

WOODINVILLE
6400 WALTRY ROAD
MILLER, H. E. *
2692
***** 3 DIGIT PRE *****

MONITORING TIMES

Zambia's Native Drum: Shortwave Radio

Wildlife Tracking in the Everglades
Old Radios Never Die
Plus reviews of the
Sangean ATS808,
Regency INF10,
GRE Super Amplifier



Your Own Radio Station
Legal and Only \$89.95





FRANKIE FREQFINDER FINDS FREQUENCIES FAST NOW THAT HE HAS AN OPTOELECTRONICS FREQUENCY COUNTER

Frankie knows that only a frequency counter will give him a transmit frequency in seconds! And smart fellow that he is, Frankie also knows that Optoelectronics handheld counters are the most sensitive and have the greatest range. With several models and a complete selection of antennas to choose from, Optoelectronics counters make scanning more fun!

MODEL 1300H/A 1MHz to 1300MHz range. Our lowest cost and most popular counter. Extremely sensitive from 27MHz up through 500MHz. \$169.

MODEL 2210 10Hz to 2.2GHz. Wider frequency range than the 1300H/A, and more sensitive above 450MHz. Great general purpose counter for every application, audio through microwave. \$219.

MODEL CCA 10MHz through 550MHz. Designed for counter surveillance, (bug detection), features RF detector LED with variable threshold adjustment. Maximum sensitivity in the range where RF bugs operate. \$299.

All counters include NiCad Battery Pack and AC Charger/Adapter.

MODEL 2600H 1MHz through 2.6GHz. New, 10 digit LCD counter with 16 segment bargraph that responds to RF signal/level. More resolution, reads up to 150MHz direct count (1Hz displayed in 1 second). 4 gate times, two prescalers, hold feature, low battery indicator and more. Available April. \$325.



Model 1300H/A

Model 2600H

COUNTER ANTENNAS

MODEL TA100S - General purpose wide band antenna. \$12.

MODEL RD11 -11 meter through 2 meter rubber duck. Best antenna for 27 - 100 MHz. \$29.

MODEL RD100 -2 meter (150 MHz) narrow band rubber duck. \$20.

MODEL RD800 -best 800 - 1300MHz antenna. Peak resonance in cellular phone band. \$35.

SAVE \$11!!
PACKAGE OF 3 ANTENNAS MODEL ANT/PACK-1 INCLUDES TA - 100S, RD11, AND RD800 for \$65.

ORDER FACTORY DIRECT. VISA, MASTER CARD ACCEPTED.

OPTOELECTRONICS INC.

5821 N.E. 14th Avenue, Fort Lauderdale, Florida 33334
1-800-327-5912 • FL (305) 771-2050 • FAX (305) 771-2052



MONITORING TIMES

The Mouse that Roared by Karl J. Zuk

6



Just about everyone who enjoys monitoring the radio has also toyed -- perhaps in secret -- with the idea of having their own radio station. Some express this urge by maintaining full-time careers in the broadcast media. Others take up ham radio. And still others take to the airwaves illegally, becoming pirate radio operators. Now it's your turn.

For a short period, before the FCC begins to formally assign stations, you can put your own station on the air in the newly expanded AM band. It's legal, there's no license needed and your

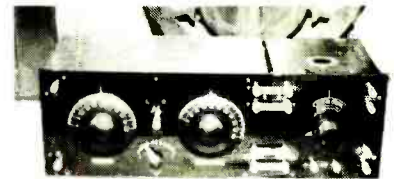
transmitter will cost under a hundred bucks. Join *Monitoring Times*' American BandScan columnist as he shows how you, too, can have the DX opportunity of a lifetime.

Old Radios Never Die by Everett Slosman

12

As remarkable as some of today's hi-tech receivers are, there's nothing that can capture the true flavor of our hobby like an old radio. Sure, they may not have many of the bells and whistles of their late model colleagues -- they may be primitive by comparison - - but they are the soul of this hobby.

Ev Slosman has been traveling the radio flea markets and shows of America in search of these receivers and their fascinating stories. and meet the machines that made our hobby what it is today.



Take a trip into the past

Wildlife Tracking in the Everglades

by Robert Wyman

18

Wildlife management is a science and profession in South Florida, where a variety of environmentally-sensitive species exist in proximity to one of the fastest-growing urban areas of the country. In Everglades National Park and a number of other sites, scientists can study a living laboratory of wildlife and habitats.

In South Florida, government and private resources have been teamed to accomplish the wildlife-monitoring tasks. Jim Wyatt, owner and operator of James Wyatt Enterprises, Inc., is a private contractor to the U.S. Department of Interior/National Parks Service (NPS) who uses radio extensively in his work and who flies Cessna 172 and 182 aircraft on a variety of wildlife and environment-related missions.



ON THE COVER: African village scene. Photo by Benjie Thomas.

Zambia on Shortwave by Colin Miller 10



Drums used to serve as the communication link for African tribal society. But in this day and age, how do you draw together a nation the size of Texas whose citizens speak 70 different native languages? How do you bring it into modern society without losing

its cultural identities? The answer to both questions is -- through Radio!

The BBC's Pamela Creighton 22

She is one of the better known voices on the BBC World Service: Pamela Creighton. You may know her as one of those measured voices of reason, reading the news from Bush House in London. But to her colleagues, she is "Crisis Creighton."

Only the second woman to read the news, her career nearly ended when she took a very close World Cup soccer game off the air just moments before the winning goal was scored. She almost didn't live down the embarrassment. Meet this superb journalist on page 22 of this issue of *Monitoring Times*.

And more . . .

Equipment reviews include Larry Magne's review of the Sangean ATS808, while Bob Grove puts the Regency INF10 and the GRE Super Amplifier through their paces.

If it's a little too cold yet to think about outside antennas, Rich Arland presents a homebrew active antenna that will get you going without putting a foot out the door. On the other hand, if you are looking for an outdoor antenna, why not try Clem's "Quickie Quad" for high gain and no pain?

DEPARTMENTS

Letters	3	Outer Limits	52
Communications	4	Below 500 kHz	54
Shortwave Broadcasting	24	Program Guide	56
Utility World	28	Frequency Section	65
The Scanning Report	32	Magne Tests ...	86
What's New?	36	Scanner Equipment	88
Uncle Skip's Corner	38	Catalogs	90
The Federal File	40	DeMaw's Workbench	92
High Seas	42	Experimenter's Workshop	94
On the Ham Bands	44	Antenna Topics	96
The QSL Report	46	Ask Bob	98
Reading RTTY	47	Convention Calendar	101
Satellite TV	48	Stock Exchange	102
American Bandscan	50		

**MONITORING
TIMES**

MONITORING TIMES (ISSN: 0889-5341) is published monthly by Grove Enterprises, Inc., Brasstown, NC, USA.

Address: P.O. Box 98, 140 Dog Branch Road, Brasstown, NC 28902
Telephone: (704) 837-9200
FAX: (704) 837-2216 (24 hrs)
Subscription Rates: \$18 in U.S. and \$26 elsewhere

STAFF

Publisher
Bob Grove, WA4PYQ
Managing Editor
Larry Miller
Associate Editor
Rachel Baughn
Subscriber Services
Beverly Berrong
Advertising
Beth Leinbach
Dealerships
Judy Grove

Editorial Staff

Frequency Manager Greg Jordan
Frequency Monitors Richard Keen
Colin Miller
Program Manager Kannon Shanmugam
Program Monitors Jim Frimmel
Dale Vanderpoel
Reading RTTY Jack Albert, WA9FVP
Uncle Skip's Corner T.J. Arey, WB2GHA
Experimenter's
Workshop Rich Arland, K7YHA
Plane Talk Jean Baker
DeMaw's Workbench Doug DeMaw
SW Broadcasting Glenn Hauser
High Seas James R. Hay
Scanning Report Bob Kay
On the Ham Bands
Propagation Report Ike Kerschner, N3IK
Magne Tests... Lawrence Magne
Federal File Rod Pearson
Satellite TV Ken Reitz, KC4GQA
Outer Limits John Santosuosso
Antenna Topics Clem Small, KR6A
SW Broadcast Logs
QSL Corner Gayle Van Horn
Utility World Larry Van Horn, N5FPW
Below 500 kHz Joe Woodlock
American Bandscan Karl Zuk

Correspondence to columnists should be mailed c/o Monitoring Times. Any request for a personal reply should be accompanied by an SASE.

Second class postage paid at Brasstown, NC, and additional mailing offices.

POSTMASTER: Send address changes to Monitoring Times, Post Office Box 98, Brasstown, NC 28902.

LETTERS

Bad Times - Great Radio

"I read with great interest your article concerning disaster planning," says David Pickett of Sharon, Massachusetts.

"Several years ago," David continues, "hurricane Gloria ripped through New England, bringing with it the potential of doing great damage. Not knowing how long we would be without power, or how many batteries I would need, I parked the car where nothing would fall on it and ran 16-gauge zip-cord from the battery into the house.

"That gave me all the power I needed to run my Kenwood R-1000 receiver and a small black-and-white television. Add to that a small kerosene space heater (on which we could also heat food) and we were set for the duration. When the power finally went out, it had no affect on us. I was able to follow all the emergency broadcasts without interruption!"

"You know," concludes David, "major weather disasters aren't bad when you're ready for them."

Bill Carson of Union City, New Jersey, wrote a similar letter. "A neighbor called to let me know that the National Weather Service had declared a severe storm warning for our area. Looking outside, sky was filled with roiling black clouds. It looked serious indeed."

The first thing Bill did was move his car closer to his house so he, too, could tap some of the electricity from his car. "Fighting the wind, I strung cable from the car, across the drive and into the house. I carefully set up the radio, brought in some candles, made sure I had matches, and prepared to settle in.

"In the end, the storm passed without so much as a whimper. The lights didn't even go out. But a large oak tree fell on the car, totalling it. If I had of left it where it was instead of

trying to hook it up to my radios, I wouldn't be taking the bus today."

Pete Kemp is quite a whiz when it comes to AM broadcasting. We've long admired his work with the National Radio Club (P.O. Box 118, Poquonock, CT 06064). His contributions on AM broadcasting are so comprehensive as to be incredible. But there's more to Kemp than AM radio and the NRC. He's also the coordinator for BEARS, the Bethel Educational Amateur Radio Society, a part of the Bethel, Connecticut, Middle School.

The BEARS, it seems, are very excited about the message they received from Soviet Cosmonaut Aleksander Volkov, confirming the club's on-air contact with the orbiting space station MIR last year. You and I know the "message" as a QSL but the kids are excited nonetheless.

What a great idea. And our thanks to Pete Kemp for getting the word out about radio.

