC-2SRA two-meter, hand-held transceiver with an integral, continuous coverage, 25-950 MHz scanner. A 440 MHz transceiver version is available.

For licensed MARS (Military Amateur Radio Service), CAP (Civilian Air Patrol), Coast Guard Auxiliary and Experimental Class operators, the transmit function can be enabled from 138-174 MHz (FM); right off the shelf the transmit limits are 140-149.995 MHz. A dual frequency, brightly-lighted, LCD display shows the transceiver frequencies and scanner receive frequency side by side.

The radio comes with two antennas (one for two-meter transceiver, the other for general coverage scanning), battery pack, AC wall charger, belt clip and hand strap (apparently very popular with the Japanese!).

Transmit power may be varied from 0.5 to 1.5 watts (5 watts with 12 volt battery). A DTMF ("Touch Tone") keypad is provided. Optional accessories include desktop charger, cigarette lighter adaptor, headset, speaker mike and mobile mounting bracket, tone squelch, high power battery.

### Receive Specs

In the two meter band, the ham receiver section allows an extraordinary sensitivity of 0.1 microvolts (12 dB SINAD), largely due to its bandpass filtering. Selectivity at -6 and -60 dB is 15 and 30 kHz, a good 2:1 shape factor.

The wide-coverage receiver is an entirely separate circuit. Even here, however, sensitivity averages a respectable 0.3 microvolts (although the manufacturer claims a miserable 0.56 micro-

volts). Internal shielding is excellent, allowing very few "birdies" (self-generated interference signals) to be heard.

Modes may be chosen from NBFM (land mobile services), WBFM (for radio and TV broadcast reception) and AM (for civilian and military aircraft monitoring). Scan/search rate is approximately 10 steps per second, and 63 memory channels are provided, but without banks or lockout capability.

A rotary tuning dial is provided; step selection may be 5\*, 10, 12.5, 15\*, 20, 25, 30, 50, 100 kHz (\*not above 267.8 MHz), and 1 and 10 MHz. And what's a radio without a clock/timer? The 2SRA has one.

The unit may be powered by any of several DC sources, including a high power battery (5 watts; optional) or 12 VDC mobile or bench supply. Current drain in the power saver mode is only 20-40 mA, rising to 200-250 mA at full rated audio output (180 mW into 8 ohms, 10% distortion).

At full rated audio output the sound is rather ragged, but turning the volume control down to normal listening level, sound is quite acceptable from the tiny internal speaker.

Because the unit has two separate receivers, it also has two antennas. The transceiver antenna is a 6" rubber duckie with a BNC base, while the 8" scanner antenna is equipped with a mini-phone plug base.

As with other small hand-held radios, finger flexibility is compromised by tiny pushbuttons and cramped quarters, but this is the sacrifice we must make when we want teensy radios with lots of features, and the ICOM 2SRA is loaded with features.

An excellent manual, liberally illustrated, accompanies the radio, as does a full, fold-out schematic.

Measuring 2-1/4"W x 7"H x 1-1/4"D and weighing only 15 ounces, the 2SA carries a manufacturer's list price of approximately \$600, but is available at a discount from MT advertisers who sell ICOM equipment.

# Tune in that signal with the Grove MiniTuner or MiniTuner Plus!

## MiniTuner Plus



Grove has taken two of our most popular products, the MiniTuner and preamplifier, and combined them into one powerful, frequency-adjustable signal booster for shortwave listeners. Use it with a short indoor or outdoor antenna and watch those signals explode!

Whether you are a shortwave enthusiast, medium wave DXer or longwave "lower," the new Grove TUN4 MiniTuner Plus provides signal enhancement over the entire 100 kHz-30 MHz range! Optimize reception of that desired signal while rejecting interfering signals above and below your target frequency.

Better than any active antenna on the market, the MiniTuner Plus allows you to customize your listening requirements. You can use it as an amplified or unamplified tuneable preselector, all with fingertip control!

But its features don't end there. You can also select between two antennas, connect two separate receivers to either antenna, and even remove the TUN4 from the antenna circuit, all at the touch of a switch!

Tune in that weak station, switch on the low-noise, high-gain transistor amplifier, then peak the tuning control for an astounding improvement in signal strength! Equipped with 3' PL259 coax cable. 12 VDC power supply and full instructions included.

Order TUN4 *only* **\$139<sup>95</sup>**

\$4 UPS; \$6 Parcel Post; \$12 Canadian Air Parcel Post

### ACCESSORIES:

**CKSW** accessory kit **\$12.95** (includes 20' antenna wire, banana plug, 3 adaptors, for all portable and multiband tabletop radios equipped for external antenna connections).

**ANT6** Hidden Antenna **\$19.95** (see pg. 30)

### SPECIFICATIONS

**Gain:** Approximately 20 dB

**Frequency Range:** 100 kHz-30MHz in four bands

**Preselector Type:** Series-tuned L-section filter

**Power Required:** 9 to 18 volts DC (12 VDC nom.) @ 30 mA

**Connectors:** SO239 (4) signal line, 2.1 mm DIN power

**Cabinet:** Custom formed aluminum, baked enamel finish

**Dimensions:** 9-1/4"W x 3"H x 4"D

**Weight:** 1-1/2 lbs.



The TUN3 is unnecessary for shortwave reception on more expensive receivers like the ICOM, JRC, Drake, and Kenwood R5000, but it will eliminate overload problems like intermodulation and desensitization on all economy radios equipped with an external antenna jack like Sony, Panasonic, Radio Shack, and Philips/ Magnavox.

It will also improve low frequency reception on all receivers in the 100-540 kHz range where broadcast band interference is so common. Simply connect the MiniTuner between the antenna cable and your receiver and adjust the dial for peak reception of your favorite station!

A bypass function allows the MiniTuner to be switched out of the circuit without having to remove it from the antenna line. An antenna grounding selector protects your receiver from nearby (not direct) lightning strikes and transmitters. (Not for VHF/UHF scanning.)

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A tunable, unamplified signal filter for improved shortwave, mediumwave and longwave reception when using a wire antenna.

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\$4.50 US Mail P.O.; \$6 Canada P.P.

\$8 Canadian UPS

### SPECIFICATIONS

**Frequency Range:** 100 kHz-30 MHz in 4 bands

**Circuit:** Series-tuned L-section filter

**Tuner:** 365 pF air variable capacitor, ball bearing drive

**Input connector:** SO-239 (UHF, female) with random wire provision

**Output connector:** PL-259 (UHF, male) on 24" coax cable

**Enclosure:** Custom formed aluminum

**Dimensions:** 4"W x 2"H x 3"D

**Weight:** 12 ounces

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## Build a Simple Regenerative Receiver for the BC Band

Do you like to tinker? Do simple circuits motivate you toward heating a soldering iron and tacking components together? If you enjoy short-term workshop adventures, you are a kindred soul. This month's project is a reflection of the past, at least with regard to the type of circuit it employs.

A regenerative receiver was considered a breakthrough for early-day reception because the forerunners of this circuit were (1) simple crystal detectors and, later, (2) the TRF (tuned radio frequency) receivers. Neither of those early circuits offered the gain and selectivity that was provided by the regenerative receiver, or "genny" as it was often called. Many one-tube regens were used in the early days of radio, and they were powered by dry batteries.

I remember listening to a home-made BC band regenerative receiver when I was a boy. It required three batteries — an A for the filaments, a B for the tube anodes, and a C for grid bias. As a young person in the early 1930s, I was allowed 15 minutes per day to listen to the family radio. But remarkable DX was enjoyed in the 550-1600 kHz range with that simple type of circuit when an outdoor antenna was used. Operating time for the receiver was rationed because battery cost was high and it was during the Great Depression.

Modern components and transistors make it possible to use a single low-cost battery to operate a regenerative receiver. Although this circuit has been replaced by the DC (direct conversion) or synchrodyne receiver, the genny remains a practical circuit for beginners. It is sensitive and selective. Furthermore, many hours of operation are possible from a single battery.

### The Regenerative Principle

Figure 1 contains the circuit for this month's gadget. Q1 serves two functions. It acts as the detector and local oscillator. In other words, it is a detector that can be made to self-oscillate to provide the necessary injection signal to cause a beat note for CW or SSB reception.

