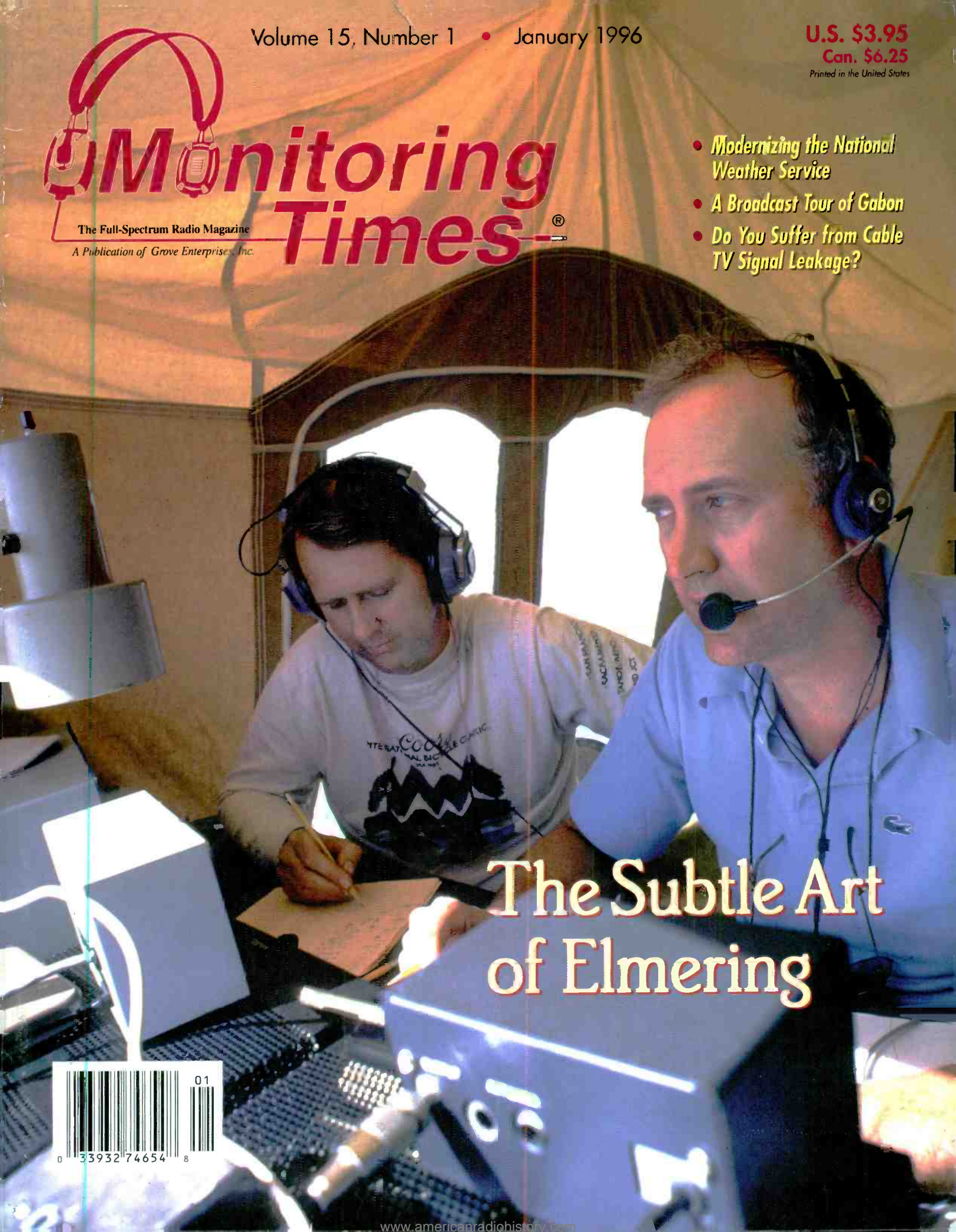


Monitoring Times®

The Full-Spectrum Radio Magazine
A Publication of Grove Enterprises, Inc.

- *Modernizing the National Weather Service*
- *A Broadcast Tour of Gabon*
- *Do You Suffer from Cable TV Signal Leakage?*



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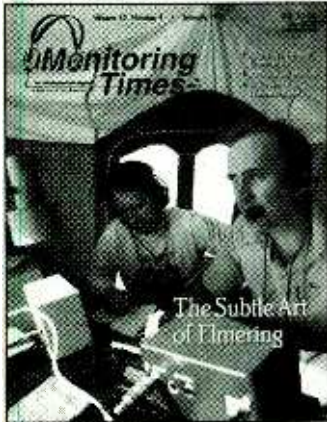
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Cover Story

The Subtle Art of Elmering

By Don Daso

"Elmer" is ham radio slang for any hobbyist with experience who shares with a newcomer the benefit of his or her knowledge and experience. Sometimes this is done so subtly we don't even recognize who our own "Elmers" were until we find ourselves in the same position.

The art of guiding a beginner isn't limited to amateur radio: you can "network" with others for encouragement and sharing information no matter what your listening target or level of expertise. In our cover picture by Don Daso, WORLX and K4UEE work side-by-side in a DXpedition to achieve more than a lone hobbyist ever could. See page 9 for the story.

Broadcasting in Gabon 14

By Colin Miller

Situated near the heart of "the dark continent" is French-speaking Gabon, home to one of Africa's most successful broadcasters, Africa No. 1.



Poor Richard's Guide to Frugal Scanning 18

By Rich Arland

Do you assume you must have a scanner hot off the assembly-line with the latest bells and whistles in order to listen to modern-day public safety agencies? Think again. You can fill your hours very satisfactorily listening to a crystal-controlled scanner (or three or four of them) bought for a song at the local flea market.

Cable TV Signal Leakage 20

By John Wilson

When CNN and HBO and TNN start appearing in portions of the spectrum where they don't belong, you can suspect leakage from your local cable TV system. There is something that can be done about it; there are also some ways you can have fun with it. More over, after reading this feature, you'll know exactly how to identify this source of radio frequency interference.

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National Weather Service 28

By Ken Reitz

Begun in 1870, the National Weather Service just celebrated its 125th anniversary. The construction and technological advances now almost completed are the most ambitious in its history. The difference can already be experienced by the public it serves.



DEPARTMENTS

In this Issue:

Two themes stand out this month: The benefits of Internet as a resource for the radio hobbyist is one. "Digital Digest" visits some sites of interest to utility monitors, "American Bandscan" only scratches the surface of the mediumwave broadcasters using the multi-media capability of the Web, and there are new, recommended sites to be found in "Net News."

The second topic you'll find columnists talking about is used or even antique equipment. "Beginner's Corner" will take you all the way back to the '20s with a crystal set you can build yourself; "Scanner Equipment" has you pulling those collectible crystal scanners off the shelf and putting them back into service; "On the Ham Bands" encourages you to consider discarded commercial transceivers, which may be modifiable for ham use.

From crystal-control to computer-control, you'll find the same variety in *Monitoring Times* as you'll find in the real world of radios.

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Scanners/CB/Weather Stations

New Scanner Products Available

Now it's easy to purchase communications, emergency management supplies, weather forecasting equipment and more directly from Communications Electronics Inc. Your free fax-on-demand catalog including un-advertised specials is instantly available by calling 313-663-8888 from your fax machine.

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- Davis Rain Collector II 0.2 mm 7852METRIC-U \$59.95
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Looking Forward; Looking Back

It was hard not to be startled when *Monitoring Times*' volume number changed this month to volume 15! Especially since I've been associated with the magazine for most of those years. Bill Grove—son of Bob, computer whiz, and now an *MT* staff writer—wasn't even in high school then.

Over recent years the hobby has been changing at an ever-accelerating pace, and our intentions are to help our readers keep up-to-date. Each regular department helps you stay current with new developments in its own area of coverage. For technology so new it didn't even have a slot in the magazine, we have added "Net News," edited by Bill Grove, and "Skylink," by Wayne Mishler, which debuts in this issue.

We still do a little constructive looking back, as well. Interest in collecting older equipment is growing. But, hobbyists are finding that a lot of yesterday's technology isn't ready for the display case just yet. Rich Arland's feature this month on "Poor Richard's Guide to Frugal Scanning" is an example of what can be done with inexpensive, second-hand equipment. Rich will be editing a quarterly column, beginning in March, on other such "low-tech" solutions to today's listening.

Chicago Fan

MT has a new supporter in Ed Schwartz, late night program host on WLUP FM 97.9 in Chicago. He writes, "I'm overjoyed with this magazine. As a radio talk show host, a scanner nut, and former CB and amateur radio operator with an interest in SWLing, it gives me everything. The columns are informative and I have greatly increased my library with books and information offered in *MT*. I enjoy antenna articles. My residence is atop a 600-foot Chicago highrise. I can pick up weak signals with a paper clip! [For this you need antenna articles?] I'm always 'high' when scanning. I'd like to read more about Chicago's 'radio activity.'"

Kidding aside, thanks for the kind words, Ed. There are a couple of Chicago-area clubs listed in *MT*'s "Club Circuit" (which readers will note has been moved to a new location following the "Shortwave Guide") that should



yield some contacts for local frequencies. A feature on Chicago-based scanning would be welcome, however. Who hasn't spent some time at least passing through Chicago's airport? How about it, writers?

Needed: Good Home for a Lost Kit

Do you have an ICOM R71 and an itchy soldering gun?

Herbert Foster, AD4UA, of Melbourne, Florida, has a Phased Locked AM Option kit, manufactured by Eska & Edvis of Sweden, to give away to the right person, and you may be it. Herb ordered the kit several years ago. "The price, if my memory is correct, was about \$150." By the time his order was filled and he had time to devote to the installation, his interest had turned to ham radio and the R71 was traded away.

"During some recent remodeling of the shack this kit and the manual turned up, still in its original box. I would like to give this kit, free of charge, to anyone who would like to have it, and will give it a good home."

The kit is here at *MT* headquarters. Anyone wishing the PLAM option may write, fax, or e-mail your name and shipping address to MTEDITOR, mentioning the PLAM OFFER in the text. On **January 19th**, I'll put all names into a pot and draw one.

There is one catch: "I would like one thing in return: I'd like some word regarding how it goes together and how it works when completed."

Fair enough: I'm sure our readers would be interested in its performance, as well. Here's a brief description of what the PLAM option does, from the manual.

Phase locked AM reception eliminates distortion during selective fading, which occurs frequently on most shortwave AM stations. The AM reception in the PLAM mode becomes much clearer and more stable. The PLAM option consists of the following circuits: (a) Phase detector, (b) Level converter, with loopgain control and output relay, (c) Lock detector with LED driver, (d) Filter selector and audio response circuit.



Volunteerism

Steve Reese of LeRoy, New York, sent this suggestion in response to Otto Muller's article "The Secret of Well-Informed Scanning" in the December issue. "I'd like to add another idea to enhance your scanning knowledge and enjoyment. Rather than just chatting with local firefighters, policemen, and so forth, why not just join them? I realize that many *MT* readers may already be involved in community volunteer organizations, but if you're not, it's a great way to meet people with similar interests and learn more about your hobby.

"Even if you don't plan to be a smoke-eater or an EMT, your participation in a local volunteer fire department, ambulance corps, REACT chapter, neighborhood watch group, Red Cross, etc., can benefit you and your community. Many organizations will offer training free of charge right in your own town. Your hobby and professional interests could also be of benefit to the group, as is the case with many members of the ambulance corps I belong to.

"Volunteer organizations across the country are having a tough time finding people to spend just a few hours each week or month helping their community, so for those of you who aren't already involved but enjoy scanning as a hobby, give a nearby volunteer organization a call."

Static in the Neighborhood

After reading B.W. Battin's October feature about static from power lines, Bruce Elving, owner of FM Atlas Publishing in Esko, Minnesota, recollected an experience of his own some 20 years ago.

"I had been trying to tune in WLOL-FM 99.5 Minneapolis in Duluth, MN, using a yagi antenna to scoop the weak signal into my Harman-Kardon tuner. I noticed a 'bloop-bloop' type interference coming through the classical music. Taking a portable AM-FM radio on a walk led me to a certain house, right in line with my yagi's beam—and to a character I'll call 'Electric Blanket Man.'

"While all the other neighbors were helpful, allowing me in to see what appliances they might have, Electric Blanket Man refused, even after I told him that I suspected he had an electric blanket that was arcing and causing radio interference, and which could cause a fire. I even noticed what times the lights went out in the portion of the house my

(Continued on Page 112)



STARTEK INTERNATIONAL INC.

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#RD-275	27 & 50 MHz Rubber Duck Antenna ... 19
#RD-450	450 MHz Rubber Duck Antenna 16
#RD-800	Cellular phone band RD Antenna 16
#P-110	200 MHz 1X-10X Probe 39
#LF-22	Low Pass, Audic Probe 25
#DC-10	Direct 50 OHM Probe 20
#DC-5	BNC Cable to Clip Leads 12
#M-207	Interface Cable MFJ Ant. Analyzers ... 10
#APA-9	9VDC Auto Power Adapter 6

FEATURES	ATH-10 CALL reg \$179	ATH-15 CALL reg \$235	ATH-30 CALL reg \$299	ATH-5C CALL reg \$339
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H-Z LOW RANGE	NO	NO	NO	YES

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Two Way Quack Up

You think U.S. radio regulations are tough? A man in Launceston, Australia, was fined \$2,000 for quacking like a duck on his two-way. According to the Reuters News Agency, Don Desmond Davey was convicted for "broadcasting something that was not speech, was not understandable, and could cause confusion." Davey pled guilty and was ordered to turn in his radio.

How Much Did It Hurt?

Infinity Broadcasting finally paid up the fine levied by the FCC for obscenities aired on the Howard Stern talk show. The \$1.7 million, technically called a "voluntary contribution to the U.S. Treasury," was said to be the highest ever levied. But did it hurt? Apparently not too much. Infinity just shelled out \$275 million to purchase seven more AM/FM radio stations. The group now has 34 stations, 28 in top-ten markets.

More Vanity

Ham radio operators in the U.S. have been working out a system of so-called vanity call signs. Like vanity license plates for cars, they are expected to not only be popular but something of a revenue generator for the government.

Were you aware, however, that vanity addresses are now being issued on the Internet? This came to our attention when it was revealed that Proctor & Gamble and Kraft Foods began a massive "buy" of such names as "flu.com" and "diarrhea.com." It now costs \$100 to register an Internet domain name.

No Morse on HF, either?

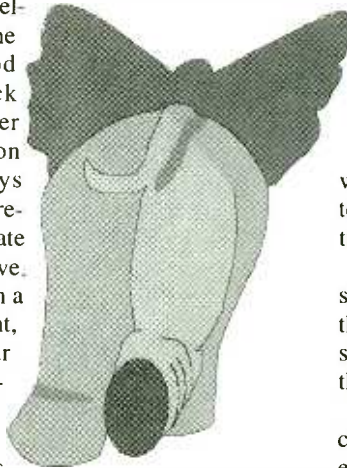
The anti-Morse code movement is continuing to gain ground. New Zealand recently proposed to eliminate the international code requirement for HF (shortwave) amateur operation. Now the United Kingdom is apparently joining the Kiwis and plans to support the New Zealand proposal at the World Ad-

ministrative Radio Conference. The Radio Society of Great Britain is protesting, though, saying that the decision is contrary to the wishes of UK hams.

Satellites Win Again

Another potential DX target has been lost to space-age technology. According to the Smithsonian Institution, Malaysian wildlife will henceforth be tracked by satellite. "It'll be the same method used to track ships on water and trucks on roads," says Smithsonian research associate Michael Stuwe. "We will catch a rogue elephant, strap a collar with a transmitter round its neck, and track its movements with a satellite."

Darn; and I just bought 4000 bumper stickers to launch WILDIX—the Wildlife International Listeners DX Club.



Everybody's Gone Country

According to the Katz Radio Group, country formats are now "king" of U.S. radio, although the format is apparently splitting into two different camps. Two groups of country radio listeners have emerged: younger, rock-based listeners and older, soft/gold listeners. The report tracked programming performance over the past 10 years and involved some 4,065 stations in 161 different markets. Interestingly, however, if you combine the plethora of Christian formats (contemporary, Gospel, etc.) listed in the *M Street Radio Directory*, religious stations are #1 in the United States.

Police Scanning

Police in Rowley, Massachusetts, almost caught a burglar because an off-duty Georgetown officer happened to be listening to his scanner. The officer, who police refused to identify, apparently monitored what appeared to be a cellular phone conversation

about the crime. "[The officer] heard them saying that a cruiser had just passed them, and a few other things that led him to believe there was a break in progress," said Rowley police. Police later stopped a car in Haverhill and found three people "and a variety of cellular phones and radios" but did not make an arrest.

Scanning to the Rescue

The Fredericksburg, Virginia, *Free-Lance-Star* reports that "a call from an alert scanner listener led to the arrests of two men accused of breaking into two homes yesterday in Spotsylvania County." Police responded to a burglar alarm and saw three men coming out of the house. While they were able to grab one of the men, the two other took off. A search, using dogs, was unable to turn up the two.

Some time later, the two suspects were seen at a pay phone by someone who heard their descriptions over the scanner. Police stopped their car a short time later and made the arrests.

This, and dozens of other examples of citizens using their scanners to assist law enforcement, ends when public safety officials decide to "scramble" or digitalize their signals without giving the public access.

Scanning Rescue II

It was a tense moment in a Westminster, Maryland, bank. A man walked in, "acted suspiciously, and left as soon as another customer walked in. The police were called and a description of the man and his vehicle was broadcast over police radio. According to police spokesman Greg Shipley, it wasn't long before area scanner listeners pitched in to help. Police received several calls from residents who heard the transmission and helped police pinpoint the vehicle's location.

When the man was stopped by police, they found a pipe bomb, a fake bomb, several guns, and newspaper clippings on the Oklahoma City bombing. He was arrested and charged with attempted robbery, handgun possession, manufacturing and possessing a pipe bomb, and possessing a device that resembles a bomb.



The Whole Truth

When Kenya Broadcasting Corporation (KBC) viewers tuned in to a rebroadcast of the BBC's "The World Today," they were greeted with the following announcement: "We wish to inform our viewers that we have not been able to receive the BBC's *The World Today* news program [because of] technical changes that took place in the relay of the signal affecting the region.

KBC will therefore not be able to relay the program for some time." Meanwhile, back at the capital, the Kenyan Minister of Information and Broadcasting announced the KBC had cancelled its agreement to rebroadcast BBC World Service because London was airing "hostile" programs about Kenya.

Technical reasons, eh? Yeah: Crossed wires.

Czech TV Bingo Cancelled

Bad news for TV viewers in Prague. Nova TV's on-air bingo games have been suspended by the finance minister. The move comes in reaction to police investigations of fraud. According to reports, someone became suspicious when an "R" was called out.

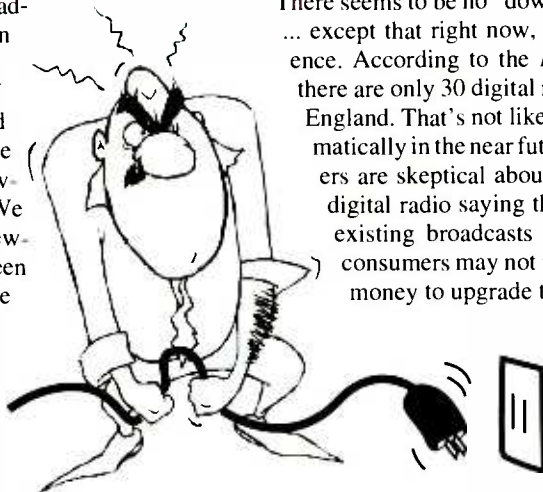
I'll Pay! I'll Pay!

Chuck Shepherd reports that Paragon Cable in New York has come up with a new way to get customers to pay their bills. Instead of cutting off service altogether, Paragon instead fills all 77 channels on the system with C-SPAN. C-SPAN televises such delicacies as long-winded speeches by congressmen and live Senate hearings on cockroach research in Honduras. Paragon says that the project has been successful.

Is Anybody Out There?

The BBC in London has launched its new digital audio broadcasting service, billing it as one of the most important advances in radio technology since Marconi's experiments in 1890. According to officials, the digital service produces remarkably clear sound, eliminates interferences and does all of this

on such a narrow bandwidth that the number of frequencies can be dramatically increased. There seems to be no "down" side to digital ... except that right now, there is no audience. According to the *Financial Times*, there are only 30 digital receivers in all of England. That's not likely to change dramatically in the near future. Manufacturers are skeptical about the potential of digital radio saying that the quality of existing broadcasts are so high that consumers may not want to spend the money to upgrade their old radios.



Silent Voices

Sultry-voiced radio pioneer Alison Steele has died after a 10-year battle with stomach cancer. Steele, who flourished on New York airwaves as the "Nightbird," began her career in 1968 when she was hired as part of an experimental all-female staff on WNEW. The experiment failed, but Steele succeeded in a then-male dominated industry. She remained on the air for over 25 years, most recently doing overnights on K-ROCK. She was 58.

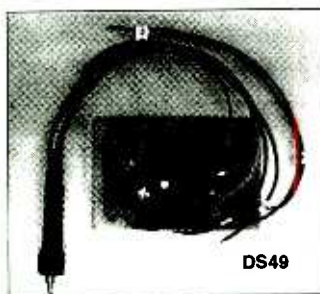
Sidney Shure, chairman and founder of Shure Brothers, Inc., died at the age of 93. S.N. Shure, as he was known, started the Shure Radio company in 1925 as a wholesale

parts supplier for home radio set builders. Today, 70 years later, it is the world's largest manufacturer of microphones.

"Communications" is written by Larry Miller with help from Rachel Baughn and the following readers who are members of the Communications Monitoring Team: Dave Alpert, New York, NY; Harry Baughn, Brasstown, NC; George Beard, Kansas City, KS; J.R. Berry, Jr., Columbus, OH; Bob Fraser, Cohasset, MA; Charles Gossett, Nashville, TN; Peter Hassett, Los Angeles, CA; Maryanne Kehoe, Atlanta, GA; H. Kelley; Brian Lawrence, San Francisco, CA; David McBeth, Amesbury, MA; Hugh Miller, Salt Lake City, UT; Les Roberts, Baldwinsville, NY; Richard Sklar, Seattle, WA; Kurt Sokolowski, Fredericksburg, VA; Jim Sutton, Mt. Morris, NY; Robert Thomas II, Bridgeport, CT; Thanks, too, to the monitoring team members who wish to remain anonymous. We also consulted the following sources and list their names in appreciation: BBC *World Broadcast Information*, Chuck Shepherd's *News of the Weird*, *National Scanning*, *Radio World*, *W5YI Report*.

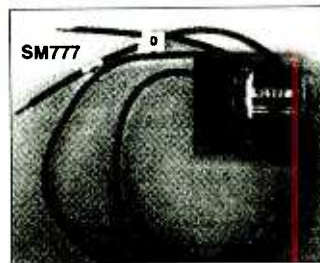
Become a member of the MT news monitoring team: send clippings and stories of interest to the hobby to "Communications," P.O. Box 98, Brasstown, NC 28902; fax 704-837-2216; e-mail mteditor@grave.net.

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The Subtle Art of 'Elmering'

How did you get started in the hobby?

Do you remember who helped you along the way? In amateur radio, such a mentor is called an "Elmer," but the principle is not limited to hams. The following story may remind you of your own start in radio ... or if you're new to the hobby it may encourage you to know that it's okay to ask for help!



Story and Photos By Don Daso

The big floor model Zenith sat in one corner of our living room. Mostly, we listened to ball games on it—provided there was time from the farm chores. We especially tuned in to night games, when there'd be time to sit back and relax.

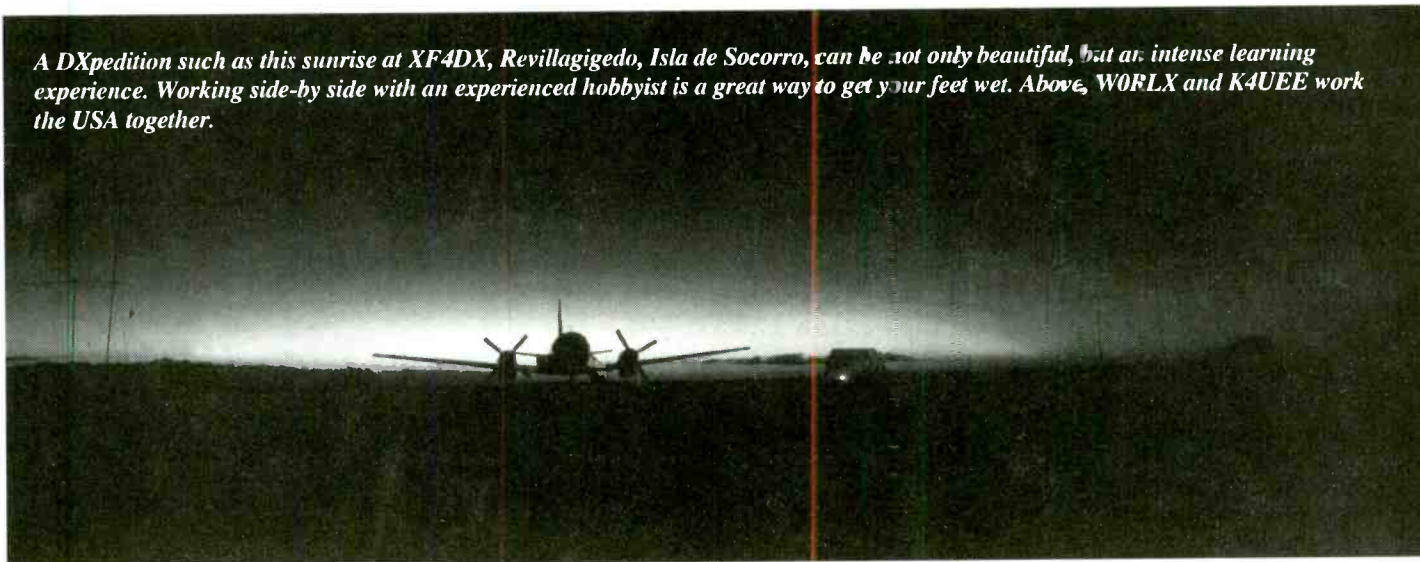
One night—when a game was over and spinning the big weighted dial around failed to turn up anything interesting—I reached out and moved one of the knobs, labeled BAND. The Cleveland Indians went away for good. The sounds were totally different. To my 12-year old imagination, it seemed sort of like a science fiction movie soundtrack:

squeals and whistles and pops and strange voices and music and noises. An adventure in sound.

The big black rotary dial was labeled in bold white print at various points. *Short-wave broadcast. London. Paris. Tokyo. AMATEUR.* At some spots in my rotation of the dial, you could actually hear sounds from where the label said—for instance, the BBC, which turned out to really be in London. I thought this was pretty terrific, considering I was sitting in Ohio in my farmhouse living room on a warm summer night.

As was often the case, I went to the library to read about what I was

A DXpedition such as this sunrise at XF4DX, Revillagigedo, Isla de Socorro, can be not only beautiful, but an intense learning experience. Working side-by-side with an experienced hobbyist is a great way to get your feet wet. Above, WORLX and K4UEE work the USA together.



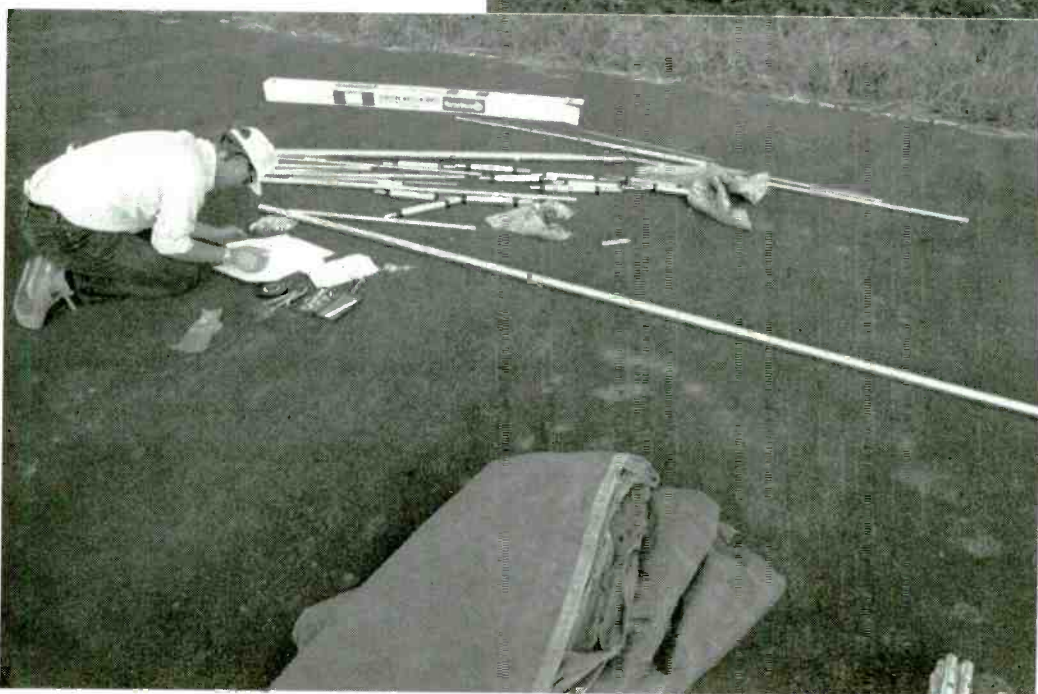
doing. Radio, it turned out, was a very big deal. In 1960 radio was a commercial enterprise, a cultural phenomenon, an historical presence, a technological marvel, and a hobby. It was this latter aspect which caught my attention.

Within a year of reading and asking questions, I had taught myself a lot about each of those areas. I was listening, more and more regularly, to those bands marked *AMATEUR* instead of the shortwave broadcasters. I was beginning to understand these "hams," as I'd learned they were called, and some of their language.

I'd convinced my folks to let me have the Zenith. It had taken me most of an afternoon to work up the courage to remove the back from the big console and look into the works of the set. The radio itself was relatively small, although it had a huge circular dial, and a big speaker mounted underneath the chassis. By evening, that chassis and speaker were set up, alone, on a small desk beside my bed, and the lovely wooden cabinet relegated to the scrap heap. The radio would occupy more and more of my time.

Finally, I found out there was another ham in my school, in the class ahead of mine. We became friends. WA8ATG helped me learn the code, let me listen to QSOs (conversations), let me talk to people on the air, let me know there were other hams in the small town near where we lived.

Finally, after a practice session late one December evening, he turned to me and said, "Congratulations, you've just passed your



Some aspects of the hobby require teamwork! WA8MAZ, K4MQG, WA4UNZ and N5TF prepare to launch a 12-ft. dirigible, used as a vertical antenna support.

It must go together like this ... W0RLX studies the assembly of a Cishcraft A-3 tribander for the XF4DX expedition.

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Novice code test!” He was my first Elmer, although this term hadn’t come into popular use yet. (An “Elmer” is an experienced ham who personally teaches you about the hobby.)

It certainly didn’t take me long to get the written exam out of the way after that. The long wait for my license began. And of course, I would now need a station of my own. The Zenith was woefully inadequate, without a BFO or any selectivity to speak of. But how was I going to afford equipment? I was 13 years old, and my folks didn’t have money to buy me equipment.

Well, like all hams, I improvised. I took my only income and squirreled it away. I saved up my lunch money. I really didn’t have a plan, but I knew I needed a radio station if I was going to be a real ham. This was a step in that direction—at the staggering rate of 35 cents a day.

One day, another student walked up to me after gym class and said he’d heard I was a ham. His dad used to be a ham, he said, and so did he, but both of them were no longer licensed. What kind of gear did I use?, he wanted to know. Patiently, I explained my situation. The next day, he asked me if I wanted to buy his Dad’s old receiver, which

he cautioned me didn’t work, but was still a fine receiver—something called a BC-348.

Again, I read some books and did research. It seemed the BC-348 was usable in hamming. Indeed, there were several articles available about “converting surplus” which referenced this particular radio. Once I’d figured out “surplus” and what “converting” meant, I concluded the asked-for \$10 price tag was probably worth it.

Enter Elmer number two. Pete, ‘ATG, convinced me to call W8SGH and ask for his help. He’d been a radioman in the war and knew lots about surplus gear. Lou agreed to help me get the radio up and running in his spare time. He stressed he’d help me, but that I’d be doing the work.

Well, it quickly became obvious that while I might have passed a test, I really didn’t know anything about this aspect of the hobby. Indeed, I had a healthy curiosity about it, could read a book about it and memorize facts and figures, but had never soldered two wires together. My education began. Proceeding so slowly and subtly that I wonder whether or not he planned it this way, I learned something about the mysteries of electronics. I learned not to be afraid. I learned what com-

ponents did, what symbols stood for what on a schematic. I learned, in short, something more about being a ham. Together, down in his basement workshop, over the course of some nights and weekends, we “converted” that BC-348.

I used the 348 in QSOs made during the course of the Novice Roundup—which is when my license came: WN8HJW. It was a real thrill and quite a challenge, getting on the air and making your first contacts during a contest.

Pete and I became members of our local radio club—the Medina County (Ohio) Radio Club. Again, the process was subtle, yet real. Many of the members of this group of mostly older, retired guys gave us the benefit of their experience and knowledge—real “two-letter call” hams explaining something about the history of the hobby, sharp rf technicians talking through transmitter design, accomplished DXers describing operating techniques. We had a wealth of Elmers helping us out. Maybe it was the times (who won’t agree the 60s were unique?), maybe it was the fact we were the only youngsters around (someone even had to drive us to meetings), maybe it was our own eager enthusiasm, but



What a view! Pilots John and Bob, XE1IKP, WORLX, K9AJ and WA8MAZ at the highest point on Socorro



Photo by Harry Baughn

Don't have an Elmer? Then latch onto an event like the Grove Expo where hobbyists of all levels come together to learn, share knowledge and experiences, and rekindle their enthusiasm for monitoring.

we learned an awfully lot in that radio club.

Much of what I learned has stayed with me. Some of it enabled me to find work during college, building electronic equipment for the University physics lab. Some of it's gotten me temporary jobs during periods of unemployment. It's enabled me to repair gear I use in my business today—film and television production. It's made it possible to build some good contest and DX stations. Some of it started me on the path to being a good operator, and some of it has made me friends with an amazing number and variety of people.

Mostly, it has meant I would somehow continue to pass on what I have learned—something I wasn't really aware I was doing. Until last year, that is, when a man walked up to me on the crowded floor of the Dayton

Hamvention to thank me for inspiring him.

I gave him his Novice exam when I was in graduate school at Ohio University. He was an older student—married, with a family; a former CBer, who wanted to talk further than he could on 11 meters and have what he called “real conversations.” The code was particularly hard for him, but he and his son responded well to an intensive class I was teaching at the University's club station, W8PZS. I remembered his surprise and joy one evening when I looked out over the class and said, “Congratulations, you've just passed your code test!”

He wanted me to know he was now an Extra class ham; that he was now trying DXing and contesting; that he still looked through the DXCC and contest results to see

where I was living, to see what I was doing. And that he wanted to thank me.

I was, to say the least, surprised. Pleased, but surprised. Yet, I had this overwhelming memory of having felt exactly the same way back there in the 1960s, when Louie or Ev or Al or Sam or Willie or Doc or any of my first radio club gang gave me their advice.

As we stood there amid the thousands of slow-moving, shoving hams, time slowed down, and the convention floor seemed to get kind of quiet. As we shook hands, I said it was no trouble at all. It was really my pleasure. And helping out was just one of the things ham radio was all about—something I had learned a long time ago, in a radio club far, far away. From my own many Elmers.

“Thank you!” I said.

Don Daso became WN8HJW in the early 60s. Upgrading to WA8MAZ a year later, he quickly became interested in traffic handling and the quarterly CD Party Contests. Finally, after many years, he made the leap to “bigger contests, bigger radios, bigger antennas” and today, as WZ3Q, finds himself contributing to contest totals as both a single op and as part of multi-multi stations: “A big club which hasn't lost sight of many of the values addressed in this article,” he says. He enjoys writing and Honor Roll DXing—that contest for very slow operators.

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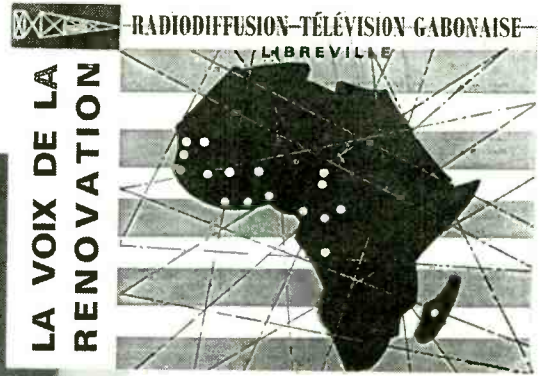
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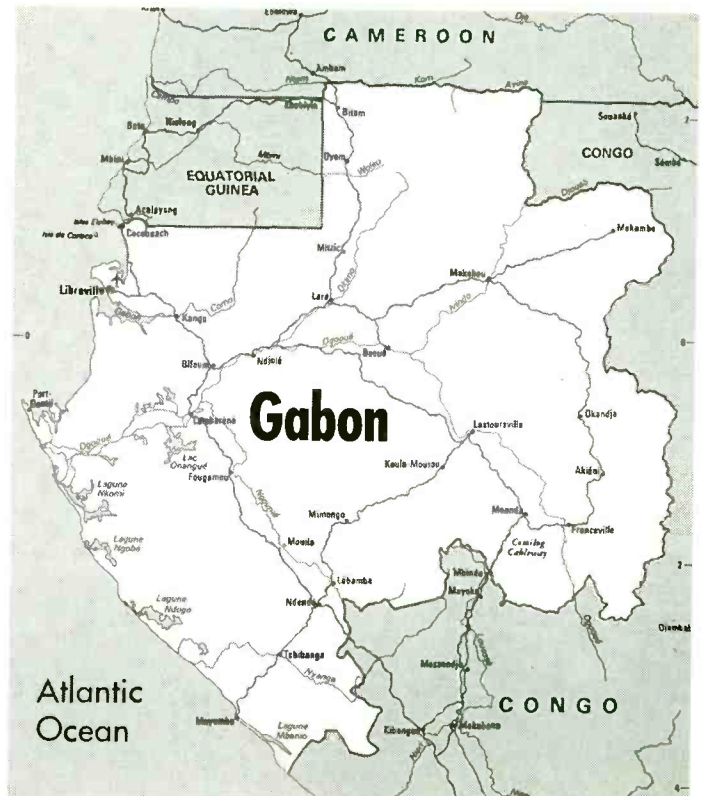
By Colin Miller

Over a period of years, we've gradually added to a series of articles on African broadcasting. The spotlight this month falls on the Central African country of Gabon. It is here where the famous missionary Albert Schweitzer in 1913 established his mission hospital at Lambaréné. Gabon is located right on the equator on the Atlantic coast of West Central Africa. It is bounded on the north by Equatorial Guinea and Cameroon, and on the east and south by the Congo Republic.

The official language is French, but other languages include Fang, spoken in the north, Omiene in rural areas, and Bantu dialects in the south. The Fang people are thought to originate from the Bahr-el-Ghazal region of Sudan. Another group, the Mpongwe, settled around the estuary of the Gabon river; they were the chief source of educated labor before independence was achieved. Other groups are the Bakota in the northeast, famous for their religious carvings, and the Eshira in the southwest. About 60% of the population are Christians, mainly Roman Catholics.

The total area of Gabon is a little more than 103,000 square miles, nearly the size of Colorado, or a little smaller than New Zealand. However, the population is only about 1.2 million. This is because the country is heavily forested, with coastal lowlands, plateaus in the northeast and south, and mountains in the north, southeast and center. Most of the country is drained by the Ogué and Gabon rivers.

Gabon is one of the most prosperous African countries, thanks to abundant natural resources such as timber and oil. About 80% of the country is forested. The main crops include coffee, rice, cocoa,



peanuts and palm products. The main minerals mined include manganese, oil, and uranium. Most of the manganese is exported to the United States. Before oil was discovered, the main industry was lumbering. Other factors leading to Gabon's prosperity are foreign private investment and government development programs. Most of the tourists visiting the country head for Lambaréné, located in the west on the lower Ogué River.

This country was formerly part of French Equatorial Africa. Although it was discovered by Spaniards in the 15th century, it was the French who settled there in 1842. At that time the slave trade was at its height. In 1849 Bouet Willaumez intercepted slave ships off the coast and put their human cargo ashore at the site of Libreville, or "free town." During the Second World War in 1940, after the collapse of France, Gabon supported the cause of the Free French under General de Gaulle. It attained its independence on 17 August 1960. On 12 March 1968 the Parti Democratique Gabonaise was established (La Renovation) and a one party government formally instituted.

■ National Broadcasting

Gabon was the last of the equatorial Francophone countries to obtain its own broadcasting service. The first broadcast of Radiodiffusion Nationale Gabonaise was made in 1959 from Libreville, the capital, and in 1961 the system was equipped by the French company SORAFOM with its standard sending complement of 1 kW, 4 kW, and 30 kW transmitters. In that year all programs, 60% of which were devoted to music, were in French.

By 1971 the Radiodiffusion Television Gabonaise, as it had come to be known, had undergone considerable expansion. Programs in local languages were introduced. The main station at Melene near Libreville has been supplemented by medium wave regional repeater stations at Oyem, Franceville-Epila, Tchibanga, and Port Gentil. These were well-disposed in relation to the capital, which is situated on the coast near the northern border. Franceville, at the extreme opposite corner towards the southeast, had two shortwave transmitters of 20 kW and 4 kW, but these are now inactive.

Today, RTG has one regional and two national networks, broadcasting daily in French and local languages. The main national network is on the air from 0455 to 2300 UTC, broadcast on three medium wave trans-



AFRICA N°1

mitters, as well as several FM stations. It is relayed via a 100 kW shortwave transmitter on 4777 and 7270 kHz (see Table 1). Try the 4777 kHz frequency around sign on at 0455. The interval signal is an indigenous musical instrument, and is followed by the national anthem, "La Concorde." This channel should also be audible on the East Coast during the winter after sunset.

The provincial network RTG-2 broadcasts from Franceville, Oyem, and Tchibanga on medium wave, in French and vernaculars. A network of 13 FM stations was constructed a few years ago.

■ Africa No. 1

There is an easier way to log Gabon on shortwave. In 1977 the Thomson CSF company of France completed installations at the high power transmitting station of Moyabi-Moanda. This station is located on a 2,000 feet plateau in southeastern Gabon in the heart of tropical forest. The site, which cost 16 billion CFA francs, originally consisted of four 500 kW shortwave transmitters and 22 curtain antennas, capable of beaming in seven different directions. Full scale tests were made in September and October 1979 and regular broadcasting began in February 1981.

In February 1990 a fifth 500 kW transmitter was inaugurated at a second site, Moyabi 2, near the original site (a further 500 kW transmitter is planned). That year the station made a profit of 4 million French francs.

The Moyabi-Moanda site is used to carry the programs of Africa No. 1, a 35% Government owned commercial station, broadcasting for 18 hours a day to Francophone Central and West Africa. Programs of Africa No. 1 originate from studios in Franceville and are fed to Moyabi

by microwave. VOA made use of Africa No. 1 in 1990 following the closure of its Monrovia, Liberia, station after the outbreak of the civil war there. In addition, the transmitter is used to relay some of Radio France International's broadcasts to Africa and leases time to Radio Japan.

Africa No. 1 is keeping abreast of modern technology. During the past few years the station has been available on the Intelsat 605 satellite, enabling the signal to be distributed to ground stations in Africa. FM stations have been established in eight Francophone cities in Africa, including Bamako, Mali; Dakar, Senegal; Brazzaville, Congo; Abidjan, Côte d'Ivoire; as well as Paris, France. Africa No. 1 is the most popular station in Francophone Africa, with an estimated 17 million listeners.

In early 1994, the station's Board of Directors met to discuss financial matters following the devaluation of the CFA franc. It decided to increase the budget, as well as to continue developing the FM network. On a *Media Network* broadcast, Louis Barthelemy Mapangou, the President of Africa No. 1,



TABLE 1

Radiodiffusion Télévision Gabonaise

0455-0800	French	4777	GAB
0800-1600	French	7270	GAB
1600-2300	French	4777	GAB

Africa No. 1

0500-2300	French	9580	AfC
0000-1600	French	17630	AfW
1600-1900	French	15475	AfW

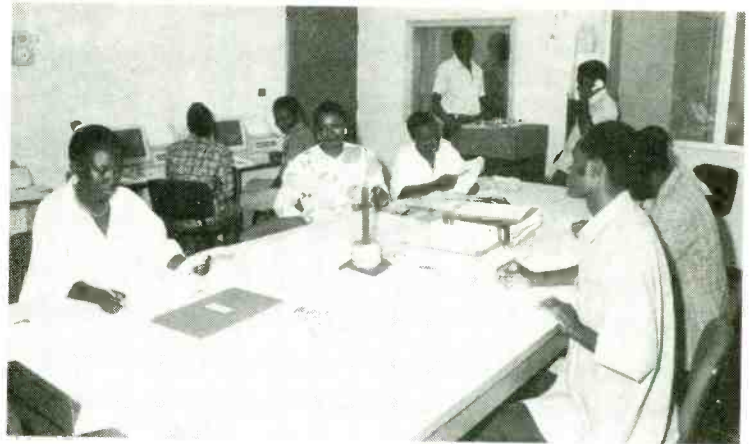
gave additional details about the station's plans for the future. Africa No. 1 plans to submit applications for FM licenses in Benin, Togo, Guinea Republic, and Equatorial Guinea. They are also interested in Cameroon, but the legislation there still only allows the Government-run stations to broadcast. As soon as authorization is received, the planned FM stations can be on the air almost immediately, because the equipment was ordered in advance.

Africa No. 1 has a satellite switching system which allows local stations to break away from the satellite feeds, insert local announcements, and rejoin the network. The station has a dual strategy when operating the FM stations. Firstly, they have "passive relays," which simply rebroadcast the Africa

No. 1 programs. Africa No. 1 buys the transmitter, which is then given to the national broadcaster, which in turn rents airtime back to Africa No. 1. Secondly, they have "dual active relays," like the one in Paris. In this case, Africa No. 1 buys a minority share

in the FM station, but it is just enough to block any decisions that would go against the station's interest. Under this type of agreement the local station can broadcast its own programs for a certain period. The aim has always been to broadcast these locally produced programs on the entire network, except for local items such as weather and sport.

Africa No. 1 is also studying the possibility of starting up an FM station in Belgium, which is home to a large African community. The station is on the air daily in French to Central Africa from 0500-2300 on 9580 kHz, and to West Africa from 0800-1600 on 17630 kHz and 1600-1900 on 15475 kHz. Since



propagation conditions on higher frequencies are deteriorating, lower frequencies may be used during the current low end of the sunspot cycle.

Radio France International and RFI Plus Afrique are relayed from Paris between 0300 and 2300 in French (see Table 2). English is carried from 1200-1300, 1400-1500 and 1600-1700, and Portuguese from 1700-1800. Some of these transmissions and frequencies are subject to change without notice. A color TV service was introduced in December 1975 using the French SECAM standard. Programs are transmitted to other African countries by satellite.

TABLE 2: Overseas Relays from Moyabi

Radio France Internationale (RFI):

0300-0400	French	5945	AfE/ME	
0300-0400	French	7135	AfE	
0300-0400	French	9790	Af/ME	
0300-0400	French	9805	ME	
0300-0400	French	6175	AfE/ME	(summer)
0600-0700	French	9845	AfW	
1100-1200	French	21520	AfC	(winter)
1200-1230	French	9790	Af	
1200-1300	English	15325	AfW	(summer)
1300-1400	French	9790	AfC	
1400-1500	English	17560	ME	
1600-1700	English	11700	AfW	
1600-1700	English	12015	AfS	
1700-1800	Portuguese	12015	AfS	
1900-2130	French	7160	AfC	
1900-2130	French	9790	AfW/C	
2200-2300	French	9790	AfW(winter)	

RFI Plus Afrique:

0400-0500	French	6175	AfC/E	
0400-0500	French	7135	AfE	
0400-0600	French	4890	AfC	
0500-0600	French	11700	AfE	
0400-0600	French	15135	AfN/ME	(summer)
0600-0800	French	11700	Af	
0600-0700	French	7135	AfC	
1230-1300	French	9790	Af	
1800-1900	French	7160	AfC	

1800-1900	French	9790	AfW
2130-2200	French	9790	AfW
2130-2200	French	7160	AfC

Since RFI uses multiple sites on some of its frequencies; it is not always possible to know which transmissions are carried by Moyabi. Although the transmitters are rated at 500 kW, they are only using 250 kW at present.

Radio Japan Regional Service

0145-0215	Swahili	7180	Af	
0330-0400	Arabic	11785	ME	(alt 9515)
0430-0530	Russian	11785	Eu	
0530-0545	Swedish	11785	Eu	
0545-0600	Italian	11785	Eu	
0600-0630	German	11785	Eu	
0630-0700	French	11785	Eu	
1100-1115	Swedish	17780	Eu	
1115-1130	Italian	17780	ME	
1130-1200	German	17780	ME	
2030-2100	Spanish	11835	Eu	(alt 15195)
2100-2200	English	11865	Eu	(alt 11925)

Radio Japan General Service

0700-0800	English	15335	ME/Eu/Af	
0800-0900	Japanese	17760	ME/Eu/Af	(alt 21640)
0800-0900	Japanese	15335	ME/Eu/Af	
1000-1100	Japanese	11785	AfS	
1500-1600	English	15355	AfS	
1600-1700	Japanese	21700	Eu	
2100-2200	English	11865	Eu	

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Poor Richard's Guide to Frugal Scanning

By Rich Arland, K7YHA¹

It never ceases to amaze me how wrapped up in technology we can become. Every time a scanner or radio manufacturer releases a new whiz-bang model, hundreds (if not thousands) of scannists and radio listeners are ready to sell off their current receivers in favor of the newest offering. Bells and whistles aside, exactly how much flexibility does one need? Is this quest for the newest and best radio equipment really rooted in the desire to hear different and more distant stations or could it possibly be traced to a neurotic urge to possess what others do not?

Recently I needed to upgrade my scanners and was looking through the Grove Catalog at all the various offerings from Uniden/Bearcat, Radio Shack, ICOM and AOR. One thing for sure: scanners are not cheap. Good scanners—ones that will let you do some serious scanning—start at about \$300!

This latest excursion into the netherworld of new scanners started me thinking. I earn a reasonably good wage, yet I have to think twice about plunking down \$300 or more for a new scanner. How is someone just starting into this hobby going to be able to justify spending \$300 or more for a radio? What if the newcomer finds that he/she doesn't enjoy eavesdropping on the local EMS, fire, and police frequencies?

Over the last 30-plus years as a ham radio operator, shortwave listener, and scannist, I have been able to have fun, enjoy the hobby, and further my electronics and communications education, all without going into the poorhouse. How? Simple: by using my brain. By defining what I need versus what I want, I have been able to outfit my shack with all sorts of electronic gadgetry at minimal cost. After a while, this becomes a game of creativity. What can I press into service that will do the job at minimal cost? The answers may surprise you. The radio hobby need not be expensive.

■ Six Cost-Saving Approaches to Scanning

- ◆ #1: You do not need the latest in technology to enjoy the hobby. The underlying philosophy in Zen, "less is more," can be imported into the radio hobby. Don't spend money on toys you don't need. Remember the old bumper sticker: "He who dies with the most toys wins!"? Here is my version: "He who dies with the most toys is still dead!" Life is too short to be cluttering it up with "needful things."
- ◆ #2: You can utilize older equipment to do the same job as some new whiz-bang scanner.

Study your scanning habits. Do some homework, find out what you want versus what you need, and buy accordingly. Set a dollar amount on how much you are going to spend for a piece of gear. It doesn't make sense for someone attending college or living on a fixed income to invest \$400 or more on a new scanner, when all they plan on doing is listening to the local fire, EMS, and police agencies. Conversely, if you are heavy into survivalist preparations, you might not be satisfied with a four-channel crystal-controlled scanner.

◆ #3: Time and effort spent in doing some in-depth research prior to purchasing any piece of radio equipment will keep you from making a regrettable mistake. Try the *Ham Trader Yellow Sheets*², classified ads in *Monitoring Times*, *CQ Magazine*, *QST*, and other periodicals, local "trading papers," and various users groups and lists on the Internet. There you will find all sorts of goodies at great savings. For instance, eight-channel, crystal-controlled Bearcat-IV (Hi/Lo VHF & UHF) scanners normally show up for around \$15 to \$30—a tremendous savings. Older synthesized scanners (Bearcat 210s, 250s, etc) are regularly found for about \$50 to \$75! Who says you can't enjoy the scanning hobby on a budget?

◆ #4: Research the models you want to purchase. Look at back issues of *MT* and other magazines for product reviews and advertisements about the older equipment. Read and ask questions of other scannists in your local area. Find out if they currently own or have owned the model(s) you want to buy. Ask them what they thought of the rig's performance and for any nasty habits that the radio might have displayed. In short, become an informed buyer. This is a great way to find extra crystals for the older scanners, too. Many times, some of the local scannists will have a few crystals sitting around from the days when they had a crystal scanner.

◆ #5: Crystal scanners are a good bargain, despite the fact you might have to put \$20 to \$40 into crystals. (Ed. note: see *Scanning Equipment column* for more on using crystal-controlled scanners.) I regularly find older Bearcat, Regency, E.F. Johnson, and Craig scanners at



The shack of K7YHA consists of 45% recycled equipment. Top shelf L to R: Rotor control box, two Bearcat scanners, MFJ packet radio and TNC atop speaker, Hallicrafters SX-130 HF receiver. Bottom shelf: MFJ antenna tuner, Ten-Tec Argonaut 515 QRP transceiver, digital readout for the Argonaut and power supply, two active audio filters, and a Heath GR94 SW receiver.

ham radio fleamarkets, trading post papers and yard sales. Most of the time, these receivers will have many of the local EMS, fire, and police frequencies already installed.

You might have to add one or two more crystals in order to cover additional services; however, at a cost of about \$5 per crystal, these scanners are still a bargain. Any Radio Shack store can order Bearcat crystals, as well as furnish crystals for their own products. Just be sure to specify to the Radio Shack salesperson the type of crystals you need. Most of the early crystal scanners feature rock solid construction and seldom develop terminal problems.

One additional benefit of using a crystal scanner is the lack of intermod reception. Since the RF front ends on these early scanners are a lot tighter and less sensitive than many of the current crop of super wideband receivers, the ever-present intermodulation distortion and adjacent channel interference is not a problem. Most of the time, the lack of super sensitivity is an asset when scanning in high RF stress environments, like major cities. Also the crystal mixing scheme found in crystal scanners has no phase noise—something which plagues synthesized scanners and lowers their performance standards.

◆ #6: You can obtain extended frequency coverage on older synthesized scanners by using converters. Grove Enterprises and GRE both offer (while the supply lasts) scan converters that allow reception of band segments not nor-

mally covered by the older scanners. This is a cost-effective way of obtaining extended band coverage for the aeronautical, military, and 800 MHz bands. Presto! Instant extended frequency coverage. Even if the commercial supply dries up, these band converters are not that hard to build. There are circuits in various magazines that will do the job at a fraction of the cost of buying a commercial unit.

■ Poor Richard's Listening Post

Do I follow my own advice? You bet! My current scanners include a Bearcat-IV set up for the local EMS, fire, and law enforcement frequencies. Granted, there are a few additional frequencies that I would like to be able to receive, so I have recently purchased a Bearcat-III that will be used exclusively for scanning law enforcement agencies. The Bearcat-IV will be recrystallized to receive only EMS and fire frequencies. My total cost is small compared to the cost of a new Radio Shack PRO-2035! Besides, I doubt that I would ever use all the features of a PRO-2035, so why do I need it? Vanity has its price!

In addition to these aforementioned scanners, I have my trusty, 20-year old, Radio Shack PRO-4 rocked up on the local PD/FD and EMS freqs. My Subaru has a Radio Shack PRO-2026 synthesized mobile scanner permanently installed. And for those "serious times," my ICOM IC-24AT (dual-band ham) hand-held, modified for wideband coverage, will scan 40 ham and EMS, fire, and police frequencies in the Hi/Lo VHF & UHF spectrum.

If I were to expand my scanner collection, one Radio Shack PRO-2021 (200-channel synthesized) scanner would be my first choice. I have seen these on the used market for about \$100, which is another bargain.

■ Custom Color Coding

While some scannists may criticize my choice of crystal scanners, there are several things that factor into the equation. First is cost and availability. Secondly, the crystal scanners are not plagued by interference (as discussed earlier) Finally, the majority of crystal scanners use red LEDs to show which channel is active: A simple modification to these LEDs provides a way to quickly see exactly who is transmitting.

One of the main problems with any scanner is that the operator tends to forget who is on which channel. By replacing a red LED with one of another color, you can color code your scanner to readily show which service is transmitting. I use the red LEDs for fire frequencies (fire engine red!). Law enforcement slots are represented by blue LEDs (NYPD Blue!). EMS users are color coded with green LEDs, and yellow or orange for EMA frequencies. Simply glancing at the front of the radio shows which agency is transmitting. Replacement LEDs (including blue LEDs) are available from Digi-Key Corporation³.

We have focused on using older scanning equipment to provide a cost-effective means of pursuing the scanning hobby. I want to stress that our intended goal is general scanning of public service agencies (EMS, police, fire, EMA, airport tower, RAPCON, etc) in the VHF Lo/Hi and UHF bands—not highly specialized weak-signal work, surveillance scanning, or 800 MHz trunked system listening.

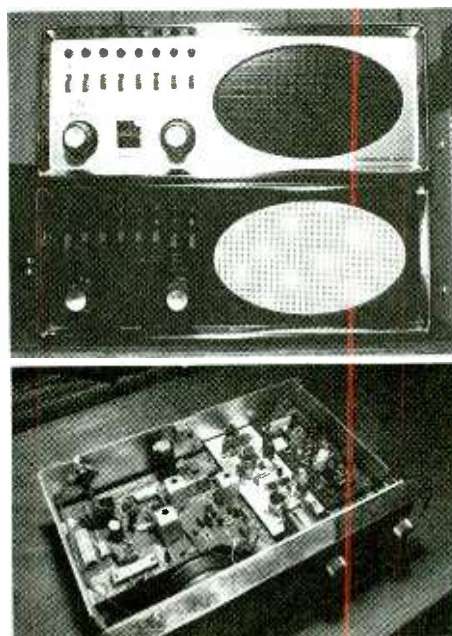
I hope that my ideas regarding a frugal approach to scanning have stimulated your interest and ingenuity. Don't be intimidated by others who have more money than common sense. Remember, this is only a hobby. The idea is to have fun, not spend tons of money just to impress the crowd at the doughnut shop.

¹ P.O. Box 1782, Shavertown, PA 18708 or via the Internet: k7yha@ix.netcom.com

² P.O. Box 2057, Glen Ellyn, IL 60138-2057

³ 701 Brooks Ave., South, P.O. Box 677, Thief River Falls, MN 56701-0677 Tel: (800) 344-4539

Editor's Note: Watch for a quarterly series by Rich Arland beginning in March on "K.I.S. Radio - Poor Richard's guide to frugal listening" for tips, equipment, and projects to keep your monitoring costs down.



Top Photo: Two Bearcat scanners. The Bearcat IV (top) was purchased for \$20. The other Bearcat cost only \$10: crystals are available from any Radio Shack Store for only \$4.98 ea plus tax.

Bottom: Inside the Bearcat III. The two RF decks (on right of circuit board) can be swapped out if needed to make a hi/lo VHF model into a Hi/UHF or Lo/UHF model. These scanners perform well despite their age.

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Cable TV System Signal Leakage

Curse or

The Curse

You just programmed your new scanner to search the 138 to 144 MHz range hoping to capture some elusive military transmissions. Suddenly, you get a hit on 143.750 MHz. A check of your frequency lists shows that it's possibly a Civil Air Patrol (CAP) signal. You listen but something doesn't sound right.

Suddenly it strikes you that you are not hearing audio from CAP but from CNN. Why are you hearing CNN audio on your scanner? you ask yourself. Congratulations—or deepest sympathy—are due, depending upon your listening perspective. You are experiencing signal leakage reception from one of cable TV's (CATV) own created TV channels. In this circumstance the cable system decided to transmit CNN video and audio on Mid Band Channel D (138 -144 MHz).

If you doubt me, tune to 139.2500 MHz AM. You should hear an obnoxious annoying hum, similar to 60 cycle AC. This is the video portion of the transmission and its signal can be detected by most scanners/receivers.

■ What is cable TV signal leakage?

Cable TV signal leakage is a specific, measurable amount of unwanted radio frequency (rf) energy transmitted from the cable trunk or branch coaxial cable signal distribution sys-

The Industry Standard

Searcher Plus Precision Leakage Detector



NO CCL COMPLIANCE THE SEARCHER PLUS OFFERS THE BEST VALUE IN LEAKAGE DETECTION PERFORMANCE. WITH OVER 1000 HOURS OF OPERATION DAILY USE IN EXTREME ENVIRONMENTS THE SEARCHER PLUS HAS PROVEN ITS PLACE IN THE INDUSTRY'S MOST DEMANDING ENVIRONMENTS.

SPECIAL CCL TESTING
When used with a Trilithic APS-2 antenna the Searcher Plus displays calibrated leakage measurements down to 2 microvolts per meter in a step-wise fashion and.

LEAK SEARCHES AND QUARTERLY DRIFT TESTS
The Searcher Plus records an audible tone when it was driven near a signal and a light. The tone is 1000 Hz and the light is green. You can also see the leakage without adding a tone from the road. The light is green when it is with every Searcher Plus.

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Fax: 212-261-1112

The abundance of ads for leakage detectors (such as the Trilithic ad above) suggests the problem is extensive. The author suggests there may be other ways to deal with this matter.

Blessing?

By John Wilson (W4UVV)

tem. Your cable provider does not *want* any leakage to occur. But today's technology contains many rf electrical component interfaces. These interfaces include multi-amplification of TV channel signals and hundreds or thousands of coax cable connections. A cable TV system is similar in concept to your home's closed loop, pressurized water plumbing system. Like plumbing systems, leaks can and do occur in time.

The FCC takes a keen interest in ensuring that cable TV systems do not exceed FCC-established rf radiation levels. It holds cable systems to strict accountability and responsibility by requiring periodic documented proof that compliance is being maintained. This reporting requirement has created a unique business opportunity for companies that can provide this specialized certification service. One such sophisticated service uses aerial surveys combined with computer graphics technology. Interfaced with global positioning equipment, a color-coded detailed map graphically depicting various signal leakage levels within geographical locations can be created. This specialized service is not cheap, but does satisfy the FCC certification requirement.

One reason for the FCC's concern is that a cable TV system may create its own TV channels using frequencies assigned to other FCC licensees. Excess signal leakage could pose danger and risk to life in some cases. For example, cable TV channels A-2 through Mid-

Band Channel C comprise five cable TV channels of 6 MHz bandwidth, each beginning at 108 MHz and ending at 138 MHz. The 108 - 118 MHz range is populated heavily by aviation navigational beacons. The 118 - 136 MHz portion is active thousands of times daily with aeronautical aircraft/ground communications. If excess signal leakage should occur on an aircraft control frequency that is stronger than the ground station the aircraft is attempting to hear, or vice versa, the lives of the aircraft crew and passengers including other aircraft in the area are at significant risk.

The FCC acts quickly to shut down any cable TV system experiencing excessive signal leakage in these frequency range areas until the problem(s) is corrected. Many cable system operators, if given the option, wisely choose not to operate in these frequency ranges. However, if the cable TV system channel capacity is greater than 12 channels, the choice of these frequencies is tempting. The alternative requires using UHF frequencies for signal distribution, but due to increased signal loss and higher equipment costs for this range, the UHF option is not an attractive one, either.

■ Is this a new problem?

No; cable TV signal leakages have been occurring in varying degrees from the first day systems were operational. The difference now is that recent state-of-the-art scanners/receivers have much greater sensitivity than older electronic equipment, and leaking signals are detected more easily.

The rf interference problem is not limited to the private monitor enthusiast. Cable TV system signal leakages also may cause interference to other FCC licensees, including police, fire, rescue, and business users. Signal leakage problems are a concern nationwide. For example, the two-meter amateur frequency 145.250 MHz seldom is used for repeater or simplex communications because of possible interference from cable TV Mid-Band Channel E video that transmits on the same frequency.

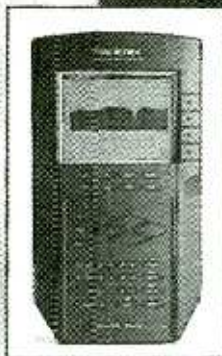
■ How does a cable TV provider find leaky signals?

There are several ways a cable TV company can detect signal leaks in its system. The first way is generally a telephone caller complaining about receiving interference on other radios such as FM radios and scanners/receivers.

The cable TV system's best means of detecting the site of signal leakage is via the



“Everyone was wondering how to easily test the reverse path.”



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WAVETEK

You don't have to live with cable TV leakage; a technician can “sniff” out the source of the interference (as shown in this Wavetek ad)—or you can have some fun with your own DFing!

“sniffer” process. It works like this: The cable TV system transmits many radio frequency carriers on its coaxial cable system. On one frequency, which typically is on an unused frequency in the 106 - 108 MHz range, an FM modulated carrier with warbling high frequency audio is broadcast continuously. The cable TV system in my geographical area uses 108.625 MHz.

The location of a leakage problem can often be pinpointed by a cable technician in a vehicle equipped with an FM receiver fixed on the “sniffer” frequency. When it picks up the sniffer signal, he can note the location for troubleshooting.

The sound is unique, and there is no confusing it with any other type of audio you've ever heard before. It is similar to the audio transmitted on emergency locator transmitter beacons carried aboard aircraft and ships. If you should ever hear this transmission when monitoring, contact your cable company immediately as excess signal leakage may be present in your area.

■ It happened to me—it can happen to you.

Several years ago I upgraded my tower-mounted VHF/UHF monitoring antenna configuration to include low noise preamplifiers. Approximately a week later, I began receiving very strong signals on frequencies that I could not relate to other licensed FCC or known military/government users. At first, I thought I was receiving image interference from one or more of the area's VHF/UHF TV stations. However, the closest transmitters were 15 to 20 air miles distance from my monitoring location and proved not to be the cause.

Continual close monitoring of the audio on several of these frequencies confirmed I was hearing audio from CNN, HBO, TNN, and other cable TV services. These signals were radiating from the trunk line cable mounted on the power pole that passed by the front of my house. My tower, antennas, and preamps were located approximately 75 feet away.

A check of my reference file of cable TV frequencies and subsequent tuning of my scanners/receivers to selected frequencies

The Blessing: DXing Your Cable TV System

Some monitors actually view cable TV system signal leakage as a weak signal monitoring challenge. Receiving such cable TV system audio programming is like tuning in more TV stations without the picture. Though I have no details from personal knowledge and have never tried any such creative schemes, over the years I have heard of various reception techniques. One of the more innovative ones involved mast-mounting a high gain VHF TV antenna, equipped with rf preamp, perpendicular to and at the same height as a power-pole-mounted TV coaxial cable located about 20 feet away.

The preamp output was connected to an ICOM R7000 input using the optional TV adaptor and tuned to the center of the video signal in the AM mode. The R7000 TV adaptor video and audio outputs connected to a color TV accepting baseband inputs. Reception results varied in direct proportion of the

strength of the received signal. If only audio was desired, then the TV adaptor was not used.

Under the 1986 ECPA such activity probably would be illegal. The cable TV company would consider such reception as theft of service, and we don't recommend you attempt this reception technique.

■ Where are these cable TV channels?

Theoretically, cable TV channels can be operational from 7 through 806 MHz in an FCC-assigned frequency channelization scheme. Unfortunately, almost everything that someone wishes to listen to transmits within this frequency range. Shown at Table 1 is the relationship of standard cable TV video and audio frequencies to services sharing those same appropriate frequency ranges and to which cable TV signals may cause interference when monitoring. Selected CATV channel figures shown in parentheses represent numerical channel designations.

CATV diagnostic equipment ads from Com Sonics, Inc. and Trilithic.



confirmed my suspicions. Where there should have been annoying video hum, there was. Where audio should have been, it was, varying only in levels of signal strength. I was annoyed at receiving HBO audio on 167.7500 MHz as I frequently monitored the 167 MHz range for FBI and/or other government users. I reluctantly accepted I would have to live with the interference and assumed such was the trade-off for the increased signal strength levels of desired signals.

Approximately a year later I noticed a cable TV repairman on my street. I spoke with him about my reception problems. By coincidence he was repairing the signal leakage source which was causing my problems. The "sniffer" receiver in his truck alerted him to a high signal leakage situation. His immediate troubleshooting revealed a bad electrical connection in an in-line trunk signal amplifier located approximately 500 feet from my house. As a result, high levels of signal radiation from various frequencies were spewing forth in an omni-directional pattern. Upon returning home and tuning the previously problem frequencies, I was very happy to find nothing but white noise and desired signals.

I also no longer heard the "sniffer" transmission on 106.825 MHz, which was another good sign that the problems had been corrected. An annoying source of radio frequency interference had been eliminated and immediately made my monitoring excursions more pleasurable. The lesson learned is that if I had contacted the cable TV company earlier, the problem would have been discovered and corrected earlier.

Find your signal leaks faster.

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The Trilithic Super Plus gives you 4 times the signal leak detection range of the Trilithic Searcher Plus. The Super Plus receiver is designed to detect signal leaks that are 4 times the range of the Searcher Plus. The Super Plus receiver is designed to detect signal leaks that are 4 times the range of the Searcher Plus. The Super Plus receiver is designed to detect signal leaks that are 4 times the range of the Searcher Plus.