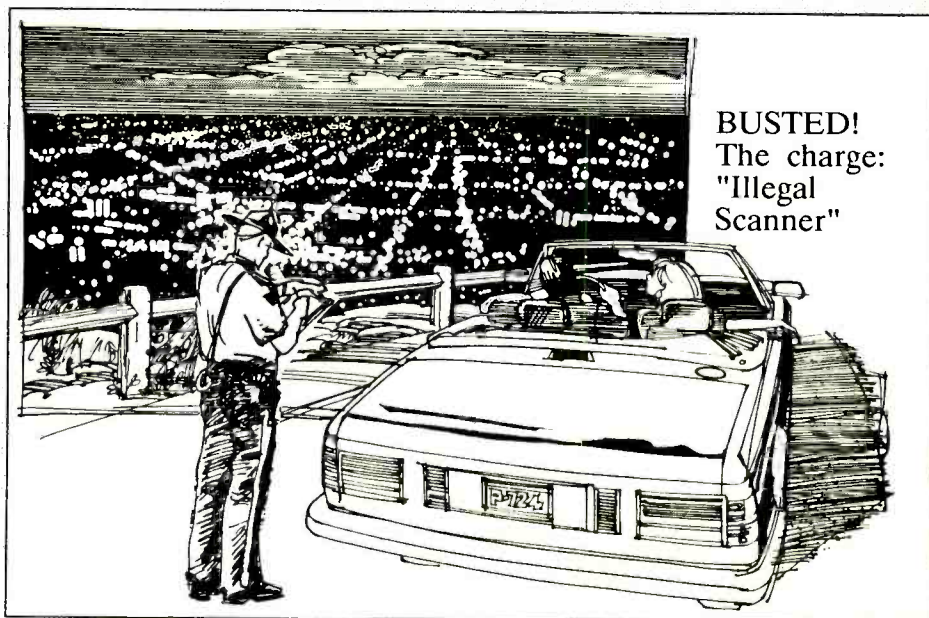
A while back, the papers down in Florida were buzzing about that state's restrictive scanner law. It seems that scanning in private homes

is allowed, as is mobile scanning by licensed hams, radio and TV stations, and emergency personnel. Prohibited is the use of scanners in motor vehicles, business establishments and newspaper offices. It's that last one that got reader William Blackstone of Sarasota, Florida, up in arms.

"I worked at the Sarasota *Herald Tribune* during the 1950s. For 21 years, I was a newsphotographer in Columbus, Ohio. During this time, I always had a scanner in my car. Some of the earlier ones were tunable and without a squelch circuit but all were valuable to my profession.

"I worked closely with law enforcement. They knew of my radio equipment and I never had any problems. Over the years, I've even been able to help the police through my monitoring. Why, then, would the law permit radio and TV news people to have scanners in their cars but not newspaper reporters and photographers? You know, it almost seems that scanners are getting like handguns: only the bad guys will have them."

Please turn to page 100 for more "Letters"



New FM Band Goes Kaput

The FCC has reaffirmed its earlier decision to reject the concept of establishing a second FM band. The frequency range, from 50 to 54 MHz, was to be carved out of the amateur radio 6 meter band and reallocated to a new FM broadcast band. Known among supporters as "FM2," the new frequency range was designed to provide a new home for limited time and low-power AM stations and some low-power FM stations.

The FCC, in making their ruling, stated that "the petitioner has not provided a satisfactory demonstration that amateur operations at 50-54 MHz could be accommodated elsewhere in the spectrum or that broadcast operations in this band would not cause interference to international amateur communications."

The original petition for the establishment of FM2 was filed last year by Lawrence J. Tighe, Jr, owner of 1000 kHz WRNJ-AM and himself a General Class amateur radio operator.

Cuba Braces for TV Marti

Cuba says that it has "taken steps" to prevent the United States from broadcasting television programs to Cuba. Cuban Foreign Minister Isidoro Malmierca, in a letter to U.N. Secretary General, Javier Perez de Cuellar, said that the pretexts used by Washington to set up the TV station are as "childish as they are cynical."

Malmierca also stated that the U.S. economic blockade on Cuba has already prevented his country from buying modern transmission equipment. He did not explain the "steps" that his nation will take.

According to sources in Washington, TV Marti will use "advanced communications technology," allowing the station to be received in Cuban homes without the need of antennae and will supercede "one or more" television channels in Cuban territory. TV Marti could be on the air by the time you read this. If so, be sure to

listen in on the AM band for examples of Cuban retaliation.

Ham Operator Charged with Piracy

The FCC is at it again. This time, a licensed ham radio operator in West Taghkanic, New York, was fined \$1,000 for illegally broadcasting on the AM broadcast band. The FCC had received a complaint from the New York State Broadcasters Association that an alleged unauthorized station was rebroadcasting U.S. Armed Forces Radio Network programs and "news" from the John Birch Society on 1000 kHz.

The unauthorized station, which an FCC press release says was operated by Frederick Stark, KA2YLZ, apparently interfered with the reception of a licensed station on 1010 kHz.

Long Distance, Please

On Christmas morning, police and fire dispatcher Mark Wilkins was on the job, hoping for a safe and uneventful holiday. Occasionally, his thoughts drifted toward home, 15 miles away in Quincy, Massachusetts. Half a world away, Max Van Arnhem was listening.

With an ear to his four receivers, the Huissen, Netherlands, resident successfully heard Wilkins dispatch an ambulance for a medical emergency at the Norwell Gardens Senior Citizens center.

"At the given time, I heard a male dispatcher after an alert-tone: 'This is KCG933 to all stations to receive us, responding to a medical aid at 399 Washington Street, that is 399 Washington Street, apartment 7A, time of tone 9:46,'" reads the reception report. The report was accompanied by a cassette recording of Wilkins' voice.

Said Fire Chief George Cavanagh, "It's a small world." Yes, chief. With radio it is.

New Spy Proof Radio Communications

According to Vice Admiral Jerry Tuttle, the Navy's command and control chief, the U.S. Navy is trying to prevent a recurrence of the Walker spy disaster by rapidly deploying a new generation of computerized message scrambling machines.

The scramblers, also known as cryptological machines, translate radio messages into seemingly chaotic lists of numbers -- lists that are theoretically impossible to understand when intercepted. According to Defense Department officials, only friendly forces possessing a secret numerical key and a scrambling machine can translate the messages back into the original message. The secret numerical key is electronically fed into the machines, thus bypassing potential spies.

City Penalized for Not Fixing Radios

A judge placed the financially troubled city of East St. Louis on one year's probation for potentially endangering its police officers. The city was convicted of reckless conduct for not repairing radios in squad cars. It was the city's second conviction in three months and only the third known against a city in Illinois.

According to the State's Attorney for St. Clair County, "The City has made a minor effort to improve the situation" adding that "many officers have bought their own radios." The maximum fine for the conviction is \$1,000.

A Shortwave Revolution

During his U.S. tour last November, Lech Walensa insisted on attending a Washington conference sponsored by Radio Free Europe and Radio Liberty. There he was asked how important the U.S.-funded radio networks had been for the cause of Polish freedom. He replied with a

COMMUNICATIONS

simple question: "Would there be land and earth without a sun?"

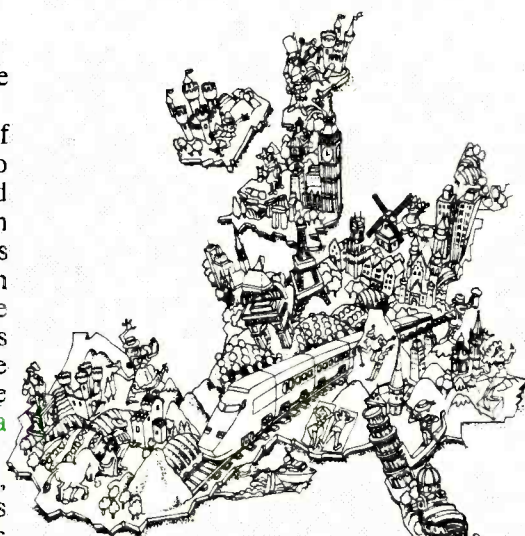
For almost 40 years, the "sun" of Radio Free Europe and Radio Liberty has illuminated the darkened lands of Eastern Europe. Western broadcasts were often the only ones people behind the Iron Curtain listened to. Estimates are that the four main Western broadcasters (RFE/RL, Voice of America, the BBC and West Germany's Deutsche Welle) reached 75 million listeners a week in the Soviet Union alone.

Throughout Eastern Europe, foreign broadcasts were always trusted more than the domestic media. When East Germany's Communist regime announced that it was opening the Berlin Wall, hardly anyone tried to cross over. But they moved hours later when East Berliners heard a Radio Free Europe-affiliated station report that a couple had crossed over.

But nowhere was the impact of Radio Free Europe greater than in Romania. The Orwellian nature of the Romanian media meant that an estimated 88% of the adult population listened to international radio. "Everyone I know learned about the changes in Eastern Europe from radio," university student Juliana Petrescu told us. "It gave them courage."

The good that U.S. broadcasts can do for oppressed peoples isn't over by any means. Radio Free Europe can now play an important new role in the countries of Eastern Europe that are throwing off communism: It can help them understand the more routine details of political and economic freedom. A growing number of listeners are asking for information on the practical aspects of building democratic institutions, creating a free press, and nurturing a free economy.

The \$200 million a year or so that the U.S. spends on them to broadcast news and culture in 22 languages is surely one of the most productive Cold War investments it ever made. It is an investment that should continue so long as the peoples of the Soviet Union and Eastern Europe are



*Radio Free Europe,
a source of information
and hope for so many years,
may soon be able to say, "Mission
accomplished."*

still striving for full national sovereignty and human rights.

-- *The Wall Street Journal*

Radio Free Europe Happily Prepares to Sign Off.

Radio Free Europe's success at nurturing freedom in Eastern Europe could put the broadcasting service off the air, according to publishing executive Malcolm Forbes, Jr. Forbes was just reappointed by President Bush to head the Board for International Broadcasting, the parent organization of RFE.

"If in the coming years," said Forbes, "certain conditions are met, we can say with pride, 'Mission accomplished. You don't need us anymore.'" Forbes added that in some nations, such as Hungary, Poland and Czechoslovakia, Radio Free Europe's job could be completed in one to five years.

But Forbes said that the most important work is still to come for Radio Liberty, a similar service broadcasting to the Soviet Union.

"In the Soviet Union, you have numerous nationalities; you have a significant portion of the population

wanting greater elbow room; you have an economy that's much worse than in Eastern Europe," he said. "The Soviet Union is in for some very rough sledding."

Munich-based Radio Free Europe and Radio Liberty serve as "surrogate" radio stations for the 11 nations tuned in, Forbes said. "They play what you'd have in each country if it were 'free.'"

-- *The Star Ledger*

Thanks to Dave Alpert, New York, New York; Rene Bordo, Sunnyvale, California; Torkel Clark, Chico, California; Bob DiCorcia, Franklin Park, Tom Dotset, Washington, D.C.; New Jersey; Dick Keough, Braintree, Massachusetts; Pat Lacey, Phoenix, Arizona; Thomas McKeon, Indianapolis, Indiana; Michael Prosis, Daisy, Maryland; Zack Schindler, Ferndale, Michigan; Justin St. James, Indiana, Pennsylvania; Robert Turner, Yonkers, New York.

SHORTWAVE NAVIGATOR

Interactive - Customizable - for the SWL
Version 2.0 now shipping

Version 2.0

For delivery outside North America, please add \$5⁹⁹

\$49.50

The WRTH Industry Award
Most Innovative Software
1988

"...one of the best graphic connections we have seen so far between the computer and the radio."

Jonathan Marks
The World Radio TV Handbook 1989

- For the Macintosh
- A HyperCard 1.2 program
- sorts w/external commands
- Includes one free upgrade!
- Write for complete, graphic details (Quick Help Guide)
- Hard disk drive required

DX COMPUTING

232 Squaw Creek Rd.
Willow Park, TX 76087

(817)
441-9188

THE MOUSE THAT ROARED

by Karl J. Zuk

The AM broadcast band is expanding to 1700 kHz, and you can transmit on it, legally, without a license! Your signals may be heard hundreds of miles away, and it will cost you less than a hundred dollars to get on the air.

If it sounds too good to be true, it's not! Dozens of people in North America are already doing it, and you can join in the fun today!