A potentiometer, R1, is the regeneration control. When copying CW or SSB you must adjust this control until the detector breaks into oscillation and produces a beat note for CW or carrier insertion for an SSB signal. R1 controls the feedback that is provided by the tap on L2. The lower the R1 resistance, the greater the feedback power, and hence the stronger the Q1 oscillation.

The detector is not allowed to oscillate strongly for AM reception. Rather, R1 is

adjusted until you hear a howl in the earphones, and then the regeneration control is turned back until the howl just ceases. In other words, you should not hear a heterodyne when you tune the receiver either side of the AM signal center frequency.

This setting ensures the best sensitivity and selectivity. Under these conditions the detector acts like a Q multiplier, which enhances the overall selectivity and allows you to separate the stations more effectively than when Q1 is not on the fringe of oscillating. C1 is adjusted to the station of interest.

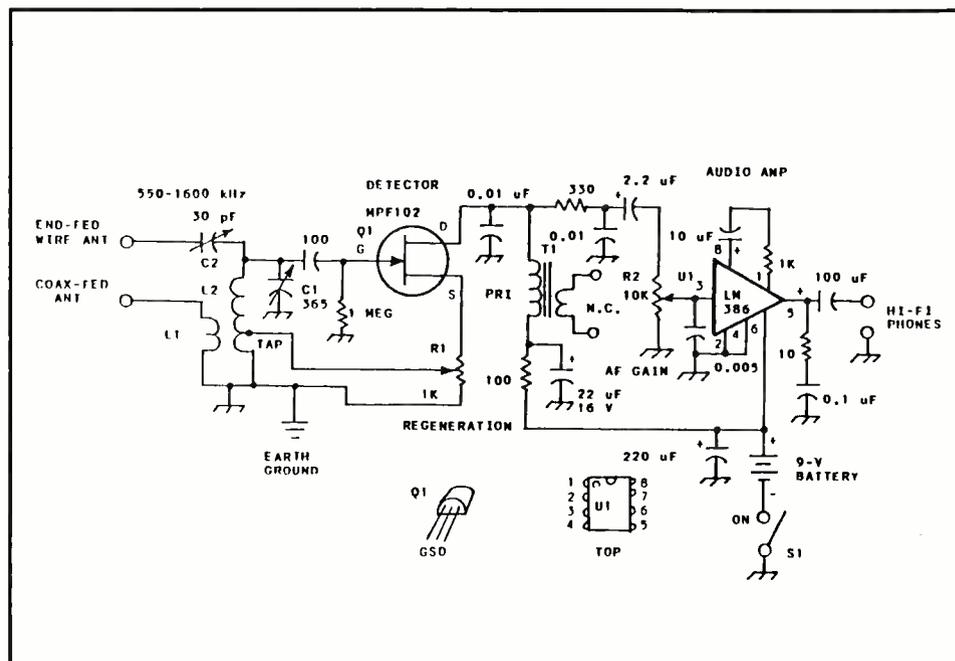
As in the situation with DC receivers, gennys radiate a weak signal on the frequency to which they are tuned. This can be minimized by using an RF amplifier between the antenna and detector.

### Our Practical Circuit

The input tuned circuit in Figure 1 has two antenna connections. The C2 terminal is used when a random length of wire is employed for the antenna, especially if it presents a high impedance to the receiver. L1 is used for low-impedance antennas, such as a dipole that is fed with 50 or 75-ohm coax. C2 is adjusted while

**Figure 1:** diagram of the BC-band receiver. Fixed-value capacitors are in pF, except decimal-value units, which are in uF. Polarized capacitors are in uF and are electrolytic. Fixed-value resistors are 1/4 or 1/2 watt carbon film or composition.

- C1 - 365-pF variable capacitor
- C2 - 30-pF trimmer capacitor
- L1 - 18 turns of no. 28 enam. wire wound over the grounded end of L2.
- L2 - 186 turns of no. 28 enam. wire on a piece of 3/4 inch ID PVC tubing or wooden dowel rod, close wound. Tap at 46 turns above grounded end of L2.
- Q1 - Motorola MPF102 N-channel JFET or similar transistor
- R1 - Linear-taper carbon composition control, panel mounted
- R2 - Audio-taper carbon composition control, panel-mounted
- S1 - SPST toggle or slide switch
- T1 - 1000-ohm to 8-ohm transistor radio output transformer, new or from discarded radio. Secondary is not used.
- U1 - National Semiconductor Corporation audio amplifier IC.



listening to a signal to provide the lightest antenna coupling that allows good reception. Too much coupling will prevent the detector from oscillating, no matter how you adjust R1.

Output from Q1 is at audio, owing to the diode action of the gate-source junction of Q1. The drain element of Q1 is bypassed and filtered by a resistor (330-ohm) and two bypass capacitors (each are 0.01 uF). This keeps RF energy caused by the self-oscillation from reaching U1 and disrupting its performance: We want U1 to receive only the audio information from Q1.

R2 serves as an audio-gain control for strong signals. U1 is an audio-amplifier IC that has some 40 dB of gain. It will drive a pair of hi-fi headphones to good volume on all but the weakest of signals. If you wish to operate a speaker from this receiver, simply feed the receiver output into your hi-fi amplifier.

## Building the Receiver

You can assemble the Figure 1 receiver on a piece of wood or PC board. If you use a wooden chassis you can create circuit tie points by using no. 6 solder lugs. Attach them to the wood base by means of small wood screws. If you use PC board as the foundation, solder 560K-ohm or 1-megohm, 1/2W resistors to the PC board (one end only), stand the resistors up vertically, and use the unsoldered pigtailed as circuit tie points.

Use a metal front panel for mounting C1, R1, R2 and the phone jack. The panel can be made from furnace-duct iron, aluminum or another piece of PC board. Make sure you ground the panel to the negative bus of the receiver circuit. This will help prevent unwanted hand-capacitance effects (receiver detuning) when you bring your hands near the controls.

U1 can be laid on its back, dead-bug fashion, to permit access to its pins when wiring the circuit. A dab of epoxy cement or bathtub caulk may be used to keep the IC affixed to the chassis.

The tap on L2 is made as you wind the coil. Pull the wire away from the coil form about 3/4 inch, twist it three times to form a small loop, and then finish winding the coil. Scrape the insulation from the loop after the coil is wound. Make the R1 connection to this loop.

Keep all of the circuit leads short and direct. This will minimize unwanted stray inductances that could cause Q1 to self-oscillate on some unrelated frequency — notably at VHF.

## Using Your Receiver

Tune in a moderately loud AM station. Adjust R1 until you hear a slight howl in the audio. Readjust R1 until the howl just vanishes. Best reception occurs when Q1 is on the verge of oscillating. It may be necessary to readjust R1 when you tune the receiver to other frequencies.

If you like to log DX on the standard BC band, you will get a special thrill from using this simple receiver. Also, you will find that the audio is crystal clear compared to the output of many commercial receivers. The fidelity is excellent with regen receivers.

The Figure 1 receiver can be used on the shortwave bands by merely changing the number of turns on L1 and L2, accordingly. In the old days of radio we used plug-in coils to facilitate using our gennys from 550 kHz to 30 MHz. Remember that the coil tap is always placed 1/4 the way up from the grounded end of L2 when you modify the circuit for HF reception. L1 has 10 percent of the L2 turns.

You may power this receiver by using a 9-volt transistor radio battery. Any dc voltage from 9 to 12 is suitable. Your car battery may be used as a power supply when you are camping. Best performance is had when an earth ground is connected to the receiver ground bus.



## Computer Aided Scanning

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Now Radio Shack PRO 2006 owners for the first time have access to the exciting world of Computer Aided Scanning with the highly acclaimed Datametrics Communications Manager system. Computer Aided Scanning is as significant as the digital scanner was five years ago and is changing the way people think about radio communications.

- The Datametrics Communications Manager provides computer control over the Radio Shack PRO2006 receiver.
- Comprehensive manual includes step by step instructions, screen displays, and reference information.
- Powerful menu driven software includes full monitoring display, digital spectrum analyzer and system editor.
- Extends receiver capabilities including autolog recording facilities, 1000 channel capacity per file, and much more.
- Uses innovative Machine State Virtualizer technology (patent pending) hardware interface by Datametrics.
- Simple 4 step installation - no soldering or modification to normal receiver operations.

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- Computer Aided Scanning system \$349
- PRO2006 receiver w/interface installed and CAS system \$749
- Manual and demo disk \$15
- Requires Radio Shack PRO 2006 receiver and IBM PC with 300K memory (500K for full channel capacity) and parallel (printer) port.