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Reader Service Number 146

Cable TV Signals Producing Possible Interference to other Radio/TV Services

CATV Channel	Video Carrier (MHz)	Possible Affected Monitored Services	Audio Carrier (MHz)	Possible Affected Monitored Services	CATV Channel	Video Carrier (MHz)	Possible Affected Monitored Services	Audio Carrier (MHz)	Possible Affected Monitored Services
T-7	7.0000	HF Shortwave (SW)	11.5000	HF Shortwave (SW)	II/(45)	349.2625	AF/NV/ML	353.7625	AF/FA/ML
T-8	13.0000	HF Shortwave (SW)	17.5000	HF Shortwave (SW)	JJ/(46)	355.2625	NV/ML	359.7625	NV/ML
T-9	19.0000	HF Shortwave (SW)	23.5000	HF Shortwave (SW)	KK/(47)	361.2625	NV/ML	365.7625	AF/ML
T-10	25.0000	IP	29.5000	AM (10 Mtr)	LL/(48)	367.2625	AF/NV/ML	371.7625	AF/ML
T-11	31.0000	IB/IS/LU/PO	35.5000	IS/MT/PG	MM/(49)	373.2625	AF/ML	377.7625	AF/ML
T-12	37.0000	AR/CG/FO/IF/IP/W	41.5000	AG/AR/GV	NN/(50)	379.2625	AF/FA/ML	383.7625	NV/ML
T-13	43.0000	IB/IS	45.5000	PL/PP	OO/(51)	385.2625	NV/ML	389.7625	AF/FA/ML
2	55.2500	None - TV Ch. 2	59.7500	None - TV Ch. 2	PP/(52)	391.2625	AF/ML	395.7625	AF/FA/ML
3	61.2500	None - TV Ch. 3	65.7500	None - TV Ch. 3	QQ/(53)	397.2625	AF/NV/ML	401.7625	GV/NO/ML/WX
4	67.2500	None - TV Ch. 4	71.7500	None - TV Ch. 4	RR/(54)	403.2500	GV/NO/ML/WX	407.7500	AR
A-8	73.2500	LM	77.7500	None - TV Ch. 5	SS/(55)	409.2500	CG/GV/JD	413.7500	GV/IM/JD
5	77.2500	None - TV Ch. 5	81.7500	None - TV Ch. 5	TT/(56)	415.2500	AF/AG/ID	419.7500	GV/ID/SS
A-7	79.2500	None - TV Ch. 5	83.7500	None - TV Ch. 6	UU/(57)	421.2500	AM (440 MHz)	425.7500	AM (440 MHz)
6	83.2500	None - TV Ch. 6	87.7500	None - TV Ch. 6	VV/(58)	427.2500	AM (440 MHz)	431.7500	AM (440 MHz)
A-6	85.2500	None - TV Ch. 6	89.7500	FM Broadcasting	WW/(59)	433.2500	AM (440 MHz)	437.7500	AM (440 MHz)
A-5/(95)	91.2500	FM Broadcasting	95.7500	FM Broadcasting	XX/(60)	439.2500	AM (440 MHz)	443.7500	AM (440 MHz)
A-4/(96)	97.2500	FM Broadcasting	101.7500	FM Broadcasting	YY/(61)	445.2500	AM (440 MHz)	449.7500	AM (440 MHz)
A-3/(97)	103.2500	FM Broadcasting	107.7500	FM Broadcasting	ZZ/(62)	451.2500	IF/IP/IX/IW/TC	455.7500	BA
A-2/(98)	109.2750	AB	113.7750	AB	None/(63)	457.2500	LX	461.7500	IB
A-1/(99)	115.2750	AB	119.7750	AV/FA	-/(64)	463.2500	IB	467.7500	IB
A/(14)	121.2625	AV/FA	125.7625	AV/FA	-/(65)	469.2500	IB	473.7500	TV Ch. 14
B/(15)	127.2625	AV/FA	131.7625	AV	-/(66)	475.2500	TV Ch. 14	479.7500	TV Ch. 15
C/(16)	133.2625	AV	137.7625	NO/NA	-/(67)	481.2500	TV Ch. 15	485.7500	TV Ch. 16
D/(17)	139.2500	GV/ML/AR	143.7500	CA/GV/ML/NV	-/(68)	487.2500	TV Ch. 16	491.7500	TV Ch. 17
E/(18)	145.2500	AM (2 Mtr)	149.7500	AF/AR/EN/GV/ML	-/(69)	493.2500	TV Ch. 17	497.7500	TV Ch. 18
F/(19)	151.2500	IB/PO	155.7500	PL	-/(70)	499.2500	TV Ch. 18	503.7500	TV Ch. 19
G/(20)	157.2500	MR	161.7500	BA	-/(71)	505.2500	TV Ch. 19	509.7500	TV Ch. 20
H/(21)	163.2500	AF/AR/JD/PS/VA	167.7500	GV/JD	-/(72)	511.2500	TV Ch. 20	515.7500	TV Ch. 21
I/(22)	169.2500	BL/CG/FA/FE/GV/ID	173.7500	AF/AR/IM/ML/PO/VA	-/(73)	517.2500	TV Ch. 21	521.7500	TV Ch. 22
7	175.2500	TV Ch. 7	179.7500	TV Ch. 7	-/(74)	523.2500	TV Ch. 22	527.7500	TV Ch. 23
8	181.2500	TV Ch. 8	185.7500	TV Ch. 8	-/(75)	529.2500	TV Ch. 23	533.7500	TV Ch. 24
9	187.2500	TV Ch. 9	191.7500	TV Ch. 9	-/(76)	535.2500	TV Ch. 24	539.7500	TV Ch. 25
10	193.2500	TV Ch. 10	197.7500	TV Ch. 10	-/(77)	541.2500	TV Ch. 25	545.7500	TV Ch. 26
11	199.2500	TV Ch. 11	203.7500	TV Ch. 11	-/(78)	547.2500	TV Ch. 26	551.7500	TV Ch. 27
12	205.2500	TV Ch. 12	209.7500	TV Ch. 12	-/(79)	553.2500	TV Ch. 27	557.7500	TV Ch. 28
13	211.2500	TV Ch. 13	215.7500	TV Ch. 13	-/(80)	559.2500	TV Ch. 28	563.7500	TV Ch. 29
J/(23)	217.2500	AM (220 MHz)	221.7500	AM (220 MHz)	-/(81)	565.2500	TV Ch. 29	569.7500	TV Ch. 30
K/(24)	223.2500	AM (220 MHz)	227.7500	AM (220 MHz)	-/(82)	571.2500	TV Ch. 30	575.7500	TV Ch. 31
L/(25)	229.2625	AR/ML	233.7625	NV/ML	-/(83)	577.2500	TV Ch. 31	581.7500	TV Ch. 32
M/(26)	235.2625	AF/NV/ML	239.7625	AF/ML	-/(84)	583.2500	TV Ch. 32	587.7500	TV Ch. 33
N/(27)	241.2625	AF/NA/ML	245.7625	AF/AR/NV/ML	-/(85)	589.2500	TV Ch. 33	593.7500	TV Ch. 34
O/(28)	247.2625	AF/AR/NV/ML	251.7625	NV/ML	-/(86)	595.2500	TV Ch. 34	599.7500	TV Ch. 35
P/(29)	253.2625	NV/ML	257.7625	AF/AR/FA/ML	-/(87)	601.2500	TV Ch. 35	605.7500	TV Ch. 36
Q/(30)	259.2625	AF/ML	263.7625	AF/ML	-/(88)	607.2500	TV Ch. 36	611.7500	TV Ch. 37
R/(31)	265.2625	NV/ML	269.7625	NV/ML	-/(89)	613.2500	TV Ch. 37	617.7500	TV Ch. 38
S/(32)	271.2625	AF/NV/ML	275.7625	AF/AR	-/(90)	619.2500	TV Ch. 38	623.7500	TV Ch. 39
T/(33)	277.2625	NV/ML	281.7625	AF/ML	-/(91)	625.2500	TV Ch. 39	629.7500	TV Ch. 40
U/(34)	283.2625	AF/NV/ML	287.7625	AF/ML	-/(92)	631.2500	TV Ch. 40	635.7500	TV Ch. 41
V/(35)	289.2625	AF/ML	293.7625	AF/ML	-/(93)	637.2500	TV Ch. 41	641.7500	TV Ch. 42
W/(36)	295.2625	AF/ML	299.7625	AF/NV/ML	-/(94)	643.2500	TV Ch. 42	647.7500	TV Ch. 43
AA/(37)	301.2625	NV/ML	305.7625	AF/ML	-	649.2500	TV Ch. 43	653.7500	TV Ch. 44
BB/(38)	307.2625	FA/ML	311.7625	AF/NV/ML	-	655.2500	TV Ch. 44	659.7500	TV Ch. 45
CC/(39)	313.2625	AF/NV/ML	317.7625	AF/FA/ML	-	661.2500	TV Ch. 45	665.7500	TV Ch. 46
DD/(40)	319.2625	AF/ML	323.7625	AF/ML	-	667.2500	TV Ch. 46	671.7500	TV Ch. 47
EE/(41)	325.2625	AF/NV/ML	329.7625	AF/FA/ML	-	673.2500	TV Ch. 47	677.7500	TV Ch. 48
FF/(42)	331.2750	AF/FA/ML	335.7750	AF/ML	-	679.2500	TV Ch. 48	683.7500	TV Ch. 49
GG/(43)	337.2625	AR/NV/ML	341.7625	AF/NV/ML					
HH/(44)	343.2625	AF/ML	347.7625	NV/ML					

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BELOW 500 kHz

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-----	--

FEB Realistic Antenna Battery Saver;
MR8100 Cell Mod
MAR SW Reception on Scanner Antenna
APR Upside Down Antennas
MAY PRO-2035 knob fix; Sony 2010 test
JUN Cellular Image Reception
JUL Cable and Adaptor Losses
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OCT Full coverage on AR8000, PRO-46
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COMPUTERS & RADIO

JAN PC FM Radio Card
FEB Grove FCC Database
MAR Bus Mouse Installation
APR Optical Scanning
MAY ScanCat Gold
JUN Radio vs. the Internet
JUL Copycat Pro; Hoka Code 3
AUG Scan Manager Pro
SEP Scan Star Pro
OCT Collins PropMan
NOV Mail: Internet v Hams
DEC AEA FaxIII; OCR Revisited

DEMAW'S WORKBENCH

JAN Tape Recorder Interface
FEB DC Voltage Regulators
MAR Understanding Transmitters
(without a license)
APR Using Op Amps to Aid Reception
MAY SWR
JUN Dealing with Man-Made Noise
JUL Looking for Parts?
AUG Understanding Your S-Meter
SEP Beginning Circuit Design
OCT Multiband Reception w/
Tuned Antenna Feeders
NOV Using the MFJ-259 Multitester
DEC Intro to Crystal Oscillators

DIGITAL DIGEST

JAN ARQ Modes
APR Third Shift Cyrillic RTTY
JUL Worldwide Ute News Club;
French Forces message
OCT French Forces Naming
Conventions and Vessel Suffixes

EXPERIMENTER'S WORKSHOP

JAN Inside the PRO-2035
FEB PRO-2035 Extended Memory
MAR Tape Recording and Volume Control
APR Battery Backup & Memory
Preservation
MAY Easy Datalogger for Home & Shack
JUN Great Circle Spreadsheet
JUL Radio Shack and Metex PC interface
meters; Enhanced Zeromatic
for PRO-2004 series
AUG Free Space Radio Path Analysis;
MAX471 measures battery charge
SEP Rolling Your Own Resistors
OCT Antenna Switching; Ground-Wave
Propagation Analysis
NOV Building or Upgrading Computers
DEC Upgrading Computers - Part II

FEDERAL FILE

JAN Bug Hunting; Border Patrol
FEB Summit of the Americas;
Boston freqs; Strange Signals
MAR Postscripts (Secret Service at
Summit); C31 Data Links; federal
realignment proposal; fed loggings
APR Top Agencies' SecureNet System ;
Whitman AFB; US Customs;
US P.O; seismic monitor
freqs; US Geologic Survey
MAY FCC downsizing; Drug
Enforcement and related ops
JUN Federal comms in strange places;
diplo comms; monitoring UN & A-bomb
anniversaries; US So Command
moving to Miami
JUL BATF and FEMA frequencies
AUG Summer VHF Activity:
backpack radios; NASA HQ, Argonne
Natl Lab, Arnold AFB, GA Forestry
Comm, FAA, Amtrak on 900 MHz
SEP Scanning the Big Apple; Boise Idaho River
Festival, BLM, US Forestry
Service; Assoc of Am Railroads;
more hidden media freqs
OCT Who's where and who's moving -
projected reallocations
NOV SWLing the Feds
(SW back-up systems)
DEC Federal protection details,
presidential campaigns, Olympics,
and nuclear terrorism

HIGH SEAS

JAN New York Harbor
MAR KFS World Communications
adds VCT; Visual Morse; m/v *Polydoros*
radioman saves lives
MAY Petroleum Industry
JUL Globe E-mail and telex freqs;
USCG final CW
SEP The Navy's New Boat (guest feature)
NOV Comings and Goings (history
of maritime comms; final column)

MAGNE TESTS

(Reprints of Magne Tests are not available.)
JAN AR3030
FEB Best Receivers to Buy
MAR Sangean SG 789A
APR Sony ICF-2010
MAY ICOM R71; Satellit 700 price hike;
W-J HF-1000 difficulties continue;
SG 789A antenna
JUN Drake SW8 improvements,
Drake R8A Coming; Sangean
drops ATS-803A; Grundig changes NAM
lineup; W-J still promises improvements
JUL JRC NRD-93
AUG Yacht Boy 305; News - Drake R8A,
Lowe HF-250
SEP Lowe HF-250
OCT Aroma SED-EDL88C
NOV Watkins-Johnson HF1000
DEC Looking Ahead: Should you buy now?

ON THE HAM BANDS

JAN Propagation Tips; New Videos;
Mini-Regen receiver schematic
FEB Straight Key Night - sending
good CW; Low Band Activity
MAR Three Short Antennas;
Casio watch for DX tool
APR Ten Meters; observations
about antennas; homebrew tilt-over
tower and coil-winder books
MAY New Products: Amateur Radio
Newsline, No Code License Program,
Buckmaster Electronics Software
Compendium, Power Pocket, QRP Plus
JUN Are You Ready? Field Day,
VHF Contest; Hambrew magazine; Antique
Electronic Supply; Atlas 400X transceiver
JUL Value of old gear; ICE
DigiField FS meter
AUG RS HTX-212; Ramsey SX-20
SEP Winter Preparations; Iso-tip
cordless soldering iron
OCT 6 Meter FM; Alinco DR-MO6
NOV 46, 160, 80 m; Antenna Compendium
DEC Stocking Stuffers

*Reprints are available for \$2 per article plus self-addressed, stamped envelope.
A comprehensive index is also available on the MT homepage at www.grove.net.*

OUTER LIMITS

JAN Frente Nacional Cubano Busted Twice; Pirates on 43 meters; Clans in Russia; Radio Free Berkeley
FEB Radio Caiman CIA op?; Radio Patria Libre; Radio Democracy QSL; Books
MAR Pirate Activity Record Broken; Trummel's Black Book; Iran Clandestine QSL; Best QSL?
APR FCC Loses one, wins one (Radio Free Berkeley, 3 busts); La Voz de Chiapas, La Voz de Guatemalan Mayan; KIWI
MAY Pirate Bust Developments; Eropirate bulletin; Mexican clans; Taiwan pirates
JUN Pirate Jams Iran; Aum Shinrikyo; Super DX Edge; So Music Radio; Spectrum bcasts from Winterfest
JUL "Patriot" Programming; RNI returns; Polish pirates; Iranian clandestines; WRMI E-mail
AUG CID using satellite feed; NASWA covers pirates; Radio Pirana; 41/43 Meter Notes; more foreign pirates
SEP Increase in pirate activity; WINB in limbo; KIWI still active; RNI quits; Radio Marti on WHRI; Iran clan heard in Brasstown
OCT Chiapas Libre; R Free Berkeley Fined; SIO Codes; R Pirana Moves; Black Book e-mail; New ACE Publisher
NOV Israel Busts Pirate; SRS E-mail; 41-43m 2-way Spanish
DEC Iranian Clan loses funding; Mexican clans; Local FM pirates

PLANE TALK

FEB Oakland Oceanic Control
APR The Black Box and Cockpit Voice Recorder; HF Nets serving MWARA; Software offer Final Approach
JUN LDOC; New HF Datalink HFDL being tested; Atlanta aero freqs
AUG Flight of the Concorde
OCT Brush Up Your Basics; Observation Decks; Monitoring the Comics
DEC San Fran ATC Tower; Oakland Center; St Louis freqs; *World Air Carrier Callsign Directory*; readers' corrections, additions; LDOC verifications

PROGRAMMING SPOTLIGHT

MAR VOA Inaugurates Talk Radio
JUN BBC in Transition (split streaming)
SEP Radio on the Internet
DEC Shortwave Simulcasting - KTBN & WEWN

RADIO REFLECTIONS

FEB Working at WATT
MAY 100 Years of Radio (Marconi)
AUG Revive a Five! (restoration)

NOV Medical Quackery

SATELLITE TV

JAN Trade-offs - Choosing a System
FEB World Radio Network
MAR World TV for Newshounds
APR X*press Information is Ingenious; AMSAT 3-D freqs; WRN; KJAZ
MAY TVRO Shopping via Satellite; Russian RS-15; Digital Audio Radio Service; Equip needs for Inmarsat/Wxsat, & SPCP
JUN *World Sat Yearly*; SPCP on 18" dish? Minimum equipment requirements for SPCP
JUL Peaking Your Dish
AUG View from Europe, European experimenters; AMSAT news; Ingenius update
SEP Rebroadcast audio thro your house with FX Wave; DMX update, New Old Stock supplier, sat talk shows, BBC news feed; satellite predictions
OCT Ethnic Programming; BBC feed; Bloomberg on Ku; DigiCipher rcvrs delayed, etc.
NOV 1995 *World Satellite Almanac*; industry news
DEC SPCP On a Budget

SCANNER EQUIPMENT

JAN PRO-2035 vs. PRO-2006
FEB PRO-62; RadioMap
MAR BC9000XLT
APR BC3000XLT
MAY Uniden BC860 XLT
JUN PRO-2036/BC890XLT
JUL PRO-2037
AUG PRO-26
SEP PRO-60
OCT AR 2700
NOV Comparison of scan rates, current consumption, modulation acceptance between AR8000 and other handhelds; RU2700 recorder option for AR2700; portable antenna alternatives
DEC PRO-2040

SCANNING REPORT

JAN Scanning Questions; NOAA weather; new aero freqs; taxi cabs
FEB Scanning Savvy; cellular newsclips
MAR Beyond UHF; Qualcom cellular contract; protection from cellular clones; TV bands
APR Spring cleaning (scrounging); news clips
MAY Listening Post Improvements; cordless mikes; bumper beepers; news clips
JUN Mapping antennas in your neighborhood; briefcase satellite phone;

news clips; extending cordless range; Goodyear Blimp freqs
JUL Computerized Scanning; OKC active freqs; bugs in restaurants; PO scanning; new aero freqs
AUG August scanning (shopping malls, sat freqs, winterizing); NY TV/public safety; list of cellular restorable scanners
SEP Equipment TLC; cellular banned in hospitals
OCT Trunking; Briefcase Satellite; Laser Guns; New Opto Scout
NOV How to scan during the holidays; TV audio freqs; CB channels; allocation rules & regs
DEC Alive and Well - good December scanning freqs; antenna heights; Tulsa, Okla., case

UTILITY WORLD

JAN AFTN almost gone; DCS HF system; Nightwatch Update; Hobbyist's Guide to COMINT
FEB Aero Mobile Band Standardizes
MAR RTTY Numbers Stations; HICOM gone
APR Single Letter HF Markers Revealed
MAY SECURE system; AF manual description of EAMs; 5680 & 5696 logs; X-ray codes
JUN FEMA Support Communications
JUL British Royal Air Force
AUG Hurricane Season, NOAA and 53rd WRS and related freqs
SEP The meaning behind the EAM messages; Navy Tacamo takes on ABNCAP role; Nightwatch nets
OCT US STRATCOM Network Freqs; Inter-American Air Forces and Army communications systems
NOV Coast Guard Pacific Operations, corrections
DEC US Gov HF Exercises; FAA HF radio; Global Wireless maritime network

WHAT'S NEW

Reviews:

Alpha-Delta DX-Ultra Jun
AOR SDU5000 Spectrum Display May
CTP DS-49 Descrambler Sep
Free Radio Berkeley transmitter kit Jun
Grove TUN-5 Oct
JPS ANC-4 Antenna Noise Canceller ... Aug
K&L Message Tracker Jul
Kiwa MW Air-Core Ant Dec
Logic Limited Franklin Converter Oct
MFJ-784 DSP Filters Sep
Naval Electronics HTS-2 vs. -3 Jul
Optoelectronics DC 440 decoder Mar
Optoelectronics Scout 400 Feb
Optoelectronics Scout 40 Nov
Par Electronics intermod filters Sep
Select-A-Tenna vs the Black Box Apr
ZS Electronics ZSRX Antenna Jul

NATIONAL WEATHER SERVICE

Ready for the Next Atmospheric Century

As early as 1902 the Weather Bureau was sending forecasts in Morse Code via wireless telegraphy to ships at sea. By 1905 ships were equipped with wireless transmitters and two-way weather exchanges could be made.

Technology moved rapidly as the science of meteorology advanced and observation techniques became more sophisticated. Airborne observations of temperature, relative humidity, and winds in the upper atmosphere were made with instruments carried aloft by kites.

Following World War II the U.S. military gave the Weather Bureau 25 surplus radars (some of which are still in use today) which



The NEXRAD radome. Inside is a 28 foot parabolic dish with a 360 degree vision out to 250 miles.

Story and photos by Ken Reitz, KS4ZR

US. route 460 East is the straightest road in Virginia. It strikes deliberately through the flat, sandy farm land of the eastern part of the state. Here the land is neatly carved into vast fields of peanuts, tobacco, and extensive stands of tall loblolly pines. The highway links small old towns, with names like New Bohemia and Disputanta, to the fading industrial city of Petersburg to the west and Suffolk, on the Chesapeake Bay, to the east.

In the midst of this unlikely setting, on a small acreage of land donated by Sussex County near the town of Wakefield, Virginia, the National Weather Service has built one of its new, prototypical, modern weather stations.

■ NWS at 125

In 1995 the National Weather Service celebrated its 125th anniversary. Begun during the Administration of Ulysses S. Grant in 1870, the Weather Service spent its first 21 years as a bureau in the office of the Secretary of War. Observations were made by members of the Army Signal Service known as "observer sergeants." From 1891 to 1940 the Weather Bureau came under the oversight of the Department of Agriculture.

launched the modernization of the Weather Service. The progressive use of computer technology, high atmospheric balloons, and, eventually, geostationary and polar orbiting weather satellites have brought the Weather Service to this end of the 20th century.

■ NWS Today

The current movement toward modernization is seen most clearly in the deployment of the new Doppler radar referred to as Next Generation Weather Radar (NEXRAD). NEXRAD systems will be installed in 119 Weather Forecast Offices (WFO) around the United States.

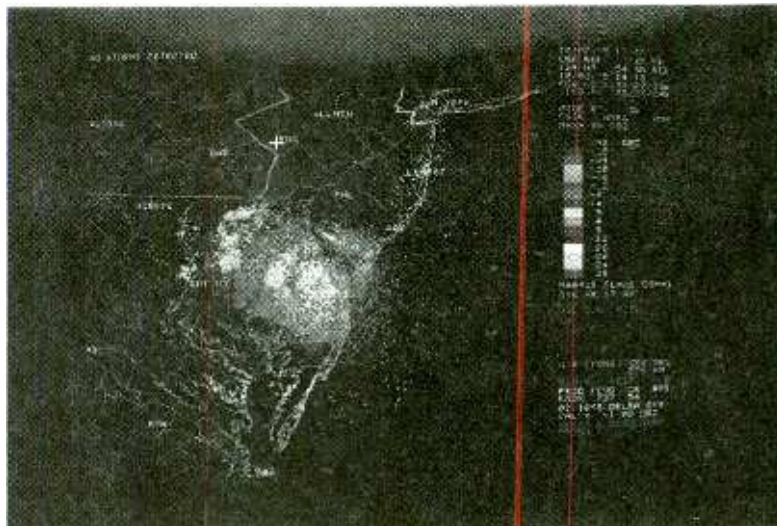
NEXRAD is complemented by a new system of Automated Surface Observing Systems (ASOS) which automatically take routine surface observations and send the data back via telephone lines to the regional WFO. This data, combined with NEXRAD imagery and data from weather satellites, is sent to the Advanced Weather Interactive Processing System (AWIPS), which is an "interactive workstation" that also receives information from the three national centers: the National Meteorological Center, the National Severe Storms Forecast Center, and the National Hurricane Center. This enormous amount of data is used to help in warning the general public of potential threatening weather, as well as long and short range forecasting.

The implementation of this network of Weather Forecast Offices is in the final five years of construction and represents the greatest single period of technological advance in the history of the Weather Service.

■ NWS, Wakefield

While the site survey for the NWS Wakefield was completed in June 1988, construction of the building did not begin until the fall of 1993. By June 1994 the building was completed and the first forecasters hired with round-the-clock operations commencing one month later. By February 1, 1995, Wakefield assumed County Warning Area Responsibility, Hydrologic Service Area Responsibility, and programming for four NOAA Weather Radio stations.

The staff at Wakefield, typical of similar WFOs, totals 22, including eight meteorologists, five hydrometeorologist technicians, and three meteorological interns. Wakefield



Actual NEXRAD doppler radar image of eastern Virginia and the DELMARVA peninsula. Data at right indicates image status.

staff is headed by Meteorologist in Charge, Tony Siebers.

Siebers, like most of the rest of the staff, is not from Virginia. In fact, 12 states are represented in the newly-assembled Wakefield staff. All, however, are from within the National Weather Service and represent a combined depth of working experience not obvious from their youthful appearance.

Individually, it's a well-traveled staff. Two years on any one assignment is normal. Staff meteorologist Greg Noonan came to Wakefield from Kansas and still can't get over those tall Virginia pines; Hydro-Meteorological Technician Christy Smith came to Wakefield from the Nevada Test Site where she made the transition from Air Force to civilian weather service; Meteorologist in Charge (MIC) Siebers came from Milwaukee where he was a Deputy MIC. Compared to Wisconsin winters, he can't believe how mild eastern Virginia winters are. As to the hot, humid summers, Siebers is less surprised, having weathered several summers during a stint with the Weather Service in Washington, D.C.

■ A Tour of the Center

Siebers took me into his office and, swiveling a computer monitor in my direction, gave me his computer-generated slide show. Bringing up a service area map he showed why Wakefield is unique in the NWS: keeping track of the weather along 500 miles of coastline, parts of three states, and the Chesapeake Bay—in addition to

running four NOAA Weather Radio stations—is quite a task.

We went to the Operation Center to meet some of the meteorologists and take a look at the NEXRAD radar screens. The center, as with the whole building, is spacious, clean, and well lit. Equipment is a blend of old Weather Service equipment in the familiar Air Force Blue and the new gear in the beige color typically favored by office machine manufacturers.

The meteorologist on duty was Greg Noonan, who demonstrated the NEXRAD system and how severe weather warnings are done. Noonan deftly manipulated a computer program designed specifically for the alert. Within 60 seconds of spotting severe storm configurations on the screen, computer-generated warnings could be issued to all sites hooked into the system including public safety



The pride of Wakefield, VA. Entrance to the new National Weather Service Office. Doppler NEXRAD radome in background.

offices, and a warning message broadcast on the four NOAA Weather Radio stations under its control.

The sophistication of the NEXRAD system includes the ability to process the radar returns to determine rainfall intensity within a storm cell, as well as gradients of wind velocity. In addition, the computer capability allows meteorologists to determine rainfall accumulation and storm tracking over specified periods.

There are four NEXRAD screens which are about the size of a 19" TV. All four Virginia NEXRAD sites can be brought up on any one screen. A special switch panel measuring roughly 2' x 2' is divided into a grid of switching possibilities which are controlled by a computer mouse. Moving the mouse from square to square and clicking produces another NEXRAD image. It's possible to examine each image minutely as to the content as well as the chronology of the imagery.

■ Four Stations In One

A small, sound-deadened room just off the operations room holds the broadcast consoles for the four nearby NOAA Weather Radio stations. Advanced technology is again evident; the old-style broadcast cartridge tape consoles have been replaced by totally digital recorders. Easy to operate, taking up less than a quarter the space, and virtually maintenance free, these new digital recorders exemplify the new high-tech image of the Weather Service.

Christy Smith, Hydrometeorological Technician, was in the radio room while I was visiting and demonstrated the new gear. She's

one of many on staff who record the weather reports for broadcast over the Weather Radio system. It's a job she clearly enjoys. Smith, who joined the Air Force at the age of 19, was asked by the recruiter what job she'd like to be trained for. It wasn't a question to which she had given a lot of consideration, but, reflecting that her Dad was always watching The Weather Channel at home, she signed up for meteorology.

Transmissions from the digital consoles are fed by telephone lines to the various transmitter sites around eastern Virginia and southern Maryland. These transmitters are usually co-located with other public service transmitters and share tower space. Typical reception range is under 40 miles.

■ Severe Weather Warning

Aside from the obvious weather gathering and disseminating activities for agriculture, aviation, and the general public, the Weather Service counts as its most important mission the protection of life under threat of severe weather. So important is this aspect of the Weather Service that there is a position for Warning Coordination Meteorologist. At Wakefield, Bill Sammler fills that position.

Sammler works with state and local authorities to coordinate reaction to pending severe weather. In this part of Virginia it's likely to be severe thunderstorms from the spring through the fall seasons, with tropical storm activity throughout the summer, and possible ice storms in the winter. Each storm activity requires different emergency reaction.

In addition, Sammler works closely with

the Sky Warn Severe Storm Spotter Program. This program entails training members of the general public to be able to spot potential severe weather as it's developing and to report actual weather events such as high wind, hail, heavy rainfall, and flooding. Participants in the program are typically trained in a two- or three-hour classroom course in severe weather, taught by staff meteorologists. Upon finishing the class, participants are given a Spotter ID number and a toll free phone number directly to the Wakefield Operations Center to relay emergency weather information.

Sammler stresses the importance of the Spotter program even at a time of NEXRAD's sophisticated and tireless vision: "...We need to hear the 'ground truth' from spotters on the ground." It's a matter of data input. With severe weather, you can never have too much information. Sammler also coordinates the Amateur Radio Sky Warn network which has a 2 meter amateur radio station with its own desk in the operation center. In threatening weather, an Amateur Radio Control Operator signs on the station and opens the Sky Warn net.

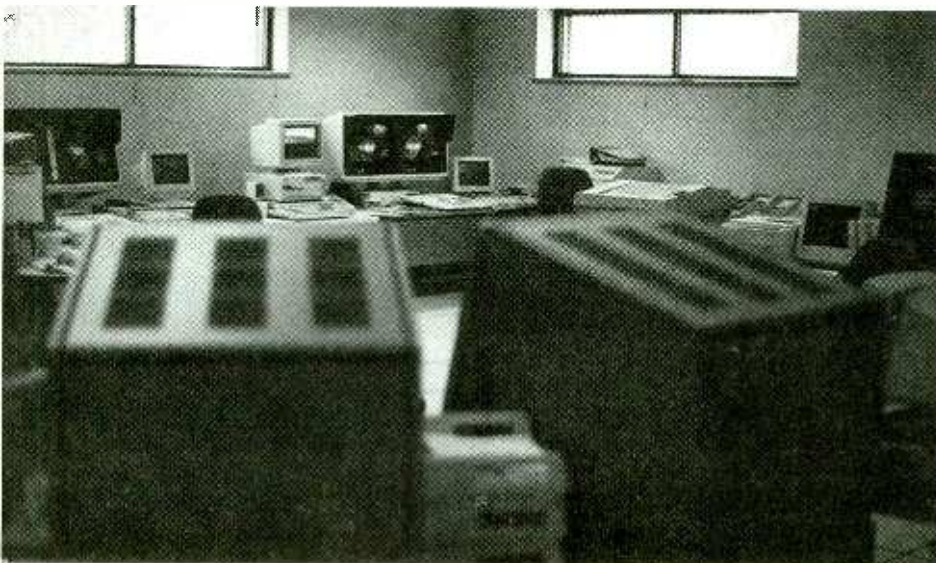
■ Inside The Radome

It was a clear day in early October when I visited Wakefield and the weather couldn't have been better. That's why I had no trouble asking to go inside the Radome. Siebers agreed and asked Noonan to show the way. After a small amount of "housekeeping" to shut down the NEXRAD, we went through a series of locked, chainlink fences and gates. All power to the Radome was killed and we started to climb the tower.

It hadn't seemed that tall from the ground, but with each flight of stairs I noticed my legs getting a little weaker. It didn't help that the entire steel support structure was nearly transparent, even the steps. The final flight resembled a narrow step ladder at a steep angle. At this height (over hundred feet and considerably taller than the pines) the wind seemed to be howling.

Greg Noonan unlocked the steel trap door at the base of the Radome and we entered. The NEXRAD antenna is a 28-foot parabolic dish inside a 30-foot radome. The steel, sectioned dish is pointed nearly perpendicular to the horizon and spins 360 degrees, its powerful beam stretching invisibly across the countryside for up to 250 miles. Within 125 miles it can "see" to an elevation of 17,000 feet.

Returning to the main building, we pass two separate small buildings which Noonan explains are the generator back-ups to the



The Operations Center. NEXRAD screens in back. Computers link consoles with various other sites and weather services.

whole system: one for the NEXRAD and the other for the rest of the operations. In the event of a power outage the two big Cummins diesel-fired generators come to life. The entire system could run on battery back up for up to 20 minutes.

Inside the main building, in a separate and spacious room, are the main computers for the Advanced Weather Interactive Processing System (AWIPS) made by Unisys and featuring racks of optical Write Once Read Many (WORM) disc drives. This is the information which can be accessed by any of the subscribers to the Weather Station's services such as the Department of Defense, Department of Transportation, and other Weather Service sites.

■ Enter WRSAME

Upgrades and new technology is not limited to the forecasting of weather. Another notable change will be the addition of encoded weather alerts sent via the NOAA Weather Radio Network. Dubbed WRSAME (Weather Radio Specific Area Message Encoder), this technology will allow emergency messages to be sent to specific areas of a particular NOAA Weather Radio service area. Wakefield's Sammler explains that the worst thing that can happen is for the public to ignore emergency weather broadcasts. In the past, such broadcasts opened the squelch on all Weather Radios to broadcast the impending emergency. It was found that people would shut off their Weather Radios to avoid hearing emergency messages which weren't directed specifically to them.

WRSAME allows the WFO directing the NOAA broadcasts to target the specific areas for a warning. This technology will be built into all new Weather Radios. There are even plans to include this technology in car radios and cable television receivers to allow fair warning to those in the affected areas. In the case of cable sets, a short text message would identify the location and type of emergency. According to Stan Johson, Program Manager for NOAA Weather Radio, the WRSAME system will replace the old Emergency Broadcast System (EBS) and be ready for implementation by July 1996. Johson says there are currently 375 stations in the NOAA Weather Radio Network, and it's estimated that an additional 350 will be needed to achieve coverage to 95 percent of the U.S. population.

■ Mission Accomplished

Barry Reichenbaugh of the NOAA Public Affairs Office said, "... We're more than half-



Hydrometeorological Technician Christy Smith records the latest weather announcement for one of four NOAA Weather Radio Stations under Wakefield's direction. The three units in the rack at the left are digital audio consoles. Each one replaces the gear in the rack to the right.

way through the modernization of the National Weather Service." Even so, it's not too early to judge the success of this venerable old service.

The Weather Service has a new attitude, and the Wakefield example sets a high standard. Here, the Service is not just interested in its paying customers but in those who have already paid via taxes. The emphasis has shifted to public dissemination of weather-related information, and the public is invited to participate. Even if you don't have a Weather Radio or are too far away for good reception, Wakefield has a toll free number to get the same Weather Radio broadcasts on the phone. They even publish their own newsletter for Volunteer Storm Spotters, keeping in touch with those they serve and those they need. As far as the general public is concerned, this underscores the "service" in the National Weather Service.

■ Note:

NOAA Weather Radio Network has produced an updated list of the 375 stations in the network. Grouped by state, the city and frequencies are given. For your copy, send a self-addressed stamped envelope with your request to: National Weather Service 1325 East-West Highway, Silver Spring, MD 20910. Be a part of your local Weather Service Office. They sponsor Storm Spotter programs in your area. Call them to find out when the next class will be held. You don't need to be a radio amateur operator, but if you are, you may want to participate in your local Sky Warn net. Net members often activate the net

to test their readiness in the event of a local emergency. Ask the local hams in your area where to get more information.

SCANNERS AND RECEIVERS

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ICR7100 25 MHz to 2000 MHz	AR3000A 100 KHz to 2036 MHz	MVT8000 8 MHz to 1300 MHz
ICR9000 100 KHz to 2000 MHz	AR3030 30 KHz to 30 MHz	
ICR7000 25 MHz to 1000 MHz 1025 MHz to 2000 MHz		

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Getting Back to Our Roots

Somebody once asked me: "If you could write any other column for *MT*, which one would it be?" You may be surprised to hear I've known the answer to that question even before my name ever graced an *MT* masthead. *I want Larry Magne's job!*

Don't get me wrong: Nobody else in the radio hobby could do the excellent job of reviewing receivers that Larry does. But you have to admit, Larry gets to have all that fun playing with all those neat rigs. Who wouldn't want the chance to do that gig?

Well, my chance to play at product reviewer came this month when a couple of receivers of special interest to beginners came my way. While my thoughts here are no substitute for the in-depth analysis accorded by the "Magne Tests" column or the "RDI White Papers," I couldn't pass up the opportunity to introduce beginning radio hobbyists to radio gear designed to get folks back to the very roots of radio.

Radio can be traced to the early 1800s when Michael Faraday and Joseph Henry developed the theory that a current flowing through one wire could induce a current to flow

in a separate wire. In 1820 Hans Christian Oersted successfully demonstrated this principal of electromagnetic induction. The German physicist Henrich Hertz was the first to formulate a reasonable explanation of what was going on with his demonstration of the existence of electromagnetic waves in 1887. In 1892, French Physicist Edouard Branly developed the first "receiver" of electromagnetic waves, which he called a "Coherer."

The experimenters of the world now possessed the science on which to build their ideas. It was a young Marconi who followed these developments and created his first successful wireless system in 1895. After patenting his invention in England in 1896, he went on to pursue the commercial aspects of his invention through installing his system on ships and at shore stations. As radio signals became more commonplace, monitoring was not far behind. Folks began to experiment with improved "detectors"—devices that would allow better reception and use of those transmitted radio waves.

In 1908 G.W. Pickard patented the crystal detector. His system was based on the semiconducting properties of the mineral Galena. If you have been playing with radio for any length of time, you may have run across

"crystal sets" designed around common semiconductor diodes such as the 1N270 or the 1N34. But wouldn't it be neat to build a "real" crystal set using your own hunk of Galena? What would it be like to use a receiver like those used by many folks back in the 1920's to bring in those early radio stations such as KDKA, WWJ, KQW and W2XR?

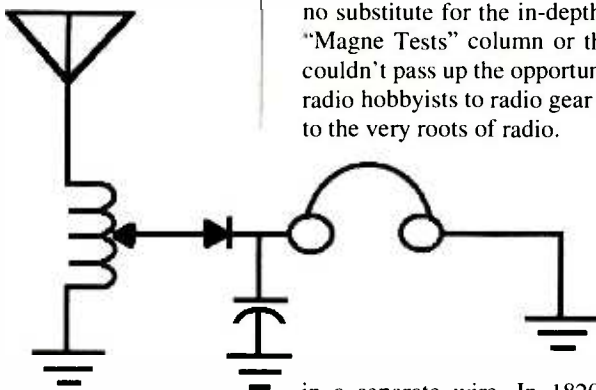
■ No power or solder required

The folks at Ramsey Electronics, Inc., have come up with a great educational kit that also gives everyone a chance to become 1920's style radio monitors. Their CS-1 Crystal Radio Set comes with everything you need to build a genuine Galena crystal detector. This "Learn-As-You-Build" kit is designed to teach you about how radio signals are received, detected, and turned into useful audio signals. The kit is designed to go together without any soldering. All you need to get things together is a small knife to scrape away insulation and a screw driver to attach a few fahnestock clips—probably the same tools your grandfather used to build his first crystal set.

The components in the kit are also of the same nature as those that Grampa probably used to pull his rig together: some wood, some wire, and a chunk of Galena. The only concession to the modern world you will find is a common 260pf tuning capacitor like those found in modern transistor radios. This is an acceptable substitution because old-style air-variable capacitors are somewhat rare and can be very expensive. (If you want to be totally traditional I'll tell you later about a resource that describes how to make your own capacitors out of common materials.) All provided materials are of good quality and the instruction book is easy to follow. You and/or your protégé should have no trouble getting the kit together and on the air in the same evening.

The instruction book not only takes you step by step through the assembly process, along the way you will begin to learn how radio receivers work. When you're done you will be the proud owner of a crystal receiver capable of tuning through the standard AM broadcast band. Further, you will be able to amaze folks with a radio that operates with no power source other than the few microvolts it draws out of the detected radio signal.

In my own household, Number One Son has already brought the receiver in to his Physical Science class to contribute to the discussion of geology. Num-



The crystal set is the simplest radio receiver.

ber Two Son has even brought it in to his elementary science class for "show and tell." Who said you can't get kids away from their Nintendos?

■ Tweaking

But why should the kids have all the fun? I decided to try my hand at some good old-fashioned mediumwave monitoring. I logged about half a dozen stations in spite of a strong local broadcast signal. Then I succumbed to the ever-present desire to tinker.

The manual gives directions on how to tap the coil in the circuit to allow you to tune across the 75 meter shortwave broadcast band. Now that's fun! You will find that "tickling" the crystal to get a good "hot" spot takes some practice. For this reason, the kit allows you to build the circuit so that you can switch between the Galena crystal and a modern diode for comparison. Performance is more or less subject to signal strengths.

Okay, it's no Watkins-Johnson, but you're going to have a lot of fun for a lot less than it costs to take the family out to a movie without popcorn. And, there's a bonus thrown in! The instruction manual shows you how to construct a World War Two "Foxhole" receiver. Get yourself a couple of razor blades and a pencil lead. You will be totally amazed.

The CS-1 Crystal Radio Set can be purchased directly from Ramsey Electronics, Inc. 793 Canning Parkway, Victor, NY 14564 1-800-446-2295. The price for this kit is \$19.95.

■ The next step: regeneration

Moving down the radio receiver time line, the next important development in receiver design involved a process known as "regeneration." Simple detectors, such as the crystal set, could only demodulate relatively strong RF signals. Folks began to experiment with feeding the detected signal back to the input. Once this process was fully harnessed, a signal could be boosted many times, allowing weaker signals to become listenable. A delicate balance of feedback and oscillation was further improved by radio and audio frequency amplification that allowed for "armchair" listening for our grandparents.

Regenerative receivers can be a lot of fun to use. Once you get the hang of tuning the regeneration control, you can listen to just about anything that someone with a more sophisticated receiver can. Even though the "superheterodyne" technology used in most modern receivers was perfected in the 1930's, the regenerative receiver design never really died out. Many of us got our start in the radio hobby by building inexpensive regenerative shortwave receivers in the early 1960's. You could log your first fifty countries on a receiver that cost well under \$20. That fit into a paper route budget just fine and you learned something about radio as well.

Now, thanks to the folks at MFJ Enterprises, Inc., you can relive the 1930's or the 1960's by way of the MFJ-8100 World Band Receiver. This receiver is available in either kit or wired form. My suggestion is to build the kit if at all possible. It is a simple, first project requiring only a few common electronic tools. Further, you can learn so much more about how the signal gets from the antenna to the earphones by building the circuit along the way.

Instead of going with a truly traditional design, the MFJ folks have applied some aspects of modern engineering to the regenerative receiver concept. This produces a receiver that is much less difficult to manage when compared to regen radios of the past. I don't recall ever running across a regenerative receiver that was as stable as the

MFJ-8100. This stability, coupled with a very smooth regeneration circuit that does not surprise you by going into over-oscillation, makes this design easy for even a total beginner to master in a very short time. Once you learn to use the regeneration control to peak signals, you will discover that this little receiver is really capable of some fairly high performance.

Many of those 1960's vintage regen receivers required replacing coils for each band you wanted to tune. The MFJ-8100 uses LC tuning with no coils to plug in or tap. A simple bandswitch allows you access to five frequency ranges, 3.5 to 4.3 MHz, 5.85 to 7.40 MHz, 9.5 to 12.00 MHz, 13.2 to 16.4 MHz and 17.5 to 22 MHz. This provides for a good mix of both shortwave broadcast and amateur radio frequencies.

I wired this puppy up to a wire antenna and proceeded to get absolutely nothing else done around the house for several evenings! This is *real* radio: No punching up frequencies on a keypad. You have to go on the hunt for signals, and then you have to help them along by adjusting the regeneration control. You will probably even find a few signals you may have missed on your more modern receiver, because digital tuning can make even the most dedicated DXer a bit lazy when it comes to tuning around.

If you are looking for a receiver to teach a young person about monitoring, this rig even comes with two headphone jacks to allow you to both listen to what is going on. The receiver is designed to make use of inexpensive "personal radio" style headphones. This is in keeping with the overall cost-conscious design.

The receiver can be purchased directly from MFJ Enterprises, Inc. P.O. Box 494, Mississippi State, MS 39762; 1-800-647-1800. The prices are \$59.95 for the kit and \$79.95 for the wired version.

■ Starting from scratch

Chances are that owning one or both of these receiver kits might just get you even more excited about building your own receivers. If this is the case, Old Uncle Skip has yet another resource for your bookshelf:

Radio Receiver Projects You Can Build
by Homer L. Davidson
312 Pages
\$18.95
Tab Books
Blue Ridge Summit, PA
ISBN 0-8306-4190-4

This is one of the most enjoyable books I have read in a long time! Admittedly I have always been one to warm up the soldering iron. I have never been shy about ripping into the innards of my equipment, and I always have a small project or two on the workbench in some state of partial completion. If you have ever had the urge to either build something or to get a "hands on" idea of how these magic boxes we call radios work, this is the book for you. Just as the front cover states, inside you will find thirty-three complete receiver projects that will take you from construction of a basic crystal radio up through a high performance, superheterodyne, shortwave receiver complete with ceramic filters. In each case, Davidson leads you by the hand, step by step.

One of the most enjoyable rewards the monitoring hobby has to offer is to log stations on a receiver you built with your own hands. Give some thought to giving it a try. Make it a New Years' resolution to melt some solder in 1996. And don't forget to have fun!

Antenna Farms

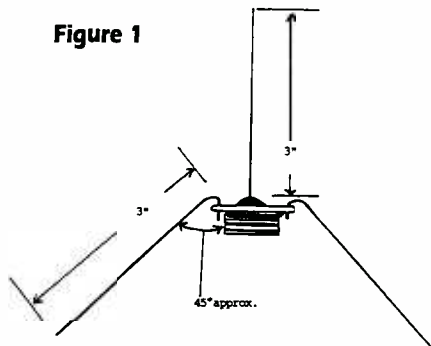
The number and variety of antennas that a radio buff uses to monitor the airways is affectionately referred to as the "antenna farm." And although antenna articles are generally published during the spring and summer months, your letters indicate that reader interest in antennas peaks during the winter months. The cold air and early nightfall restricts outside activities and we spend more time listening to the scanning bands. As our monitoring time increases, we begin to ask ourselves "What if" questions. What if I put up another antenna? What if I put an antenna in the attic? What if I build my own scanning antenna—will it work as well as a commercially-available antenna?

Building your own scanning antennas is fun, economical, and efficient. You can construct a ground plane antenna for the 800 megahertz band for less than two dollars. Best of all, you don't need special tools or skills. If you're handy with a few hand tools (drill, hammer, wrench, etc), you can build a variety of antennas that will perform as well as any scanning antenna on the market.

The 800 MHz ground plane (see Fig 1) is made from five lengths of coat hanger wire soldered to an SO-239 chassis mount, Radio Shack #278-201. Slip the SO-239 over a length of metal pipe or PVC and there you have it: a quick and easy antenna mount. The formula to construct a quarter wave ground plane antenna is:

"Length in feet = 234 divided into the frequency."
For an 800 megahertz ground plane the formula provides a vertical element length of approximately three inches.

Figure 1



construction has also been made easier by the availability of low heat, aluminum solder. The special solder is stocked by a variety of hardware stores and home improvement centers.

The use of dissimilar metals during antenna construction is probably the only area that merits special consideration. The use of aluminum and steel for example, will cause an adverse reaction that will eventually corrode the connection point. Many of today's commercially available antennas utilize steel rivets with aluminum tubing. Over a period of time, the steel rivets become rusted and the electrical connection that is needed to receive a strong signal is compromised. To correct the problem, drill through the rivets and replace them with brass or stainless steel nuts and bolts. Also remember to use non-corrosive hardware during new antenna construction as well.

In addition to building new antennas, it's also possible to modify a television antenna for use on the scanning bands. Although the procedure is difficult to explain without pictorial diagrams, here's the basic concept: (1) Remove both UHF deflectors from the antenna boom; (2) Locate the longest element—measure from the boom and mark this element at 21"; (3) Locate the shortest element and mark it at 16-1/2" from the boom. Tie a string to both marks and use the string as a cut-off guide for the remaining elements—do this for both sides of the antenna; (4) Hold the antenna vertically, determine the new center point of the boom and drill two mounting holes at that location; (5) Lastly, remount the antenna, attach a balun to the feed points and use RG-6U coax cable.

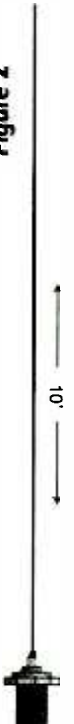
Finding the answers to your "what if?" antenna questions can be a lot of fun—especially if you're building custom antennas at home. If you want to try new antennas at new locations, winter is the perfect time to stay indoors, stay warm, and to build your very own custom antenna farm.

Treasure Hunt

To kick off the new year, Grove Enterprises is providing their new FCC Database on both CD-ROM and High Density Diskette. The database contains licensees from the FCC Master File. You'll get Public Safety, railroad, business, industrial, broadcast, maritime and many others. You can sort through fields like city, service, state, call sign, antenna height, and output power, or you can custom tailor the program to fit your personal search needs. To win the Grove CD-ROM Database, simply find the answers to the following:

- 1) Briefly describe the Radio Shack #25-0202.
- 2) Briefly describe the Grove #ACC 143.
- 3) What is the U.S. one year subscription price to MT?
- 4) Caller ID provides the call signs for radio transmissions. True or False?
- 5) The Grove SDU-100 is compatible with the ICOM R-7000. True or False?

Figure 2



The Grove CD-ROM Database also offers a unique mapping program. The program displays a map of major roadways in your area and it actually shows you where the transmitter site is located. To win the CD-ROM Database, send your answers via post card or letter to Treasure Hunt, P.O. Box 98, Brasstown, NC 28902. Sorry, no bulk mailings or faxed entries will be accepted.

■ Frequency Exchange

January is a great month to return unwanted Christmas gifts. The holiday crowds are gone, there's plenty of parking space, and if you'll be returning those gifts in **Atlanta, Georgia**, Michael Lawrence has provided the mall frequencies.

464.375	Northlake Mall
464.575	Phipps Plaza
464.6625	Cumberland Mall
464.825	Lenox Square
464.975	Perimeter Mall

Our next stop is **Jefferson County, Idaho**. An anonymous contributor provided the following:

154.115	BRMC lifeflight
154.16	Fort Hall fire
154.415	Jefferson Co. fire
154.965	Pocatello transit
155.28	EMS
155.385	Madison County Ambulance
163.75	Big Butte BLM
453.225	State University police
453.525	Chubbuck Police
453.95	Aberdeen Police
460.175	Pocatello Police
460.225	Bannock County Sheriff
460.35	Chubbuck Police
460.525	State Police car/car
460.625	Pocatello Valley Fire
463.025	BRMC ambulance
463.10	BRMC ambulance
465.075	Pocatello Police
465.275	Bannock Co. Sheriff

Gorden Lester lives near the **Massachusetts Bay** area and he has provided a frequency list for the Massachusetts Bay Transportation Authority.

470.6375	470.6625	470.6875	470.7375
470.7875	470.9125		

Since we're already in New England, let's stop to visit with Gary Parks. Gary lives in **Windsor, Connecticut**, and in addition to providing everyone with coffee and doughnuts, here are Gary's favorite frequencies:

Windsor Locks

45.85	Police	153.935	Roads
154.01	Fire	154.95	Police
155.60	Police	170.15	Fire

Windsor

33.94	Fire	453.475	Police
453.60	Ambulance	453.80	Fire
465.075	Police		

Is your credit card over-loaded from holiday shopping? Barry Sheldon has invited everyone to come to **Las Vegas, Nevada**. The

idea is to win at the gambling tables and pay off your bills! Here are Barry's favorite frequencies.

153.845	Conv. Cen.	153.935	Conv. Cen.
154.37	Fire	154.43	Fire
155.685	Detent. Cen.	155.76	Comm. Col.
158.925	Ct. Hse Sec.	453.10	Fire
453.15	Fire	453.40	Fire
453.625	Jail	453.825	Animal cntrl.
460.40	Police		

Shelly Phiper says forget the gambling tables; she intends to stay put in **Anderson County, South Carolina**, and enjoy monitoring these frequencies.

153.95	Fire	154.16	Fire
154.71	Police	154.76	Police
154.85	Police	155.22	Rescue squad
155.265	Memorial Hos.	155.415	Police
155.565	Police	156.075	Prison
453.55	Fire	465.25	Police

An anonymous reader from **Conway, South Carolina**, sent in the following:

154.40	Fire	154.725	Police
154.80	Police	154.85	Police
155.235	Rescue squad	155.40	Ambulance

Trunked System

811.2125	811.4375	812.2125	812.4375	814.2125
814.4375	815.2125	815.4375	856.2125	856.4375
857.2125	857.4375	858.2125	858.4375	859.0125
859.4375	860.2125	860.4375		

Our last stop during this cold, winter month will surely chill your bones. Welcome to **Bloomington, Minnesota!** Scott Glidere lives nearby, and to keep warm, Scott listens to the following hot frequencies:

45.65	Police	151.40	Fire
153.82	Fire	154.05	Fire
154.875	Police		

Trunked

811.9625	812.7125	812.9625	813.7125	813.9625
814.9625	815.9625	856.9625	857.7125	858.7125
858.9625	859.9625	860.9625		

The Frequency Exchange is willing to travel throughout the U.S. and abroad. Send your frequency invitations to the Frequency Exchange, P.O. Box 98, Brasstown, NC 28902.

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■ Cellular Clones

Cellular cloning involves decoding the ESN/MIN data burst and then cloning a new EPROM chip to make a new phone. The "new phone" can then be used to make illegal phone calls. The device needed to decode the data burst is called a "phone reader." The good news is that phone readers are also being used to catch criminals.

Phone readers are being used by law enforcement agencies to obtain the suspect's telephone number and to access the cellular phone habits of known criminals. The standard Curtis ESN cell phone reader can read the ESN the phone number of the car phone and the number dialed from a distance of 30 feet.

The special model phone reader, however, can be used to pinpoint fraudulent cellular operations and the detection of phones in specific areas for up to two miles! Law enforcement officials have been using the new model to track cloned phones and to arrest cellular bandits. The new special model, with improved sensitivity, is only available to law enforcement agencies. (News clipping from Dave Page).

■ Beeper Monitoring

The monitoring of voice paging systems was made illegal by the ECPA. But as many of you have begun to realize, voice paging is on the decline. On the increase is the annoying sound of digital paging devices. One of the advantages of digital pagers over voice pagers is the amount of air time actually used. Voice pagers transmit in "real time" and they use a sizable chunk of air time for each transmission.

Digital pagers can transmit a large amount of information and store it in a few milliseconds. This is especially important when the message is via satellite. Millions of digital messages could be relayed by satellite in the time that it would take one real-time voice message to be sent. The digital, computerized signal is the wave of the future. A computer assigns numeric values to voice messages and sends the encrypted information over the air. At this writing, it is not possible to decode digital signals.

■ RF & Alcohol

A Huron, Ohio, resident had his drunk driving conviction overturned because the Huron police had not checked the breathalyzer for radio interference. A state regulation requires the radio interference test when breath testing units are located within 30 feet of a radio antenna.

The police administering the test were unaware that the police radio transmitting tower was located within 30 feet of the building and the breathalyzer. According to the court, failing to conduct the radio interference test made the breathalyzer results unreliable. (News clipping from the *Morning Journal*.)

■ Antenna Safety

Erecting an antenna on or near your home is a dangerous task. It becomes especially dangerous during the winter months. The cold wind, snow, and ice makes it impossible to erect or to repair an existing antenna. But, naturally, your antenna refuses to fail during the warm lazy days of summer. Unfortunately, winter repairs are sometimes necessary.

Before you climb onto your roof or antenna tower, here are a few safety tips to remember: 1) Wear a safety belt; 2) Ask a friend to watch you from the ground; 3) Keep away from power lines; 4) Don't climb and carry tools at the same time. Hoist your tools to the antenna site

with a strong rope. If you need additional tools or other items on the roof, use a rope and a canvas bag to hoist needed items to the antenna site.

Another item you may not have thought of that can save you time is a cordless phone. If your ladder falls, or if you need emergency assistance, you can phone for help from the rooftop.

■ IF Explanation

One of the basic principles in scanning is knowing how to find image frequencies. As most of you already know, images are always a multiple of the intermediate frequency (IF) of your scanner. Scanner radios typically operate on the following intermediate frequencies: 10.7, 10.8 or 10.85 MHz.

But what is an intermediate frequency? Here's a brief, nontechnical explanation: In your scanner radio, there are two frequencies—one from the signal picked up by the antenna and one generated by an oscillator in the receiver. Both of the signals are combined in what is called a "mixer circuit." The mixer output will contain the original two frequencies and the sum and difference of both frequencies. The difference is called the intermediate frequency.

A scanner radio that changes the original frequency to the IF frequency in one step is called a single-conversion circuit. When two steps are involved—two mixers and two IF's—that's called a double-conversion receiver.

Now, before all you technoids write in to complain, I'll be the first to admit that the above explanation is over-simplified. If you think you can come up with a shorter, clearer explanation of an IF circuit and how images are created, I invite you to write the Scanning Report, P.O. Box 98, Brasstown, NC 28902.

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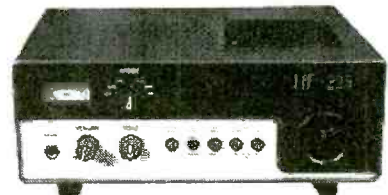
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VOA Utility Station On-The-Air

Shortwave listeners are very familiar with the Voice of America (VOA) as an international broadcaster, but now they have a utility station on HF.

During the last month, I received a number of logs regarding several ASCII test transmissions monitored in the 49-meter international shortwave broadcast band. My initial reaction was that maybe the USIA (United States Information Agency)/VOA had brought back the old continental press file broadcasts that disappeared off shortwave in the late 1980's. Those transmissions were moved to satellite audio subcarriers on USIA Worldnet transponders. Further investigation proved that these transmissions were something quite different.

The continuous test tape broadcasts monitored on 6165 kHz contained the following information:

*****VOA Outernet*****

This is a test transmission from the Voice of America in Washington, D.C. using ASCII 300 baud AFSK, 170 Hz shift (Mark=2125 Hz, Space=2295 Hz). Reception reports are welcomed and should be addressed to the Voice of America, 330 Independence Avenue, S.W., Washington, DC 20547, Atten: Dr. Robert Everett, Room 4238.

Several of our readers wanted to know what these broadcasts were doing in the 49 meter SW broadcast band. I contacted Dr. Everett at the VOA, who provided *Utility World* with some background on their experimental program, VOA Outernet.

The primary purpose of the transmissions, according Dr. Everett, is to "evaluate the feasibility of using HF frequencies for worldwide broadcast of multimedia transmissions." In a nutshell, the VOA is considering using the HF spectrum as a medium to send all sorts of high speed computer information (e.g.-digital voice, graphics, news bulletins, etc.).

These test transmissions may have ceased by the time you read this, but I would watch 6165 kHz very closely for future experimental transmissions. The current schedule for these broadcasts is 1315-2000 UTC on 6165 kHz using 110/300 baud ASCII from the VOA transmitter site at Greenville, NC.

Dr. Everett said he will verify all correct reception reports at the address noted in the transmission test tape.

■ RAF Volmet Trying to Find a New Home

Since the December 1994 reorganization of the aeronautical OR (Off Route) frequencies (see the February 1995 *UW* column) the British Royal Air Force has been trying to find a new home for their H+00/H+30 Volmet weather broadcasts. Originally, the 11 MHz broadcast was on 11200 kHz. A move to 11178 (a new OR

frequency) encountered severe interference from tactical military communications from the Caribbean. They now seem to have settled on a new frequency of 11193 kHz.

The 4 MHz frequency has also been jumping around. They were on 4722 kHz, had moved to 4740 kHz, but now seem to have settled on 4715 kHz. 4740 kHz is a well-known numbers frequency, and I am sure they have had interference problems.

What is even more bizarre is their choice for the 6 MHz Volmet broadcasts: 6739 kHz—a Global HF System (GHFS) house channel. During the late afternoon and evening, they do cause significant interference to GHFS communications here in the States. Due to the decline in high frequency communications (low sunspot numbers) a lot of military GHFS traffic now uses 6739 kHz in the evening after 11175 kHz propagation shuts down. I have heard operators on more than one occasion complain about the interference.

These RAF Volmet broadcasts can be used as excellent propagation beacons for paths into Europe. If you hear the broadcast at the top of the hour or on the half hour, then you know you have a propagation path to England. In fact, I use the commercial Volmet broadcasts from New York, Gander, Honolulu, Tokyo, etc. as propagation beacons. A complete list of these Volmet broadcast, frequencies, and schedules can be found in the 8th edition of the *Grove Shortwave Directory* available from Grove Enterprises.

■ AWACS Callsigns Revealed

MT Ute World regular, Bob Lewallyn from Texas, recently reported on the WUN Internet news group that some hard information has come to light regarding the U.S. Air Force AWACS callsigns commonly heard on HF. He received his information courtesy of Brian Scott, also in Texas, who talked with the aircrew of an E-3 AWACS at a recent military air show. Specifically, the air crew confirmed that the Bandsaw, Chalice, etc. calls that we hear used by the AWACS designate an aircraft of a particular squadron. Brian and Bob offer the list of calls found in Table 1.

TABLE 1: AWACS Callsigns

Bandsaw	E-3 AWACS	964th AACS, 552nd ACW	Tinker AFB, OK
Brigham	E-3 AWACS	961st AACS, 18th Wing	Kadena AB, Okinawa
Chalice	E-3 AWACS	963rd AACS, 552nd ACW	Tinker AFB, OK
Current Ops		AWACS Exercise Controller	Tinker AFB, OK
Darkstar	E-3 AWACS	965th AACS, 552nd ACW	Tinker AFB, OK
Dragnet	TC-18E/E-3	966th AACTS, 552nd ACW	Tinker AFB, OK
Focus	E-3 AWACS	962nd AACS, 3rd Wing	Elmendorf AFB, AK
Ramrod		Supervisor of Flying	Tinker AFB, OK

Notes:

AACS Airborne Air Control Squadron
 AACTS Airborne Air Control and Training Squadron
 AWACS Airborne Warning and Control System
 ACW Airborne Control Wing

The aircrew also stated that the suffix words which follow the aircraft calls (e.g.-Bandsaw Golf, Chalice Bravo, etc) are randomly allocated and do not always designate the same console position on the aircraft.

Many thanks to Brian and Bob for forwarding this information to *UW*.

■ Mystic Star Update

Not a month goes by that I don't get a letter from someone wanting my latest Mystic Star frequency list. As I have stated before in this column, as soon as we get information on a particular subject, we try to get it into the column as fast as we can. I personally do not track

Mystic Star designators, but several of our *UW* readers do. When they pass along updates to me, I pass them on to you.

UW regular Jeff Jones has passed along his latest list of Mystic Star VIP network designators; use it to replace the one we ran in the column in August 1994. The frequencies/designators listed in Table 2 have been noted since the April 1, 1994, change of Mystic Star frequencies. Many thanks to Jeff for keeping *MT* readers up to date on the Mystic Star system.

If you have any additional frequencies/designators to confirm some of the above information (do not supply any frequency/designator discovered prior to April 1, 1994), we would like to hear from you. You can reach the *Ute World* column at the usual Brasstown address or at: mt@grove.net.

TABLE 1: Mystic Star Frequencies/Designators

F-003	Positively known to be an 8 MHz frequency	F-350	Night use, moved here from the 6 MHz range	F-662	15048.0
F-005	9120.0	F-354	11053.0	F-667	6817.0
F-007	Possible 4 MHz	F-356	Moved here from the 8 MHz range	F-673	Unknown
F-009	Day use, moved here from 11 MHz probably higher than 11MHz	F-365	11059.0	F-677	Night use, moved here from a 6 MHz frequency
F-020	Probable 7 to 13 MHz range	F-372	Unknown	F-700	Unknown
F-054	Possible 9 MHz frequency	F-380	3144.0	F-702	Night use, moved here from a 6 MHz frequency
F-057	Unknown	F-382	15094.0	F-703	Day use, moved here from 11 MHz frequency
F-058	4742.0	F-395	9057.0	F-706	Moved here from a 6 MHz frequency
F-063	Possible 10760.0	F-400	6728.0	F-707	Moved here from a 6 MHz frequency
F-064	11214.0	F-406	18393.0	F-708	Data moved here from a 13 MHz frequency
F-077	Unknown	F-417	Unknown	F-717	Night use, moved here from a 9 MHz frequency
F-078	Probable 15 to 18 MHz range or higher	F-419	11407.0	F-719	13822.0 (not verified)
F-080	Confirmed 11 to 12 MHz range	F-432	6731.0	F-722	11 to 13MHz range
F-086	Unknown	F-437	7910.0 (not verified)	F-723	18323.0
F-089	13204.0	F-452	Possible 8077.0	F-728	11236.0 (not verified)
F-090	6716.0 (not verified)	F-453	Unknown	F-731	6683.0
F-094	9017.0	F-461	13211.0	F-732	15011.0
F-098	Unknown	F-463	4610.0	F-734	Moved here from a 6 MHz frequency, probable 6 MHz or lower frequency
F-099	13247.0	F-465	8040.0	F-736	Night use
F-102	11118.0 (not verified)	F-467	9023.0	F-741	Possible 9323.0
F-103	11488.0	F-481	Moved here from the 11 MHz range	F-748	6756.0
F-114	6986.0	F-486	Positively known to be a 5 MHz frequency	F-752	8047.0
F-117	6683.0	F-489	Data moved here from the 6 MHz range	F-754	Moved here from a 6 MHz frequency, possible 7 MHz range
F-128	Unknown	F-496	11059.5	F-777	Night use
F-134	Possible 11159.0	F-497	5411.0	F-778	18023.0
F-136	Unknown	F-498	8032.0	F-784	9043.0
F-146	9027.0	F-499	4442.0	F-785	15687.0
F-153	8063.0	F-500	8989.0	F-790	13MHz
F-173	Possible 11MHz	F-505	Moved here from the 13 MHz range	F-821	Unknown
F-186	3046.0 (not verified)	F-517	9270.0	F-823	11229.0
F-194	13825.0	F-521	11484.0	F-832	Moved here from 6 & 11 MHz ranges
F-197	4982.0	F-523	Moved here from 9 MHz interference, possible 9 MHz frequency	F-864	Data moved here from a 13 MHz frequency
F-211	11056.0	F-532	18003.0 (not verified)	F-867	6830.0
F-226	5435.5	F-540	Night use, moved here from a 6 MHz frequency	F-868	9218.0
F-236	15041.0	F-542	5431.0 (not verified)	F-869	Possible 11634.0
F-243	5020.0 (not verified)	F-548	18400.0 (not verified)	F-873	13248.0
F-248	5398.0	F-551	18331.0	F-875	6717.0
F-249	Night use, possible 4MHz	F-561	Night use, moved here from a 6 MHz frequency	F-877	4721.0
F-251	13217.0	F-567	13565.0	F-895	5710.0
F-264	Moved here from 8 MHz interference, possible 8 MHz frequency	F-574	11413.0	F-904	10202.0
F-265	15733.0	F-575	Night use	F-909	7687.0
F-266	7997.0	F-576	11153.5	F-910	Unknown
F-267	6730.0	F-595	Night use	F-912	Unknown
F-268	7325.0	F-600	13878.0	F-915	12107.0 (not verified)
F-271	Moved here from the 11 MHz range	F-601	Unknown	F-918	Day use, moved here from a 8 MHz frequency
F-287	11226.0	F-611	Day use, moved here from a 7 MHz frequency	F-920	Unknown
F-290	8026.0	F-614	4448.0	F-924	Data moved here from a 13 MHz frequency
F-291	13960.0	F-616	9320.0	F-940	Possible 23433.0
F-292	Possible 9 MHz frequency	F-622	Night use, possible 4 MHz frequency	F-948	15038.0
F-295	11460.0	F-623	18317.0 (not verified)	F-957	6761.0
F-302	Unknown	F-624	13241.0	F-965	11466.0
F-311	11220.0	F-631	18755.0	F-974	10586.0
F-322	11153.0 (not verified)	F-633	18290.0	F-987	10583.0
F-327	18716.0 (not verified)	F-639	Data (voice in use on 6,9,11,and13 MHz)		
		F-642	18218.0		
		F-644	15821.0		
		F-646	13440.0		
		F-649	8053.0		

Abbreviations used in this column

ALE	Automatic Link Establish	IOC	Index of Cooperation
ANMCC	Alternate National Military Command Center	LDOC	Long Distance Operational Control
ARQ	Synchronous transmission and automatic repetition teleprinter system (in general)	MAP	Maghreb Arabe Presse
ARQ-E	Single-channel ARQ teleprinter system	MARS	Military Affiliate Radio System
ARQ-E3	Single-channel ARQ teleprinter system	MFA	Ministry of Foreign Affairs
ARQ-M2	Multiplex ARQ teleprinter system with 2 data channels	MOD	Ministry of Defense
ARQ-M4	Multiplex ARQ teleprinter system with 4 data channels	MOI	Ministry of Information
AT&T	American Telephone and Telegraph	m/v	Motor Vessel
CAP	Civil Air Patrol	NAS	Naval Air Station
CdeV	Controle de Voie	NATO	North Atlantic Treaty Organization
CW	Morse Code	NCA	National Command Authority
DOE	Department of Energy	NACTOR	Teleprinter system combining certain characteristics of packet radio and SITOR.
EAM	Emergency Action Message	PIAB	Presse- und Informationsamt dieser unserer Lugengregierung
ETR	Eastern Test Range	POL-ARQ	Polish diplomatic ARQ teleprinter system
FAF	French Air Force	Piccolo	6- or 12-tone multi-frequency-shift keying teleprinter system
FAX	Facsimile (drum speed-rpm/IOC)	RAF	Royal Air Force
FCC	Federal Communications Commission	RPM	Revolutions per minute
FEC	Forward error correction teleprinter system	RTTY	Radioteletype
FEC-A	One-way traffic FEC teleprinter system	SAM	Special Air Mission
FEMA	Federal Emergency Management Agency	Selcal	Selective Calling
FF	French Forces	SITOR-A	Simplex teleprinting over radio system, mode A (ARQ)
FHWA	Federal Highway Administration	SITOR-B	Simplex teleprinting over radio system, mode B (FEC)
GHFS	Global HF System	TACAMO	Take Charge and Move Out (USN E-6 aircraft)
HF	High Frequency	Unid	Unidirectional
HKTI	Hong Kong Telecom	USB	Upper Sideband
ID	International Ltd Identification	USCG	US Coast Guard
		USN	US Navy
		VOA	Voice of America
		WPM	Words per minute
		XINHUA	New China News Agency

All times are in UTC, all frequencies in kHz, and all transmissions are in USB unless otherwise indicated

- 1608.0 DHJ59-German Navy Wilhelmshaven, with 75 baud encrypted messages at 2218. (Ary Boender-Netherlands)
- 1609.5 LGB-Rogaland Radio, Norway, with CW marker at 2217. (Ary Boender-Neth)
- 2965.0 Bangkok, Thailand, volmet with aviation weather at 1312. (Steve McDonald-BC)
- 2998.0 Japan Air 80 working Honolulu Aeradio, HI, at 1439. (Jerry Brookman-Kenai, AK)
- 3321.8 R-Single letter HF marker, Ustinov, Russia, in CW at 1731. (Boender-Neth)
- 3455.0 Polish Army, Warsaw, sending 50 baud RTTY at 1602, "RY PGH4 de KTH6" followed by encrypted messages. (Boender-Neth)
- 3542.7 GKE2-Portishead Radio, England, with SITOR-A/CW transmission at 0240. (Fred Hetherington-Ormond Beach, FL)
- 3386.3 RFLID-FF Points a Pitre (ARI) using ARQ-E3 to RFLI-Fort de France, Martinique, on 3753.24 (IRA) at 0230. (Hetherington-FL)
- 3832.7 RFFP-MOD Paris, France with ARQ-M2 messages to RFFVAY-Sarajevo at 1630. (Boender-Neth)
- 3852.4 MOI Wiesbaden, Germany, with ARQ-E traffic to MOI Bonn (HFVBK) at 1806. (Boender-Neth)
- 4023.5 3BZ-Bigara Plaisance Air, Mauritius, with ARQ-E3 (PTA) to 5AST-Antananarivo, Madagascar, on 7834.5 at 0150. On this frequency rather than 4014.6, the usual correspondent's frequency. (Hetherington-FL)
- 4077.0 WA4659-Medusa Challenger (cement bulk) working WLC-Rogers City Radio, MI, with weather observations at 0236. WYZ3931-Stewart J. Cort (ore carrier) at 0604 and WYP8657-James R. Baker (laker) at 0532 both working WLC. WE3806-John G. Munson (laker) at 0530 and WB4520-Calcite II at 0247 working WLC with weather observations. (JSM-BC)
- 4101.0 UQNZ-m/v Volga 4006 working Helsinki Radio, Finland, at 1649. (Robin Hood-UK)
- 4180.5 UOUZ-m/v Zarachensk working Oostende Radio, Belgium, in SITOR-A at 1955. Vessel in ballast from Vlissingen to Murmansk (Hood-UK)
- 4211.0 ZLA-Awanui Radio, New Zealand, with SITOR-A signing CW now on the air in the Global Wireless Network in maritime telex service. At 1000 very weak, but better on 6315.0. Also on 8417 and 12580. (Hetherington-FL)

- 4341.0 Two weak US military stations attempting secure mode communications at 2158. (J.L. Metcalfe-KY)
- 4387.0 WOO-AT&T Ocean Gate Radio, Manahawkin, NJ, with an automated voice traffic list at 2200. (Metcalfe-KY)
- 4666.0 Northwest 10 working Honolulu Aeradio, HI, at 1446. (Brookman-AK)
- 4703.5 Presumed Link 11 data channel at 0507. (Jeff Haverlah-Houston, TX)
- 4715.0 RAF Volmet with weather reports at 1657 (moved from 4739). (Hood-UK)
- 4721.0 Air Force One at 0417 working Andrews AFB, MD, with communications check. (Rick Baker-Austintown, OH) AF1 working Andrews at 0615. (Haverlah-TX)
- 4738.5 Presumed Link 11 data channel at 0231. (Haverlah-TX)
- 4742.0 WAR46-ANMCC Raven Rock Mountain, PA, at 0424 working Nightwatch 01 with communications checks on X-209. (Baker-OH)
- 4932.0 MFA Warsaw, Poland, with "CLARIS Nr 2029" bulletin in 100 bd POL-ARQ at 1707. (Hood-UK)
- 5211.0 KGA93-FCC Washington, DC, and Goldenrod 36-CAP Albertville, AL, working WGY912-FEMA Winchester, VA, for emergency traffic at 1520. (Metcalfe-KY)
- 5858.0 USN MARS traffic: NNNOPSX with a brief message for NNNJOM in PACTOR at 2148. (Metcalfe-KY)
- 5616.0 Aeroflot 431 working Gander Aeradio, NF, and Shanwick Aeradio, Ireland, relaying message from RAF Ascot 9295 at 2245. (Hood-UK)
- 5628.0 Honolulu Aeradio, HI, working Singapore 1 and Asiana 272 at 1406. (Gordon Levine-Anaheim, CA)
- 5658.0 Speedbird 3571 working Karachi Aeradio, Pakistan, for selcal check (FJ-BG) at 1622. (Hood-UK)
- 5696.0 Delta 2 Delta (P-3 from NAS Whidbey Island, WA) working Rescue 1709 at 0330. (Levine-CA)
- 5700.0 Presumed ALE pulse at 0300. ALE pulses now heard on occasion on this frequency. (Haverlah-TX)
- 6167.2 VOA-Washington, DC, with a test transmission at 1525 using 110 baud ASCII. The text of the message indicated 300 baud, but only 110 was monitored. For the VOA Outreach program. (Metcalfe-KY and many others)
- 6375.0 WCC-Chatham, MA, with CQ CW marker at 0033. (Sue Wilden-Columbus, IN) *Actual window frequency, Sue, is 6375-Larry.*
- 6387.0 WNU42-Slidell Radio, LA, with CQ CW marker at 1005. (Wilden-IN) *Actual window frequency is 6389.6-Larry.*
- 6586.0 American 658 working New York Aeradio, NY, for selcal (BP-EJ) at 2155. (Hood-UK)
- 6628.0 Santa Maria Aeradio, Azores, working Lufthansa 336 at 2344. (Fred Dodge-Albany, NY)
- 6659.0 MIW14-Call preceded by Delta 11, Delta 12, Delta 13 up to Delta 21 at 0000. Are you familiar with this transmission? (Doug Vaznaian-North Kingstown, RI) *Welcome aboard, Doug. This is an Israeli Mossad number station you have reported-Larry.*
- 6673.0 San Francisco Aeradio, CA, working Northwest 27 at 0101. (Dodge-NY)
- 6683.0 SAM 202 working Andrews AFB, MD (Mystic Star), at 1536. (Dan Michel-Kennesaw, GA) Air Force One working Andrews at 1700. (Patrick Griffith-Denver, CO) AF1 at 2005 working Andrews. (JSM-BC)
- 6707.5 Presumed Link 11 data channel at 0153. (Haverlah-TX)
- 6712.0 Andrews GHFS, MD meeting its sometimes nightly 0617 schedule with an EAM pulled from a 0500++ GHFS EAM transmission cycle. (Haverlah-TX)
- 6728.0 SAM 677 (one of the E-4B aircraft) pulling SAM duty — who outside the NCA rates an E-4B? Calling SAM 200 and raising Andrews at 0108. (Haverlah-TX)
- 6730.0 Air Force Two working Andrews AFB, MD (Mystic Star), at 1355. (Michel-GA)
- 6736.0 S7A working Sidecar 2 — FT activity at 2351. (Dodge-NY)
- 6738.0 Rain 27 working Thule GHFS, Greenland, with a phone patch to Nordic Control at 0145. (Duke Rumley-Madison, NC)
- 6739.0 Ascot 3221 calling Architect at 0540 with no reply and gone. Lajes GHFS, Azores, with a Foxtrot broadcast at 0517. (Haverlah-TX)
- 6741.5 TSBD-PLM La Galite (501) Tunisian Navy combattante III M-class fast attack missile boat at 0559 in SITOR-A with "routine secret" traffic in French. (Baker-OH)
- 6746.0 Presumed Link 11 data channel at 0108. (Haverlah-TX)
- 6750.0 Gordo 11 working Lajes GHFS, Azores, with data transmissions for injection to Autodin. Moved here from 9023 at 0231. Apparent training for the Lajes operator. (Haverlah-TX)
- 6761.0 SAM 202 working Andrews AFB, MD (Mystic Star) at 1435. (Haverlah-TX)
- 6809.0 Continuous 24-hour traffic with WGY901 (net control), WGY912, 952 (on St. Croix), 962, 965, 992 (in Puerto Rico), 2VI (on St. Thomas - possibly a ham operator), 2VIB (ID'ed as 285th-military), VYI, WWV60, AAAUSA. FEMA traffic on both sidebands. (Dodge-NY) *901 is Maynard, MA; 912 is Winchester, VA; 952 and 962 are probably transportable stations; 2VI is the National Guard at St. Croix, VI (full call is AAC2VI) and 2VIB is probably a mobile setup for them-Larry.*
- 6884.5 RFHI-FF Noumea, New Caledonia, with ARQ-E idling at 1111. (Hetherington-FL)
- 6915.0 BAP46-XINHUA Beijing, China, with 75 baud English RTTY news at 1140. (Hetherington-FL)
- 6966.0 FDY-FAF Orleans, France, with 50 baud RTTY RY test tape at 1648. (Boender-Neth)
- 6993.0 Air Force One working Andrews AFB, MD (Mystic Star), at 1600. (Griffith-CO)
- 7311.0 FDY-FAF Orleans, France, with 50 baud RTTY RY test tape at 1538. (Boender-Neth)