Become a MedFER Operator

Recently, the Federal Communications Commission updated their rules and regulations allowing the MedFERs (Medium Frequency Experimental Radio Stations) to operate from 510 to 1705 kHz. For the first time, experimenters can transmit in the nearly unused 1610 to 1705 kHz band where, almost nightly, signals

can be heard from amazing distances. Until the FCC begins to authorize commercial broadcasters on these frequencies, it is a DX paradise that awaits your visit!

Play by the Rules

The FCC has given you an inch. You have to learn how to make it go miles and miles! The rules are pretty simple: The power input to your final tube or transistor cannot exceed 100 milliwatts. That's only one tenth of one watt.

Your antenna can be no longer than three meters (about ten feet), which includes the antenna, the transmission line, and any ground lead, if you use one. Almost any type of modulation is allowed: CW, RTTY, AM, FM, single sideband, frequency shift keying, and even TV. The only prohibited type is Class B, known as "damped waves."

In the 1610 to 1705 kHz range, your station's field strength should be no more than 14 microvolts per meter at a distance of 30 meters. If your transmitter and antenna meet FCC specifications exceeding this limit is almost impossible.

Finally, a label must be affixed to your rig which reads: "This device complies with Part 15 of FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference and (2) his device must accept any interference received, including interference that may cause undesired operation."

If you construct your own transmitter, add these three sentences: "I have constructed this device for my own use. I have tested it and certify that it complies to applicable regulations of FCC Rules Part 15. A copy of my measurements is in my possession and is available for inspection."

Then, sign and date the form, and post it on the transmitter. In Canada, you get an extra bonus: there are no restrictions on antenna length.

Karl Zuk:

You Heard:
Medium Frequency (iEDfe)
Experimental Radio
Station "OIP". (iEDfer)
(currently signing 30HH).
Antenna: dipole
Rig: homebrew PANNAIS style.
Time: Oct. 2/1988: 0200 EST.
Power: 100 mW max.

This was a special message directed at
the ODXA's concurrent dx-pedition.
Frequency: 1619.5 khz. Mode: A1 (CW).

How far can you transmit on a tenth of a watt? Well, here's the challenge. 30HH's signal reached me from 500 miles away! Beat that if you can...

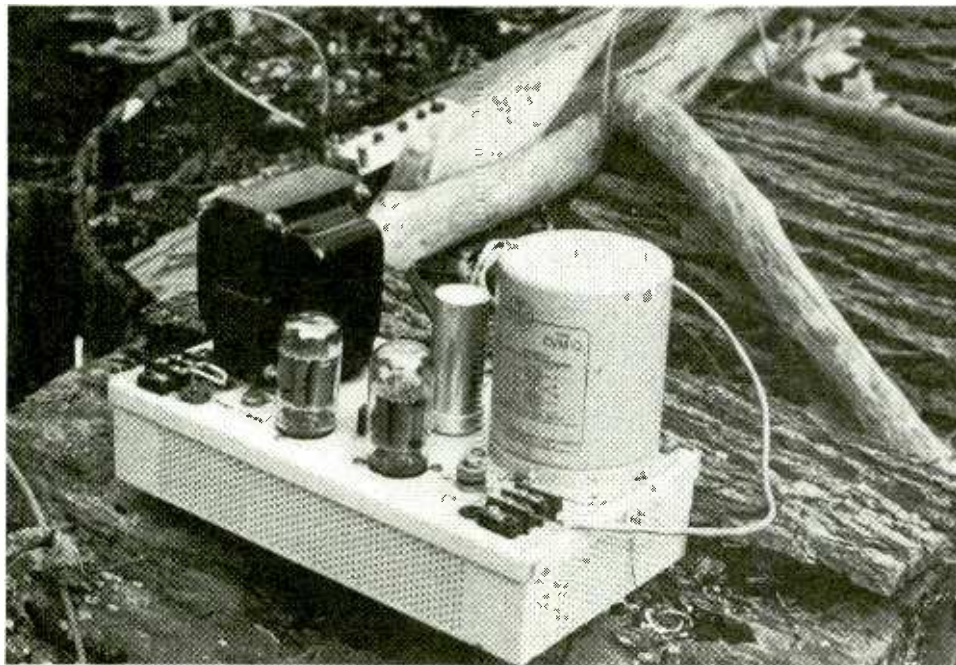
Other frequencies are also available for your experimentation. 160 to 190 kHz is a popular band for unlicensed beacons. Operating on long wave, these are known as LowFERS. Here, the FCC allows one watt input to your finals and an antenna height of 15 meters. These stations also may travel hundreds of miles.

A newly allocated band for unlicensed operation is 13.553 to 13.567 MHz. Your field strength can be 10,000 microvolts at 30 meters, which is roughly the same power as an unlicensed Citizen's Band walkie talkie. Part 15 transmitters can also be operated on the FM broadcast band, but their reception distance is very limited.

For complete details on the new Part 15, order FCC Docket 87-389 by calling 202-857-3800, or go to a local library that serves as a depository for federal documents and review it. Now you know the basic rules. Let's learn some expert strategy.

The Mighty Flea

MedFERs may be flea-powered, but their signals are mighty. Ask Ken Cornell, operator of station KEN in Point



Old carrier transmitters are easily adapted for MedFER use.

Pleasant Beach, New Jersey. Like most MedFER operators, Ken uses Morse Code to send his call sign over and over again, much like long wave navigational beacons. CW is the preferred mode, since it can be received about ten times easier under weak signal conditions.

Repeating your call sign constantly makes your station very easy to identify. KEN is on the air nightly on 1652 kHz from 0200 to 0400 UTC, and has been heard in Ontario and Ohio. Herb Balfour of Richmond Hill, Ontario, is quite proud of his MedFER 30HH. DXers have heard it all over the East Coast, and Herb even received a tentative logging from Norway! Arizonans Greg Farkas (AZ on 1689 kHz) and Rex Wilson (TI on 1650 kHz) have both been heard in Hawaii.

Imagine the feeling of accomplishment and pride these guys must feel! Hundreds of miles on a hundred milliwatts!

There is a lot of skill involved in this hobby. Ken Cornell gives this advice: "Don't expect to set the world on fire with your first attempts at communications on this band. It takes time and patience to



MedFER station Y-12 uses an antenna with a capacitive "high hat" to improve antenna efficiency.

familiarize yourself with your equipment and band conditions. You have to learn to milk the last milliwatt out of your transmitter and antenna as well as improving your receiving techniques."

Ken is the author of *The Low and Medium Wave Radio Scrap Book*, considered the Bible of MedFER operators. It's loaded with easy to build projects that will educate you in every aspect of receiver and transmitter design and operation. His book describes how to improve your receiver's sensitivity, null out noise with specialized receiving antenna designs, and increase your transmitter and antenna efficiency dramatically.

The Final Product

The basic MedFER station begins with a tiny transmitter using just a handful of parts. Another small device will key the transmitter to produce your CW call sign. This can be done with a simple circuit or mechanically.

New York station Y-12 uses a surplus device that came from an old fishing vessel's beacon transmitter. A wheel, with small metal notches, spins slowly as a



Y-12 uses a CW identifier that came from a Japanese fishing vessel.

microswitch rides on its edge. As the wheel travels around and around, the microswitch turns on and off creating a CW call sign. Other versions have been constructed from old clock motors with a notched wheel of masonite and a microswitch to create the same effect.

FCC rules prevent the antenna and feedline from being longer than ten feet, so no one uses a feedline. The antenna is attached directly to the transmitter, and it all stays outdoors. A pair of wires to a

DC power supply is usually all that is connected to your house. Loading coils can be used at the base of the antenna, to increase its electrical length, but they must be enclosed in a shielded chassis to conform with FCC regulations.

The antenna element can be a simple as a whip antenna or a TV antenna mast. Some operators prefer to use a capacitive "high hat" to improve antenna efficiency. One MedFER, Ron Barlow of Cleveland, North Carolina, uses a directional vertical loop antenna for his station, "A" on 1631 kHz.

If you use PVC pipe in the construction of your loading coil or antenna, be sure to only use white pipe. Other colors conduct electricity slightly and will ruin your project!

Keep your antenna from shorting to ground with a glass insulator. A pop bottle works just fine! Remember that time and moisture are your worst enemies. Household silicon seal is a good investment to keep your outdoor transmitter box safe from water damage. Make sure it's almost air tight!

Also remember that an efficient antenna system requires a good ground. The best ground system consists of many long pieces of wire buried in soil meeting

at the base of your antenna resembling the spokes of a wheel. If you don't want to dig up your property, large pieces of chicken wire fence can be laid over your grass and soldered together surrounding the antenna base. Your town's cold water pipe system may suffice, but NEVER use a gas pipe! The results could be explosive!

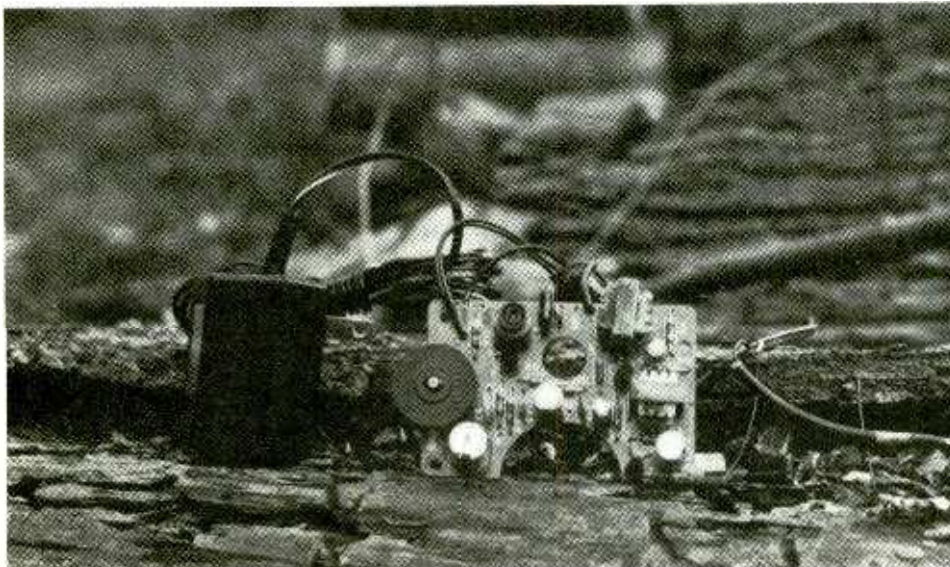
Almost all transmitters are home-brew, but use your imagination! Easy plans are available from several sources, and deluxe kits, complete with parts and chassis, are available, too. Panaxis Productions of Paradise, California, sells a handsome transmitter kit complete with box and power supply for \$87.95.

Old type cordless phones operated just above the AM broadcast band, and are right on frequency to become MedFER transmitters in minutes. Station Y-12 uses a printed circuit board from an old wireless babysitter designed for the AM band. Transmitters like these are very easy to construct and well within the reach of beginners.

Tell Me More!

You can listen to established station operators trade tips every Sunday on the LowFER Net; heard on amateur radio. Join in the conversation, if you are a licensed ham. On the East Coast, try 1983 kHz on Sunday nights around 9 pm EST. On the West Coast, tune in at 7:30 am PST Sunday mornings on 3927 kHz. Both nets operate on single sideband. They'll be glad to welcome you and help you along in your new hobby.