Send check or money order to Datametrics, Inc., 2575 South Bayshore Dr. Suite 8A, Coconut Grove, FL 33133. 30 day return privileges apply.

# SCORPIO

```
ID[Ste]GXV6 (PORTISHEAD RADIO) Location: England
Date: 02-27-91 Begin Prg: 03:17:35 End Prg: 17.220.00
Mode: FSK Signal: Agw/Svc: Coastal (sea) QSL-
Remarks: SITOR traffic <-arq>-
Data: 23> / > / 17.220.00 FSK / Signal(1) #2002
[Radio] [PSET] [CLS] Terminal Mode [CHG] [CLD] [S/F] [Qu/ax]
-LogScan-----Log of John Doe-----
```

```
CMD: AL
MODE NOW ALIST
.. THIS IS AN AUTO TELEX MESSAGE SYSTEM
TRAFFIC FOR THE FOLLOWING VESSELS:
USS FREDRICKS
HMS WING...

GR*7

<arq FILE LOADED>
```

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## Probing SCA and the World of VLF

### Trick the ICOM R71A to Receive Below 100 kHz

The ICOM R71A shortwave receiver is specified to cover 100 kHz to 30 MHz, but the following steps will harmlessly confuse its CPU to permit reception of VLF (very low frequency) down to nearly DC!

1. Select an unused memory channel. If all 32 memory channels are filled, use the FUNC and CLEAR buttons to clear one memory channel.
2. Set the VFO/M switch to the "M" (Memory) position.

3. Rock the MAIN TUNING knob back and forth and at the same time, rock the MEMORY-CH rotary control back and forth between a memory channel with a frequency in it and the designated clear memory channel. Continue rocking both the controls until 0.000.0 appears in the display.
4. Press the WRITE button. This stores 0.000.0 in the memory channel. Now rotate the MAIN TUNING knob clockwise to tune UP from 0.000 MHz to a desired VLF frequency.

**CAUTION:** if you rotate the MAIN TUNING knob counterclockwise, the display will revert to 29.999 MHz and you'll have to start all over again. Recall 0.000 anytime from the designated memory channel and tune UP for VLF reception between 0 & 100 kHz.

This procedure has been verified to work as stated, but for highly enhanced VLF capability use a very long antenna and/or an antenna tuner and/or a low pass (BCB) filter (10 - 500 kHz). Thanks to George Moshier of Las Vegas, NV, for steering me to this interesting tip and the related one to follow.

### Use Your Shortwave Receiver to Detect SCA Broadcasts!

FM stations in Canada and the USA are permitted to broadcast Subsidiary Carrier Authorization (SCA) subscription programs in addition to the regular format. SCA is a specially encoded FM signal which can't be detected by ordinary FM-BC receivers and capable FM scanners (PRO-2003/4/5/6, etc.) without a decoder (a future project?) or the below procedure.

[CAVEAT: It may be illegal to detect SCA signals without the broadcaster's permission. Request this permission from your local FM station managers; explain that you want to detect their subcarriers for hobby purposes only.]

Assuming you've cleared the legal hurdles, you can enjoy a wide variety of commercial-free "secret" programming, including "Muzak" (elevator & dentist office music); light rock & country music; medical news & info; special sportscasts, readings for the blind, ethnic programs and other neat stuff.

If your shortwave receiver is capable of tuning VLF below 100 kHz, you won't need an SCA decoder. You'll just need an FM-broadcast capable scanner or receiver; a VLF-SW receiver; a short length of coaxial cable and a capacitor, 0.1-uF to 1-uF at 35-vdc.

This technique exploits the spatial distribution of FM broadcast signals. Skipping

the technical drivel, SCA signals are encoded onto subcarriers at several points between 50 kHz & 100 kHz from the reference FM carrier. The most commonly used subcarrier is 67 kHz. Find where the detected audio comes out of an FM receiver's discriminator circuit; tap it at that point and route it to the antenna input of a shortwave receiver tuned to that subcarrier, and BINGO, you'll receive the elusive SCA program! It's easy to do and here's how:

#### Scanners with FM-BC: PRO-2003, PRO-2004, PRO-2005 & PRO-2006

These scanners are FM-BC capable. Solder the (+) leg of the coupling capacitor to the HIGH (ungrounded) end lug of the scanner's SQUELCH control. To the other leg of the capacitor, solder the center conductor of a small diameter coax or shielded microphone cable. Solder the shield of the coax or mic cable to a nearby ground; the grounded end lug of the SQUELCH control will do. Then route the coax or mic cable to the rear of the scanner and solder it to a new jack, preferably an RCA phono jack.

Make up a suitable length of coax or mic cable with connectors on each end, one to suit the needs of the shortwave receiver and the other to connect to the new SCA jack on the back of the scanner. (I have tested this method to work with

the above scanners and a Yaesu FRG-7700 SW receiver!)

#### Other FM Receivers

Employ the mechanical tap, jack & capacitor procedures outlined above for scanners, but connect the capacitor's (+) leg to a suitable SCA pickoff point somewhere between the FM Discriminator (detector) and a point where the weak audio goes into a filter called the "de-emphasis" network. If you tap a point after the de-emphasis network, the SCA program will be filtered out and you'll receive only noise.

The SCA pickoff point will require some poking around to locate, but it's not difficult. Tune the FM receiver to a known SCA-FM station. Tune your SW receiver to 67 kHz and connect a cable to its antenna jack. The other end of the cable should have a short temporary ground clip from the shield to the FM receiver's chassis. Solder the (-) lead of a 0.1 to 1.0-uF capacitor to the center conductor of the cable. The free lead of the capacitor will now be a test probe.

Poke it on likely-looking spots between the FM discriminator chip or transistors and the volume control. First snoop around the FM discriminator IC chip, typically near pins 6 - 10, depending on the specific chip. When a point with SCA is touched, the SW receiver will let you know! When an SCA point is identified,

# Improve Your Scanning Coverage!

GRE America is proud to introduce a new family of products to enhance your scanning pleasure! First, GRE has designed the new **Super Converter 9001** for base model scanners. The 9001 converts 810 MHz - 950 MHz down to 410 MHz - 550 MHz. The 9001 is the perfect alternative to buying a new, expensive scanner covering the 800 MHz band. Next, GRE announces the new **Super Amplifier 3001** for base model scanners. The 3001 will increase gain by as much as 20 dB, and is engineered to help scanners with low sensitivity pull in weak signals. Both products use BNC connectors, (1) 9 volt battery and have an off/pass switch for returning to normal operation.



Super Converter 9001 & Super Amplifier 3001



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route it via a shielded cable and the capacitor to a jack on the rear chassis.

There is almost no jeopardy of disaster with this experimental method because the capacitor blocks DC from entering or leaving the circuit. Just touch one likely spot at a time with the capacitor's free lead until the SW receiver indicates a medium to strong 67 kHz signal.

For FM-mono receivers, the HIGH (ungrounded) end of the Volume Control may be a good spot for the SCA pickoff. Many spots in FM receivers have the SCA signal available, so it's not like hunting for a needle in a haystack.

### Operation

After you've tapped and jacked the receiver, connect a cable between the FM receiver or scanner and the SW receiver. Tune the SW receiver to 67.0 kHz. Select the FM-mode on your SW receiver if so equipped; otherwise select AM at the widest bandwidth for "slope detection." Tune the FM receiver to a station known to carry SCA programming. If you're not sure, then scan or search the FM broadcast band, 88-108 MHz, and check each station for a 67 kHz subcarrier signal on the SW receiver. After you find one, you'll learn the rest of the "ropes" in short order.

If SCA signals don't appear on the SW receiver, then either there aren't any SCA programs in your area, or you haven't done something right per the above steps.

Three subcarriers are in popular use by FM broadcasters; 67 kHz, 92 kHz and 57 kHz. Most metro regions have several FM-SCA stations, so when you get things working, check each station in your area for subcarriers by tuning the SW receiver to each carrier. Some stations may use all three subcarriers, though the majority will use two or less. Beware that SCA is susceptible to degradation by overload and multipath interference, so begin your experiments with either a short antenna or use the FM receiver's attenuator if it has one.