- 7322.0 FDY-FAF Orleans, France, with 50 baud RTTY RY test tape at 1442. (Boender-Neth)
- 7383.0 Polish Embassy Copenhagen, Denmark, in POL-ARQ with messages for Warsaw at 1443. (Boender-Neth)
- 7474.0 MFA Warsaw, Poland, with POL-ARQ messages to the Polish embassy in Paris at 1512. (Boender-Neth)
- 7536.5 AC4-Assault Unit 4, USN Little Creek, VA, at 1518 working Hopper 54 (LCAC-54) calling on radio two, later Hopper 49 and 51 each calling on radio two no joy. (Baker-OH) *Glad you solved this one Rick-Larry.*
- 7634.0 RFGW-MFA Paris, France, with FEC-Amessages at 1557 to the following embassies: W5E, D7A, G7M, G8T, S5F, A9E, L4N and K4X. (Boender-Neth)
- 7642.7 MOD Paris, France, with ARQ-M2 messages at 1514. (Boender-Neth)
- 7842.4 CNM20/1X-MAP Rabat, Morocco, with French 50 baud RTTY news at 1010. (Hetherington-FL)
- 7946.1 RFLVJY-French Oceanographic Ship *Jules Verne* working RFLVIC-Marine Reunion Island, in ARQ-E at 1710. (Robert Hall-Capetown, RSA)
- 7963.5 Unid military at 1230, American male operator said they would not be up on this frequency that evening. (Baker-OH) *Rick, I show this one is a USMC/USN tactical channel for the record-Larry.*
- 8026.0 Air Force One working Andrews AFB, MD (Mystic Star), at 1302. (Michel-GA)
- 8120.5 Presumed Link 11 data channel at 0645. (Haverlah-TX)
- 8192.0 9MR-Malaysian Naval Radio, Johor Baharu, Malaysia, with RY/SIG ID (RMMJ) in 50 baud RTTY at 1645. (Hood-UK)
- 8240.0 UWWK-Freezer carrier *Serebryansk* working UIW-Kaliningrad Radio, Russia, at 0831. (Hood-UK)
- 8279.0 J8F06-m/v *Gill* working Helsinki Radio, Finland, with phone patch from Istanbul roads at 0700. (Hood-UK)
- 8404.0 EOYW-m/v *Arabat* (Ukrainian factory trawler) working CNP-Casablanca Radio, Morocco, in CW at 1510. (Hood-UK)
- 8431.0 KEJ-Hoolehua, Molakai, HI, part of Global Wireless Network with SITOR-B sports report at 1018. (Hetherington-FL)
- 8533.0 WLO-Mobile Radio, AL, with SITOR-B mode transmission with weather information at 1750. (Wilden-IN) *The actual window frequency is 8534.0-Larry.*
- 8549.0 UCE-Arkhangesk Radio, Russia, working UZUH-Arseniy *Moskvin* in SITOR-A at 1820. (Hood-UK)
- 8921.0 Caledonian 1419 calling Speedbird London (LDOC), England, at 1715, no answer. (Hood-UK)
- 8967.0 USN Foxtrot Tango net working F6E asking him to take FT and EAE at 0358. (Tim Dobbins-FL)
- 8971.0 Blackhawk 01 (probable US Customs aircraft) at 2252 working Shark 44 (WPB-1344 USCGC Block Island) on a Customs mission, relay of communications. Odd they were up here on the Navy Safety of Flight frequency. (Baker-OH)
- 8992.0 HOG working Ascension GHFS with phone patch to COMSUBLANT for an "Exercise Esteem Highly Alpha" at 0254. (Haverlah-TX)
- 9014.0 Vacuum working Raisin One with threat information at 1443. (Haverlah-TX)
- 9016.0 SAM 200 working MacDill GHFS, FL, at 1412. (Haverlah-TX)
- 9017.0 PACCOM 01 on F-094 (Mystic Star) working Andrews AFB, MD, then moved to F-295 (11460) then to F-99 for radio checks. Same time Andrews working Nightwatch and Bag Money on X-904 then moved to F-467 (9023) for net continuity checks at 1808. Nightwatch working Roadcrew with checks then moved to W-108 (12070) at 2255. (Paul Swietek-Gilbert, AZ)
- 9023.0 Deerhunter working Dragnet Yankee on self ID'ed B-29 transmitting 5 tracks at 1641. (Swietek-AZ)
- 9031.0 RAF Cyprus Flightwatch with weather for Larnaka at 1615. (Hood-UK)
- 9040.5 Presumed Link 11 data channel at 1553. (Haverlah-TX)
- 9120.0 Andrews AFB, MD, at 2145 with comm check on "five upper," F-005 with SAM 204. (Baker-OH)
- 9845.7 Unid station with Piccolo transmission noted at 2155. (Hetherington-FL)
- 9937.8 Unid station with Piccolo transmission noted at 2150. (Hetherington-FL)
- 10223.8 CW test tape at about 18 wpm around 1731. Transmission looks like code practice or worse yet, practice in carrying on a QSO, only this guy was playing both sides, Crummy procedures being used. Callsigns noted included: Eagle, Hydra, Tiger, Moray, and Raven. The messages were 5-letter/number code groups sent in 50 and 100 groups. Q-signals were standard commercial types except one was common to the sea going community — QTO (I have/have you left the dock yet). (Jeff Johnson-Ozark, MO) *The only thing that might be close here Jeff is a Coast Guard freq, but they normally use RTTY here and they are supposed to be out of the CW business-Larry.*
- 10493.0 Tommy Gun (possible TACAMO aircraft) in communication with WGY912-FEMA Winchester, VA, at 1625. Tommy Gun also attempted to reach WGY906-FEMA Denton, TX, for a "HF connectivity check," but failed. (Metcalfe-KY)
- 10515.7 LOL-Argentine Navy, Buenos Aires, at 2345 using 75 baud RTTY with "COAMAS 95" exercise traffic to PWX-Brazilian Navy, Brasilia. (Baker-OH)
- 10588.0 WGY946-FEMA Baton Rouge, LA, with voice coordination prior to 39-tone 2400-baud data transmission. (Metcalfe-KY)
- 10780.0 Cape Radio-Cape Canaveral, FL, working ARIA 2 (Advanced Range Instrumentation Aircraft) for Atlas launch on the ETR, weak. Ascension Radio began working ARIA 1 and had both aircraft loud and clear. Also heard ARIA control at 0211. (Dobbins-FL)
- 10869.3 RFTJ-FF Dakar, Senegal, at 2329 in ARQ-E3 with CodeV circuit run. (Baker-OH)
- 10891.0 NOJ-USCGC Kodiak, AK, barely heard with a SHARES exercise message for WWJ82-FHWA Grand Isle, NE, at 2140. Heard KBW49-DOE Las Vegas, NV, at 2138 also. (Metcalfe-KY)
- 10971.0 HBD20-MFA Berne, Switzerland, with 5-letter SITOR-A groups at 1537. (Boender-Neth)
- 11022.0 Desperate working Hammer at 1451, NGF control primary. (John Robinson-Nashville, TN) *Yes, from what I have seen, this does look like a USN Naval Gunfire Support frequency in the Caribbean-Larry.*
- 11080.5 Presumed Link 11 data channel at 0032. (Haverlah-TX)
- 11085.0 RFGW-MFA Paris, France, with FEC-A messages to embassies D6Z (Budapest, A9C (Bucharest) and U3H (Moscow) at 1426. (Boender-Neth)
- 11173.5 RFGW-MFA Paris, France, with FEC-A messages to embassies G8T (Belgrade) and A1G at 1506. (Boender-Neth)
- 11175.0 Wise 82 working Andrews GHFS, MD, with phone patch to Plantation (DSN 579-5764) at 2327. (Mr. T-UK) Reach 12261 (self ID'ed C-17 aircraft) working Andrews GHFS, MD, with phone patch to Dover AFB, DE, at 1955. (Haverlah-TX)
- 11220.0 PACCOM 01 working Andrews AFB, MD, with SAM 970 also on frequency, did checks on F-646 (13440), F-752 (8047) and passed along preflight frequencies of F-311 (11220) primary, F-732 (15011) secondary and F-633 (?) backup at 1838. (Swietek-AZ) *F-633 is 18290.0-Larry.*
- 11415.2 RFFP-MOD Paris, France, with ARQ-M2 messages to RFFVAY-Sarajevo at 1456. (Boender-Neth)
- 11460.0 SAM 049 working Andrews AFB, MD (Mystic Star) at 1512. (Michel-GA)
- 11518.2 RFFP-MOD Paris, France, with ARQ-M2 messages to RFFVAY Sarajevo at 1351. (Boender-Neth)
- 12165.0 RKB78-Moscow Meteo, Russia, with a nice fax chart (90/576) at 1652. (Hall-RSA)
- 12308.0 ESAF-m/v *Sompa* working Helsinki Radio, Finland, for phone patch to Tallinn at 0700. (Hood-UK)
- 12428.0 UUZU-m/v *Vega* working WCC-Chatham Radio, MA, with message for Turkey in CW at 1745. (Hood-UK)
- 12439.0 3EE06-m/v *Sun Crown* working XSW-Kaoshuing Radio, Taiwan, in CW at 0800. (Hood-UK)
- 12579.1 NRV-USCG Guam, West Pacific weather and typhoon warnings in SITOR-B at 1530. (Hall-RSA)
- 12652.0 SAB-Goteburg Radio, Sweden, with SITOR-A and signing CW at 1530. Another new station in the Goba Wireless Network. (Hetherington-FL)
- 12660.0 S70-Seychelles Radio, with CW marker at 0702. (Hood-UK) *Now if WLO would go away I could log that one. Nice catch-Larry.*
- 12697.0 UTW/USU-Mariupol Radio, Ukraine, with general information and navigation warnings (PRIIPS) in Ukrainian using 50 baud RTTY. Repeated at 0714 in very fast CW. (Hood-UK)
- 12811.3 HZY-Ras Tannurah Radio, Saudi Arabia, with announcement for traffic list next hour on 12811.3 and 16960 kHz in CW at 1148. (Hood-UK)
- 13204.0 Control working S11, S11 advised fly-by ok, coming around ready to land at Amarillo at 5 past the hour at 2052. (Swietek-AZ) *I know some B-1B flight testing was done on this one, as well as some other R&D testing; interesting comms, to say the least-Larry.*
- 13206.0 Plantation Ops (16th SOW Hurlburt Field, FL) at 1608 calling Goose 01, Goose 01 calling them on F1, neither could hear the other. Later Goose 01 worked Goose 99 and 99 called Plantation Ops. Turned up later on 9019 (apparently F4). (Baker-OH)
- 13373.45 5YD-Nairobi Air, Kenya, with 50 baud RTTY RY test tape at 2107. (Hetherington-FL)
- 13572.5 RFFX-MOD Paris, France, with ARQ-E encrypted messages at 0950. (Boender-Neth)
- 13839.7 RFFA-MOD Paris, France, with ARQ-M2 encrypted messages at 0940. (Boender-Neth)
- 14458.7 DFO46L-PIAB Bonn, Germany, with FEC-A German news nulletins at 1634. (Hall-RSA)
- 14575.0 RFGW-MFA Paris, France, with FEC-A 5-letter coded groups to Embassy at 1400. (Hetherington-FL)
- 14685.9 V5G-MFA Bucharest, Romania, with ROU-FEC transmission at 1410. Can't read ROU-FEC, but ID'ed by CW marker. (Hetherington-FL)
- 14710.0 Echo and Golf confirming "All events cancelled." Also heard here: AB/AG/BF/LD/H/K/W/Bayrider. Callsign Mike-XAE and callsign R8L=XCB. (Larry Fowler-MA) *I have nothing in my files on this one; maybe it is NATO or some such-Larry.*
- 14731.7 RFLVITW-FF St. Denis, Reunion Island, ARQ-E message to Pongendmobil Mayotte (Police) at 1230. (Hall-RSA)
- 14985.8 ZEN69-HKTI Victoria Island, Hong Kong, with ARQ-M4 idling at 1210. (Hall-RSA)
- 16340.2 CLP8-Cuban Embassy, Conakry, Guinea, with 5-letter groups for CLP1-Havana at 1125. (Hall-RSA)
- 16350.0 Unid station sending 5-letter/number groups at 1430 in CW. (Roger Parmenter-Hyannis, MA)
- 16851.8 SAB-Goteburg, Sweden, with SITOR-A, signing CW at 1525. (Hetherington-FL)
- 16977.5 3BM6-Port Louis Radio, Mauritius, with CW traffic list and beacon frequency info in CW at 1210, off frequency. (Hall-RSA)
- 17049.0 UUI-Odessa Radio, Ukraine, working UFSJ-Kapitan *Kaminskiy* using 50 baud RTTY at 1600. (Hall-RSA)
- 17443.2 BZG48-XINHUA Beijing, China, with 50 baud RTTY French news bulletins at 1201. (Hall-RSA)
- 17921.5 Spanish Embassy with SITOR-A transmission, off at 1758 with ZLS (We are suffering from lightning storms). (Hetherington-FL)
- 18034.16 CLP1-MFA Havana, Cuba, with 50 baud RTTY message in Spanish and English to Embacubas Tanzania and Uganda from Fidel Castro to the presidents of the two countries on the 33rd anniversary of their republics at 2000. Went to CW at 2030. (Hetherington-FL)
- 18057.5 Unid station sending Piccolo transmissions at 1810. (Hetherington-FL)
- 18257.0 HBD73-Unid Swiss Embassy with SITOR-A 5-letter messages, one for well over an hour and off at 1848. (Hetherington-FL)
- 18308.5 RFGW-MFA Paris, France, with FEC-A 5-letter code group messages to Embassies, end at 1425. (Hetherington-FL)

Glenn Hauser, P.O. Box 1684-MT, Enid, OK 73702
 fax: (405) 233-2948, or (704) 837-2216 ATT: Hauser

ALBANIA For a "new music experience" unlike anything you've heard before, go to R. Tirana, evenings on 7270 kHz (Kevin Hecht, PA, *World of Radio*) Local folk music. Albanian talk 0015-0300+ with two wobbly, unstable spurs varying ± 200 Hz around 7254.7 and weaker on 7285.2, //6080 (Brian Alexander, PA, *W.O.R.*)

ANGUILLA Caribbean Beacon's new SW transmitter and antenna installed, may start testing by January after government frequency selection delays (Paul Hunter, C.B., via Stig Hartvig Nielsen, *DX Focus*, via AWR *Wavescan* via BDXC *Communication*) 100% Gene Scott?

ARGENTINA 20276.0 active weekends, believed for Argentine UN troops in Europe; around 1300, R. América programming on USB, phone patches on LSB; at 1200, R. Continental (Harald Kuhl, Germany, HCJB *DX Partyline*) A Sunday 1800-2100+ 20276 LSB had sports with Caracol IDs for Colombian net (Alan Roberts, PQ)

AUSTRALIA R. Australia budget reduced by A\$2 million to help bail out ATV totalling A\$18 million (VOA *Communications World*) Plans to close Carnarvon site, where electricity costs four times as much as Shepparton, but will lose 56% of Asian capacity. Some transferred to Darwin, but does not operate at night and is too close to Indonesia unless new transmitters, aerials reconfigured for below 6 MHz (R. Netherlands *Media Network*) Heard 1250-1337+ on 6060, RA in Chinese with echo a word apart; two unsynchronized sites? (gh, OK)

BELGIUM To escape Martí on 6030, RVI moved NAM service to 5900 at 2230-0100, English from 0030 (Diane Mauer, Brian Alexander, Bob Thomas, Steven Cline) Weak but better except for ute on high side (gh)

BOLIVIA R. Estación Colonia, 6557, is in Yapacaní, Santa Cruz, at 2325-0040*. R. Abaroa adjusted to 4719.6, implying that Bolivians try to keep at least 15-20 kHz apart. R. Mauro Núñez disappeared from 6142 (Henrik Klemetz, Colombia, *W.O.R.*)

BRAZIL Radiobrás started new Spanish service to C & N América, daily 1330-1450 on 15445. Also a new program to Brazilian UN soldiers, *Boa Noite Angola*, schedule unknown, and there is a domestic program for truckers, *Br Camioneiro* on hundreds of

Rádio Nacional de Brasília

AM & FM stations Mon-Fri 0700-0800, also on Amazonian service 6180 & 11780, with toll-free call-ins. RNB external service manager Octávio Bonfim told me several months ago that new 250 kW transmitters and new antennas, more effective in directionality, would be operational about the beginning of 1996. (Arsênio Fornaro, NY)

CANADA *Cross-Country Checkup*, Sun 2109-2259 on CBC 9625, now has a single number, 1-800-363-1632 (gh)

CFCX, 6005, Montreal, off since August, was back in November, at 2200 and 1530, fair to good here in daytime, but slaughtered by Europeans eves and late afternoons (Kevin Hecht, PA) But where is CKOI in French; it's relaying CIQC in English (Denis Pronovost, *The Wave*) CIQC fall schedule includes *Elvis Hour* Sat 1900, *Jewish Variety Show* Sun 2100-2300 (*Le Guide*



Northern Québec Service

*All times UTC; All frequencies kHz; * before hr = sign on, * after hr = sign off; // = parallel programming; + = continuing but not monitored; 2 x freq = 2nd harmonic; W-95 = Winter season*

RadioPhile via Bill Westenhaver)

CHINA V. of Russia in English at 1700-1757 is believed to be relay from here, since before 1700 is Beijing in Vietnamese, both on 6590; likewise 1100-1157 on 17850 with typical Chinese-site closing at :57 (S. Aoki and Y. Kato, R. Japan *Media Roundup*)

COLOMBIA Among many MW harmonics, **Frecuencia Musical**, Quimbaya, Quindío, is always dependable around 1100 on 3225; also around 2200 on 4845. **R. Católica Nacional**, 3579.7, San Carlos, Túquerres, Nariño, is active 2 or 3 nights weekly 2200-0400 with 2 kW. *La Voz de la Selva*, 6170.3, has been renamed **Caracol Florencia** or Caracol 1090, reactivated. (Henrik Klemetz, Bogotá, *W.O.R.*)

COSTA RICA RFPI, 7385 sometimes fades down evenings as MUF plummets; also hit by co-channel from TWR Albania at 0615 and later; China in English 1200-1500; with *World of Radio* arriving earlier in week, RFPI may make permanent schedule changes from Jan 1; listen for announcements (gh) *Spiritual Awakenings* is now daily at 2355, 0755; also on WWCW Mon-Fri 1610 on 15685 (Jim Bean) *Report from the Desert*, Wed 1840, Thu 0240, 0940 is about veterans and their problems, not the Gulf War itself (Richard McCathy, AL)

After missing for weeks, TIAWR resumed *Wavescan* Sun at 2300 but an old tape joined in progress. 15460, 13750, 9725 (Diane Mauer, gh) Also ran across it Mon 1223 on 9725, 5030, boring and outdated (George Thurman)

CUBA R. Reloj relayed on 9830 USB at 0748, after RHC ended at 0700 (gh, OK) [non] R. Martí relay via WHRI ended Nov 14 due to budget (Seifert, VOA, *Jihad DX* via HCJB *DXPL*)

CZECH REPUBLIC R. Prague has peculiar flutter at 1400 on 13580, also heard at times evenings on 5930, 7345 (Joe Hanlon, PA) Perhaps two transmitters not precisely synchronized (gh) R. Prague, again in danger of being abolished, has been appealing for letters of support, and reception reports (John Wells via Marie Lamb, HCJB *DXPL*)

R. Ropa remains on LW, FM, and cable, but shut down SW 5980/5975 due to poor reception (Eugene Gebreurs, RVI *Radio World* via Cline)

DENMARK Look for R. Denmark's new monthly English hourly via Norway on first Sunday, UT Monday such as Jan 7-8, Feb 4-5, around 1345 on 15605, 1445 on 11840, 2245, 2345, 0045, 0145, 0245, 0345 on 6200, 7465 (gh)

ECUADOR Tho it has a 500-kW transmitter, HCJB's frequency schedule shows maximum now is 250 (gh) Clayton & Helen Howard, *DX Partyline* hosts 1961-1984, are now living in Oklahoma (Rich McVicar, *DXPL*)

La Voz de Su Amigo, Esmeraldas, 4019.9 = 3 x 1340, good from *1100 and local evening with news (Henrik Klemetz, Colombia)

GERMANY [non] Contrary to RCI relay schedule showing DW at 0100 on both 5960 and 6145, the two are not synchronized, so 6145 must be from somewhere else (gh, OK)

GOA AIR sked from Panaji site: Urdu 0830-1130 on 9595. Burmese 0100-0130 on 11620. Nepali 0130-0228 on 7250, 0700-0800 on 9595, 1330-1430 on 11850. Tibetan 0130-0200 on 9595, 1215-1330 on 11710 (Wolfgang Büschel, HCJB *DXPL*)

GREECE For D-95, V. of Greece at 0000-0350 on 6245, 7448, 9420, 1300-1450 on 9420, 15650 (John Babbis, MD, *W.O.R.*)

GUYANA Michael in Aruba is hearing 5950 mornings and evenings, sounds like 100 watts (Kirk Trummel, *Jihad-DX* via DSWCI *SW News*) GBC faxes that it's off

now, but back in January with 10 kW on 3290. 5950 (HCJB *Latest Catch*)

INDONESIA VOI is on new 9525 in English at 0800-0900 (John Mainland, NZ, *RNMN*) Also at 2000-2100, ex-domestic service (Eugene Gebreurs, RVI *Radio World*, via Cline, Mauer) Site is Cimanggis (Andy Sennitt, *RNMN*) But best chance for us to hear English is Tue 1230-1257 on RRI domestic service 9680, Australian-oriented language practice show (gh, OK)

IRELAND [non] RTE, lacking any SW transmitters of its own, tested via BBC last fall, but chose WPCR for daily broadcasts from Nov 30, weekdays 1930-2000, Sat 2000-2030, Sun 2100-2130 on 12160, from WRN feed at 1830; and for Australia, weekdays 1000-1030, weekends 1100-1130 on 5065, delayed from last available feed at 2200; mostly news and sports (Chuck Adair, WPCR)

ISRAEL Kol Israel on 7418 ex-7415 including English at 2000-2030, fighting it out with VOA Botswana on 7415 (Ed Rausch, NJ) Awful heterodyne; also Reshet Bet on 7498 ex-7495 at 0120 (Kevin Hecht, PA)

ITALY RAI W-95 in English: 0050-0110 11800, 9645, 6005; 0425-0440 on 7275, 5990; 1935-1955 on 7235, 6030; 2200-2225 11815, 9710, 5990 (BBCM)

A law was passed authorizing non-commercial entities to apply for external SW licenses, allowing political, cultural and religious stations to broadcast legally. Prior to this there were no regulations (AWR via BDXC) AWR Forlí operated in limbo since 1984, and will now apply for license, excited after six years of petitioning (AWR via BBCM)

KAZAKHSTAN [non] R. Almaty, 9560, 0631-0659 in English, poor copy due to co-channel Turkey (Brian Alexander, PA, *W.O.R.*) Is via Ukraine, also at 1700-1728 on 5940 (Wolfgang Büschel, HCJB *DXPL*)

KOREA SOUTH Some new programs on RKI, Mon *Notes of Nostalgia*, Korean court, folk, and traditional music (Gigi Lytle, TX) Also sounded like *Music Trap*, Korean pop music on Sat (gh)

MALDIVES ISLANDS VOM back on SW, new 11815 heard briefly in late Sept at 1026, 1926 (Takanaka, *SW DX Guide* via WRMI *Wavescan*) Anyone confirm lately, or ever?

MEXICO XERMEX, R. México Internacional, a.k.a. La Voz de México, is part of IMER, and relays some programs from XEB 1220; address: Margaritas 18, Col. Florida, 01030 México, DF, or Apartado Postal 19-737, 03900 México, DF. Tel +52-5-534-5210; fax +52-5-524-1758. Sked is 2000-0500 on 9705v, 5985v, 1300-1700 on same or alternate 11770; news daily at 0100-0130, 0400-0455, weekdays 1300-1400, weekends 1400-1430, weekdays 2000-2100, weekends 2000-2030, all in Spanish (BBCM) does contain occasional brief English segments (gh)

MOROCCO RTVM had English on 17815 Sunday +1842-1900 (Kevin Hecht, PA, *W.O.R.*) Checked next Sunday, 1802-1900* non-stop US pop music, 1830 with 4 minutes of English news; previous Sunday English at 1400-1500 on 17595 had changed to Arabic (Brian Alexander, PA, *W.O.R.*)

NEPAL I visited R. Nepal, met engineering director who expected to use 100 kW on 3230 instead of 7165 from mid-November to end of April, but exact dates depend on propagation; also with 40 kW on 5005. Because of mail theft, do not send dollar bills as return postage but three IRCs to R. Nepal, P.O. Box 634, Singha Durbar, Kathmandu; or to his personal address; Mr. Ram S. Karki, P.O. Box 4946, Kathmandu (William A. Matthews, RK1 *SW Feedback*)

NETHERLANDS RN documentaries UT Thu 0052 & 0452, Fri 2352; Jan. 18-26, "Bringing Home the Beef"; Feb. 1-8, Greenland (*On Target*, via Steven Cline, Bob Thomas)

NETHERLANDS ANTILLES What's the mix of Spanish stations on 5875 around 0400? (George Thurman, TX) RN Bonaire on 6165 and 6020, at 145 kHz separations, with audio deliberately offset so on 5875

we hear the same thing going by twice a few seconds apart; don't confuse with BBC actually on 5875 in Spanish to 0130* (gh, *W.O.R.*)

NEW ZEALAND Rudi Hill expected to undergo cardiac surgery in October; he may not get cards unless sent to home address: 498-B Adelaide Rd, Ber Hampore, Wellington (Gigi Lytle, via Diane Mauer) Subsequently heard him doing *Hymns for Today*, NZ church choirs, Mon 0730-0800 on 9700; his other shows include *On the March*, Thu 0910-0950; and 4-weekly *Around the World*, Tue 0930-1000 confirmed Nov. 14, repeated Fri 0430 on 15115 (gh) RNZI modified sked in Nov: M-F 1650-1750 on 5960, daily 1750-1950 on 9810, occasional 1207-1649 on 5960; still on 11735, 15115, 11900, 9700 at other times (Adrian Sainsbury, RNZI via George Thurman)

NIGERIA V. of Nigeria, external service only on 7255, unheard since Sept 26 (BBCM) Back on Nov 8, *0500 in English (BBCM via *DXPL*) Also hrd here around that date, but gone again on Nov 15 check. Don't you believe imaginary frequencies VON publishes in quarterly schedule—7225, 9690, 11770, 15120 as put unquestioningly on packet (gh)

Bandscan of home services confirmed these on air: 4770, 6050, 6090, 6100, 7275, 9570, possibly 6145; not heard: 3325, 3970, 4990, 6015, 7285 (Rocky Vermani, Port Harcourt, via John Fisher, *Fine Tuning*)

NORWAY R. Norway changed many frequencies Nov. 1 due to propagation, interference, including: 2300-0400 on 7465 ex-6040, 6010, 5940, 6030 (Olav Grimdalen, NTRA via Bob Thomas) Also in same time period 6200 replaced several frequencies. Grimdalen tells me new antennas for 13-17 MHz being installed at Sveio; and will install second transmitter there by end of 1996, perhaps replacing 20-year-old Fredrikstad (Joe Hanlon, PA)

PAKISTAN R. Pakistan is interested in a N. American service once additional funds are available (BBCM via HCJB *Latest Catch*) D-95 English: 0230-0245 on 7290, 15190, 17705, 17725, 21730; 0800-0847 and 1100-1120 on 17895, 15470; 1600-1630 on 9485, 9785, 11570, 11745, 13590, 15555; 1700-1800 on 5825, 11570. Oct programs included Pakistani Literature/Feminist Writings, Sun; Pakistan Valley and Culture, Mon; Wild Life and Natural History of Pakistan, Wed; World Media and Kashmir, Fri—all at 0815 and 1727 (via Gig Lytle, TX)

PERÚ 4154.7, R. Naylamp on new freq, poor around 0000, 4183.1, R. San Ignacio 0210-0316* from San Ignacio, Sinsicap district, La Libertad dept., near Membrillar, where R. Membrillar once used 4183, presumably same transmitter; announces 4200, and sign-on *0930, 6089.6v, R. San Miguel, Cajamarca, 0725-0838 in unexpected absence of Brazilian, 6281.1, R. Huancabamba, reactivated in Oct. (Henrik Klemetz, *Dateline Bogotá*) R. Altura on new 5956.7 at 1221 (Harald Kuhl, Ecuador, HCJB *TLC*) Second harmonics heard around 1415: on 12190, R. Nacional, Lima; on 12230, R. Unión (Rich McVicar, Ecuador, *Jihad-DX*)

PHILIPPINES FEBC R. International, Oct. guide: English 0000-0200 daily on 15450, 0930-1100 on 11635, 1300-1600 on 11995. *DX Dial* Sat 0940, Wed 1315 approx. *Mailbag* Thu 0945, Fri 1345, Sat 1540

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(FEBC)

PORTUGAL RDP Int'l puts a spur on 9470 at 2100-2400+; can't figure out how this derives from 6095, 9570, 9635 where also heard at 0000 (Kevin Hecht, PA) QSL card is a beautiful litho of a 15th century sailing ship; a keeper, great printing. Winnie Almeida also sends a 58-page travel brochure on top-flight enamel paper (John T. Wagner, OH, W.O.R.)

RUSSIA Special News for Polar Regions, W-95: 1500-1530 Tue & Thu from 6025 & 6190 Novosibirsk 100 kW 335°, 7255 Samara 100 kW 140° (Nikolai Rudnev, *Australian DX News*) Amid the VOR Arabic service is a program at 2000-2030 daily called *Bismilla As Sabakh*, address in English at end, P O Box 7240, Limassol, Cyprus; on 5935, 7420, 7425, all Russian sites, and maybe 6095 (Ivo Ivanov, Rumen Pankov via Büschel, Dave Kenny, BDXC)

SCOTLAND Bessemer Broadcasting, R&D station at Sheffield, England, has resumed 2404.5 kHz from new site (Dave Porter, *MW News* via HCJB TLC) Near Peterhead, Scotland, 24 hours (Porter & Steve Whitt, *MWN* via RNMN) Has 12-month antenna test licence, 1 watt (Dave Kenny, UK, *Jihad-DX*)



SLOVAKIA BBC has announced a relay via 250 kW Rimavská Sobota to Pakistan 1800-1900 on 12 MHz band (AWR *Wavescan* via WRMI via Diane Mauer)

SPAIN R. Liberty site at Pals was to close Oct 31: it had started in 1959 (*El País* via RN *Radio Enlace*) No longer any need for it; station taken over by VOA (REE *Distance Unknown*)

SWEDEN R. Sweden at 1430 only shifted 15240 to 15245 due to WEWN 15235 (Magnus, R. Sweden via George Thurman) Strangely enough, no WEWN heard here (gh) Latin American service at 0030 is pretty good here on 6065 until WYFR comes on at 0054 (Thurman, TX)

SWITZERLAND SRI news reported that residents of Schwarzenburg, where SRI has 4 x 250 and 2 x 100 kW transmitters, have called for a shutdown, saying it gives off "harmful electronic smog." Authorities only admit that residents' sleep is disturbed (Bob Thomas, CT)

THAILAND R. Thailand, 0030 in English back on 11905 this winter (Joe Hanlon, PA, W.O.R.) And English at 1900-2000, 2030-2045 on 11805 and 9655 tho announcing 11835 (Joe Barry, OR)

TURKEY VOT replaced 7190 with 9655 for English to us at 2300 and 0400, as of Mid-Nov (George Poppin, CA, via Joe Hanlon, and Bob Thomas)

UGANDA R. Uganda on new 7201.1 at *0245 xylo IS, 0300 English ID, then blocked by VOA (Ed Kusalik, Alta., NU via HCJB TLC) Aren't Afghanistan and Sudan enough around 7200?

UAE Abu Dhabi, English at 2322 good on two new winter frequencies, 9770 and 9605 with press review (Daryl Rocker, Chet Dougherty, Roger Chambers, MVSWLC DX Camp, NY) English runs 2200-2400 + a third frequency. A week's sked in Sept showed same titles seven days: 2200 *Holy Quran*, 2215 *Stories of the Prophets*, 2230 FM Programme [Capital Radio], 2300 *Arabic Writing of Today*, 2330 *Editorials, Music, Mail Box*, 2340 *Beloved Sands* (ASWLC) in mid-Nov had patriotic UAE song in English at 2345, *Women in the Quran* at 2347 (gh, OK) Also on 9695 (Gebreurs, RVI *Radio World* via Cline)

URUGUAY R. Emisora Montevideo on new 6145 until HCJB *0945, maybe via SODRE (Ernst Krüger, RGS, HCJB *DXPL*)

USA WWCR planned to have #4 transmitter on by Jan, or Feb at latest, 9475 day, 7435 dawn/dusk, new 120 mb channel at night. Meanwhile #1 on 3315 outpropagates higher channels from 0000, but in deference to DXers, goes back up to 7435 at 0900-1100 to keep DX window open on 90m. When programming permits, mainly on #3 daytime on 12160, WWCR presents live coverage of White House news conferences and briefings. From Jan 1, WWCR adds *The Olympic Report*, daily entertainment feature thru Aug. 25, exclusively on SW,

morning, midday, and afternoon. On Halloween, WWCR broadcast Viking Trading's *War of the Worlds* parody on collapse of the dollar; despite lots of disclaimers, many irate listeners took it seriously. *Mundo Radial*, gh's monthly Spanish DX report, retimed to 2315 certain Mondays on 9475. *World of Radio* may remain as given last month, but the Sat 1130 airing on 5065 may start at 1128 in anticipation of frequency-change exercise at 1159 (gh, WWCR) see also IRELAND

World of Radio on WSUI, 910, Iowa City, moved to Sun 10:30 pm Central, now = 0430 UT Mon.

Wavescan on "wormy" WRMI, 9955, announced sked in Nov: Sat 2215, Sun 0100, 1245, 1445, Mon 0100, 0215 (Diane Mauer, WI)

WGTC, 9475 continues with nothing but Bro. Stair, and expanded to Monday (George Thurman, TX) We hear that B.S. is getting WGTC time at bargain rates, nowhere near the kilodollars per month he was raising for this (gh) WGTC was being built for the *Overcomer* broadcast, is all legal and approved, soon to be 24 hours (*Overcomer* via Mauer)

WINB was still dark on Oct. 31 when John Stocksdale there told me they planned to be back by Jan. 1 (George Thurman, TX, W.O.R.)

WVHA lost its case, must pay local property taxes (Jim Bean, ME) moved live Sabbath broadcast to 15745 at 1400-1800 (Jim Moats, OH) Stanley Leinwoll has become WVHA frequency manager (David Mays, WDXC *Contact*)

KVOH may be next to approach 60 meter band, on 5085 (W.O.R.) WHRI had to turn 5745 back to VOA after 0300, and WHRI to 5760 (George Jacobs via George Thurman)

FCC International SW frequency skeds now available on Internet: on WWW via Mosaic and Netscape: http://www.fcc.gov/Bureaus/International/WWW/HF_broadcasting/hf.html—alternatively <http://www.fcc.gov/Welcome.html> or using FTP if WWW browser unavailable, [ftp.fcc.gov](ftp://ftp.fcc.gov)—login as "anonymous" and use your E-mail addr as password. HF files can be downloaded from the "pub/Bureaus/International/WWW/HF_broadcasting" directory (FCC via Bruce Elving)

VOA has been testing various digital modes, daytimes on 6165 via Greenville; may increase bit-rate, eventually voice-capable, high potential for new mode of international broadcasting (Bob Everett, VOA *Communications World*) Was ASCII, 300 baud, 170 Hz shift, OK for hobby RTTY or decoder, computer, but above 300 baud breaks down on HF, no good (Fred Osterman, Universal, VOA CW) Also hrd here, and much stronger on 9745, 15170—please get this noise outside the broadcast bands! (gh) 6165 at 1315-2000; and Delano at 1400-1600 on 9745, 1600-2000 on 15170 (VOA CW) During govt closedown in Nov, VOA was able to maintain normal sked for a few days, with re-runs or advance productions, tho 20% of broadcast employees and 83% of administrators were furloughed (Geoff Cowan, VOA Director on *Communications World*)

UZBEKISTAN R. Tashkent, English at +1206-1228* on 9715, under Bonaire; where else are they? (Roger Chambers, NY) Winter also on 5060, 5975, 6025 announced, plus 1330-1400, but best here on 9715 (Edwin Southwell, England, W.O.R.)



The Christian program in Bengali originally on 15470 at 1330-1400 and now on 7400 is believed to be via Tashkent, registered 200 kW, 130° (Nikolai Rudnev, Stroitel, Russia, *ADXN*)

ZANZIBAR R. Tanzania Zanzibar, Dole, 6014.65 at 1925-2000* in Swahili, ME vocals, not // 5050, mentioned Tanzania Zanzibar at s/ off (Ed Rausch, NJ) On 6014.64 at 1930-2000* local folk music, 1959 anthem, very weak (Brian Alexander, PA, W.O.R.)

Until the Next, Best of DX and 73 de Glenn!

Broadcast Loggings

Gayle Van Horn

SHORTWAVE BROADCASTING

- 0015 UTC on 11780**
BRAZIL: Radio Nacional Amazonia. Portuguese. Sign-on with "La Voz da Brazil" ID to anthem. News reports from foreign correspondents. Promos into Brazilian music at 0022. (Jerry Witham, Keaau, HI)
- 0018 UTC on 13760**
NORTH KOREA: Radio Pyongyang. Text on North Korea's army, // 15130 a S6-7, // 11335 a S5. Script included the role of the army for the 90's. Station ID at 0027 and intro for music program in honor of "our dear leader." (Sam Wright, Biloxi, MS)
- 0055 UTC on 6280.09**
LEBANON: Voice of Hope. English. VERY weak signal! Lady's regional topics about Lebanon. Middle Eastern vocals to Arabic announcer's newscast to 0104. No sign tonight of Lebanon's **Wings of Hope** on 9960. Signal improved by 0107 with vocalist tunes and talk to 0115. (Wright, MS)
- 0159 UTC on 4790**
PERU: Radio Atlantica. Spanish. Political speeches to Latin tunes. "Canned" IDs and public service announcements at 0225, to station slogans. (Giovanni Serra, Rome, Italy)
- 0226 UTC on 6726**
PERU: Radio Satellite. Spanish. Lady sending out message "comunicados" to 0230. "Canned" station ID with frequency quote and regional items for city of Santa Cruz. Commercial for a market and public service announcements. Peru's **Radio Lajas** heard on 5498 at 0240. Folk vocals to time check and greetings. Upbeat regional music-VERY weak but a nice catch! (Gayle VH, NC)
- 0227 UTC on 4799.76**
GUATEMALA: Radio Buenas Nuevas. Spanish. Male host ID sounded like, "esto el carason del area mamen San Sebastian de Huehuetenango...Radio Buenas Nuevas, en 4800 kilociclos en la banda de 90 metros...buenas noches," anthem and 0228". (Serra, Italy)
- 0235 UTC on 7210.12**
QATAR: Qatar Broadcasting Service. Arabic. Signal carrier noted at 0235. Very weak string instrument interval signal at 0243-0245. Male host with sign-on ID and brief news item. Holy Koran recitations audible to 0314, covered by amateur radio CQ call at 0315. (Gayle VH, NC)
- 0458 UTC on 5047**
TOGO: Radio Togo. French. Weak signal for interval signal, anthem and 0500 sign-on ID. (Witham, HI)
- 0500 UTC on 7330**
RUSSIA: Voice of Russia. Sign-on into world and regional news to 0510. Featured report, *Commonwealth Update*. (Witham, HI) Program on Tolstoy heard on 7180 at 2330. (Fraser, MA)
- 0550 UTC on 9605**
JAPAN: Radio Japan. *Radio Japan Magazine* program to 0555, followed by ID and Japanese service at 0600. (Witham, HI)
- 0710 UTC on 7140**
RUSSIA: Radio Rossii. Russian. Male monologue to ID at 7320. Delightful Russian folk music heard on 7200// 7210, 7320, 7345, 7440. (Witham, HI) Station heard on 4485 at 0057 with newscast, and weather forecast. (Serra, Italy)
- 1130 UTC on 13730**
AUSTRIA: Radio Austria International. Report on the post World War II Austrian film-making. (Bob Fraser, Cohasset, MA)
- 1151 UTC on 15530**
AUSTRALIA: Music show *Australian Country Style*. Station ID/frequency schedule to *Moon River* musical pause. World newscast. (Serra, Italy)
- 1235 UTC on 13625**
FRANCE: Radio France International. *Spotlight on Africa* program with report on the anti-military movement in Nigeria. (Fraser, MA)
- 1410 UTC on 13670**
BELGIUM: Radio Vlaanderen International. *Belgium Today* program covering the expansion of the high speed train system, and a planned protest strike. Station heard in French at 2230, 6030 with *Press Review*. (John Hanz, Old Bridge, NJ)
- 1445 UTC on 17715**
GERMANY: Deutsche Welle. German. Beethoven piano recital to ID at 1500. World news heard on 17765// 15275. (Hanz, NJ)
- 1515 UTC on 11995**
PHILIPPINES: FEBC. Religious sermon to contemporary Christian vocals. Musical bridge to ID and world newscast. (Serra, Italy)
- 1550 UTC on 11580**
GUAM: KTWR. Religious text amid "gurgling water dripper" interference. Station ID and QSL address at 1600. (Hanz, NJ) *To those still wondering what that "gurgling water dripper" noise is, it is an "over the horizon" transportable radar system, used to spot drugrunners, etc., and is run by the U.S. Navy!* (Gayle VH, NC)
- 1605 UTC on 15240**
SOUTH AFRICA: Channel Africa. African news about Tanzania, and Burundi suspends the World Food Program because of thievery. Great signal! (Hanz, NJ)
- 1625 UTC on 4790.6**
PAKISTAN: Radio Pakistan. An address on the quality of life in Pakistan, as related to the protection of the environment, thru the use of *Environmentally Friendly* technology. ID at 1645. (Witham, HI)
- 1650 UTC on 3912**
CLANDESTINE: Voice of the People. Korean. Male/female alternating with presumed political messages. Appeared to be jammed, but easily copied on LSB. (Witham, HI)
- 1705 UTC on 4635**
TAJIKISTAN: Tajik Radio. Tajik or Uzbek. News with mentions of Dushanbe. Interview at 1710, long pause at 1715, then into Middle Eastern music accompanied by a dramatic reading. (Witham, HI) Station heard on 4635 at 0134 in Tajik. (Serra, Italy)
- 1710 UTC on 5020**
SRI LANKA: SLBC. Presumed Sinhala. Regional music hosted by a "laid-back" announcer. Time pips and prayers at 1730, with anthem at 1735". (Witham, HI)
- 1800 UTC on 9200**
SUDAN: Radio Omdurman. "The English service of Radio Omdurman" ID. Regional news and main points review at 1810. *Press Coverage* program reviewing world and national headlines. QRM by RTTY at 1814. (Witham, HI)
- 1810 UTC on 4965**
ZAMBIA: Christian Voice. Various male/female religious sermons. Religious tunes to world newscast. Musical pause to station ID, heard on LSB to avoid RTTY. (Serra, Italy)
- 1840 UTC on 9780**
YEMEN: Yemeni Rep. Radio. DJ format with "lite pop" music program. Audio hum present and interference from Radio Portugal's Portuguese service. News briefs on the Middle East. Closing ID to national anthem at 1858. Arabic service at 1900 with ID and news format. (Frank Hillton, Charleston, SC)
- 1852 UTC on 11990**
KUWAIT: Radio Kuwait. Pop vocals to instrumental ballad. *Pop Sessions Special* program from male/female host. Music featured from U.K. artist-Count Indigo, Free Power, and Out of My Hair! S-10 signal. (Tom Banks, Dallas, TX)
- 1905 UTC on 13710**
BOTSWANA: Voice of America relay. Male newscast with correspondents, including sports roundup and ID. Major news points to VOA current affairs program about war in former Yugoslavia. heard on // 9760, 15410, 7415. (Serra, Italy)
- 1921 UTC on 11620**
INDIA: All India Radio-Bangalore. Musical intros for instrumental sitar music program. Editorial on Islamabad summit to station ID. Frequency/target area schedule at 2045. Subcontinental sitar music accompanied on tabla (drums) and tambura (drone lute). (Gayle VH, NC)
- 1945 UTC on 9605**
MADAGASCAR: Radio Netherlands relay. *African Season* featuring an exhibit of African metal art in London, // heard on 11655. (Fraser, MA)
- 1950 UTC on 9534.7**
ANGOLA: Radio Nacional de Angola. French/English. Pop vocals to French DJ. Vibraphone bell chime tone at 1955. "Radio Nacional" twice and bell chime repeat. Text on Luanda in French. English news at 2000 with ID. Portuguese pops from DJ format, audible at 2220 recheck. Great S8 signal quality! (Gayle VH, NC)
- 2010 UTC on 15160**
ALGERIA: Radio Algiers International. English world news at tune-in. English service ID at 2012 with continued news to 2016. Rock music from Robert Palmer to *Press Review* program. Heard to 2101* (Banks, TX; Wright, MS;)
- 2046 UTC on 15190**
EQT. GUINEA: Radio Africa. Contemporary Christian vocalist. Bible course offer with Pa. address. (No // heard on 7190, 7203) Religious text on Moses with signal overmodulation, heard to 2105. (Hillton, SC)
- 2200 UTC on 6160**
CANADA: CKZN-St. John's Newfoundland. Interesting discussion on the maritime provinces. RCI's Sunday afternoon program *Mailbag* noted at 2205 on 9805, 11945, 13690. **CBC N. Quebec Service** heard on 9625 at 0010 in French. (Taylor, FL) Canada's **CFCX** heard on 6005 at 2220. (Fraser, MA)
- 2330 UTC on 5975**
CANADA: BBC relay. *Seeing Stars* features finding a brown dwarf. (Fraser, MA)

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

Radio Stamp Collecting?



Perhaps it's the purely visual appeal, or the diversity of intriguing topics, but stamp collecting remains one of the most popular hobbies among DXers around the world.



Many philatelists specialize in topical collections representing a group of stamps with the same theme—space travel, wildlife, sports, or entertainers. The topics are as endless as your imagination! Have you noticed the stamps on your QSL card or



letters? Saved as what's known as a "cover," many stamped envelopes represent varied subjects and beauty. However, have you considered collecting radio-related stamps?

Issued in 1964 as a tribute to Amateur Radio, the US Postal Service honored the "hams" and it was an instant hit. In 1995, the Royal Mail of Great Britain honored Guglielmo Marconi, one hundred years after he sent the first wireless message.

Why not combine your hobby with RADIO stamp collecting!

AUSTRALIA

Radio Australia, 11800 kHz. Full data QSL card signed by Arie Schellaars-Asst. Transmission Manager. Station calendar and souvenirs enclosed. Received in 10 days for an English report and one IRC (returned with reply). Station address: P.O. Box 428G Melbourne Victoria, 3001 Australia. (Eric M. Walton, Vancouver, BC Canada)

Australia Defense Forces Radio/North West Cape NAVCOMMSTA, 8743 kHz. Full data QSL on station letterhead, signed by Adam Iffland for Hugh McKenzie-Manager. RAAF stickers and Oz Travellers pamphlet enclosed. Received in 30 days for an English report and one IRC (returned with reply). Station address: Anzac Park West Offices, APW 1-B-07 REID ACT Australia. (Walton, CAN)

VIM-Telstra Melbourne Maritime Radio, 8291 kHz USB. Full data QSL on station letterhead, signed by Roger Boyden-Manager. Received in 23 days for a utility audio cassette, view card, personal letter and one U.S. dollar. Station address: Boneo Rd., Cape Schanck VIC 3939 Australia. (Walton, CAN)

BRAZIL

Radio Nacional Bras, 15445 kHz. Partial data QSL form unsigned and personal letter from Gabriela Braga. Received in 128 days for an English report and two IRCs. Station address: P.O. Box 08840, Postal Zone 70913-790, Brasilia, DF Brazil. (Glenn R. Bowman, Saline, MI)

Swiss Radio International relay, 5885 kHz. Full data QSL card with "transmitter site" notation unsigned. Received in 19 days for an English report. Station address: Giacomettistrasse 1, 3000 Bern 15, Switzerland. (Charlie Washburn, Robbinsonton, ME; Patrick M. Griffith, Federal Heights, CO)

CANADA

Radio Canada International. Full data 50th Anniversary QSL card unsigned. Station souvenirs and frequency/program schedule enclosed. Received in three weeks for an English report and one IRC. Station address: P.O. Box 6000, Montreal PQ, H3C 3A8 Canada. (Steve Carter-KC5NAR, via Internet, mt@grove.net)

CFRX, 6070 kHz. Full data QSL map card signed

by Stephen Cannery. Received in 28 days for an English report. QSL address used c/o Official QSL Manager, Ontario DX Association, P.O. Box 161, Station A, Willowdale, ONT M2N 5S8, Canada. 905-853-3169 Voice/FAX. (Don Taylor, Green Cove Springs, FL)

CROATIA

HRT/Croatian Radio, 7370/5894/9830 kHz. Full data QSL on HRT station letterhead, unsigned. Received in 48 days after first English follow-up report, one U.S. dollar and a self-addressed-envelope (not used for reply). Station address: Hrvatska Radio-Televizija, Odasiljaci I Veze, 41000 Zagreb, Prilavlje 3, Croatia. Be advised *PWBR 1995 & 1996*, list an additional address for the Washington Bureau: Croatian-American Association. This address is not valid, and was returned to me as; "Return to Sender-Moved Not Forwarded." (Gayle Van Horn, Brasstown, NC)

ECUADOR

HCJB, 9745 kHz. Full data "Ilapingachos" QSL card unsigned. Received in 32 days for an English report. Station address: c/o English Section, Casilla 17-17-691, Quito, Ecuador. (Washburn, ME; George Knight, Garfield, NJ; Brian Bagwell, St. Louis, MO)

ICELAND

Icelandic National Broadcasting Service, 13860 kHz. Full data Icelandic scenery QSL card unsigned. Received in 39 days for an English report. Station address: Efstaleiti 1, 150 Reykjavik, Iceland. (Knight, NJ)

RUSSIA

The Voice of Vietnam via Tbilisskaya relay, 7250 kHz. Full data map/logo QSL card unsigned and silver station sticker enclosed. Received in 10 weeks for an English report. Station address: Dai Tieng Noi Viet Nam, 58 Quan Su Stree, Hanoi. (Steven Goldman, Roselle, IL; GVH, NC)

Voice of Russia, 15180, 9720 kHz. Full data Kremlin scenery QSL card unsigned. Received in 63 days for an English report. Station address: Pyantnitskaya ul. 25, Moscow, Russia. (Randy Stewart, Springfield, MO; Knight, NJ)

SHIP TRAFFIC

Poly Ken WG2688, 156.8 MHz (1939 Wheeler). Hand written letter from H.B. Kincade-Captain. Note included that the Captain just renewed his license at a mere 80 years young! Received in eight

days for an English utility report and return mint postage. Ship address: c/o Captain H.B. Kincade, 2521 West 18th St., Wilmington, DE 19806. (Hank Holbrook, Dunkirk, MD)

Stolt Helluland ELJZ7, 156.7 MHz (Chemical Tanker). QSL letter and photo of vessel. Received in 60 days for an English utility report and return mint postage. Ship address: c/o Stolt-Nielsen Inc., 8 Sound Shore Dr., Greenwich, CT (Holbrook, MD)

M/V Ambassador KRFK, 500 kHz. (Roll-On/Roll-Off). Full data canary yellow with black lettering station QSL card signed by Richard Monjure-Radio Officer. Received in 33 days for an English utility report and return mint postage. Ship address: c/o Crowley American Transport, P.O. Box 359004, Ft. Lauderdale, FL 33335. (Holbrook, MD) *Hank reports that this commercial ship, is one of only a few that make up a special QSL card for DX reports, and this practice is noted as very rare among ships. -ed.*

MEDIUM WAVE

KTWO, 1030 AM kHz. Full data station antenna QSL card unsigned and station sticker. Received in 380 days for an English AM report. Station address: 150 North Nichols, Casper, WY 82601. (Mark Redfox, Seattle, WA)

WBZ, 1030 AM kHz. Full data QSL info on station letterhead signed by Mark Manuelian-Manager. Received in 26 days for an English AM report. Station address: 1170 Soldiers Field Rd., Boston, MA 02134 (Knight, NJ)

WGHT, 1500 AM kHz. No QSL data on station letterhead signed by John Silliman-Gen. Manager. Station coverage map enclosed. Received in five days for an English AM report and programming cassette. Station address: P.O. Box 4015, Wayne, NJ 07474. (Knight, NJ)

UNITED STATES

KFS/Globe Wireless, 8558.5 kHz USB. Partial data (no frequency) station logo postcard with illegible signature. Received in 26 days for an English utility report and return mint postage (unused on reply). Station address: c/o Engineering Dept., One Meyn Rd., Half Moon Bay, CA 94019. (Stewart, MO)

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 Times, respectively.

Note that all dates, as well as times, are in UTC; for example, a show which might air at 0030 UTC Sunday will be heard on Saturday evening in America (7:30 pm Eastern, 4:30 pm Pacific).

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—space does not permit 24-hour listings except for the "Newline" 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 rerun, 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 T: Tuesday H: Thursday A: Saturday
M: Monday W: Wednesday F: Friday

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. All frequencies are in kHz.

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. Irregular broadcasts are indicated "tent" and programming which includes languages besides English are coded "vl" (various languages).

4: Choose the most promising frequencies for the time, location and conditions.

Not all stations can be heard and none all the time on all frequencies. To help you find the most promising 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	as: Asia
na: North America	au: Australia
ca: Central America	pa: Pacific
sa: South America	va: various
eu: Europe	do: domestic broadcast
af: Africa	om: omnidirectional
me: Middle East	

Consult the propagation charts. To further help you find the right frequency, we've included 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.

HOT NEWS AND HOT SPOTS

Democratic Voice of Burma (*Democratic Myanmar a-Thau*) via Radio Norway is daily 1100-1130 on 15170, 1430-1500 on 11850, says BBC Monitoring. It is now believed that the station is run by Burmese student activists accountable to the Norway-Burma Council but no longer with any formal control by the National Coalition Government of the Union of Burma. Address is P O Box 6720, St Olavs Plass, 0130 Oslo; fax +47 2 114988.

On *Media Network*, Victor Goonetilleke reported that Sarath Weerakoon had heard the long-silent R. Kawthoolei of the Karen National Union, back at *1030-1230 and 0030-0230 on 6355.5, countered by the government station for the same audience, Mayawadi Broadcasting on 5973 at 1130-1330, 1430-1530. In Colorado, Hans Johnson also heard this, presumably, with low modulation at 1330* and *1429 on 5972.9, per *Jihad DX* via DX Partyline.

SLBC reported that the clandestine station of the Liberation Tigers of Tamil Eelam had been off the air for nearly six days in late October and may have been hit during a military offensive at Nirveli, reports BBCM.

R. Dnestr International, Tiraspol. English on 6205 at 2130-2200 is shown by BBCM as on Mon, Wed, Thu only, but Sunday at 2200-2230, though Kevin Hecht hears no trace of the 2200 broadcast.

Abkhazia's separatist station was heard on 9494.75 from 0501 in Russian with IDs as *Govorit Sukhumi*, choral music until 0650 sign-off amid jamming; was best on lower sideband, says Rich McVicar. Ecuador on HCJB's *Latest Catch*.

Two Communist clandestines for Iran continue to use the same frequencies but at different times, indicating they share facilities, says BBCM. Recently, both vary 3875-3890, and V. of the Iranian Revolution also announces 4300 and 6420. It signed on at 1430, while V. of the Communist Party of Iran opened at 1700. IDs are *Sedaye Hezb-e Komanist-e Iran* for VOCPI in Persian, and *Ira Dangi Shurashi Iran* for VOIR in Kurdish. Also for Iran, V. of the Mojahed continually varies frequencies to escape jamming; for example one day at 1945 on 6020, and delayed a few minutes on 5445-5465; 5 weeks later at 0300 and 0700 on 6175, 1800 on 5475; 7075 next day at

1600 on 5170, 5765; jamming is either noise or relays of VIRI. Iranian official radio, the latter heard on 6020, 7070.

A new Kurdish station is Denge Medya (Voice of the Land of the Medes, an ancient name for the Kurdish People). It was first mentioned by Med-TV, London, but apparently there is no connection except in name. Schedule was given as 0800-1100 and 1300-1500 on 9855, 11985 and 15255 in Turkish, Kurdish and Arabic, but heard only in Kurdish and only on 9855, which has been pinpointed to Russia. It opens with the Kurdish national song "*Aq Raqib*." Typical Russian test tones precede the broadcast, and schedule is announced in Moscow time, says BBCM.

Voice of Iraqi Kurdistan, Salah al-Din, expanded schedule on 4180v, confirmed by BBCM as: 0345-0500 Kurdish, 0500-0600 Arabic, 1030-1200 & 1645-1800 Kurdish, 1800-1900 Arabic, 1900-1930 Kurdish and Arabic, sometimes later as also for Europe.

Voice of the Palestinian Islamic Revolution was originally a program within Iran's Arabic service, but now it seems to be a separate station on frequencies used

by Iran at other times: 0400-0430 on 9670, 5995, 1900-1930 on 15230, 7230, reports BBCM.

Republic of Sudan Radio began using 9025 for all its broadcasts, not just those blocking clandestine Voice of Sudan at 1300-1500; then VOS moved to 9000 where it was clear briefly until ROSR followed it there too, says BBCM. Edwin Southwell in England heard ROSR's English hour at 1800 on 9000, still announcing 9200 but the next day it was not on either frequency; while one or the other was in Arabic at 1457 on 9000. BBCM found an additional VOS morning broadcast at 0300-0600 on 9000, also jammed. On a day when Arthur Cushen, NZ, listened for English at 1800, he heard ROSR on 9020.

Angola's VORGAN shifted from 7100 to 7090, heard at 1830-2000+ by Don Moman, Alberta, *DX Partyline*.

There's little clandestine activity reported from Latin America, but in October, Henrik Klemetz had not heard the FARC station for Colombia since June 30 when it broadcast two 20-minute programs twice at 2200-2240 on 6259.2, called Su Estación Fariana.

MORE SW NEWS COMPILED BY GLENN HAUSER

MT MONITORING TEAM

Gayle Van Horn, Frequency Manager
North Carolina

Jim Frimmel, Program Manager
Texas

Dave Datko
California

Jeff Demers
New Hampshire

Next Reporting Deadline
January 20, 1995

Jacques d'Avignon
Propagation Forecasts
Ontario, Canada

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)

AWR Latin America [T-F]*
BBC (am) (Newsdesk)
BBC (as pac) (Newsdesk)
BBC (south as)
Canada (North-Quebec) [S]
China Radio Intl
Croatian Radio
Monitor Radio Intl [T-A]
Radio Australia
Radio Bulgaria
Radio Canada Intl
Radio Exterior de Espana
Radio New Zealand Intl
Radio Prague
Radio Thailand
Radio Vilnius
Voice of America (am)
Voice of America (as)
Voice of America (ca)
Voice of Russia
WHRI (Indiana) [T-A]
0003
Radio Pyongyang
0010
China Radio Intl*
Voice of America (ca) [T-A]*
0015
Radio Cairo
0030
All India Radio
Radio Netherlands Intl
Radio New Zealand Intl [M-F]
Radio Sweden [T-A]
Radio Thailand [T-S]
Radio Vlaanderen Intl
Voice of America (am) [T-S]
(Special English)
Voice of America (as) (Special English)
Voice of Russia
0035
Voice of Iran
0045
BBC (am)*
BBC (as pac)*
BBC (south as)*
0050
RAI Italy

0100 UTC

(8:00 PM EST, 5:00 PM PST)

BBC (am) (Newsdesk)
BBC (as pac)
BBC (south as) (Newsdesk)
Canada (North-Quebec)
Croatian Radio
Deutsche Welle
HCJB (am)
Monitor Radio Intl [T-A]
R Slovakia Intl [A]*
R Slovakia Intl [S/T-F]

Radio Australia
Radio Exterior de Espana
Radio Havana Cuba [T-S]
Radio Japan
Radio Korea
Radio New Zealand Intl
Radio Norway Intl [M]
Radio Prague
Radio Ukraine Intl
Radio Yugoslavia [M-A]
Swiss Radio Intl
Voice of America (am)
Voice of America (as)
Voice of America (ca)
Voice of Indonesia
Voice of Russia
Voice of Vietnam
WWCR #1 (Tennessee) [T-A]
0110
Radio Australia [M-F]*
0113
Radio Havana Cuba [T-S]*
0130
Radio Austria Intl
Radio Havana Cuba [T-S]
Radio Netherlands Intl
Radio Sweden [T-A]
Voice of Greece
Voice of Russia
Voice of Vietnam
0145
Radio Tirana
0155
Voice of Indonesia

0200 UTC

(9:00 PM EST, 6:00 PM PST)

BBC (af) (Newsday)
BBC (am) (Newsday)
BBC (as pac) (Newsday)
BBC (eu) (Newsday)
BBC (south as) (Newsday)
Canada (North-Quebec) [S]
Croatian Radio
Deutsche Welle
Monitor Radio Intl [T-A]
Radio Australia
Radio Budapest
Radio Canada Intl
Radio Havana Cuba [T-S]
Radio New Zealand Intl [M-A]
Radio Romania Intl
Radio Yugoslavia
RAE Argentina [T-A]
Voice of America (as)
Voice of Myanmar (Burma)
Voice of Russia
Voice of Vietnam
0203
Voice of Free China
0212
Radio Havana Cuba [T-S]*
0215

Radio Cairo
Radio Nepal
0230
Radio Austria Intl
Radio Havana Cuba [T-S]
Radio Netherlands Intl
Radio Pakistan
Radio Portugal Intl [T-A]
Radio Sweden [T-A]
Radio Tirana
Voice of Russia [T-A]
Voice of Vietnam
0255
Radio Canada Intl [T-A]

0300 UTC

(10:00 PM EST, 7:00 PM PST)

BBC (af)
BBC (am)
BBC (as pac)
BBC (eu) [S-F]
BBC (south as)
Canada (North-Quebec)
Channel Africa
China Radio Intl
Croatian Radio
Deutsche Welle
Monitor Radio Intl [T-A]
Radio Australia
Radio Canada Intl
Radio Havana Cuba [T-S]
Radio Japan
Radio New Zealand Intl [M-A]
Radio Norway Intl [M]
Radio Prague
Radio Thailand
Voice of America (af) [A-S]
Voice of Russia
WHRI (Indiana) [T-A]
WWCR #3 (Tennessee) [T-A]
0301
Voice of America (af) [M-F]*
0303
Voice of Free China
0310
China Radio Intl*
0313
Radio Havana Cuba [T-S]*
0315
Radio Cairo
0320
Radio Philipinas [M-A]
0330
BBC (eu) [A]
Radio Budapest
Radio Dubai
Radio Havana Cuba [T-S]
Radio Prague
Radio Sweden [T-A]
Voice of America (af) [M-F]
(Special English)
Voice of Russia
0340

BBC (af) [S]*
Voice of Greece
0355
Radio Japan [W-M]

0400 UTC

(11:00 PM EST, 8:00 PM PST)

BBC (af) (Newsdesk)
BBC (am) (Newsdesk)
BBC (as pac)
BBC (eu) [S-F] (Newsdesk)
BBC (south as) (Newsdesk)
Canada (North-Quebec)
Channel Africa
China Radio Intl
Croatian Radio
Deutsche Welle
Monitor Radio Intl [T-F]
Radio Australia
Radio Canada Intl
Radio Havana Cuba [T-S]
Radio New Zealand Intl [A]
Radio New Zealand Intl [M-F]*
Radio Romania Intl
Radio Tanzania
Radio Ukraine Intl
Swiss Radio Intl
Voice of America (af)
Voice of America (me)
Voice of Russia
Voice of Turkey
WHRI (Indiana) [T-A]
WWCR #3 (Tennessee) [T-A]
ZBC Zimbabwe
0403
Radio Pyongyang
0410
China Radio Intl*
0412
Radio Havana Cuba [T-S]*
0425
RAI Italy
0430
BBC (af) [A-S]*
BBC (eu) [A] (Newsdesk)
Radio Havana Cuba [T-A]
Radio Netherlands Intl
Voice of Russia
0431
Voice of America (af) [M-F]*

0500 UTC

(12:00 PM EST, 9:00 PM PST)

BBC (af) (Newsday)
BBC (am) (Newsday)
BBC (as pac) (Newsday)
BBC (eu) (Newsday)
BBC (south as)
Canada (North-Quebec)
Channel Africa
China Radio Intl
Deutsche Welle
HCJB (am)

Monitor Radio Intl [T-F]
Radio Australia
Radio Bulgaria
Radio Cameroon
Radio Exterior de Espana
Radio Havana Cuba [T-S]
Radio Japan
Radio New Zealand Intl [S-F]
Voice of America (af)
Voice of America (me)
Voice of Israel
Voice of Russia
WYFR (Satellite Network) [A]
0510
China Radio Intl*
Radio Australia [M-F]*
0513
Radio Havana Cuba [T-S]*
0530
BBC (af) [A-S]*
Radio Austria Intl
Radio Havana Cuba [T-A]
Radio Romania Intl
Voice of Nigeria
Voice of Russia
0555
Radio Japan [A]

0600 UTC

(1:00 AM EST, 10:00 PM PST)

BBC (af)
BBC (am) (Newsday)
BBC (as pac)
BBC (eu) (Newsday)
BBC (south as)
Canada (North-Quebec)
Deutsche Welle
Monitor Radio Intl [T-F]
Radio Australia
Radio Canada Intl [M-F]
Radio Havana Cuba [T-S]
Radio Japan
Radio Korea
Radio New Zealand Intl [M-A]
Swiss Radio Intl
Voice of America (af) [A-S]
Voice of America (me)
Voice of Kenya
Voice of Malaysia
Voice of Russia
WWCR #1 (Tennessee) [T-A]
0601
Voice of America (af) [M-F]*
0603
Croatian Radio
Radio Pyongyang
0612
Radio Havana Cuba [T-S]*
0615
Swiss Radio Intl (eu)
0630
BBC (af) [A-S]*
Radio Austria Intl [T-S]

Radio Havana Cuba [T-S]
 Voice of Nigeria [M-F]
 Voice of Russia
 0631
 Radio Romania Intl
 0645
 Radio Romania Intl
 Voice of Nigeria [T-F]*
 0655
 Radio Japan [W-M]
 Voice of Med. (Malta) [M-F]

0700 UTC
(2:00 AM EST, 11:00 PM PST)

BBC (af)
 BBC (am)
 BBC (as pac)
 BBC (eu)
 BBC (south as)
 KWHR (Hawaii) [M-F]
 Monitor Radio Intl [T-F]
 Papua New Guinea
 Radio Australia
 Radio Japan
 Radio New Zealand Intl [A]
 Radio New Zealand Intl [M-F]*
 Radio Norway Intl [S]
 Voice of Myanmar (Burma)
 Voice of Russia
 0703
 Radio Pyongyang
 Voice of Free China
 0710
 Radio Australia [M-F]*
 0715
 Swiss Radio Intl (eu)
 0730
 HCJB (eu)
 Radio Netherlands Intl
 Radio Vlaanderen Intl
 Voice of Greece
 Voice of Russia
 0750
 Radio New Zealand Intl [M-F]*
 0755
 Radio Japan
 Voice of Med. (Malta) [M-F]

0800 UTC
(3:00 AM EST, 12:00 PM PST)

BBC (af)
 BBC (am)
 BBC (as pac)
 BBC (eu)
 BBC (south as)
 KNLS (Alaska)
 Monitor Radio Intl [M-A]
 Radio Australia
 Radio Korea
 Radio New Zealand Intl
 Radio Pakistan
 Radio Prague
 Voice of Indonesia [A-H]
 Voice of Malaysia
 Voice of Russia
 WWCR #3 (Tennessee) [S]
 0803
 Croatian Radio
 Radio Pyongyang
 0810
 Radio New Zealand Intl [M-F]*
 0830
 R Slovakia Intl
 Radio Austria Intl [T-S]
 Radio Netherlands Intl
 Voice of Russia [T-A]
 0855
 Voice of Indonesia [A-H]

0900 UTC
(4:00 AM EST, 1:00 AM PST)

BBC (af)
 BBC (am)
 BBC (as pac)
 BBC (eu)
 BBC (south as)
 China Radio Intl
 Deutsche Welle
 HCJB (pac)
 Monitor Radio Intl [M-A]
 Papua New Guinea [M]*
 Radio Australia
 Radio Japan
 Radio New Zealand Intl [M-A]
 Swiss Radio Intl
 Voice of Russia
 0910
 China Radio Intl*
 Radio Australia [M-F]*
 0930
 FEBC (Philippines) [M-A]
 Radio Netherlands Intl
 Voice of Armenia [S]
 Voice of Russia
 0945
 Deutsche Welle [M-F]*
 0950
 Russia (Radio Pacific Ocean)
 [A]
 0955
 Radio Japan

1000 UTC
(5:00 AM EST, 2:00 AM PST)

All India Radio
 BBC (af) (Newsdesk)
 BBC (am) (Newsdesk)
 BBC (as pac) (Newsdesk)
 BBC (eu) (Newsdesk)
 China Radio Intl
 Monitor Radio Intl
 Papua New Guinea
 Radio Australia
 Radio New Zealand Intl [S-F]
 Radio Prague
 Radio Tanzania
 Radio Vlaanderen Intl [M-A]
 Voice of America (as)
 Voice of America (ca)
 Voice of Kenya
 Voice of Russia
 Voice of Vietnam
 WWCR #1 (Tennessee) [H-F]
 WYFR (Satellite Network) [M-A]
 1010
 China Radio Intl*
 Radio New Zealand Intl [M-F]*
 1020
 Radio New Zealand Intl [H]*
 1030
 FEBC (Philippines) [M-F]*
 Radio Austria Intl [M-A]
 Radio Dubai
 Radio Netherlands Intl
 Voice of Nigeria
 Voice of Russia
 1045
 Voice of Nigeria [A-S]*

1100 UTC
(6:00 AM EST, 3:00 AM PST)

BBC (af) (Newsdesk)
 BBC (am) [] (Newsdesk)
 BBC (as pac) (Newsdesk)
 BBC (eu) (Newsdesk)
 BBC (south as) (Newsdesk)
 Deutsche Welle

Monitor Radio Intl [M-A]
 Papua New Guinea
 Radio Australia
 Radio Ghana [A-S]
 Radio Japan
 Radio Jordan
 Radio New Zealand Intl (Newsdesk)
 Radio Singapore Intl
 Swiss Radio Intl
 Swiss Radio Intl (eu)
 Voice of America (as)
 Voice of America (ca)
 Voice of Israel
 Voice of Russia
 WYFR (Satellite Network) [M-A]
 1102
 Radio Mozambique
 1103
 Radio Pyongyang
 1105
 Radio Pakistan
 1110
 Radio Australia*
 1120
 Vatican Radio [M-A]
 1130
 Radio Austria Intl
 Radio Korea
 Radio Netherlands Intl
 Radio Prague
 Radio Singapore Intl
 Voice of Asia
 Voice of Russia
 1135
 Voice of Iran
 1145
 Deutsche Welle [M-F]*
 1155
 Radio Japan [S-F]

1300 UTC
(8:00 AM EST, 5:00 AM PST)

BBC (af) (Newshour)
 BBC (am) (Newshour)
 BBC (as pac) (Newshour)
 BBC (eu) (Newshour)
 BBC (south as) (Newshour)
 Canada (North-Quebec) [A-S]
 China Radio Intl
 KNLS (Alaska)
 Monitor Radio Intl [M-A]
 Papua New Guinea
 Polish Radio [A]
 Polish Radio [M-F]*
 Radio Australia
 Radio Canada Intl
 Radio Ghana
 Radio Norway Intl [S]
 Radio Romania Intl
 Radio Singapore Intl
 Radio Tanzania [A-S]
 Swiss Radio Intl
 Swiss Radio Intl (eu)
 Voice of America (as)
 Voice of Kenya
 Voice of Russia
 WYFR (Satellite Network) [M-F]
 1303
 Radio Pyongyang
 1310
 China Radio Intl*
 Radiobras [M-F]*
 1324
 HCJB (am) [M-F]
 1328
 Radio Cairo
 1330
 All India Radio
 FEBC (Philippines) [M-A]
 Radio Austria Intl
 Radio Canada Intl
 Radio Dubai
 Radio Finland
 Radio Netherlands Intl
 Radio Singapore Intl
 Radio Sweden [M-F]
 Radio Tashkent
 Radio Vlaanderen Intl [S]
 Radio Yugoslavia
 Voice of America (as) (Special English)
 Voice of Russia [M-A]
 Voice of Turkey
 Voice of Vietnam
 WYFR (Satellite Network) [M-F]
 1335
 FEBC (Philippines) [M-F]*
 1355
 Radio Singapore Intl