Several newsletters are available that include MedFERS and their operation. For the latest news, listings of active operators, and circuit designs, subscribe to Herb Balfour's *The Northern Observer* (91 Elgin Mills Road West, Richmond Hill, Ontario, L4C 4M1, Canada). Herb collects information and news of advancements and achievements from other low-powered transmitter operators and culls them into a fascinating home-brew magazine.



Y-12's transmitter used to be an AM radio baby monitor.

A Sample of Active MedFER Beacons

Frequency	Callsign	Location
525	T	Sunnyvale, CA
1620	3OHH	Richmond Hill, ON
1620	U	Salt Lake City, UT
1631	A	Cleveland, NC
1634	YOR	Ravenna, OH
1637	RR	San Rafael, CA
1640	DAW	Greer, SC
1648	ABC	Hilton Head Is, SVC
1650	G4	Palo Alto, CA
1650	TI	Kingman, AZ
1652	KEN	Pt Pleasant Beach, NJ
1655	CO	Glenwood Springs, CO
1661	U	San Diego, CA
1687	D	Descanso, CA
1688	TUS	Tucson, AZ
1689	AZ	Tucson, AZ

The Longwave Club of America publishes a monthly bulletin, *The Lowdown*, all about unlicensed beacon operations and reception techniques on long and medium wave. Write to: Bill Oliver, 45 Wildflower Road, Levittown, PA 19057.

The International Radio Club of America is a medium wave only club that publishes *DX Monitor* 34 times a year, and has a wealth of information to offer from their "Goodie Factory." For details write to: IRCA, 6059 Essex Street, Riverside, CA 92504-1599.

Everyone should have a copy of Ken Cornell's *The Low and Medium Frequency Scrap Book*, an excellent primer for beginner and seasoned DXer. It's \$16.95 from Ken at 225 Baltimore Avenue, Point Pleasant Beach, NJ 08742.

Another source for all kinds of discount supplies and a notebook describing numerous useful circuits and hints for low powered operators is Oak Hills Research, P.O. Box 250, Luther, MI 49656. An

SASE will get you their list.

Panaxis Productions, P.O. Box 130, Paradise, CA 95967-0130 distributes a comprehensive catalog of transmitter and antenna kits, do-it-yourself books, and radio accessories for MedFER use. They produce a complete, easy to assemble MedFER transmitter kit, too.

It's easy to become an expert DXer who can make the best of receivers and transmitters. Learn the easy way by experimenting with your own equipment. Become a MedFER!



Credits

Thanks to John Reed and Kevin McKeon of the Federal Communications Commission, MedFERs Ken Cornell, Herb Balfour, and Steve McGreevy, Doug DeMaw of Oak Hills Research, and Ernie Wilson of Panaxis Productions.

CHANNEL CLEANER™

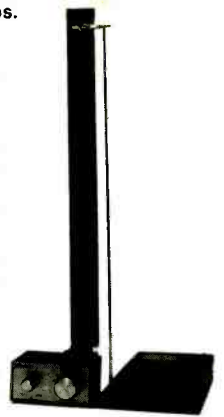
- New reception principle.
- Reduce interference 15-30 dB.
- For small portable radios.

Bugged by interference? Two stations on one frequency and you can't understand either one? Splatter? Heterodynes?

Channel Cleaner™ solves these problems. Simply place your radio on Channel Cleaner's platform. Tune **Channel Cleaner™** and rotate it to null out the interference.

Channel Cleaner™ makes a directional radio frequency shadow that shades your radio's antenna from the interference. Reception in all other directions is normal.

Experience this exciting new development. Order your **Channel Cleaner™** today.



Model PA-420 Channel Cleaner™ \$79.95 + \$4 shipping/handling in U.S. & Canada. California residents add sales tax.



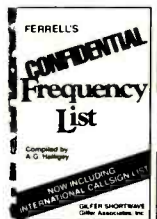
Send for FREE catalog that shows our complete line of antennas, preamplifiers, and filters.

PALOMAR ENGINEERS

BOX 455, ESCONDIDO, CA 92025
Phone: (619) 747-3343

GILFER — first in Shortwave

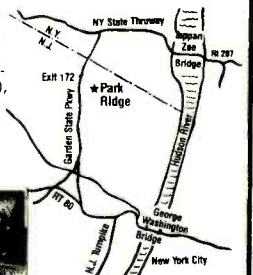
GILFER'S FAMOUS "CONFIDENTIAL FREQUENCY LIST" — \$19.95



Popular Communications magazine says: "Can't imagine anyone attempting to listen to HF voice or CW/RTTY communications without a handy copy." Recognized worldwide as the indisputable leader and most comprehensive list of SW in the 4-28MHz region. Over 30,000 frequencies with call sign, country, details covering aero marine, embassy, weather, press, feeders, INTERPOL, time, channel marker and more. Now includes special section on worldwide FAX and RTTY stations. Charts also included. Add \$2 USA; Overseas add \$4 surface, \$10 air.

VISIT GILFER'S STORE

Easy to find, accessible from New York City. Take Garden State Parkway (NE portion of N.J.), Exit 172. Gilfer is in the center of Park Ridge, opposite the Borough Hall. Store hours: M-F 10am-5pm, Sat. 10am-3pm.



GILFER SHORTWAVE

52 Park Ave, Park Ridge, NJ 07656, Ph 201/391-7887

ZAMBIA on Shortwave

by Colin Miller



Formerly known as Northern Rhodesia, Zambia is located in southern central Africa. It's a landlocked country bounded by Zaire on the north, Tanzania, Malawi, and Mozambique on the east, Zimbabwe on the south, and Angola and Southwest Africa/Namibia on the west and south-west.

To get an idea of Zambia's size, think of Texas -- with an area of 290,586 square

miles, it is somewhat larger. To get an idea of some of Zambia's problems, imagine that a Texas where the people speak over 70 languages in addition to English.

The history of Zambia goes back to the early nineteenth century when various Portuguese explorers traversed the country between Angola and Mozambique. In 1850, Dr. David Livingstone reached the

Zambezi River from the south; and in 1855 he discovered the Victoria Falls on his famous missionary journey.

(It is worth mentioning here that Victoria Falls greatly surpasses Niagara in dimensions. The width of the falls is one mile, with a maximum height of 420 feet. Although of greater volume, Niagara has parallel drops of only 158 and 167 feet.)



Thomas Larson/Nat'l Geo Soc

Imagine a country the size of Texas, containing more than 70 different languages and cultures adapted to modern society to varying degrees, and you'll get an idea of the diversity faced by African nations today.

Radio Comes to the Zambezi

It was not until World War II that Northern Rhodesia acquired a radio service. In 1941 the government's Information Department installed a 300 watt transmitter in Lusaka, the capital. This station was built for the purpose of disseminating war-related information.

From the outset, the Lusaka station addressed programs to Africans in their own languages, becoming the pioneer in the field of local vernacular broadcasting. In 1945 Harry Franklin, Lusaka's far-sighted information officer, proposed that Radio Lusaka concentrate on developing programming for Africans.

Since Northern Rhodesia could not afford such a specialized service on its own, the administrations of Southern Rhodesia and Nyasaland were persuaded to share in the operating costs, while the British Government agreed to provide capital funds. Thus, the Central African Broadcasting Station came into being.

Among the by-products of this effort were the world's most extensive collection of ethnic African music, and a breakthrough in that most formidable barrier to audience growth, the lack of a receiver which Africans could afford to buy.

Radio in a Saucepan

Franklin tried for three years in the late 1940s to persuade British manufacturers that a potential mass market existed among Africans for a very simple and inexpensive battery-operated shortwave receiver. (One must bear in mind that this was before the days of transistors.) He finally persuaded a battery company to invest in the research and development of the idea.

One of the early models was mounted experimentally in a nine inch diameter aluminum housing originally intended as a saucepan. Thus was born in 1949 the famous "Saucepan Special," a four-tube tropicalized shortwave receiver, which succeeded even beyond Franklin's expectations. It cost five pounds Sterling, and the battery, which lasted 300 hours, was an additional one pound five shillings.

Within the first three months, 1,500 of the Saucepan Specials had been sold, and in the next few years, 50,000 sets were imported. Franklin had hopes of capitalizing on a world market for the sets, but within a few years the transistor came into mass production and so turned his brain-child into a mere historical curiosity.

In 1953 federation came, and in 1958 a new broadcasting organization, the Federal Broadcasting Corporation of Rhodesia and Nyasaland, was founded, with headquarters in Salisbury, Southern Rhodesia (now Harare, Zimbabwe). Lusaka continued to use African languages as well as English, but the spirit which had animated the original station had long since been drowned by the rising tide of animosity between the races.

Eventually, in 1964, Northern Rhodesia and Nyasaland broke away from the federation and became Zambia and Malawi. The station in Lusaka was then known as the Zambia Broadcasting Corporation until 1966, when it changed to Zambia Broadcasting Services (ZBS). This was again changed at the end of 1988 to the Zambia National Broadcasting Corporation (ZNBC). The ZNBC is a government department under the Ministry of Information, Broadcasting and Tourism.

There are two domestic services: the General Service with over eight AM



Benjie Thomas

Radios are easily available in today's Africa, but it wasn't always so. Harry Franklin foresaw the impact of radio could have in the political life of Africa -- he just didn't foresee the development of transistors!

stations, broadcasting in English, Bemba, and Nyanja; and the Home Service carried by ten AM stations, using the seven major languages of Bemba, Nyanja, Lozi, Tonga, Kaounde, Lunda, and Luvale. These are used in rotation to ensure a prime time audience for each group.

Programs include news, public affairs, light entertainment, sport, religion, and education. School broadcasts are carried on the General Service during school semesters. Agricultural programs for farmers cover all the country areas. Listening is encouraged by free provision of receivers for farm radio forums, of which there are more than 600. An annual license fee is payable, but many receivers are not licensed.

The latest available shortwave schedule is as follows: General Service 6165 kHz all times; and 7235 kHz 0600-1530. The Home Service uses 3290 and 4910 kHz, 0255-0600 and 0255-0730 respectively, and 1530-2105 (Sat/Sun 2205); and 7220 kHz 0600-1430.

Transmitters range in power from 10 to 50 kW. The best times to hear these

stations in North America are around sign-on and sign-off.

In addition to the above, the ZNBC has an External Service called Radio Zambia International, beamed to Southern Africa over a 50 kW transmitter. The schedule is from 1555-2105 (2205 Friday and Saturday) on 9505 kHz in English and various African languages. It has also been carried on 9580 kHz as an alternative channel. Much of the programming is anti-apartheid material produced by nationalist political groups.

On Sunday mornings UTC there is sometimes an additional transmission commencing at 0555 UTC but this is on an irregular basis. Frequencies include 9505, 11880, or 17895 kHz.

The station interval signal is the distinctive call of the fish eagle, a striking reddish-brown, black winged bird with white head and breast, found throughout southern Africa. Its wild scream thrills all who hear it. Judge for yourself.

mt



Old Radios Never Die



by Everett L. Slosman

Ever wonder what happened to that Hallicrafter or National you used for your first DX attempts? Or what about the cathedral cabinet radio which sat on the folk's living room table, and is now being instant-copied in plastic by offshore companies for the consumer knockoff market?

Readers know there are "buffs" who rebuild and restore old radios from cat whisker receivers to novelty cases. What they may not realize is that these collectors are as dedicated to their portion of the radio hobby as any DXer trying to log a 10 watt domestic station half way around the world.

The Antique Wireless Association and Antique Radio Club of America cater to restorers and collectors. However, because their members have herd instincts, local and regional organizations also exist to fulfill "rag-chewing" and "tech-bragging" needs.