Subcarriers are also used for digital paging and computer data communications, so if you hear a cacophony of weird tones, it's probably SCA! Check the sidebar for sources of useful FM & SCA data, SCA kits and a book that lists FM stations and SCA broadcasters throughout the USA and Canada.

Please continue to let me know what you want here. My files are chock full of stuff, sufficient for the next ten years' worth of columns, but all that data is worthless if it's not what you want. I'm open to your ideas, mods, tricks, hints and kinks. Correspondence with an SASE will receive a reply.

73/bc

### SCA and VLF Sources

FM ATLAS  
PO BOX 336, DEPT. MT  
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*(FM station directory; SCA adapter kits; SCA information)*

WORLD SCANNER REPORT  
PO BOX 262478-M, DEPT. MT  
SAN DIEGO, CA 92196-2478  
*(Scanner modification info; SCA adapter installation info)*

XANDI  
PO BOX 25647, DEPT. MT  
TEMPE, AZ 85282  
*(Special circuits & kits)*

PANCOM  
PO BOX 130-PII, DEPT. MT  
PARADISE, CA 95967  
*(Special circuit & kits)*

WORLDWIDE TV-FM DX ASSOCIATION  
PO BOX 514, DEPT. MT  
BUFFALO, NY 14025-0514  
*(Club with emphasis on TV & FM monitoring)*

LONGWAVE CLUB OF AMERICA  
45 WILDFLOWER ROAD, DEPT. MT  
LEVITTOWN, PA 19057  
*(Club dedicated to VLF & MF monitoring.)*

## A Multiband Antenna for Shortwave Listening

The ability to engage in "Bandhopping," or switching from one shortwave band to another as your listening interest leads you, is one of the pleasures of shortwave listening. With just the turn of a bandswitch or the keying of a keypad, you can be on a new band, listening to new signals and new action.

But is the antenna you are using appropriate for these frequency excursions? Probably it is, to some degree — most antennas will pull in the strong signals on several different bands. But usually an antenna favors one band and gives its best performance on that band. This month's featured antenna is one that helps overcome this limitation and gives good monitoring results on a number of shortwave bands.

This type of design is therefore referred to as a "multiband" antenna. So, if you find that your antenna is not bringing in signals on all the bands you want to monitor, consider giving a try to this month's antenna, the "Multiband Shortwave Sloper."

### Let's Build the MSS Antenna

The MSS described here is designed for coverage of the popular 49, 31, 25, 16, and 13 meter bands. These correspond to frequency

bands centering around 6.1, 9.7, 11.9, 17.7, and 21.7 MHz. But you can build the MSS to cover any bands that you wish: Use the formula:

$$\text{Length}_{(\text{in feet})} = 468 / \text{Frequency}_{(\text{in MHz})}$$

For instance, an element for the 60 meter band, centered on 5 MHz would require the addition of an element  $468/5$  or 93.6 ft. (93 ft. 7 in.). You may entirely redesign the antenna, omitting elements that I suggest in the model I describe here, and adding any that you wish.

Hard drawn or braided copper antenna wire of something like 12 to 16 gauge is good, but you can use about any wire that you have on hand for this antenna. Wire that is too small or too soft may break. Follow the layout of Fig. 1 as you build.

1. First cut the elements to length, add 8 to 12 in. extra for the amount needed to wrap the ends around the insulators.
2. Remove the insulation (if any) from a few inches of one end of each element. Scrape these ends bright and clean, if necessary, and solder or clamp them together. Soldering is more resistant to weather in the long-run.

Remember to run one or two of them through the bottom insulator before you connect them together, so that you can anchor the bottom end of the antenna to the ground via that insulator as shown in Fig. 1. This group of ends, connected together, will be connected to the center conductor of the coax feedline later.

3. Put an insulator on the top-end of each element, making sure that each element is the correct length.
  4. Drive down a ground rod to make your ground connection. In dry soil you may need more than one rod to get a decent connection.
  5. Anchor the bottom-end insulator to the ground rod by a short nylon rope and make a short connection from the coax shield to the ground connection. Low impedance coax, such as 52 ohm, is best if you use this antenna for transmitting, but any coax in good condition should be fine for monitoring applications.
  6. Attach the top-ends of the elements to appropriate high attachment points, such as a tower, tree, building, etc. Be very careful that you do not get close to or touch any powerlines with the antenna. Be careful to mount the antenna so that it can't fall on a powerline if it breaks.
- You may run the various elements of the antenna in different directions, to favor reception from different directions for different bands. Pointing the element at 90 degrees to the desired direction of reception is likely to give the desired result.

7. Make a short connection between the coax center connection and the collection of wire-ends that attach to the bottom insulator. Seal off the end of the coax from the weather with coax-type sealer. Water will quickly ruin the coax otherwise.

8. Run the coax lead-in to your receiver and start monitoring!

Don't forget that the minimum lightning protection, especially in lightning country, is to never use the antenna during a storm, and disconnect and ground the antenna when it is not in use.

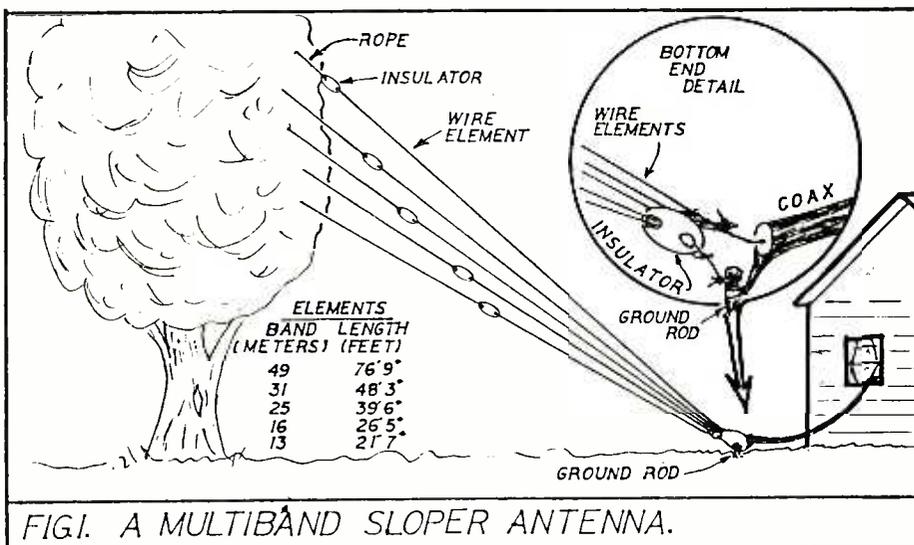


FIG. 1. A MULTIBAND SLOPER ANTENNA.

## Want to increase your code speed *quickly and easily*, and *enjoy* doing it?

### Who says Morse Code has to be hard?

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"A slick commercial program that clearly ranks among the top Morse trainer programs" - Karl Thurber, W8FX, *CQ Magazine*  
 "Sickest program to come along in a long time - I highly recommend it to those who want to learn Morse properly" - Ike Kerschner, N3IK, *Monitoring Times*  
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## Ouch!

Yes "Ouch!" That's what Tom Morganelli, KA3LAM, wrote on the note which he included with a newspaper clipping he sent to me recently. The article described the results of accidental contact between an antenna being removed from a roof, and a 34,500 volt high-power line!

The men removing the antenna were "lucky": The jolt threw the antenna away from them. Nevertheless both men were admitted to a hospital, one in stable and one in critical condition. Start the New Year off right, and keep this in mind when you site and mount your antennas.

## Odd Antenna Systems

Some time back, I got a letter from Mitch Rosenbaum, WA4KBF, telling about a chap who gave new meaning to the term "bedspring antenna." It seems the fellow in Long Island actually mounted an old bedspring on top of his house, connected a lead-in to it, and used it as his antenna!

To complete the system he also buried an old iron bathtub 15 feet down in his back yard to use as a ground connection. Reports are that he worked out well on all shortwave ham bands with this interesting set-up!

## RADIO RIDDLES:

### Last Month's:

Last month I asked what is short about a "shortwave?" or "long" about a "longwave?"

The most appropriate answer here is that the signals or electrical waves that travel the skyways to bring us our radio programming actually have different lengths, depending upon the frequency at which they are transmitted. If we could actually see these waves, frozen for a moment in time and made visible, we would see that the waves for 10 MHz are physically only one half the length of those at 5 MHz, and the 20 MHz waves are only one half the length of those at 10 MHz, and so on.