1200 UTC
(7:00 AM EST, 4:00 AM PST)

BBC (af) [M-A]
 BBC (am)
 BBC (as pac) [M-A]
 BBC (eu)
 BBC (south as)
 Canada (North-Quebec) [A-S]
 China Radio Intl
 Croatian Radio
 Monitor Radio Intl [M-A]
 Papua New Guinea
 Radio Australia
 Radio France Intl
 Radio Korea
 Radio New Zealand Intl [H-T]
 Radio Singapore Intl
 Radio Tashkent
 Voice of America (as)
 Voice of Russia
 WHRI (Indiana) [A]
 WWCR #1 (Tennessee) [T-A]
 WYFR (Satellite Network) [M-F]
 1203
 Voice of Free China
 1204
 HCJB (am) [M-F]
 1210
 China Radio Intl*
 1215
 BBC (af) [M-A]*
 BBC (as pac) [M-F]*
 BBC (eu)*
 BBC (south as) [M-A]*
 1230
 HCJB (am) [M-F]*

Radio Bangladesh [S-M]
 Radio Bulgaria
 Radio Cairo
 Radio Canada Intl
 Radio Finland
 Radio Korea [S-W/A]
 Radio Netherlands Intl
 Radio Singapore Intl
 Radio Sweden [M-F]
 Voice of Russia
 Voice of Vietnam
 WYFR (Satellite Network) [M-F]
 1231
 Radio France Intl [T]*
 1240
 Voice of Greece

1400 UTC
(9:00 AM EST, 6:00 AM PST)

BBC (af)
 BBC (am)
 BBC (as pac)
 BBC (eu)
 BBC (south as)
 Canada (North-Quebec) [A-S]
 China Radio Intl
 Monitor Radio Intl [M-A]
 Radio Australia
 Radio Cameroon
 Radio Canada Intl [S]
 Radio France Intl
 Radio Ghana
 Radio Japan
 Radio Norway Intl [S]
 Radio Prague
 Radio Vlaanderen Intl [M-A]
 Voice of America (as)
 Voice of Russia
 WYFR (Satellite Network) [M-F]
 1410
 China Radio Intl*
 1415
 Radio Nepal
 1424
 HCJB (am) [M-F]
 1430
 FEBC (Philippines) [M-A]
 Radio Austria Intl
 Radio Canada Intl
 Radio Netherlands Intl
 Radio Romania Intl
 Radio Sweden [M-F]
 RTM Morocco [S]
 Voice of Myanmar (Burma)
 Voice of Russia
 1431
 Radio France Intl [T]*
 1435
 Voice of Greece
 1445
 All India Radio
 Voice of Myanmar (Burma)
 1455
 Radio Japan [A]
 Voice of Med. (Malta) [M-F]

1500 UTC
(10:00 AM EST, 7:00 AM PST)

BBC (af)
 BBC (am)
 BBC (as pac) [A-S]
 BBC (eu)
 BBC (south as)
 Canada (North-Quebec) [A-S]
 Channel Africa
 China Radio Intl
 Monitor Radio Intl [M-A]
 Radio Australia
 Radio Canada Intl [S]
 Radio Japan
 Radio Jordan
 Radio Norway Intl [S]
 Radio Omdurman
 Swiss Radio Intl
 Voice of America (as)
 Voice of America (me)
 Voice of Russia
 WWCR #1 (Tennessee) [M-F]
 1503
 Radio Pyongyang
 1510
 China Radio Intl*
 1530
 All India Radio*

FEBA (Seychelles)
 FEBC (Philippines) [M-A]
 Radio Netherlands Intl
 Radio Portugal Intl [M-F]
 Voice of Nigeria [M-F]
 Voice of Russia
 WYFR (Satellite Network) [M-F]
 1535
 Voice of Iran
 1550
 Voice of Med. (Malta) [F]
 1555
 Radio Japan [A]
 Voice of Med. (Malta) [M-H]

1600 UTC
(11:00 AM EST, 8:00 AM PST)

BBC (af)
 BBC (am)
 BBC (as pac)
 BBC (eu)
 BBC (south as)
 Canada (North-Quebec) [A-S]
 Channel Africa
 China Radio Intl
 Deutsche Welle
 Estonian Radio [M-F]
 Monitor Radio Intl [M-A]
 Radio Australia
 Radio Canada Intl [S]
 Radio France Intl
 Radio Jordan
 Radio Korea
 Radio Pakistan
 Radio Tanzania
 Voice of America (af) [A-S]
 Voice of America (as)
 Voice of America (me)
 Voice of Ethiopia
 Voice of Kenya
 Voice of Russia
 Voice of Vietnam

WWCR #1 (Tennessee) [M-F]
 WYFR (Satellite Network) [A]
 1610

China Radio Intl*
 1612
 Vatican Radio [M-F]
 1630
 Channel Africa [F]*
 Radio Austria Intl
 Radio Canada Intl
 Radio Dubai
 Radio Finland
 Voice of America (af) [M-F]*
 Voice of America (as) (Special English)
 Voice of America (me) (Special English)
 Voice of Ethiopia
 Voice of Russia
 1633
 Deutsche Welle [M]*
 1638
 Deutsche Welle [T-F]*
 1645
 BBC (am) [S-F]*
 BBC (as pac) [M-F]*
 BBC (eu) [S-F]*

1700 UTC
(12:00 M EST, 9:00 AM PST)

BBC (af)
 BBC (am)
 BBC (as pac)
 BBC (eu) [A]
 BBC (south as)

Canada (North-Quebec) [A]
 Channel Africa
 China Radio Intl
 HCJB (eu)
 Monitor Radio Intl [M-A]
 Radio Australia
 Radio France Intl
 Radio Japan
 Radio New Zealand Intl [M-F]*
 Radio Pakistan
 Radio Prague
 Swiss Radio Intl
 Swiss Radio Intl (eu)
 Voice of America (af)
 Voice of America (as)
 Voice of America (me)
 Voice of Russia
 WRNO (Louisiana) [M-F]
 WWCR #3 (Tennessee) [A]
 WYFR (Satellite Network) [M-A]
 1703
 Radio Pyongyang
 1710
 China Radio Intl*
 Radio Australia*
 1715
 Radio Sweden
 Radio Tirana
 Vatican Radio
 1725
 Radio New Zealand Intl [F]*
 1730
 Radio Netherlands Intl
 Radio Romania Intl
 Voice of Russia [S-F]
 1740
 BBC (af)*
 1745
 Radio Canada Intl [M-F]
 1755
 Radio New Zealand Intl [M-W]*

1800 UTC
(1:00 PM EST, 10:00 AM PST)

All India Radio
 BBC (af) (Newsdesk)
 BBC (am) (Newsdesk)
 BBC (eu) (Newsdesk)
 BBC (south as) (Newsdesk)
 Canada (North-Quebec) [A]
 Monitor Radio Intl [M-A]
 Polish Radio [A]
 Polish Radio [M-F]*
 Radio Australia
 Radio Cameroon
 Radio New Zealand Intl [M-F]*
 Radio Omdurman
 Radio Prague
 Radio Tanzania
 Radio Yemen
 Voice of America (af) [A-S]
 Voice of America (af) [M-F]*
 Voice of America (me)
 Voice of Kenya
 Voice of Russia
 Voice of Vietnam
 WRNO (Louisiana) [M-F]
 1802
 Radio Mozambique
 1830
 BBC (af) [A-S]*
 Radio Bangladesh
 Radio Kuwait
 Radio Netherlands Intl
 Radio Sweden [M-F]
 Radio Yemen
 Voice of America (af) [A-S]

(Special English)
 Voice of America (me) (Special English)
 Voice of Russia
 1840
 Voice of Greece [M-A]
 1845
 Voice of Armenia [M-F]
 1855
 Radio New Zealand Intl [M-H]*

1900 UTC
(2:00 PM EST, 11:00 AM PST)

All India Radio
 BBC (af)
 BBC (as pac) [M-A]
 BBC (eu) [M-A]
 China Radio Intl
 Deutsche Welle
 Monitor Radio Intl [M-A]
 Radio Australia
 Radio Japan
 Radio Korea
 Radio New Zealand Intl
 Radio Norway Intl [S]
 Radio Portugal Intl [M-F]
 Radio Romania Intl
 Radio Vlaanderen Intl
 Voice of America (af)
 Voice of America (as)
 Voice of America (me)
 Voice of Greece [M-A]
 Voice of Russia
 Voice of Vietnam
 WHRI (Indiana) [M-F]
 WWCR #1 (Tennessee) [M-F]
 1910
 China Radio Intl*
 Radio Australia [M-F]*
 Radiobras [M-F]*
 1930
 Deutsche Welle [M-F]*
 R Slovakia Intl
 Radio Austria Intl
 Radio Netherlands Intl
 Radio Tirana
 Radio Yugoslavia
 Voice of Russia
 Voice of Turkey
 1935
 RAI Italy
 Voice of Iran

2000 UTC
(3:00 PM EST, 12:00 M PST)

BBC (af) (Newshour)
 BBC (am) (Newshour)
 BBC (as pac) [M-A]
 (Newshour)
 BBC (eu) (Newshour)
 China Radio Intl
 Deutsche Welle
 Estonian Radio [M/H]
 Monitor Radio Intl [M-A]
 Radio Australia
 Radio Budapest
 Radio Bulgaria
 Radio New Zealand Intl
 Radio Vilnius
 Swiss Radio Intl
 Swiss Radio Intl (eu)
 Voice of America (af) [A-S]
 Voice of America (af) [M-F]*
 Voice of America (me)
 Voice of Indonesia
 Voice of Israel
 Voice of Nigeria [M-F]
 Voice of Russia

WHRI (Indiana) [M-F]
 WWCR #3 (Tennessee) [M-F]
 2003
 Radio Pyongyang
 2007
 Radio Damascus [M-F]
 2010
 China Radio Intl*
 Radio New Zealand Intl [S-H]*
 2025
 RAI Italy
 2030
 Polish Radio [A-S]
 Polish Radio [M-F]*
 Radio Netherlands Intl
 Radio Thailand
 Voice of Vietnam
 2055
 Voice of Indonesia [M]
 2057
 Radio Kuwait

2100 UTC
(4:00 PM EST, 1:00 PM PST)

All India Radio
 BBC (af)
 BBC (am)
 BBC (as pac)
 BBC (eu)
 China Radio Intl
 Deutsche Welle
 Monitor Radio Intl [M-A]
 Radio Australia
 Radio Cameroon
 Radio Canada Intl
 Radio Damascus [F]
 Radio Exterior de Espana
 Radio Havana Cuba [M-A]
 Radio Japan
 Radio Korea
 Radio New Zealand Intl [A-H]
 Radio Prague
 Radio Romania Intl
 Voice of America (af)
 Voice of America (as)
 Voice of America (me)
 Voice of Russia
 WHRI (Indiana) [M-F]
 2110
 China Radio Intl*
 Radio Damascus [S-M]
 Radio New Zealand Intl [M-H]*
 2112
 Radio Damascus [F]
 2115
 BBC (af)*
 BBC (eu)*
 Radio Damascus [T]
 2120
 Radio Cairo
 2130
 Radio Cairo
 Radio Havana Cuba [M-A]*
 Radio Riga Intl [M-F]
 Radio Sweden [M-F]
 Voice of Armenia
 Voice of Russia
 2135
 Voice of Iran
 2145
 Radio Damascus [W]
 2155
 Radio Canada Intl [M-F]

2200 UTC
(5:00 PM EST, 2:00 PM PST)

All India Radio
 BBC (af) (Newsdesk)

BBC (am) (Newsdesk)
 BBC (as pac) (Newsdesk)
 BBC (eu) (Newsdesk)
 Canada (North-Quebec) [A-S]
 China Radio Intl
 Croatian Radio
 Monitor Radio Intl [M-A]
 Radio Australia
 Radio Budapest
 Radio Bulgaria
 Radio Canada Intl
 Radio Exterior de Espana
 Radio Havana Cuba [M-A]
 Radio Korea
 Radio New Zealand Intl [A-H]
 Radio Norway Intl [S]
 Radio Ukraine Intl
 Radio Vilnius
 Radio Vlaanderen Intl [S-F]
 Radio Yugoslavia
 RAI Italy
 Voice of America (as)
 Voice of Russia
 WWCR #1 (Tennessee) [F]
 2203
 Voice of Free China
 2210
 China Radio Intl*
 2215
 Radio Cairo
 2230
 Radio Austria Intl
 Radio Finland
 Radio Prague
 Radio Sweden [M-F]
 Voice of America (as) (Special English)
 Voice of Russia [M-F]
 2240
 Radio Cairo
 Voice of Greece [S-F]

2300 UTC
(6:00 PM EST, 3:00 PM PST)

All India Radio
 BBC (af) [S-F]
 BBC (am) [S-F]
 BBC (as pac)
 BBC (eu) [S-F]
 Canada (North-Quebec) [S]
 Croatian Radio
 Deutsche Welle
 KWHR (Hawaii) [M-F]
 Monitor Radio Intl [M-A]
 Radio Australia
 Radio Canada Intl
 Radio Japan
 Radio New Zealand Intl [A-H]
 Voice of America (as)
 Voice of Russia
 Voice of Turkey
 WHRI (Indiana) [T-F]
 2303
 Radio Pyongyang
 2315
 Radio Cairo
 2330
 Radio Canada Intl [A-S]
 Radio Netherlands Intl
 Voice of Russia
 Voice of Vietnam
 2335
 Voice of Greece [S-F]

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GAIN: Continuously adjustable—10dB to 18 +dB
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POWER REQUIRED: 12VDC (nom.); AC adaptor included

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DELTA COMM™ I-7000 and your MS-DOS computer integrated with the Delta Research custom CI-V interface and optimized software will not just control but will maximize the potential of your ICOM™ IC-R7000's monitoring capability.

- CYBERSCAN function allows scan file tracking control of systems employing frequency hopping techniques
- Spectrum log at speeds in excess of 1300 channels a minute, generate a real time histogram of activity and create scan database file automatically.
- Birdie log during frequency search automatically characterizes your R7000, then locks out those frequencies
- Activity log function continuously monitors and logs all frequencies of a scan database while displaying active, was active and never active channels.

Optional DELTA COMM™ DSS (Digital Signal Strength) upgrade for your DELTA COMM™ I-7000 communication manager.

- Innovative interface design allows digitizing and storing the R7000 signal level information with 8-bit accuracy via your computer's game/joy stick port.
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Delta Research



Box 13677 • Wauwatosa, WI 53213 • FAX/Phone (414) 353-4567

FREQUENCIES

0000-0030	Australia, Radio	9610as	13605pa	13745as	17750as	0000-0100	Spain, R Exterior Espana	9540na				
0000-0100 vl	Australia, VLBA Alice Spg	4835do				0000-0030	Thailand, Radio	9655as	9680af	11905af		
0000-0100 vl	Australia, VL8K Katherine	5025do				0000-0100	United Kingdom,BBC London	5965as	5970sa	5975va	6175na	
0000-0100 vl	Australia, VL8T Tent Crk	4910do						6195as	7110as	7265as	7325va	
0000-0100	Bulgaria, Radio	7480na	9700na					9590va	9915sa	11750sa	11955as	
0000-0015	Cambodia, Natl Voice of	11940as						15280as	15360as			
0000-0100	Canada, CBC N Quebec Svc	9625do				0000-0030	United Kingdom,BBC London	9580as	11945as			
0000-0100	Canada, CFCX Montreal	6005do				0000-0100	USA, KAIJ Dallas TX	5810am				
0000-0100	Canada, CFRX Toronto	6070do				0000-0100	USA, KLTN Salt Lk City UT	7510am				
0000-0100	Canada, CFVP Calgary	6030do				0000-0100	USA, KWHR Naalehu HI	17510au				
0000-0100	Canada, CHNX Halifax	6130do				0000-0100	USA, Monitor Radio Intl	7535am	9430ca			
0000-0100	Canada, CKZN St John's	6160do				0000-0100	USA, VOA Washington DC	5995na	6130am	7215va	7405na	
0000-0100	Canada, CKZU Vancouver	6160do						9455am	9775na	9890as	11695am	
0000-0030 mtwhfa	Canada, RCI Montreal	6040am	9535am	11940am				11760va	13740na	15185va	15290va	
0000-0100	Canada, RCI Montreal	5960na	9755na					17735va	17820va			
0000-0100	China, China Radio Intl	9710na	11655na	11715na		0000-0100	USA, WEWN Birmingham AL	5825eu	7425na	7520sa		
0000-0100	Costa Rica, AWR Alajuela	5030am	6150am	7375am	9725am	0000-0100	USA, WHRI Noblesville IN	5745am	7315am			
		13750am				0000-0100	USA, WJCR Upton KY	7490na	13595na			
0000-0005	Croatia, Croatian Radio	5895eu	7370eu	13830eu		0000-0025	USA, WRMI/R Miami Intl	9955am				
0000-0027	Czech Rep, Radio Prague	5930na	7345na			0000-0100	USA, WRNO New Orleans LA	7355am				
0000-0030	Egypt, Radio Cairo	9900na				0000-0100	USA, WWCR Nashville TN	3315am	5065am	9475am	13845am	
0000-0015	Ghana, Ghana Broadc Corp	3366do	4915do			0000-0044	USA, WYFR Okeechobee FL	6085na				
0000-0045	India, All India Radio	9705as	9950as	11745as	13750as	0000-0030	Yugoslavia, Radio	9580na				
		15145as				0028-0100	Iran, VOIRI Tehran	6150na	6175na	9022na		
0000-0100	Lebanon, Voice of Hope	6280va				0030-0100	Australia, Radio	9580pa	9660pa	11795as	13605pa	
0000-0100	Lebanon, Wings of Hope	9960va						13755as	15240pa	15365pa	15415as	
0000-0030 sm	Lithuania, Radio Vilnius	5940na						15510as	17795pa	17860pa		
0000-0100	Malaysia, Radio	7295do				0030-0100 irreg	Belarus, Radio Minsk	5940eu	13640eu	17665eu		
0000-0100	Malaysia, RTM Kuching	7160do				0030-0055	Belgium, R Vlaanderen Int	5900na	9925sa			
0000-0100	Netherlands, Radio	6020na	6165na			0030-0100	Ecuador, HCJB Quito	9745am	21455am			
0000-0100	New Zealand, R NZ Intl	15115pa				0030-0100	Netherlands, Radio	5905as	7305as	9860as	11655as	
0000-0050	North Korea, R Pyongyang	11335na	13760na	15130na		0030-0100	Sri Lanka, SLBC Colombo	15425as				
0000-0100	Palau, KHBN/Voice of Hope	9965as				0030-0100	Sweden, Radio	6065sa	9850sa			
0000-0100	Philippines, FEBC/R Intl	15450as				0030-0100	Thailand, Radio	9655as	11905as	15370as		
0000-0100	Russia, Voice of	7105na	7125na	7180na		0045-0100	USA, WYFR Okeechobee FL	6065na				
						0050-0100	Italy, RAI Rome	6005na	9645na	11800na		

SELECTED PROGRAMS

Sundays

- 0005 UK, BBC London (south as): Science and Technology. The Planets. See H 0135.
- 0011 Spain, R Exterior de Espana: Spanish Hall of Fame.
- 0020 China, China Radio Intl: Travel Talk.
- 0025 Spain, R Exterior de Espana: Distance Unknown.
- 0029 China, China Radio Intl: The Cooking Show.
- 0030 Australia, Radio: Correspondents' Report.
- 0030 Ecuador, HCJB Quito (am): Musical Mailbag.
- 0030 USA, VOA Washington DC (ca): Communications World.
- 0033 Spain, R Exterior de Espana: What's Cooking Today?
- 0035 China, China Radio Intl: Music from China.
- 0039 Belgium, R Vlaanderen Intl: Music from Flanders.
- 0045 Spain, R Exterior de Espana: Getting to Know Spanish Wine.

Mondays

- 0013 Spain, R Exterior de Espana: Visitors Book.
- 0015 Bulgaria, Radio: Answering Your Letters.
- 0020 China, China Radio Intl: China Scrapbook.
- 0023 Spain, R Exterior de Espana: Flamenco.
- 0025 China, China Radio Intl: Music Album.
- 0030 Bulgaria, Radio: Plaza Bulgaria.
- 0030 Sweden, Radio: Sounds Nordic (biweekly).
- 0030 UK, BBC London (at/as pac/eu): The Multitrack Sessions. See S 0445.
- 0032 Russia, Voice of: Folk Box.
- 0035 Netherlands, Radio (am): Sincerely Yours.
- 0036 Belgium, R Vlaanderen Intl: Radio World.

Tuesdays

- 0000 USA, WWCR #3 Nashville TN: The Voice of Liberty (live).
- 0012 North Korea, R Pyongyang: Commentary.
- 0015 Spain, R Exterior de Espana: Panorama.
- 0019 China, China Radio Intl: Current Affairs.
- 0030 USA, VOA Washington DC (ca): Music USA (Standards).
- 0031 China, China Radio Intl: China's Open Windows (biweekly).

- 0032 Russia, Voice of: Yours for the Asking.
- 0040 Spain, R Exterior de Espana: Cultural Encounters.

Wednesdays

- 0000 USA, WWCR #3 Nashville TN: The Voice of Liberty (live).
- 0009 Czech Rep, Radio Prague: Magazine '95.
- 0015 UK, BBC London (south as): New Science Series. See M 0630.
- 0016 Spain, R Exterior de Espana: Panorama.
- 0020 North Korea, R Pyongyang: Music.
- 0030 North Korea, R Pyongyang: Feature Report.
- 0030 UK, BBC London (am): Classical Music. The High-C Hero (3rd,10th,17th). The story of the tenor, featuring recordings by some of the greatest performers.
- 0030 USA, VOA Washington DC (ca): Now Music USA.
- 0032 Russia, Voice of: The Jazz Show.
- 0035 China, China Radio Intl: Orient Arena.
- 0036 Spain, R Exterior de Espana: Entertainment in Spain.
- 0040 China, China Radio Intl: Listeners' Letterbox.

Thursdays

- 0000 USA, WWCR #3 Nashville TN: The Voice of Liberty (live).
- 0005 UK, BBC London (south as): Writers in a Nutshell. Miriam Newman guides you through the major themes and preoccupations of some of this century's greatest writers.
- 0012 North Korea, R Pyongyang: Commentary.
- 0015 UK, BBC London (south as): Pick of the World. See S 1130.
- 0029 Spain, R Exterior de Espana: As Others See Us.
- 0030 UK, BBC London (at/eu/as pac): Classical Music. The High-C Hero (4th,11th,18th). See W 0030.
- 0030 USA, VOA Washington DC (ca): Now Music USA.
- 0033 China, China Radio Intl: Profile.
- 0039 Belgium, R Vlaanderen Intl: Belgium Today.
- 0039 Spain, R Exterior de Espana: The Natural World (biweekly).
- 0041 Spain, R Exterior de Espana: Science Desk (biweekly).
- 0050 Belgium, R Vlaanderen Intl: The Arts.

- 0054 Radio Netherlands: Documentary. Homosexuality in Japan (4th). See W 1154.
- 0054 Radio Netherlands: Documentary. Japanese Youth (11th). See W 1154.
- 0054 Radio Netherlands: Documentary. The Coming of Age of Greenland (Feb 1). See W 1554.
- 0054 Radio Netherlands: Documentary. The Coming of Age of Greenland (Feb 1). See W 1554.
- 0054 Radio Netherlands: Encore Documentary. Bringing Home the Beef (18th). See W 1154.
- 0054 Radio Netherlands: Encore Documentary. Bringing Home the Beef (25th). See S 0154.

Fridays

- 0016 Spain, R Exterior de Espana: Panorama.
- 0022 Spain, R Exterior de Espana: Press Review.
- 0030 USA, VOA Washington DC (ca): Now Music USA (Top Ten).
- 0032 China, China Radio Intl: Focus.
- 0032 Russia, Voice of: The Jazz Show.
- 0038 Spain, R Exterior de Espana: Cultural Clippings.
- 0039 Belgium, R Vlaanderen Intl: Belgium Today.
- 0041 China, China Radio Intl: Culture in China.
- 0043 Belgium, R Vlaanderen Intl: International Report.
- 0049 Belgium, R Vlaanderen Intl: Economics.

Saturdays

- 0012 Czech Rep, Radio Prague: Calling All Listeners.
- 0029 Spain, R Exterior de Espana: Window on Spain.
- 0030 Australia, Radio: Indian Pacific.
- 0030 USA, VOA Washington DC (ca): Country Music USA.
- 0032 Russia, Voice of: Folk Box.
- 0035 China, China Radio Intl: Life in China.
- 0039 Spain, R Exterior de Espana: Arts in Spain.
- 0047 Iran, Voice of: Political Commentary.
- 0049 Belgium, R Vlaanderen Intl: Tourism.
- 0057 Iran, Voice of: Listeners' Special.

FREQUENCIES

0100-0200 twtfa	Argentina, RAE	11710am				0100-0130 m	Norway, Radio Norway Intl	5940na	6010na	6030na	7465na
0100-0130	Armenia, Voice of	7480na				0100-0200	Philippines, FEBC/R Intl	15450as			
0100-0200	Australia, Radio	9580pa	9660pa	13605pa	13745as	0100-0200	Russia, Voice of	5920na	7105na	7125na	
		13755as	15240pa	15245as	15365pa	0100-0127	Slovakia, R Slovakia Intl	5930na	7300na	9440sa	
		15415as	15510as	17715as	17750as	0100-0200	South Korea, R Korea Intl	7550eu	11810na	15575na	
		17795pa	17860pa	17880as		0100-0200	Spain, R Exterior Espana	9540na			
0100-0200 vl	Australia, VL8A Alice Spg	4835do				0100-0200	Sri Lanka, SLBC Colombo	15425as			
0100-0200 vl	Australia, VL8K Katherine	5025do				0100-0200	Switzerland, Swiss R Intl	6135na	9885na	9905na	
0100-0200 vl	Australia, VL8T Tent Crk	4910do				0100-0200	Ukraine, R Ukraine Intl	5905na	5915na	6010na	6055na
0100-#200	Australia, Defense Forces R	13525as				0100-0200	United Kingdom, BBC London	7205na			
0100-#200 vl	Canada, CBC N Quebec Svc	9625do						5970sa	5975va	6175na	6195as
0100-#200	Canada, CFCX Montreal	6005do						7325va	9590va	9915sa	11750as
0100-#200	Canada, CFRX Toronto	6070do						11955as	15360as		
0100-#200	Canada, CFVP Calgary	6030do				0100-0200	USA, KAIJ Dallas TX	5810am			
0100-#200	Canada, CHNX Halifax	6130do				0100-0200	USA, KTVB Salt Lk City UT	7510am			
0100-#200	Canada, CKZN St John's	6160do				0100-0200	USA, KWHR Naalehu HI	17510au			
0100-0200	Canada, CKZU Vancouver	6160do				0100-0200	USA, Monitor Radio Intl	7535na	9430am		
0100-0200	Costa Rica, RF Peace Intl	7385am	9400am	15050am		0100-0200	USA, VOA Washington DC	5995na	6130na	7405na	9455na
0100-0105	Croatia, Croatian Radio	5895eu	7370eu	13830eu				9775na	13740na	15205as	15250as
0100-0200	Cuba, Radio Havana Cuba	6000na	9820na	9830na				15370as	17740as	21550as	
0100-0127	Czech Rep, Radio Prague	6200na	7345na			0100-0200	USA, WEWN Birmingham AL	5825eu	7425na	7520na	
0100-0200	Ecuador, HCJB Quito	9745am	21455am			0100-0200	USA, WHRI Noblesville IN	5745am			
0100-0150	Germany, Deutsche Welle	5960na	6040na	6085na	6145na	0100-0200	USA, WJCR Upton KY	7490na	13595na		
		9555na	9640na	9670na		0100-0200	USA, WRNO New Orleans LA	7355am			
0100-0115	Ghana, Ghana Broadc Corp	3366do				0100-0200	USA, WWCR Nashville TN	3115am	5065am	5935am	
0100-#200	Guatemala, Radio Cultural	3300do				0100-0200	USA, WYFR Okeechobee FL	6065na	9505na		
0100-#130	Iran, VOIRI Tehran	6175na	7180na	7260na	9022na	0100-0200	Vietnam, Voice of	5940na	9840na	15010na	
0100-0110	Italy, RAI Rome	6005na	9645na	11800na		0100-0130 mtwftfa	Yugoslavia, Radio	6195af	7115na		
0100-0200	Japan, NHK/Radio	11840as	11860as	11890as	11910as	0130-0200	Austria, R Austria Intl	9655na			
		17810as	17845as			0130-0150	Greece, Voice of	6245na	7448na	9420na	
0100-0200	Lebanon, Wings of Hope	9960va				0130-0200	Netherlands, Radio	9860as			
0100-0200 smtwh	Malaysia, Radio	7295do				0130-0200	Sweden, Radio	7120as			
0100-0200	Netherlands, Radio	5905as	7305as			0140-0200	Vatican State, Vatican R	5980as	7335as		
0100-0125	Netherlands, Radio	6020na	6165na			0145-0200	Albania, R Tirana Intl	6140na	7160na		
0100-0200	New Zealand, R NZ Intl	15115pa									

SELECTED PROGRAMS

Sundays

- 0102 Italy, RAI: Tunes for Whistling.
- 0105 Switzerland, Swiss R Intl: Newsnet. Ten minutes of comment and backgrounds from correspondents; 15 minutes on what's happening in Switzerland.
- 0109 Ecuador, HCJB Quito (am): DX Partyline.
- 0111 Spain, R Exterior de Espana: Spanish Hall of Fame.
- 0116 Switzerland, Swiss R Intl: Capital Letters (14th, 28th). SRI's bimonthly mailbag and listener contact program.
- 0124 Spain, R Exterior de Espana: Distance Unknown.
- 0130 Austria, R Austria Intl: Report from Austria. A magazine program covering all aspects of Austrian life and events in the news and opening with the latest news bulletin.
- 0133 Spain, R Exterior de Espana: What's Cooking Today?.
- 0137 Austria, R Austria Intl: Postbox. Radio Austria's mailbag program.
- 0140 Vietnam, Voice of Vietnam: Review of Major Developments.
- 0145 Spain, R Exterior de Espana: Getting to Know Spanish Wine.
- 0154 Radio Netherlands: Documentary. Homosexuality in Japan (7th). See W 1154.
- 0154 Radio Netherlands: Documentary. Japanese Youth (14th). See W 1154.
- 0154 Radio Netherlands: Documentary. The Coming of Age of Greenland (Feb 4). See W 1554.
- 0154 Radio Netherlands: Encore Documentary. Bringing Home the Beef (21st). See W 1154.
- 0154 Radio Netherlands: Encore Documentary. Bringing Home the Beef (28th). The UN year highlighting the problems of people who choose to live on their own, or are forced to do so by circumstances.

Mondays

- 0100 Slovakia, R Slovakia Intl: Slovakia Today.
- 0105 Switzerland, Swiss R Intl: Newsnet. See S 0105.
- 0109 Ecuador, HCJB Quito (am): Saludos Amigos.
- 0114 Cuba, Radio Havana Cuba: The Mailbag Show.
- 0115 UK, BBC London (af/as pac/eu): Red Dwarf. A sci-fi

comedy first commissioned for BBC-TV is a space odyssey adventure series.

- 0118 Germany, Deutsche Welle: Living in Germany.
 - 0125 Japan, Radio: Media Roundup.
 - 0130 Austria, R Austria Intl: Report from Austria. See S 0130.
 - 0130 Guatemala, TGNA: Music in the Post Meridian.
 - 0131 Cuba, Radio Havana Cuba: The Jazz Place.
- ### Tuesdays
- 0100 USA, WWCR #3 Nashville TN: Protecting Your Wealth (live).
 - 0105 Switzerland, Swiss R Intl: Newsnet. See S 0105.
 - 0106 Slovakia, R Slovakia Intl: Tourism.
 - 0115 UK, BBC London (af/as pac/eu): Man, Machine and Music. Rick Wakeman explores the major inventions which have produced the evolution of popular music.
 - 0118 Cuba, Radio Havana Cuba: Spotlight on the Americas.
 - 0120 Yugoslavia, Radio: Cultural Report.
 - 0122 Yugoslavia, Radio: Sports Roundup.
 - 0130 Austria, R Austria Intl: Report from Austria. See S 0130.
 - 0140 Spain, R Exterior de Espana: Cultural Encounters.
 - 0140 Vietnam, Voice of Vietnam: Current Affairs.
 - 0148 Vietnam, Voice of Vietnam: Vietnam—Land and People.

Wednesdays

- 0100 USA, KWHR Naalehu HI: Music.
- 0105 Switzerland, Swiss R Intl: Newsnet. See S 0105.
- 0109 Czech Rep, Radio Prague: Magazine '95.
- 0110 USA, VOA Washington DC (ca): Report to the Americas.
- 0118 Cuba, Radio Havana Cuba: Spotlight on the Americas.
- 0130 Austria, R Austria Intl: Report from Austria. See S 0130.
- 0130 UK, BBC London (as pac/eu): Music Feature. Ports of Call: The Islands (5th, 12th, 19th). See S 0330.
- 0135 Cuba, Radio Havana Cuba: DXers Unlimited.
- 0136 Spain, R Exterior de Espana: Entertainment in Spain.

Thursdays

- 0105 Switzerland, Swiss R Intl: Newsnet. See S 0105.
- 0107 Slovakia, R Slovakia Intl: Business News.

- 0110 Ukraine, R Ukraine Intl: Ukraine Today.
- 0119 Yugoslavia, Radio: People and Events.
- 0120 Ukraine, R Ukraine Intl: Closeup.
- 0130 Austria, R Austria Intl: Report from Austria. See S 0130.
- 0130 Ecuador, HCJB Quito (am): Ham Radio Today.
- 0135 UK, BBC London (as pac/eu): Science and Technology. The Planets. Roland Pease takes a look at the solar system.
- 0141 Spain, R Exterior de Espana: Science Desk (biweekly).

Fridays

- 0105 Switzerland, Swiss R Intl: Newsnet. See S 0105.
- 0109 Germany, Deutsche Welle: European Journal.
- 0110 Ukraine, R Ukraine Intl: Ukraine Today.
- 0119 Cuba, Radio Havana Cuba: Spotlight on the Americas.
- 0120 Ukraine, R Ukraine Intl: Closeup.
- 0121 Yugoslavia, Radio: Cultural Report.
- 0129 Spain, R Exterior de Espana: People of Today.
- 0130 Austria, R Austria Intl: Report from Austria. See S 0130.
- 0130 Ecuador, HCJB Quito (am): What's Cooking in the Andes?.
- 0138 Spain, R Exterior de Espana: Cultural Clippings.

Saturdays

- 0105 Switzerland, Swiss R Intl: Newsnet. See S 0105.
- 0107 Ukraine, R Ukraine Intl: The Week.
- 0110 Australia, Radio: Oz Sounds.
- 0110 Vietnam, Voice of Vietnam: Important Events in North Vietnam History.
- 0117 Vietnam, Voice of Vietnam: Talk of the Week.
- 0120 Slovakia, R Slovakia Intl: Slovak Kitchen (biweekly).
- 0130 Austria, R Austria Intl: Report from Austria. See S 0130.
- 0130 Ecuador, HCJB Quito (am): Musica del Ecuador.
- 0140 Cuba, Radio Havana Cuba: Cuban Music.
- 0140 Vietnam, Voice of Vietnam: Important Events in North Vietnam History.
- 0147 Vietnam, Voice of Vietnam: Talk of the Week.

FREQUENCIES

0200-0300	Australia, Radio	9580pa 15365pa 17750as	9660pa 15415as 17795pa	13605pa 15510as 17860pa	15240pa 17715as	0200-0230 0200-0300	Sri Lanka, SLBC Colombo Taiwan, VO Free China	15425as 5950na 11825as	7130as 15345as	9680na 6135af	11740ca 6175na
0200-0300	Australia, Defense Forces R	13525as	9625do			0200-0300	United Kingdom, BBC London	5970sa 7235va 9915sa	5975va 7325va 11955as	6135af 9590va 15360as	9605as
0200-0300	Canada, CBC N Quebec Svc	9625do				0200-0300	USA, KAIJ Dallas TX	5810am			
0200-0300	Canada, CFCX Montreal	6005do				0200-0300	USA, KTRN Salt Lk City UT	7510am			
0200-0300	Canada, CFRX Toronto	6070do				0200-0300	USA, KVOH Los Angeles CA	9975am			
0200-0300	Canada, CFVP Calgary	6030do				0200-0300	USA, KWHR Naalehu HI	17510au			
0200-0300	Canada, CHNX Halifax	6130do				0200-0300	USA, Monitor Radio Intl	5850na	9430am		
0200-0300	Canada, CKZN St John's	6160do				0200-0300	USA, VOA Washington DC	7115as 9740as 17820as	7205as 11705as	7215as 15205as	7651as 17740as
0200-0300	Canada, CKZU Vancouver	6160do				0200-0300	USA, WEWN Birmingham AL	5825eu	7425na		
0200-0300	Canada, RCI Montreal	5905na	9535am	9755na	11725am	0200-0300	USA, WHRI Noblesville IN	5745am			
0200-0300	Costa Rica, RF Peace Intl	7385am	9400am	15050am		0200-0300	USA, WJCR Upton KY	7490na	13595na		
0200-0205	Croatia, Croatian Radio	5895eu	7370eu	13830eu		0200-0300	USA, WRNO New Orleans LA	7355am			
0200-0300	Cuba, Radio Havana Cuba	6000na	9820na	9830na		0200-0300	USA, WWCR Nashville TN	3315am	5065am	5935am	
0200-0300	Ecuador, HCJB Quito	9745am	21455am			0200-0300	USA, WYFR Okeechobee FL	6065na	9505na		
0200-0300	Egypt, Radio Cairo	9475na				0200-0300	Vietnam, Voice of	5940na	9840na	15010na	
0200-0250	Germany, Deutsche Welle	6035as 7355as	6130na 9515as	7265as 9615as	7285as	0200-0230	Yugoslavia, Radio	6100na	7115na		
0200-0230	Hungary, Radio Budapest	6190na	9850na	11870na		0230-0300	Albania, R Tirana Intl	6140na	7160na		
0200-0300	Kenya, Kenya Broadc Corp	4885do	4935do	6150do		0230-0300	Austria, R Austria Intl	9655na	9870ca	13730sa	
0200-0300	Lebanon, Wings of Hope	9960va				0230-0245	Pakistan, Radio	7290as 21730as	15190as	17705as	17725as
0200-0300 smtwh	Malaysia, Radio	7295do				0230-0300	Philippines, R Pilipinas	17760me	17865me	21580me	
0200-0230	Netherlands, Radio	5905as	7305as	9860as	11655as	0230-0300 mtwhf	Portugal, R Portugal Intl	6175sa	9570na		
0200-0300	New Zealand, R NZ Intl	15115pa				0230-0300	Sweden, Radio	7115na			
0200-0300	Romania, R Romania Intl	5990na 11940na	6155na	9510na	9570na	0250-0300	Vatican State, Vatican R	6095na	7305na		
0200-0300	Russia, Voice of	5950na 9580na	7105na 12050na	7270na 11810sa	7345na						
0200-0300	South Korea, R Korea Intl	7275sa									

SELECTED PROGRAMS

Sundays

- 0214 Yugoslavia, Radio: Cultural Panorama.
- 0215 Taiwan, V of Free China: The Adventures of Taiwan. A young couple's escapades in Taiwan.
- 0217 Romania, Radio Romania Intl: World of Culture.
- 0228 Romania, Radio Romania Intl: Radio Pictures.
- 0230 Austria, R Austria Intl: Report from Austria. See S 0130.
- 0235 Taiwan, V of Free China: Mailbag Time. Letters from listeners and music requests.
- 0237 Austria, R Austria Intl: Postbox. See S 0137.
- 0240 Albania, Radio Tirana: Reality.
- 0243 Romania, Radio Romania Intl: Bucharest Along the Centuries.
- 0247 Taiwan, V of Free China: Let's Learn Chinese. Chinese lessons with commentary and translation in English.
- 0249 Romania, Radio Romania Intl: Radio Romania DX Mailbag.

Mondays

- 0211 Russia, Voice of: Music and Musicians.
- 0215 Taiwan, V of Free China: Jade Bells and Bamboo Pipes. Chinese folk and temple music.
- 0230 Austria, R Austria Intl: Report from Austria. See S 0130.
- 0230 Canada, RCI Montreal: The Mailbag.
- 0230 Cuba, Radio Havana Cuba: Breakthrough.
- 0230 Sweden, Radio: Sounds Nordic (biweekly).
- 0238 Albania, Radio Tirana: Current Affairs.
- 0243 Albania, Radio Tirana: Music at Your Request.
- 0249 Taiwan, V of Free China: Let's Learn Chinese. See S 0247.

Tuesdays

- 0200 USA, WWCR #1 Nashville TN: Protecting Your Wealth (live).
- 0200 USA, WWCR #3 Nashville TN: Protecting Your Wealth (live).
- 0215 Taiwan, V of Free China: Kaleidoscope. Spotlight on life in Taiwan.
- 0215 Yugoslavia, Radio: Press Review.
- 0220 Yugoslavia, Radio: Cultural Report.
- 0222 Yugoslavia, Radio: Sports Roundup.
- 0230 Austria, R Austria Intl: Report from Austria. See S 0130.
- 0232 Russia, Voice of: Folk Box.
- 0233 Taiwan, V of Free China: Main Roads and Byways. Hop a tour bus to a Taiwan attraction.
- 0236 Costa Rica, R for Peace Intl: Hightower Radio.

Wednesdays

- 0215 Romania, Radio Romania Intl: Business Club.

- 0215 Taiwan, V of Free China: Music Box. Some of the popular music of Taiwan.
- 0226 Romania, Radio Romania Intl: Romanian Anglicists.
- 0230 Austria, R Austria Intl: Report from Austria. See S 0130.
- 0236 Costa Rica, R for Peace Intl: Hightower Radio.
- 0236 Romania, Radio Romania Intl: Youth Club.
- 0243 Albania, Radio Tirana: PO Box Radio Tirana.
- 0245 Portugal, Radio Portugal Intl: Musical Kaleidoscope.
- 0251 Taiwan, V of Free China: Let's Learn Chinese. See S 0247.

Thursdays

- 0215 Taiwan, V of Free China: Perspectives. Issues facing the lives and conversations of Taiwanese people.
- 0219 Yugoslavia, Radio: People and Events.
- 0230 Austria, R Austria Intl: Report from Austria. See S 0130.
- 0232 Taiwan, V of Free China: Journey into Chinese Culture. Conversation about a particular cultural activity in Taiwan.
- 0252 Taiwan, V of Free China: Let's Learn Chinese. See S 0247.
- 0254 Radio Netherlands: Documentary. Homosexuality in Japan (4th). See W 1154.
- 0254 Radio Netherlands: Documentary. Japanese Youth (11th). See W 1154.
- 0254 Radio Netherlands: Documentary. The Coming of Age of Greenland (Feb 1). See W 1554.
- 0254 Radio Netherlands: Encore Documentary. Bringing Home the Beef (18th). See W 1154.
- 0254 Radio Netherlands: Encore Documentary. Bringing Home the Beef (25th). See S 0154.

Fridays

- 0209 Yugoslavia, Radio: Commentary.
- 0215 Taiwan, V of Free China: Confrontation. Two points of view on a controversial topic.
- 0221 Yugoslavia, Radio: Cultural Report.
- 0230 Austria, R Austria Intl: Report from Austria. See S 0130.
- 0232 Taiwan, V of Free China: New Record Time. The latest releases of the popular music of Taiwan.
- 0236 Costa Rica, R for Peace Intl: Hightower Radio.
- 0241 Cuba, Radio Havana Cuba: Cuba Today.
- 0246 Portugal, Radio Portugal Intl: Spotlight on Portugal.
- 0247 Taiwan, V of Free China: Let's Learn Chinese. See S 0247.

Saturdays

- 0210 Australia, Radio: Feedback.
- 0210 Vietnam, Voice of Vietnam: Important Events in North Vietnam History.
- 0215 Taiwan, V of Free China: Reflections. See S 0315.

- 0217 Vietnam, Voice of Vietnam: Talk of the Week.
- 0230 Austria, R Austria Intl: Report from Austria. See S 0130.
- 0232 Russia, Voice of: The Jazz Show.
- 0240 Albania, Radio Tirana: Horizon.
- 0240 Vietnam, Voice of Vietnam: Important Events in North Vietnam History.
- 0247 Vietnam, Voice of Vietnam: Talk of the Week.

HAUSER'S HIGHLIGHTS

CANADA: CBC

CBC North-Quebec on 9625, includes these English programs for winter season:

- Mon-Fri 2230 Regional News, also Inuktitut
 - Sat 1405 *The House*
 - 1505 *Basic Black*
 - 1635 *Double Exposure*
 - 1705 *Quirks & Quarks*
 - 1805 *Definitely Not the Opera*
 - Sun 0005 *Random Sampling*
 - 0105 *Finkleman's 45s*
 - 1411 *Sunday Morning*
 - 2109 *Cross Country Checkup*
 - 2300 *The World this Weekend*
 - 2330 *Now the Details*
 - Mon 0105 *On Stage at the Gould*
 - 0305 *Sunday Showcase*
 - 0405 *Jazz Beat*
- (via Bill Westenhaver, PQ)

FREQUENCIES

0300-0400	Australia, Radio	9580pa 15245as 17795pa	9660pa 15365pa 17860pa	13605pa 15510as	15240pa 17750pa	0300-0400	Taiwan, VO Free China	5950na 15345as 9655na	9680na	11745as	11825as
0300-0400 vl	Canada, CBC N Quebec Svc	9625do				0300-0330	Thailand, Radio	5970sa	11905na		
0300-0400	Canada, CFCX Montreal	6005do				0300-0330	United Kingdom, BBC London	15360as 3255af 6175na 9605as	6135af 15380as 3955eu 9410va 11760va	7235va	7325sa 6005af 9600af 15310as
0300-0400	Canada, CFRX Toronto	6070do				0300-0400	United Kingdom, BBC London	5810am 7510am 9975am			
0300-0400	Canada, CFPV Calgary	6030do				0300-0400	USA, KAIJ Dallas TX	17510au			
0300-0400	Canada, CHNX Halifax	6130do				0300-0400	USA, KTVB Salt Lk City UT	5850na	7535af		
0300-0400	Canada, CKZN St John's	6160do				0300-0400	USA, KVOH Los Angeles CA	6035af	7105af	7280af	7340af
0300-0400	Canada, CKZU Vancouver	6160do				0300-0400	USA, KWHR Naalehu HI	7405af	9575af	9885af	
0300-0330 twhta	Canada, RCI Montreal	6010na	9755na			0300-0400	USA, Monitor Radio Intl	5825eu	7425na		
0300-0400 sm	Canada, RCI Montreal	6010na	9755na			0300-0400	USA, WEWN Birmingham AL	5745am			
0300-0400	China, China Radio Intl	9690na	9710na	11715na		0300-0400	USA, WHRI Noblesville IN	7490na	13595na		
0300-0400 vl	Costa Rica, Faro del Carib	5055do				0300-0400	USA, WJCR Upton KY	7395am			
0300-0400	Costa Rica, RF Peace Intl	7385am	9400am			0300-0400	USA, WRNO New Orleans LA	3315am	5065am	5935am	
0300-0305	Croatia, Croatian Radio	5895eu	7370eu	13830eu		0300-0400	USA, WYFR Okeechobee FL	6065na	9505na		
0300-0400	Cuba, Radio Havana Cuba	6000na	9820na	9830na		0300-0315	Vatican State, Vatican R	6095na	7305na		
0300-0327	Czech Rep, Radio Prague	5930na	7345na			0300-0400	Zimbabwe, ZBC/Radio 3	3306do	3396do	4828do	
0300-C400	Ecuador, HCJB Quito	9745am	21455am			0315-0330 s	Greece, Voice of	6245na	7448na	9420na	
0300-0330	Egypt, Radio Cairo	9475na				0320-0350	Vatican State, Vatican R	7360af			
0300-0350	Germany, Deutsche Welle	6045na 9650na	6085na	6120na	9535na	0330-0357	Czech Rep, Radio Prague	6200as			
		3300do				0330-0400	Hungary, Radio Budapest	5965na	9850na	11870na	
0300-0400	Guatemala, Radio Cultural	5960na	9605na	11840as		0330-0355	Moldova, R Moldova Intl	7500na			
0300-0400	Japan, NHK/Radio	11885na	11895ca	11960na		0330-0400	Sweden, Radio	7115na			
0300-0330	Japan, NHK/Radio	4885do	4935do	6150do		0330-0400 vl	Tanzania, Radio	5050af			
0300-0400 vl	Kenya, Kenya Broadc Corp	9960va				0330-0400	UAE, Radio Dubai	13675na	15395eu	21605na	
0300-0400	Lebanon, Wings of Hope	9960va	12000na			0330-0400	United Kingdom, BBC London	9610af	11730af	11955as	15280as
0300-0330	Mongolia, R Ulan Bator	9960va	12000na			0340-0350	Greece, Voice of	6245na	7448na	9420na	
0300-0325	Netherlands, Radio	5905as	7305as	9860as	11655as	0345-0400 irreg	Burundi, Radio Nationale	6140do			
0300-3400	New Zealand, R NZ Intl	15115pa									
0300-0330 m	Norway, Radio Norway Intl	5940na	6010na	6030na	7465na						
0300-0330	Philippines, R Pilipinas	17760me	17865me	21580me							
0300-0400	Russia, Voice of	5930na 7270na	5940na 7345na	9580na							
0300-0400	S Africa, Channel Africa	5955af	9585af								

SELECTED PROGRAMS

Sundays

- 0300 USA, WWCR #3 Nashville TN: Spectrum (WWCR) (live).
- 0309 South Africa, Channel Africa: Gospel Music.
- 0310 Japan, Radio: Hello from Tokyo.
- 0315 Taiwan, V of Free China: Reflections. The best of Chinese literature.
- 0330 UK, BBC London (am): Music Feature. Ports of Call: The Islands (1st, 8th). A new series which explores music within island groups and on specific islands around the world.
- 0330 UK, BBC London (as pac): New Science Series. See M 0630.
- 0331 South Africa, Channel Africa: Religions of the World.
- 0339 South Africa, Channel Africa: Choral Music.
- 0347 Taiwan, V of Free China: Let's Learn Chinese. See S 0247.

Mondays

- 0308 Germany, Deutsche Welle: Mailbag.
- 0311 Russia, Voice of: Moscow Mailbag.
- 0314 Cuba, Radio Havana Cuba: The Mailbag Show.
- 0315 Taiwan, V of Free China: The Adventures of Taiwan. See S 0215.
- 0331 Cuba, Radio Havana Cuba: The Jazz Place.
- 0332 Russia, Voice of: Timelines.
- 0335 Taiwan, V of Free China: Mailbag Time. See S 0235.
- 0340 China, China Radio Intl: Listeners' Letterbox.
- 0347 Taiwan, V of Free China: Let's Learn Chinese. See S 0247.

Tuesdays

- 0305 USA, WWCR #3 Nashville TN: Radio Free America (live).
- 0306 New Zealand, Radio NZ Intl: In Touch with New Zealand.
- 0306 USA, WHRI Noblesville IN: For the People (repeat) (5.745).
- 0308 South Africa, Channel Africa: Dateline Africa.
- 0315 Taiwan, V of Free China: Jade Bells and Bamboo Pipes. See M 0215.
- 0318 Cuba, Radio Havana Cuba: Spotlight on the Americas.
- 0323 South Africa, Channel Africa: Business Dateline.
- 0334 South Africa, Channel Africa: Dateline Sports.

Wednesdays

- 0303 Czech Rep, Radio Prague: Current Affairs.
- 0309 Czech Rep, Radio Prague: Magazine '95.
- 0315 Taiwan, V of Free China: Kaleidoscope. See T 0215.

- 0318 Cuba, Radio Havana Cuba: Spotlight on the Americas.
- 0330 UK, BBC London (am): Pick of the World. See S 1130.
- 0333 Czech Rep, Radio Prague: Current Affairs.
- 0333 Taiwan, V of Free China: Main Roads and Byways. See T 0233.
- 0335 Cuba, Radio Havana Cuba: DXers Unlimited.
- 0339 Czech Rep, Radio Prague: Magazine '95.
- 0349 Taiwan, V of Free China: Let's Learn Chinese. See S 0247.

Thursdays

- 0304 Vatican State, Vatican Radio: Postcards from Rome.
- 0305 USA, WWCR #3 Nashville TN: Radio Free America (live).
- 0308 South Africa, Channel Africa: Dateline Africa.
- 0315 Taiwan, V of Free China: Music Box. See W 0215.
- 0323 South Africa, Channel Africa: Business Dateline.
- 0334 South Africa, Channel Africa: Dateline Sports.
- 0342 Japan, Radio: Japan Diary.
- 0351 Taiwan, V of Free China: Let's Learn Chinese. See S 0247.

Fridays

- 0305 USA, WWCR #3 Nashville TN: Radio Free America (live).
- 0315 Japan, Radio: Radio Japan Magazine Hour.
- 0315 Taiwan, V of Free China: Perspectives. See H 0215.
- 0319 Cuba, Radio Havana Cuba: Spotlight on the Americas.
- 0330 Japan, Radio: Close Up.
- 0332 China, China Radio Intl: Focus.
- 0332 Taiwan, V of Free China: Journey into Chinese Culture. See H 0232.
- 0333 Germany, Deutsche Welle: Science and Technology.
- 0341 China, China Radio Intl: Culture in China.
- 0342 Japan, Radio: Japan Diary.

Saturdays

- 0308 South Africa, Channel Africa: Africa and All That Jazz.
- 0310 Australia, Radio: Soundabout.
- 0310 Japan, Radio: This Week.
- 0312 Czech Rep, Radio Prague: Calling All Listeners.
- 0315 Taiwan, V of Free China: Confrontation. See F 0215.
- 0332 Taiwan, V of Free China: New Record Time. See F 0232.
- 0333 South Africa, Channel Africa: Historical Almanac.
- 0334 Czech Rep, Radio Prague: Current Affairs.
- 0340 Cuba, Radio Havana Cuba: Cuban Music.
- 0342 Czech Rep, Radio Prague: Calling All Listeners.

HAUSER'S HIGHLIGHTS UKOGBANI: BBC

Now that BBC has expanded SW usage to us, check or tape these blocks as of November:

1030-1100 on 6195 via Antigua:

Sat *From the Weeklies, Letter from America*

Sun *In Praise of God*

Mon *Composer of the Month*

Tue *Counterpoint*

Wed *Pop music features*

Thu *Assignment*

Fri *Ed Stewart Show*

1715-1745 on 17840 via Antigua:

Sat *Pop music features*

Sun *On Screen, On the Move*

Mon *Composer of the Month*

Tue *Discovery*

Wed *Counterpoint*

Thu *Focus on Faith*

Fri *Vintage Chart Show*

1830-1900 on 17840 via Antigua:

Sat *Multitrack Alternative*

Sun *John Peel*

Mon *Jazz for the Asking*

Tue *Multitrack Hit-List*

Wed *Anything Goes*

Thu *Multitrack X-Press*

Fri *Andy Kershaw's World of Music*

17840 in particular offers good fading-free, interference-free audio for music programs.

FREQUENCIES

0400-0500	Australia, Radio	9580pa	9660pa	11880pa	13605as				
		15240pa	15365pa	15415pa	15510pa	0400-0500	United Kingdom,BBC London	7205na	
		17715pa	17750as	17795pa				3255af	5975va
0400-0500 vl	Canada, CBC N Quebec Svc	9625do						7160af	9410va
0400-0500	Canada, CFCX Montreal	6005do						11760af	11955as
0400-0500	Canada, CFRX Toronto	6070do				0400-0430	United Kingdom,BBC London	15310as	15575va
0400-0500	Canada, CFPV Calgary	6030do						3955eu	6195eu
0400-0500	Canada, CHNX Halifax	6130do				0400-0500	USA, KAIJ Dallas TX	5810am	
0400-0500	Canada, CKZN St John's	6160do				0400-0500	USA, KTBN Salt Lk City UT	7510am	
0400-0500	Canada, CKZU Vancouver	6160do				0400-0500	USA, KVOH Los Angeles CA	9975am	
0400-0430	Canada, RCI Montreal	6150me	9505me	9645me		0400-0500	USA, KWHR Naalehu HI	17510as	
0400-0500	China, China Radio Intl	9730na	11680na			0400-0500	USA, Monitor Radio Intl	7535eu	9840af
0400-0500	Costa Rica,RF Peace Intl	7385am	9400am	15050am		0400-0500	USA, VOA Washington DC	6035af	6110af
0400-0405	Croatia, Croatian Radio	5895eu	7370eu	13830eu				7280af	7340af
0400-0500	Cuba, Radio Havana Cuba	6000na	6180na	9820na	9830na			9630af	9885af
0400-0500	Ecuador, HCJB Quito	9745am	21455am			0400-0500	USA, WEWN Birmingham AL	5825eu	7425na
0400-0450	Germany, Deutsche Welle	6015af	6045af	6065af	7225af	0400-0500	USA, WHRI Noblesville IN	5745am	
		7265af	9565af			0400-0500	USA, WJCR Upton KY	7490na	13595na
0400-0500 twtfa	Guatemala, Radio Cultural	3300do				0400-0500 smtwhf	USA, WMLK Bethel PA	9465eu	
0400-0500 vl	Kenya, Kenya Broadc Corp	4885do	4935do	6150do		0400-0500	USA, WRNO New Orleans LA	7395am	
0400-0500	Lebanon, Wings of Hope	9960va				0400-0500	USA, WWCR Nashville TN	3315am	5065am
0400-0458	New Zealand, R NZ Intl	15115pa				0400-0445	USA, WYFR Okeechobee FL	6065na	9505na
0400-0450	North Korea, R Pyongyang	15180as	15230as	17765as		0400-0430	Vietnam, Voice of	7360na	9840na
0400-0430	Romania, R Romania Intl	5990na	6155na	9510na	9570na	0400-0500	Zimbabwe, ZBC/Radio 3	3306do	3396do
		11940na				0425-0440	Italy, RAI Rome	5990eu	7275eu
0400-0500	Russia, Voice of	5920na	5930na	7105na	7175na	0425-0500	Nigeria, FRCN/Radio	3326do	4990do
		7180na	7270na			0430-0500	Australia,DefenseForces R	13525as	
0400-0500	S Africa, Channel Africa	5955af	9585af			0430-0455	Moldova, R Moldova Intl	7500na	
0400-0427	S Africa, Trans World R	7165af				0430-0500	Netherlands, Radio	5995na	6165na
0400-0500	Slovakia, AWR	9450af	9465af			0430-0500	Russia, Voice of	7330na	
0400-0430	Switzerland, Swiss R Intl	6135na	9885na	9905na		0430-0500	Swaziland, Trans World R	3200af	5055af
0400-0500	Switzerland, Swiss R Intl	9905na				0430-0500	Switzerland, Swiss R Intl	6135na	9885na
0400-0430	Tanzania, Radio	5050af				0430-0500	Switzerland, Swiss R Intl	9905na	
0400-0500	Turkey, Voice of	9445na	9560as	9655na	9685eu	0430-0500	United Kingdom,BBC London	7150eu	
		9760au				0430-0457	Yugoslavia, Radio	9580na	
0400-0415	Uganda, Radio	4976do				0445-0500	Tajikistan, Tajik Radio	7245as	
0400-0500	Ukraine, R Ukraine Intl	5905na	5915na	6010na	6055na	0455-0500	Nigeria, FRCN/Voice of	7255af	
						0459-0500 mtwhf	New Zealand, R NZ Intl	11900pa	

SELECTED PROGRAMS

Sundays

- 0405 Switzerland, Swiss R Intl: Newsnet. See S 0105.
- 0412 Turkey, Voice of: Outlook.
- 0415 Turkey, Voice of: The World of Science (biweekly).
- 0415 Turkey, Voice of: VOT DX Corner (biweekly).
- 0416 Switzerland, Swiss R Intl: Capital Letters (14th,28th). See S 0116.
- 0430 Switzerland, Swiss R Intl: Network Switzerland. The top Swiss stories and what's happening around the country.
- 0433 Turkey, Voice of: Blue Voyage.
- 0445 UK, BBC London (as pac/eu/south as): The Multitrack Sessions. Featuring the best in acoustic music.
- 0450 UK, BBC London (am): Science and Technology. The Planets. See H 0135.

Mondays

- 0400 USA, WWCR #3 Nashville TN: The Extraordinary Science Radio Hour.
- 0405 Switzerland, Swiss R Intl: Newsnet. See S 0105.
- 0413 Turkey, Voice of: Tastes from Turkey.
- 0420 Turkey, Voice of: Turkish Music.
- 0430 Switzerland, Swiss R Intl: Network Switzerland. See S 0430.
- 0430 Turkey, Voice of: Magnificent Istanbul.
- 0430 UK, BBC London (south as): Classical Music. The High-C Hero (1st,8th,15th). See W 0030.
- 0440 Turkey, Voice of: Turkish Music.
- 0445 Switzerland, Swiss R Intl: Capital Letters (8th,22nd). See S 0116.
- 0445 UK, BBC London (eu/south as): Red Dwarf. See T 0115.

Tuesdays

- 0405 Switzerland, Swiss R Intl: Newsnet. See S 0105.
- 0408 South Africa, Channel Africa: Historical Almanac.
- 0409 Turkey, Voice of: Review of the Turkish Press.
- 0412 Turkey, Voice of: Last Week.
- 0418 South Africa, Channel Africa: Did You Know?.
- 0418 Turkey, Voice of: Tolerance of Virtue.
- 0423 South Africa, Channel Africa: English for Africa.
- 0426 Turkey, Voice of: Notes from Turkey.

- 0430 Switzerland, Swiss R Intl: Network Switzerland. See S 0430.
- 0433 Turkey, Voice of: Turkish Songs.
- 0435 South Africa, Channel Africa: Off the Press.

Wednesdays

- 0405 Switzerland, Swiss R Intl: Newsnet. See S 0105.
- 0405 USA, WWCR #3 Nashville TN: Radio Free America (live).
- 0407 Turkey, Voice of: Review of the Turkish Press.
- 0408 South Africa, Channel Africa: Reggae and Rock.
- 0410 Turkey, Voice of: Turkey: A Haven in the East.
- 0419 Turkey, Voice of: Popular Turkish Music.
- 0429 South Africa, Channel Africa: News Summary.
- 0432 Turkey, Voice of: Economic Panorama (biweekly).
- 0440 Turkey, Voice of: Turkish Music.

Thursdays

- 0405 Switzerland, Swiss R Intl: Newsnet. See S 0105.
- 0407 Turkey, Voice of: Review of the Turkish Press.
- 0410 Turkey, Voice of: Review of the Foreign Media.
- 0414 Turkey, Voice of: Letter Box.
- 0429 Turkey, Voice of: In Your Own Voice.
- 0430 Switzerland, Swiss R Intl: Network Switzerland. See S 0430.
- 0444 Turkey, Voice of: Turkish Music.
- 0454 Radio Netherlands: Documentary. Homosexuality in Japan (4th). See W 1154.
- 0454 Radio Netherlands: Documentary. Japanese Youth (11th). See W 1154.
- 0454 Radio Netherlands: Documentary. The Coming of Age of Greenland (Feb 1). See W 1554.
- 0454 Radio Netherlands: Encore Documentary. Bringing Home the Beef (18th). See W 1154.
- 0454 Radio Netherlands: Encore Documentary. Bringing Home the Beef (25th). See S 0154.

Fridays

- 0405 Switzerland, Swiss R Intl: Newsnet. See S 0105.
- 0409 South Africa, Channel Africa: Dateline Africa.
- 0409 Turkey, Voice of: Review of the Turkish Press.

- 0412 Turkey, Voice of: Heading for Europe.
- 0413 South Africa, Channel Africa: Historical Almanac.
- 0418 Turkey, Voice of: Turkish Music.
- 0420 South Africa, Channel Africa: The Price of Freedom.
- 0430 Switzerland, Swiss R Intl: Business as Usual. Swiss economic news and business report.
- 0435 Turkey, Voice of: Ambassadors of Art.
- 0439 South Africa, Channel Africa: Sports Profile.

Saturdays

- 0400 Costa Rica, R for Peace Intl: World of Radio.
- 0405 Switzerland, Swiss R Intl: Newsnet. See S 0105.
- 0408 South Africa, Channel Africa: First Light Africa.
- 0412 Turkey, Voice of: Review of the Turkish Press.
- 0415 Turkey, Voice of: Turkish Album.
- 0422 South Africa, Channel Africa: Focus on Africa.
- 0430 Switzerland, Swiss R Intl: Swiss Scene. People and politics.
- 0431 South Africa, Channel Africa: The Hit Parade.
- 0432 Turkey, Voice of: The Ataturk History.
- 0442 Turkey, Voice of: Turkish Music.

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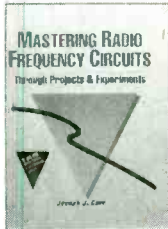
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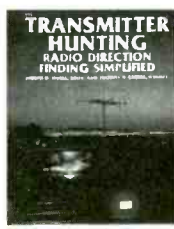
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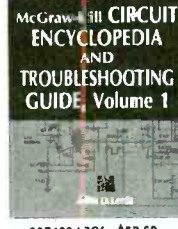
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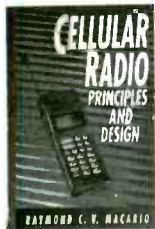
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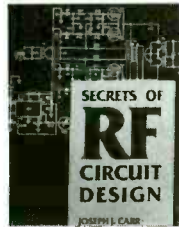
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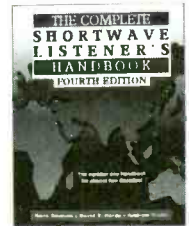
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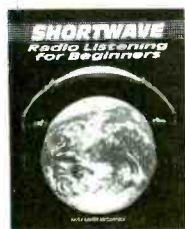
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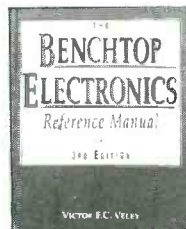
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FREQUENCIES

0500-0600	Australia, Radio	9580pa	9660pa	11880pa	13605as	0500-0600	United Kingdom, BBC London	3255af	3955eu	5975va	6005af
		15240pa	15245as	15365pa	15415as			6175va	6195af	7150eu	7160af
		17715pa	17795pa					9410va	9600af	9640sa	9740as
0500-0600	Australia, Defense Forces R	13525as						11760va	11955va	12095af	15280as
0500-0600	Bulgaria, Radio	7480na	9700na					15310as	15360va	15420af	15575va
0500-0600	Canada, CFCX Montreal	6005do					17640af	17885af			
0500-0600	Canada, CFRX Toronto	6070do				0500-0600	USA, KAIJ Dallas TX	5810am			
0500-0600	Canada, CFVP Calgary	6030do				0500-0600	USA, KTBN Salt Lk City UT	7510am			
0500-0600	Canada, CHNX Halifax	6130do				0500-0600	USA, KVOH Los Angeles CA	9975am			
0500-0600	Canada, CKZU Vancouver	6160do				0500-0600	USA, KWHR Naalehu HI	9930as			
0500-0600	Costa Rica, RF Peace Intl	7385am	9400am	15050am		0500-0600	USA, Monitor Radio Intl	7535eu			
0500-0505	Croatia, Croatian Radio	5895eu	7370eu	13830eu		0500-0600	USA, VOA Washington DC	6035af	6873va	7170va	7295af
0500-0600	Cuba, Radio Havana Cuba	9820na	9830na					9630af	9700va	9885af	11825va
0500-0600	Ecuador, HCJB Quito	9745am	21455am					11965va	15205va		
0500-0600 as	Eqt Guinea, R East Africa	9585af				0500-0600	USA, WEWN Birmingham AL	5825eu	7425na		
0500-0550	Germany, Deutsche Welle	5960na	6045na	6120na	6185na	0500-0600	USA, WHRI Noblesville IN	5745am	9495am		
0500-0515	Israel, Kol Israel	5885na	17545na			0500-0600	USA, WJCR Upton KY	7490na	13595na		
0500-0600	Japan, NHK/Radio	5975eu	6110na	6150eu	9605na	0500-0600 mtwhfa	USA, WMLK Bethel PA	9465eu			
		11725as	11740as	11885na	17810as	0500-0600	USA, WRNO New Orleans LA	7395am			
0500-0600 vl	Kenya, Kenya Broadc Corp	4885do	4935do	6150do		0500-0600	USA, WWCR Nashville TN	3315am	5065am	5935am	
0500-0600	Lebanon, Wings of Hope	9960va				0500-0600	USA, WYFR Okeechobee FL	5985na	9885af		
0500-0525	Netherlands, Radio	5995na	6165na			0500-0530	Vatican State, Vatican R	7360af	9660af	11625af	
0500-0600 mtwhf	New Zealand, R NZ Intl	11900pa				0500-0530	Vietnam, Voice of	7360na	9840na	12030na	
0500-0505	Nigeria, FRCN/Radio	3326do	4990do			0500-0600	Zimbabwe, ZBC/Radio 3	3306do	3396do		
0500-0600	Nigeria, FRCN/Voice of	7255af				0505-0600	Swaziland, Trans World R	3200af	5055af	6070af	9500af
0500-0600	Russia, AWR	9895me				0525-0600	Ghana, Ghana Broadc Corp	3366do	4915do		
0500-0600	Russia, Voice of	5905na	5920na	5930na	7105na	0530-0600	Australia, Radio	15510as	15565as	17880as	
		7175na	7180na	7270na	7330na	0530-0600	Austria, R Austria Intl	6015na	6155eu	13730eu	
0500-0600	S Africa, Channel Africa	7185af	11900af			0530-0600	Romania, R Romania Intl	11940af	15250af	15365af	17745af
0500-0556	Spain, R Exterior Espana	9540na						17790af			

SELECTED PROGRAMS

Sundays

- 0509 Ecuador, HCJB Quito (am): DX Partyline.
- 0509 South Africa, Channel Africa: Talking of Books.
- 0511 Spain, R Exterior de Espana: Spanish Hall of Fame.
- 0524 Spain, R Exterior de Espana: Distance Unknown.
- 0525 Japan, Radio: Media Roundup.
- 0530 Australia, Radio: The Australian Music Show.
- 0530 Austria, R Austria Intl: Report from Austria. See S 0130.
- 0533 Spain, R Exterior de Espana: What's Cooking Today?
- 0537 Austria, R Austria Intl: Postbox. See S 0137.

Mondays

- 0500 Cuba, Radio Havana Cuba: Sunday Edition.
- 0508 South Africa, Channel Africa: Dateline Africa.
- 0509 Ecuador, HCJB Quito (am): Saludos Amigos.
- 0514 Cuba, Radio Havana Cuba: The Mailbag Show.
- 0523 Spain, R Exterior de Espana: Flamenco.
- 0530 Austria, R Austria Intl: Report from Austria. See S 0130.
- 0531 Cuba, Radio Havana Cuba: The Jazz Place.
- 0532 Russia, Voice of: The Jazz Show.
- 0540 Spain, R Exterior de Espana: Radio Club.

Tuesdays

- 0500 USA, WWCR #3 Nashville TN: The Hour of the Time (live).
- 0508 South Africa, Channel Africa: Dateline Africa.
- 0515 Spain, R Exterior de Espana: Panorama.
- 0518 Cuba, Radio Havana Cuba: Spotlight on the Americas.
- 0519 China, China Radio Intl: Current Affairs.
- 0530 Austria, R Austria Intl: Report from Austria. See S 0130.
- 0535 South Africa, Channel Africa: Sports.
- 0540 Spain, R Exterior de Espana: Cultural Encounters.

Wednesdays

- 0500 USA, WWCR #3 Nashville TN: The Hour of the Time (live).
- 0508 South Africa, Channel Africa: Dateline Africa.
- 0518 Cuba, Radio Havana Cuba: Spotlight on the Americas.
- 0520 Australia, Radio: Pacific Beat.
- 0530 Australia, Radio: Pacific Women.
- 0530 Austria, R Austria Intl: Report from Austria. See S 0130.
- 0530 Ecuador, HCJB Quito (am): El Mundo Futuro.
- 0535 Cuba, Radio Havana Cuba: DXers Unlimited.

- 0536 Spain, R Exterior de Espana: Entertainment in Spain.
- 0540 China, China Radio Intl: Listeners' Letterbox.

Thursdays

- 0500 USA, KWHR Naalehu HI: Music.
- 0500 USA, WWCR #3 Nashville TN: The Hour of the Time (live).
- 0508 South Africa, Channel Africa: Dateline Africa.
- 0520 Australia, Radio: Pacific Beat.
- 0525 Costa Rica, R for Peace Intl: Hightower Radio.
- 0529 Spain, R Exterior de Espana: As Others See Us.
- 0530 Austria, R Austria Intl: Report from Austria. See S 0130.
- 0530 Ecuador, HCJB Quito (am): Ham Radio Today.
- 0532 Russia, Voice of: Folk Box.
- 0533 Germany, Deutsche Welle: German Tribune.
- 0541 Spain, R Exterior de Espana: Science Desk (biweekly).
- 0545 UK, BBC London (eu): Classical Music. The High-C Hero (4th, 11th, 18th). See W 0030.

Fridays

- 0500 USA, WWCR #3 Nashville TN: The Hour of the Time (live).
- 0508 South Africa, Channel Africa: Dateline Africa.
- 0520 Australia, Radio: Pacific Beat.
- 0522 Spain, R Exterior de Espana: Press Review.
- 0528 Spain, R Exterior de Espana: People of Today.
- 0530 Australia, Radio: Beat of the Pacific.
- 0530 Austria, R Austria Intl: Report from Austria. See S 0130.
- 0530 Ecuador, HCJB Quito (am): What's Cooking in the Andes?.
- 0538 Spain, R Exterior de Espana: Cultural Clippings.
- 0540 South Africa, Channel Africa: Letterbox.

Saturdays

- 0500 USA, WWCR #3 Nashville TN: The Hour of the Time (live).
- 0510 South Africa, Channel Africa: Focus on Africa.
- 0515 South Africa, Channel Africa: Good Vibrations.
- 0522 Spain, R Exterior de Espana: Press Review.
- 0529 Spain, R Exterior de Espana: Window on Spain.
- 0530 Austria, R Austria Intl: Report from Austria. See S 0130.
- 0530 Ecuador, HCJB Quito (am): Musica del Ecuador.
- 0532 Russia, Voice of: Timelines.
- 0539 Spain, R Exterior de Espana: Arts in Spain.
- 0554 South Africa, Channel Africa: This Day in History.