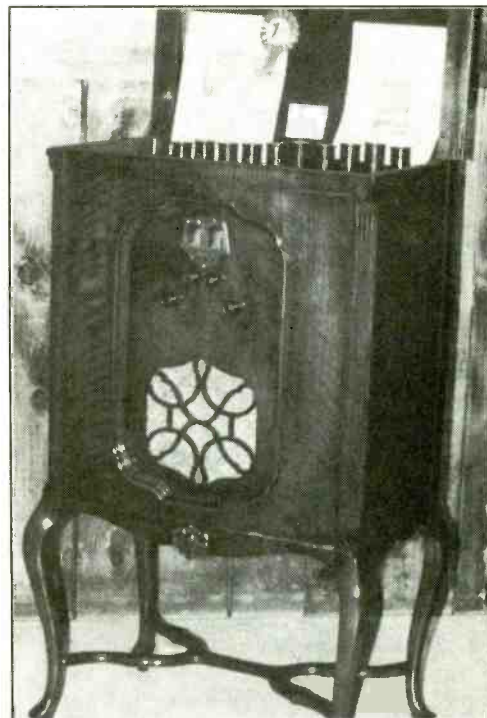
One of the larger groups is the New England Antique Radio Club (NEARC) with over 300 members throughout the United States, Canada, Puerto Rico, and the Virgin Islands.

They publish a quarterly newsletter, *The Escutcheon*. It is 20 pages of club news, article reprints, restoration tips, and strong

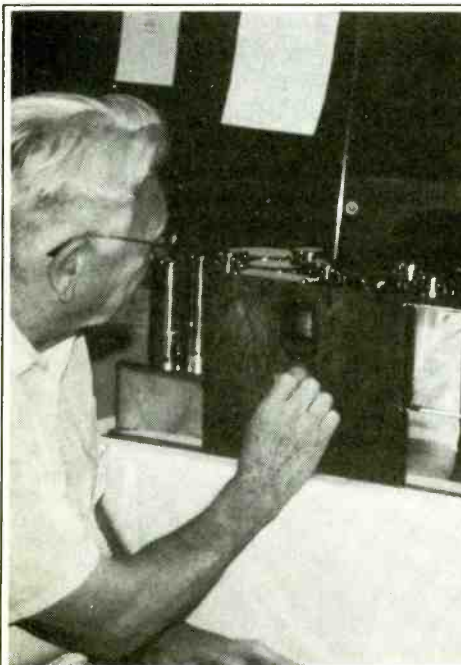
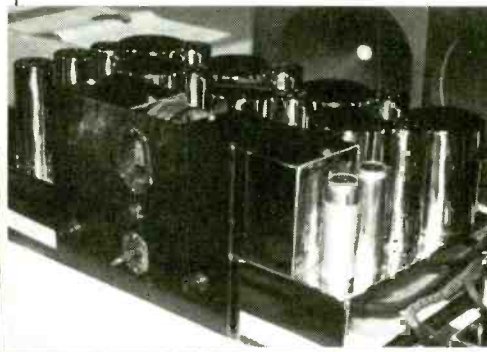
opinions. It reads like the old Newark News DX bulletin, complete with territorial imperatives, calls for more this or that, and lots of chest-thumping. The publication is definitely not dull.

Every three months NEARC holds a swap meet in Nashua, New Hampshire, inside a church building aptly named the Resurrection Center. Here, between 30 and 40 dealers operate sale booths while other members display their restored receivers and unusual items hoping to win a ribbon. Competition is fierce, but friendly, and the radios are superb examples of their class.

"Buffs" are not the only ones prowling the aisles. There are a number of "yuppies," "dinks," and decorators crowding tables searching for restored Grebes and Majestics to serve as decor in 200 year old remodeled New England farmhouses. They may not know a TRF from a superhet or a transistor from an octal, but they love veneers, mahogany, and grille cloth and can spot a bargain from halfway across the room.



2. A Scott High Boy with plug-in coils. This wood cabinet is the factory original.



1. Aime Baudry in front of his Scott All Wave receiver. The speakers are mounted in homemade baffles and the cabinet face is also homemade. The power supply is separate.

His Father's Scott (Photo 1)

E.H. Scott Radio Laboratories advertised their 12 tube All Wave component kit as the "only receiver guaranteed to give daily world-wide reception." This was no idle boast. The Chicago, Illinois, firm's superheterodynes held all the verified regular reception records during most of the 1920s. That may be the reason Aime Baudry's father bought one for his Manchester, New Hampshire, home.

This All Wave contains a preselector RF stage, oscillator and detector, IF amplifier, second detector, and an audio filter with state-of-the-twenties fidelity. It uses separate coils for each band that mount in a mechanical selector under the chassis. This system differs radically from the tapped and plug-in coils in use at that time. Even today, this unit delivers exceptional performance.

Aime Baudry, W1FVQ, commercial broadcast pioneer, and avid *Monitoring Times* reader, is a fixture at these swap meets. He represents the first generation of New Englanders who grew up with radio: crystal sets, Allied Radio do-it-yourself receiver kits, and N.R.I. correspondence courses.

Rag-chewing with this broadcast engineer and Civil Air Patrol officer means hearing about old radios and the pioneers who commercialized Marconi's inventions. He talks passionately about the early days, before television, and has preserved everything he can about this one set, from the original purchase invoice to outboard speakers.

It was not, interestingly enough, the All Wave, but Scott's floor model version, the High Boy (Photo 2), that was considered the ultimate living room radio. More furniture than technology, it bridged a gap between housewife and hobbyist, placing radio in middle-class parlors.



3. This Grebe cathedral style radio is typical of the units produced in the early 1930s and is very much in demand as a decorator item.

Grebe Cathedrals (Photo 3)

Another prize restoration is the 1931-32 Grebe cathedral style "Synchrophase" with a mahogany and burl walnut case. This AC table radio was among the last units manufactured on Long Island by A.G. Grebe & Co., Inc., before the company went bankrupt.

Like many other early manufacturers, Alfred H. Grebe was up to his loose couplers in radio before he hit his teens. He shipped out as a 17-year-old wireless operator in 1912; four years later he began manufacturing and selling regenerative receivers.

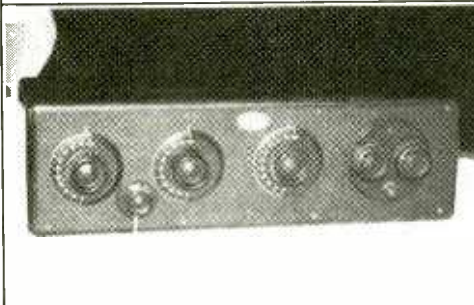
World War I shut down the fledgling broadcasting industry and Grebe was reduced to installing Navy subchaser radios. After the war, he went back to manufacturing consumer radios. This activity earned him the distinction of being

the first person sued for patent infringement by RCA.

Rapid technical advances prompted Westinghouse, Armstrong, RCA, and Hazeltine to slug it out in the courts for control of the key patents involved in the hot consumer radio market. Many small entrepreneurs found themselves embroiled in costly legal battles over patent rights. But, that's a story for another day.

Grebe operated radio station WAHG as a way to advertise receivers. The station was later sold to Atlantic Broadcast Company and re-signed WABC. Eventually, they sold the station to Columbia Broadcasting Corporation who changed the call letters to WCBS.

The Great Depression forced Grebe to shut down in 1932 and reorganize. He intended to resume manufacturing, but died in 1935 of complications following a colostomy. The Grebe cathedrals passed from the retail scene and into the collector's world.



4. An early Atwater Kent model. At the time, this was one of the more popular models. It required headphones and the tuning scales used linear marking from 0-100 instead of frequencies and bands.

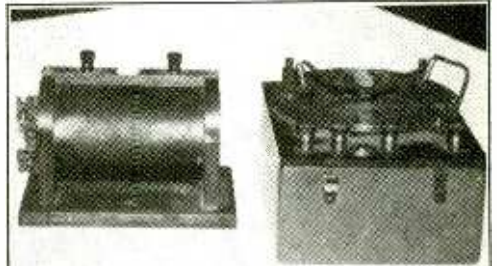
Atwater Kent (Photo 4)

Atwater Kent invented a distributor and ignition system used in most automobiles until it was replaced by the electronic ignition. Few realize, however, that this Worcester Polytechnic Institute engineering dropout also manufactured everything from electric meters to optical gun sights.

He also built coupled-circuit regenerative and RF tuners. The popular Atwater Kent radio line included a variety of models from one-dial table units to full-floor consoles. Success came as much from Kent's marketing sense as from his engineering skills.

But, like others, he misread the economic warning signs and became mired in the depression. He worked hard to stay afloat, but by 1936 the thrill of technology

faded. The company closed and he retired. Kent spent the next decade in Hollywood mixing with movie stars and celebrities, as happy in retirement as he had been as a Worcester Polytech's college bad boy and all-around campus rake. He died in 1949.



5. Military spark gap (L) and Air Corp in-plane transmitters, circa 1918.

Early Military Gear (Photo 5)

These two units date back to the U.S. Army's early broadcast experiments. The one on the right is a transmitter used in WW I observation planes. The spark circuit relied on the flat wound coil rather than a more conventional cylindrical type. While pilots dodged groundfire and enemy planes, observers keyed messages in Morse. It was crude, but effective, and beat dropping notes to the ground in weighted scarfs.

The other unit is a military spark coil, part of the original technology made obsolete by later refinements in Fleming's valve and Armstrong's tubes.

National (Photo 6)

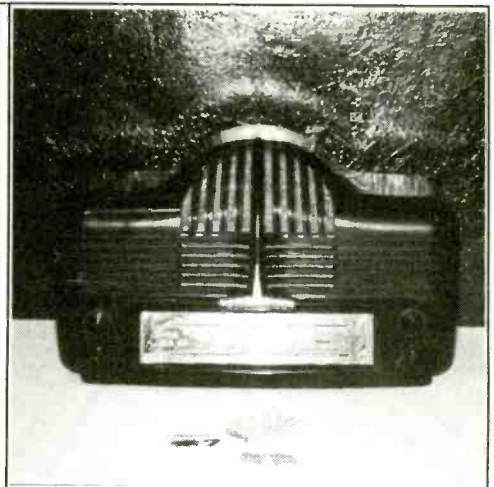
National's receivers competed with Hallicrafter and others for the ham and shortwave markets following World War II. Most units, like this SW-5 (on top), came in metal cases that made them more suitable for the shack than the living room.

Early kit units used the regenformer circuit which was also the heart of the Browning-Drake receivers. Both companies used National's condensers and vernier dials. In 1925 Browning-Drake began producing complete receivers while National stuck with their kits. Eventually, the firms went their separate ways, evolving into Browning Laboratories, Aircraft Radio Corporation, and National Company.

Eventually, National dropped out of the hobby market and concentrated on the industrial communications sector. The shortwave receivers still pop up in garage and estate sales where they are ignored by



6. National SW-5 (top) and E.R.L. Sentinel Model AC radios.



8. This art deco designed Sonora earned a third place in NEARC's recent 1930s AC Set competition.

DXers. They are reasonably priced and ideal starters for the beginning collector.

E.R.L. Industries (Photo 6)

On the other hand, the E.R.L. on the bottom of the photo has a different image. In the early 20s, the company produced quality consumer receivers for the home in both table and floor models.

George A. Pearson, an automobile dealer and dabbler in technology, founded E.R.L. in 1921 as a part-time venture. The firm suddenly went from producing reflex circuit kits in Chicago to building half-a-million cabinet units in 1925. But, like other technology firms, they continued to lose money.