And, in further explanation, the waves produced by transmitters in the AM broadcast band, being MF or medium frequency, are longer than any of the waves found on the shortwave bands. Waves of signals on the longwave bands are longer still. The length of signals at the different radio frequencies to which you listen each possess a different physical length as they fly through the ionosphere on the way to your waiting antenna.

If we want to wax eloquent, we can even add to this basic answer some other "short" things about shortwaves, such as the time taken for one cycle of oscillation to occur in the transmitter generating the signal, and the length of resonant antenna elements for the signal. And isn't it interesting that the short waves are famous for being the ones that best travel the long distances in the ionosphere?

### This Month's:

*Monitoring Times* reader Paul M. Lalli, AA5AN, wrote me with an excellent answer to my recent riddle on the difference between the Hertzian and Marconi antennas. Then he riddled me right back, the obstreperous rascal. "Riddle me this" he says, "What's a "unipole" antenna?" This is an excellent Radio Riddle, and so now I ask you, dear readers, just what is a unipole antenna?

Find the answer to that and much more in the next issue of *Monitoring Times*. Til then, Peace, DX, and 73.



## A Better Way to Skin a Cat

Like most of you reading this, I wouldn't be caught without my new copy of *Monitoring Times* next to my receivers in the shack. Where else can you find such a condensed amount of frequency information for broadcast listening, DXing, utilities and VHF/UHF scanner stations? Why, on a good month you can add hundreds of possible frequencies to your own "heard" list.

But after a few short months (or in my case, a few decades) of hoarding frequency lists the task of finding the currently active frequencies for the service that you would like to hear becomes increasingly difficult.

Until receivers with built-in microprocessors and memories came along, the method I used to try all the possibilities required my wife reading lists of frequencies while I frantically tuned the HE-30 Lafayette tube receiver — later, the FRG-7 and Kenwood R-1000. The receivers changed but the method remained painfully the same. Checking alternate frequencies or going back to a listing required retuning.

Then came the Sony ICF-2001 microprocessor controlled portable receiver, with its seven memories, direct entry tuning, liquid crystal display and relatively low cost. This system ushered in a whole new method of designing and using shortwave communications systems in the military, professional and consumer markets. Today's radios are their direct descendants. But the functions which the radio could perform were limited by the microprocessor and the designer fixed features permanently stored in the microprocessor's memory (ROM).

When home computers arrived on the scene, the thought of "hooking" a home computer to a receiver tantalized the imagination with the power of possibilities. No more wife pleading, "... just a few more pages, O.K.?" Possible domestic tranquility at the very least.

But computers like the Apple, C-64, Atari 800 and TRS, which appeared in the early 1980s, were too busy playing Pac-man and took a different route for the radio enthusiast: decoding of signals like Morse code and even radioteletype. Decode programs became available around the world for all kinds of computers by the end of the 1980s, but still no domestic tranquility, no receiver control/frequency data base programs.

Only in the past few years have a number of receivers begun including some form of computer control port on the rear apron. Then bright

guys began writing software to set the frequency and mode via the port and a computer. And today we radio enthusiasts find ourselves with quite a number of control, database and decode programs available to us. Which ones are worth the money? Which still have bugs to work out?

Each month this column will review a different program and tell you what it can do for your monitoring and your domestic tranquility. In addition, we will be covering the hardware interface requirements of different receivers and giving you info on where you can buy the interface and how it performs with various software packages. We have a lot to cover and a long way to bring the hobby with these capabilities.

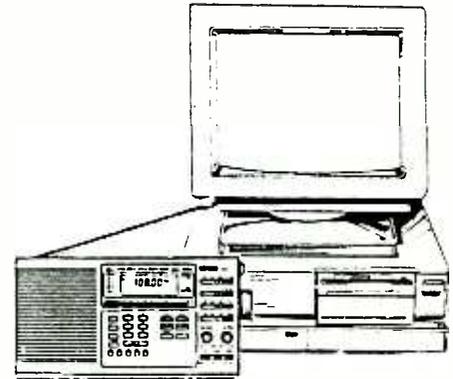
### SCANCAT by J & J Enterprises

This month we will review a receiver control and frequency database program called SCANCAT. The current cost of the program is around \$50, which is not the earth, but more than Pac-man. But, more importantly, what can it do? What receiver(s) will it run? Which computer is required? What additional hardware do you need to use it?

SCANCAT requires an IBM-PC, XT, AT or compatible computer with at least 512K memory, a serial port, an interface box for most receivers and works with the following radios: FRG-8800, FRG-9600, R-5000, TS-440, FT-757GX, AOR-3000, NRD-525 and the list is growing. The program will work with the stock interfaces available from Yaesu or Kenwood. These interfaces convert the standard serial port voltage levels to the receiver manufacturers' control port voltage levels.

Let's start with what it can do. When you run SCANCAT you are presented with a menu of choices. One choice allows you to input a single frequency and mode (e.g., AM) to your receiver by simply following the on-screen instructions. Once in your receiver, you can store the frequency, receiver mode, description of the station, date and time to a floppy or hard disk drive. Your files can be arranged ("sorted," to us computer nerds) by descending or ascending frequency, mode or description.

When a previously saved file is loaded from disk the main menu allows you to "Scan Diskfile." The time interval that an entry is held before moving to the next one ("scan delay") can be set



from 0.5 seconds to over a minute using the <> keys. Pushing the space bar stops the scan if you hear something of interest. Another push re-starts it. SCANCAT will also search a frequency range between two frequencies of your choice.

By grouping all the military aircraft frequencies in a file named, for example, MILAIR1, MILAIR2 etc., you can keep track of all the frequencies you read in the magazines and then call back the file(s) to scan the frequencies. You guessed it. No more list reading! Well, at least only once.

### Other Features, Real and Imagined:

The "Terminal Communications" mode allows you to view the output of your PK-232 or MFJ smart decoders without leaving SCANCAT. This allows for control and storage of receiver information and viewing and storing decoded information all from one program. SCANCAT comes with a basic, but adequate, 24-page manual.

I have to say that the lack of a signal detection feature (i.e., squelch break or S-meter signal level detection), does not allow true, automatic scanning. The addition of this, plus autologging, would make a very powerful package.

Overall, SCANCAT offers a lot for \$50. SCANCAT is manufactured by J&J Enterprises, priced at \$49.95 postpaid, and is available directly from J&J at 4001 Parkway Dr. Bossier City, LA 71112, telephone orders 318-631-3081.

### Reader's Input

Do you have a radio/listening idea or requirement for which there may be a software solution? Problem with getting your equipment to work with a software package? Comments on software/hardware you are using? Or is there software you would like to suggest for review? Drop me a line at the MT mailbox. (An SASE must be enclosed for a personal reply.) 'Til then, domestic tranquility base, signing off.



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- **Keyboard and Tuning.** This compact, easy-to-operate receiver features both direct keyboard entry and rotary tuning controls. You select the operation best suited to your needs.
- **100 Memory Channels.** The ultra-compact IC-R1 has 100 memory channels that store frequency, mode and skip functions. You can even mask memories.
- **Built-in-Clock.** More advanced functions of ICOM's IC-R1 include a 24 hour clock with automatic timer. Your receiver can turn itself on or off. Super convenient for scheduled listening!
- **Other Features.** The world's smallest full-featured handheld receiver, ICOM's IC-R1 is also equipped with a power saver function, adjustable LCD contrast, signal indicator, external DC power jack with battery charge capability plus a large variety of other options from the "S" series handhelds.



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**Q.** *If the ICOM R7000 had normal rescan delay, faster scan rate, and more memory channels, would it make a good scanner? James Stegmeier, Alden, NY)*

**A.** Yes, if you could bank the memory channels.

**Q.** *What is the difference in performance between Radio Shack's center loaded whip antenna and the Grove ANT-8 telescoping whip? (Larry Fangmann, Wichita Falls, KS)*

**A.** The center loading coil on the Radio Shack antenna will give it an edge in receiving low band (30-50 MHz) signals. The Grove whip can be adjusted from 4-46 inches to allow optimum reception from about 50-960 MHz with no gaps.

**Q.** *Does a combination VHF/UHF TV antenna compromise the performance of separate VHF and UHF TV antennas? (William Bovard, Grove City, PA)*

**A.** Not on multi-channel designs, but a multi-element Yagi beam designed for one specific channel will work better on its design channel than a multi-channel antenna.