HAUSER'S HIGHLIGHTS

MOLDOVA: RADIO MOLDOVA

Shows in printed schedule until 31 March are Monday-Friday only, and not all have been confirmed by BBCM, 25 mins each via Romania:

0230	Spanish	9400
0300	Romanian	7500
0330	English	7500
0400	Russian	6135
0430	English	7500
1200	Spanish	15315
1230	Romanian	9400
1930	Russian	9400
2000	French	7500
2030	Spanish	7500
2100	French	7500
2130	Spanish	7500
2200, 2300	English	7500

Address is Str. Miorita 1, 277028 Chisinau, Moldova; fax +373-2-723329/723307.

FREQUENCIES

0600-0700	Australia, Radio	11910pa	13605as	13755pa	15240pa	0600-0700	Slovakia, AWR	5905eu	11655af		
		15365pa	15510as	17715as	17795pa	0600-0630 vi	Solomon Islands, SIBC	5020do	9545do		
0600-0630	Australia, Radio	9580pa	9660pa	15415pa		0600-0700	South Korea, R Korea Intl	7205na			
0600-0630	Australia, Defense Forces R	13525as				0600-0630	Switzerland, Swiss R Intl	9885af	12070af	13635af	
0600-0700 vi	Canada, CBC N Quebec Svc	9625do				0600-0700	United Kingdom, BBC London	3955eu	5975va	6005af	6175va
0600-0700 vi	Canada, CBC N Quebec Svc	9625do						6195af	7145pa	7150eu	9410va
0600-0700	Canada, CFCX Montreal	6005do						9600af	9640sa	11760va	11780af
0600-0700	Canada, CFRX Toronto	6070do						11940af	11955as	12095af	15070va
0600-0700	Canada, CFVP Calgary	6030do						15280as	15310as	15360va	15420af
0600-0700	Canada, CHNX Halifax	6130do						1760af	17790as	17885af	
0600-0700	Canada, CKZU Vancouver	6160do				0600-0700	USA, KAIJ Dallas TX	5810am			
0600-0630	Canada, RCI Montreal	6050eu	6150eu	9740eu	9760eu	0600-0700	USA, KTVN Salt Lk City UT	7510am			
		11905eu				0600-0700	USA, KVOH Los Angeles CA	9975am			
0600-0700	Costa Rica, RF Peace Intl	7385am	9400am			0600-0700	USA, KWHR Maalehu HI	9930as			
0600-0605	Croatia, Croatian Radio	5895eu	7370eu	13830eu		0600-0700	USA, Monitor Radio Intl	7355eu			
0600-0700	Cuba, Radio Havana Cuba	9820na	9830na			0600-0700	USA, VOA Washington DC	6035af	6873va	7170va	7285af
0600-0700	Ecuador, HCJB Quito	9745am	21455am					9435af	11805va	11950af	12080af
0600-0700 as	Eqt Guinea, R East Africa	9585af						15205va	15600af		
0600-0650	Germany, Deutsche Welle	6100af	9565af	11765af	13790af	0600-0700	USA, WEWN Birmingham AL	7425na			
		15185af	17820af	21705me		0600-0700	USA, WHRI Noblesville IN	5745am			
		3316do	4915do			0600-0700	USA, WJCR Upton KY	7490na	13595na		
0600-0615	Ghana, Ghana Broad Corp	3316do				0600-0700 smtwhf	USA, WMLK Bethel PA	9465eu			
0600-0700	Italy, IRRS Milan	3985eu				0600-0700	USA, WWCR Nashville TN	3315am	5065am	5935am	
0600-0700	Japan, NHK/Radio	11725as	17810as			0600-0620	Vatican State, Vatican R	4005eu	5860eu	5882eu	
0600-0700 vi	Kenya, Kenya Broad Corp	4885do	4935do	6150do		0600-0700	Yemen, Yemeni Rep Radio	9780as			
0600-0700 vi	Kiribati, Radio	9825do				0600-0700	Zimbabwe, ZBC/Radio 3	5975do	6045do		
0600-0700	Lebanon, Wings of Hope	9960af				0605-0700	Swaziland, Trans World R	5055af	6070af	9500af	9650af
0600-0700 vi	Liberia, Radio ELBC	7275do						11730af			
0600-0700	Liberia, Radio ELWA	4760do				0615-0630	Switzerland, Swiss R Intl	6165eu	7410eu		
0600-0700 mtwhfa	Malta, V of Mediterranean	9765me				0630-0700	Australia, Radio	5995pa	6020pa	6080pa	9860pa
0600-0635 s	Malta, V of Mediterranean	9765me						15245as			
0600-0700 mtwhf	New Zealand, R NZ Intl	11900pa				0630-0700	Austria, R Austria Intl	6015na			
0600-0630	Nigeria, FRCN/Radio	3326do	4990do			0630-0700	Georgia, Georgian Radio	11805eu			
0600-0700	Nigeria, FRCN/Voice of	7255af				0630-0700	Kazakhstan, R Alma Ata	9560eu			
0600-0700	North Korea, R Pyongyang	15180as	15230as			0630-0700	Vatican State, Vatican R	7360af	9660af		
0600-0700	Russia, Voice of	5905na	5920na	5930na	7175na	0645-0700	Romania, R Romania Intl	15250pa	15405pa	17720pa	17805pa
		7270na	7330na								
0600-0700	S Africa, Trans World R	11730af									

SELECTED PROGRAMS

Sundays

- 0605 Switzerland, Swiss R Intl: Newsnet. See S 0105.
- 0608 Vatican State, Vatican Radio: On-the-Air.
- 0610 Australia, Radio: Feedback.
- 0611 Russia, Voice of: Science and Engineering in the CIS.
- 0630 Austria, R Austria Intl: Report from Austria. See S 0130.
- 0630 Ecuador, HCJB Quito (am): Musical Mailbag.
- 0630 UK, BBC London (as pac/eu/south as): Pick of the World. See S 1130.
- 0632 Russia, Voice of: This is Russia.
- 0634 Cuba, Radio Havana Cuba: DXers Unlimited.
- 0640 Austria, R Austria Intl: Postbox. See S 0137.

Mondays

- 0605 Switzerland, Swiss R Intl: Newsnet. See S 0105.
- 0611 Australia, Radio: Pacific Beat.
- 0611 Russia, Voice of: Moscow Mailbag.
- 0611 South Korea, Radio Korea Intl: Echoes of Korean Music.
- 0630 Australia, Radio: International Report.
- 0630 Austria, R Austria Intl: Report from Austria. See S 0130.
- 0630 Cuba, Radio Havana Cuba: Breakthrough.
- 0630 UK, BBC London (am): Science Series. From Pins to Paperclips/Bluffers Guide to Science/The Gene Shifters. Three science-based series aimed at new listeners to the BBC.
- 0632 Russia, Voice of: This is Russia.
- 0635 South Korea, Radio Korea Intl: Shortwave Feedback.

Tuesdays

- 0603 USA, WWCR #1 Nashville TN: The Dave Hinkson Show.
- 0605 Switzerland, Swiss R Intl: Newsnet. See S 0105.
- 0611 Australia, Radio: Pacific Beat.
- 0612 Canada, RCI Montreal: Report to the Peacekeepers.
- 0630 Australia, Radio: International Report.
- 0630 Austria, R Austria Intl: Report from Austria. See S 0130.
- 0630 New Zealand, Radio NZ Intl: Ears.
- 0630 UK, BBC London (as pac/eu/south as): Man, Machine and Music. See T 0115.
- 0632 Russia, Voice of: Moscow Yesterday and Today.
- 0640 Cuba, Radio Havana Cuba: Cuba Today.

Wednesdays

- 0603 USA, WWCR #1 Nashville TN: The Dave Hinkson Show.
- 0605 Switzerland, Swiss R Intl: Newsnet. See S 0105.
- 0608 Germany, Deutsche Welle: Africa Report.
- 0611 Australia, Radio: Pacific Beat.
- 0611 Russia, Voice of: Focus on Asia and the Pacific.
- 0615 Japan, Radio: Radio Japan Magazine Hour.
- 0630 Austria, R Austria Intl: Report from Austria. See S 0130.
- 0632 Russia, Voice of: This is Russia.
- 0641 Japan, Radio: Japan Diary.

Thursdays

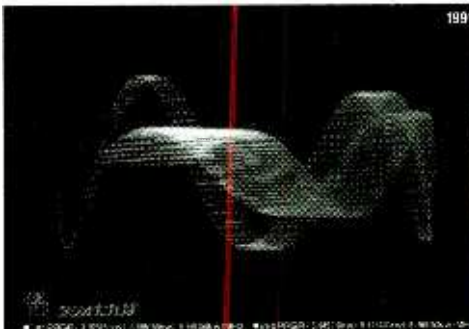
- 0600 Ecuador, HCJB Quito (am): The Latest Catch.
- 0603 USA, WWCR #1 Nashville TN: The Dave Hinkson Show.
- 0605 Switzerland, Swiss R Intl: Newsnet. See S 0105.
- 0611 Australia, Radio: Pacific Beat.
- 0614 Vatican State, Vatican Radio: Postcards from Rome.
- 0615 UK, BBC London (as pac): Red Dwarf. See T 0115.
- 0624 Germany, Deutsche Welle: European Journal.
- 0630 Austria, R Austria Intl: Report from Austria. See S 0130.
- 0630 New Zealand, Radio NZ Intl: Ears.
- 0632 Russia, Voice of: Moscow Yesterday and Today.

Fridays

- 0600 Vatican State, Vatican Radio: Then and Now.
- 0603 USA, WWCR #1 Nashville TN: The Dave Hinkson Show.
- 0605 Switzerland, Swiss R Intl: Newsnet. See S 0105.
- 0608 Germany, Deutsche Welle: Africa Report.
- 0611 Australia, Radio: Pacific Beat.
- 0611 Russia, Voice of: Focus on Asia and the Pacific.
- 0615 Japan, Radio: Radio Japan Magazine Hour.
- 0630 Austria, R Austria Intl: Report from Austria. See S 0130.
- 0632 Russia, Voice of: This is Russia.
- 0641 Cuba, Radio Havana Cuba: Cuba Today.

Saturdays

- 0603 USA, WWCR #1 Nashville TN: The Dave Hinkson Show.
- 0605 Switzerland, Swiss R Intl: Newsnet. See S 0105.
- 0610 Japan, Radio: This Week.
- 0611 Russia, Voice of: Focus on Asia and the Pacific.
- 0616 Switzerland, Swiss R Intl: Capital Letters (13th, 27th). See S 0116.
- 0630 Australia, Radio: Indian Pacific.
- 0630 Austria, R Austria Intl: Report from Austria. See S 0130.
- 0630 USA, WWCR #3 Nashville TN: America On Air.
- 0632 Russia, Voice of: Moscow Yesterday and Today.
- 0650 Cuba, Radio Havana Cuba: Cuban Music.



A QSL depicting radio waves from "the Nikon SW Broadcasting Co., also known as Radio Tampa" was sent MT by Tom Risher of Whittier, CA.

FREQUENCIES

0700-0800	Australia, Radio	5995pa 9710pa 17695as	6020pa 9860pa	6080pa 15240pa	9580pa 15565as				
0700-0730	Australia, Radio	13605as	15415as	17795as					
0700-0800 vl	Australia, VL8A Alice Spg	4835do							
0700-0800	Canada, CFCX Montreal	6005do							
0700-0800	Canada, CFRX Toronto	6070do							
0700-0800	Canada, CFVP Calgary	6030do							
0700-0800	Canada, CHNX Halifax	6130do							
0700-0800	Canada, CKZU Vancouver	6160do							
0700-0800	Costa Rica, RF Peace Intl	7385am	9400am						
0700-0800	Ecuador, HCJB Quito	5900pa	6050eu	21455am					
0700-0800 as	Eqt Guinea, R East Africa	9585af							
0700-0715	Ghana, Ghana Broadc Corp	3366do	4915do						
0700-0800	Italy, IRRS Milan	3985eu							
0700-0800	Japan, NHK/Radio	5975eu 11850pa 21610as	7230eu 15165me	11725as 17810va	11740as 17815af				
0700-0800 vl	Kenya, Kenya Broadc Corp	4885do	4935do	6150do					
0700-0800 vl	Kiribati, Radio	9825do							
0700-0800	Lebanon, Wings of Hope	9960va							
0700-0800 vl	Liberia, Radio ELBC	7275do							
0700-0800	Liberia, Radio ELWA	4760do							
0700-0800 asmtwh	Malaysia, Radio	7295do							
0700-0800 s	Malta, V of Mediterranean	9765me							
0700-0716 mtwhf	New Zealand, R NZ Intl	11900pa							
0700-0757 as	New Zealand, R NZ Intl	11900pa							
0700-0750	North Korea, R Pyongyang	15340af	17765me						
0700-0730 m	Norway, Radio Norway Intl	7180pa							
0700-0800	Russia, Voice of	5905na 7270na 5920na 7330na 5905na 5920do 5950na	5920na 7330na 5930na 9545do	5930na	7175na				
0700-0800 vl	Solomon Islands, SIBC	5020do							
0700-0800	Taiwan, VO Free China	5950na							
0700-0800	United Kingdom, BBC London	3955eu 7145pa 9640sa 12095va 15360va	5975va 7325va 11760va 15070va 15575va	6175na 9410va 11940af 15280as 17640af	6195va 9600af 11955va 15310as 17790as				
	17830af								
0700-0730	United Kingdom, BBC London	6180eu	11780va						
0700-0715	United Kingdom, BBC London	6005af	7160af	11860af					
0700-0800	USA, KAIJ Dallas TX	5810am							
0700-0800	USA, KLTN Salt Lk City UT	7510am							
0700-0800	USA, KWHR Naalehu HI	9930as							
0700-0800	USA, Monitor Radio Intl	7535eu							
0700-0800	USA, WEWN Birmingham AL	7425na							
0700-0800	USA, WHRI Noblesville IN	5745am	7315am						
0700-0800	USA, WJCR Upton KY	7490na	13595na						
0700-0800 smtwhf	USA, WMLK Bethel PA	9465eu							
0700-0800	USA, WWCR Nashville TN	3315am	5065am	5935am					
0700-0745	USA, WYFR Okeechobee FL	7355eu	9680eu						
0700-0745 mtwhf	Vatican State, Vatican R	4005va							
0700-0800	Zimbabwe, ZBC/Radio 3	5975do	6045do						
0705-0800	Swaziland, Trans World R	5055af	6070af	9500af	9650af				
0715-0730	Switzerland, Swiss R Intl	6165eu	7410eu						
0717-0800	New Zealand, R NZ Intl	9700pa							
0730-0800	Australia, Radio	9660pa	17880as						
0730-0800	Belgium, R Vlaanderen Int	5985eu	9925va						
0730-0745 s	Greece, Voice of	7450eu	9425eu	11645au					
0730-0800	Netherlands, Radio	9720au	11895pa						
0740-0800	Monaco, Trans World Radio	7115eu							
0745-0800 s	Ghana, Ghana Broadc Corp	3366do	4915do						
0745-0755	Greece, Voice of	7450eu	9425eu	11645au					
0745-0800	USA, WRMI/R Miami Intl	9955am							
0755-0800	Guam, AWR/KTWR	15200as							

0800 UTC

0800-0900	Australia, Radio	5995pa 9710pa	6020pa 9860pa	6080pa 17715as	9580pa 21725as				
0800-0830 vl	Australia, VL8A Alice Spg	4835do							
0800-0830 vl	Australia, VL8K Katherine	5025do							
0800-0830 vl	Australia, VL8T Tent Crk	4910do							
0800-0900	Australia, Defense Forces R	15607af	18194af						
0800-0900 vl	Canada, CBC N Quebec Svc	9625do							
0800-0900 vl	Canada, CBC N Quebec Svc	9625do							
0800-0900	Canada, CFCX Montreal	6005do							
0800-0900	Canada, CFRX Toronto	6070do							
0800-0900	Canada, CFVP Calgary	6030do							
0800-0900	Canada, CHNX Halifax	6130do							
0800-0900	Canada, CKZU Vancouver	6160do							
0800-0900	Costa Rica, RF Peace Intl	7385am	9400am						
0800-0827	Czech Rep, Radio Prague	5930eu	7345eu						
0800-0830	Ecuador, HCJB Quito	5900pa	6050eu	21455am					
0800-0900 as	Eqt Guinea, R East Africa	9585af							
0800-0830	Georgia, Georgian Radio	11910eu							
0800-0805 s	Ghana, Ghana Broadc Corp	3366do							

0800-0900	Guam, TWR/KTWR	15200as							
0800-0900	Indonesia, Voice of	9525as							
0800-0830	Italy, IRRS Milan	3985eu							
0800-0900 vl	Kiribati, Radio	9825do							
0800-0900	Lebanon, Wings of Hope	9960va							
0800-0830	Liberia, Radio ELWA	4760do							
0800-0900	Malaysia, Radio	7295do							
0800-0825	Malaysia, Voice of	15295as							
0800-0830 s	Malta, V of Mediterranean	9765me							
0800-0900	Monaco, Trans World Radio	7115eu							
0800-0825	Netherlands, Radio	9720au	11895pa						
0800-0900	New Zealand, R NZ Intl	9700pa							
0800-0850	North Korea, R Pyongyang	15180as	15230as						
0800-0850	Pakistan, Radio	15625eu	17900eu						
0800-0900 vl	Papua New Guinea, NBC	4890do	9675do						
0800-0900	Russia, Voice of	9685as 15160va 3316do	12005va 17560va	12025va 17860va	12035va				
0800-0815	Sierra Leone, SLBS	3316do							
0800-0900 vl	Solomon Islands, SIBC	5020do	9545do						
0800-0900	South Korea, R Korea Intl	7550eu	13670me						
0800-0900	United Kingdom, BBC London	3955eu 9410va 12095va 15400va 17830af	6190af 11760va 15070va 15575va	6195va 11940af 15280as 17640va	7325as 11955va 15310as 17790as				
0800-0815	United Kingdom, BBC London	7145pa							
0800-0830	United Kingdom, BBC London	3955eu	9640sa						
0800-0900	USA, KNLS Anchor Point AK	6150as							
0800-0900	USA, KLTN Salt Lk City UT	7510am							
0800-0900	USA, KWHR Naalehu HI	9930as							
0800-0900	USA, Monitor Radio Intl	7535eu	13615pa	15665eu					
0800-0900	USA, WEWN Birmingham AL	5825eu	7425na						
0800-0900	USA, WHRI Noblesville IN	5745am	7315am						
0800-0900	USA, WJCR Upton KY	7490na	13595na						
0800-0900 smtwhf	USA, WMLK Bethel PA	9465eu							
0800-0900	USA, WRMI/R Miami Intl	9955am							
0800-0900	USA, WWCR Nashville TN	3315am	5065am	5935am					
0800-0900	Zimbabwe, ZBC/Radio 4	5975do	6045do	7285do					
0805-0835	Swaziland, Trans World R	5055af	6070af	9500af	9650af				
0815-0900 mtwhf	Nigeria, FRCN/Radio	3326do	4990do						
0830-0900 vl	Australia, VL8A Alice Spg	2310do							
0830-0900 vl	Australia, VL8K Katherine	2485do							
0830-0900 vl	Australia, VL8T Tent Crk	2325do							
0830-0900	Austria, R Austria Intl	6155eu	13730eu	17870pa					
0830-0900	Italy, IRRS Milan	7125eu							
0830-0900	Netherlands, Radio	9720au	11895pa	13700pa					
0830-0857	Slovakia, R Slovakia Intl	11990au	15640au	17485au					
0855-0900	Guam, TWR/KTWR	11830pa							



Charlie Coutts—Head of the English section at Radio Budapest.

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MOD	(to interface units)	\$60.00*	\$40.00
FCC CD	Complete FCC Database	99.95	FREE
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FREQUENCIES

0900-1000	Australia, Radio	5995as 9860pa	7240as 13605as	9510as 15170as	9580pa 21725as				
0900-1000 vl	Australia, VL8A Alice Spg	2310do							
0900-1000 vl	Australia, VL8K Katherine	2485do							
0900-1000 vl	Australia, VL8T Tent Crk	2325do							
0900-1000	Australia, Defense Forces R	15607af	18194af						
0900-1000	Canada, CFCX Montreal	6005do							
0900-1000	Canada, CFRX Toronto	6070do							
0900-1000	Canada, CFVP Calgary	6030do							
0900-1000	Canada, CHNX Halifax	6130do							
0900-1000	Canada, CKZU Vancouver	6160do							
0900-1000	China, China Radio Intl	11755pa	15440pa						
0900-1000	Costa Rica, RF Peace Intl	7385am	9400am						
0900-1000	Ecuador, HCJB Quito	5900pa	21455am						
0900-0950	Germany, Deutsche Welle	6160pa 15145af 21600af	7380as 21680as 4915do	11715as 17780pa	11725af 17820as				
0900-0915 mtwtf	Ghana, Ghana Broadc Corp	3366do							
0900-1000	Guam, AWR/KSDA	9530as							
0900-0915	Guam, TWR/KTWR	15200as							
0900-1000	Guam, TWR/KTWR	11830pa							
0900-1000	Italy, IRRS Milan	7125eu							
0900-1000	Japan, NHK/Radio	6090as	11850au	15190as					
0900-0948 vl	Kiribati, Radio	9825do							
0900-1000	Lebanon, Voice of Hope	6280va							
0900-1000	Lebanon, Wings of Hope	9960va							
0900-1000	Malaysia, Radio	7295do							
0900-0905 a	Monaco, Trans World Radio	7115eu							
0900-0930	Netherlands, Radio	9720au	13700pa						
0900-1000	New Zealand, R NZ Intl	9700pa							
0900-1000 vl	Papua New Guinea, NBC	4890do	9675do						
0900-1000	Russia, Voice of	7305as 12025va	9450as 17860va	9685as	12005va				
0900-1000	Slovakia, AWR	15620af							
0900-0930	Switzerland, Swiss R Intl	11640au	13685au						
0900-1000	United Kingdom, BBC London	6190af 11750as 15190sa 15575va 17885af	6195va 11940af 15280va 17640va	9410va 12095va 15380as 17705eu	9740as 15070va 15400va 17830va				
0900-0915	United Kingdom, BBC London	7180as 11955va 17790as	7325af 15310as	9580as 15310as	11760va 15360va				
0900-1000	USA, KTBN Salt Lk City UT	7510am							
0900-1000	USA, Monitor Radio Intl	7395sa	7535eu	9430as	13615au				
0900-1000	USA, WEWN Birmingham AL	5825eu	7425na						
0900-1000	USA, WHRI Noblesville IN	5745am	7315am						
0900-1000	USA, WJCR Upton KY	7490na	13595na						
0900-1000 smtwhf	USA, WMLK Bethel PA	9465eu							
0900-1000	USA, WRMI/R Miami Intl	9955am							
0900-1000	USA, WWCR Nashville TN	5065am	5935am						
0900-1000	Zimbabwe, ZBC/Radio 4	5975do	6045do	7285do					
0905-0920 smtwhf	Monaco, Trans World Radio	7115eu							
0910-0940	Mongolia, R Ulan Bator	9960au	12000au						
0915-1000	Ghana, Ghana Broadc Corp	6130do	7295do						
0930-1000 s	Armenia, Voice of	15275va							
0930-1000	Canada, CKZN St John's	6160do							
0930-1000	Netherlands, Radio	7260pa 13700pa	9720au	9810pa	11895pa				
0930-1000	Philippines, FEBC/R Intl	11635as							
1000-1100	Australia, Radio	5995as 13605as	7240as 15170as	9510as 15170as	9580pa 21725as				
1000-1100 vl	Australia, VL8A Alice Spg	2310do							
1000-1100 vl	Australia, VL8K Katherine	2485do							
1000-1100 vl	Australia, VL8T Tent Crk	2325do							
1000-1100	Australia, Defense Forces R	13525as							
1000-1025 mtwhfa	Belgium, R Vlaanderen Int	6035eu	15510af	17595af					
1000-1100 vl	Canada, CBC N Quebec Svc	9625do							
1000-1100	Canada, CFCX Montreal	6005do							
1000-1100	Canada, CFRX Toronto	6070do							
1000-1100	Canada, CFVP Calgary	6030do							
1000-1100	Canada, CHNX Halifax	6130do							
1000-1100	Canada, CKZN St John's	6160do							
1000-1100	Canada, CKZU Vancouver	6160do							
1000-1100	China, China Radio Intl	11755pa	15440pa						
1000-1100	Costa Rica, RF Peace Intl	7385am	9400am						
1000-1030	Czech Rep, Radio Prague	15640as	17845af						
1000-1100	Ecuador, HCJB Quito	5900pa	21455am						
1000-1100	India, All India Radio	15050as							
1000-1100	Iraq, Radio Iraq Intl	13680eu							
1000-1100	Italy, IRRS Milan	7125eu							
1000-1100	Lebanon, Voice of Hope	6280va							
1000-1100	Lebanon, Wings of Hope	9960va							
1000-1100	Malaysia, Radio	7295do							
1000-1100 vl	Malaysia, RTM Kuching	7160do							
1000-1100 vl	Malaysia, RTM Kota Kinabalu	5980do							
1000-1100	Netherlands, Radio	7260as	9720pa	9810pa					
1000-1100	New Zealand, R NZ Intl	9700pa							
1000-1100 vl	Papua New Guinea, NBC	4890do	9675do						
1000-1100	Philippines, FEBC/R Intl	11635as							
1000-1100	Russia, Voice of	7305as 17755as	9685as 17860va	15490va	15560va				
1000-1100	Singapore, SBC Radio One	6155do							
1000-1100	United Kingdom, BBC London	6190af 11750as 15070va 15575va 17830va	6195va 11760va 15190sa 17705va	9410va 11940af 15310as 17885af	9740as 12095va 15400af 17830va				
1000-1030	United Kingdom, BBC London	15280as							
1000-1100	USA, KTBN Salt Lk City UT	7510am							
1000-1100	USA, Monitor Radio Intl	7395sa	7535eu	9430as	13615au				
1000-1100	USA, WHRI Noblesville IN	5745am	7315am						
1000-1100	USA, WJCR Upton KY	7490na	13595na						
1000-1100	USA, WWCR Nashville TN	5065am							
1000-1100	USA, WYFR Okeechobee FL	5950na							
1000-1030	Vietnam, Voice of	7360na	9840as	12020as	15010as				
1030-1100 mtwhfa	Austria, R Austria Intl	6155eu	13730pa	17870pa					
1030-1055	UAE, Radio Dubai	13675eu	15395eu	17825eu	21605me				

Staff members of Radio Budapest, Left to Right: Mike Mitchell, presenter; Karl Kirk, reporter; Gyorgyi Jakobi, Senior Editor; (sitting on table) Enniko Zsuffa, presenter; Agnes Kevi, correspondence; Renata Winkelbauer, secretary; Charlie Coutts, head of English section; (at the telephone) Sandor Saczko, sports editor; Nicholas Jenkins, cultural editor; and Balint Sebestyen, press reviewer.



FREQUENCIES

1100-1200	Australia, Radio	5995as 9710pa 15530as	7240as 9860pa 15565as	9510pa 13605as	9580pa 15170as	1100-1200	Singapore, SBC Radio One	6155do 9530as			
1100-1200 vl	Australia, VL8A Alice Spg	2310do				1100-1200	Singapore, R Singapore Int	11835as	15120as	17850au	
1100-1200 vl	Australia, VL8K Katherine	2485do				1100-1130	Sri Lanka, SLBC Colombo	6165eu	9535eu	9885as	11640as
1100-1200 vl	Australia, VL8T Tent Crk	2325do				1100-1130	Switzerland, Swiss R Intl	6165eu 13635as 7445as			
1100-1200	Australia, Defense Forces R	13525as				1100-1200	Taiwan, Voice of Asia	7445as			
1100-1200	Canada, CFCX Montreal	6005do				1100-1200	United Kingdom, BBC London	5965na 9410va 9580as	6190af	6195va	7180as
1100-1200	Canada, CFRX Toronto	6070do				1100-1200	USA, KWHR Naalehu HI	11955as	12095va	15070va	15220am
1100-1200	Canada, CFVP Calgary	6030do				1100-1200	USA, Monitor Radio Intl	15310as	15575va	17640va	17750va
1100-1200	Canada, CHNX Halifax	6130do				1100-1200	USA, VOA Washington DC	17830af 15190sa	17885af	17790as	
1100-1200	Canada, CKZU Vancouver	6160do				1100-1130	United Kingdom, BBC London	15190sa	15400eu	17790as	
1100-1200	Canada, CKZU Vancouver	6160do				1100-1200	USA, KTVN Salt Lk City UT	7510am			
1100-1200	Costa Rica, AWR Alajuela	5030am	7375am	9725am	13750am	1100-1200	USA, KWHR Naalehu HI	9930as			
1100-1200	Costa Rica, RF Peace Intl	9400am				1100-1200	USA, Monitor Radio Intl	6095na	7395ca	9355as	9430au
1100-1130	Ecuador, HCJB Quito	5900pa				1100-1200	USA, VOA Washington DC	5985va 9590am	6110va	6165am	7405am
1100-1200	Ecuador, HCJB Quito	12005am	15115am	21455am		1100-1200	USA, VOA Washington DC	9590am	9645va	9760va	11720va
1100-1200sa	EQT Guinea, R E. Africa	15190af				1100-1200	USA, WEWN Birmingham AL	15160va	15425va		
1100-1150	Germany, Deutsche Welle	15370af	15410af	17765af	17800af	1100-1200	USA, WHRI Noblesville IN	7425na			
1100-1200	Iraq, Radio Iraq Intl	13680eu				1100-1200	USA, WJCR Upton KY	6040am	6185am		
1100-1200	Italy, IRRS Milan	7125eu				1100-1200	USA, WVHA Greenbush ME	7490na	13595na		
1100-1200	Japan, NHK/Radio	6090as	6120na	15350as		1100-1200 s	USA, WVHA Greenbush ME	13770af			
1100-1200	Jordan, Radio	11970na				1100-1200	USA, WWCN Nashville TN	5935am	7435am	15685am	
1100-1200	Malaysia, Radio	7295do				1100-1200	USA, WYFR Okeechobee FL	5950na	7355na		
1100-1200 vl	Malaysia, RTM Kuching	7160do				1100-1200	Austria, R Austria Intl	13730eu			
1100-1200 vl	Malaysia, RTM Kota Kinabalu	5980do				1130-1200 vl	China, China Radio Intl	6995as	11445as	15135as	
1100-1200	Nepal, Radio	3230do	5005do			1130-1157	Czech Rep, Radio Prague	7345eu	9505eu		
1100-1200	New Zealand, R NZ Intl	9700pa				1130-1200	Iran, VOIRI Tehran	11745as	11790as	11875me	11930me
1100-1150	North Korea, R Pyongyang	6576na	9977na	11335na		1130-1200	Myanmar, Voice of	15260af	17750me		
1100-1120	Pakistan, Radio	15625as	17900as			1130-1200	Netherlands, Radio	5990do			
1100-1200 vl	Papua New Guinea, NBC	4890pa	9675do			1130-1200	South Korea, R Korea Intl	6045eu	7190eu		
1100-1200	Russia, Voice of	12055va 17860va	15490va	15560va	17755va	1130-1200	India, All India Radio	9650na			
						1135-1140	USA, WRM/R Miami Intl	9595as			
						1145-1200	USA, WRM/R Miami Intl	9955am			

SELECTED PROGRAMS

Sundays

- 1100 Radio E. Africa, Equatorial Guinea: Wayne Avenue Church of God (from 1045) (J. C. Wilber).
- 1105 Switzerland, Swiss R Intl: Newsnet. See S 0105.
- 1110 Japan, Radio: Hello from Tokyo.
- 1115 Radio E. Africa, Equatorial Guinea: Camp Meeting (Leon Lewis).
- 1130 Australia, Radio: Fine Music Australia.
- 1130 Austria, R Austria Intl: Report from Austria. See S 0130.
- 1130 Radio E. Africa, Equatorial Guinea: Last Day Outreach (S. C. Payne).
- 1130 UK, BBC London (am/as pac): Pick of the World. Back by popular demand is the program that brings you the very best of BBC World Service each week.
- 1130 USA, VOA Washington DC (as pac): Issues in the News.
- 1145 Radio E. Africa, Equatorial Guinea: World Vision for Christ (Albert Chambers).

Mondays

- 1100 Ecuador, HCJB Quito (pac): Nightsounds.
- 1105 Switzerland, Swiss R Intl: Newsnet. See S 0105.
- 1110 USA, VOA Washington DC (ca): Stateside.
- 1113 North Korea, R Pyongyang: Music/Commentary.
- 1130 Australia, Radio: Innovations.
- 1130 Austria, R Austria Intl: Report from Austria. See S 0130.
- 1130 Japan, Radio: Radio Japan Magazine Hour.
- 1130 USA, VOA Washington DC (as pac): Music USA (Standards).
- 1142 South Korea, Radio Korea Intl: Seoul Calling.
- 1144 Japan, Radio: Japan Diary.

Tuesdays

- 1100 Ecuador, HCJB Quito (pac): Nightsounds.
- 1105 Switzerland, Swiss R Intl: Newsnet. See S 0105.
- 1110 USA, VOA Washington DC (ca): Stateside.
- 1115 North Korea, R Pyongyang: Music.
- 1121 North Korea, R Pyongyang: The Immortal Story.
- 1126 North Korea, R Pyongyang: Truth Idea.
- 1130 Austria, R Austria Intl: Report from Austria. See S 0130.
- 1130 USA, VOA Washington DC (as pac): Now Music USA.
- 1131 Japan, Radio: Japanese Culture Today.
- 1139 Czech Rep, Radio Prague: Magazine '95.

Wednesdays

- 1105 Switzerland, Swiss R Intl: Newsnet. See S 0105.
- 1115 North Korea, R Pyongyang: Music.
- 1120 North Korea, R Pyongyang: The Reminiscences of the Great Leader.
- 1130 Austria, R Austria Intl: Report from Austria. See S 0130.
- 1137 South Korea, Radio Korea Intl: News Commentary.
- 1139 North Korea, R Pyongyang: The Great Man of the Century.
- 1142 South Korea, Radio Korea Intl: Pulse of Korea.
- 1154 Radio Netherlands: Documentary. Homosexuality in Japan (3rd). The gay and lesbian struggle for civil rights.
- 1154 Radio Netherlands: Documentary. Japanese Youth (10th). See S 2354.
- 1154 Radio Netherlands: Documentary. The Coming of Age of Greenland (31st). See W 1554.
- 1154 Radio Netherlands: Encore Documentary. Bringing Home the Beef (17th). Part I of Marijke van der Meer's award-winning series.
- 1154 Radio Netherlands: Encore Documentary. Bringing Home the Beef (24th). See S 0154.

Thursdays

- 1105 Switzerland, Swiss R Intl: Newsnet. See S 0105.
- 1109 Germany, Deutsche Welle: Newline Cologne.
- 1110 USA, VOA Washington DC (ca): Stateside.
- 1130 Austria, R Austria Intl: Report from Austria. See S 0130.
- 1130 UK, BBC London (af/eu): Man, Machine and Music. See T 0115.
- 1130 UK, BBC London (as pac): New Science Series. See M 0630.
- 1130 UK, BBC London (as pac): Pick of the World. See S 1130.
- 1130 USA, VOA Washington DC (as pac): Now Music USA (Top Ten).
- 1133 Germany, Deutsche Welle: Hallo Africa.
- 1144 Japan, Radio: Japan Diary.

Fridays

- 1100 Ecuador, HCJB Quito (pac): Nightsounds.
- 1105 Switzerland, Swiss R Intl: Newsnet. See S 0105.
- 1113 North Korea, R Pyongyang: Music.
- 1121 North Korea, R Pyongyang: Immortal Ideas of the Great Leader.

- 1130 Austria, R Austria Intl: Report from Austria. See S 0130.
- 1130 Japan, Radio: Radio Japan Magazine Hour.
- 1130 USA, VOA Washington DC (as pac): Country Music USA.
- 1131 North Korea, R Pyongyang: Music.
- 1138 North Korea, R Pyongyang: The Great Man of the Country.
- 1144 Japan, Radio: Japan Diary.

Saturdays

- 1100 Radio E. Africa, Equatorial Guinea: St. Paul's A.M.E. Church (from 1045) (Leroy Attles, Sr.).
- 1100 USA, WWCR #3 Nashville TN: The Old Record Shop.
- 1105 Switzerland, Swiss R Intl: Newsnet. See S 0105.
- 1110 Japan, Radio: This Week.
- 1113 North Korea, R Pyongyang: Music/Commentary.
- 1115 Radio Africa, Equatorial Guinea: Countrywide Full Gospel (John Barfoot).
- 1116 Switzerland, Swiss R Intl: Capital Letters (13th, 27th). See S 0116.
- 1130 Austria, R Austria Intl: Report from Austria. See S 0130.
- 1130 USA, VOA Washington DC (as pac): Press Conference USA.
- 1130 USA, VOA Washington DC (ca): Music USA (Standards).
- 1137 South Korea, Radio Korea Intl: From Us to You.

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SEE ARTICLE IN FEB 95 MONITORING TIMES pg 26-29

FREQUENCIES

1300-1400	Australia, Radio	5995pa	7240as	9560pa	9610as	1300-1400	Singapore, R Singapore Int	9530as			
		11800pa				1300-1330	Switzerland, Swiss R Intl	7230as	7480as	11640as	13625as
1300-1330	Australia, Radio	6060pa	6080as	9510pa		1300-1400	Switzerland, Swiss R Intl	6165eu	9535eu		
1300-1320	Brazil, Radiobras	15445na				1300-1400	United Kingdom, BBC London	5965na	5990as	6190af	6195va
1300-1330	Bulgaria, Radio	9810as	11605as					9410va	9515na	9740as	11750as
1300-1400 vl	Canada, CBC N Quebec Svc	9625do						11760va	11940af	12095va	15070va
1300-1400	Canada, CFCX Montreal	6005do						15220va	15310as	15420af	15575va
1300-1400	Canada, CFRX Toronto	6070do						17640va	17705va	17830af	17885af
1300-1400	Canada, CFVP Calgary	6030do						21470af	21660af		
1300-1400	Canada, CHNX Halifax	6130do				1300-1400	USA, KJES Mesquite NM	11715na			
1300-1400	Canada, CKZN St John's	6160do				1300-1400	USA, KNLS Anchor Point AK	7365as			
1300-1400	Canada, CKZU Vancouver	6160do				1300-1400	USA, KTVN Salt Lk City UT	7510am			
1300-1400	Canada, RCI Montreal	9635na	11955na			1300-1400	USA, Monitor Radio Intl	6095na	9355as	9455na	13625au
1300-1400	China, China Radio Intl	7405na	9715as	11660pa	15440pa	1300-1400	USA, VOA Washington DC	6110va	9645va	9760va	11715va
1300-1400	Costa Rica, RF Peace Intl	6200am	9400am	15050am				15160va	15425va		
1300-1400	Ecuador, HCJB Quito	12005am	15115am	21455am		1300-1400	USA, WEWN Birmingham AL	7425na	7425na	11875na	
1300-1330	Egypt, Radio Cairo	17595as				1300-1400 irreg	USA, WGTG McCaysville GA	9370am	9475am		
1300-1400sa	EQT Guinea, R E. Africa	15190af				1300-1400	USA, WHRI Noblesville IN	6040am	15105am		
1300-1400	Finland, YLE/R Finland	11735na	15400na			1300-1400	USA, WJCR Upton KY	7490na	13595na		
1300-1400	Iraq, Radio Iraq Intl	13680as				1300-1400	USA, WRMI/R Miami Intl	9955am			
1300-1400	Italy, IRRS Milan	7125eu				1300-1400 a	USA, WVVA Greenbush ME	11695af			
1300-1400	Lebanon, Wings of Hope	9960va				1300-1400	USA, WWCR Nashville TN	5935am	7435am	15685am	
1300-1400	Malaysia, Radio	7295do				1300-1400	USA, WYFR Okeechobee FL	5950na	9705na	11830na	11970na
1300-1400 vl	Malaysia, RTM Kuching	7160do						13695na			
1300-1400 vl	Malaysia, RTM Kotakinabalu	5980do				1307-1400 occsnal	New Zealand, R NZ Intl	9655pa			
1300-1325	Netherlands, Radio	6045eu	7190eu			1330-1400	Austria, R Austria Intl	15450as			
1300-1350	North Korea, R Pyongyang	9345as	9640eu	11740as	15230as	1330-1355 s	Belgium, R Vlaanderen Int	13670na			
		15430as				1330-1357	Canada, RCI Montreal	6150as	9535as		
1300-1330 s	Norway, Radio Norway Intl	7315as	9590eu	15605as		1330-1400	India, All India Radio	13732as	15120as		
1300-1400 vl	Palau, KHBN/Voice of Hope	9965as				1330-1400	Netherlands, Radio	9895as	13700as	15150as	
1300-1400 vl	Papua New Guinea, NBC	4890do	9675do			1330-1400	Sweden, Radio	11650na	15240na		
1300-1400	Philippines, FEBC/R Intl	11995as				1330-1400	Turkey, Voice of	9445eu	9630as		
1300-1355	Poland, Polish R Warsaw	6095eu	7145eu	7270eu	9525eu	1330-1355	UAE, Radio Dubai	13675eu	15395eu	17825eu	21605me
		11815eu				1330-1400	Uzbekistan, R Tashkent	5060eu	6025eu	9715eu	
1300-1400	Romania, R Romania Intl	11940eu	15390eu	17745eu		1330-1400	Vietnam, Voice of	7360as	9840as	12030as	
1300-1400	Russia, Voice of	4740va	12055as	15470va	17880as	1330-1400	Yugoslavia, Radio	11835eu			
1300-1400	Singapore, SBC Radio One	6155do				1345-1400	Vatican State, Vatican R	9500as	11625as	15585as	

SELECTED PROGRAMS

Sundays

- 1300 Radio E. Africa, Equatorial Guinea: Victory Baptist Church (David Robinson).
- 1305 Canada, RCI Montreal: Quirks and Quarks.
- 1305 Switzerland, Swiss R Intl: Newsnet. See S 0105.
- 1305 Switzerland, Swiss R Intl: Newsnet. See S 0105.
- 1330 Austria, R Austria Intl: Report from Austria. See S 0130.
- 1330 Radio E. Africa, Equatorial Guinea: Moments of Praise (Carroll A. Baltimore).
- 1335 Finland, Radio: Business Roundup.
- 1336 Belgium, R Vlaanderen Intl: Radio World.
- 1345 Belgium, R Vlaanderen Intl: PD Box 26.
- 1348 Finland, Radio: Economic Comments in the Finnish Press.

Mondays

- 1300 UK, BBC London (af): New Science Series. See M 0630.
- 1305 Switzerland, Swiss R Intl: Newsnet. See S 0105.
- 1305 Switzerland, Swiss R Intl: Newsnet. See S 0105.
- 1310 USA, VOA Washington DC (as pac): Spotlight on Business and Finance.
- 1330 Australia, Radio: The Australian Music Show.
- 1330 Austria, R Austria Intl: Report from Austria. See S 0130.
- 1331 China, China Radio Intl: China's Open Windows (biweekly).
- 1334 China, China Radio Intl: Investing in China.
- 1340 Philippines, FEBC: Computer Corner.

Tuesdays

- 1305 Switzerland, Swiss R Intl: Newsnet. See S 0105.
- 1305 Switzerland, Swiss R Intl: Newsnet. See S 0105.
- 1315 Romania, Radio Romania Intl: Business Club.
- 1326 Romania, Radio Romania Intl: Romanian Anglicists.
- 1330 Austria, R Austria Intl: Report from Austria. See S 0130.
- 1330 USA, WWCR #1 Nashville TN: World of Radio.
- 1335 Finland, Radio: Cultural Topics.
- 1342 Finland, Radio: Environment Report.
- 1347 Finland, Radio: Music.
- 1350 Finland, Radio: Health Topics.
- 1354 Finland, Radio: Finnish Press Review.

Wednesdays

- 1305 Switzerland, Swiss R Intl: Newsnet. See S 0105.

- 1305 Switzerland, Swiss R Intl: Newsnet. See S 0105.
- 1316 North Korea, R Pyongyang: Music.
- 1328 North Korea, R Pyongyang: The Reminiscences of the Great Leader.
- 1330 Austria, R Austria Intl: Report from Austria. See S 0130.
- 1339 North Korea, R Pyongyang: The Great Man of the Century.
- 1354 Radio Netherlands: Documentary. Homosexuality in Japan (3rd). See W 1154.
- 1354 Radio Netherlands: Documentary. Japanese Youth (10th). See W 1154.
- 1354 Radio Netherlands: Documentary. The Coming of Age of Greenland (31st). See W 1554.
- 1354 Radio Netherlands: Encore Documentary. Bringing Home the Beef (17th). See W 1154.
- 1354 Radio Netherlands: Encore Documentary. Bringing Home the Beef (24th). See S 0154.

Thursdays

- 1305 Switzerland, Swiss R Intl: Newsnet. See S 0105.
- 1305 Switzerland, Swiss R Intl: Newsnet. See S 0105.
- 1325 Costa Rica, R for Peace Intl: Hightower Radio.
- 1330 Australia, Radio: Australian Country Style.
- 1330 Austria, R Austria Intl: Report from Austria. See S 0130.
- 1335 Finland, Radio: Media Review.
- 1345 Vatican State, Vatican Radio: Pilgrim City (biweekly).
- 1352 Netherlands, Radio: Media Network.
- 1359 Vatican State, Vatican Radio: Postcards from Rome.

Fridays

- 1305 Switzerland, Swiss R Intl: Newsnet. See S 0105.
- 1305 Switzerland, Swiss R Intl: Newsnet. See S 0105.
- 1310 Australia, Radio: Asia Focus.
- 1310 USA, VOA Washington DC (as pac): Perspectives.
- 1325 Costa Rica, R for Peace Intl: Hightower Radio.
- 1330 Australia, Radio: Music Deli.
- 1330 Austria, R Austria Intl: Report from Austria. See S 0130.
- 1345 Vatican State, Vatican Radio: Then and Now.

Saturdays

- 1300 Radio E. Africa, Equatorial Guinea: New Love Alive Broadcast (Henry Moore).

- 1305 Switzerland, Swiss R Intl: Newsnet. See S 0105.
- 1305 Switzerland, Swiss R Intl: Newsnet. See S 0105.
- 1310 Romania, Radio Romania Intl: The Week.
- 1316 Switzerland, Swiss R Intl: Capital Letters (13th, 27th). See S 0116.
- 1317 Romania, Radio Romania Intl: World of Culture.
- 1328 Romania, Radio Romania Intl: Radio Pictures.
- 1330 Austria, R Austria Intl: Report from Austria. See S 0130.
- 1330 Radio E. Africa, Equatorial Guinea: Let the Bible Speak (Leslie Curran).
- 1335 Finland, Radio: Focus.
- 1343 Romania, Radio Romania Intl: Bucharest Along the Centuries.
- 1349 Romania, Radio Romania Intl: Radio Romania DX Mailbag.

THANK YOU ...

Additional contributors to this month's Shortwave Guide:

John Babbis, Silver Spring, MD;
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Worldwide; BBC *Summary of World
 Broadcasts*; Grove Enterprises BBS;
 Internet Shortwave Newsgroup via
 Larry Van Horn.

FREQUENCIES

1500-1600	Australia, Radio	5995pa 7260as 11660as	6060pa 9580pa 11695pa	6080pa 9615as 11800pa	6090as 9710pa	1500-1600	S Africa, Channel Africa	11945as	12055as	12065me
1500-1600	Australia, Defense Forces R	8743af	10623af			1500-1600 mtwhfa	Seychelles, FEBA Radio	7240af	9545af	
1500-1600 vt	Canada, CBC N Quebec Svc	9625do				1500-1530 s	Seychelles, FEBA Radio	9810as		
1500-1600	Canada, CFCX Montreal	6005do				1500-1600	Singapore, SBC Radio One	11870as		
1500-1600	Canada, CFRX Toronto	6070do				1500-1600	Sri Lanka, SLBC Colombo	6155do		
1500-1600	Canada, CFVP Calgary	6030do				1500-1530	Switzerland, Swiss R Intl	9720as	15425as	
1500-1600	Canada, CHNX Halifax	6130do				1500-1600	United Kingdom, BBC London	9885as	12075as	13625as
1500-1600	Canada, CKZN St John's	6160do				1500-1600	USA, KTVN Salt Lk City UT	5965as	5990as	6190af 6195va
1500-1600	Canada, CKZU Vancouver	6160do				1500-1600	USA, KWHR Naalehu HI	9410va	9515na	9740as 11750as
1500-1600 s	Canada, RCI Montreal	9640na	11955na			1500-1600	USA, Monitor Radio Intl	12095va	15070va	15260na 15400va
1500-1600	China, China Radio Intl	9785as	11815as	15165as		1500-1600	USA, VOA Washington DC	17705va	17830af	17840va 21470af
1500-1600	Costa Rica, RF Peace Intl	6200am	9400am	15050am		1500-1530	United Kingdom, BBC London	21660af	11860af	11940af 15400eu 15420af
1500-1600	Ecuador, HCJB Quito	12005am	15115am	21455am		1500-1600	USA, KTVN Salt Lk City UT	17880af	21490af	
1500-1600sa	EQT Guinea, R E. Africa	15190af				1500-1600	USA, KWHR Naalehu HI	7510am		
1500-1600	Guam, TWR/KTWR	11580as				1500-1600	USA, Monitor Radio Intl	9930as		
1500-1530	Italy, IRRS Milan	7125eu				1500-1600	USA, VOA Washington DC	9355as		
1500-1600	Japan, NHK/Radio	6090as 15355af	7240as	9535na	9695as	1500-1600	USA, WEWN Birmingham AL	6110as	7125as	7215as 9575as
1500-1600	Lebanon, Wings of Hope	9960va				1500-1600	USA, WGTG McCaysville GA	9645as	9700as	9760va 15205as
1500-1600	Malaysia, Radio	7295do				1500-1600 irreg	USA, WGTG McCaysville GA	15255as	15395as	
1500-1600 vt	Malaysia, RTM Kuching	7160do				1500-1600	USA, WHRI Noblesville IN	9455na	11875na	15235sa
1500-1600 vt	Malaysia, RTM KotaKinabalu	5980do				1500-1600	USA, WHRI Noblesville IN	9370am	9475am	
1500-1515	Mongolia, R Ulan Bator	7530as	9950as			1500-1600	USA, WJCR Upton KY	13760am	15105am	
1500-1515 s	Myanmar, Voice of	5990do				1500-1600	USA, WJCR Upton KY	7490na	13595na	
1500-1525	Netherlands, Radio	9895as	13700as	15150as		1500-1600	USA, WRNO New Orleans LA	15420am		
1500-1600 occsnal	New Zealand, R NZ Intl	6100pa				1500-1600 a	USA, WVHA Greenbush ME	15665af		
1500-1550	North Korea, R Pyongyang	9325eu	9640eu	9977na	13785me	1500-1600	USA, WWCR Nashville TN	12160am	13845am	15685am
1500-1530 s	Norway, Radio Norway Intl	9485me	9520me	11730me		1500-1600	USA, WYFR Okeechobee FL	11830na	15215na	17760eu
1500-1600 vt	Palau, KHBN/Voice of Hope	9965as				1530-1545	India, All India Radio	7410as		
1500-1600	Philippines, FEBC/R Intl	11995as				1530-1600	Iran, VOIRI Tehran	11875as	15260as	17750as
1500-1530	Romania, R Romania Intl	11740as	11810as	15335as		1530-1600	Italy, IRRS Milan	3985eu		
1500-1600	Russia, Voice of	4740as 9470va	4975as 9635va	7115va 9905as	7130va 11765va	1530-1600	Netherlands, Radio	9895as	15150as	
						1430-1500 mtwhf	Portugal, R Portugal Intl	21515me		
						1530-1600	United Kingdom, BBC London	7180as		

SELECTED PROGRAMS

Sundays

- 1500 Guam, TWR/KTWR: The Worship Hour.
- 1500 Radio E. Africa, Equatorial Guinea: Heaven's Peace Plan (Nicholas Grunner).
- 1505 Switzerland, Swiss R Intl: Newsnet. See S 0105.
- 1510 Australia, Radio: Oz Sounds.
- 1510 Japan, Radio: Hello from Tokyo.
- 1511 Russia, Voice of: News and Views.
- 1520 China, China Radio Intl: China Scrapbook.
- 1525 China, China Radio Intl: Music Album.
- 1530 Australia, Radio: Fine Music Australia.
- 1540 China, China Radio Intl: Listeners' Letterbox.

Mondays

- 1500 Guam, TWR/KTWR: Hour of Freedom.
- 1505 Switzerland, Swiss R Intl: Newsnet. See S 0105.
- 1510 Australia, Radio: Asia Focus.
- 1515 Japan, Radio: Today's Top News Asia.
- 1519 China, China Radio Intl: Current Affairs.
- 1525 Japan, Radio: Profile.
- 1530 Australia, Radio: Innovations.
- 1530 Guam, TWR/KTWR: Thru the Bible.
- 1534 China, China Radio Intl: Investing in China.
- 1546 Portugal, Radio Portugal Intl: Visitors' Notebook.

Tuesdays

- 1500 Guam, TWR/KTWR: Telling the Truth.
- 1505 Switzerland, Swiss R Intl: Newsnet. See S 0105.
- 1516 Romania, Radio Romania Intl: Youth Club.
- 1530 Guam, TWR/KTWR: Thru the Bible.
- 1530 USA, VOA Washington DC (me): Now Music USA.
- 1540 China, China Radio Intl: Listeners' Letterbox.
- 1545 Portugal, Radio Portugal Intl: Musical Kaleidoscope.
- 1555 Japan, Radio: Tokyo Pop-In.

Wednesdays

- 1500 Guam, TWR/KTWR: Good Tidings Hour.
- 1505 Switzerland, Swiss R Intl: Newsnet. See S 0105.
- 1505 UK, BBC London (am): Writers in a Nutshell. See H 0005.
- 1510 South Africa, Channel Africa: Yours and Mine.
- 1515 UK, BBC London (am): Red Dwarf. See T 0115.
- 1530 Australia, Radio: Science File.

- 1554 Radio Netherlands: Documentary. Homosexuality in Japan (3rd). See W 1154.
- 1554 Radio Netherlands: Documentary. Japanese Youth (10th). See W 1154.
- 1554 Radio Netherlands: Documentary. The Coming of Age of Greenland (31st). Part I of a series about one of the world's last frontiers.
- 1554 Radio Netherlands: Encore Documentary. Bringing Home the Beef (17th). See W 1154.
- 1554 Radio Netherlands: Encore Documentary. Bringing Home the Beef (24th). See S 0154.

Thursdays

- 1500 Guam, TWR/KTWR: Hour of Decision.
- 1505 Switzerland, Swiss R Intl: Newsnet. See S 0105.
- 1515 Japan, Radio: Today's Top News Asia.
- 1530 Australia, Radio: Couchman.
- 1530 Guam, TWR/KTWR: Thru the Bible.
- 1532 China, China Radio Intl: Focus.
- 1546 Portugal, Radio Portugal Intl: Spotlight on Portugal.

Fridays

- 1500 Guam, TWR/KTWR: Words of Hope.
- 1505 Switzerland, Swiss R Intl: Newsnet. See S 0105.
- 1510 Australia, Radio: Asia Focus.
- 1525 Japan, Radio: Music and Book Beat.
- 1530 Guam, TWR/KTWR: Thru the Bible.
- 1542 Portugal, Radio Portugal Intl: Visitors' Notebook.
- 1553 Netherlands, Radio: A Good Life.
- 1555 Japan, Radio: Tokyo Pop-In.

Saturdays

- 1500 Guam, TWR/KTWR: Search for Truth.
- 1500 Radio E. Africa, Equatorial Guinea: Words of Life (Richard Ramsey).
- 1505 Switzerland, Swiss R Intl: Newsnet. See S 0105.
- 1506 South Africa, Channel Africa: Yours for the Asking.
- 1513 Romania, Radio Romania Intl: Bucharest Along the Centuries.
- 1515 Guam, TWR/KTWR: Masterdesign.
- 1516 Switzerland, Swiss R Intl: Capital Letters (13th, 27th). See S 0116.

- 1519 Romania, Radio Romania Intl: Radio Romania DX Mailbag.
- 1525 Japan, Radio: Entertaining in Asia.
- 1529 China, China Radio Intl: The Cooking Show.
- 1530 Guam, TWR/KTWR: In Touch.
- 1530 Radio E. Africa, Equatorial Guinea: Bwana Nasema (Francine Lovell).
- 1535 China, China Radio Intl: Music from China.
- 1545 Radio E. Africa, Equatorial Guinea: Christ Gospel Broadcast (B. R. Hicks).
- 1546 Japan, Radio: Asia Kaleidoscope.

HAUSER'S HIGHLIGHTS
KUWAIT: R. KUWAIT

- English at 1800-2100 on 11990 included as of Sept: 1802 *Aftermath*
- Sat 1802 *Kuwait the Home and the Land*
- Sun 1802 *History of Journalism in Kuwait*
- Tue 1802 *The Silent Warriors*
- Wed 1930 *Bits & Bytes*
- 2000 *Variety Show*
- Thu 1800-2100 Relay FM SuperStation 99.7
- Fri 1802 *Our Best Friend*
- Fri-Tue 2000 *Noble Women of Islam*
- Fri-Tue 2030 *Great Men of Islam* (via Kevin Hecht)

FREQUENCIES

1600-1700	Australia, Radio	5995pa 9580pa 11695pa	6060pa 9710pa 11800pa	6090pa 9770as	7260as 11660pa	1600-1700	South Korea, R Korea Intl	5975as	9515va	9870va	15575eu
1600-1613	Bangladesh, Radio	15520as				1600-1630	Sri Lanka, SLBC Colombo	9720as	15425as		
1600-1700 vl	Canada, CBC N Quebec Svc	9625do				1600-1700	Swaziland, Trans World R	9500af			
1600-1700	Canada, CFCX Montreal	6005do				1600-1640	UAE, Radio Dubai	13675eu	15395me	17825me	21605me
1600-1700	Canada, CFRX Toronto	6070do				1600-1700	United Kingdom, BBC London	3915as	5965as	6190af	6195va
1600-1700	Canada, CFVP Calgary	6030do						7135as	7205af	9410va	9515na
1600-1700	Canada, CHNX Halifax	6130do						9740va	11750as	11780eu	12095va
1600-1700	Canada, CKZJ St John's	6160do						15070va	15400va	17830af	17840va
1600-1700	Canada, CKZU Vancouver	6160do						21470va	21660af		
1600-1700 s	Canada, RCI Montreal	9640na	11955na			1600-1615	United Kingdom, BBC London	5990as	7180as	17705va	
1600-1700	China, China Radio Intl	4130af	11575as	15110af	15130af	1600-1700	USA, KTNB Salt Lk City UT	15590am			
1600-1700	Costa Rica, RF Peace Intl	6200am	9400am	15050am		1600-1700	USA, KWHR Naalehu HI	6120as			
1600-1700	Ecuador, HCJB Quito	12005am	15115am	21455am		1600-1700	USA, Monitor Radio Intl	9355af	21640af		
1600-1630	Ethiopia, Radio	7165af				1600-1700	USA, VOA Washington DC	3970af	6110as	7125as	7215as
1600-1700	France, Radio France Intl	6175eu	9485eu	11615af	11700af			9645as	9700as	9760as	11920af
		12015af	15210af	15460af	15530af			12040af	13710af	15205as	15225af
1600-1650	Germany, Deutsche Welle	6170as	7225as	7305as	9585as	1600-1700	USA, WEWN Birmingham AL	15395as	15445af	17895af	
1600-1700	Germany, Deutsche Welle	7195af	9735af	11965af		1600-1700 irreg	USA, WGTG McCaysville GA	13615na	15340na		
1600-1700	Guam, AWR/KSDA	9370as				1600-1700	USA, WHRI Noblesville IN	9370am	9475am		
1600-1615 mt	Guam, TWR/KTWR	11580as				1600-1700	USA, WJCR Upton KY	13760am	15105am		
1600-1630 whfas	Guam, TWR/KTWR	11580as				1600-1700	USA, WRNO New Orleans LA	7490na	13595na		
1600-1630	Iran, VOIRI Tehran	11875as	15260as	17750as		1600-1700	USA, WVHA Greenbush ME	15420am	15665eu		
1600-1700	Italy, AWR Europe	7230eu				1600-1700	USA, WWCR Nashville TN	12160am	13845am	15685am	
1600-1700	Italy, IRRS Milan	3985eu				1600-1700	USA, WYFR Okeechobee FL	11580na	11830na	15215na	15566eu
1600-1700	Lebanon, Voice of Hope	6280va						17760eu	21525af	21745eu	
1600-1700	Malaysia, Radio	7295do				1600-1630 a	Vatican State, Vatican R	9940va	11640va		
1600-1625	Netherlands, Radio	9895as	13700as	15150as		1600-1620 smtwhf	Vatican State, Vatican R	9940va	11640va		
1600-1649 occsnal	New Zealand, R NZ Intl	9655pa				1600-1630	Vietnam, Voice of	7360na	9840eu	12030as	
1600-1630	Pakistan, Radio	7425af	9485af	11570af	11710af	1615-1625	Egypt, Radio Cairo	11874af			
		13590af	15555af	17660af		1615-1700	United Kingdom, BBC London	9630af	11860af	15420af	
1600-1700 vl	Palau, KHBN/Voice of Hope	9965as				1630-1700	Austria, R Austria Intl	11780as			
1600-1700	Russia, Voice of	7180as	7330eu	9905as	11945me	1630-1657	Canada, RCI Montreal	7150as	9550as		
1600-1700	S Africa, Channel Africa	7240af	9545af	15240af		1630-1700	Egypt, Radio Cairo	15255af			
1600-1700	S Africa, Trans World R	9500af				1630-1700 mtwhfa	USA, WRMI/R Miami Intl	9955am			
1600-1700	Singapore, SBC Radio One	6155do				1645-1700 mtwhf	Canada, RCI Montreal	9555eu	11935eu	15325eu	17820eu
						1650-1700 mtwhf	New Zealand, R NZ Intl	5960pa			

SELECTED PROGRAMS

Sundays

- 1600 Guam, TWR/KTWR: Verse by Verse.
- 1609 South Africa, Channel Africa: Africa This Week.
- 1615 UK, BBC London (af): Music Feature. Ports of Call: The Islands (7th, 14th). See S 0330.
- 1622 France, Radio France Intl: Paris Promenade.
- 1630 Austria, R Austria Intl: Report from Austria. See S 0130.
- 1630 UK, BBC London (south as): New Science Series. See M 0630.
- 1631 France, Radio France Intl: News Headlines.
- 1632 France, Radio France Intl: Club 9516.

Mondays

- 1600 Guam, TWR/KTWR: Answers.
- 1608 South Africa, Channel Africa: News Watch.
- 1615 Guam, TWR/KTWR: Pacific DX Report.
- 1615 UK, BBC London (am): Pick of the World. See S 1130.
- 1627 South Africa, Channel Africa: Sports Watch.
- 1630 Austria, R Austria Intl: Report from Austria. See S 0130.
- 1631 France, Radio France Intl: RFI Europe.
- 1634 South Africa, Channel Africa: Business News.
- 1647 France, Radio France Intl: Arts in France.
- 1648 South Africa, Channel Africa: Techno Watch.
- 1650 Radio Africa, Equatorial Guinea: Spiritual Warfare (Diana Taylor).
- 1655 Radio Africa, Equatorial Guinea: Way to Life (Dick Saunders).

Tuesdays

- 1600 Guam, TWR/KTWR: Search for Truth.
- 1608 South Africa, Channel Africa: News Watch.
- 1615 Guam, TWR/KTWR: Shortwave Bible School.
- 1636 Austria, R Austria Intl: Report from Austria. See S 0130.
- 1630 South Africa, Channel Africa: Sports Watch.
- 1635 South Africa, Channel Africa: Business News.
- 1642 France, Radio France Intl: Books.
- 1647 France, Radio France Intl: Drumbeat.
- 1650 Radio Africa, Equatorial Guinea: Spiritual Warfare (Diana Taylor).
- 1655 Radio Africa, Equatorial Guinea: Way to Life (Dick Saunders).

Wednesdays

- 1600 Guam, TWR/KTWR: Bread of Life.
- 1610 South Africa, Channel Africa: News Watch.
- 1615 Guam, TWR/KTWR: The Macedonian Call.
- 1626 South Africa, Channel Africa: Business News.
- 1630 Austria, R Austria Intl: Report from Austria. See S 0130.
- 1630 South Africa, Channel Africa: Sports Watch.
- 1631 France, Radio France Intl: RFI Europe.
- 1641 France, Radio France Intl: The Bottom Line.
- 1641 South Africa, Channel Africa: Eco Watch.
- 1646 France, Radio France Intl: Land of France.
- 1650 Radio Africa, Equatorial Guinea: Spiritual Warfare (Diana Taylor).
- 1655 Radio Africa, Equatorial Guinea: Way to Life (Dick Saunders).

Thursdays

- 1600 Guam, TWR/KTWR: Friends in Focus.
- 1610 South Africa, Channel Africa: News Watch.
- 1615 Guam, TWR/KTWR: The Macedonian Call.
- 1615 UK, BBC London (as pac): Man, Machine and Music. See T 0115.
- 1626 South Africa, Channel Africa: Business News.
- 1630 Austria, R Austria Intl: Report from Austria. See S 0130.
- 1630 South Africa, Channel Africa: Sports Watch.
- 1635 Finland, Radio: Media Review.
- 1646 France, Radio France Intl: Science Probe.
- 1649 Finland, Radio: Background on the News.
- 1650 Radio Africa, Equatorial Guinea: Spiritual Warfare (Diana Taylor).
- 1655 Finland, Radio: Finnish Press Review.
- 1655 Radio Africa, Equatorial Guinea: Way to Life (Dick Saunders).

Fridays

- 1600 Guam, TWR/KTWR: Tempo.
- 1610 South Africa, Channel Africa: News Watch.
- 1615 Guam, TWR/KTWR: Wonderful Words.
- 1620 South Africa, Channel Africa: Business News.
- 1630 Austria, R Austria Intl: Report from Austria. See S 0130.

- 1631 France, Radio France Intl: RFI Europe.
- 1638 France, Radio France Intl: News Headlines.
- 1641 France, Radio France Intl: Film Reel.
- 1646 France, Radio France Intl: Made in France.
- 1650 Radio Africa, Equatorial Guinea: Spiritual Warfare (Diana Taylor).
- 1655 Radio Africa, Equatorial Guinea: Way to Life (Dick Saunders).

Saturdays

- 1600 Guam, TWR/KTWR: The Word Today.
- 1609 South Africa, Channel Africa: Today's Dream.
- 1614 France, Radio France Intl: Focus on France.
- 1615 Guam, TWR/KTWR: Hope for Today.
- 1630 Austria, R Austria Intl: Report from Austria. See S 0130.
- 1631 France, Radio France Intl: Spotlight on Africa.
- 1635 Finland, Radio: Focus.
- 1639 South Africa, Channel Africa: Music in the Sun.

RadioMap™

Transmitter sites in your area are researched and marked on a beautiful 8-1/2 x 11 full color plot. See FCC licensed sites from VLF through microwave including police, fire, cellular phone sites, business, industrial, broadcasters and selected FAA transmitter sites. Callsigns, frequency assignments, and names provided. Ham radio stations not included.

You choose the map center location—your neighborhood, near your office, around sports stadiums—anywhere within the United States. We adjust map coverage for best readability, depending on transmitter site density.

Invaluable to radio professionals and hobbyists for identifying towers, sources of radio interference etc. Send nearest street intersection and check for \$25.95 payable to Robert Parnass.