By 1928, Pearson wanted out and sold the company to Greene-Brown, a Chicago firm that manufactured B-battery eliminators. Unfortunately, the two plants were at opposite ends of Chicago. This led to production inefficiencies and in 1930 to bankruptcy.

Reorganized the next year as the Sentinel Radio Corporation, they built their own Sentinels and private labels for the chain store and export markets. Magnavox absorbed them in 1956.

Zenith Trans-Oceanics (Photo 7)

For some, nothing can replace Zenith Trans-Oceanics, the world's first true portable multi-band receiver. Patterned after an experimental model used on polar expeditions, the first commercial model rolled out in mid-1941 and was snapped up by GIs on overseas assignments.

The Zenith mystique continued after

WW II, making it the most popular portable on the civilian market. During the Korean War, it became a best seller in Post Exchanges and Ship's Stores in Korea and Japan. Some specialists collect one of each model from the loctal tube 8G005 to the fully transistorized R1000D.

If you are looking for excitement, casually mention you have a 1946 Clipper or a 1952 G500. Trans-Oceanic collectors jump on such statements like a dog on a meaty bone.

Ask a question about a particular model and they will spend hours bending your ear while talking about their own units. Some still use their Zeniths to DX and can pull in an amazing variety of stations. Naturally, there is a lot of one-

upmanship involved, but they have the QSLs to prove their abilities.

Sonora (Photo 8)

American Bosch Magneto originally built the Sonora radio line which was taken over by Arborphone in 1927. The new company began manufacturing several table models. The bakelite-cased Sonora Excellence 301A is one of the company's last art deco models.

Very little is known about the company's founders or their engineers. Arborphone was not an innovative manufacturer, but they produced a medium priced unit which sold well and looked nice. So, the Sonora line survived into the mid-1950s.

(cont'd p.16)



7. A gaggle of Zenith Trans-Oceanics; some with Wavemagnet antennas. These could be removed and placed in a window or other remote location for better reception.



Realistic® - The First Name In Communications

Quality Electronics At Low Prices, at the Radio Shack Near You

Your nearby Radio Shack offers a big selection of exclusive Realistic equipment, including our 10-meter mobile Ham transceiver, marine VHF two-way radio, shortwave receivers, CBs, scanners and easy-to-use Weatheradio® receivers.



Backed by Service

Radio Shack supports every Realistic product with friendly people and personal service at 7000 locations.

Discover the big advantages of choosing America's first name in communications—Realistic service, selection and quality!

FREE 184-Page Catalog! Write:
Radio Shack, Dept. 178-19,
300 One Tandy Center,
Fort Worth, TX 76102



REALISTIC™ Exclusively at

Radio Shack®
The Technology Store™
A DIVISION OF TANDY CORPORATION



Swap Meets will find you everything from multi-band portables, to novelty radios, to embroidered speaker enclosures.

Novelties

One of the most fascinating collecting categories involves novelty radios like the radio globe by Vista or the giant watch radio. A novelty buff might collect advertising, Disney, or Charlie McCarthy radios. There are all sorts of possibilities to assemble a novelty collection, according to Harry Poster.

Harry is an authority on novelty radios, a supplier of vintage radios and television sets for advertising and commercial films, and managing editor of *Sight-Sound-Style*, the quarterly newsletter for serious collectors. He and his wife Anna spend several weekends a year displaying their collection at shows and swaps throughout the northeast.



An early code tape reader. The paper tape had punched holes which activated a key. The principle is similar to a player piano roll. Circa 1910.

Anna and Harry are down-to-earth people who set an informal booth using cardboard boxes to display their treasures. Their collection runs the gamut from Snoopy and his dog house to a Lufkin ruler-radio.

A Day at the Swap Meet

NEARC's Swap Meet is a mixture of equipment, literature, "Nipper" (His Master's Voice) statuettes, remanufactured tubes, the odd, the unusual, and the simply fascinating. There's coffee and hamburgers for the hungry and pleasant conversations.

It's the place for old receivers to end up, not to die on a scrap heap or be cannibalized for parts, but to regain some of their former elegance and dignity. And for radio article writers, it's a place to let your hair down and find a hundred different stories.

mt

I would like to thank Sue and Marty Bunis of NEARC. Without their cooperation, this article would have remained in my word processor.



Suggested Books to Read

Radio Manufacturers of the 1920s, Volumes I and II, Alan Douglas.

Radios: The Golden Age, Philip Collins, Chronicle Books, San Francisco, CA 1987.

Guide To Old Time Radios, David and Betty Johnson, \$16.95 + 1.55 bookrate from DX Radio Supply, Box 360, Wagontown, PA 19376.

The Zenith Story: A History from 1919. The Zenith Radio Corporation.

Sources for More Information

Clubs

Antique Radio Club of America (ARCA), 81 Steeplechase Road, Devon, PA 19333. 215-688-2976.

Antique Wireless Association (AWA), Main Street, Holcomb, NY 14469. 716-657-7489

New England Antique Radio Club (NEARC), P.O. Box 809, Contoocook, NH 03229. 603-746-6127.

For the addresses of other regional clubs, call your local library's reference room.

Museums

Museum of Broadcast Communications, 800 S. Wells Street, Chicago, IL 60607. 312-987-1500.

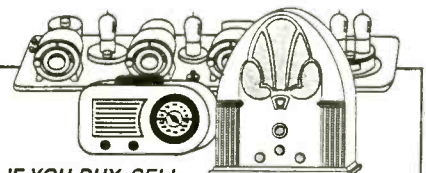
Museum of Broadcasting, 1 East 53rd Street, New York, NY 10022. 212-752-4690.

Smithsonian Institution, Museum of History and Technology, Washington, DC 20560.

Other publications

Sight-Sound-Style, P.O. Box 1883, South Hackensack, NJ 07606.

All photos are by Everett Slosman



IF YOU BUY, SELL OR COLLECT OLD RADIOS, YOU NEED...

ANTIQUE RADIO CLASSIFIED

FREE SAMPLE COPY!

Antique Radio's Largest Monthly Magazine
Articles - Classifieds - Ads for Parts & Services.

Also: Early TV, Ham Equip., Books, Telegraph, Art Deco, 40's & 50's Radios & more...

Free 20-word ad each month. Don't miss out!
6-Month: \$11. 1-Year: \$20 (\$30 by 1st Class)

A.R.C., P.O. Box 802-P5, Carlisle, MA 01741

GET THE LATEST ADVANCES IN ELECTRONICS

WITH A SUBSCRIPTION TO

Radio- Electronics®



ENJOY THE WORLD OF ELECTRONICS EACH MONTH!

Now you can subscribe to the best electronics magazine. The only one that brings you articles on—electronics projects, technology, circuit design, communications, new products and much more.

Radio-Electronics looks to the future and shows you what new video, audio and computer products are on the horizon. What's more you'll find helpful, monthly departments such as Video News, Equipment Reports, Hardware Hacker, Audio Update, Drawing Board, Communications Corner. All designed to give you instruction, tips, and fun.

Radio-Electronics gives you exciting articles like:

- ┌ ISDN: The Telephone Network of Tomorrow
- ┌ The Facts on FAX
- ┌ A Digital Phone Lock
- ┌ How To Design Switching Circuits

PLUS: COMPUTER DIGEST! A New Kind of Magazine for Electronics Professionals.

- ┌ EIA-232 A real standard for serial interfacing?
- ┌ Build a synergy card for your PC
- ┌ '386 Power at a '286 price
- ┌ Build a biofeedback monitor
- ┌ More on Multiplexing



FOR FASTER SERVICE CALL TODAY
1-800-999-7139

DON'T DELAY SUBSCRIBE TODAY!

Just fill out the order card in this magazine and mail it in today.

Radio-Electronics 7MT02

Wildlife Tracking in the Everglades

by Robert Wyman

Wildlife Management by Radio

Wildlife management is a science and profession in South Florida, where a variety of environmentally-sensitive species exist in proximity to one of the fastest-growing urban areas of the country. Everglades National Park, which encompasses most of the southern tip of Florida, and the Big Cypress National Preserve in southwest Florida and Biscayne National Park along the southeast coast, provide scientists with a living laboratory of wildlife and habitats which may be studied.

In South Florida, government and private resources have been teamed to accomplish the wildlife-monitoring tasks. Jim Wyatt, owner and operator of James Wyatt Enterprises, Inc., is a private contractor to the U.S. Department of Interior/National Parks Service (NPS).

Mr. Wyatt operates four aircraft out of Homestead General Airport, located about 25 miles southwest of Miami.

Mr. Wyatt's staff includes ten pilots who fly Cessna 172 and Cessna 182 aircraft on a variety of wildlife and environment-related missions. Along with other contractors/pilots, these missions include flights supporting NPS, the Audubon Society, the South Florida Water Management District, and the University of Florida.

Mission profiles include fire surveillance, fire-fighting management and control, bird migration surveillance, bird population studies, coastal waterway management studies, and regularly-scheduled flights to track specific species.

The scheduled wildlife-tracking flights are used to monitor the health and migratory patterns of selected birds,

panthers, deer, manatees, and turtles. Radio transmitters have been used for several years to aid in this effort.

Panther Tracking Mission:

Background

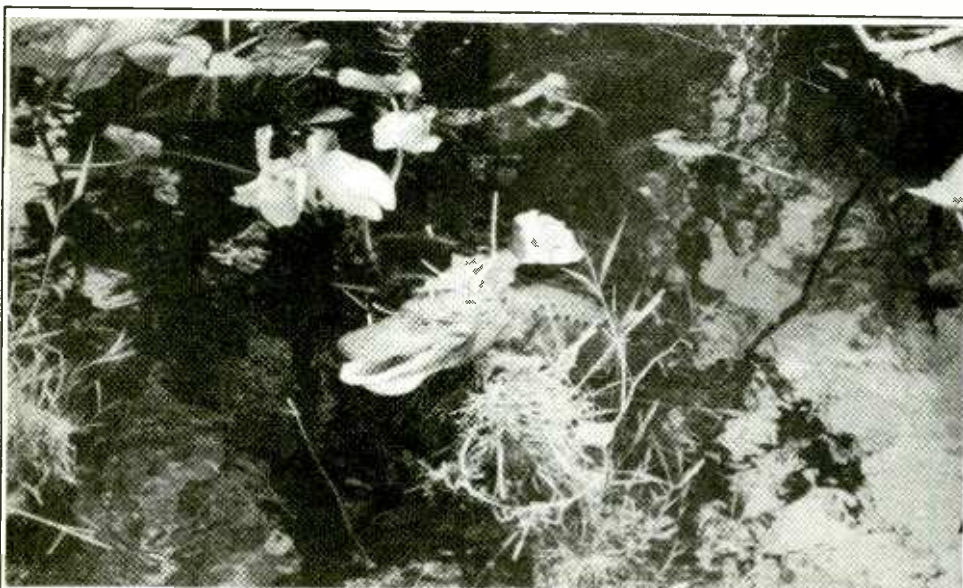
One daily flight monitors the location of several Florida panthers, an endangered species with only 30 to 50 animals estimated to remain in existence. Approximately 25 panthers are estimated to live south of Lake Okeechobee, with under ten of these living within the confines of protected federal property. Several panthers are fitted with radio transmitter collars as part of this study.

Personnel and Equipment

A typical daily flight includes pilot Terry Buker, a member of Wyatt's staff under contract to NPS, and Sonny Bass, an NPS Research Biologist who was raised in the Homestead, Florida, area and has served NPS and Everglades National Park for 14 years.