**Q.** *While tuning shortwave in the SSB mode I occasionally encounter a "babbling brook" sound. Is this related to frequency hopping for security? (Robert Stone, NY, NY)*

**A.** Good guess! Frequency hopping is a method of constantly changing the transmitter's frequency in a pseudo-random pattern so that only a receiver which has been encoded with synchronous tracking can follow it accurately and monitor the transmission.

Since the transmitter "hops" dozens or even hundreds of times per second, the occasional pulses of signal which hit on or near your tuned frequency sound like erratic bubbling.

Spread spectrum, another method of secure transmission, digitizes the speech or data components and smoothly distributes them over a wide swath of spectrum. This is virtually impossible to detect except for a slight rise in background noise.

**Q.** *As an active listener, I would like to keep track of frequencies and stations without using a computer or carrying around a long printed list. Is there any alternative? (John Hilton, Houston, TX)*

**A.** Pocket data banks (electronic address books) are disappointing when used this way because of their inflexibility. Try the Sharp Wizard, a \$300 "smart" data bank which allows alphabetic or numeric searching. Data may be manually entered or computer loaded.

**Q.** *About 20 years ago I remember listening to an old Aiwa police band radio. About 1/4 mile from the police station, I heard the dispatcher say, "Someone is operating a police radio at (my location)." Could the police have known I was listening, or was I dreaming? (Dave Melonakos, Newton, NC)*

**A.** The only way a receiver can be detected electronically is by monitoring its oscillator radiation. At 1/4 mile away, that would have been well beyond the capability of any conventional surveillance equipment.

If they weren't visually watching for you, or reporting someone else, I'd say you were dreaming!

**Q.** *I recently read an ad for a new-generation cordless telephone which doesn't operate in the conventional 46/49 MHz spectrum. Where are they? (Steve Voorman, Monroe, NY)*

**A.** They are anywhere they want to be in the 902-928 MHz spectrum. Since few people know about them, interception is less likely. Range is less than with the VHF units, and they share their frequency band with a wide range of services including ham radio.

**Q.** *In the UHF 453 and 460 MHz band, police repeaters are offset 5 MHz from their mobile inputs. What is the standard on high band? Paul Bukowski, Palmer, MA)*

**A.** There isn't one.

**Q.** *My old Radio Shack PRO2004 scanner has poor sensitivity. Are the newer models more sensitive? Aren't most other scanners about equally sensitive? (James Stegmeier, Alden, NY)*

**A.** Radio Shack shrewdly reduced the sensitivity in the PRO2004/5/6 to reduce strong signal overload. Someone buying a 300-400 channel scanner is likely to be in the city where signals are much stronger.

The newer PRO2006 has only slightly less sensitivity than the competition (which are, generally, equally sensitive), but every 1 dB reduction in sensitivity results in 3 dB reduction in intermodulation ("intermod"—a form of overload interference), making the 2006 particularly suitable for metropolitan listening.

In weak signal environments, an external antenna or antenna/preamplifier combination will boost the unit's range, bringing it up to par with the most sensitive competitors.

**Q.** *Sometimes when I hear on-scene news coverage I get the feeling that the reports are censored. Are some radio stations "quieted"? Do some even alter the news to suit their purposes? (Ken Ballweg, Denver, CO)*

**A.** In the United States, broadcasters (and publishers) are constitutionally guaranteed the right of free speech (and press) by Article I of the Bill of Rights.

News agencies may exercise some discretion, however, (and may be requested to do so by law enforcement agencies) when the safety of individuals or success of an on-going investigation may be jeopardized by the divulgence of too much information.

While conformity to such requests is voluntary, stations which do not cooperate soon find themselves ignored by agencies who could help them by supplying additional information on future news stories.

Some broadcasters may take advantage of their freedom, altering news to fit their commercial, ideological, or political purposes. This may not be ethical, but it is legal.

The best insurance against biased reporting is listen to (or read) more than one news source.

Questions or tips sent to "Ask Bob", c/o MT, are printed in this column as space permits. If you desire a prompt personal reply, mail your questions along with a self-addressed stamped envelope (no telephone calls, please) in care of MT.

## Bob's Tips of the Month

### A Test for Sony 2010 RF Burnout

Few comments in MT's history have had such long-standing repercussions as that in which we mentioned some years back that the RF preamplifier in the Sony ICF2010 short-wave portable was vulnerable to catastrophic failure from static electricity.

While the problem is rarely reported, there are a couple of simple tests. Here at MT headquarters, with the whip fully extended, we simply tune through the 11.6-11.9 MHz spectrum during the day, making sure that at least some signals make the LED light bar illuminate most of its segments.

Jim Campbell of Ann Arbor, Michigan, has come up with yet another simple test: Set the radio to 1620.0 kHz with the whip shortened completely and note the noise level in the background; now tune slightly higher—there should be a pronounced drop in background noise.

### CB Selective Calling

"Is there such a thing as selective calling for CBs?" was the basic question asked by Ricardo Molinar in the December issue. Jeff Multer of Charlotte, North Carolina, writes to suggest Ricardo contact Motron Electronics (310 Garfield St., Suite 4, Eugene, OR 97402; 503-687-2118). DTMF and DSC are their specialty, according to the 1992 *CQ Equipment Buyer's Guide*.

Or it might be a challenge Experimenter's Workshop columnist Bill Cheek would tackle if there is enough interest.

### AR1000 Wallet Look-up Chart

The popular AR1000 handheld scanner can be perplexing to program. One of our readers suggests that owners of that scanner might wish to photocopy and plastic-laminate this wallet-sized lookup chart for prompting when away from the instruction manual.

### "Passband Tuning" on Inexpensive Receivers

David Prescott of Marlborough, Massachusetts, suggests a technique for tuning in AM shortwave broadcasters that makes better use of the filters.

While it is natural to tune in a signal exactly on frequency (i.e., 11.830 MHz) and then select the filter which reduces interference with the least sacrifice in audio quality, there is still one additional step.

David selects the narrow filter, then changes the tuning slightly (1 or 2 kHz) up or down listening for best audio with the least interference. This procedure moves the desired signal further from the sharp edge of the filter, allowing even greater rejection of the adjacent interference. And if the receiver has a tone control it, too, can be adjusted for better sound.

#### LOAD SEARCH

- 1) SEARCH 2) PROG 3) lower XX.XXX 4) LIMIT
- 5) upper XX.XXX 6) ENT 7) step 5 or 12 5 8) ENT
- 9) AM/FM 10) ENT 11) BCH 12) ENT

#### TO CAPTURE FROM SEARCH

- 1) HOLD 2) ENT 3) BCH

#### SEARCH BANK(S)

- 1) SEARCH 2) BANK 3) PROG 4) B' 5) LIMIT 6) B'
- 7) ENT

#### PROGRAM-FREQ

- 1) MANUAL 2) AM/FM 3) XX.XXX 4) ENT 5) PROG
- 6) BANK 7) BCH

#### SCAN A BANK

- 1) SCAN 2) BANK 3) B

#### BANK LOCKOUT

- 1) SEARCH 2) BANK 3) B00 4) BANK 5) LOCKOUT

#### PRIORITY A CHANNEL

- 1) AUX 2) PROG 3) BCH 4) ENT

#### DIRECT ACCESS

- 1) MANUAL 2) BANK 3) BCH

#### COPY FREQ. TO ANOTHER CHANNEL

- 1) MANUAL 2) BANK 3) BCH 4) PROG 5) BANK
- 6) BCH

#### CHECK LOCKOUT FREQS. IN A BANK OR UNLOCK A BANK

- 1) BANK 2) PROG 3) LOCKOUT to unlock
- 4) ENT to keep locked

TO UNPRIORITY, PRESS AUX WHILE IN SCAN  
B=BANK CH=CHANNEL

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# Club Circuit

## Club Profiles

Each month we'll tell you a little bit more about one or two clubs, featured in the order in which their listings were received. Don't see your local radio club listed below? Write or call Club Circuit, c/o MT, and ask for a form.

### American Shortwave Listener's Club (ASWLC)

The founding principle of the ASWLC, active since December 1959, is "World Friendship through Shortwave." Its primary activity is in sharing information from its members through the monthly newsbulletin, "SWL."

The publication contains regular sections dealing with specific fields of interest and different geographic regions. Topics include shortwave broadcasting, utilities (non-broadcast communications), QSLs, and feature articles. A sample bulletin is available for \$1 in N.A. or US\$2 airmail overseas.