Robert Parnass, M.S.
Radio Electronics Consulting
2350 Douglas Road, Oswego, IL 60553

FREQUENCIES

1700-1800	Australia, Radio	6060pa 9580pa 11660pa	6080pa 9615as 11695pa	6090pa 9710pa 11880pa	7260as 9860pa					
1700-1800 vl	Canada, CBC N Quebec Svc	9625do								
1700-1800	Canada, CFCX Montreal	6005do								
1700-1800	Canada, CFRX Toronto	6070do								
1700-1800	Canada, CFVP Calgary	6030do								
1700-1800	Canada, CHNX Halifax	6130do								
1700-1800	Canada, CKZN St John's	6160do								
1700-1800	Canada, CKZU Vancouver	6160do								
1700-1800	China, China Radio Intl	7405af	9535as	11575af						
1700-1800 as	Costa Rica, AWR Alajuela	13750am								
1700-1800	Costa Rica, RF Peace Intl	6200am	9400am	15050am						
1700-1727	Czech Rep, Radio Prague	5930eu	9430eu							
1700-1800	Ecuador, HCJB Quito	12005am	15115am	21455am						
1700-1800	Egypt, Radio Cairo	15255af								
1700-1730	France, Radio France Intl	9485af	11615af	15210af	15460af					
1700-1730	Georgia, Georgian Radio	11910eu								
1700-1800	Italy, IRRS Milan	3985eu								
1700-1800	Japan, NHK/Radio	6150as 11930me 11970na	7280as	9535na	9580as					
1700-1730	Jordan, Radio	11970na								
1700-1800	Lebanon, Voice of Hope	6280va								
1700-1730	Lebanon, Wings of Hope	9960va								
1700-1800 mtwhf	New Zealand, R NZ Intl	5960pa								
1700-1750	North Korea, R Pyongyang	9325eu	9640af	9977af	13785me					
1700-1800	Pakistan, Radio	7485eu	11570eu							
1700-1800 vl	Palau, KHBN/Voice of Hope	9965as								
1700-1800 vl	Russia, Voice of	7330eu	13670af							
1700-1800	S Africa, Channel Africa	7240af	9545af							
1700-1800	Slovakia, AWR	9465af	9475af							
1700-1800	Swaziland, Trans World R	9500af								
1700-1730	Switzerland, Swiss R Intl	5850va	9885va	13635va						
1700-1800	United Kingdom, BBC London	3955eu 7135as 9515na 12095va 17830af	6180eu 7160me 9740va 15070va 17840va	6190af 7205as 9410va 15400af	6195va 9410va 11780eu 15420af					
1700-1745	United Kingdom, BBC London	3915as	9630af	11860af						
1700-1800	USA, KTBN Salt Lk City UT	15590am								
1700-1800	USA, KWHR Naalehu HI	6120as								
1700-1800	USA, Monitor Radio Intl	9355af	21640af							
1700-1800	USA, VOA Washington DC	6040va 11920af 13710af 15445af	6110as 11945va 15205va 17895af	7215as 12005va 15255as 19379me	9760va 12040af 15410af					
1700-1800 mtwhf	USA, VOA Washington DC	5990va 9770as	6045va	9525as	9670as					
1700-1800	USA, WEWN Birmingham AL	11580na	13615na	15340sa						
1700-1800 irreg	USA, WGTG McCaysville GA	9370am	9475am							
1700-1800	USA, WHRI Noblesville IN	13760am	15105ca							
1700-1800	USA, WJCR Upton KY	7490na	13595na							
1700-1800 smtwhf	USA, WMLK Bethel PA	9465eu								
1700-1800	USA, WRMI/R Miami Intl	9955am								
1700-1800	USA, WRNO New Orleans LA	15420am								
1700-1800	USA, WVHA Greenbush ME	15745af								
1700-1800	USA, WWCR Nashville TN	12160am	13845am	15685am						
1700-1800	USA, WYFR Okeechobee FL	15566eu	17760eu							
1700-1800	Zambia, Christian Voice	4965af								
1715-1730	Albania, R Tirana Intl	7155eu	9740eu							
1715-1730	Vatican State, Vatican R	4005eu	6245eu	7250eu	11810eu					
1730-1800	Romania, R Romania Intl	9750af	11740af	11940af						
1730-1800	Russia, Voice of	9585eu								
1730-1745	Sweden, Radio	6065eu								
1730-1800	Vatican State, Vatican R	9660af	11625af	11635af						
1745-1800 mtwhf	Canada, RCI Montreal	5995eu 15325eu	9555eu 17820eu	11915eu	11935eu					
1745-1800	India, All India Radio	7410eu 11935af	9650me 13750as	9950me	11620eu					
1745-1800	Swaziland, Trans World R	3200af								

1800 UTC

1800-1900	Algeria, R Algiers Intl	11715me	15160eu		
1800-1900	Australia, Radio	6060pa 9860pa	6080pa 11660as	6090pa 11695pa	9580pa 11880pa
1800-1900	Brazil, Radiobras	15265eu			
1800-1900	Canada, CFCX Montreal	6005do			
1800-1900	Canada, CFRX Toronto	6070do			
1800-1900	Canada, CFVP Calgary	6030do			
1800-1900	Canada, CHNX Halifax	6130do			
1800-1900	Canada, CKZN St John's	6160do			
1800-1900	Canada, CKZU Vancouver	6160do			
1800-1900	Costa Rica, RF Peace Intl	6200am	9400am	15050am	
1800-1827	Czech Rep, Radio Prague	5835eu	9430eu		
1800-1900	Ecuador, HCJB Quito	15490eu	21455am		
1800-1830	Egypt, Radio Cairo	15255af			

1800-1845	India, All India Radio	7410eu 11935af	9650me 13750as	9950me	11620eu
1800-1900	Italy, IRRS Milan	3985eu			
1800-1900	Kuwait, Radio	11990na			
1800-1900	Lebanon, Voice of Hope	6280va			
1800-1825	Netherlands, Radio	6020af	9605af	11655af	17605af
1800-1849 mtwhf	New Zealand, R NZ Intl	5960pa			
1800-1900 vl	Palau, KHBN/Voice of Hope	9965as			
1800-1855	Poland, Polish R Warsaw	6095eu	7270eu	7285eu	
1800-1900	Russia, Voice of	7180eu 9830va	7205va 9890eu	7210va 13670af	9490va
1800-1900	Sudan, Radio Omdurman	9025af			
1800-1830	Swaziland, Trans World R	9500af			
1800-1900	United Kingdom, BBC London	3255af	3955eu	6180eu	6190af
1800-1900	USA, KJES Mesquite NM	6195eu	9410va	9740as	11860af
1800-1900	USA, KTBN Salt Lk City UT	11955ua	12095va	15070va	15400va
1800-1900	USA, KWHR Naalehu HI	13625au	17830af		
1800-1900	USA, Monitor Radio Intl	9355va	9370eu	21640af	
1800-1900	USA, VOA Washington DC	6040va 13710af	9760va 15410af	11920af 15580af	12040af 19379va
1800-1900 mtwhf	USA, VOA Washington DC	4875af			
1800-1900	USA, WEWN Birmingham AL	11580eu	13615na	13695na	
1800-1900 irreg	USA, WGTG McCaysville GA	9370am	9475am		
1800-1900	USA, WHRI Noblesville IN	9495am			
1800-1900	USA, WJCR Upton KY	7490na	13595na		
1800-1900	USA, WMLK Bethel PA	9465eu			
1800-1900	USA, WRMI/R Miami Intl	9955am			
1800-1900	USA, WRNO New Orleans LA	15420am			
1800-1900	USA, WVHA Greenbush ME	15745af			
1800-1900	USA, WWCR Nashville TN	12160am	13845am	15685am	
1800-1900	USA, WYFR Okeechobee FL	15566eu	17760eu		
1800-1830	Vietnam, Voice of	7360na	9840eu	12030as	
1800-1900	Yemen, Yemeni Rep Radio	9780as			
1800-1900	Zambia, Christian Voice	4965af			
1802-1500 s	Morocco, RTVM Marocaine	17815af			
1815-1900	Bangladesh, Radio	7185eu	9648as	15520as	
1830-1900	Netherlands, Radio	4945af 9860af	6015af 9895af	6020af 11655af	9605af 15315af
1830-1857	S Africa, Trans World R	9525af			
1830-1855 irreg	Somalia, Radio Mogadishu	6710af			
1830-1900	South Korea, R Korea Intl	6480eu			
1830-1900	Sweden, Radio	6065eu	7240eu	9655af	
1830-1900	United Kingdom, BBC London	6005af	9630af		
1833-1900	Cote D' Ivoire, RDTV	11920do			
1840-1850	Greece, Voice of	11645af	15150af		
1845-1900 irreg s	Mali, RDTV Malienne	4783do	4835do	5995do	
1850-1900	New Zealand, R NZ Intl	11735pa			



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SPECIFICATIONS:

Power required: 12 to 14 VDC @500 mA; 120 VAC adaptor included
Audio power output: 2.5 W @ 10% THD (8 ohms)
Audio selectivity: Peak/notch 30 dB or greater, 0.3-6 kHz
Squelch hold: 0-10 seconds
Noise limiter: Adjustable-threshold pulse noise clamp
Tape activator: Audio activated (VOX), 3 second hold
Tape output: 55- mV P-P @ 600 ohms (nom.)
Headphone jack: Universal mono-wired stereo jack
Dimensions: 10-7/8"W x 6-7/8"H x 7-1/4"D

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FREQUENCIES

1900-2000 mtwhf	Argentina, RAE	15345eu				2000-2100	Algeria, R Algiers Intl	11715me	15160eu		
1900-2000	Australia, Radio	6060pa	6080pa	6150as	7240pa	2000-2100 as	Angola, Radio Nacional	9534do			
		7260as	9560as	9580pa	9860pa	2000-2100	Australia, Radio	6060pa	6080pa	6150pa	7260as
		11660pa	11695pa	11880pa				9580pa	9860pa	11660pa	11695pa
1900-1930	Azerbaijan, Voice of	4957eu						11855as	11880pa		
1900-1945	Bangladesh, Radio	7185eu	9648as	15520as		2000-2100 vl	Australia, VL8K Katherine	2485do			
1900-1930	Belgium, R Vlaanderen Int	5910eu	9925af			2000-2100 vl	Australia, VL8T Tent Crk	2325do			
1900-1920	Brazil, Radiobras	15265eu				2000-2100	Bulgaria, Radio	7335eu	9700eu		
1900-2000	Canada, CFCX Montreal	6005do				2000-2100	Canada, CFCX Montreal	6005do			
1900-2000	Canada, CFRX Toronto	6070do				2000-2100	Canada, CFRX Toronto	6070do			
1900-2000	Canada, CFVP Calgary	6030do				2000-2100	Canada, CFVP Calgary	6030do			
1900-2000	Canada, CHNX Halifax	6130do				2000-2100	Canada, CHNX Halifax	6130do			
1900-2000	Canada, CKZN St John's	6160do				2000-2100	Canada, CKZN St John's	6160do			
1900-2000	Canada, CKZU Vancouver	6160do				2000-2100	Canada, CKZU Vancouver	6160do			
1900-2000 vl	China, China Radio Intl	9440af	11515me			2000-2100	China, China Radio Intl	6950eu	9440af	9920eu	11715af
1900-2000	Costa Rica, AWR Alajuela	13750am	15460am					15110af			
1900-2000	Costa Rica, RF Peace Intl	6200am	9400am	15050am		2000-2100	Costa Rica, RF Peace Intl	6200am	9400am	15050am	
1900-1930	Cote D'ivoire, RDTV	11920do				2000-2100	Eq Guinea, Radio Africa	15190af			
1900-2000	Ecuador, HCJB Quito	15490eu	21455am			2000-2030	Germany, Deutsche Welle	5960eu	7285eu		
1900-1950	Germany, Deutsche Welle	9670af	9765af	11785af	11810af	2000-2030	Ghana, Ghana Broadc Corp	3366do	4915do		
		11865af	13790as	15145af	15425af	2000-2100	Guatemala, AWR	5980am			
1900-1910	Greece, Voice of	9375eu				2000-2030	Hungary, Radio Budapest	3975eu	5970eu	7250eu	9835eu
1900-2000	Guatemala, AWR	5980am				2000-2100	Indonesia, Voice of	9675as			
1900-1945	India, All India Radio	7410eu	9950me	11620eu	11935af	2000-2030	Iran, VOIRI Tehran	7260af	9022eu		
		13750as				2000-2030	Israel, Kol Israel	7418na	7465na	9435eu	9845ca
1900-2000	Italy, IRRS Milan	3985eu						13750sa			
1900-2000	Japan, NHK/Radio	6150as	7140pa	9535na	9580as	2000-2100	Italy, IRRS Milan	3985eu			
		11850pa				2000-2100 vl	Kenya, Kenya Broadc Corp	4885do	4935do	6150do	
1900-2000 vl	Kenya, Kenya Broadc Corp	4885do	4935do	6150do		2000-2100	Kuwait, Radio	11990eu			
1900-2000	Kuwait, Radio	11990eu				2000-2100	Lebanon, Wings of Hope	9960va			
1900-2000	Lebanon, Wings of Hope	9960va				2000-2100	Liberia, Radio ELBC	7275do			
1900-2000	Liberia, Radio ELBC	7275do				2000-2100	Liberia, Radio ELWA	4760do			
1900-2000	Liberia, Radio ELWA	4760do				2000-2030	Lithuania, Radio Vilnius	9710eu			
1900-2000	Netherlands, Radio	4945af	6015af	6020af	9605af	2000-2025	Netherlands, Radio	4945af	6020af	9605af	9860af
		9860af	9895af	11655af	15315af			9895af	11655af	15315af	17605af
		17605af				2000-2100	New Zealand, R NZ Intl	11735pa			
1900-2000	New Zealand, R NZ Intl	11735pa				2000-2005	Nigeria, FRCN/Radio	3326do	4990do		
1900-2000	Nigeria, FRCN/Voice of	7255af				2000-2100	Nigeria, FRCN/Voice of	7255af			
1900-1930 s	Norway, Radio Norway Intl	5930pa	5960eu	7485af	9590af	2000-2050	North Korea, R Pyongyang	6576eu	9345as	9640af	9977as
1900-2000	Romania, R Romania Intl	6105eu	7195eu	9510eu		2000-2030 mtwhf	Portugal, R Portugal Intl	6130eu	9780eu	9815eu	15515af
1900-2000	Russia, Voice of	5940eu	5995eu	7180eu	7205eu	2000-2100	Russia, Voice of	5940eu	5995eu	6055eu	7180eu
		7210va	9470va	9490va	9585eu			7205eu	9470va	9490va	9585af
		9830eu	9890eu	11895va	13670af			9890eu	13670af		
1900-2000	South Korea, R Korea Intl	5975eu	7275as			2000-2030	South Korea, R Korea Intl	3970eu			
1900-2000	Swaziland, Trans World R	3200af				2000-2015	Swaziland, Trans World R	3200af			
1900-2000	Thailand, Radio	9655eu	11805eu			2000-2030	Switzerland, Swiss R Intl	6165eu	9770af	9885af	11640af
1900-2000	United Kingdom, BBC London	3255af	3955eu	5975va	6005af	2000-2030	Turkey, Voice of	9445eu			
		6180eu	6190af	6195va	7325af	2000-2015	Uganda, Radio	4976do	5026do		
		9410va	9630af	9740as	11780eu	2000-2100	United Kingdom, BBC London	3255af	3955eu	6005af	6180eu
		12095eu	15070eu	15400af	17830af			6195va	9630af	9740as	11750sa
1900-2000	USA, KTBN Salt Lk City UT	15590am						11780eu	11835va	11955va	15400af
1900-2000	USA, KWHR Naalehu HI	13625au				2000-2100	USA, KAIJ Dallas TX	17830af			
1900-2000	USA, Monitor Radio Intl	9355eu	9370eu	17510af		2000-2100	USA, KAIJ Dallas TX	13815am			
1900-2000	USA, VOA Washington DC	7415af	9525va	9760va	11870va	2000-2100	USA, KTBN Salt Lk City UT	15590am			
		11920af	12040af	13710af	15180va	2000-2100	USA, KWHR Naalehu HI	11980as			
		15410af	15580af	19379va		2000-2100	USA, Monitor Radio Intl	7510eu	9355eu		
1900-2000	USA, WEWN Birmingham AL	11580na	13615na	13695af		2000-2100	USA, VOA Washington DC	7415af	9760va	9770va	11855af
1900-2000 irreg	USA, WGTG McCaysville GA	9370am	9475am					13710af	15205va	15410af	15580af
1900-2000	USA, WHRI Noblesville IN	9495am	13760eu					17725af	17755af	19379va	
1900-2000	USA, WJCR Upton KY	7490na	13595na			2000-2100	USA, WEWN Birmingham AL	7425na	13615na	13695na	15375sa
1900-2000	USA, WMLK Bethel PA	9465eu				2000-2100 irreg	USA, WGTG McCaysville GA	9370am	9475am		
1900-2000	USA, WRMI/R Miami Intl	9955am				2000-2100	USA, WHRI Noblesville IN	9495am	13760eu		
1900-2000	USA, WRNO New Orleans LA	15420am				2000-2100	USA, WJCR Upton KY	7490na	13595na		
1900-2000	USA, WVHA Greenbush ME	15745af				2000-2100	USA, WMLK Bethel PA	9465eu			
1900-2000	USA, WWCR Nashville TN	12160am	13845am	15685am		2000-2100	USA, WRMI/R Miami Intl	9955am			
1900-2000	USA, WYFR Okeechobee FL	17760eu				2000-2100	USA, WRNO New Orleans LA	15420am			
1900-1930	Vietnam, Voice of	7360na	9840eu	12030as		2000-2100	USA, WVHA Greenbush ME	15745eu			
1900-2000	Zambia, Christian Voice	4965af				2000-2100	USA, WWCR Nashville TN	12160am	13845am	15685am	
1900-2000	Zimbabwe, ZBC/Radio 4	3306do	3396do	4828do		2000-2100	USA, WYFR Okeechobee FL	17760eu			
1930-2000	Albania, R Tirana Intl	7260eu	9740eu			2000-2030	Vatican State, Vatican R	7365af	9645af		
1930-2000	Austria, R Austria Intl	5945eu	6155eu	9655me	13730af	2000-2030	Zambia, Christian Voice	4965af			
1930-2000	Iran, VOIRI Tehran	7260af				2000-2100	Zimbabwe, ZBC/Radio 3	3306do	3396do	4828do	
1930-2000	Mongolia, R Ulan Bator	4080as	7530as			2005-2100	Syria, Radio Damascus	15095na			
1930-2000	Slovakia, R Slovakia Intl	5915eu	6055eu	7345eu		2015-2045 s	Swaziland, Trans World R	3200af			
1930-2000	Turkey, Voice of	9445eu				2025-2045	Italy, RAI Rome	5990af	7110af	9710af	
1930-2000	Yugoslavia, Radio	6100af	9720eu			2030-2100	Egypt, Radio Cairo	15375af			
1935-1955	Italy, RAI Rome	6030eu	7235eu			2030-2100	Poland, Polish R Warsaw	6035eu	6095eu	7285eu	
1945-2000	Togo, Radio	5047do				2030-2045	Thailand, Radio	9655eu	11805eu		
						2030-2100	Vietnam, Voice of	7360as	9840eu	12020eu	
						2045-2100	India, All India Radio	7410eu	9910au	9950eu	11620eu
								11715pa	15225pa		
						2050-2100	Vatican State, Vatican R	4055eu	5882eu	7250eu	

FREQUENCIES

2100-2200	Australia, Radio	6060pa 9580pa 11880pa	6080pa 9660pa 11955pa	7240pa 11660pa	7260as 11855as
2100-2130 vl	Australia, VL8A Alice Spg	2310do			
2100-2130 vl	Australia, VL8K Katherine	2485do			
2100-2130 vl	Australia, VL8T Tent Crk	2325do			
2100-2110	Bahrain, Radio	6010do			
2100-2200 vl	Canada, CBC N Quebec Svc	9625do			
2100-2200	Canada, CFCX Montreal	6005do			
2100-2200	Canada, CFRX Toronto	6070do			
2100-2200	Canada, CFVP Calgary	6030do			
2100-2200	Canada, CHNX Halifax	6130do			
2100-2200	Canada, CKZN St John's	6160do			
2100-2200	Canada, CKZU Vancouver	6160do			
2100-2200	Canada, RCI Montreal	5925eu 9805eu 15150eu 6950eu	5995eu 11945eu 17820eu 9920eu	7260eu 13650eu 13690eu	9755eu
2100-2200	China, China Radio Intl	15110af			
2100-2130	China, China Radio Intl	15110af			
2100-2200	Costa Rica, RF Peace Intl	6200am	9400am	15050am	
2100-2200	Cuba, Radio Havana Cuba	11705eu			
2100-2127	Czech Rep, Radio Prague	5930na	7345na		
2100-2200	Egypt, Radio Cairo	15375af			
2100-2200	Eq Guinea, Radio Africa	15190af			
2100-2150	Germany, Deutsche Welle	6185as 9765as 15270af 5980am	7225af 11785as	9670as 11810af	9690af 11905af
2100-2200	Guatemala, AWR	7410eu	9910eu	9950eu	11620au
2100-2200	India, All India Radio	11715au 3950eu 6035as 11865eu	15225au 7125as	7140as	11850pa
2100-2200 fas	Italy, IRRS Milan	3950eu			
2100-2200	Japan, NHK/Radio	6035as 11865eu	7125as	7140as	11850pa
2100-2115	Japan, NHK/Radio	7190as	7280as		
2100-2110 vl	Kenya, Kenya Broadc Corp	4885do	4935do	6150do	
2100-2200	Lebanon, Voice of Hope	6280va			
2100-2200	Lebanon, Wings of Hope	9960va			
2100-2200 mtwhfa	Liberia, Radio ELWA	4760do			
2100-2200	New Zealand, R NZ Intl	11735pa			
2100-2200	Nigeria, FRCN/Radio	3326do	4990do		
2100-2125	Poland, Polish R Warsaw	6035eu	6095eu	7285eu	
2100-2200	Romania, R Romania Intl	5955eu	5990eu	7105eu	7195eu
2100-2200	Russia, Voice of	5940eu 7205eu 3316do	5995eu 9890eu	6055eu	7180eu
2100-2115	Sierra Leone, SLBS	3316do			
2100-2200	Slovakia, AWR	9465af			
2100-2200	South Korea, R Korea Intl	6480eu	15575eu		
2100-2200	Spain, R Exterior Espana	6125eu			
2100-2110	Uganda, Radio	4976do	5026do		
2100-2200	United Kingdom, BBC London	3255af 6005af 6195va 11750sa	3915as 6120as 7325va 11780eu	3955eu 6180eu 9410va 11835va	5975am 6190as 9740as 11955va
2100-2130	United Kingdom, BBC London	9630af			
2100-2200	USA, KAIJ Dallas TX	13815am			
2100-2200	USA, KTNB Salt Lk City UT	15590am			
2100-2200 s	USA, KVOH Los Angeles CA	17775am			
2100-2200	USA, Monitor Radio Intl	7510na	9355na	13840pa	
2100-2200	USA, VOA Washington DC	6070va 11870va 15375sa 18275va	7415af 13710af 15410af 19379va	9595va 15185va 15580af 17725af	9760va 15205va
2100-2200	USA, WEWN Birmingham AL	7425na	13615na	15375sa	
2100-2200 irreg	USA, WGTG McCaysville GA	9370am	9475am		
2100-2200	USA, WHRI Noblesville IN	9495am	13760am		
2100-2200	USA, WJCR Upton KY	7490na	13595na		
2100-2200	USA, WMLK Bethel PA	9465eu			
2100-2200	USA, WRMI/R Miami Intl	9955am			
2100-2200	USA, WRNO New Orleans LA	15420am			
2100-2200 a	USA, WVHA Greenbush ME	15745eu			
2100-2200	USA, WWCR Nashville TN	12160am	13845am	15685am	
2100-2200	USA, WYFR Okeechobee FL	7355eu	11580af	15566af	
2100-2200	Zimbabwe, ZBC/Radio 3	3306do	3396do	4828do	
2105-2200	Syria, Radio Damascus	12085na	15095na		
2115-2200	Egypt, Radio Cairo	9900eu			
2115-2130	United Kingdom, BBC London	15390ca	17715ca		
2120-2130 mh	Estonia, Estonian Radio	5925eu			
2130-2200	Armenia, Voice of	7480na	9965na		
2130-2200	Australia, Radio	9610as	9645as	15365pa	17860pa
2130-2200 vl	Australia, VL8A Alice Spg	4835do			
2130-2200 vl	Australia, VL8K Katherine	5025do			
2130-2200 vl	Australia, VL8T Tent Crk	4910do			
2130-2200	Iran, VOIRI Tehran	6175au			
2130-2200 as	Latvia, Radio	5935eu			
2130-2200	Liberia, Radio ELWA	4760do			
2130-2200 mva	Moldova, R Dniester Intl	6205na			
2130-2200	Russia, Voice of	7170eu	7400eu		

2200 UTC

2200-2200	Australia, Radio	9580pa	9610as	9645as	9660pa
		11660pa	11695pa	11855as	11880pa
		11955pa	13755as	15365pa	17795pa
		17860pa			
2200-2300 vl	Australia, VL8A Alice Spg	4835do			
2200-2300 vl	Australia, VL8K Katherine	5025do			
2200-2300 vl	Australia, VL8T Tent Crk	4910do			
2200-2230	Belgium, R Vlaanderen Int	5900eu	7250eu		
2200-2300	Bulgaria, Radio	7105eu	9700eu		
2200-2300 vl	Canada, CBC N Quebec Svc	9625do			
2200-2300	Canada, CFCX Montreal	6005do			
2200-2300	Canada, CFRX Toronto	6070do			
2200-2300	Canada, CFVP Calgary	6030do			
2200-2300	Canada, CHNX Halifax	6130do			
2200-2300	Canada, CKZN St John's	6160do			
2200-2300	Canada, CKZU Vancouver	6160do			
2200-2230	Canada, RCI Montreal	5995eu 11705as	7260eu 11945eu	9755am 13690eu	9805eu
2200-2230	China, China Radio Intl	3985eu			
2200-2300	China, China Radio Intl	7170eu			
2200-2300	Costa Rica, RF Peace Intl	7385am	9400am	15050am	
2200-2300	Cuba, Radio Havana Cuba	6180na	11960na		
2200-2245	Egypt, Radio Cairo	9900eu			
2200-2300	Eq Guinea, Radio Africa	15190af			
2200-2215	Ghana, Ghana Broadc Corp	4915do			
2200-2300	Guatemala, AWR	5980am			
2200-2230	Hungary, Radio Budapest	3975eu	5935eu	7250eu	9835eu
2200-2230	India, All India Radio	7410eu 11715au	9910eu 15225au	9950eu	11620au
2200-2230	Iran, VOIRI Tehran	6175au			
2200-2300 fas	Italy, IRRS Milan	3950eu			
2200-2225	Italy, RAI Rome	5990as	9710as	11815as	
2200-2300	Lebanon, Voice of Hope	6280va			
2200-2300	Lebanon, Wings of Hope	9960va			
2200-2300	Malaysia, Radio	7295do			
2200-2225 mtwhf	Moldova, R Moldova Intl	7500eu			
2200-2205	New Zealand, R NZ Intl	11735pa			
2200-2205	Nigeria, FRCN/Radio	3326do	4990do		
2200-2230 s	Norway, Radio Norway Intl	6170as	6200na		
2200-2300	Russia, Voice of	5940eu 7205eu	6055eu 7360eu	7140eu 7400eu	7180eu 9890eu
2200-2215	Sierra Leone, SLBS	3316do			
2200-2300	Slovakia, AWR	7100eu			
2200-2230	South Korea, R Korea Intl	5965eu			
2200-2300	Spain, R Exterior Espana	11775af			
2200-2205	Syria, Radio Damascus	12085na	15095na		
2200-2300	Taiwan, VO Free China	5810eu	9850eu		
2200-2300	UAE, Radio Abu Dhabi	9605na	9770na	13605na	
2200-2300	Ukraine, R Ukraine Intl	4795eu	4820eu	5905eu	5940eu
2200-2300	United Kingdom, BBC London	6005eu 6130eu 3955eu	6010eu 7135eu 5975am	6055eu 7205eu 6175na	6080eu 7240eu 6195va
		7110as 11750sa	9410va 11835va	9590na 11955va	9915sa 11965pa
2200-2230	United Kingdom, BBC London	11780eu			
2200-2300	USA, KAIJ Dallas TX	13815am			
2200-2300	USA, KTNB Salt Lk City UT	15590am			
2200-2300	USA, Monitor Radio Intl	7510eu	9430as	13770sa	13840as
2200-2300	USA, VOA Washington DC	7215va	9770va	9890af	11760va
		15185va 15290va	17735va 15305va	17820va 17820va	18275va
2200-2230 mtwhf	USA, VOA Washington DC	7415af	12080af	13710af	
2200-2300	USA, WEWN Birmingham AL	7425na	13615na	15375sa	
2200-2300	USA, WHRI Noblesville IN	9495am			
2200-2300	USA, WJCR Upton KY	7490na	13595na		
2200-2300	USA, WRMI/R Miami Intl	9955am			
2200-2300	USA, WRNO New Orleans LA	15420am			
2200-2300 w	USA, WVHA Greenbush ME	9852eu			
2200-2300	USA, WWCR Nashville TN	12160am	13845am		
2200-2245	USA, WYFR Okeechobee FL	5810na	9985eu	11580eu	15566af
2200-2230	Yugoslavia, Radio	6100eu	6185eu		
2230-2300	New Zealand, R NZ Intl	15115pa			
2230-2300	Austria, R Austria Intl	5945eu	6155eu	9870ca	
2230-2257	Czech Rep, Radio Prague	5930na	7345na		
2230-2300	Lithuania, Radio Vilnius	9675eu			
2230-2300	Russia, Voice of	7105eu			
2230-2300	Sweden, Radio	6065eu			
2240-2250	Greece, Voice of	9425au			
2245-2300	Ghana, Ghana Broadc Corp	3366do	4915do		
2245-2300	India, All India Radio	9705as	9950as	11745as	13750as
		15145as			
2245-2300	Vatican State, Vatican R	6065as	9600au	11830au	

FREQUENCIES

2300-0000	Australia, Radio	9610as	9660pa	11645as	11660pa	2300-0000	New Zealand, R NZ Intl	15115pa			
		11695as	11855as	13755as	15365pa	2300-2305	Nigeria, FRCN/Radio	3326do	4990do		
		17795pa	17860pa			2300-2350	North Korea, R Pyongyang	11700na	13650na		
2300-0000 vl	Australia, VL8A Alice Spg	4835do				2300-0000	Russia, Voice of	5940na	5995na	6055na	6130na
2300-0000 vl	Australia, VL8K Katherine	5025do						7105na	7125na	7170na	7180na
2300-0000 vl	Australia, VL8T Tent Crk	4910do						7205na	9550na		
2300-0000	Canada, CBC N Quebec Svc	9625do				2300-2317	Sierra Leone, SLBS	3316do			
2300-0000	Canada, CFRX Montreal	6005do				2300-0000	Turkey, Voice of	7280eu	9560as	9655na	
2300-0000	Canada, CFRX Toronto	6070do				2300-0000	UAE, Radio Abu Dhabi	9605na	9770na	13605na	
2300-0000	Canada, CFVP Calgary	6030do				2300-0000	United Kingdom, BBC London	5975am	6175na	6195va	7110as
2300-0000	Canada, CHNX Halifax	6130do						7180as	7250as	7325va	9580as
2300-0000	Canada, CKZN St John's	6160do						9590na	11750sa	11945as	11955va
2300-0000	Canada, CKZU Vancouver	6160do				2300-2330	United Kingdom, BBC London	9915sa			
2300-0000	Canada, RCI Montreal	5960am	6040am	9535am	9755am	2300-2315	United Kingdom, BBC London	9410af	11835va		
		11940am				2300-2330	USA, KAIJ Dallas TX	13815am			
2300-0000	Costa Rica, AWR Alajuela	5030am	6150am	7375am	9725am	2300-0000	USA, KTVN Salt Lk City UT	15590am			
		13750am	15460am			2300-0000	USA, KWHR Naalehu HI	17510as			
2300-0000	Costa Rica, RF Peace Intl	7385am	9400am	15050am		2300-0000	USA, Monitor Radio Intl	7510eu	9430as	13625pa	13770sa
2300-2305	Croatia, Croatian Radio	5895eu	7370eu	11635eu	13830eu	2300-0000	USA, VOA Washington DC	7215va	9705va	9770va	9890af
2300-0000	Egypt, Radio Cairo	9900na						11760va	15185va	15290va	15305va
2300-2350	Germany, Deutsche Welle	6000as	6160as	7250as				17735va	17820va	18275va	
2300-0000	Guam, AWR/KSDA	11980as				2300-0000	USA, WEWN Birmingham AL	7425na	13615na		
2300-0000	Guatemala, AWR	5980am				2300-0000	USA, WHRI Noblesville IN	5745am			
2300-0000	India, All India Radio	9705as	9950as	11745as	13750as	2300-0000	USA, WJCR Upton KY	7490na	13595na		
		15145as				2300-0000	USA, WRNO New Orleans LA	7355am			
2300-0000	Japan, NHK/Radio	6055eu	6155eu	7125as	7140as	2300-0000 w	USA, WVHA Greenbush ME	9852eu			
		11850pa				2300-0000	USA, WWCR Nashville TN	5065am	9475am	13845am	
2300-0000	Lebanon, Voice of Hope	6280va				2300-0000	Australia, Radio	9645as	9850as	13605as	15240pa
2300-0000	Lebanon, Wings of Hope	9960va				2300-0000	Netherlands, Radio	6020na	6165na		
2300-0000	Malaysia, Radio	7295do				2300-0000	Palau, KHBN/Voice of Hope	15140as			
2300-2325 mtwhf	Moldova, R Moldova Intl	7500eu				2335-2345	Greece, Voice of	9935sa	11595sa	11640sa	

SELECTED PROGRAMS

Sundays

- 2300 Guam, AWR/KSDA: Wavescan.
- 2308 Turkey, Voice of: Review of the Turkish Press.
- 2310 UK, BBC London (am): Writers in a Nutshell. See H 0005.
- 2313 Turkey, Voice of: Tastes from Turkey.
- 2323 Turkey, Voice of: Turkish Music.
- 2330 Turkey, Voice of: Magnificent Istanbul.
- 2340 Netherlands, Radio (am): Wide Angle.
- 2340 Turkey, Voice of: Turkish Music.
- 2354 Netherlands, Radio (am): Siren Song.

Mondays

- 2300 USA, WRNO New Orleans LA: Latino USA.
- 2300 USA, WWCR #3 Nashville TN: The Norm Resnick Show (live).
- 2312 Turkey, Voice of: Last Week.
- 2318 Turkey, Voice of: Tolerance of Virtue.
- 2319 Turkey, Voice of: History of the Turkish Press.
- 2326 Turkey, Voice of: Notes from Turkey.
- 2333 Turkey, Voice of: Turkish Songs.
- 2349 USA, Monitor Radio Intl: Letterbox.

Tuesdays

- 2300 USA, WWCR #3 Nashville TN: The Norm Resnick Show (live).
- 2300 Vatican State, Vatican Radio: Postcards from Rome.
- 2305 Turkey, Voice of: Review of the Turkish Press.
- 2319 Turkey, Voice of: Popular Turkish Music.
- 2332 Turkey, Voice of: Economic Panorama (biweekly).
- 2340 Turkey, Voice of: Turkish Music.
- 2355 Japan, Radio: Tokyo Pop-In.

Wednesdays

- 2300 USA, WWCR #3 Nashville TN: The Norm Resnick Show (live).
- 2306 Turkey, Voice of: Review of the Turkish Press.
- 2310 Turkey, Voice of: Review of the Foreign Media.
- 2314 Turkey, Voice of: Letter Box.
- 2329 Turkey, Voice of: In Your Own Voice.
- 2344 Turkey, Voice of: Turkish Music.

Thursdays

- 2300 Guam, AWR/KSDA: Sounds of Inspiration.
- 2300 USA, WWCR #3 Nashville TN: The Norm Resnick Show (live).
- 2309 Turkey, Voice of: Review of the Turkish Press.

- 2312 Turkey, Voice of: Heading for Europe.
- 2318 Turkey, Voice of: Turkish Music.
- 2335 Turkey, Voice of: Ambassadors of Art.

Fridays

- 2300 USA, WWCR #3 Nashville TN: The Norm Resnick Show (live).
- 2312 Turkey, Voice of: Review of the Turkish Press.
- 2315 Turkey, Voice of: Turkish Album.
- 2315 UK, BBC London (am): Red Dwarf. See T 0115.
- 2332 Turkey, Voice of: The Atatürk History.
- 2342 Turkey, Voice of: Turkish Music.

Saturdays

- 2300 Guam, AWR/KSDA: Wavescan.
- 2300 USA, WWCR #3 Nashville TN: Taking Back America (live).
- 2309 Turkey, Voice of: Review of the Turkish Press.
- 2310 Turkey, Voice of: Turkey: A Haven in the East.
- 2312 Turkey, Voice of: Outlook.
- 2315 Turkey, Voice of: VOT DX Corner (biweekly).
- 2330 UK, BBC London (as pac): Pick of the World. See S 1130.
- 2333 Turkey, Voice of: Blue Voyage.
- 2354 Radio Netherlands: Documentary. Homosexuality in Japan (6th). See W 1154.
- 2354 Radio Netherlands: Documentary. Japanese Youth (13th). The changing face of family life in Japan.
- 2354 Radio Netherlands: Documentary. The Coming of Age of Greenland (Feb 3). See W 1554.
- 2354 Radio Netherlands: Encore Documentary. Bringing Home the Beef (20th). See W 1154.
- 2354 Radio Netherlands: Encore Documentary. Bringing Home the Beef (27th). See S 0154.

HAUSER'S HIGHLIGHTS
KOREA SOUTH: RADIO KOREA INT'L
RKI'S REVISED ENGLISH SCHEDULE FOR D-95, AS ANNOUNCED:

60-minute:

0800	7550, 13670 Eu
1200	7285 China/ME/af
1600	5975 omni, 9515 ME/af, 9870 ME/af, 15575 Eu
1900	5975, 7275 omni
2100	6480, 15575 Eu
0200	7275 omni, 11725, 11810
SAm	
0600	7205 NAM

30-minute:

1130	9650 via RCI to NAM
1230	9570 SEAs, 9640 omni, 13670 ME/af
1830	6480 Eu
2000	3970 via BBC to Eu



Your Name in Lights!

... or at least in ink within the *Monitoring Times* Shortwave Guide. Please send us your "best catches" on the worldwide shortwave bands — QSLs, that is — and we will try to use them in future issues of *MT*.

All Ohio Scanner Club: Dave Marshall, 50 Villa Rd., Springfield, OH 45503-1036. U.S. northeast of the Mississippi; VHF/UHF/HF utilities. Net Mon 9:30pm 146.940. *American Scannergram*. \$18 U.S., \$21 Can/Mex, \$28 ww. \$3 sample. Annual summer meeting.

American SW Listener's Club: Stewart MacKenzie, WDX6AA, 16182 Ballard Lane, Huntington Beach, CA 92649, (714) 846-1685; wdx6aa@aol.com. Western US, Pacific, Asia. SWBC. utilities, longwave, clandestine. SWL. \$24 US, \$25 Can/Mex. \$2 sample (\$3 ww). Meets 1st Sats 10am address above.

Association of Clandestine Enthusiasts (A.C.E.): Kirk Baxter, P.O. Box 11201, Shawnee Mission, KS 66207. US, Europe and Middle East; Pirate and clandestine. *The A.C.E.* \$20 US, US\$21 Can/Mex, US\$27 ww.

Association of Manitoba DX'ers (AMANDX): Shawn Axelrod, 30 Becontree Bay, Winnipeg, Manitoba, R2N 2X9 Canada, (204) 253-8644.

Manitoba; LW, MW, SW, and VHF/UHF. Meets monthly. \$2.

Bay Area Scanner Enthusiasts: Bruce Ames, P.A.O., 105 Serra Way #363, Milpitas, CA 95035, (408)267-3244. Western U.S.; 25+ MHz. *Listening Post* (bi-monthly). Meets 2nd Mons. 7:30 Milpitas Police Admin Bldg. \$25 US, \$2 sample, or SASE for info.

Bayonne Emergency Radio Network (BERN): Ray Baron/Bob Frasca, P.O. Box 1203, Bayonne, NJ 07002-6203, 1-800-286-2876. Metro NJ, NY; Fire/disaster, pub safety.

Bearcat Radio Club: Larry Miller, Box 360, Wagontown, PA 19376, 1-800-423-1331. National. Scanning only. *National Scanning Report* (bi-monthly). \$17.50 or \$29.90, \$5 more Can. \$3 sample.



Dispatchers from the Mountain NewsNet (an emergency incident paging notification network) send their season's greetings. Their new address is P.O. Box 4488, Estes Park, CO 80517-4488.

Listener's Nets

You are invited to post your North American amateur radio net in this bi-monthly listing if its primary emphasis is devoted to the radio monitoring hobby (not amateur radio).

Capitol Hill Monitors

146.91 MHz 1st & 3rd Mon 7:30pm ET, DC, Md, N.Va, S.Del; Scanning and amateur radio
Frequency Forum BBS 703-207-9622 [8-N-1]
Net Mgr: N3RDC, John Korman
Call Alan Henney 301-270-2531 or John Korman 301-299-5455 for info
Newsletter \$8; 6912 Prince George's Ave, Takoma Park, MD 20912-5414

Central Florida Listeners Group

146.730 MHz, Sun 8pm ET, Central Florida; any radio communications outside amateur bands
Net Mgr: Andy Fountain, KD4OKJ
Telephone gateways announced; CFLG BBS conference on LASER BBS 407-647-0031
Call: Andy Fountain, KD4OKJ, (407)898-6784 for info

Larkfield's ARC SW-Scanner Net

147.210 MHz, Fri 8pm ET, Long Island, NYC, NJ, Conn; Shortwave BCers & utes, MW, amateur radio, scanning
Net Mgr: Hank Lukas, N2GCM
Open to all amateurs on air; by letter for scanner listeners
Contact: P.O.Box 115, Plainview, NY 11803-0115

Listening Post

147.03, 224.96, 447.725 (W3DID/R), Sun 8pm, Baltimore and metro area; non-amateur transmissions DC to Daylight except ECPA-related items or tacticals
Net Mgr: Mike Agner KA3JJZ
Open to all amateurs on air; by maildrop at: 6710-F Ritchie Hwy #236, Glen Burnie, MD 21060.
Packet: KA3JJZ @ WB3FFV.md.ena.usa

Montreal DX Listeners Net

146.910 MHz, Sun 8:15 pm ET, Montreal PQ area; MW SW, & Scanner
Net Mgr: Sheldon Harvey VE2SHW
Telephone gateways announced

Monitoring the Long Island Sounds Net

146.805 Tues 8pm ET, Long Island, NY; Primarily scanning
Net Mgr: WB2RVA, 2134 Decker Ave, North Merrick, NY 11566

Monix SW and Scanner Listeners Info Net

146.835 MHz, Thurs. 9:30 pm ET; Cincinnati/Tri-State Area; All band
Net Mgr: Mark Meece, N8ICW, (513) 777-2909 (no collect calls)

Open to all amateurs; Telephone gateways to net mgr up to 1/2 hr before net; The Listening Post BBS (513) 474-3719

New York DX Association

146.880 Mon 9pm ET, NYC area; "DC to Light"
Net Mgr: Charles Hargrove N2NOV, 723 Port Richmond Avenue, Staten Island, NY 10302-1736

Voice mail 1/2 hr before net: 212-978-3375; Compuserve 73167,312

Northeast SW Listeners and Scanners Net;

Rip Van Winkle Society
147.21 MHz (WB2UEB) Wed 8pm, Albany, NY, area.

Net Mgr: Ray Loeper N2RAD

Ontario DX Association - Listeners Net

442.375* (VA3ODX; 103.4Hz CTCSS tone), Sun 8:30pm ET; Toronto area coverage; LW, MW, SW, FM, VHF/UHF topics discussed
Net Mgr: Stephen Canney, VA3ID
Open to all; repeater used daily by ODXA members

Rocky Mountain Monitoring Net

147.225, 224.980 Denver; 145.460 Boulder; 145.160 Colorado Springs Sun 20:00; communications monitoring

Brian Gould, KB0MEP, Mt. News Net

Shortwave Listeners Net, Association of North American Radio Clubs

7.240 MHz LSB, Sun 10am ET, Eastern US; Shortwave broadcasts and utilities
Net Mgr: KW3F, 238 Cricklewood Circle, Lansdale, PA 19446

Telephone gateways announced

Southern Wisconsin SW Listeners Net;

MARA

147.150 MHz, alt 146.760 MHz. Madison, WI, area
First Sun 8pm CT. Shortwave, scanning, dc to daylight, equipment notes and comments.
Net Mgrs: N9LTD, KA9SRU, N9EWO
Contact: N9EWO, Dave Zantow, 1609 Ontario Drive, Janesville, WI 53545

Boston Area DXers: Paul Graveline, 9 Stirling St., Andover, MA 01810-1408, (508)470-1971, 50 mile radius Boston; 3-30 MHz. Meets 3rd Fris 7:30pm, The Lexington Club, Rte 4/225 1/4 mi W of Rte 128.

Canadian Int'l DX Club: Sheldon Harvey, 79 Kipps St., Greenfield Park., Quebec, Canada J4V 3B1, (514)462-1459. Canada nationwide/ membership open to all; General coverage. *The Messenger*. \$26 Can, \$25 US, \$US28 or \$Can35 ww. \$2 sample. Meets 2nd Tues 7pm Montreal; several annual events.

Capitol Hill Monitors: Alan Henney, 6912 Prince Georges Ave, Takoma Park, MD 20912-5414, (301) 270-2531/5774 fax. DC, MD, No.VA, So.DE. Scanner bands. Frequency Forum BBS 703-207-9622 (8-N-1) Net 1st & 3rd Mons 7:30pm 146.91. *Capitol Hill Monitor*. \$8. Meets irregularly.

Central Florida Listeners Group: Andy Fountain KD4OKJ, (407)898-6784. Central Florida; All bands. Net on 146.73 MHz Sun 8 pm. Meets 2nd Sats 12 noon. Conf#10 on Laser BBS (407)647-0031.

Central Indiana Shortwave Club: Steve Hammer, 2517 E. DePauw Road, Indianapolis, IN 46227-4404. Central Indiana; SW broadcasting, pirates, and the offbeat. *Shortwave Oddities*.

Central VA Radio Enthusiasts: Richard Rowland, POB 34832, Richmond, VA 23234-0832.

Metro Richmond and vicinity. VHF/UHF. SASE. No newsletter, no dues. Meets quarterly in Richmond.

Chicago Area DX Club: Edward G. Stroh, 53 Arrowhead Dr., Thornton, IL 60476. 300 mile radius of Chicago; DXing all bands. *DX Chicago*. \$17, \$1 sample. Meets irregularly.

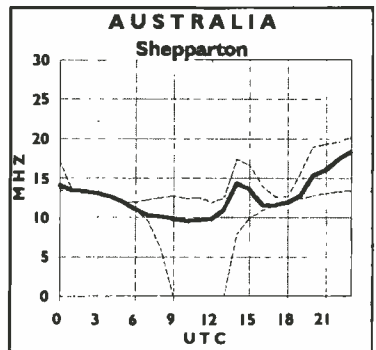
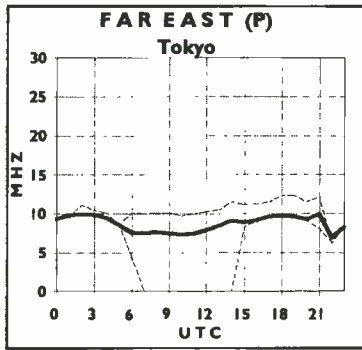
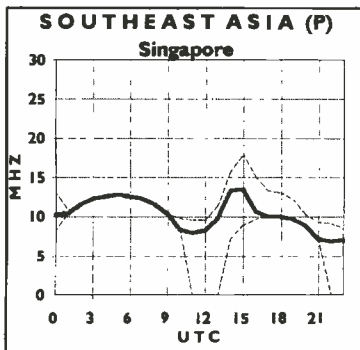
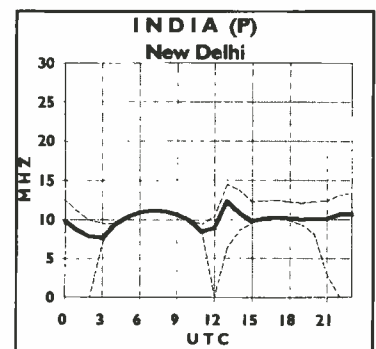
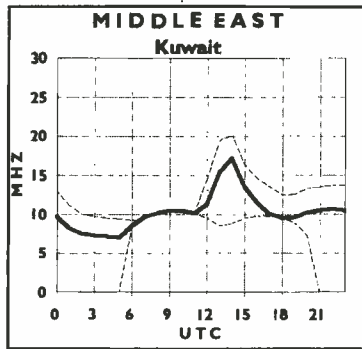
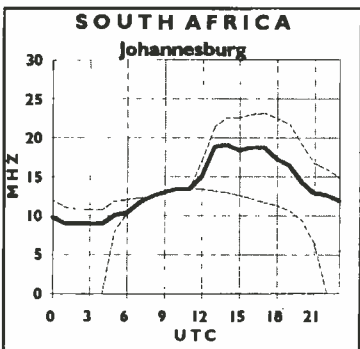
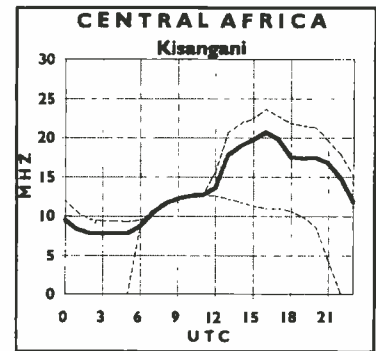
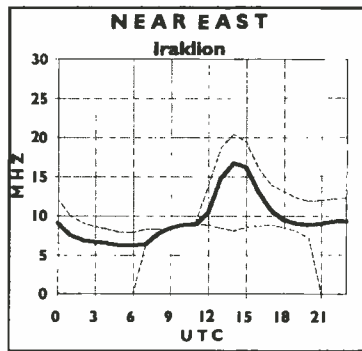
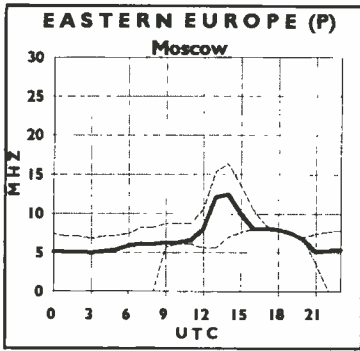
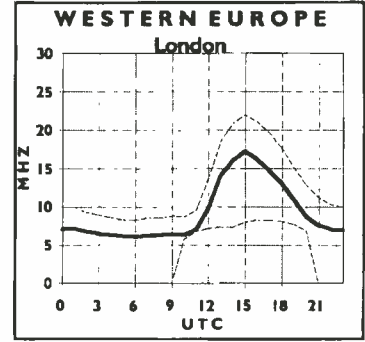
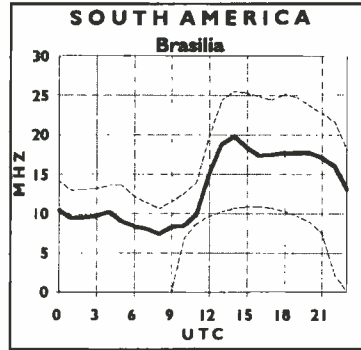
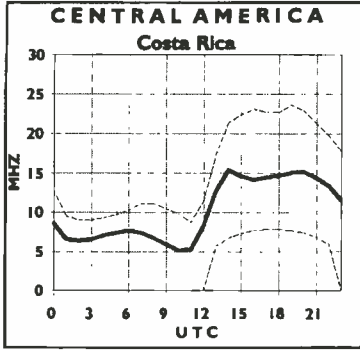
Chicago Area Radio Monitoring Association (CARMA): Ted & Kim Moran, 6219 N. Greenview, Chicago, IL 60660-1815. Chicago & midwest. Public safety & general coverage. SCUG/CARMA BBS (708)852-1292. *CARMA Newsletter*. Meetings (Sats) and newsletter bi-monthly on alternate months.

Colorado Shortwave Listeners Club: Rob Harrington N0NNI, P.O. Box 370593, Denver, CO 80237-0593, 303-756-9455. Colorado residents. Longwave, shortwave. *Colorado Shortwave Listener* (4x) 50 cents or 10 cents plus SASE for info and latest newsletter or Internet YABX92A@prodigy.com. Meetings cancelled remainder of '95.

Communications Research Group: Scott Miller, 122, Greenbriar Drive, Sun Prairie, WI 53590-1706. Wisconsin area. Scanning.

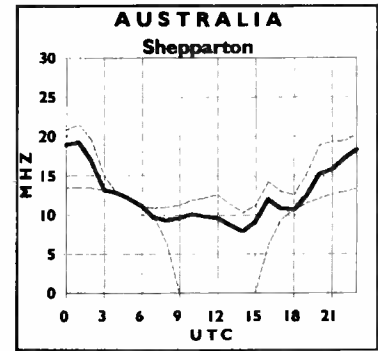
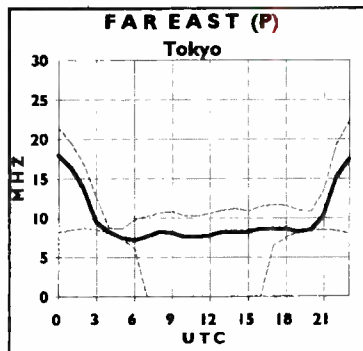
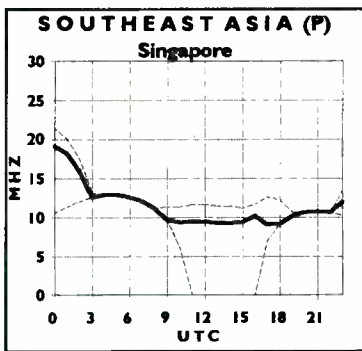
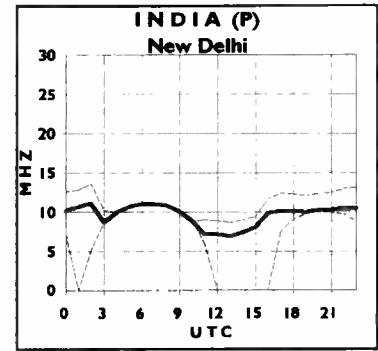
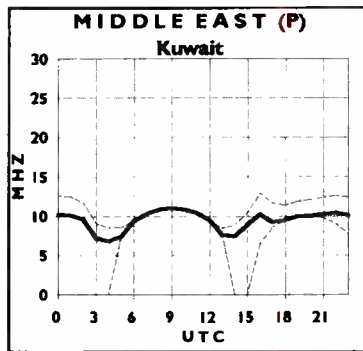
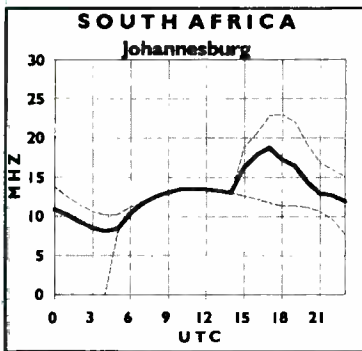
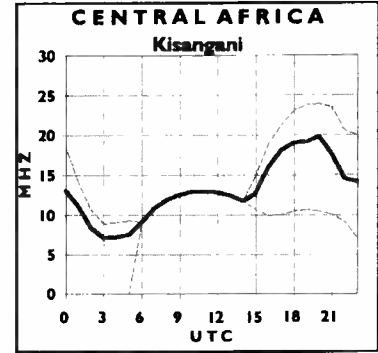
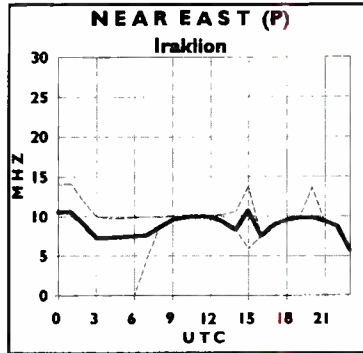
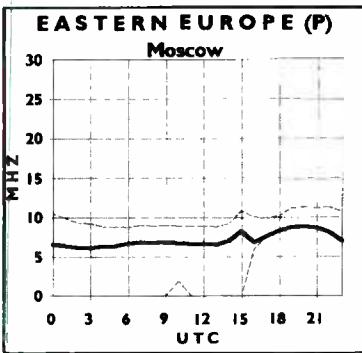
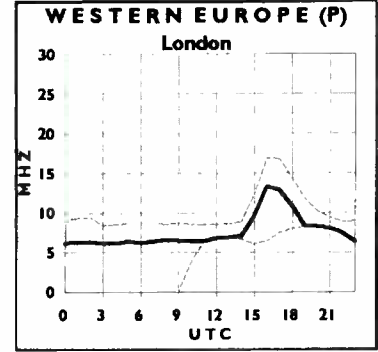
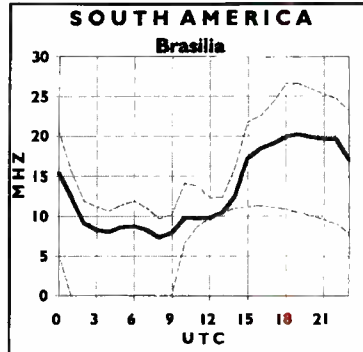
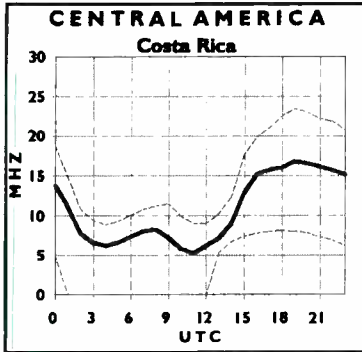
Propagation Conditions: Eastern United States

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. The Sun Spot Number used this month for forecasting purposes is 6.



Propagation Conditions: Western United States

Once you've located the correct charts, look along the horizontal axis of the graph for the time you are listening. The top line of the graph shows the maximum usable frequency (MUF), the heavy middle line is the frequency for best reception, or optimum working frequency (OWF), and finally, the bottom line is the lowest usable frequency (LUF). You will find the best reception along the heavy middle line. Circuits labeled (P) cross the polar auroral zone. Expect poor reception on these circuits during ionospheric disturbances.



Logging On

It's a new year and the longwave DXing conditions have reached their traditional peak. What better time for making a resolution to explore radio's basement band for the first time—or to re-discover it?

A logsheet is a time-tested way to chart your DXing progress. This month, we'll discuss how to make a logsheet that suits the special needs of the longwave DXer. This will give you something to show for your efforts and help you spot changes that occur on the band from year to year.

A log doesn't have to be anything fancy. You can make up a ruled sheet, and run photocopies of it as needed. Or, for those wishing to go first class, a log can be kept "online" using a spreadsheet or word processing program.

What categories should your log contain? Just as with shortwave logs, it's important to show the date, time, frequency, ID, signal strength and location of the station heard. But that's pretty much where the similarity ends. Here are some additional entries for longwave work:

Serial Number—Many beacon chasers like to assign a sequential number to each log entry. This makes it easy to keep track of your total loggings at a glance and provides a convenient reference point when searching for a specific entry later on.

ID Pitch—The two tones you'll hear from most navigation beacons are 1020 Hz and 400 Hz. Traditionally, U.S. beacons use the 1020 Hz tone and Canadian beacons use the 400 Hz tone. There are some exceptions to the rule, however, where just the opposite is true, and these are considered somewhat rare catches—all the more reason to have it down on paper!

Distance—The airline distance in miles (or kilometers) from your station to the beacon site is very useful information for DXing. One technique for determining distance is to have a map posted in your shack with your location marked by a thumbtack. Attached to the thumbtack is a movable strip of paper that has been marked off in miles (or kilometers) for quick measurement of distances.

Beacon Power—To put a logging in the right

perspective, it's helpful to know the transmitting power of the station. For instance, hearing a 2000-watt beacon 500 miles away may be fairly routine, but pulling in a 25-watt beacon at that distance would certainly be a good catch by any standards.

Service—In this space, you could have a code letter to signify the type of beacon you heard: A=aeronautical, M=marine, P=private, L=lowfer, etc.

IDs per minute—This is the number of complete identifications that are sent by the beacon in one minute. This is, in effect, the "fingerprint" of the station. It can be very helpful to include this information in a verification letter as proof of reception.

Remarks—A space should be left to note special information about a logging such as whether or not the transmission included a voice message (now a rare thing), ID errors noted, local WX conditions at the time of reception, QSL information, and so on.

An almost indispensable tool for determining the output power, exact location, and other details about a beacon is *The Aero/Marine Beacon Guide*. It lists complete data for thousands of beacons and contains a handy cross reference section that allows you to find an entry as long as you know either the ID or frequency. The guide is available for \$15.00 (\$20.00 Foreign) post-paid from Ken Stryker, 2856-G West Touhy Avenue, Dept. MT, Chicago, IL 60645.

■ New Resource

If you have Internet e-mail access, you may want to check out the Worldwide Utilities Network (WUN) listserver. This is an online club dealing exclusively in signals below 30 MHz.

The LF column, *Surfing the Longwaves*, is edited by George Karayannopoulos, N2OWO, and includes up-to-date loggings, reception tips and information on LF resources. To join WUN, simply send e-mail to the WUN listserver at: majordomo@npl.com. In the body of your message, type only the following text: "subscribe WUN youraddress". Within a day or



Beacon SY (242 kHz)—East Syracuse, NY (The V-shaped antenna beside the building is for a 75 MHz marker beacon.) Photo by Philip Gentile

so you should begin receiving messages from the listserver.

A paper copy of the WUN newsletter is also available. Send \$1.50 to Tim Braun (Publisher), WUN International HQ, P.O. Box 16533, Washington, DC 22041-6533.

If you surf the Internet Worldwide Web, there's another LF-related site that has natural radio .WAV files you can download and hear on a properly equipped PC. The address for this web site is: <http://www.pw.pkysics.uiowa.edu/mcgreevy/>. This page has been set up by natural radio enthusiast Stephen P. McGreevy. If you've never heard a "dawn chorus," or "whistler" this is the place to go.

■ Loggings

Loggings this month are brought to you by Philip Gentile of East Syracuse, NY. His equipment lineup includes a Yaesu FRG-100 receiver, a Time Wave DSP-59+ digital signal processor, and a 3 foot homebrew tuned loop. Philip doesn't limit his monitoring to just New York State. Some catches were made while traveling in Ocho Rios, Jamaica. These are marked with an asterisk (*).

TABLE 1

Beacon Loggings

FREQ.	ID	LOCATION
178.6	ZWI	Baldwinsville, NY
209	GDW	Gladwin, MI
212	AWW	Winchester, IN
218	CLB	Wilmington, NC
230	BU	Columbus, OH
232	GP	Gaspé, QUE
242	SY	Syracuse, NY
248	MBJ	Montego Bay, Jamaica*
275	RF	Rockford, IL
315	USR	Simon Reyes, Cuba*
329	IA	Niagara Falls, NY
344	ZIY	Georgetown, Coymon Is.*
353	UHG	Holguin, Cuba*
346	YXL	Siaux Lookout, ONT
379	BRA	Asheville, NC
426	IZS	Montezuma, GA

* Monitored from Ocho Rios, Jamaica

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Bob Kay
Keith Stein
Glenn Hauser
Jorge Rodriguez, Esq.
Jeff Wallace
Larry Magne
Ken Reitz
Larry Van Horn
Jim Frimmel
John Fulford
Don Dickerson
Bob Evans
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George Zeller
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Keith Baker
Jean Baker
Larry Van Horn

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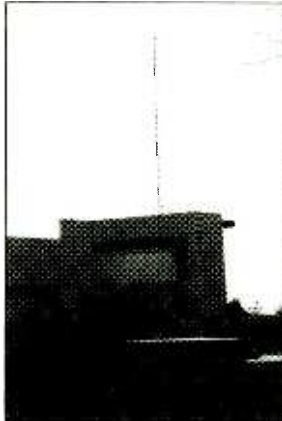
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Internet resources for the domestic-band DXer

If you haven't heard about the Internet this year, you've been hiding under a rock! The "information superhighway" was the big story of 1995, and Internet growth shows no sign of slowing down. The Net is full of resources for all kinds of pursuits, both commercial and hobby. It should come as no surprise that plenty of information for the domestic-band DXer can be found as well.



This modern facility is home to Long Island's WALK 1370 AM and 97.5 FM. The single tower serves as the antenna for the non-directional AM station.

The Commission posts decisions and public notices of various types on their WorldWide Web pages. While this information can be interesting for observing changes in the regulations, the routine public notices of new station applications and

technical changes are not posted. You can find this information on the Commission's automated fax server. Call (202) 418-2830 from a touch-tone telephone, and follow the instructions. The documents you want are numbers 4103-4112. Public notices will be automatically faxed to you.

■ FCC information

Probably the most important information on the Internet are the FCC broadcast databases. The technical databases for U.S. AM, FM, and TV stations are available for free download; see the sidebar for the details.

The FCC information is compressed in .GZ files. There are a number of PC utility programs available for un-compressing the information. One example is WINZIP.EXE, available on several forums on Compuserve, including PCUTIL. If you're active on a local BBS, I'm sure you can find an appropriate program there as well.

If you're a Compuserve subscriber, you can download a free Windows program for viewing the AM database: GO HAMNET. Look in library 21 for AMDB.EXE. This excellent program allows you to browse by frequency, displaying all technical information for U.S. and Canadian stations. Among the information displayed is a plot of the radiation pattern of the antenna, providing a graphic explanation of why you receive certain stations on a frequency and not others.

Warning: these files are HUGE! The AM database is roughly 17 megabytes uncompressed. The FM and TV databases are somewhat smaller, but they still won't fit on a floppy disk. This may be a good time to buy a larger hard disk, if your bank account survived the holidays.

Unfortunately, I know of no viewer programs for the FM and TV databases. If you're capable of writing simple BASIC programs, you can easily convert these databases to a format that can be read by common spreadsheet or database programs. This is not a task for the computer novice.

■ Canadian government information

I've not been able to locate the Canadian databases on the Internet. You can, however, access public notices of applications for, and actions on, new stations and facilities changes. You can download a specific week's documents, or you can "subscribe" to the changes. If you choose to subscribe, you'll automatically receive an e-mail message approximately weekly. Again, see the sidebar for the addresses to use.

■ The WorldWide Web

As the WorldWide Web grows, so does the list of broadcast stations with home pages. The easiest way to find stations is to start at Yahoo (www.yahoo.com) and look under Entertainment. This resource may be particularly valuable to the TV DXer, who can see logos of distant stations, and match them against his/her DX. Another valuable WWW page belongs to the CBC (www.cbc.ca), which lists all their transmitters.

In the future, the Internet may become even more valuable to the domestic-band DXer. The technology already exists for transmission of live audio and video, and a few radio stations—KJHK 90.7 FM in Lawrence, Kansas, was the first—are already simulcasting on the Net. Not only does this technology

allow the DXer to sample radio in distant places, but it makes it possible to compare programming between a potential DX catch, and its live, interference-free simulcast!

■ 1600-1700 kHz notes

By the time you read this, WJDM-1530 Elizabeth, New Jersey, will have become the first station in the expanded band. Numerous DXers in the East have heard the station testing on 1660 kHz, and station personnel say regular broadcasts were to start in November or December 1995. WJDM should be an easy catch from a rare state.

Kintronics of Bluff City, Tennessee, has been testing on 1680 kHz under an experimental license. A few DXers in the South have heard test tones on this frequency during the day. I don't think this station is operating at night.

Finally, a number of DXers have been hearing a religious station on 1630 kHz, signing WTJS FM 108. The bearing seems to point to a location in Florida. No sign of this station (either on 1630 or FM) appears in any of the databases. My guess is this is an unlicensed station—such things do happen frequently in this band. Catch WTJS before the FCC does—but don't count on a QSL!

■ Odds and Ends

- On the other end of the dial, Robert Knight of Garfield, New Jersey, has received a verification for his reception of highway advisory radio station WPAM592. The station operates on 530 kHz from the intersection of highways 4 and 17 in Paramus, NJ. This flea-powered station uses only 10 watts of power, and claims a normal coverage of about 3 miles. However, I've heard such stations from as far as 40 miles away, and other DXers have done even better. Robert's verification came from the Bergen County Division of Emergency Management.

- Digital radio broadcasting has stepped out of the laboratory and into consumers' homes in England. The BBC has installed five digital transmitters around London. Each transmitter can carry several programs simultaneously. For the time being, they're simulcasting the BBC's five regular radio services, but several additional programs are under development.

A total of approximately 2300 kbps of data can be transmitted. This data is allocated among the various programs. Talk and information programs require less data, and can use as little as 32 kbps; music programs can use as much as 384 kbps. Leftover capacity can be used to broadcast additional programs, or to transmit other types of data.

- In Sacramento, thieves trying to steal copper chose a dangerous victim. FM station KYMX 96.1 was knocked off the air when someone cut all four guy wires on one side of a 200-foot tower in KCTC AM's array. The tower collapsed into the 510-foot tower supporting KYMX's antenna, causing it to collapse as well. Sacramento County Sheriff's Department officials say the suspects had previously been arrested for stealing copper at another site, using similar tools.

- If you read the DX Test listings each month, you know HCJB is instituting monthly DX tests on their AM transmitter on 690 kHz. (If you aren't reading the DX Test listings, you should!) Remaining tests will be on Sunday mornings UTC - Saturday night in North America - on January 7, February 4, March 3, April 7, May 5, June 2, July 7, August 4, and September 1. HCJB may be an easy logging on the shortwave bands, but a 690 kHz logging is quite an accomplishment. If you succeed in hearing one of these tests, please let us know. Write me at Box 98, Brasstown NC 28902, or via the Internet at 72777.3143@compuserve.com. Good DX!

INTERNET ADDRESSES FOR THE DXER

The FCC's FTP server is at <ftp.fcc.gov>. Look for the broadcast databases in [/pub/Bureaus/Mass Media/Databases](#). Or, on the WorldWide Web, attach to www.fcc.gov and look in [/Bureaus/Mass Media/Databases](#). An automated fax server for Public Notices is available at (202) 418-2830.

On Compuserve, a Microsoft Windows program for un-compressing .GZ files is available in the PCUTIL forum; the filename is WINZIP.EXE. Also on Compuserve, a program for viewing the AM database is in the HAMNET forum; the filename is AMDB.EXE.

Canadian information is available on Industry Canada's server at info.ic.gc.ca. The directory changes from time to time, but the filenames are of the format 11-10-95.e. The .e files are in English; the .f are in French. To subscribe to regular Canadian updates, send an e-mail message to listproc@info.ic.gc.ca. The subject is ignored. The first line of the message should read **subscribe gazette-list Doug Smith**. (Of course, replace "Doug Smith" with your name!)

DX TEST BULLETIN

These special test broadcasts provide a unique opportunity to hear and identify the following stations. If you hear their broadcasts, please let the engineer know at the address provided.

Sunday, Jan 7 - HCJB-690, Casilla 17-17-691, Quito, Ecuador, will conduct a DX test between 3-3:15 am EST. The test will include Morse code ID's and "other unique items." Correct reception reports will be verified with a special QSL card. According to the station, *if you hear code, you must report exactly when you heard it and what characters you heard.* Tape recordings are welcome, but tapes cannot be returned. Please include one international reply coupon or first class postage in US or Canadian stamps for a reply to your reception report, which may be sent to: Mr. Rich McVicar (HC1JMN), Frequency Manager, Attn: 690 DX Test, c/o English Language Service, HCJB. (Arranged by Mr. Rich McVicar of HCJB for the benefit of all DXers)

Monday, Jan 8 - WOOW-1340, 310 Evans Street, Greenville, NC 27835, will conduct a DX test between 1-1:30 am EST. The test will include test tones, Morse code IDs, polkas, and march music. Reception reports may be sent to: Mr Eugene Underwood (KE4JEV), Engineer.

Monday, Jan 8 - WARM-590, 600 Baltimore Drive, Wilkes-Barre, PA 18702, will conduct a DX test between 1:30-2:00 am EST. The test will include Morse code IDs, and march music. Reception reports may be sent to: Mr. Bob Lenio, Technical supervisor.

Monday, Jan 15 - WWLS-640, 2020 East Alameda, Norman, OK 73071, will conduct a DX test between 1-2:00 am EST. The test will include Morse code IDs and voice IDs. Reception reports may be sent to: Mr. Tony Sellars, Operations Manager.

Monday, Jan 3 - KLTC-1460, P.O. Box 1478, Dickinson, ND 58602-1478 will conduct a DX test between 2:30-3:30 am EST. The test will include Morse code IDs and voice IDs. Reception reports may be sent to: Senator Ray David, Owner and General Manager.

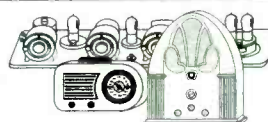
These tests were arranged by J.D. Stephens for the International Radio Club of America Courtesy Program Committee (PO Box 1831, Perris, CA 92572-1831, USA); 32-cent stamp (US\$1 or 1 IRC overseas) for sample bulletin.

SKIPPING IN

C.R. Bernth of Eastport, New York, has been cleaning up:

540	WDAK	Columbus, GA
670	Radio Rumbos	Venezuela
920	WMEL	Melbourne, FL
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1360	CJVL	Ste.-Marie-de-Beauce, Quebec

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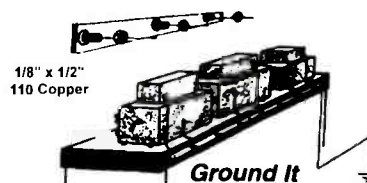
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February 1994, Pg. 68,
Antennas And Accessories
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Quebec Clandestine Makes Surprise Appearance

A new, pro-federalist English language clandestine made a surprise appearance in the 41 meter band just prior to (and after) the late October referendum on Quebec's potential separation from Canada. Identifying itself as **Johnny Canuck**, the station operated on 7425.2 kHz. Three broadcasts were logged by various DXers at 1700, 1800, and 1900 UTC on October 29, the day prior to the Quebec referendum.

Among those hearing this show were *MT* readers Robert Ross of London, Ontario, and Neil Wolfish of Toronto, Ontario, and John T. Arthur of Belfast, NY. Your columnist also fortunately heard them from his shack in Cleveland. The new clandestine returned November 5 on the same frequency to celebrate the election results.

The station took its name from a well-known World War II era Canadian hero. Although some folk music was played, program content was a vigorous message that Quebec voters should reject the separatist referendum at the ballot box. All programming was in English, with no French segments. Although no correspondence address was announced during broadcasts, the station informs *MT* that it will verify reports sent via the Merlin, Ontario maildrop (see below).

■ New Black Book Editor

The *Black Book* comprehensive list of unlicensed broadcasting station maildrop addresses has been a valuable resource for years. Longtime editor Kirk Trummel has announced that the chores have been transferred to Mary Jo Ondrechen, otherwise known as "Mama DX." If you would like a copy of this very helpful file, an e-mail address of maryjo@neu.edu will send you to the right place.

■ Winter Propagation

North American pirate activity has obviously maintained an enormous level lately. Our readers sent in loggings of more than three dozen different stations this month, which is an all-time record. Note that many stations are moving their broadcast times earlier in the day. During winter propagation conditions, the 43 meter band near 6955 kHz will fall above the Maximum Usable Fre-



KTLA's QSL emphasizes Halloween, not rock oldies

quency on many nights. In addition to time changes, it's possible that some pirates will move down to 90 meters between 3400-3500 kHz, or even down to the medium wave band around 1620 kHz. It will pay to tune around!

■ More Local Pirates

Just about every month we hear about local AM medium wave or FM pirates from our readers. Examples this month include multiple pirates on 91.9 MHz in the New York City area, and a racially offensive pirate in Syracuse, NY, that has been picked up by inmates at the Onondaga County jail. Thanks go to George Stearns of Syracuse for a copy of *Syracuse New Times* pirate coverage, and to John Neves of New York, NY, for New York *Daily News* pirate coverage.

■ What We Are Hearing

Your pirate loggings are always welcome for this column via PO Box 98, Brasstown, NC 28902. You can also use ew088@cleveland.freenet.edu if you have Internet access.

Maildrop addresses used by pirate stations reported this month include PO Box 452, Wellsville, NY 14895; PO Box 109, Blue Ridge Summit, PA 17214; PO Box 146, Stoneham, MA 02180; PO Box 28413, Providence, RI 02908; PO Box 605, Huntsville, AL 35804; 770 Sycamore Ave. #J193, Vista, CA 92083; PO Box 293, Merlin, Ontario N0P 1W0; Postfach 220342, D-42373 Wuppertal,

Germany; and c/o SRS, Ostra Porten 29, S-44254 Ytterby, Sweden. When writing to pirate stations, you must enclose three 32¢ stamps in the envelope to USA addresses; \$2 US or two International Reply Coupons go to foreign drops.

Altered States Radio- 6955 at 2100. William Hurt's rock music programming is usually supplemented by drama sketches. Addr: Merlin. (David Chapchuk, Scranton, PA; Barry Williams, Enterprise, AL)

Bob Dylan Radio- 6955 at 2200. It's been a while since this one has been on. You get three guesses as to what artist's music is featured on this station; first two guesses don't count. Addr: None, but verifies some logs printed in *The ACE*. (Michael Prindle, New Suffolk, NY)

Free Hope Experience- 6955 at 0445. Major Spook's station mixes music with commentary on various social and political issues. Addr: None. (J. C. Mello, North Scituate, RI; Isaac Kelly, Houston, TX; Gigi Lytle, Lubbock, TX)

Friday Radio- 6955 at 2345. Dick seems to have been one of the few DXers to hear this new one. Its rock music format celebrated the fact that it was Friday, and that the weekend had therefore started. Addr: None. (Dick Pearce, Brattleboro, VT)

He Man Radio- 6955 at 2300. He Man still broadcasts in upper sideband, the "manliest of all modes." In the past he has run sports programs from Cleveland, but he's been relatively silent about the Browns' move to Baltimore. Addr: Blue Ridge Summit. (Williams)

K-2000- 6955 at 0115. Their recent O. J. Simpson trial parody was an elaborate tale about the acquittal of *ACE* columnist John T. Arthur, who is now a free man. Many feel that the production standards on this DX parody station are the best in pirate radio today. Addr: Stoneham. (William Hassig, Mt. Prospect, IL; Chris Lobdell, Stoneham, MA; Chapchuk; Williams; Prindle)

KDED- The station forwards information from the Kitt Peak observatory at the University of Arizona, indicating that an asteroid has been named after Jerry Garcia of the Grateful Dead. (Direct from the station)

KICK- 6955 at 0100. Isaac submitted this one as unidentified, but it appears that he heard Pete Moss with a program of diverse music. Addr: Huntsville. (Kelly)

KMCR- 6955 at 0030. Magic Mike at Magic Carpet Radio is still active, recently with a program of classic rock and Cajun music. This one is a very tough catch in eastern North America, but Donald had a good signal in California. Addr: Blue Ridge Summit. (Donald Tomkinson, Huntington Beach, CA)

KNBS- 6955 at 2345. Phil Muzik's marijuana advocacy shows, sponsored by the California Marijuana Cooperative, have now been heard on

the pirate bands for ten years. His shows are entertaining, regardless of your feelings about the station's politics. Addr: Wellsville. (Pat Murphy, Chesapeake, VA; Ross; Chapchuk; Pearce; Hassig; Prindle)

KOLD- 6955 at 0130. This new "Big Band" format station put out a good signal, and was widely heard. It features well-known artists like Guy Lombardo, Count Basie, and Glenn Miller. Addr: Stoneham. (Cliff Watts, Dickinson, TX; Sam Hevener, Richfield, OH; Kelly; Murphy; Mello; Prindle; Lytle; Chapchuk; Ross; Williams)

KTLA- 6955 at 2130. The music on this one consists of ancient rock and roll oldies hit tunes, but the parody commercials are all phony. Their QSL that we see here was not for a Halloween show. Addr: Providence. (Pearce)

North American Pirate Relay Service- 7415 at 1400. Although Richard T.

Pistek's NAPRS remains a very active relay transmitter site, especially for Europirate programming, he occasionally produces a show of his own. A recent example was his third anniversary special with past highlights of the station's transmissions.