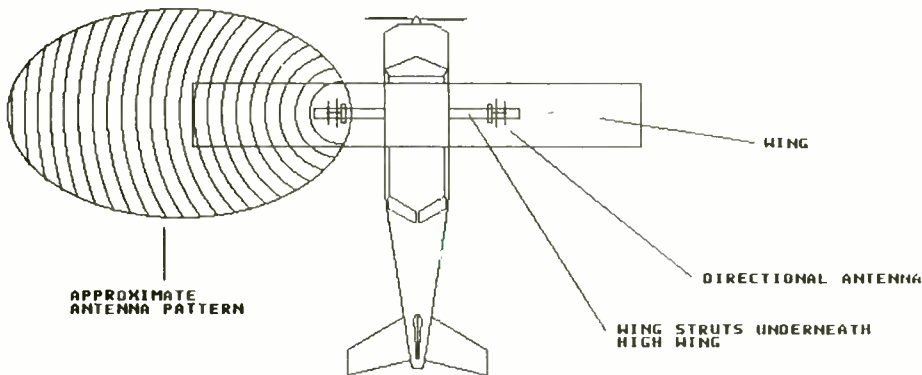
Mr. Bass is part of a 35-member staff in the research department, which includes scientists and technicians who specialize in a variety of wildlife and environmental studies. Everglades National Park employs approximately 100 full-time employees, with another 100 employees used on a seasonal basis.

The Cessna 172 used for the mission is equipped with normal avionics plus LORAN and a radio which operates on NPS frequencies, as well as special attachment points on the wing struts for wildlife-tracking antennas. In addition, Mr. Bass has a set of detailed low-level charts of the panther's habitat which are used to pinpoint the animal's location to within a specific group of trees or grasses.



Harry Baughn

Much of the Everglades looks alike at first glance -- It actually supports thousands of species of both plants and wildlife.



The Cessna 172 uses special attachment points on the wing tips for the wildlife tracking antennas, giving almost 360-degree coverage.

Much of the Everglades looks alike at first glance due to a completely flat landscape and what appears to be a limited variety of vegetation. Actually, the area supports thousands of plant and wildlife species, some of which are not found elsewhere.

Since the panther's habitat includes areas of sawgrass prairies, hardwood hammocks, pine forests and cypress stands, the use of detailed charts is essential in the location and study of the panther's behavior, feeding characteristics, and territory. In fact, Florida panthers may travel as much as fifteen miles in a single night.

In addition to highlighting the locations of the panthers, these special charts of the area are valuable for aircraft navigation as well. Everglades National Park encompasses 1.4 million acres and the Big Cypress Preserve includes 700,000 acres. Light aircraft flying under VFR conditions at low altitudes have few landmarks identified on standard aeronautical charts, so the ability to determine an aircraft's position by finding a particular pond or grouping of trees is a necessity.

The radio tracking equipment used on the mission is manufactured by Teconics of Mesa, Arizona. The receiver section is a portable rechargeable unit which scans preprogrammed frequencies in the 150.0000-151.0000 MHz range. Nonscanning models are also used on occasion. Signals identified by the receiver are patched into the aircraft intercom/head-

phone system and are heard as steady beeps, which increase in volume as the signal intensifies.

The receiver is connected to a signal splitter/combiner, which in turn is connected to dual VHF antennas, cut for the 150.0000-154.0000 MHz band. The antennas are directional types, and are mounted on each wing strut facing away from the aircraft. The resulting antenna pattern provides almost 360-degree coverage, with primary reception areas at the 90-degree (starboard/right-side) and 270-degree (port/left-side) positions relative to the front of the aircraft.

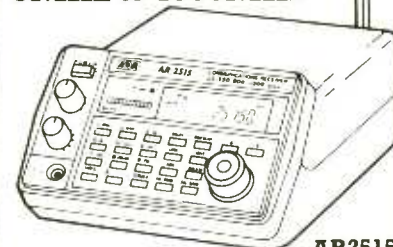


Harry Baughn

Only 25 panthers remain south of Lake Okeechobee; less than ten live within Federally-protected property.

New from AOR

2000 Channels
5MHz to 1500MHz



AR2515

- Covers 5MHz to 1500MHz in AM/FM/Wide FM modes Continuous coverage
- 2000 Channel Memory 1984 Scan Frequencies & 16 Search Groups
- Scan/Search speeds up to 36 channels or increments per second
- Built in RS 232 computer interface
- 25 Day Satisfaction Guarantee Full Refund if not Satisfied
- Size 3 1/4" H x 5 3/4" W x 7 1/4" D Wt. 2lb 10oz
- Supplied with AC & DC power cords Telescopic antenna

Total Price Freight Prepaid (Express Shipping Optional) Upgrades of AR2002's to AR2515 specs Available

\$695.00



COMMUNICATIONS

10707 E. 106th St. Indpls., IN 46256

Toll Free 800-445-7717

Visa and MasterCard (COD slightly higher)



In Indiana 317-849-2570 Collect FAX (317) 849-8794

BE A HAM RADIO OPERATOR

Q&A Manual contains all 1,932 questions, multiple choices and answers used in all FCC Amateur Radio licenses, Novice—Extra Class. \$9.95 postpaid. Money-back guarantee. VISA/MC orders accepted 10:00 a.m.—2:00 p.m. (817) 548-9594 or send check to: W5YI, P. O. Box 565101, Dallas, TX 75356.

COMMUNICATIONS

118.1000	Miami Int'l Airport Approach Control
122.2000	Miami Flight Service Station, weather advisories (Enroute Flight Advisory Service -- EFAS)
122.8000	Homestead General Aviation Airport, Airport Advisory Service (AAS)
123.0500	Everglades National Park, Aircraft Operations
123.8000	Homestead AFB Approach Control (GCA)
150.0000-	
-151.0000	Radio collar transmitter band (various frequencies and spacing)
172.4250	Big Cypress National Preserve (repeater output)
172.5250	Everglades National Park, primary ops. (repeater output)
172.6750	Biscayne National Park (repeater output)
172.7750	Everglades National Park, fire ops. (repeater output)

Mr. Bass, a self-taught operator of the tracking equipment, has developed a unique ability to quickly pinpoint a panther's location by constantly manipulating the signal gain and antenna switching controls, resulting in a rapid determination of initial bearing and range, then location within a specific quadrant, and finally the exact location of the animal within a group of trees.

This control manipulation by Mr. Bass allows the pilot to fly almost directly to the panther's site, as opposed to first flying toward the general area of the strongest signal, then initiating a series of decreasing orbits around the area until the site is determined.

The radio collars worn by the animals contain a lithium battery with an operational life of approximately two years. The collars transmit a constant-rate tone signal known as an "Activity Monitor." This feature is normally operational at all times. When an animal has not moved for a period of two hours, the Activity Monitor shifts into "Mortality Mode," which then transmits the tone signal at a higher or faster rate.

Although scientists first believed that a panther will move at least once during any two-hour period, actual studies indicate otherwise, resulting in occasional "false alarms" concerning the well-being of a particular animal.

The radio collar may be optionally equipped with a variety of sensors, including temperature, pulse, and other vital sign instrumentation.

Operations

An informal pre-flight briefing acquaints the pilot (and any observers on board) with the last known positions for each of the five panthers being tracked. Generally, aircraft routes to each site do not vary greatly each day, with flights lasting just under two hours and covering approximately 100 miles point-to-point.

After leaving the airport, the mission proceeds toward the first site at 800-1200 feet altitude. As the area is reached, Mr. Bass begins adjusting the gain and antenna switching controls to determine if the animal is to the left or right of the aircraft. As the beeping sounds increase in volume, Mr. Bass continues to fine-tune the system and advise the pilot of course corrections. The aircraft then descends to approximately 200 feet and begins to close in on the panther's location.

When the tones heard are rapid, which indicates "Mortality Mode," the crew prepares themselves for what may be a saddening event in the life of a biologist: the discovery of the death of an endangered animal. Most Mortality Mode indications, however, are false alarms, which are remedied by "buzzing" the suspected site at an extremely low altitude, thus awakening the panther and resetting the transmitter to Activity Monitor status.

Although Mr. Bass can usually identify the location on the first pass, additional passes are sometimes necessary as dense foliage can limit the transmitter's range. In addition, since the tracking antennas are mounted on each side of the aircraft, the pilot may point an antenna directly down at

a site by orbiting tightly over the position of the strongest signal, further verifying the location. (Aerobatic-style tight turns and low altitude passes over federal recreational lands require special pilot certification by the U.S. Department of Interior.)

Note that panthers are rarely seen from the air on these missions, as they are generally nocturnal hunters who rest in overgrown shaded areas by day.

Experiments by Mr. Bass which oriented the antennas toward the front of the aircraft proved unsatisfactory, as the side-to-side reception coverage combined with the maneuverability of the aircraft was a more reliable system.

As each panther is located, the aircraft once again climbs to approximately 1000 feet enroute to the next location.

Communications

Radio communications include normal air traffic advisories in the vicinity of the airport, plus mission status reports to the NPS headquarters at Everglades National Park. Contact with Miami Approach Control, Miami Flight Service, or Homestead AFB is initiated when necessary (see attached frequency list).

Interestingly, the federal employees on these missions have often been scrutinized by another group of federal employees: the U.S. Customs Service! Apparently, the angular course plots, rapid altitude changes, and tight turns over specific sites in remote areas also fit the profiles of "drops" attempted by smugglers. Consequently, the wildlife-monitoring aircraft are sometimes targeted and intercepted by Customs aircraft on patrol over South Florida.

Although an air-to-air radio call or high-tech verification of registration and transponder "squawk" code by Customs always remedies the situation, NPS staffers are starting to rely on old-fashioned telephones to call the Customs Air Branch before flights.

Further information about the Everglades may be obtained from Mrs. Pat Tolle, Public Information Officer, Everglades National Park, at 305-247-6211, whose cooperation and assistance with this article is appreciated.



uniden®

\$12,000,000 Scanner Sale

Uniden Corporation of America has purchased the consumer products line of Regency Electronics Inc. for \$12,000,000. To celebrate this purchase, we're having our largest scanner sale in history! Use the coupon in this ad for big savings. Hurry...offer ends September 30, 1990.

★★★ MONEY SAVING COUPON ★★★

Get special savings on the scanners listed in this coupon. This coupon must be included with your prepaid order. Credit cards, personal checks and quantity discounts are excluded from this offer. Offer valid only on prepaid orders mailed directly to Communications Electronics Inc., P.O. Box 1045 - Dept. UN12, Ann Arbor, Michigan 48106-1045 U.S.A. Coupon expires September 30, 1990. Coupon may not be used in conjunction with any other offer from CEI. Coupon may be photocopied. Add \$12.00 for shipping in the continental U.S.A.

RELM RH808B-A \$419.95
 RELM RH256B-A \$294.95
 Bearcat 800XLT-A \$229.95
 Bearcat 210XLT-A \$164.95
 Bearcat 70XLT-A \$139.95
 Uniden HR2510-A \$229.95
 Uniden HR2600-A1 \$239.95
 Uniden PR0810E-A \$189.95
 Uniden CARD-A \$164.95
 Uniden RD3XL-A \$149.95
 Uniden RD99GT-A \$114.95

★★★ VALUABLE COUPON ★★★

Bearcat® 760XLT-A

List price \$499.95/CE price \$254.95/SPECIAL 12-Band, 100 Channel • Crystalless • AC/DC Frequency range: 29-54, 118-174, 406-512, 806-956 MHz. Excludes 823.9875-849.0125 and 868.9875-894.0125 MHz. The Bearcat 760XLT has 100 programmable channels organized as five channel banks for easy use, and 12 bands of coverage including the 800 MHz band. The Bearcat 760XLT mounts neatly under the dash and connects directly to fuse block or battery. The unit also has an AC adaptor, flip down stand and telescopic antenna for desk top use. 6-5/16" W x 1-1/4" H x 7-3/4" D. Model **BC 590XLT-A** is a similar version without the 800 MHz band for only \$199.95. Order your scanner from CEI today.