There is a club meeting on the first Saturday of each month at 10a.m. Pacific at the ASWL headquarters in Huntington Beach, California (714-846-1685).

ASWLC is a founding member of the umbrella organization, SCADS (Southern California Area DXers). One of their goals for the future, says Stewart MacKenzie, is to serve all the U.S. SWLs west of the Mississippi and in the Pacific Rim. Members from those areas are especially welcome.

Annual dues are \$18 in the U.S., \$19 to Canada and Mexico, \$16 for U.S. students under 18, or \$18 worldwide if the bulletin is shipped by seairmail rates.

### All Ohio Scanner Club (AOSC)

In 1979 a scanner enthusiast founded the AOSC to help bring together people interested in the same hobby and to share information such as frequencies, codes and technical knowledge. Although they have members

in forty states, the focus of the club publication, "American Scannergram," is on Ohio, Illinois, Indiana, Kentucky, Michigan, Pennsylvania, West Virginia, and Ontario.

"American Scannergram" is published every two months, and in addition to regional public safety columns, it covers government, sports, aviation, railroad, maritime, military, and even some shortwave and amateur topics. Equipment and techniques are also discussed. A sample is available for \$2.

There are no monthly gatherings; however, the club holds an annual family picnic in June or July in Columbus, Ohio. The AOSC co-sponsors a listeners' forum each year at the Dayton Hamvention, and has also become a regular presence at the Monitoring Times Convention.

Annual dues are \$16 in the U.S., \$19 for Canadian and Mexican residents, and \$26 elsewhere.

#### Club Name: All Ohio Scanner Club

Contact: Dave Marshal  
Club Address: 50 Villa Road  
Springfield, OH 45503-1036  
Region: Ohio and surrounding states  
Interests: VHF/UHF and some HF and amateur coverage  
Publication: American Scannergram

#### Club Name: American SW Listener's Club

Contact: Stewart MacKenzie, WDX6AA  
Club Address: 16182 Ballad Lane  
Huntington Beach, CA 92649  
Phone: (714) 846-1685  
Region: Western US, Pacific, Asia, & Middle East  
Interests: SWBC  
Publication: SWL

#### Club Name: Association of Clandestine Enthusiasts (A.C.E.)

Contact: Kirk Baxter  
Club Address: P.O. Box 11201  
Shawnee Mission, KS 66207  
Region: US, some Europe and Middle East  
Interests: Pirate and clandestine  
Publication: The A.C.E.

#### Club Name: Association of DX Reporters (ADXR)

Contact: Reuben Dagold  
Club Address: 7008 Plymouth Rd.  
Baltimore, MD 21208  
Region: International  
Interests: Utilities, ham band, QSLing, MW, LW, and SWBC  
Publication: DX Reporter

#### Club Name: Association of Manitoba DX'ers (AMANDX)

Contact: Shawn Axelrod  
Club Address: 30 Becortree Bay  
Winnipeg, Manitoba, R2N 2X9  
Canada  
Phone: (204) 253-8644  
Region: Manitoba  
Interests: LW, MW, SW, and VHF/UHF

#### Club Name: Bay Area Scanner Enthusiasts

Contact: Herman Frisch  
Club Address: 1465 Portobelo Drive  
San Jose, CA 95118  
Region: San Francisco Bay area  
Interests: 30+ MHz  
Publication: Listening Post

#### Club Name: Cincinnati Area Monitoring Exchange (MONIX)

Contact: John Vodenik  
Phone: (513) 398-5968  
Region: SE Indiana, Kentucky, SW Ohio  
Interests: SWBC, utility, military, satellites, scanning, BCBC

#### Club Name: Drake SPR-4 International Club

Contact: Rick Sitz  
Club Address: 5210 14th St. West, #11  
Bradenton, FL 34207  
Region: International  
Interests: Information specific to Drake SPR-4 radio

#### Club Name: Metro Radio System

Contact: Julian Olansky  
Club Address: P.O. Box 26  
Newton Highlands, MA 02161  
Phone: (617) 969-3000  
Region: New England states  
Interests: Public Safety  
Publication: M.R.S. Newsletter

#### Club Name: Michigan Area Radio Enthusiasts

Contact: Bob Walker  
Club Address: P.O. Box 311  
Wixom, MI 48393  
Region: Michigan & surrounding  
Interests: All bands  
Publication: Great Lakes Monitor

#### Club Name: Monitor Communications Group

Contact: Louis Campagna, Operations Mgr.  
Club Address: 8001 Castor Avenue, #143  
Philadelphia, PA 19152-2701  
Region: 35 mile radius of Philadelphia  
Interests: Various types of communications

#### Club Name: National Radio Club

Contact: Mike Knitter, General Mgr.  
Club Address: P.O. Box 24  
Cambridge, WI 53523-0024  
Phone: (608) 423-4159  
Region: Worldwide  
Interests: AM/FM  
Publications: NRC Publications, P.O. Box 164, Mannsville, NY 13661

#### Club Name: North American SW Assoc.

Contact: Bob Brown, Executive Director  
Club Address: 45 Wildflower Lane  
Levittown, PA 19057  
Region: Worldwide  
Interests: Shortwave broadcast only  
Publication: The Journal

#### Club Name: Northeast Ohio DXers

Contact: Mike Fanderys  
Club Address: 2802 North Avenue  
Parma, OH 44134  
Phone: (216) 661-2443  
Region: NE Ohio  
Interests: SWBC and utilities

#### Club Name: Northeast Scanner Club

Contact: Les Mattson  
Club Address: P.O. Box 62  
Gibbstown, NJ 08027  
Phone: (609) 423-1603 evenings  
Region: Maine thru Virginia  
Interests: UHF/VHF, public safety, aircraft, military  
Publication: Northeast Scanning News (NESN)

#### Club Name: Ontario DX Association

Contact: Harold Sellers, General Mgr.  
Club Address: P.O. Box 161, Station A  
Willowdale, Ontario M2N 5S8  
Canada  
Phone: (416) 853-3169 voice & fax  
(416) 299-6392 DX-Change information svce.  
Region: Predominantly Providence of Ontario  
Interests: SWBC, utility, MW, FM-TV, scanning, technical, propagation  
Publication: DX Ontario

#### Club Name: Pakistan SW Listeners Clubs Association

Contact: Javid Iqbal

Club Address: P.O. Box 5

Shekhpura, 39350, Pakistan  
Region: Pakistan  
Interests: SWBC

#### Club Name: Regional Communications Network (RCN)

Contact: Bill Morris, Public Info. Officer  
Club Address: Box 83-M  
Carlstadt, NJ 07072-0083  
Region: 50 mile radius of NY City  
Interests: HF, VHF, UHF, 800 MHz, utilities, and broadcast

#### Club Name: Rocky Mountain Radio Listeners

Contact: Wayne Heinen  
Club Address: 4131 S. Andes Way  
Aurora, CO 80013-3831  
Region: Denver metropolitan area  
Interests: All bands

#### Club Name: Southern California Area DXers (S.C.A.D.S.)

Contact: Don R. Schmidt  
Club Address: 3809 Rose Avenue  
Long Beach, CA 90807-4334  
Phone: (310) 424-4634  
Region: California area  
Interests: AM, FM, TV, scanner and shortwave broadcasting

#### Club Name: SPEEDX (Society to Preserve the Engrossing Enjoyment of DXing)

Contact: Bob Thurberg, Business Mgr.  
Club Address: P.O. Box 196  
DuBois, PA 15801-0196  
Region: Worldwide  
Interests: SWBC, utilities  
Publication: SPEEDX-monthly newsletter

#### Club Name: Toledo Area Radio Enthusiasts

Contact: Ernie Dellinger, N8PFA  
Club Address: 6629 Sue Lane  
Maumee, OH 43537  
Phone: (419) 865-4284  
Region: NW Ohio and SE Michigan  
Interests: Shortwave, scanning, amateur

## DX Radio Tests

The following are "special events" arranged as a DX opportunity for listeners. The first listing was arranged by the Courtesy Program Committee of the National Radio Club. For more information on the NRC and BCB DXing, send \$1 to NRC Membership Center, P.O. Box 118, Poquonock, CT 06064-0118.