Addr: Wellsville. (Mello; Prindle; Hassig; Chapchuk)

POLKA- 6955 at 0000. The happy shortwave voice of polka music has made numerous broadcasts this year. Their interval signal is an instrumental version of "shave and a haircut, two bits." Addr: Stoneham. (Mello; Ross; Williams; Prindle; Chapchuk)

One Voice Radio- 6955 at 2345. Although there is

some music on this station, its main focus is calm features on health advocacy issues. Addr: Blue Ridge Summit. (Williams)

Radio Airplane- 6955 at 0000. Captain Eddy, who had been relatively quiet lately, has returned with his traditional mix of rock and comedy transmitted from an airplane in flight. Addr: Wellsville. (Williams)

Radio Amazonia- 6955 at 0200. Mr. Tequila of this Europirate has mailed several QSL's for reports on their relays via NAPRS. Isaac's verie said that the station expects to be active again during the next couple of months. Addr: Ytterby. (Dave Johnson, Durham, NC; Williams; Kelly)

Radio Azteca- 6955 at 2230. Bram Stoker has produced more than a dozen different parody shows that hilariously poke fun at DXers and DXing. Station QSL's still come with a green frog sticker attached. Addr: Wellsville. (Jeff Richardson, Dover, DE; Chapchuk; Prindle; Pearce)

Radio Barnyard- 6955 at 2230. Captain Cowpie's new station features a very well produced country music format, along with clucking chicken noises in the background. But, nobody knows how to contact it yet. Addr: None. (Williams; Prindle; Hassig; Lytle)

Radio Free Speech- 6955 at 0015. Bill O Rights still announces a commitment to open discourse via radio, but he always mixes some tongue in cheek comedy segments into his broadcasts. He uses AM mode exclusively. Addr: Wellsville. (Johnson; Richardson; Mello; Prindle; Williams)

Radio Fusion Radio- 6956 at 1400. This rap music pirate has added comedy to its programming lineup. They claim that their transmitter generates 900,000 watts, but this is questionable. Addr: Providence. (Jesse Rose, Hampton, VA)

Radio Halloween- 6955 at 2130. Halloween is always a very active holiday for pirates, and 1995 was no exception. Among the stations heard was a return of this one, featuring Halloween music and scary dramas. Addr: Wellsville. (Prindle; Mello)

Radio Mindwebs- 7412 at 2300. Michael's logs of several pirates this month on 41 meters should remind us that all unlicensed broadcasting has not moved to the area around 6955 kHz. The station's broadcast was dominated by a radio drama. Addr: Wellsville. (Prindle; Mello)

Radio Titanic International- 6955 at 2015. This Europirate's rock music and memorials to the m/v

Titanic are generally heard in North America by a NAPRS relay. Addr: Wuppertal. (Ross)

Radio USA- 6955 at 0015.

Mr. Blue Sky may be the longest running currently active pirate, since his punk rock and comedy format traces its origin all the way back to 1983. William notes that their AM carrier was warbly, making exalted carrier reception difficult. Addr: Wellsville. (Hassig; Murphy; Prindle; Pearce; Kelly)

The Logical Alternative- 6955 at 2315. This new one made a couple of broadcasts in early November with a soothing new age music interval signal, multiple identifications by a male announcer, and a program of soft rock music.

Not much is known about it yet. Addr: None. (Ross; Mello; Prindle)

The Purple Pumpkin- 6956 at 0445. This station name has a long history in pirate radio, especially around Halloween. This year's example omitted "The Voice" that often was part of the identification in the past. Addr: None. (Kelly; Ross)

Up Against the Wall Radio- Owsley mailed out numerous QSL's lately, including one to Grove Communications Expo attendee Diane Maurer. Another fancy design arrived here at MT; it is a digital QSL that is on a 3.5 inch floppy disk. You need a computer to see this one, which is impressive. Addr: Providence. (Diane Maurer, Pulaski, WI; direct from the station)

Voice of the Daleks- 6955 at 2100. The gargly-voiced leader of the intergalactic Dalek war is still heard on the pirate bands, as he attempts to establish the New Dalek Order. Addr: Wellsville. (Williams; Ross)

Voice of the Dead- 6955 at 1500. This one's slogan is, "All dead people, all the time." All musical selections are by deceased artists such as Bob Marley and Beethoven, and a similar policy applies to comedy bits. Addr: Vista. (Wolfish; Williams; Prindle)

Witch City Radio- 6955 at 2045. As is the case most years, this operation from Salem, MA, transmitted Halloween fare around that holiday. Addr: Wellsville. (Cathy Zylka, North Tonowanda, NY; Wolfish; Williams)

WJFK- 6955 at 2300. This seasonal station often

appears around the November 22 anniversary of President Kennedy's assassination, but it showed up three weeks earlier this year with a memorial to Lincoln, King, and Kennedy. Addr: None, but sometimes verifies logs in *The ACE*. (Zylka)

WKIK- 7415 at 0030. From an announced Jacksonville location, this one programs rock music. Their announcer always apologizes for a "delay" in QSL mailings. The fact is that they have never issued a QSL, although they announce an address. Addr: Wellsville. (Rose)

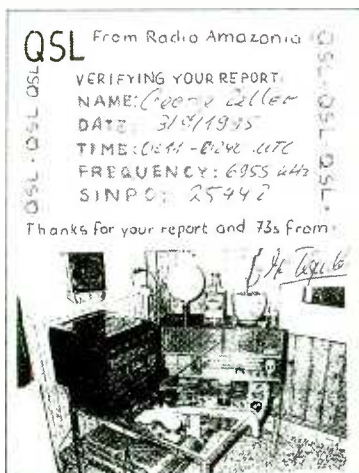
WLIS- 7415 at 1445. Jack Boggan's distinctive broadcasts always feature actual interval signals used by licensed shortwave broadcasters. Jack plays them as if they were hit tunes. Note that some stations are still using 7415 kHz at times when **WEWN** is not broadcasting on nearby 7425 kHz. Addr: Blue Ridge Summit. (Prindle)

WMPR- 6955 at 1800. This one was widely heard during the fall with an announced test transmission featuring electronic music. We pictured their elaborate QSL design in the March 1995 issue of *MT*. Addr: None, but sometimes responds to loggings in club bulletins. (Pearce; Prindle)

WPN, World Parody Network- 6956 at 0030. At first this one tested with a music format, but since then it has lived up to its announced purpose as a satire station. Addr: Huntsville. (Paul Roales, Tulsa, OK; Kelly; Williams)

WRV- 6955 at 2200. Pete the Pirate mixes comedy with rock music, using a slogan of, "The Radio Virus, the station that nobody wants to catch." Addr: Wellsville. (Prindle)

WREC- 6955 at 0100. I tentatively heard P. J. Sparx's Halloween broadcast, but J. C. Mello provided a definite ID for a program heavily laced with holiday content. Addr: Wellsville. (Mello; Williams)



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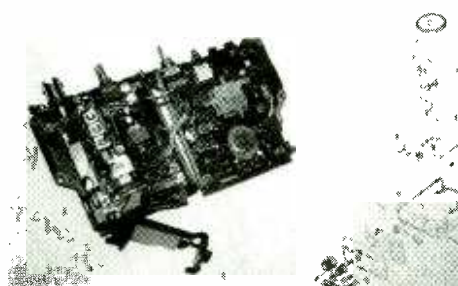
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New from Old

I have often talked about restoring older ham gear to use, but this month let's look at surplus commercial FM gear used as ham rigs. Almost every hamfest has HT's or mobile commercial rigs for sale at reasonable prices. In many cases these rigs go for little or nothing, simply because the average ham does not want to bother modifying the unit.

For the most part commercial FM gear make super ham rigs, due to their higher power, better sensitivity, and rugged design. On the negative side, the average commercial rigs have fewer channels, cover a smaller bandwidth, often are in two or more pieces (e.g., transceiver, control head, and power supply), and are crystal-controlled or computer-programmable.

Since most of us only operate on a handful of frequencies (if we're honest about it) and price is an important consideration, the lack of mega-frequencies shouldn't be of importance when compared to the minimal expense to get on a new band.



Kenwood produces many HTs suitable for VHF/UHF ham use (computer programmable)

■ What to look for

Stick to well-known brand names such as Motorola, Kenwood, GE, Midland, Uniden, Regency, Maxon. Parts and manuals are usually available for the better-known names.

Know the frequencies on which you want to operate, because many commercial rigs are set up for specific frequencies. For example, many low band rigs come in one of two splits—either 30 to 40 MHz or 40 to 54 MHz (or thereabout). Changing a split can be very difficult—sometimes impossible, so choose the rig that covers your range of interest.

Always try to get a schematic or, if pos-

sible, a service manual. Be sure you know *how* the rig is set on frequency. If it must be programmed using a computer and special software/hardware, be sure you have access to the required material. Crystal-controlled rigs naturally require the proper crystals to operate (readily available for most rigs). Be sure to tell the crystal manufacturer the brand and model of rig; if you have a manual, stick to the crystals it recommends.

If a rig has obvious damage or is discolored (signifying water damage) keep walking. Sometimes a piece of commercial gear has been retired because the owner has gotten tired of lugging it to the service shop every other week. These duds are fairly obvious with lots of fresh solder blobs and nice new parts scattered throughout the chassis, along with well-worn screws and nuts on the covers.

Should the seller say, "Uh, well I think it works," or, "You shouldn't have any trouble doing whatever you want with it," be wary. Buy used commercial gear from someone who knows the score, and if possible take a friendly 2-way service tech along to spot the phonies.

On the other hand, simply looking worn is not always a sign of problems: oftentimes gear is retired due to frequency changes or system upgrades, and many older pieces of gear are excellent candidates for modification. A lot of two-way shops go out of their way to make such rigs available to hams at decent prices along with some kind of guarantee. They may even offer help getting it on the air.

If you feel competent, and you can acquire the necessary schematic or service manual, you should be able to get your rig going without too much trouble. Access to a service monitor is a big plus, although it is possible to use fairly simple gear to test and align the rig. Be sure your shop supply is heavy enough to power the unit under transmit conditions.

If your ability to work on gear is not particularly strong, check around for the local expert. Every community has at least one ham who has good savvy on commercial gear and is willing to share his expertise and test gear with his fellow hams.



Motorola "Mostar," in plentiful supply at hamfests, makes a good mobile base.

■ Modifying HTs

Handi Talkies are often available very inexpensively on the hamfest circuit. Be aware, though, that batteries for these rigs may be hard to find and expensive. On the other hand, cobbling together a battery pack isn't difficult.

HT's pose a whole different set of problems when modifying because of their size. Special tools to work on these midgets aren't necessary, but they sure help. The greatest problem is finding test probes small enough to sit on one point at a time instead of straddling two or more.

Whenever possible, replace that often hard-to-find antenna connector with a good BNC connector—it'll be well worth your while. The second modification I make to an HT is to provide a method of powering it with an external supply.

As you progress in your ability to work on these rigs, you'll begin to discover many other improvements that can make your commercial rig more enjoyable and easier to use on the ham bands. For the most part, commercial two-way gear is inexpensive, fun to get going, and a great way to learn.

■ A Moving Experience

Over the past six months I have moved three different times; consequently much of my mail has been misdirected, missent, and misplaced. So if you have written to me and have not received a reply, please forgive me. I am settled at last, so do write again. Happy New Year to all! 73 de Ike, N3IK

SPECIAL EVENT CALENDAR

Date	Location	Club/Contact Person
Jan 6-7	Ft. Myers, FL	Ft Myers ARC / Jackie Kampfert KR4MZ, 1533 SW 53rd Ln, Cape Coral, FL 33914. 941-542- 6675
Jan 7	South Bend, IN	Michiana Valley Hamfest Assn/ Denny Denniston KA9WNR, 21970 Kern Rd, South Bend, IN 46614, 219-291-0252
Jan 13	Loveland, CO	No Colo ARC Winter Superfest / Michael Robinson, AA0UB, 2236 Silver Trails Dr, Ft. Collins, CO 80526, 970-282-1167. Location: Larimer Co Fairgrounds, 9am- 3pm. \$3. Talk-in 44.515/145.115
Jan 13	Marathon NY	Skyline ARC / Barb Mudge KB2TIK, 3364 Rt 221 West, Marathon, NY 13045, 607-849- 6751
Jan 13-14	Sarasota, FL	Sarasota Hamfest / Samuel Everts, KE4BXF, 5551 Camelford Terr, Sarasota, FL 34233, 941-927-8999. Location: Robarts Sports Arena, Sarasota Fairgrounds, 9am - 5pm. \$7. Talk-in 146.31/91, 444.925/ 449.925
Jan 14	Dover, OH	Tusco ARC / Howard Blind KD8KF, 6288 Echo Lake Rd NE, New Philadelphia, OH 44663- 8023, 216-364-5258.
Jan 20	Springfield, LA	Hammond Hamfest, SE LA ARC / POB 442, Springfield, LA 70462. Location: University Center on Columbus Drive. 8am, talk-in 147.000-
Jan 20	St. Joseph, MO	NW Missouri Winter Hamfest / John Winkler, WB0VRA, Route 1 Box 53A, Gower, MO 64454, 816-424-6484. Location: Ramada Inn, I-29 and Frederick Ave.\$3. Talk-in 146.85, 444.925.
Jan 21	Yonkers, NY	Metro 70cm Network / Otto Supliski WB2SLQ, 53 Hayward St, Yonkers, NY 10704, 914- 969-1053
Jan 21	Nelsonville, OH	Sunday Creek AR Federation / Allan Withem KC8VR, Old St. Rt 78, Glouster, OH 45732, 614- 767-2766
Jan 28	Villa Park, IL	Wheaton Comm RA / WCRA, PO Box QSL, Wheaton, IL 60189, 708-545-9950
Jan 28	Odenton, MD	Maryland Mobileers ARC / Bob Andersen W3HEI, 601 Elizabeth Rd, Glen Burnie, MD 21061, 410-766-3481

Monitoring Times is pleased to run brief announcements of radio events open to our readers.

Send your announcements at least 60 days before the event to:

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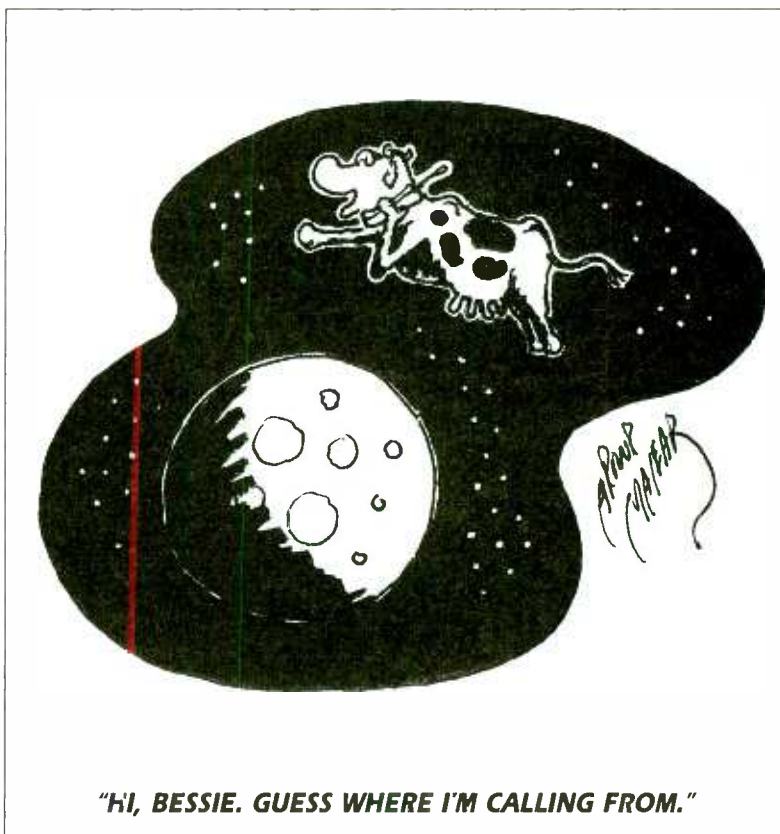
A 20-hour evening course, open to anyone interested in the hobby or who wants to know more about shortwave listening, will be offered in

February 1996.

The course instructor has been involved in shortwave listening professionally and as a hobby for many years. He presently prepares radio propagation forecasting for several magazines in North America and abroad and writes extensively on the subject.

FOR MORE INFORMATION CONTACT:

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"Hi, BESSIE. GUESS WHERE I'M CALLING FROM."

Build a Multipurpose Broadband Amplifier

There are countless applications for a linear, small-signal, broadband, solid-state amplifier. For example, you can use one of these handy gadgets to increase the output power of a signal generator when the generator does not provide sufficient output for certain lab tests. If you place a tuned circuit ahead of the amplifier you can use it as a receiver preamplifier for a specified part of the radio spectrum. Another common application for a broadband amplifier is its use between a weak-signal source and an oscilloscope when the unamplified signal lacks the amplitude to sufficiently deflect the waveform on the scope display screen.

There are many other uses for a broadband amplifier during routine experimenting and testing in the home workshop. This month I will describe an inexpensive and easy to build broadband amplifier. You will learn how it may be used as a workbench tool, or in combination with a shortwave receiver to boost incoming signals.

■ One Transistor — 18 dB of Gain

A single transistor can be used to provide 18 dB (decibels) of signal gain from 500 kHz to 50 MHz. Many inexpensive NPN general-purpose transistors are suitable for this project. The somewhat generic 2N2222 or 2N2222A are fine devices to use. Other transistors, such as the 2N4400 and 2N4401, are excellent choices, too. If there is an ideal transistor to use for this application it is the 2N5179, which is designed to provide gain to 1000 MHz, but these units are not as easy to obtain as the other types mentioned.

Figure 1 shows the circuit for our broadband amplifier. There can be no tuned circuits at the input or output of the amplifier if we are to have it provide broadband performance. Resistors and capacitors, except for RFC1, are used throughout the circuit. The amplifier has a 50-ohm input impedance. The Q1 collector impedance (Z_c) is 200 ohms without T1 included to transform the characteristic 200 ohms to 50 ohms. T1 may be eliminated if the amplifier is used to look into a 200-ohm load.

If the load impedance (input port of the circuit that follows the amplifier) is greater than 200 ohms, you can wind a toroidal broadband step-up transformer with the appropriate

turns ratio for use at T1. An Amidon, Inc. FT-37-43 ferrite toroid core is fine for this purpose. Remember that the impedance ratio of a transformer is the square of the turns ratio, i.e., a 2:1 turns ratio yields a 4:1 impedance ratio.

In order for the Figure 1 amplifier to have a broadband response it is necessary to use what is known as "shunt feedback." Components C2 and R3 are used for this purpose. They feed some of the output energy (collector), which is 180 degrees out of phase with the base-input signal, back to the Q1 base. This network has a declining effect on the Q1 gain as the operating frequency is raised. This unique action ensures that the stage gain from 500 kHz to 50 MHz is relatively constant (desirable).

In order to make the Q1 input exhibit a 50-ohm impedance we have added R4. It creates

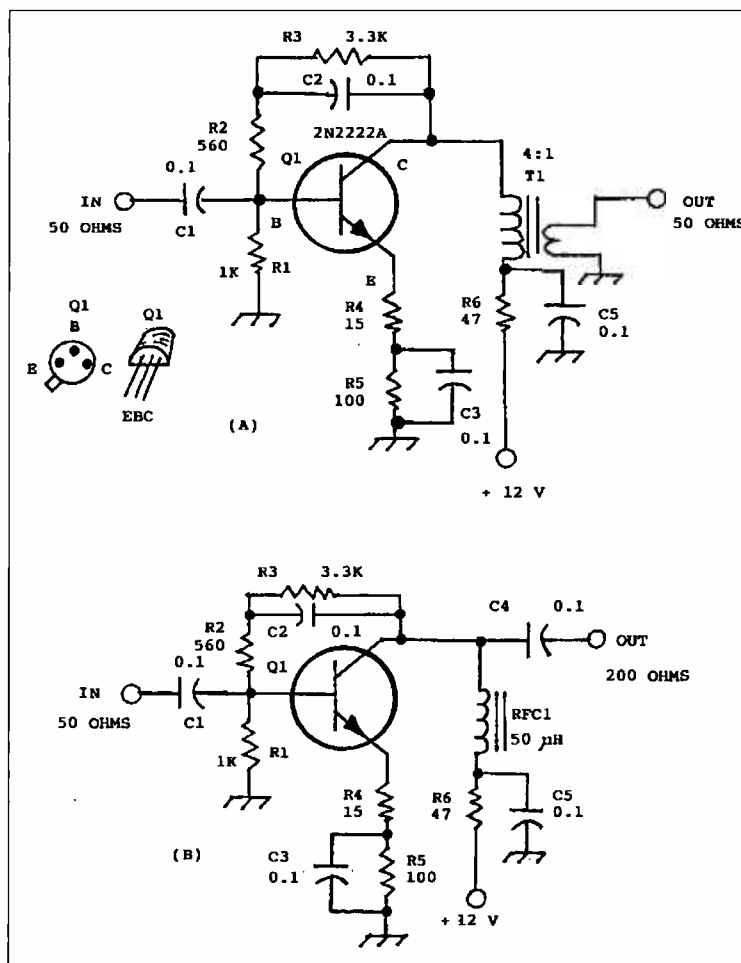
what is known as "degenerative feedback." RF bypassing is done at the bottom end of R4 rather than at the top in order to accomplish this effect.

Forward bias (a small + voltage) is supplied to the Q1 base through R2 and R3, from the collector. The values indicated in Figure 1 cause Q1 to operate as a linear class-A RF amplifier. A linear amplifier produces very low signal distortion and faithfully reproduces the same waveform shape at the amplifier output as is fed to the input terminal at C1.

■ Increasing the Gain

As many as four Figure 1 amplifiers may be used in cascade if additional broadband amplifier gain is needed. If you decide to do this you should obtain 25 dB of gain from two stages, and approximately 50 dB from four

Figure 1 -- Schematic diagram of a broadband linear amplifier for use from 500 kHz to 50 MHz. Capacitors are in μF and are 50-V disc ceramic. Resistors are 1/4-watt carbon or carbon film. RFC1 is a miniature 50- μH RF choke. The T1 primary has 12 turns of no. 26 enam. wire on an Amidon FT-37-43 toroid core. The secondary winding uses 6 turns of no. 26 enam. wire wound over the entire primary winding.



identical stages. The higher gain values are useful when using small loop antennas for receiving, since the amplifier gain will compensate for the inefficiency of the loop. Two or three stages are my choice for this task. An amplifier of this type is handy also for use with a short active antenna.

■ Narrow-Band Use

If you plan to use the Figure 1 circuit as a receiver preamplifier, for some portion of a short-wave band, you can adopt the circuit in Figure 2. The input of Q1 contains a tuned circuit to provide selectivity (rejection of unwanted nearby signals) at the operating frequency. Although a second tuned circuit can be used at the amplifier output, it isn't necessary to include one. It would increase the selectivity of the amplifier, but would complicate the design and stage adjustment.

I do not recommend this circuit as a receiver preamplifier above 14 MHz. This is because the amplifier noise figure is fairly high and above 14 MHz the amplifier noise may be greater than the level of a weak incoming signal, thereby masking it.

■ Instrument Amplifier

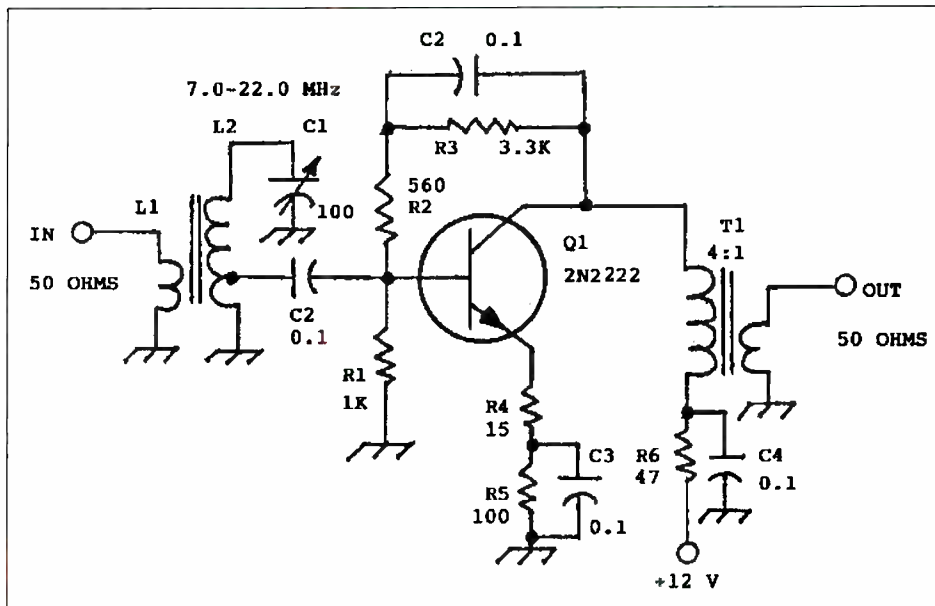
Let's suppose you have a tunable or crystal-controlled marker generator for use as a receiver calibrator. Perhaps the output signal from your generator (when used with a short whip antenna) produces weak signals in your receiver. Adding the circuit of Figure 1 between the oscillator and the whip antenna will greatly increase the amplitude of the marker signal. In a like manner, the amplifier can be used between a circuit under test and your oscilloscope to boost low level signal energy. This will provide greater waveform height on the screen of your scope. If the amplifier is being coupled to a high-impedance circuit during testing, such as the gate of an FET, use a 5- or 10-pF coupling capacitor between the test probe and the circuit sampling point. This will prevent the 50-ohm input of the amplifier from loading the circuit to which you attach the test probe.

A linear broadband amplifier is an excellent choice for use as an intermediate, low-level stage in a home-made solid-state transmitter, especially when the circuit is designed for multiband use. Broadband amplifiers eliminate the need for band switching in the part of the circuit where they are used.

■ Construction Tips

You need not build the Figure 1 circuit on an etched PC board. It can be tacked together on a piece of perforated board, or even on a

Figure 2 -- Example of how a tuned circuit is added to the Figure 1 amplifier to make it suitable as a receiver preamplifier. L2 and C1 provide resonance at the desired operating frequency. The tap on L2 is selected to ensure a 50-ohm match to Q1. The design example is for operation from 7 to 22 MHz. C1 is a 100-pF trimmer or air variable capacitor. L2 (5.3 μH) has 33 turns of no. 26 enam. wire on an Amidon T50-2 toroid. Tap at 5 turns above the grounded end. L1 has 4 turns of no. 26 enam. wire. Adjust C1 for maximum signal response at the desired frequency.



scrap of plastic or Formica. It is important, however, that you keep all signal leads as short and direct as you can. The pigtailed on the capacitors and resistors must be similarly short. This will help to prevent unwanted instability (potential self-oscillation) and a loss of gain. The completed unit should be housed in a metal box to prevent the pickup of stray RF energy from nearby broadcast stations or RF-emitting appliances in your home. An inexpensive box may be made from pieces of copper clad PC board. The mating surfaces may be joined with solder while using a 30- or 40-watt pencil type of iron.

■ Closing Remarks

This can be a short-term fun project for beginners and experienced tinkers alike. Don't be afraid to try transistors other than those listed in this article. The device you select should have an upper frequency limit (fT) well into the VHF range for best results. FETs are not suitable for this application.

I checked the input impedance of the Figure 1 circuit from 500 kHz to 50 MHz via my computer and NOVA software. It is very close to 50 ohms from 645 kHz to 20 MHz. It is 66 ohms at 50 MHz and 52 ohms at 500 kHz. Therefore, the SWR is entirely acceptable over its operating range.

Note 1 -- Amidon, Inc., 3122 Alpine Ave., Santa Ana, CA 92704. Phone: (714) 850-4660. Catalog available on request.

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How's the Weather?

Welcome aboard and Happy New Year to everyone. To start the New Year off with a bang, Plane Talk will now be a monthly column!

First on our agenda today is a look at Volmets. These stations are transmit-only, broadcasting airport weather forecast conditions for various parts of the world (usually two to three times an hour) on specific frequencies. The word "Volmet" is a contraction of the French word for "flying weather." Broadcast times vary from station to station, though it's quite common for several stations in one region to share the same frequencies.

Starting this month, we'll publish a brief, bi-monthly listing of Volmets from different parts of the globe for all the Volmet frequency collectors out there.

North Atlantic Volmets: 3485, 6604, 10051, 13270. Gander, Canada - broadcasts 20 and 50 minutes after the hour; New York - on the hour and 30 minutes half past.

European Volmets: 3413, 5505, 5640, 8957, 13264. Shannon, Ireland - on the hour, 25, 30, and 55 minutes after.

Pacific Volmets: 2863, 6679, 8828. Honolulu - broadcasts on the hour and 30 minutes after; Tokyo - 10 min. and 40 minutes after the hour; Hong Kong - 15 and 45 minutes after the hour; Auckland - 20 and 50 minutes after the hour.

Middle-East Volmets: Beirut, Lebanon - 3001, 5561, 8819 - at 15 and 45 minutes past the hour. Damascus, Syria - 2992, 5667, 8918, 13312 - on the hour and 30 minutes past. Karachi, Pakistan - 3432, 6680, 10017: 15 and 45 minutes past the hour.

■ City/Airport Identifiers and Codes

Several attendees at the recent Grove Expo asked us to include something about city-airport identifiers or codes, as they're sometimes known. Here is a brief overview of what they are and their usage.

A city code or designator is composed of three letters and indicates either a city or, if the city has more than one major airport, a specific airport. These acronyms are the basis of everything from the airline industry's reservation systems to cargo routing and accounting, baggage handling, and more. A code may spell out the first three letters of a city's

name—for example, IND for Indianapolis, or ATL for Atlanta. Other times—well, only the FAA or ICAO knows for sure.

Occasionally, these codes even confuse airport curbside check-in baggage handlers. Back in 1990, when we had our first convention in Knoxville, the curbside check-in attendant at Indy International was relatively inexperienced and couldn't locate the proper baggage tag ID for Knoxville. Attempting to be helpful I pointed it out as TYS. He shook his head and muttered "Alphabet soup—you gotta try to figure out what is where and who is what!"

It would be easy to assume (dangerous!) that Knoxville's (TN) identifier would be something like KNO—wrong! It's TYS for McGhee-Tyson Airport. Consequently, it should come as no surprise if you're going to MCI (Kansas City) that your bags may go to MIA (Miami). Incidentally, no identifiers can be duplicated or even appear to be similar to any other in a 200-mile radius, as a duplication of this sort could (and has) confused private and commercial pilots alike.

Just for fun, here's an example of some of the codes and what cities/airports they represent (in no particular order):

Baltimore	BWI
Hartford (CT)	BDL
Chicago-O'Hare	ORD
Chicago-Midway	MID
New Orleans	MSY
Newark	EWR
Fresno	FAT
Los Angeles	LAX
Nashville	BNA
Toronto	YYZ*
Albuquerque	ABQ
Portland (OR)	PDX
Portland (ME)	PWM
Montreal-Dorval	YUL
Montreal-Mirabel	YMX
Naples (FL)	APF

*Almost every designator in Canada starts with a Y.

■ Software

To bring you up to date on aero and ATC-related software available, here's a current listing:

Dulles Tower - ATC simulation - one disk; **747** - learn to fly a 747 to various

destinations, (it's *not* an easy one to master) - one disk; **Scanner** - a program that lets you store scanner frequencies, make data bases, print them out, etc. - one disk; **Assignment ATP** - gives you an opportunity to fly a 737, 747, 767, Airbus, and a prop-jet with choices of departure airports - two 3-1/2 or four 5-1/4 disks (this sim features easy-to-difficult assignments and destinations, and an extremely comprehensive training manual); **AirTrax** - a very simple ATC simulation.

For those subscribers who have **Flight Simulator** version 4, there are several really great add-ons; however, the **Aircraft and Scenery Designer** disk is required to run them (also available); there's a disk (not labeled) featuring extra planes, (including a DC-10 and an MD-80); and **Final Approach** (for those of you who didn't see the review of it in April, it features approaches and departures from Midway and O'Hare Airports, and movements around the airport surface).

The following programs run under **Windows** and also require the **ASD** disk with **FS4: Airport Facility Directory, Aircraft and Adventure Factory, and Flight Planner**.

If you would like to have any of the above, just send a note to *Plane Talk* with the title desired, a 3-1/2 high-density disk, or a 5-1/4 double-density disk, and a self-addressed, stamped disk mailer. If you prefer that I supply the disk and mailer, the total cost is \$5.00. For those of you with 3-1/2 high density capability, you can order **Dulles Tower, 747, and AirTrax** on the same disk and save yourself some \$\$.

■ Readers' Corner

On a sad note, long-time *MT* subscriber Don Dettenmeyer (Ohio) passed away last October. Some of you may have met him at past *Monitoring Times* conventions as well as recognizing his name as a contributor. This column owes much to Don—he presented me with my first "real" computer, and he was always a phone call away whenever I needed assistance. He was the kind of person who was eager to give of himself to everyone, and he will be greatly missed by everyone who knew him.

See you next month with more aero monitoring info. 73 and out.

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Model ara 60 The newly redesigned ara 60 features more gain and better IMD performance than the ara 40, making it the perfect partner for high-end receivers such as the Drake R8A, JRC NRD-535, Watkins-Johnson HF-1000, etc. Superior strong signal handling, +50dBm ICP3. Requires 12VDC power supply (optional). **Gilfer Price: \$269.95 (+\$10 s/h)**

Model ara 2000 Dressler's successor to the popular ara 1500 model, the ara 2000 utilizes a GaAs-FET amplifier for maximum gain (11-13 dB up to 1.3 GHz) and minimum noise figure (1-2.5 dB). Coverage from 50 MHz to 2 GHz, circular polarization, N-type coax connectors. Requires 12VDC power supply (optional). **Gilfer Price: \$269.95 (+\$10 s/h)**



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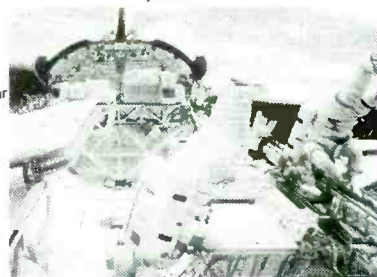


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Food Fight Monitoring

There has been a lot of press lately in our South Florida papers regarding the abuse and downright fraud regarding food stamp use. This is a multi-million dollar rip-off against the American taxpayer and against the person who legitimately needs and uses food stamps in the way in which they were intended.

The federal food stamp is under the direction of the U.S. Department of Agriculture. A lot of the undercover operations are conducted by the Office of the Inspector General of the Dept. of Agriculture.

A check with the Department of Agriculture offices indicated that the Office of Inspector General is responsible for the investigation of fraud, arson, crimes and other offenses committed against federal property under the control of the Department of Agriculture or programs of the Department of Agriculture. They are also responsible for the security of the Secretary of Agriculture.

The federal data base shows the following as the channel plan for the Dept. of Agriculture/Office of Inspector General.

Chan	Use	Frequency
01	CAR-TO-CAR	168.6000 SIMPLEX
02	CAR-TO-CAR	168.7000 SIMPLEX
03	REPEATER INPUT	170.9750
	REPEATER OUTPUT	168.7000
04	RPTR IN	168.1750 P/L 1B
	RPTR OUT	168.6750
05	RPTR IN	164.6250 P/L 1A
	RPTR OUT	166.1250
06	RPTR IN	169.9750
	RPTR OUT	170.9750
07	RPTR IN	170.5000
	RPTR OUT	169.9000

Affiliated also with the Department of Agriculture is the Federal Grain Inspection Service. This branch of the Department of Agriculture has responsibility for establishing the official United States standards for grain and other commodities and for the establishment for a nationwide standard of standards and inspections.

This might be especially interesting to monitor if you live in one of the large commodity trading centers such as Chicago or Kansas City. Here is the radio plan for the Federal Grain Inspection Service:

Channel	Use	Frequency
01	RPTR IN	411.3000
	RPTR OUT	415.3000

02 SIMPLEX 415.3000

An active agency under the Department of Agriculture out in California and Nevada is the Soil Conservation Service. This federal program is designed to develop and carry out a national soil and water conservation plan in cooperation with land owners. Their frequency assignments are:

Location	Frequency	Use
NAT. ASSIGNMENT	169.9750	RPTR INPUT
	171.0750	RPTR OUT
	171.0750	SIMPLEX
	172.2250	SIMPLEX
TEHACHAPI, CALIF.	171.4250	RPTR INPUT
	172.2750	RPTR OUT
	172.2750	SIMPLEX
LOMPOC, CALIF.	164.1500	SIMPLEX
GILROY, CALIF.	49.67000	SIMPLEX
	49.97000	SIMPLEX
STA. BARBARA, CA.	171.4250	RPTR IN
	172.2750	RPTR OUT
	172.2750	SIMPLEX
RENO, NEVADA	171.1000	RPTR IN
	169.4750	RPTR OUT
	169.4750	SIMPLEX

Wired for Bugs

The following is a quote from the Palm Beach, Fla., *Post Times Wire Services* dated November 15, 1995.

MIAMI---An aphid that carries a citrus virus has been found in the United States for the first time, turning up in Ft. Lauderdale and Miami.

The pest, called the brown citrus aphid, was first seen on an orange tree in Davie, Florida, in Broward County on November 2, the Florida Department of Agriculture said.

Since then the aphid has spread to at least 11 other places in Broward and Dade County, Florida.

The aphid is a destructive little pest. When it is found, the Department of Agriculture agents (both state and federal), under law, have the responsibility for the complete destruction of the infected trees. There is no vaccination of the trees. The pest, if left uncontrolled, can and will wipe out the citrus industry.

The United States Department of Agriculture Animal and Plant Inspection Service is the enforcement branch that is responsible for the Aphis Eradication Program. In addition to offices in the citrus areas of the country, there are also offices at the major international

ports. The following is a list of the offices and the associated radio frequencies.

Location	Frequency	Use
NATIONWIDE		
APHIS NET	171.5250	SIMPLEX
BALTIMORE, MD	171.5250	SIMPLEX
TAMPA, FL	171.5250	SIMPLEX
SAVANNAH, FL	171.5250	SIMPLEX
TWIN FALLS, ID	171.5250	SIMPLEX
GROTON, CT	171.5250	SIMPLEX
BOSTON (LOGAN AIRPORT)	171.5250	SIMPLEX
NEW ORLEANS CUSTOMS	169.1500	SIMPLEX
WASHINGTON, D.C. AIRPORT	169.1500	SIMPLEX
MOBILE, AL	171.5250	SIMPLEX
LUBBOCK, TX	171.5250	SIMPLEX
OAKLAND, CA, AIRPORT	162.2250	SIMPLEX
LOS ANGELES AIRPORT	171.5625	RPTR IN
	173.5625	RPTR OUT
HONOLULU AIRPORT	411.3000	RPTR IN
	414.6500	RPTR OUT
DODGE ISLAND, FL	164.9375	RPTR IN
	171.5250	RPTR OUT
MIAMI INT'L AIRPORT	164.9375	RPTR IN
	171.5250	RPTR OUT
FT. LAUDERDALE AIRPORT	164.9375	RPTR IN
	171.5250	RPTR OUT

Feds Around the Country

A correspondent who wishes to remain anonymous sent in the radio plan of a little-known federal agency. It is the Minerals Management Service, a branch of the Department of the Interior. Their function is to assess the minerals that are on the outer continental shelf and to ensure the recovery of mineral resources. Their radio plan is:

Location	Frequency	Use
NATIONWIDE	164.2500	RPTR IN
	164.7500	RPTR OUT
	164.7500	SIMPLEX
	417.2250	CONTROL LINK
	419.8750	CONTROL LINK

No individual locations are given.

By now we have all the data bursts on the main federal channels, such as Customs Main (165.2375). We now know these to be for programming of the radios out in the field. The radios are updated every few hours, or at least once daily, with the authorized radios, frequency settings, etc.

I have been keeping track of the repeater

outputs down here in Florida, which can be applied to any metro area. Plug in all of the repeater output channels for a particular agency, such as I did with DEA. I started hearing very strong (full quieting) data bursts on DEA channels, though I have never heard any activity. This will mean that base stations (repeaters) have been placed in an area, but you are not catching the activity on these channels. They may be for future use or tactical activity, but at least someone has taken the time and money to install these units.

I would imagine that if you plugged in all of the FBI channels, spaced 12-1/2 kHz apart, you could find all of the channels in your area, whether or not they are currently in use. Simply listening to and logging the channels with data bursts on them is informative.

- An anonymous report from a reader in Bethesda, Maryland, provides the security frequencies for the National Institutes of Health (Bethesda Medical Center) as follows: 406.1750 repeater in; 411.4500 repeater out.
- I received a letter the other day from a friend of mine in the United Kingdom. As you may or may not know, the scanner monitoring

we take for granted over here is a crime over there. Unless you are specifically authorized to monitor a particular frequency, just having the frequency in your radio is grounds for prison and/or a hefty fine. The police have the authority to stop and inspect any vehicle that has a scanner in it. Although scanning is very popular over there, is understandably kept very low-key.

My friend was writing to tell me that the military police and base operations have moved from the 70 MHz band up to the 406-420 MHz band. (Yes, an entire land mobile band is located on 70 MHz along with an amateur radio band, called 4 "metres"—the equivalent of our 30/50 MHz band.) To wrap up this month's column, here are his reported frequencies for the U.S. Army's Armed Forces Police. The frequencies are reported to be the same here as over there "across the pond."

Chan	Location	Frequency	Use
01	NATIONWIDE	407.4500	RPTR IN
		409.7500	RPTR OUT
02		408.1250	RPTR IN
		409.1250	RPTR OUT
03		407.2500	SIMPLEX

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A spare antenna is always helpful in case your outside pride and joy comes crashing down. Photo by Bob Grove

WINTER RESOLUTIONS

As 1995 draws to a close, it is really time to think about winterizing your equipment, if you haven't already done it. The elements will be taking a toll on our outside antennas and feedlines. Make sure they are well sealed along the R.F. connectors to prevent water from seeping in.

With the snow come the power blackouts. Keep one or more spare sets of batteries for each of your radios. I keep several sets of alkaline batteries for each scanner. Nicads are good, but once the power is out, there is no efficient way of recharging them. A small motorcycle battery is great for any low power amateur equipment or a scanner location that has more than one radio.

A spare antenna is always helpful if your outside pride and joy comes crashing down during a snowstorm. A magnetic base antenna for each radio is essential equipment around the shack.

What does this have to do with monitoring the federal bands? The government will not shut down in bad weather. A lot of us live near military installations. These bases will be on extra security during bad weather. The snowplows and security police will still be there.

The Secret Service, the DEA, and the FBI will still be out there. You don't want to be sitting in a dark (and possibly very cold) house wondering what is happening in the outside world.

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Stealth TVRO: Hiding Your Satellite Dish

Whenever the subject of freedom is being discussed (usually over a six pack of beer), conversation generally drifts to the peculiarities of the Third World, and someone ends up offering, "Well, I see where the government of Iran is outlawing satellite TV systems." Whereupon folks around start clucking and shaking their heads and someone else says, "Yeah, they're headed down the Information Highway to the Stone Age!" And there follows a heated exchange about whether or not to watch "Geraldo," "Hard Copy," or "Court TV."

Americans have trouble overlooking the democratic shortcomings of other countries, but there are gaping blind spots in our own vision of freedom. Each year thousands of Americans are denied the opportunity to choose their entertainment delivery systems just as surely as those in "less democratic" countries we decry. Here the regulation is the result of narrowly written zoning ordinances and restrictive residential covenants which act to suppress the freedom of its citizens.

These restrictions are done in the name of "architectural integrity" or other vaguely defined "aesthetic" goals. It would be easy to imagine such local ordinances being written by cable operators who, for instance, might sit on a local Board of Supervisors or be otherwise involved in keeping out the competition of wireless entertainment delivery systems.

■ Going "Under Cover"

There are few things that Americans enjoy as much as tweaking the nose of Authority. And what better way to do it than enjoying satellite television right in the middle of an exclusive residential development. If your

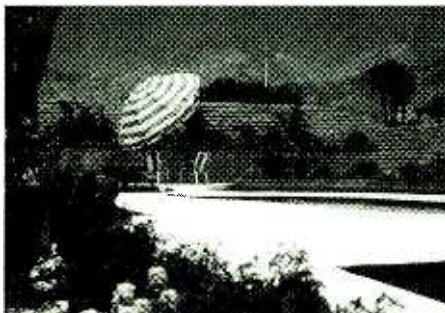


Where's the DSS dish? Inside that small boulder! (courtesy: Rock, On Inc.)

desire to enjoy satellite TV has been short circuited by "neighborphobia," you may be interested in the special patio umbrella covers designed for satellite TV dishes.

Manufactured by a company called "Under Cover" located in Indio, California, these products offer an ingenious disguise for those whose hobby would otherwise be thwarted by nosy neighbors intent on demanding obedience to their own personal world view.

Under Cover's president Gil Roberge says that the umbrellas' various sizes and color schemes have made them quite popular for suburban locales. As indicated by the photograph, Under Cover's disguises include table and chairs to complete the ruse. Prices for the kit start at \$385. But then, what price freedom?



Where's the "full view" satellite dish? Under the umbrella! (courtesy: Under Cover Satellite Systems)

■ DSS? "Rock" It!

The wildly popular 18" DSS satellite systems have also been frowned upon by the "appearance police." In some cases residents must plant their little dishes in the front yard in order to get decent reception. So, let's do a little landscaping! Just slip the neat, boulder-shaped fiberglass "rock" over the dish and you've got the makings of a catchy landscaping centerpiece.

The company making this product is called Rock, On Inc. and is located in Belleview, Florida. Company President Gary Chosewood says the item is particularly popular with senior citizens in "planned retirement communities," where strict adherence to sharply-drawn regulations is demanded. One advantage to the DSS system is that it is easily

Look, the neighbors have a new skylight. Wait a minute, there's a DSS dish in there! (courtesy: Satellite Enclosures, Inc.)



transported from northern home to southern home as the season changes. Rock, On's "bogus boulder" weighs only 27 pounds and is equally mobile. Or, better yet, buy one for each home! Manufacturer's suggested retail price is \$259.

■ Satellite Skylight

Dubbing itself "neighborhood friendly," Satellite Enclosures, Inc. offers its "Sky-Dome" alternative to making the DSS installation more attractive. This approach uses a skylight style see-through plastic dome mounted on the consumer's roof.

As shown in the mock-up pictured here, the DSS system stays unobtrusively out of the way of both weather and the keen scrutiny of querulous neighbors. Satellite Enclosure's CEO Dale Contant is excited about this new product which has just hit the market. With more and more customers in town house-style condos with smaller and smaller yards, he's hoping this Georgia-based company's product may be the answer to DSS satellite reception for those plagued by zoning and covenant restrictions.

■ Additional Attractions

Even if you live in a rural location where restrictions aren't an issue, these three products present ways to keep your satellite system out of the ravages of severe weather and the clutches of vandals.

For more information on these products write or call:

■ Under Cover

Satcom Satellite Sales
83-616 Avenue 45
Indio, CA 92201
Phone: 619-342-2888
FAX: 619-347-9300

Rock, On Inc.
4928 S. E. Abshier Blvd.
Bellevue, FL 34420
Phone: 904-347-7661
FAX: 904-347-3997

Satellite Enclosures, Inc.
1109 Cobb Parkway South
Marietta, GA 30062
Phone: 770-419-9900
FAX: 770-421-0378

■ Transponder Notes

• In the if-at-first-you-don't-succeed department: AT&T's Telstar 402R was successfully launched into its geostationary orbit September 23 from Kourou, French Guiana. The Ariane rocket took just 20 minutes to do the job it couldn't do one year earlier, which resulted in the loss of the original T402 which, to this day, orbits crazily in an elliptical orbit of use to no one.

• JCSAT-3, an eight transponder, digital, multichannel satellite owned by Japan Satellite Systems Inc., was launched at Cape Canaveral, Florida, at the end of August. Using a digital compression scheme, the company will offer 50 channels of programming to Japanese customers next April.

And, the theme is spreading. Galaxi LatinoAmerica is the name of the new satellite launched in December which will offer 144 channels of video programming and 60 stereo audio channels to customers throughout Latin America. Funded by a consortium of Mexican, Venezuelan, and Brazilian companies in association with American satellite manufacturer Hughes, the service will be broadcast to receivers using 60 cm dishes.

• YLE Radio Finland is now found in Finnish, Swedish, and English on the 6.20 MHz audio channel of TBS Superstation on Galaxy 5. Broadcasting directly from Finland eight hours a day, YLE inaugurates the new World Radio Network 2 audio service. Also slated for extended broadcast is RTE in Irish.

• Reports out of Russia indicate that country may create a digital satellite television broadcasting service in Russia. Using a Gals satellite launched late last January, experiments using digital compression have been termed successful. The satellite is said to be capable of covering the whole of European Russia. A second satellite will be launched to cover the remaining eastern territories.

• And, finally, this item: A report from PTI News Agency, New Delhi, monitored in England suggests that in late 1998 or 1999 the Earth is to pass through the worst meteor storm in over three decades. The report quotes Don Kessler of NASA as saying that the Leonids, as the storm is known, "...presents

about three years' worth of debris in about an hour..." Hold on to your momentum wheel, Slim, this could be a rough one!

■ Notes From Readers

A number of readers have sent in clippings from their local newspapers detailing the efforts of "wireless cable" enterprises to offer cable TV fare to a local audience which may or may not be presently served by traditional cable TV. These systems, known as MMDS (Multi-channel Multi-point Distribution Systems) were, before the advent of the Direct-To-Home satellite and DSS systems, the only challenge to cable's monopoly.

Using microwave frequencies, these services transmit 20 or 40 channels of cable fare and local network affiliates and typically charge cable rates. The services require the installation of small (usually 12") microwave antennas which are mounted on poles on top of the house as one would a VHF-TV antenna. The services are scrambled and the receiver is also the descrambler. The big drawback to such systems is that they have a fairly limited future. With less than a third the number of channels offered by DSS (at nearly the same

price) there's just little room for expansion. In addition, the regional coverage strategy is cumbersome and akin to a patchwork of overlapping coverage and duplicated services. It's hard to see a future for such schemes in the small dish digital world.

■ Note Of Thanks

This is the first opportunity that I have had, since the October 1995 Grove Expo, to thank the many monitoring enthusiasts who braved the rainy weather that weekend and attended what I consider to have been the best convention Bob Grove has hosted in the past six years. The enthusiastic response to all the seminar topics was gratifying. I had the opportunity to meet and chat with many *MT* readers and it's always great to be able to put a name and a face on some of our readers and to entertain questions about satellites without time or space constraints. It was a pleasure, as well, to meet the many of the *MT* and *ST* staffs as well as all the hard working folks from Grove Enterprises. I hope you'll consider making the trip to Atlanta next year in what promises to be an even better Expo. It'll be good to see you!

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Building & Upgrading Computers—Part 3

I couldn't have timed it any better. Just as we reach the climax to this series, it is official: the death knell has been sounded for the 80486 class of CPU. The last 486 computer by a major manufacturer has been shipped. There are no more! This means drastically reduced prices on all 486 CPUs and 486 motherboards, and sharply reduced prices on 486 computers from small manufacturers and pro-shops.

Sadly, Intel, AMD, and Cyrix will curtail production of the 486 CPU sometime within the next year or two. Just as supplies have dwindled to existing stocks of 386 motherboards or CPUs, the venerable 486 will suffer the same fate.

■ The Time to Upgrade is NOW

This is *good news* for us radioists who are always looking to shave a buck from the operating costs of our hobby. Low prices and the raw horsepower of the 486 chip breed a fertile opportunity for the radio hobbyist. The 486 is extremely powerful despite being overshadowed by the Pentium series. In fact, the 486DX2/66 (and higher) rival the slower Pentium 60 and 75 in performance and win hands down in cost! Despite its death knell, a 486DX2/66 or faster will be an extremely useful general purpose computer for at least another two to three years.

The ideal computer to be upgraded is a 386 of any type, since most of the peripherals—including disk drives, various controllers, case, power supply, RAM, etc.—are compatible with and transferable to a new 486 motherboard and CPU. There is a chance that your only purchase need consist of a motherboard and 486DX2/66 (or better) CPU, thereby holding the cost of the upgrade to well under \$200. Modern-day computing calls for 8-Mb of RAM (minimum), so you may have to purchase more. Some may want to upgrade the video and communications controllers as well. We'll get into that next month.

For now, our focus is on the mechanics of upgrading 386 computers. The benefits are low cost with an eye to performance. The 486 is cheap, powerful, and backed by a wealth of standard technology and a vast reserve of add-on parts, components, and accessories. The Pentium CPU is utterly superb, but it is a costly, newer technology that does not have a

dozen years of tradition and compatibility behind it.

My position for the 486 upgrade is based on low cost and high performance; shortest possible learning curve; highest probability of success; and widest support of the technology, hardware, and software. Past, present, and mid-term future software will run fine on a 486. Accessories and add-on hardware will be available for some time to come at falling prices.

■ Upgrade What with What?

Our focus is on upgrading 386's, but this could leave the door open to late versions of the AT/286 where the disk drives, video controllers, and RAM might be compatible with modern standards. Toward the other extreme, there is a certain class of 486's that can benefit from an upgrade, too. We're talking about the 486SX/xx, 486SL/xx, 486SLC/xx and 486DX/33 and slower CPUs, many of which are only marginally better than a fast 386 chip.

In looking for low-cost/high-performance, you should at least upgrade to the 486DX2/66 or better. If you already have a 486DX/50, that's fine; just don't upgrade to a 486DX/50. You really should move to a 486DX2/66 or better, with no reason to stop short of the powerful 486DX4/100. Therefore, a 386 of any type, 486's of the inferior SX/SL/SLC-type, or those of any speed less than 50 MHz are prime fodder for upgrade.

The upgrade consists of a swap of motherboards in most cases, though if you have a weaker 486 you should check the motherboard for possibilities of simply swapping CPUs and changing a few jumpers. The current crop of 486 motherboards seems capable of accepting a

huge variety of 486 types and speeds. Older 486 motherboards were not so flexible.

Don't fall prey to the "chip upgrade" for a 386 or 286 motherboard. The cost is high, and performance suffers. There is no way a 286 or 386 motherboard can be turned into a fire-breathing, rip-snorting 486, though you may find claims to that effect. *Caveat Emptor!*

■ Tools and Skills

This is where it gets cool....hardly any tools are required. A couple sizes of Phillips-head screwdrivers; a 1/4" socket or nut driver; a medium sized flat-blade screwdriver; and maybe a pair of forceps or small pliers are about all you really need. A voltmeter is helpful, but not mandatory: pencil and paper on which to take notes, is.

Mechanical savvy is nice, but the ability to make basic notes and diagrams is vital. Set up a video recorder to "watch" your work if you lack confidence. That way, you can play back the video later to see where something went wrong. However, if you follow my plan and have only basic skills, there is no reason why you can't work a little "magic" and have something to tell the grandkids someday.

FIG-1: BOARD HOLE LAYOUT & FINAL INSTRUCTIONS

Expansion Slot Openings

REAR EDGE

Continued from text

9. Position the case so you can see how the motherboard is mounted. For desktop cases, this is the bottom, and for tower cases, the right side. You will see typically 2, 3, or 4 metal screws and several slotted plastic bushings that hold the motherboard to the frame. Alternate your view from above the motherboard to identify the screwheads, to the other side of the frame where the screws penetrate, usually without nuts. Note how if there were no screws, the motherboard could slide a half-inch or so and be lifted away from the frame. (The slotted plastic standoff bushings hold the board away from the frame and yet secure, thanks to the slots.) Carefully remove the few screws that hold the motherboard to the frame, and slide it a little until the bushings come out of their holes. Lift the board out of the case and lay it aside. Remove the bushings from the board. They'll probably be needed for the new board.

10. Now do several practice runs of placing your new motherboard in the case. Some study and preparation may be required. Surprisingly, the sizes and mounting holes of all modern motherboards are standard! Your new motherboard should slide right in and match up, hole for hole. Trouble is, there may not be enough holes in the frame to accommodate all the holes in the motherboard. Sometimes this does not matter. The important thing is that the motherboard be mounted with at least two metal screws and enough nylon bushings so as to support the board at each corner; halfway along each edge; and in the center area by at least one and preferably two or more points. Hardware kits are available for pocket-change.

X = Holes in these areas are usually made for metal screws. You can tell by the metal ring or rim around the hole in contrast to those intended for the plastic standoff bushings with no metal reinforcement around the hole. The metal screws provide a chassis ground for the board. Make note of how the old board is installed; the new one can usually be mounted the same. Only two metal screws are required, though. Plastic standoff bushings can support the rest.

FRONT EDGE

■ The Job

This procedure consists of a motherboard swap. You could almost build a computer from scratch by reading between the lines a little. But I don't have the space to write between the lines, so use common sense and clear thinking if you need to depart from my procedures. Read the November and December installments of this series for additional information.

1. Turn off power. Diagram and label all external cabling to the computer, then disconnect all cables.
2. Remove the cover—usually six 1/4" hex or slotted screws.
3. Diagram the layout of accessory cards installed in the computer; know the purpose of each before removing it. Typically, there will be a hard/floppy disk controller card; a video driver card; and maybe a serial I/O card. Some computers come with these functions built into the motherboard. This is unfortunate, because those upgrades will require the purchase of stand-alone cards for each of these functions.

Current 486 motherboards have no frills, for good reason. When such functions are built into a motherboard, they are almost never "high performance." Fortunately, high performance disk, video, and communications controller cards are not very expensive.

Label any cables (and their polarity) that plug into any of these accessory cards. Disconnect any such cables and remove all accessory cards plugged into the expansion slots on the motherboard.

4. Diagram all internal cabling that goes from the motherboard to connectors or access points on the rear panel of the computer. This may be moot in some computers. Possibilities include serial I/O (comport) cables, and maybe a video cable. Obviously, if you hook a mouse and a modem to DB-9 connectors on the rear panel, these are "com ports" or serial I/O functions. Cables behind these connectors may go to the motherboard instead of accessory cards. Just be sure to label everything. There won't be many, if any, but pay attention. Then, disconnect these cables from the motherboard, noting polarities and how they are connected.

5. Diagram all internal cabling that goes from the motherboard to internal accessories including hard disk drives, floppy disk drives, CD-ROM drives, etc. Label any such cables and polarity. Disconnect these cables from the motherboard.

6. Diagram the two power supply cables that go to the rear corner area of the motherboard. They have a weird clamp/lock tab, so be careful until you see how it works. Note the color codes of the wires. Study the connectors

closely and gently rock/remove them from the motherboard.

7. Diagram the wires and small wire bundles/connectors that go from the front edge of the motherboard into the front panel of the computer. Label each with their color codes. ID for these wires is always marked on the motherboard. Disconnect each wire bundle from the motherboard.

8. Make sure there is nothing left connected to the motherboard. If there is, trace, diagram, and label it; then disconnect it.

See Figure 1 for Steps 9 & 10.

■ If Problems Arise

For many of you, this will be all the instruction you need, because the rest of the job pretty much entails a reversal of the above ten steps. There are a few details and esoteric subjects that I will wrap up next month, so if you are still unsure of the scope of the job, wait until then to actually remove a screw. You should, however, launch your campaign

to find an appropriate motherboard and CPU for your upgrade. If acquired right away, you'll have plenty of time to become even more familiar with the job and to ask questions before problems arise.

I will be happy to provide timely technical support by e-mail for most any aspect of this upgrade project. Use any of the addresses at the header of this column. I check and reply to my Internet e-mail several times daily; my FidoNet mail at least once a day; and my CompuServe mail several times a week. I'll be glad to answer questions and steer you out of trouble via those media. Snail mail is not advised unless you're patient and can find other things to do while awaiting my reply.

■ Contest Time

Remember my offer for the next five months: submit an idea or a project for this column and if selected, you'll receive an autographed copy of my latest book, *The Ultimate Scanner*.

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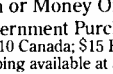
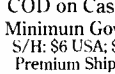
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Steam, dead trees, and wireless wonders

Wireless technology is no longer just a concept. It is reality. It is here. And the development of new wireless systems, products, and services is beginning to affect millions of people worldwide. The MT staff has been monitoring the evolution of this technology and we feel the time is right for a new MT column exploring developments of interest to radio hobbyists.

As you might expect, this technology is as complex as it is fascinating, so to produce a column you will enjoy reading we turned to a writer with a flair for turning abstract data into fun reading. Wayne Mishler, who has written several articles for MT in the past, and who currently writes two columns for our sister magazine, *Satellite Times*, will be writing our new wireless technologies column, "Skylink."

We've given Wayne a broad range to cover. He'll be telling us about new technologies and explaining how they work and how they affect our lives. If you have ideas you would like him to report on, or if you come across newspaper clippings or other reports you feel would be helpful, please send them directly to Wayne at Editorial Concepts, P. O. Box 157, Beaver, AR 72613-0157.

One of the courses I remember taking in college was called "descriptive physics." I never knew what the title meant, but in the course we studied the effects of industrial pollution on our environment.

Pollution from electrical power plants was one example. Conventional plants, of course, burn dirty coal to heat water to make steam to turn turbine generators. Nuclear plants, on the other hand, create poisonous nuclear reactions to heat water to make steam to turn turbine generators. That's progress?

A more recent technology, closer to my heart, empowers anyone with a computer, software, and laser printer to produce camera-ready pages of text and graphics that, just a few years ago, would have required sophisticated pre-press equipment with a six-figure price tag. For some reason the industry called it "desktop publishing." It was supposed to revolutionize graphics communication. So what'd we do with it? Why, we put it to work, of course, smearing ink on dead trees, as Ben Franklin did a couple of centuries ago.

■ Wireless technology

But now, at long last, comes wireless technology which involves the transmission and reception of digital information through satellites and radio. This new technology promises many wondrous things, including the advancement of science, the improvement of living standards, and, ah yes, even a way to use desktop publishing for producing electronic publications.

As we speak, publishers are hiring writers to crank out fiction and non-fiction books to be digitized and sold on-line to readers. Digitized books and publications, inexpensive to produce, give new meaning to the idea of self-publishing. Information passes from the writer's mind through a computer to readers' computer screens around the world. No ink. No dead trees. Just information without mass.

Electronic publishing enables anyone with a computer, modem, telephone line, and the yen to write to become a self-published author. Soon they won't even need the phone company. Wireless technology allows electronic publishing through satellites and radio.

■ Getting your newspaper by shortwave

Think of what this means. Think of receiv-

ing electronic publications by shortwave radio. The idea of course is not new. Many of you will remember a daily newspaper that was broadcast not long ago in three languages by Swiss Radio International. That endeavor was short-lived, but it proved that anyone with relatively inexpensive equipment could tune in and download an electronic newspaper or magazine anywhere in the world.

One drawback to receiving your daily newspaper by radio is that you have to tune in when the newspaper is transmitted, in real time, not unlike standing in your driveway in a robe every morning waiting for your hard-copy paper to be thrown.

But satellites which relay TV programming to subscribers are already carrying major publications in electronic format. Colin Haynes, author of a McGraw-Hill book entitled *Paperless Publishing*, tells us that the *USA Today* newspaper is transmitted by radio to printing plants in the U.S., Europe, and the Far East as computer data. Other newspapers use similar processes, Haynes points out.

The possibilities go beyond the production and distribution of books and periodicals. Entire libraries with millions of books are being digitized for worldwide distribution through personal communications systems (PCS).

One of the arguments for distributing electronic publications by radio rather than on-line computer services is to avoid infringement of our fundamental freedoms by commercial interests.

Lawrence Magne, in *Passport to World Band Radio*, compares the future of electronic publishing via radio to the faxing of documents, which businesses have come to regard as essential. "Short-wave radio, unlike other international media, disseminates news direct and uncut by gatekeepers," says Magne. "Short-wave-delivered news comes primarily in audio form: world band radio broadcasts. But its nonsequential form, book, magazine, or newspaper creation via radio teletype and fax, is potentially so cost effective for organizations to transmit and for individuals to receive that it recalls where office faxing stood ten years ago. It is poised to take off, providing savvy marketing and distribution are put into place."

Next month: GPS and you (no it's not a government agency.)

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Note on Advertisement below: As of 4/26/95 it became unlawful to market cellular-capable receivers in the U.S. Atlantic Ham Radio assures us that it will give a full refund and hold customers harmless from shipping expenses if a purchased unit is returned to the vendor by U.S. Customs.

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Things Are Looking Up - A Review of SatPro

When I first saw SatPro advertised in the Grove catalog, I questioned why anyone would pay \$150 for a satellite tracking program when there are some powerful shareware tracking programs around? So it was with great skepticism that I loaded SatPro into my 486. What I found surprised even me.

The SatellitePro (SatPro) version 1.5.2 comes with a very well-written and comprehensive eighty-eight page instruction manual. Be advised; the print type is quite small. It contains no illustrations or index, both of which are sorely missed. However, it does contain just about everything you would want or need to know about tracking celestial bodies, from artificial earth satellites to planets. This total treatment of the subject is equally implemented in the program. OK. Let's get it running.

■ SatPro's System Requirements

The minimum IBM PC system should have 450K of SatPro-usable RAM, DOS 3.3,



Figure 1: Main screen of SatPro

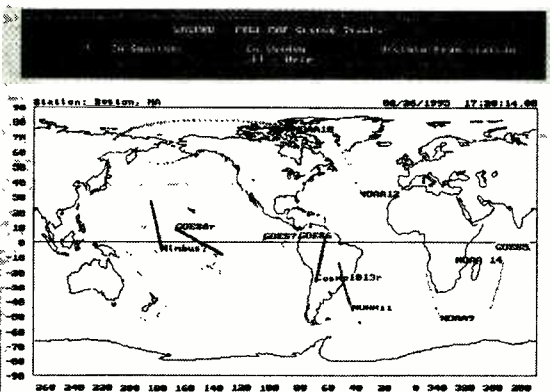


Figure 2: Full map with weather sat group, centered on Boston, MA

a floppy drive, and 2 Meg of hard disk space. *But*, it is "highly recommended" by Zephyr Services, makers of SatPro, that a math coprocessor is installed. Also, they mention the advisability of 545k of RAM and a three-button mouse. Clearly, the faster your computer the less wait time you will experience.

Installation takes a bit of time but is a hands-off effort. The main screen of the program is seen in Figure One with its now familiar top command line and pull-down menu format. F1 gives some very basic help details, but keep the manual nearby.

■ Using SatPro

I wondered, "Could a program which costs so much and promises even more be controlled from such a simple screen?" Clicking on the "Station" command brings the name of 2500 locations around the world. Selecting the one closest to your location loads longitude and latitude data into the program. You can edit the database if you have exact details of your location. Pretty nifty. Clicking on the

Elements command displays an even greater number of earth orbit satellites and their orbital parameters—over 3700! Let's use Boston, MA, as our station and try tracking a few weather satellites. We can define a group of satellites for simultaneous tracking.

Clicking on the "Elements" command in Figure One, we can create a group called WXSATS. Loading five NOAA spacecraft, four GEOS, Nimbus7, and Cosmo1013 into the WXSATS group, we have our targets defined. This database can also be added to or modified by the user.

Now, returning to the main screen we have a difficult choice to make. How do we want the information presented? SatPro gives us four graphical displays: Full map, Zoom map, Altitude-azimuth, and Space view. Each has its own unique value, which we'll examine in a moment.

But first, we must also decide if we want the calculations of signal acquisition to be based on radio reception or visible observations. Due to different refractory properties of electromagnetic waves of different wave-

lengths, the difference in signal acquisition (AOS) and loss of signal (LOS) can be quite different. Let's use radio reception.

Next we have to decide the time period we want to display. SatPro allows us to view the real time, future, or past time positions of the satellites. Let's see where the little tykes are right now at 17:10:44. We can choose an interval of time to watch their movement—say, three hours until 20:10:44—giving us lots of choices and lots of powerful analysis tools. Let's see the results.

Figure Two is the Full map at approximately 17:10 showing all eleven weather satellite positions, their names, and their paths at 17:20. Imagine this view as one which results from flattening out the earth, pre-Christopher Columbus style.

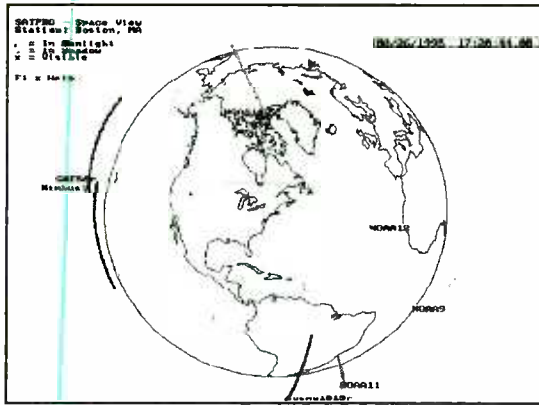
The Zoom map is a piece of the map in Figure One at higher magnification and centered about our Boston station. The closest satellite of our chosen eleven is NOAA 12, which is thousands of miles east of Boston, somewhere out in the Atlantic Ocean and traveling north toward Canada.

To use the altitude-azimuth map you have to hold the map over your head and orient it using its compass coordinates. Think of it as printed on the inside of a bowler hat. The brim is at the horizon and you are holding the hat above your head looking into it. (Hey, give me a break here. I'm trying!)

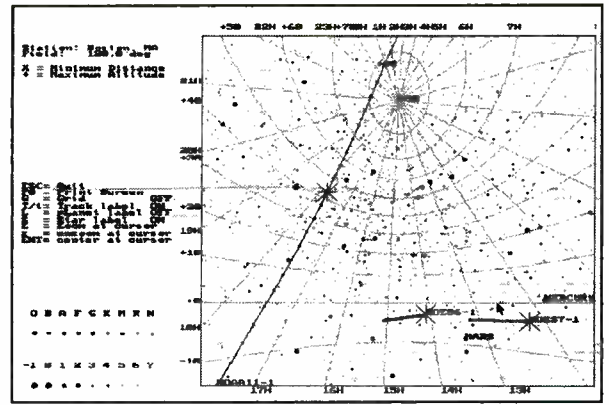
The space view, Figure Three, is self-explanatory and the easiest to understand, thank goodness. The view is from a position above your station, out in space, far enough away to view the global earth. In this view the relative altitudes of the satellites can be observed as they pass from the front face to the back.

■ The Sky is the Limit

Another very useful plot, Sky Map, is accessed from the "Review" command at the top right of Figure One. It displays a sky map which shows you exactly how the sky will look, indicating the name of observable major stars, planets, and chosen satellites. See Figure Four. The names of stars, planets, and satellites can be displayed or omitted. The direction of view and the elevation can be chosen to fit the user's actual viewing situation. Most of these commands are easily performed via the mouse.



(Left)
Figure 3: Space
view of weather sat
group



(Right)
Figure 4: Sky map -
"What can I see?
and where? Arrow
indicates horizon.

I found this plot indispensable for optical location and viewing. Using the Sky Map, I located and tracked the Russia space station MIR on a number of evenings. Since it is a large object, it is sometimes visible with the naked eye.

■ So Much More

SatPro lets you control many additional local station parameters such as blockage of view to the horizon. This is very useful if you live in a city with tall buildings, or in a thickly wooded area with tall trees. The program allows the user to customize almost every parameter. As with all important parameters, the authors of SatPro have built in default values which allow you to get up and running quickly. The default for this is ten degrees. In other words, it assumes that your view of the horizon is obstructed from the horizon until ten degrees over it.

Although a picture really does say a thousand words, there are times when the words are all we need. For these cases the program lets you display the satellite data in table form, for a given interval of time, highlighting objects which are, or will be, in range of the chosen station. I found that this table, in conjunction with a plot, give me all the data I required to go satellite hunting; either optically or by radio. All screens can be printed for field use. And the features of SatPro keep on coming.

■ Is It Worth \$150?

Well, let me say that I am very impressed with SatPro. I learned another subtle feature of the program each time I ran it. The printed screens are as well presented as the CRT screens. Even though the program has many layers of complexities, it was operational on a basic level within ten minutes of first being loaded, so it's of immediate use to the novice as well as the seasoned satellite professional.

The database of orbital objects is staggering. However, this is also one of the program's shortcomings. When I tried to load objects

which *Satellite Times* tells me are still in orbit, the program said the data was out of date, or the orbit had decayed and the object was erased by the program.

A check of the date on the files indicated that they are from September 1993! Not exactly useful for obtaining the program's advertised "high accuracy satellite predictions." Although *ST* can be used to update the object database manually and the program has a feature that allows importing data from a file, for \$150 I believe a more up-to-date objects parameter file should be included in the program. True, NASA on-line data is available and the manual gives other sources of orbital

data. But, the advertisement for the program should not highlight that it "includes more than 650 orbital element sets..." without saying that they are now over 18 months old and only really useful for geostationary satellites.

Even so, I feel SatPro is an excellent program and probably worth the money to avid satellite enthusiasts, though the price may be a bit steep for the casual sky tracker. As a program I rate it as one of the best I have seen.

SatellitePro, by Zephyr Services, is available from Grove Enterprises, Inc. (800-438-8155) for \$149.95 plus \$4 shipping and handling.

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The Web: It's More than a Computer Link

Ingenuity is often one of the keynotes of the World Wide Web. Jeff Chilton has created a site that represents the epitome of ingenuity when blending the worlds of shortwave and Internet. This site, appropriately called "The Listening Post," has linked a Drake R8 receiver with the WWW so that simply by sitting at your computer, you can actually tune the receiver and listen to real-time audio!

The page spells out what equipment goes into this listening post, so you know just what you're tuning: Mr. Chilton has the R8 hooked to a 25 foot, top-fed, vertical antenna, and offers you full control of the receiver. Also on the page is a review of the R8 by Radio Netherlands.

This type of page design is exactly what the WWW is all about—combining technologies. Congratulations, Jeff, on a page well-done. Thanks to Roger W. Hehemann for the URL.