• **WWII-720**, 8 West Main St., Shiremanstown, PA, 17011, will conduct a DX test on Sunday morning, January 26, 1992 from 0400 to 0430 EST. Program details unknown at press time. Our thanks to Mr. Dean Lebo, General Manager, for this test.

The following tests were arranged by J.D. Stephens for the International Radio Club of America (IRCA), 11300 Magnolia, #43, Riverside, CA 92505, USA. For a sample issue of *DX Monitor*, please enclose \$1 or 3 IRCs.

• Monday, January 26, 1992: **KMYZ-157C**, Tulsa, Oklahoma, will run a special DX test from 1:01 to 5:00 am EST. The test will include Morse Code IDs. Reception reports may be sent to: Mr. Joe Hancock, Chief Engineer, KMYZ-AM Radio, 5810 E. Skelly Drive, #801, Tulsa, OK 74135-6456.

• Sunday, January 12, 1992: **KUAI-720**, Eleele, Kauai, Hawaii, will air a special DX test from 5:00 to 9:00 am EST. The test will consist of polka music and hard rock music by Led Zeppelin. There will also be Morse Code IDs.

**By special arrangement with IRCA, WGN-720, Chicago, Illinois, will be off the air from 5:00 to 5:00 am EST.**

Reception reports to: Mr. Michael S. Friedlander, Chief Operator, KUAI-AM, Box 720, Eleele, Kauai, HI 96705. Also, thank you for the WGN silent period may be sent to: Mr. James Carollo, Chief Engineer, WGN-AM, 435 N. Michigan Ave., Chicago, IL 60611.

• Monday, January 20, 1992: **WJJC-1270**, Commerce, Georgia, will run a special DX test between 3:30 and 4:00 am EST. The test will include Morse Code IDs. Reception reports may be sent to: Mr. William Carson, Chief Engineer, WJJC-AM Radio, P.O. Box 379, Commerce, GA 30529.

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## SPECIAL EVENT CALENDAR

Date	Location	Club/Contact Person
Jan 11	<b>Waukesha, WI</b>	Midwinter Swapfest/West Allis RAC Location: Waukesha Exposition Center
Jan 15	<b>Toronto, Ont.</b>	Ontario DX Association Monthly Meeting Location: North York Central Library, Room #2 5120 Yonge Street, Toronto; 7-10 PM.
Jan 18	<b>Hammond, LA</b>	SE Louisiana Amateur Radio Club/Ernest Bush, N5NIB 331 Rock Road, Hammond, LA 70403, (504) 567-1261 or (504) 542-0034 Location: SLU University Center, 9-4, free admission.
Jan 18	<b>Marathon, NY</b>	Skyline Amateur Radio Club Winterfest '92/Rick A. DuBrava P.O. Box 5241, Cortland, NY 13045. Location: Civic Center starting at 7:00 a.m. Talk-in on 147.225.825.
Jan 18	<b>Monterey, CA</b>	NPSARC Winterfest '92/Doug McKinney, KC3RL 9 Glenn Ave., Prunedale, CA 93907, (408) 663-6117. Location: Monterey Peninsula College Armory
Jan 18	<b>Cameron, MO</b>	Greenhills & Ray Clay ARC's/G.E. Miller, WA0/ZOG 15816 Oakmont Pl., Kearney, MO 64060
Jan 18	<b>Ft. Myers, FL</b>	Ft. Myers ARC/Earl Spencer, K4FOU 1735 Hanson St., Ft., Myers, FL 33901
Jan 19	<b>Yonkers, NY</b>	Metro 70cm Network/Otto Supliski, WB2SLQ 53 Hayward St., Yonkers, NY 10704
Jan 25	<b>St. Louis, MO</b>	Winterfest '92 Amateur Radio & Computer Expo/James E. Welby, WB0ZJW 6059 Sutherland, St. Louis, MO 63109-2247 Location: Machinist Hall, 12365 St. Charles Rock Rd. 9am - 3 pm. (314)567-8777 or write P.O. Box 50202, St. Louis, MO 63105.
Jan 28	<b>San Diego, CA</b>	Amateur Radio Station K16YG Special Event Operation Commemorating 6th anniversary of Challenger Space Shuttle Operation on the novice phone portion of 10 meter subband between 1500 and 2400 UTC. For a special commemorative, send QSL and SASE to: Challenger JHS, 10810 Parkdale Ave., San Diego, CA 92126
Feb 8	<b>Blain, MN</b>	Midwinter Madness Hobby Electronics Show/Robbinsdale ARC P.O. Box 22613, Robbinsdale, MN 55422
Feb 8-9	<b>Miami, FL</b>	Southern Florida Section Convention/Evelyn Gauzens, W4WYR 2780 NW 3rd St., Miami, FL 33125
Feb 14-16	<b>Sarasota, FL</b>	Sarasota Amateur Radio Assoc./William Eddie Martin, KI4ZJ 1870 Bahia Vista St., Sarasota, FL
Feb 19	<b>Toronto, Ont.</b>	Ontario DX Association Monthly Meeting Location: North York Central Library, Room #2 5120 Yonge Street, Toronto; 7-10 PM.
Feb 22-23	<b>Cincinnati, OH</b>	Ohio State Convention/Stan Cohen, WD8QDQ 2301 Royal Oak Court, Cincinnati, OH 45237
Feb 23	<b>Dearborn, MI</b>	Livonia Amateur Radio Club/Neil Coffin, WA8GWL 35681 Hees, Livonia, MI 48150
Feb 29	<b>Orange, TX</b>	Orange Amateur Radio Club Hamfest/Sherwood Buckalew, KA5VOT (409) 883-6111 or Dan Killough, WB4GYS (409) 769-8436. Location: VFW Hall on Hiway 87 one mile north of IH 10.

# STOCK EXCHANGE

Ads for Stock Exchange must be received 45 days prior to the publication date. All ads must be paid in advance to *Monitoring Times*.

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## Looking Back: A Decade in Review

It is hard to believe that ten years have gone by since the first issue of *Monitoring Times* was sent out to a few hundred radio hobbyists.

The inaugural issue (see this month's cover) was an eight-page tabloid, printed on news pulp, an experiment to see what interest there might be in such a publication. Those first issues were put together at our local newspaper office, a laborious cut-and-paste procedure on which I spent many hours.

Now, ten years later and 112 pages thick, *MT* is compiled, printed, published, and mailed using up-to-date technology. Well established as the leading source of factual monitoring information, *MT* is read and discussed by all the major government agencies as well as tens of thousands of active listening hobbyists. Articles, not ads, get first priority. Our editorial policy is to report the facts about products, even if this may upset some advertisers. After all, *MT's* major responsibility has always been — and will continue to be — to our subscribers.

Advertising takes up less than 20% of our pages, not the 60% found elsewhere. This means

that our integrity is never compromised for advertising's sake. When advertisers begin to compete for space, we simply add more pages; we don't reduce the informational content. In fact, we always add enough pages to accommodate more articles as well as advertising!

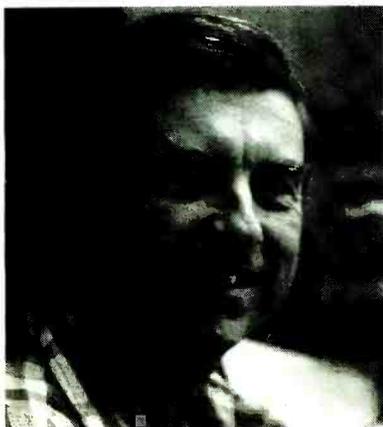
Our computerized reporting and printing network enables us to get the news to you fast. It was *MT* that first revealed the locations of the mysterious spy numbers stations, the imminent appearance of the super-secret Aurora aircraft, frequencies for following Desert Storm on all fronts, insights into world broadcasting, immediate alerts to proposed listening laws, and descriptions of new scanners and shortwave receivers.

Our shortwave guide with its worldwide frequencies and program section is the most up-to-date comprehensive listing in publication. Perhaps this is why journalists quote us more than other radio publications when they are looking for the facts behind newsbreaking stories.

While we may boast of our accomplishments and accolades, we couldn't do a thing if it weren't for the dedication of our writers and your loyalty — our readers and contributors.

From its humble beginning to its internationally-recognized position of authority and prominence, *MT* has come a long way. We can all be proud of that. As we continue to cover the past, present, and future of radio, we can all look forward to even more exciting articles and products in coming months!

-Bob Grove  
Publisher



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