Doing it right

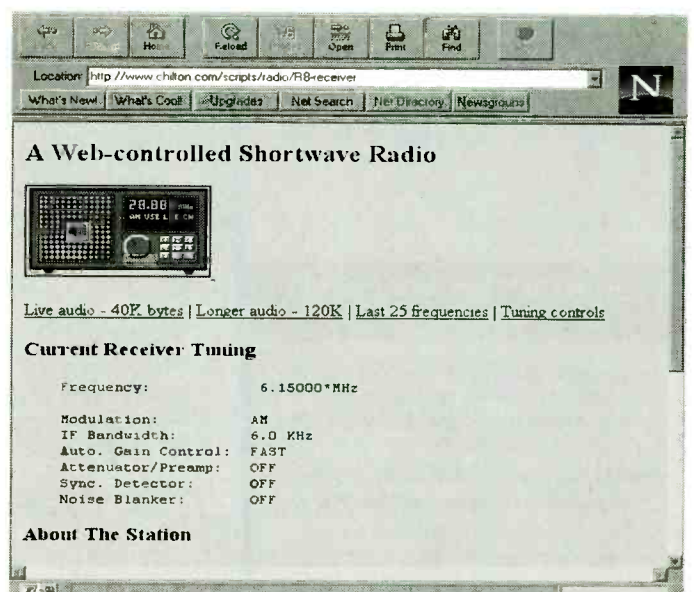
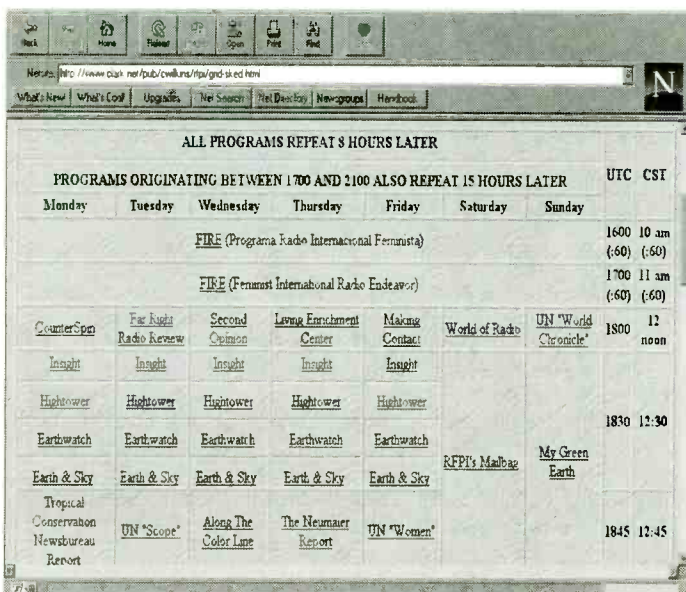
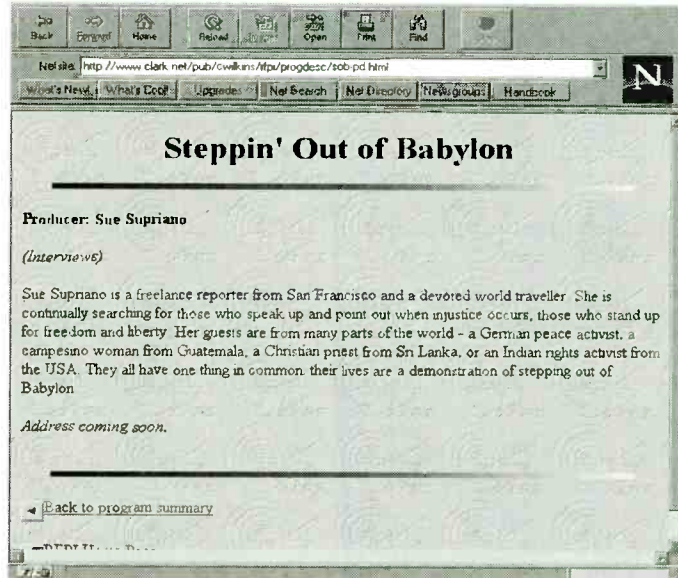
A graphically attractive WWW page needs a few elements to be successful: pleasing colors, quality graphics, easy-to-read information, and most of all, speed. **Radio for Peace International (RFPI)** has a page that I feel meets these qualities. Even though the homepage takes a bit of time to download, what you get when it's done is a clean, pertinent site. RFPI has links to their schedules,

times, and even samples of what's available during their broadcast.

The quarterly program schedule grid is an ideal format in which to display a broadcast schedule. This page must be viewed with a program capable of viewing tables, like NetScape or the new Internet Explorer. Set up with day/time on the grid, each item can be individually selected to view additional information on the program. For example, if you are looking through the list and see a show that looks interesting—like "Steppin' Out of Babylon"—you click on that listing,

and a whole page comes up dedicated to that one show. This site shows just what can be accomplished when someone takes time to link technologies.

Next month, we're going to focus in just how to get to these and many other sites on a special "Introduction to the Internet" article. We will focus on the most popular programs and give you the facts you need to get connected to cyberspace! For those already on the Web, links to the sites we have visited this month can be found at www.grove.net/netnews.html.



HS-TS500 Shortwave/Cassette

John Chilton of Chilton Pacific, Ltd., says that he's found an interesting new 4-band shortwave radio/cassette player. Made by AIWA, it's a walkman size unit with AM, FM, and two shortwave



Front (top) and back (bottom) views of the HS-TS5000

bands—2.23 to 22 MHz with no breaks. Although it's a single-conversion-type superheterodyne receiver, John says that the HS-TS500 "seems to do pretty well for its size and price." The monaural sound quality produced by the monitor speaker is acceptable and the stereo sound produced through the headphones is quite good. A pair of headphones is included with each unit.

The only drawback to the HS-TS500 is that it can't record off-air! Other than that, the HS-TS500 is recommended as an inexpensive multipurpose radio for camping, traveling, or as a gift for your non-shortwave listening friends and family. Suggested retail for the HS-TS500 is around \$99.95, but you can get one from Chilton Pacific for \$67.95 plus \$8 shipping. To order, call 800-717-7780 or write 5632 Van Nuys Blvd., Suite 222, Van Nuys, CA 91401.

Hot-Rodding the DX-394

Have you been thinking about getting one of Radio Shack's new DX-394 portables? This latest Radio Shack shortwave looks pretty nice, but why settle for nice? Craig Siegenthaler of Kiwa Electronics can take your DX-394 to an even higher level with

the installation of higher-grade wide and narrow filters.

According to Craig, the stock wide filter on the DX-394 measures 9 to 12.5 kHz (-6 dB BW). The Kiwa replacement is 6.5. The stock narrow filter is 4.5 to 5.5 kHz (-6 dB BW); the Kiwa replacement 3.2 kHz. The purpose of the filter upgrade is to greatly enhance the receiver's selectivity. The Kiwa kit (\$60 plus \$4 s/h) consists of wide and narrow replacement filters with step-by-step instructions.

If you're not comfortable with a soldering iron, Kiwa can perform the mods for you. For more info and pricing, give Craig a call at 800-398-1146, or write him at 612 South 14th Ave., Yakima, WA 98902.

Monitor TV on Shortwave

To the average shortwave listener, it's a distressing noise. But, like many of the noises that screech across the shortwave bands, it's a data stream packed with information. The particular noise we're speaking of this time is amateur Slow Scan TV (SSTV) and it's a whole other world of monitoring, generally reserved for hams.

Now any shortwave listener with a computer can monitor SSTV. All you need is Harlan Technologies' Color Slow Scan TV for the Sound Blaster Sound Card. Hookup is easy. You plug in the card into your computer. The sound from the receiver is connected to the microphone input of

the sound card. Pictures are displayed on your computer monitor.

Requirements are a PC with 286 or better, DOS 3.3 or higher, 640k memory, hard drive, VGA display capable of 640x480-256 colors, and a Sound Blaster-compatible card. SSTV can range from pictures of QSL cards, to shots of local events, parades, accident scenes, people—whatever catches the ham's interest.

You can join in the action for \$79.95 plus \$5.00 shipping. Send your order to Harlan Technologies, 5931 Alma Dr., Rockford, IL 61108. The phone number is 815-398-2683. A shareware version (SSTVBL.ZIP) is available on CompuServe, America Online, and the ARRL BBS (860-594-0360).

It's a Scanner. It's a Radar Detector



That the new Uniden BCT-10 "Bear-tracker" is a scanner with a difference is clear from the moment you first see it. The thing looks like a radar detector. And it's really small—a palm-sized 5-3/8" x 3" x 1-1/4".

The BCT-10 is billed by Uniden as a "highway information system." It's a fully pre-programmed scanner. With the touch of a button, the BCT-10 will automatically search for active police frequencies in the



VHF Low (37.02 to 46.02), VHF High (138.3450 to 172.0200) and UHF (423.000 to 508.4875) bands. There's no keypad for entering individual frequencies. You just set the state (or Canadian Province), and the scanner will do the rest—your choice of state or local police.

The BCT-10's real twist is that it not only thinks it's a radar detector, it acts like one, too. Here's how: In order to give you warning that a police officer is up ahead, the BCT-10 scans for mobile extenders. What's a mobile extender? When highway patrol officers step away from their vehicles, signals from the patrol car are sent to their portable radios by a mobile extender (repeater). The mobile extender operates on its own frequency and when the BCT-10 picks one of these up, it sounds an alarm. So there you have it, a non-radar radar detector. Suggested retail price is \$289.95.

Nitelogger II

For years, *Monitoring Times* carried an advertisement for the Nitelogger. The Nitelogger was a device that went between your scanner and your tape recorder. When a frequency became active, the Nitelogger turned the tape recorder on. It was a big hit.

Now comes Nitelogger II. Improved features include a manual/auto switch to allow manual operation of the recorder without the need to disconnect



cables. A "record" lamp has been added to provide positive indication of recorder activity. It still features an internal speaker for "listen while recording" operation, with volume control for silent operation, if desired. This is a real nice unit, proven in almost a decade of use.

To get your Nitellogger II, call 1-800-438-8155. It's carried by Grove Enterprises and costs just \$69.95 plus \$6.50 shipping.

Tune in on Telephone Calls

He's baaaack... "He" is Tom Kneitel and "it" is a new 3rd edition of *Tune in on Telephone Calls*. *TIOTC* is, without a doubt, one of the most popular scanner and shortwave guides ever published.



It's been a bestseller, garnering attention on national TV, network news—even in the courtroom. It is the unofficial handbook of the ever-growing legion of recreational eavesdropping fans who spend their time listening to "private" cellular, cordless, and other phone calls from cars, portables, homes, offices, even aircraft, ships, and trains.

Inside the 3rd edition is lots of new info—like 900 MHz cordless phone channels and the new frequencies available for 46/49 MHz cordless phones; an accessory unit that clarifies scrambled conversations; inexpensive DTMF decoders that display phone, PIN code, credit card, bank account, and other numbers people send from their pushbutton phones. There's even information on how to decode and read non-voice

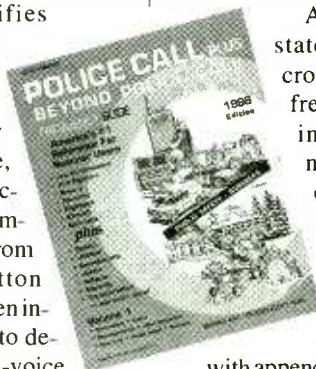
business and often spicy personal beeper messages. If you monitor phone calls in the privacy of your own home—which the federal government has declared illegal—this is *the* book on how to do it well.

You can get your copy of the new *Tune in on Telephone Calls* for \$16.95 plus shipping from virtually every radio dealer in the country, including Grove Enterprises. The new edition ships in the middle of this month.

1996 Police Call Plus

Last year, Gene Hughes, publisher of the best-selling, award-winning *Police Call* frequency directories surprised the scanning world when he introduced *Beyond Police Call*. *Beyond Police Call* was a separate book that supplemented the popular frequency directory with non-public safety frequencies. From all reports *Beyond Police Call* was very well received indeed.

But Hughes surprised us again. This year when the new 33rd edition of *Police Call* arrived at stores, scanner listeners found the two books combined into one superdirectory. As before, the new edition is divided into multi-state regional volumes, and lists detailed public safety assignments from 25-960 MHz for law enforcement, fire, rescue, forestry, highway departments, aircraft, and railroads. But now the publication also includes additional tables for sports, utilities, amusements, hotels, schools, security, transportation, and many other services as well.



Alphabetized by state and city, and cross-referenced by frequency, listings include licensee name, callsign, type of service, and number of mobile and base units. An excellent tutorial chapter is offered, along with appendices of radio "ten"

codes, a consolidated table of frequency allocations, and lists of nationally-allocated frequencies for various services.

Police Call Plus is available from Grove Enterprises (\$12.99 plus \$6 shipping) at 1-800-438-8155, or at your local Radio Shack or radio book store. *Police Call*—it's always been excellent. Now it's better.

- LM & BG

Victor—ee in Connecticut

If you're fortunate enough to live in Connecticut, there's good news. The new, 5th edition of the *Official Connecticut Frequency Guide* is now available. Written by Keith Victor and edited by Bob Coburn, the new edition is a comprehensive, 240-



page book containing over 14,576 frequencies, all of them good. Victor, who often knows more about CT public safety than some of the agencies, really shines.

Sixty-two pages are crammed with information on state and national systems, including maps and charts. Coverage includes the new update statewide emergency medical service dispatch channels, the new 800 MHz RAFS system, and the new state HAZMAT system. Frequencies are arranged by community for easy look-up. The new 5th edition of the *Official Connecticut Frequency Guide* is \$19.95 plus \$3.05 shipping from 1-800-351-7226 or P.O. Box 525, Londonderry, NH 03053. Mention *MT* when you call or write.

10-Code Card

One of the biggest problems in

scanning is how to get information on all of the local 10-codes. While a 10-20 may mean one thing in one town, it doesn't necessarily mean the same thing in another community. Fortunately, while there are local variations, many 10-codes are based on what is called the APCO 10-code list. APCO stands for the Association of Police Communications Officers.

In the future, APCO hopes that all police departments will use this standard. You can get a copy of the entire APCO 10-Code list on a handy, laminated, wallet-sized card from *National Scanning* magazine. To order yours, send \$3.00 to National Scanning, Box 360, Wagontown, PA 19376. Tell them that *MT* sent you.

Monitor America, #3

By the time you read this, the new *Monitor America* will probably be on store shelves. The arrival of this long-awaited, monster frequency directory has been heightened by reports that it absolutely bulges at 1,120 pages. According to publisher Rich Barnett—who, incidentally,



joins the *MT* staff starting next issue—this edition even includes AM and FM broadcast stations, as well as PL tones and detailed descriptions of radio systems.

Grove Enterprises will be carrying the new edition, from SMB Publishing, for \$29.95 plus \$5 shipping. To get your copy of *Monitor America*, order toll-free at 1-800-438-8155 or write P.O. Box 98, Brasstown, NC 28902.

AEA ACARS Package

Advanced Electronic Applications, Inc., has introduced a new ACARS package for receiving digital aircraft communications. ACARS is an acronym for Aircraft Communications Ad-



dressing and Reporting System. The information that goes out over ACARs varies widely. It can range from simple arrival/departure reports and performance data to a "there's a gorilla loose in cargo" message for company headquarters.

You need a scanner capable of 129-132 MHz reception and a computer (386 or better IBM-compatible) to use the AEA ACARS package. It comes with demodulator, software, and detailed manual. The price is just \$99.00. You can get yours from your favorite dealer or call AEA at 800-432-8873 for more information.

Global Broadcasting Systems

Years ago, there was a book on world broadcasting by, I think, someone named Hilliard. It might have been a Tab Book, I'm not sure. The book was pretty good; good enough for me to buy and put on my own shelf.

Somewhere along the line I lost it. When Focal Press announced that they had come out with a book called *Global Broadcasting Systems* by Robert Hilliard and Michael Keith, I called to ask if this was the same author, but I got voice mail.

In any case, *Global Broadcasting Systems* presents the history, key issues, trends, and status of radio, television, cable, and satellite broadcast facilities, their control and regulation, and programming for every country in the world. For the true student of

international broadcasting, it provides an excellent groundwork from which to understand a particular country's communications system. Hilliard is a college professor who

formerly worked as chief of public broadcasting at the FCC.

The book, *Global Broadcasting Systems*, is 200 pages and will cost you \$29.95. To order or for more information, call 800-366-2665. Mention *MT* to the voice mail.

New Heathkit catalog

Every once in a while, a new Heathkit catalog arrives in the mailbox and my heart leaps. No, it's not the Heathkit catalog of old, filled with build-it-yourself shortwave rigs and the like. Training is king, nowadays, and the emphasis is definitely away from the hobbyist and toward education.



The focus is still electronics, though. Heathkit offers hands-on training in everything from core (fundamentals, circuits, DC, AC,

semiconductors), advanced (digital, microprocessors), and master electronics, to applied electronics like VCR and TV servicing, laser and electro-optic technology. The old days are not completely gone, however. Heathkit does offer a portable AM radio kit (\$39.95), a weather station kit (\$899.95), and a clock with an accuracy level of +/- 10

milliseconds (\$349.95). It's neat stuff. Admittedly, we'll always have a warm spot in our hearts for Heathkit.

To get a copy of the latest catalog, call Heathkit at 1-800-253-0570. Tell them that *MT* sent you.

Ham Radio Above 50 MHz

There's a new ham radio magazine in town. It's called *VHF: Ham Radio Above 50 MHz* and its publishers (CQ Communications) say that it's for "all ham radio operators who are active or interested in operating on the amateur bands above 50 MHz." Features on repeaters and FM, operating techniques, packet, satellites, and projects are promised. You can subscribe for \$19.95 and get 12 issues. To order, call 1-800-853-9797.

UK Callbook-on-Disk

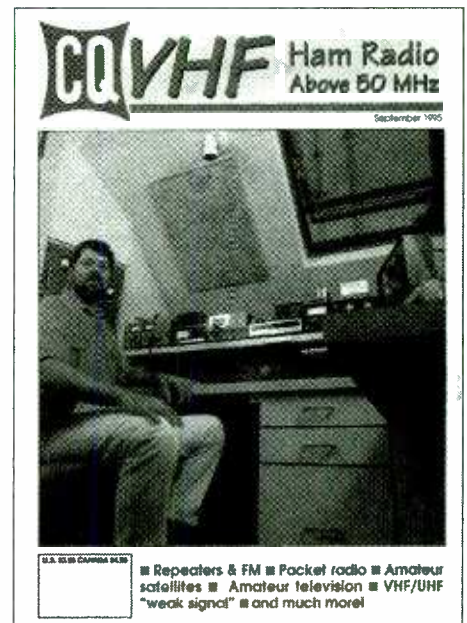
Ham DXers should appreciate a new set of 3-1/2" disks containing amateur callsigns throughout the United Kingdom, last updated August 1995. Requiring at least a 286, VGA monitor, DS-HD disk drive, 14 MB of free space, and MS-DOS 3.3 or higher, the files may be accessed by callsign, town, surname, wild card, repeater frequency, county, or postal code. Additional lists include all repeaters, nodes, HF beacons, and mailboxes, as well as a European repeater database.

Callbook-On-Disk is \$25, airmailed from GLOV & G4LUE Amateur Radio Software, 8 Hild Avenue, Cudworth, Barnsley, South

Yorkshire, S72 8RN, England. - BG

Homebrewer's Grab Bag

Capacitors, inductors, diodes, resistors, integrated circuits—these are all available from Grove Enterprises in commonly-used assortments for the experimenter and home builder. Complete contents of the parts kits can be viewed online at www.grove.net. The bags vary from \$19.95 for over 400 pieces



of mixed-value surface mount capacitors, to \$69.95 for approximately 70 ICs. All parts are identified, so you can't go wrong by taking advantage of this parts liquidation. Call Grove at 1-800-438-8155 or write PO Box 98, Brasstown, NC 28902 for a Grove catalog. - RB

Books and equipment for announcement or review should be sent to "What's New?" c/o Monitoring Times, P.O. Box 98, 300 S. Hwy 64 West, Brasstown, NC 28902.

Affordable and Fun! The Sony SRF-42 AM Stereo Walkman

By Karl J. Zuk

Attention, lovers of AM radio! Finally, there is a Walkman designed with you in mind. Sony's entry into the world of AM Stereo, the SRF-42 FM/AM Stereo Walkman, is a simple little gem. Listening in high fidelity stereo to broadcasts originating hundreds of miles away is a treat you won't want to miss. Happily, you won't have to.

At the low price of \$30, it would be difficult to match the quality and value of Sony's SRF-42. Housed in an impressive sleek black plastic case, it provides all you need for casual listening. Two small black knobs give you a handle on its analog tuning and volume controls. A large stylish gray slide switch on the front panel turns the unit on and off. The three-position bandswitch will make medium wave DXers smile: FM Stereo, AM Mono, and *AM Stereo*. It's one of the only radios you'll ever find with the National Association of Broadcasters' AMax stereo seal of approval!

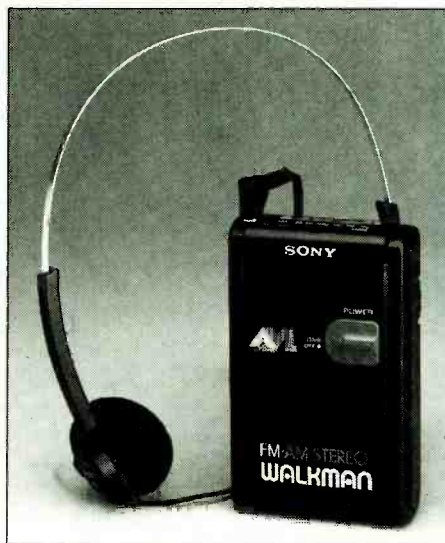
The SRF-42 features good sensitivity and selectivity considering its \$30 price. A built-in ferrite loop antenna for AM reception produces nice nulls for pulling out weak signals adjacent to strong locals. For example, I could easily enjoy stereo WLS 890 Chicago only 30 miles away from WCBS 880 New York's antenna tower every night. Typical of simple single-conversion AM radios, sensitivity is noticeably reduced below about 1000 kHz. Even so, solid reception of Nashville's WSM 650 can be heard in stereo traveling throughout the East and Midwest. Its analog tuning covers 530 through 1710 kHz, all ready for the new expansion band stations above 1600 kHz, if they ever go on the air!

AM stereo reception of weak AM signals tended to sound a little hissy, and would "motorboat" right before you reached noise level. Obvious is the change in audio bandwidth when switching modes from "AM stereo" to "AM mono." Flip the bandswitch to "AM stereo" and both stereo and mono signals can be enjoyed in high fidelity. Switch to "AM mono" and the audio bandwidth seems to be reduced to about 6 kHz, canceling any audible hiss. Listening to a couple of hours of rock standards via Detroit's stereo WJR 760 one Saturday afternoon was a rare treat!

The FM section could be slightly more selective. Missing is the ability to manually switch to monophonic reception. You are at the mercy of the preset level where the radio automatically switches to mono—a slight annoyance. FM sensitivity is not bad, and the analog tuning allows reception of TV Channel 6 audio at 87.75 MHz, as well. The lack of a tone control reminds you that this is a basic radio!

Don't be led astray by the red LED, seen to the left of the tuning dial. Listening to FM, the LED lights when a broadcast is in stereo. On AM, the LED acts as a signal strength meter, lighting when strong stations are tuned in, and does not indicate AM stereo reception. What was the logic behind this?

Holding a SRF-42 in your hand will pique your curiosity. How does



Sony jam all its sophisticated electronics into such a tiny box? Even with two AA size batteries and its plastic belt clip installed, it weighs only 5-1/2 ounces. Packed with each Walkman is a set of Sony TRH-1 headphones that sound a little shrill and lack bass response. Try the SRF-42 with a professional set of 'phones to truly appreciate its high fidelity potential. Better still, connect the headphone output jack to your living room stereo and try to distinguish FM stereo from AM stereo reception.

AM stereo has one bizarre artifact. After over ten years of heated controversy, broadcasters around the world selected the Motorola C-QUAM system as the standard method of encoding stereo audio onto AM signals. C-QUAM depends upon solid signals that remain in phase. Unfortunately, when medium wave signals skip in from hundreds or thousands of miles away at night, they are any-

thing but phase constant. As a result, these distant signals have a tendency of producing a stereo image that rotates constantly from left to right and can easily make you seasick! When two or more stations are received on the same frequency, you'll hear a cat and mouse chase known as "the merry-go-round effect." You'll hear the stations literally spin around and around, one after the other. To a DXer with trained ears, this effect might be an advantage to pulling out an otherwise buried ID. Most casual listeners will switch to mono or look for aural sanity on another frequency.

Another quirk is the disparity between American and Canadian AM broadcasts. American medium wave broadcasts have a limited audio bandwidth rolling off dramatically above 10 kHz, with the intention of minimizing adjacent channel "splatter" interference between stations. Canadian stations are not required to filter their audio, and broadcast audio frequencies out to 15 kHz and beyond. Listen for a Canadian transmission of an old Beatles song, for example, with dramatic stereo separation. You'll love the results!

Listening to AM stereo is a delight, and the SRF-42 makes it affordable. Baseball games gain a realistic ambiance; the Grand Ole Opry in stereo will make country music fans smile; late night classical music on clear-channel CBC outlets will refresh as never before. If you wondered how to spend that Christmas money, Sony's SRF-42 FM Stereo\AM Stereo Walkman is a box of magic.

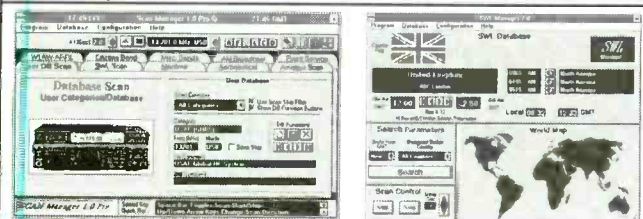


The Jan/Feb Grove catalog is now out. If you are not on the Grove Enterprises mailing list, call for the free catalog at 1-800-438-8155. For our Internet customers, Grove is offering reduced prices and special package deals on scanners, receivers and accessories. Check out our new World Wide Web site:

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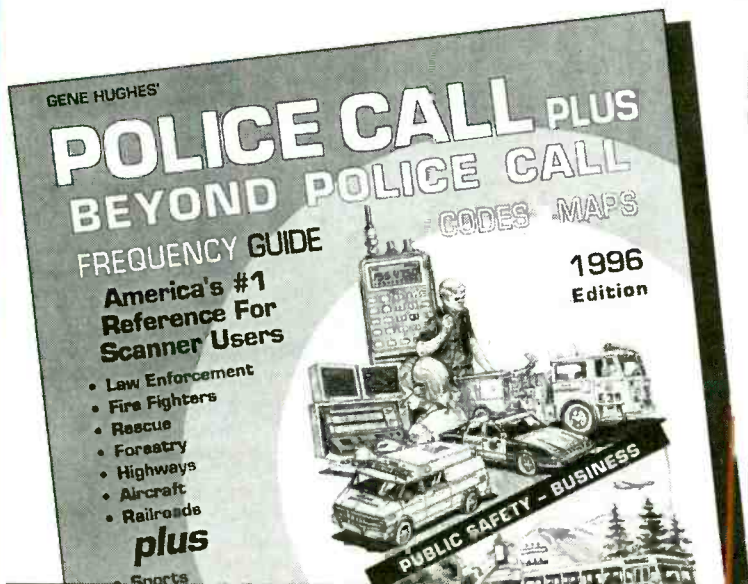
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Lab Measurements and Features: What do they mean?

The old saw that figures lie and liars figure applies splendidly to world band radio. As with any number of electronic products there are so many variables to measure, and so many means by which they may be measured and the results expressed, that in the hands of rogues the outcome can be completely misleading.

The same holds true for listings of features. One feature may be of considerable importance, another essentially meaningless. Yet, on a list or chart all are given equal weight. Like one flake in a blizzard, a key feature that may be deficient tends to get lost in the snow job.

Or take how features are expressed. Years ago, radios were often advertised as having a "genuine Alinco four-inch speaker." Sounds pretty impressive, except that at that time this was virtually the cheapest speaker that could be used. But it sure sounded better than, "We use the cheapest speaker."

■ Portables: what to consider

If you're considering a portable, you really don't need to pore over much more than the key variables. For example, double-conversion models (two IF stages for the AM mode) are more desirable than are the single-conversion variety (one IF stage); if it doesn't say, it's almost certainly single conversion, as otherwise the manufacturer would be bragging about it.

A bandwidth in the 5 to 6 kHz range is desirable. Better yet is a model with two bandwidths: one of 5 to 8 kHz, another around 3 to 6 kHz. Look for digital frequency readout and handy tuning features, such as a keypad. And if you can try the radio out before making an irrevocable purchase, listen to how it sounds to your own ears. If it's shrill and distorted, try something else.

Synchronous selectable sideband? Few portables have it, but it's a real plus and one of the many reasons the Sony ICF-2010 is considered to be the Big Enchilada of shortwave portables.

■ Tabletops and portatops: what to consider

With "serious" radios, though, it helps to



look carefully under the hood.

First, decide whether you're looking for a "stick shift" or an "automatic." Models such as the Watkins-Johnson HF-1000, Drake R8, and Japan Radio NRD-535 are designed for folks who want to control many variables manually. DX enthusiasts usually prefer this approach, just as sports car buffs go for the more hands-on models. But serious SWLs are often more comfortable with the simpler approach pioneered by Lowe Electronics in the U.K.

Second, weigh your priorities. Ergonomics, for example, are usually important to serious SWLs, but less often to DX hounds. And remember that good ergonomics does not necessarily correlate with paucity of controls. The Japan Radio NRD-535 has better ergonomics than any Lowe model, yet has more controls. Ditto audio quality. But DXers are unusually interested in the quantitative findings from a good series of laboratory measurements. For better-rated tabletop and portable models, these numbers can be found in the *RDI White Papers* sold by various shortwave dealers and the publisher, International Broadcasting Services, Ltd.

■ Specific measurements: what they mean

With world band radio signals operating on channels only 5 kHz apart, adjacent-channel

rejection—selectivity—is extremely important. Synchronous selectable sideband is a new technology that helps noticeably in rejecting interference from any one sideband (but not both at the same time), so choosing a model with this feature is a strong step in the right direction.

■ Rejecting adjacent-channel interference

Three performance variables can be measured to help you know how well a given model will reject adjacent-channel interference: bandwidth, shape factor and ultimate rejection (a/k/a ultimate selectivity). Think of bandwidth as being the width of the top part of a doorway; the shape factor as the ratio of the openings at the bottom and top of a trapezoidal doorway; and ultimate rejection as the height of a doorway.

Look for a receiver having a bare minimum of two bandwidths suitable for world band reception. If there are only two, look for one to be roughly 2 to 4 kHz and the other roughly 5 to 6.5 kHz. If there are several, look for them to be spread through the 2 to 4 kHz range.

Shape factor is the ratio between the bandwidth (measured at -6 dB) and selectivity at -60 dB, and the smaller the ratio, the better. It used to be that a bandwidth of 1:2 was considered extraordinary, but now some receivers come with bandwidths well under 1:1.5. Still, too much can be made of these numbers, which sometimes come at the expense of ultimate selectivity. So look for receivers that have skirt selectivity under roughly 1:2.

Ultimate rejection is important when you're listening to a faint station one channel away from a superpower signal. So it's relatively less important to most SWLs and tropical-band DXers, but it is definitely relevant to those DXing within the powerful international bands, such as 49, 31 and 25 meters.

■ Avoiding "overloading"

Dynamic range stems from the same problem of coping with weak signals in the presence of powerful signals on nearby frequencies. If it's inadequate, you get "overloading," which, when you dial up and down the

band, sounds like murmuring in a TV courtroom scene. The catchall norm is to measure dynamic range with signals 20 kHz apart. This tells a lot, but because world band signals are often 5 kHz apart, a 5 kHz separation (which is used by International Broadcasting Services), provides more realistic results. Dynamic range can be expressed in and of itself, or more meaningfully as the third-order intercept point (TOIP).

The rule of thumb with dynamic range and TOIP is the larger, the better. If you live where signals are unusually strong—Europe, say—and you also use a first-rate outdoor antenna, you'll need a receiver with first-rate dynamic range. Look for dynamic range measurements of at least (5 kHz) 76 dB or (20 kHz) 90 dB, and 5 kHz TOIP of at least -20 dB (20 kHz TOIP of at least 0 dB). If you live in North America, particularly if you're inland or out west, dynamic range is much less important. Look for dynamic range of at least (5 kHz) 65 dB or (20 kHz) 78 dB. You might add a bit to those figures if you live along the eastern seaboard.

■ Keeping strong signals from desensitizing

Strong signals on nearby frequencies can do more than just cause overloading. They can also cause the receiver to become desensitized to weak signals. We measure a receiver's ability to cope with this as its blocking ability. This is not a measurement worth considering if you're a sophisticated SWL or a tropical-band DXer (except when you're trying to hear something weak on a frequency not far from WWCR's Goliath tropical-band signals). But it can be important when you're trying to snare a faint DX catch in, say, the 49 meter band. So, for those DXers, look for blocking of at least 115 dB if you're in North America, at least 125 dB if you're in Europe.

■ Licking phase noise and heterodynes

Recently, a group of DXers went on a DXpedition with all manner of sophisticated tabletop receivers, plus an old tube-type R-390A which had been modified. The veteran '390A managed to dig out some faint stations the others couldn't, and the probable reason is that it is unusually quiet, so faint signals can actually be heard and copied.

While there are a number of reasons for this, in this environment the difference was

probably due to an arcane measurement: the phase noise of the local oscillator. Today's fancy digital circuits still can't equal older circuit designs in this regard. So, if your idea of a perfect day is to get up at 4:00 am to catch the sign-on of Radio Cucaracha in Las Moscas, Peru, then look for phase noise of 120 dBc—even 130 dBc—or greater.

With signals in parts of the shortwave spectrum shared with other (non-broadcasting) services, such as utilities and hams, you'll occasionally encounter loud howls—heterodynes—that make reception difficult. Selectable-sideband reception (manually or with a synchronous detector) will clear this up, but sometimes the non-heterodyned sideband has other slop to contend with.

Enter the notch filter, which reduces the howl. On some receivers, such as the Japan Radio NRD-535, these are in the IF stage, which is optimum. In others, such as the Drake R8 and R8A, it is in the AF stage, which has certain advantages but is generally less desirable. In either event, a key measurement is how deep the notch filtering is, as the deeper the notch, the stronger it is in killing heterodyne interference. Look for a depth of at least -25 dB, preferably -40 dB or more (negative). By the way, the notch on the Drake R8/R8A requires a safecracker's touch to operate, to the point where many users simply don't bother to use it!

■ Avoiding signals from other parts of the radio spectrum

The radio spectrum is broad as a barn door, including much more than just shortwave. Good radio design keeps these "alien" signals from bothering the shortwave station you're trying to hear. Among the measurements of this ability are front-end selectivity, image rejection, and first IF rejection.

Front-end selectivity can be important, as some owners of the otherwise-excellent Lowe HF-150 have discovered. (Lowe '150 owners living near AM stations often find those local stations being audible throughout much of the shortwave spectrum.) But it's virtually impossible to measure, so at IBS we assign it a grade, just like in school: A, B, C, and so forth, depending upon its design characteristics. No matter where you live, be leery of obtaining a radio with an "F" rating, but if possible go for a "C" or better.

Image rejection used to be an important consideration, but these days virtually all tabletop and portatop models are adequate. Never-

theless, look for image rejection of -70 dB or more (negative) if you want your money's worth. Ditto IF rejection.

■ Sensitivity to weak signals

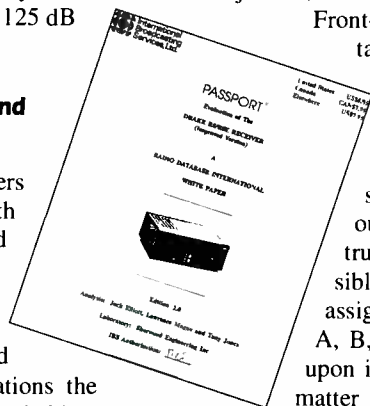
Another once-important measurement that is less important nowadays is sensitivity to weak signals. Still, for serious DXers sensitivity is relevant, and especially when it is expressed as a noise-floor measurement. Look for a noise floor of -130 dB or greater (negative) for excellent results.

■ Overall distortion

While there are yet other measurements of communications receivers we make at IBS, few are so important as overall distortion, something apparently not measured in this way except by us in the *RDI White Papers*. Traditional measurements are confined to distortion in the audio stage. However, this doesn't take into account distortion that may take place in the receiver before this stage. Thus, we measure total distortion of a signal's quality from the time it enters the receiver until it goes into the speaker.

With synchronous detection now available on several models, at least some shortwave signals have real potential to sound quite pleasant. In order to best take advantage of this improvement in fidelity, look for a receiver with synchronous detection (preferably with synchronous selectable sideband) and overall distortion of under 1%.

This equipment review is performed independently by Lawrence Magne and his colleagues in accordance with the policies and procedures of International Broadcasting Services, Ltd. It is completely independent of the policies and procedures of Grove Enterprises, Inc., its advertisers and affiliated organizations.



RADIO DATABASE INTERNATIONAL WHITE PAPER®

reports contain virtually everything found during exhaustive tests of premium shortwave receivers and outdoor antennas. For a complete list, please send a self-addressed stamped envelope to RDI White Papers, Box 300M, Penn's Park PA 18943 USA.

Add a Crystal Receiver to Your Arsenal

In the 1960s and 1970s, thousands of firemen and ambulance squad members came to rely on their single-channel, transistor Plectron and Motorola Alert Monitor receivers. They have since been replaced by portable pagers, and are often available at hamfests in the \$5 - \$25 range.

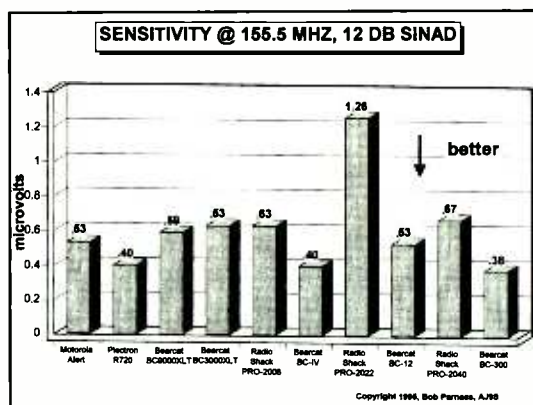
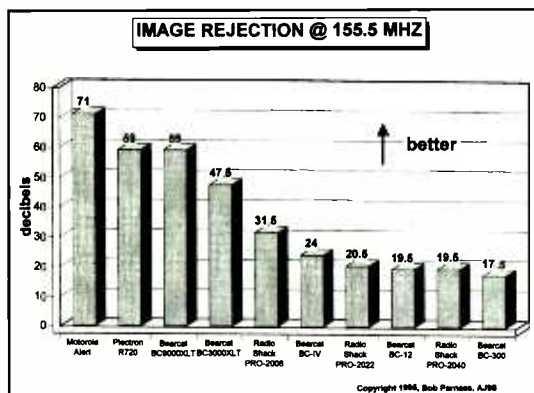
Crystal-controlled Plectron and Motorola Alert Monitor receivers are excellent for dedicated monitoring of local frequencies—a task for which you wouldn't want to tie up your 400-channel programmable scanner. They can be powered from 117VAC or 12VDC with the proper mobile cord. The audio quality of a Plectron P1, Plectron R700 series, and Motorola Alert Monitor is better than most consumer grade scanners, and intermod immunity is outstanding when aligned properly.

Even though the old "fireman's radios" have a low first IF, their image rejection is far superior to the typical scanner, which employs a varicap diode tuned front end designed to preserve sensitivity over a wide band of frequencies at the expense of selectivity. Scanners with a wide front end and a low first IF are prone to receiving images of aircraft transmissions on the VHF-high band.

I measured the VHF-high band image rejection and sensitivity of the ten scanners and monitors listed in Table 1. As Chart 1 shows, the Motorola Alert and Plectron R720 samples have excellent image rejection when aligned for a single frequency—as good or better than some up-conversion scanners. Chart 2 shows the Alert Monitor and Plectron are about as sensitive as the consumer grade scanners.

TABLE 1: Receivers measured for VHF-high band image rejection

Motorola Alert Monitor, model MO3CNB1100A,	s/n 237AGN0058
Plectron Chief,	s/n R720B2-43569
Radio Shack PRO-2006,	s/n 003736
Radio Shack PRO-2022,	s/n 920966
Radio Shack PRO-2040,	s/n 55008120
Electra/Bearcat BC IV,	s/n 118915
Electra/Bearcat BC 12,	s/n C005038
Electra/Bearcat BC-300,	s/n 15464
Uniden/Bearcat BC3000XLT,	s/n 45000433
Uniden/Bearcat BC9000XLT,	s/n 55000651



The Plectron and Motorola Alert monitors are single band receivers: VHF-low, VHF-high, or UHF. Because they employ a selective front end, no single Plectron or Motorola Alert monitor can cover the entire 30-50 MHz band, so there are versions optimized for each portion of the VHF-low band. There are different versions to cover low and high "splits" in the VHF-high band, too. Although UHF versions were made, they are somewhat rare and coverage is limited to 470 MHz and below.

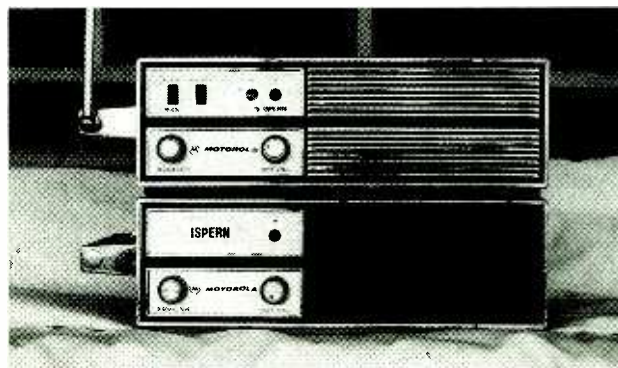
Plectron made several models with dozens of different options. Both the original P1 and later R700 series are suitable for restoration, although I prefer the newer R700 models. The Plectron 500 "economy" series is less desirable.

The P1 series (Table 2) are housed in black cabinets with a blue-green and silver color scheme used on the front panel. They were made in the Chief, Patrol, and Sentry models. The Sentry model lacks a carrier squelch and therefore is of little use to hobbyists except for scavenging parts. Model number and frequency information appears on a gummed label on the rear panel.

The R700 series (Table 3) have black cabinets with brown front panels and are slightly smaller than the P1 receivers. R700s were made in the Chief (tone decoder and carrier squelch) and Patrol (carrier squelch only) models. The Plectron FM Receiver/Recorder is a collector's item. It is essentially an R700 series Chief receiver with a built-in cassette tape recorder. The recorder is carrier activated and can tape transmissions while the receiver is unattended. A connector on the rear panel allows for all kinds of remote control possibilities.

How many is enough?

I use two Plectron P1s and four R700s in my living room, seven R700s down the basement, and keep several Plectrons and Alert Monitors stored in reserve. The basement Plectrons are turned on automatically when I walk nearby. Power to them is controlled by a modified Radio Shack Safe House infrared motion detector, originally sold as an intrusion alarm. When a rescue squad from Missouri advertised a number of used Plectrons, I bought them—over 20 of them in



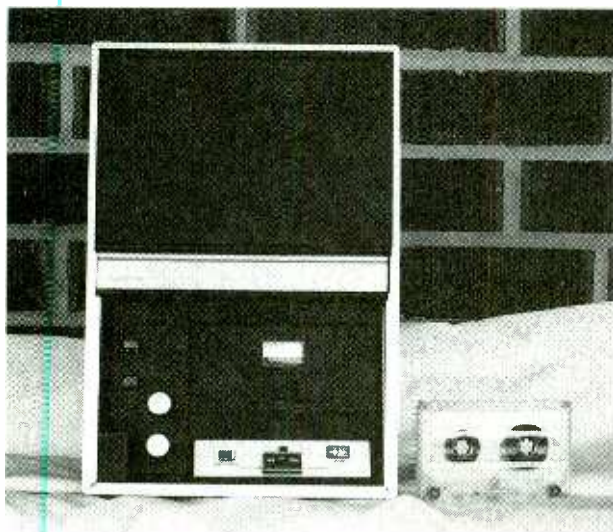
Top: Plectron R720 Chief. Bottom: Plectron P1 Patrol Radio



Two Motorola Alert Monitors

all. I cleaned, fixed, and restored each one. After recrystalling them on local frequencies, I distributed them to members of my scanner club who were glad to get them.

Motorola and Plectron receivers require special crystals. I sometimes use Radio Shack's generic 3rd overtone scanner crystals in the Plectrons, but they oscillate on frequencies far away from their marked frequencies. That's because the Plectron oscillator is designed to be used with a crystal which oscillates on its fundamental, not overtone, frequency.



A rare Plectron FM receiver/recorder

In contrast to most older scanners, the crystal oscillators in both Alert Monitors and Plectrons must be tweaked on frequency.

This affords best audio quality and sensitivity. Crystal netting is accomplished by a trimmer capacitor in the Alert Monitors and an adjustable coil in the Plectron receivers.

Because many monitor receivers are in rough condition and need repair, a hamfest special is better suited for hobbyists who like to fix their own radios.

More power to you

Many Plectrons and Alert Monitors were equipped with an internal NiCd battery pack, intended to power the receiver if the AC power fails. It's unusual to find a used monitor receiver with the NiCd pack still capable of holding a charge. More often, the batteries have died and the series charging resistor has overheated and burned. Be sure to remove the dead batteries, as they often leak.

AC power cords for both types of receivers use unique connectors and are scarce. You can try to buy them new, but it's much cheaper to drill a hole in the rear panel and attach a permanent power cord. Make sure you use a grommet in the hole to prevent the metal chassis from chafing the line cord.

If you find the squelch on your Plectron R700 series receiver has too much hysteresis, replace R96—a 180K resistor—with a 560K resistor. On the P1, the resistor is designated R81.

I have not used the Plectron tone-alerting features so I cannot address that except to say that the special coils and capacitors for the dual tone decoders vary depending on the tone frequencies and are somewhat difficult to obtain. Plectron receiver repair service is offered by many two-way radio service shops, as well as:

TABLE 3: Plectron R700 models

Band (MHz)	Chief (tone decoder & carrier squelch)	Patrol (carrier squelch)
25-54	R719	R715
148-174	R720	R716
450-470	R723	R721

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Some Plectron replacement parts are available from Federal Signal in University Park, IL, phone (800) 524-3021.

Alert Monitor parts are available from Motorola. Phone (800)972-3226.

Don't even ask: I currently have no Plectrons or Motorola Alert Monitors for sale. I'm hoarding them!

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TABLE 2: Plectron P1 models

Band (MHz)	Chief (tone decoder & carrier squelch)	Patrol (carrier squelch)	Sentry (tone decoder only)
25-54	R19	R15	R17
148-174	R20	R16	R18
450-470	R23	R21	R22

Easy Gain and Directivity: The Sloper Dipole

For most practical installations the reception pattern of an ordinary halfwave dipole antenna is almost non-directional. The antenna's reception pattern does theoretically have nulls off the antenna's ends, but when the antenna is mounted relatively close to the earth, as most of our practical installations are, these nulls are not deep and lose much of their effect. If the antenna's ends are drooped lower than its center to make an inverted-V antenna, then the directional pattern becomes essentially non-directional. In many cases this is just what we want in an HF monitoring antenna—good response to signals coming from any direction.

But many of us will, from time to time, find that we want a directional antenna in order to receive improve reception in a particular direction. Beam antennas are well-known for their ability to help in such situations; they usually provide a useful amount of gain which increases the strength of signals arriving from the direction of their main beam, and they also reduce the strength of noise and other non-desired signals coming from directions off that main beam. Both of these factors—increased strength of the desired signal and decreased response to the undesired interference—combine to enhance reception of the desired signal. This can often make possible the reception of DX signals which are otherwise too weak and covered with noise to provide good copy.

When beam antennas are mentioned we may immediately think of a Yagi or quad on a tower with an electrically-controlled rotor. This sort of beam is excellent if you have the money to buy one, and the time to install it. On the other hand, fixed wire beams, such as the dipole sloper which we feature this month, can often do a good job where a beam is required. In one situation where I wanted to keep a regular weekly schedule with another ham almost 2000 miles away, I worked with an ordinary dipole at first. But it was often difficult for him to copy my signals. After building a sloper dipole as described below, installed to point towards his location, my signals went up about two S-units dB above the dipole's signal strength as indicated by his S-meter. That's unusually high for such a comparison: a more common increase over a dipole is on the order of 3 to 6 dB.

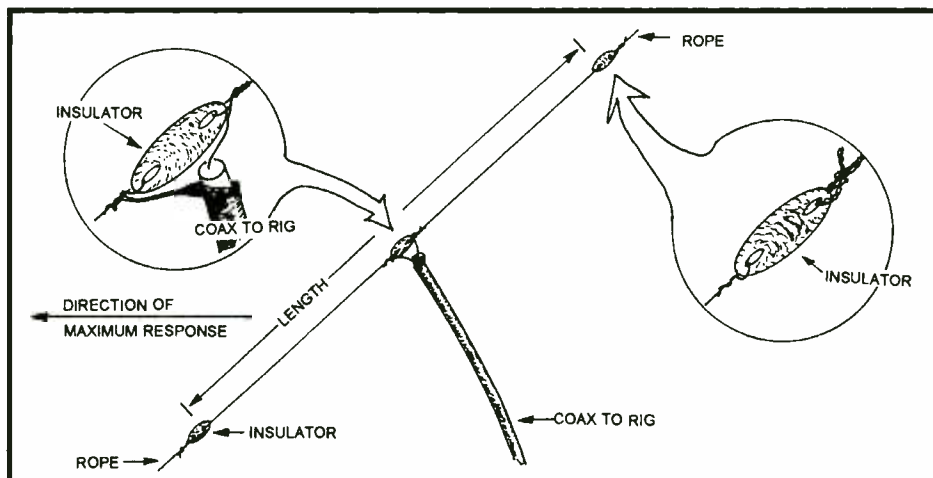


Fig. 1. A sloper dipole. See text for details.

One advantage of wire beams, such as the sloper, is that they require considerably less in terms of both time and money. Another consideration is that rotatable beams, such as the Yagi and quad, tend to be so large as to be impractical at frequencies below about 10 MHz. So, if your requirements for a directional HF antenna can be satisfied with a fixed direction beam, you may want to give this month's antenna a try.

■ The Sloper Dipole

The basis of the sloper's beam-forming action is its interaction with the ground. Also, if the supporting tower used is metal then there may be some additional gain due to the tower acting somewhat as a reflector. With one end of the sloper mounted close to the ground, and the other end elevated, this antenna's maximum response is in the direction of a line drawn out from the point directly below its high end to a point directly below its low end. In other words, if you stand directly under the antenna's higher end and look horizontally out "through" the antenna wire, you are looking in the direction of the antenna's maximum gain, its main lobe. This is the direction from which the antenna will receive best.

With this antenna, making the high end really high lowers the angle of the antenna's directional pattern. Elevating the higher end like this will also reduce the antenna's direc-

tivity. Thus, if the antenna were mounted completely vertical—that is, with the high end directly over the low end—this would maximize its low-angle radiation. In this vertical orientation it would also lose all its horizontal directivity.

■ Let's Build One

For this antenna you will need a length of wire for the antenna elements, three insulators, a length of coaxial cable for the lead-in, and a male coaxial connector for attaching the lead-in to your rig.

1. Determine the appropriate length of the antenna element from the formula given below. Cut the antenna element-wire to be about a foot longer than this length: the extra length is to allow for the wire looped around the insulators as in fig. 1. You may use wire sold specifically as "antenna wire" or any other copper, aluminum, steel, or any other metal wire, insulated or non-insulated, as long as it is sufficiently strong to hold up in use. Soft drawn copper wire, such as used in house wiring, is more likely to break than harder wires when used for lengths in excess of 50 feet.

The formulas below will give the approximate length for the antenna; the exact resonant length will vary depending on the slope angle and the nature of the objects in the nearby surrounding environment. Usually the

length given by the formula is close enough for satisfactory performance, but if you want to know the antenna's exact resonant frequency a good way is to use one of the automated SWR meters made by MFJ (reviewed in this column 8/93), AEA (reviewed 5/94), or Autek (reviewed 1/95).

$$\text{Length (in feet)} = 468 / \text{frequency (MHz) or}$$

$$\text{Length (in meters)} = 143 / \text{frequency (MHz)}$$

For example, at 10 MHz the antenna's overall length would be $468/10 = 46.8$ ft. or 46 ft. 9.6 in.

2. Affix the antenna to the three insulators as shown in fig. 1. If possible, solder the wires together where they overlap when looped around the insulators. Likewise, solder the coax connections to the antenna as shown in fig. 1.

3. Seal the coax end against weather with coax sealant.

4. Mount the antenna with one end high and the other low, with the lower end pointing in the direction from which you desire maximum response. If the antenna is used for transmitting as well for as receiving, then be sure the lower end is not where anyone will be able to accidentally touch it and get an RF burn.

5. If you live in lightning country, use protection against lightning-induced damage; the minimum protection is to never use the antenna during weather likely to produce lightning, and to disconnect and ground the antenna when it is not in use.

Your antenna is now ready to use.

RADIO RIDDLES

Last month:

I asked you "In this jolly season can you tell me what antenna is known, perhaps not too correctly, as the "Christmas tree antenna?" Well, the Telefunken company long ago developed a shortwave directional curtain array known as the "Tannenbaum" array. As I understand it, the translation of "tannenbaum" is something like "pine tree." Thus the array has at times been called the "Christmas tree" antenna.

The outline of the tannenbaum antenna looked like a squarish tree; today the peaked outline of an LPDA (log periodic directional array) resembles a Christmas tree more closely

than does the tannenbaum antenna, but I haven't yet heard the LPDA called a "Christmas tree antenna." On the other hand, there are various reports, including one of my own, of actually using live trees as antennas. So next Christmas you could have a real "Christmas Tree Antenna" if you like.

This Month:

It is common knowledge that a dipole

antenna has more gain than a quarterwave groundplane, and lots more gain than the theoretical isotropic antenna. How then can it be reasonable to say, as is often said, that the halfwave dipole has 0 dB gain?"

You'll find the answer to this month's riddle, and much more, in next month's issue of *Monitoring Times*. Til then Peace, DX, and 73.



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sleuthing had shown the interference coming from, which correlated with the onset of the interference each night.

"A man who lived across the alley from Electric Blanket Man had told me he tried to hear Radio Finland on his Zenith Trans-Oceanic radio on a Sunday morning only to have the signal drowned out by the loud interference.

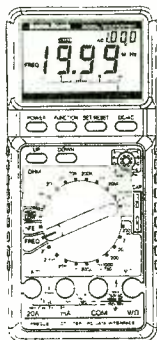
"Like B.W., I called the electric utility which sent a truck and disabled power to that city block. Listening on a portable radio near the truck, I noticed the noise disappear. The noise never came back, even though the neighbor claimed not to have an electric blanket.

"I knew not to contact the FCC but to try to deal with the neighbor direct. Having failed at that, the electric utility solved the problem to my satisfaction. I hope I was not too forceful, for all this principals in that drama except me (including the power company employee), died within a few years!"

Watching the Earth Move

It was asked in a past issue of *MT* if it was possible to watch earthquake tremors via an oscilloscope, and record it on hard copy by a pen recorder. The answer was yes. Now Ron Cheshire of Ridgecrest, Pennsylvania, sends in another way to do your observations.

"Although it is correct that watching for earthquakes is about as exciting as watching grass grow, it can be very exciting when there is activity. I use a Radio Shack 22-168 Digital Multimeter with com-



puter interface and accompanying software to watch the portable seismometers in my area. I hook the DMM meter to the speaker terminals of the scanner and let her go! The software produces a chart much like the one that the USGS receives. Maybe not so sophisticated, but at least it works. (See the accompanying chart.)

"By the way, the portable seismograph signals are horizontally polarized and highly directional. Try using a cut down TV antenna with proper matching networks for the coax. Most signals will be in the 165-167 MHz range. USGS in Menlo Park are the ones responsible for these, although Cal State and Cal Tech have been contracted to take care of them. Funding is vanishing, so these interesting devices may be going away soon."

Keep 'em Accountable

Joseph Connelly of North Bergen, New Jersey, has been watching and listening, and he has concluded that the taxpayers' confidence in the police has been seriously eroded, and for good reason. He says, "I, for one, think all people should cry out against Project 25 or any other radio system that makes it impossible for the taxpayers who pay the police salaries to hear exactly what our police are up to. What do they have to hide? All they need is codes and land lines (telephones) to keep private what needs to be kept from criminals that have scanners—even though the instances of criminals with scanners is so small it hardly matters."

Note of Thanks

Wesley Loven of Spruce Pine, NC, inquired a while back about help with the SE Optiscan scanner. He says, "I have already received two different letters from Grove fans. ... I am a scanner nut! But I am a

completely disabled person who had to have a hobby, so I took up scanners, and I couldn't have a better hobby. Thanks for putting my request in your magazine. It really helped me out."

We've often witnessed the spirit of volunteerism and generosity among our readers, just like our lead feature on Elmering. In fact, subscriber Marlene

Sherburne has made a specific offer to help any women who are just getting started in shortwave broadcast listening. Just let me know how I can put you in touch with her.

Ring in the new year! Ring in happy monitoring times!

—Rachel Baughn
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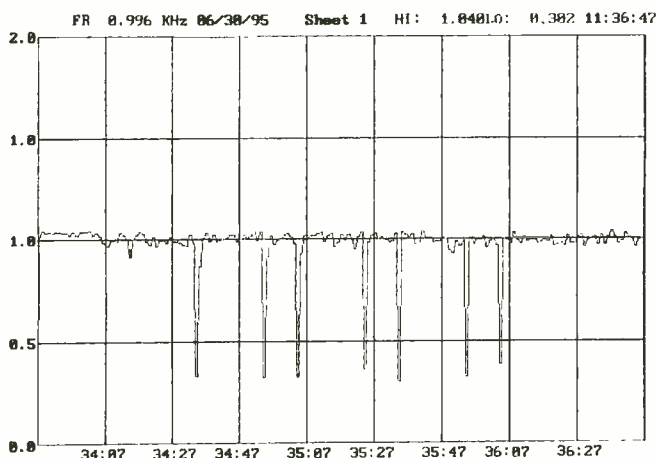
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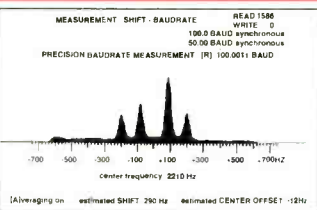
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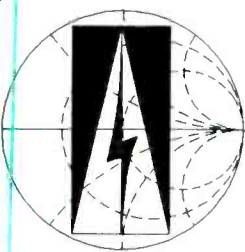
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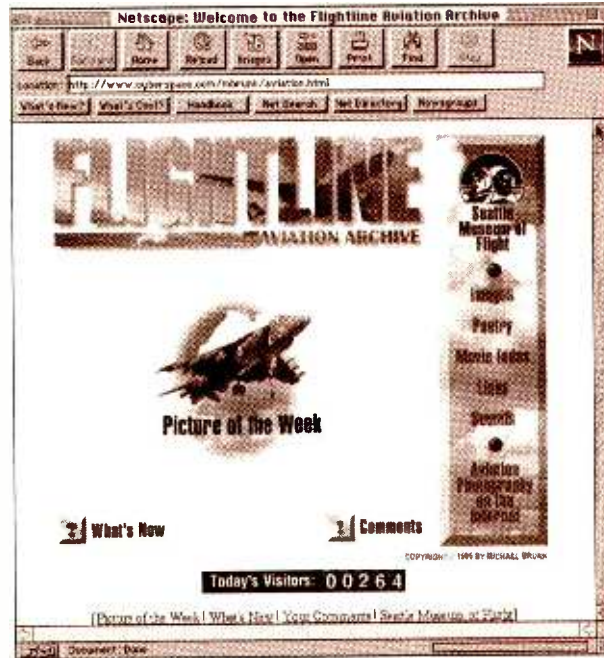
For those of us who were fortunate enough to take part in the Grove Communications Expo '95 in Atlanta last Fall, one recurring subject seems to have permeated all facets of our monitoring hobby, from voice to digital, from shortwave to satellite. The Internet—more specifically, the World Wide Web (WWW)—has opened up an invaluable information resource previously unavailable to the hobbyist/monitor.

Via the Web, you can now visit the homepages of many of your favorite international shortwave broadcasters, obtain their latest schedules including program content, provide listener feedback via e-mail, and even submit QSL reports on-line. Utilizing the "Real Audio" application from within your favorite Web browser, you can even listen to actual broadcasts from Radio Canada and Deutsche Welle.

You've just heard Radio Nepal for the first time and your knowledge of Nepal is limited. Visit the Central Intelligence Agency's homepage (yes, it's the CIA all right) and consult their *World Fact Book* for detailed information on the country's politics, history, geography and culture, economics etc. (everything any good spy should know).

Want to know what's happening this minute on the Utility bands? Subscribe to the WUN (Worldwide Utility Net's) e-mail service. With over 500 monitors from 20 plus countries subscribing, there is always someone monitoring and providing details of what they are hearing on a real-time basis. These folks also put out a terrific 55-page electronic newsletter every month.

Do you follow hurricanes and tropical storms? During the hurricane season (May to October) many Web sites contain a plethora of information, from satellite maps to predicted storm routes. You can even download demo software for your own hurricane tracking. Visit the FEMA homepage for demographics of storm devastated areas and even instructions on how to file a storm damage insurance report. If you monitor the flight of NOAA aircraft, as they repeatedly traverse the wall of a hurricane, flying in and out of its eye while sending meteo data back to the



NASA Information Services via World Wide Web

Hurricane Center in Miami, you can obtain the daily flight plans, including flight times, base of operation, reconnaissance areas, and other mission details.

NASA maintains several Web sites, complete with past mission photos/movies and current mission press kits. Visit the Jet Propulsion Laboratory in Pasadena for detailed mission data, animation, and photos from the various orbiter spacecraft. Check out the deep space objects that the orbiting Hubble telescope is currently viewing. Using an inexpensive video camera, such as the Connexix Quick Cam and Cornell University's CUSeeMe software, log into one of their reflector sites. Here you'll find video and sound from the NASA Select Satellite system and, during actual shuttle missions, live on-site broadcasts.

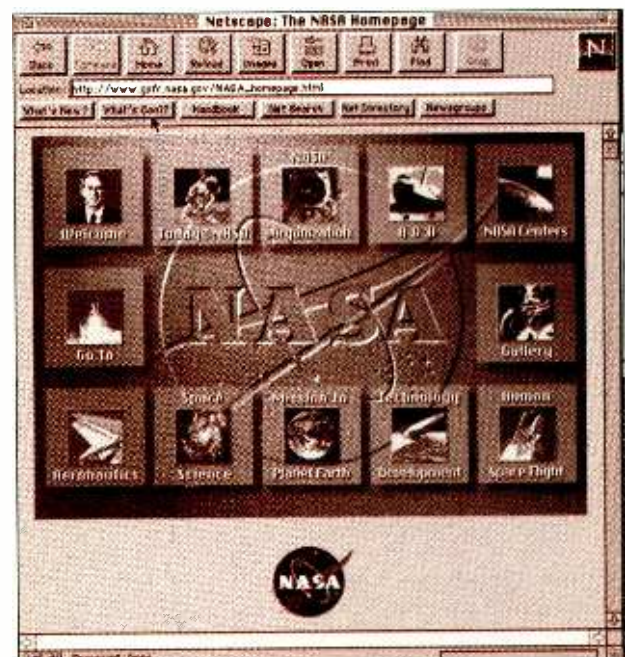
Visit AMSAT's (Radio Amateur Satellite Association's) Web page. Obtain

information on joining AMSAT, the latest Keplerian elements for satellites, and even free satellite tracking software for both the PC and the Mac.

If you monitor the "high seas"—whether voice or digital—several Web sites may be of interest. The complete maritime database of the International Telegraph Union (ITU) in Geneva is available for query. Search by call sign or vessel name. The use of wildcard search criteria will match partial identifications and help you narrow your search to a specific vessel. At other sites, the sailing schedules of cruise ships and detailed information on research vessels can also be found.

For aero monitors, visit the homepages of hundreds of scheduled and non-scheduled airlines, aircraft manufacturers, and related aviation services. Browse through the exhibits of the Smithsonian's Air and Space Museum or the Air Force Museum at Wright Patterson AFB.

If you're a military buff, visit the homepages of the U.S. Air Force, Navy, Army, Marines, and U.S. Coast Guard. You'll be surprised at the amount of information and



The Flightline Aviation Archive

photos available from these locations. Have you ever monitored US Navy MARS traffic from McMurdo base? Check out their homepage for candid look at coping with life in the Antarctic. Do you monitor the Mystic Star Net (SAM)? Check out the detailed information on Air Force One. *Jane's*, the largest publisher of military information, maintains data from their 26 major annual publications on the Web. If you monitor French Military digital traffic, check out *Jane's Fighting Ships*,

complete with vessel photos.

And last, but certainly not least, visit the Grove Enterprises homepage, place an order for equipment and books, send e-mail to column editors of *Monitoring Times* and *Satellite Times* or query the Grove technical support staff.

All this and more is yours to discover on the WorldWide Web.

SOME SELECTED WEB SITES

<http://haas.berkeley.edu/~seidel/airline.html>
Airlines on the WEB (Largest Collection of Sites)

<http://www.cyberspace.com/mbrunk/aviation.html>
The Flightline Aviation Archive

http://adswwww.harvard.edu/GA/go_servers.html
General Aviation Servers

<http://aviation.jsc.nasa.gov>
NASA Aviation Server

http://www.gsfc.nasa.gov/NASA_homepage.html
NASA Information Services via World Wide Web

<http://ceps.nasm.edu:2020/NASMPage.html>
Smithsonian National Air & Space Museum Homepage

<http://www.esrin.esa.it/>
European Space Agency

<http://www.fema.gov/fema/trop.html>
FEMA Tropical Storm Watch

<http://cirrus.sprl.umich.edu/wxnet/tropical.html>
WeatherNet: Tropical Weather Products (NOAA Aircraft)

<http://146.245.2.151/rec/air/museums/oh/usafm.html>
United States Air Force Museum (Wright Patterson AFB)

<http://www.indstate.edu//CU-SeeMe/index.html>
CU-SeeMe Desktop Videoconferencing

<http://cu-seeme.cornell.edu/>
CU-SeeMe Welcome Page (Free Software)

http://netgopher.lerc.nasa.gov/NASA_TV/NASA_TV.html
NASA Television on CU-SeeMe

<http://www.realaudio.com/index.html>
RealAudio Homepage (Free Software)

<http://www.realaudio.com/othersites.html>
RealAudio Partner Sites

<http://www.ic.gov/94fact/fb94toc/fb94toc.html>
The CIA World Factbook 1994

http://diu.cms.udel.edu/ships/ship_menu.html
Research Ship Information and Cruise Schedules

<http://www3.itu.ch/MARS/>
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The BBC Home Page

<http://info.cern.ch/hypertext/DataSources/WWW/Servers.html>
World-Wide Web Servers: Summary

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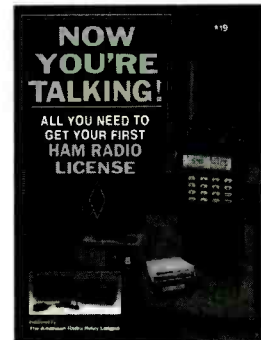
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MT

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Q. What does the new FCC spectrum "refarming" plan mean to radio hobbyists? (Numerous inquiries)

A. Nothing. No existing licensees are being forced off the air or into strange bandplan spacings. Spectrum refarming simply acknowledges that licensees are running out of room, so the FCC is merely adding new channels between the old. This has been done several times in the past.

By August 1, 1996, newly-certified two-way radios must be capable of 12.5 kHz steps, and by January 1, 2005, 6.25 kHz steps, in bands presently allowing 25 kHz intervals. Many services will remain on 25 kHz intervals, especially if they conform to narrowband technology to keep their bandwidths small to avoid interfering with co-channel users.

Q. I recently heard a TV station audio identification as "Warner Brothers WB61" around 503 MHz

on a tunable radio. Is that likely? (Robert E. Brock, Phoenix, AZ)

A. The callsign WB61 indicates a UHF-TV licensee on channel 61, 757.75 MHz audio. Perhaps you were hearing a retransmission, possibly a translator (repeater), on channel 18 or 19 (499.75 or 505.75 MHz) on that little portable radio. Just as likely, however, is that the inexpensive portable is rife with images and is succumbing to the powerful transmission of the local transmitter on another frequency.

Q. I need a 13.8 volt, 20 amp power supply; can I connect two 10 amp power supplies in parallel? (Michael Oreskovic, Burlington, Ont)

A. Yes, if the two supplies are identical, equal current will be drawn from each power supply. If one power supply is inadequate, its current flow will be limited by its internal resistance which drops its terminal voltage

below 12 volts, then all current will be drawn from the other power supply. When excessive current drain from the huskier power supply drops its voltage down to the voltage of the other supply it, too, resumes current delivery. But by this time, current demand exceeds the ratings for both power supplies.

Q. Will an antenna tuner (transmatch) help reception of shortwave signals as it does transmission? (James Watson, Woodbridge, VA)

A. No. On transmission, a transmatch assures minimum reflection losses in the transmission line by matching the relative impedances of the transmitter and the antenna system, but on reception, impedance mismatches are of little consequence on the shortwave bands. The slight—probably imperceptible—attenuation which may be experienced will reduce both signal strength and received atmospheric noise (background hiss and static) the same amount, so the net result is that you will still have the same signal-to-noise ratio; slightly turning up the volume control will restore the original reception level.

Frequency-tunable preselectors, however, are another matter. They are not impedance matchers, they are frequency-adjustable "gates," allowing only a narrow swath of frequencies through, while attenuating all frequencies outside that range, thus reducing strong-signal overload and improving the receiver's RF selectivity. Such devices would be excellent for scanners as well, but have never been available to the hobbyist.

Q. Are there any noise filters that can be added to my mobile scanner that will reduce electrical noise on all frequency ranges? (Alan Ammann, Raleigh, NC)

A. Your car generates three basic kinds of electrical noise: (A) ignition, (B) alternator, and (C) microprocessor. Ignition noise can only be corrected by reducing spark radiation (resistor plugs, resistor leads, shielded leads, shielded distributor); alternator whine is easily curbed with a filter choke and bypass

Bob's Tips of the Month

PRO 2042 vs. PRO 2035: Is There a Difference?

Radio Shack's PRO-2035 desktop scanner held much promise, but was replaced in less than a year by the upgraded PRO 2042. Is the newer unit that much better? Yes. Let's take a look at the improvements:

- Tuning speed increases by a factor of three when the tuning knob is rotated rapidly
- Empty memory channels are automatically skipped during the scan function
- Up to 200 frequencies can be locked out in search and scan functions
- Duplicate frequencies are not memorized in the automatic search/store routine
- Attempted duplicate frequency entry alerts the user to ignore or store the frequency
- Frequencies in any memory bank can be sorted in ascending or descending order
- An amber backlight increases display contrast for easier visibility

It is reassuring to know that Radio Shack has respected customer criticisms of a product by improving it. This type of response by a company adds immeasurably to its credibility. A similar concession was exercised by Uniden when they terminated production of their widely-promoted BC2500XLT hand-held and BC8500XLT desktop/mobile scanners, replacing them with the improved BC3000XLT and BC9000XLT.

This new image of approachability is evidenced by a noticeable drop in negative comments from scanner enthusiasts who formerly expressed strong dislikes of one or the other of these two leading companies. With such improved customer relations, the customer and the manufacturer both come out winners.

capacitor in the DC power line; microprocessor noise can sometimes be alleviated by adding bypass capacitors to the lines on the control box or by shielding the box itself.

Q. Have you heard of the Shinwa remote-controlled scanner? I have one; are they any good? (Tim Yeany, Rimesburg, PA)

A. Manufactured briefly in 1991 by a prominent Japanese land-mobile radio company, the Shinwa SR-001 was reviewed in the September 1991 issue of *MT*. It featured no-gap, 25-1000 MHz frequency coverage, 200 memory channels, and a bright fluorescent display. It was a hefty, three-pound mobile unit with unfamiliar legends ("skip," "band scan," "timer," and "groups" instead of lock-out, search, delay, and banks) and busy panel (26 button, jacks and keys; 36 keys on the remote control; and 25 separate icons on the display!). The factory preset frequencies followed the European bandplan, requiring the American user to defeat it.

It worked well but it was pricey at \$479 and was not received well by the American public; therefore, it was quickly discontinued.

Q. The November *MT* had an article entitled, "Understanding Trunk Radio Monitoring Laws" which said that Larry Gass was modifying Standard brand scanners; where can I buy one of these scanners? (Joseph Thornton, Ft. Myers, FL)

A. Read the article again. Gass was modifying Standard brand (and other) trunked radios; that is, two-way transceivers, not scanners (which Standard does not make).

Q. I have seen recent ads for 25 channel cordless phones. All I was aware of were the ten 46/49 MHz channels; where are the new frequencies? (Marino Wilson, Milford, CT)

A. The 15 new frequencies were listed in the

June 1995 issue of *MT* on page 6, and are all in the 43-44 MHz range.

Q. Some local experimenters are developing CTCSS squelch tones of ultrasonic frequency (200 kHz on the 450 MHz band) so they cannot be heard. What is the frequency limit of such tones? (Dennis Kruger, North Platte, NE)

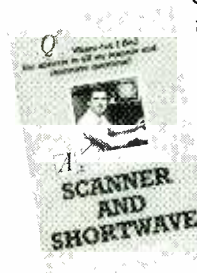
A. For narrowband modulation, voice frequencies (3 kHz) is about it. They aren't modulating at 200 kHz legally at 450 MHz unless they are using very low power on a purely experimental basis. The presence of 200 kHz tones would dramatically expand bandwidth to 1 megahertz or so, way too wide for standard communications purposes and even broadcast specifications. A receiver for this system would suffer considerable interference from co-channel users.

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Is There Room For More?

As I drafted a recent editorial for our sister magazine, *Satellite Times*, it occurred to me that the dilemma faced by the satellite monitoring enthusiast is exactly the opposite from what we shortwave and scanner hobbyists face. While the satellite experimenter has a hard time finding reasonably-priced receiving equipment and accessories, there is a boundless supply of such hardware for the lower-frequency terrestrial monitor. But that isn't all good news.

Choosing top-performing receivers, preamplifiers, preselectors, antennas, computer software, databases, decoders, converters, and other pertinent products and publications is often a bewildering task. Just because a product appears in print doesn't mean that it's a good product, nor that it is any better or worse than its competitors.

Try to find a rating system that is universally acceptable for even a simple accessory. Should a shortwave preselector have two selectable antenna inputs? Should it be amplified? Battery or AC power? What frequency range should it offer? Transmit capability as well as receive? How about gain, dynamic range, and noise figure?

To complicate the formula even further, one hobbyist's assessment of a product's worth will differ from another's. Hams will need the transmit capability. Longwave DXers will want extended low-frequency coverage. Apartment confinees will need amplification to overcome antenna restrictions. And the beat goes on.

In this vast cornucopia of equipment, accessories, and publications, is it possible that there may still be products we have overlooked that radio monitoring hobbyists—and professionals alike—really need? Is the manufactur-

ing arena really so saturated that there is no room for new players or even new merchandise? Have you recently wished you could find a something-or-other and looked everywhere, only to discover there wasn't one?

For instance, I often auctioneer for local organizations, and last week I thought it would be nice if I had a wireless PA system so that I wouldn't have to hold a mike while hefting the merchandise, or tripping over the cord as I moved from table to table. I checked the Radio Shack catalog and other merchandisers as well, only to discover there doesn't seem to be a wireless PA around. Anyone else want one?

We are in an ironic era: rapid technological change mixed with a sour economy. Just when the market needs an infusion of new products, few innovative manufacturers feel they can afford radical upgrading of their product lines. Consumer electronics have been dominated for more than 20 years by offshore manufacturers; even though their price-competitive edge has eroded, the damage to our industry caused by this domination has created a vacuum in the domestic manufacturing marketplace.

The "me too" mentality of Oriental products flooding our shores has created a false sense of market saturation. Not every consumer desire can be filled by 10,000 barely-distinguishable models of pocket calculators, wristwatches, TV sets, and AM/FM portables. Nor can every scanner need be filled by copycat radios with dreadful intermod, poor selectivity, restricted frequency range, and limited modes. And how about antennas, preamps, converters, and so on?

What products, accessories and publications would you like to see? Is there room for improvement? I'd like to hear from you.



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