NEW! Uniden® Telephones

AM470D-A Uniden answering machine \$69.95
 AM484-A Uniden answering machine \$43.95
 AM46BV-A Uniden answering machine \$43.95
 AM480-A Uniden answering machine \$43.95
 AM480-A Uniden answering machine \$69.95
 FP300-A Uniden feature phone \$34.95
 FP302-A Uniden feature phone \$43.95
 FP320S-A Uniden feature speakerphone \$43.95
 FP322S-A Uniden feature speakerphone \$53.95
 XE570-A Uniden cordless phone \$74.95
 XE422S-A Uniden cordless speakerphone \$109.95
 XE777S-A Uniden cordless speakerphone \$109.95
 BT100-A Uniden Trimstyle phone \$17.95
 KT280-A Uniden Family phone with 911 feature \$29.95
 FF150-A Uniden Executive phone \$39.95

RELM® RH256B-A

List price \$587.50/CE price \$299.95/SPECIAL 16 Channel • 25 Watt Transceiver • Priority The RELM RH256B is a sixteen-channel VHF land mobile transceiver designed to cover any frequency between 150 to 162 MHz. Since this radio is synthesized, no expensive crystals are needed to store up to 16 frequencies without battery backup. All radios come with CTCSS tone and scanning capabilities. A monitor and night/day switch is also standard. This transceiver even has a priority function. The RH256 makes an ideal radio for any police or fire department volunteer because of its low cost and high performance. A 60 Watt VHF 150-162 MHz version called the **RH808B-A** is available for \$429.95. A UHF 15 watt, 16 channel version of this radio called the **RU158B-A** is also available and covers 450-482 MHz, but the cost is \$454.95.

★★★ Uniden CB Radios ★★★

The Uniden line of Citizens Band Radio transceivers is styled to complement other mobile audio equipment. Uniden CB radios are so reliable that they have a two year limited warranty. From the feature packed PRO 810E to the 310E handheld, there is no better Citizens Band radio on the market today.

PRO310E-A Uniden 40 Ch. Portable/Mobile CB \$83.95
 PRO330E-A Uniden 40 Ch. Remote mount CB \$104.95
 PRO500D-A Uniden 40 Channel CB Mobile \$38.95
 GRANT-A Uniden 40 channel SSB CB mobile \$166.95
 PC122-A Uniden 40 channel SSB CB mobile \$119.95
 PRO10XL-A Uniden 40 channel CB Mobile \$38.95
 PRO20XL-A Uniden 40 channel CB Mobile \$56.95
 PRO330E-A Uniden 40 channel CB Mobile \$79.95
 PRO640E-A Uniden 40 channel SSB CB Mobile \$137.95
 PRO810E-A Uniden 40 channel SSB CB Base \$174.95

★★★ Uniden Radar Detectors ★★★

Buy the finest Uniden radar detectors from CEI today. TALKER-A2 Uniden talking radar detector \$119.95
 RD3XL-A Uniden 3 band radar detector \$159.95
 RD8-A Uniden visor mount radar detector \$89.95
 RD9GTL-A Uniden "Passport" size radar detector \$114.95
 RD9XL-A Uniden "micro" size radar detector \$144.95
 RD27-A Uniden visor mount radar detector \$54.95
 RD90GT1-A Uniden remote mount radar det. \$109.95
 RD99GT-A Uniden remote mount radar detector \$119.95
 CARD-A Uniden credit card size radar detector \$179.95

Bearcat® 200XLT-A

List price \$509.95/CE price \$239.95/SPECIAL 12-Band, 200 Channel • 800 MHz. Handheld Search • Limit • Hold • Priority • Lockout Frequency range: 29-54, 118-174, 406-512, 806-956 MHz. Excludes 823.9875-849.0125 and 868.9875-894.0125 MHz. The Bearcat 200XLT sets a new standard for handheld scanners in performance and dependability. This full featured unit has 200 programmable channels with 10 scanning banks and 12 band coverage. If you want a very similar model without the 800 MHz band and 100 channels, order the **BC 100XLT-A** for only \$189.95. Includes antenna, carrying case with belt loop, ni-cad battery pack, AC adapter and earphone. Order your scanner now.

Bearcat® 800XLT-A

List price \$549.95/CE price \$239.95/SPECIAL 12-Band, 40 Channel • No-crystal scanner Priority control • Search/Scan • AC/DC Bands: 29-54, 118-174, 406-512, 806-912 MHz. Excludes 823.9875-849.0125 and 868.9875-894.0125 MHz. The Uniden 800XLT receives 40 channels in two banks. Scans 15 channels per second. Size 9 1/2" x 4 1/2" x 1 1/2". If you do not need the 800 MHz band, a similar model called the **BC 210XLT-A** is available for \$178.95.

Bearcat® 145XL-A

List price \$189.95/CE price \$94.95/SPECIAL 10-Band, 16 Channel • No-crystal scanner Priority control • Weather search • AC/DC Bands: 29-54, 136-174, 406-512 MHz. The Bearcat 145XL is a 16 channel, programmable scanner covering ten frequency bands. The unit features a built-in delay function that adds a three second delay on all channels to prevent missed transmissions. A mobile version called the **BC580XLT-A** featuring priority, weather search, channel lockout and more is available for \$94.95. CEI's package price includes mobile mounting bracket and mobile power cord.

President® HR2510-A

List price \$499.95/CE price \$239.95/SPECIAL 10 Meter Mobile Transceiver • Digital VFO Full Band Coverage • All-Mode Operation Backlit liquid crystal display • Auto Squeeze RIT • Preprogrammed 10 KHz. Channels Frequency Coverage: 28.0000 MHz to 29.6999 MHz. The President HR2510 Mobile 10 Meter Transceiver made by Uniden, has everything you need for amateur radio communications. Up to 25 Watt PEP USB/LSB and 25 Watt CW mode. Noise Blanker. PA mode. Digital VFO. Built-in S/R/F/Mod/SWR meter. Channel switch on the microphone, and much more! The HR2510 lets you operate AM, FM, USB, LSB or CW. The digitally synthesized frequency control gives you maximum stability and you may choose either pre-programmed 10 KHz. channel steps, or use the built-in VFO for steps down to 100 Hz. There's also RIT (Receiver Incremental Tuning) to give you perfectly tuned signals. With receive scanning, you can scan 50 channels in any one of four band segments to find out where the action is. Order your HR2510 from CEI today.

NEW! President® HR2600-A

List price \$599.95/CE price \$299.95/SPECIAL 10 Meter Mobile Transceiver • New Features The new President HR2600 Mobile 10 Meter Transceiver is similar to the Uniden HR2510 but now has repeater offsets (100 KHz.) and CTCSS encode.



BC760XLT
800 MHz.
mobile scanner
SPECIAL!

★★★ Extended Service Contract ★★★

If you purchase a scanner, CB, radar detector or cordless phone from any store in the U.S. or Canada within the last 30 days, you can get up to four years of extended service contract from Warrantech. This service extension plan begins after the manufacturer's warranty expires. Warrantech will perform all necessary labor and will not charge for return shipping. Extended service contracts are not refundable and apply only to the original purchaser. Warrantech does not have an extended warranty plan for handheld scanners. For mobile or base scanners, CB radios or radar detectors a 1 year extended warranty is \$19.99, two years is \$39.99 and four years is \$59.99. Order your service contract today.

OTHER RADIOS AND ACCESSORIES

BC55XLT-A Bearcat 10 channel scanner \$114.95
 AD100-A Plug in wall charger for BC55XLT \$14.95
 PS001-A Cigarette lighter cable for BC55XLT \$14.95
 VC001-A Carrying case for BC55XLT \$14.95
 AT054-A Replacement antenna for BC55XLT \$14.95
 BC70XLT-A Bearcat 20 channel scanner \$159.95
 BC175XLT-A1 Bearcat 16 channel scanner \$134.95
 BC1-A Bearcat Information scanner with CB \$129.95
 INF7-A Regency Information Radio \$109.95
 INF10-A Regency Information Radio \$109.95
 INF50-A Regency Information Radio \$109.95
 UC102-A Regency VHF 2 ch. 1 Watt transceiver \$114.95
 VM200XLT-A Uniden Video monitoring system \$179.95
 BP205-A Ni-Cad batt. pack for BC200/BC100XLT \$39.95
 FBE-A Frequency Directory for Eastern U.S.A. \$14.95
 FBW-A Frequency Directory for Western U.S.A. \$14.95
 RFD1-A MI, IL, IN, KY, OH, WI Frequency Directory \$14.95
 RFD2-A CT, ME, MA, NH, RI, VT Directory \$14.95
 RFD3-A DE, DC, MD, NJ, NY, PA, VA, WV Dir. \$14.95
 RFD4-A AL, AR, FL, GA, LA, MS, NC, PR, SC, TN, VI \$14.95
 RFD5-A AK, ID, IA, MN, MT, NE, ND, OR, SD, WA, WY \$14.95
 RFD6-A CA, NV, UT, AZ, HI, GU Freq. Directory \$14.95
 RFD7-A CO, KS, MO, NM, OK, TX Freq. Directory \$14.95
 ASD-A Airplane Scanner Directory \$14.95
 SRF-A Survival Radio Frequency Directory \$14.95
 TSG-A "Top Secret" Registry of U.S. Govt. Freq. \$14.95
 TTC-A Tune in on telephone calls \$14.95
 CBH-A Big CB Handbook/AM/FM/Freeband \$14.95
 TIC-A Techniques for Intercepting Communications \$14.95
 RRF-A Railroad frequency directory \$14.95
 EEC-A Embassy & Espionage Communications \$14.95
 CIE-A Covert Intelligence, Elect. Eavesdropping \$14.95
 MFF-A Midwest Federal Frequency directory \$14.95
 A80-A Magnet mount mobile scanner antenna \$34.95
 A70-A Base station scanner antenna \$34.95
 USAMM-A Mag mount VHF ant. w/ 12' cable \$39.95
 USAKA-A 3/4" hole mount VHF ant. w/ 17' cable \$34.95
 Add \$4.00 shipping for all accessories ordered at the same time. Add \$12.00 shipping per radio and \$4.00 per antenna.

BUY WITH CONFIDENCE

To get the fastest delivery from CEI of any scanner, send or phone your order directly to our Scanner Distribution Center. Michigan residents please add 4% sales tax or supply your tax I.D. number. Written purchase orders are accepted from approved government agencies and most well rated firms at a 10% surcharge for net 10 billing. All sales are subject to availability, acceptance and verification. On all credit card orders, the ship to address must exactly match the credit card billing address. If the billing address is a P.O. Box or a P.O. Box Zip Code, UPS can not deliver to that address. When this occurs, the order must be shipped by mail at a higher cost to you. To avoid this extra charge, you may mail us a check with your order. Prices, terms and specifications are subject to change without notice. All prices are in U.S. dollars. Out of stock items will be placed on backorder automatically or equivalent product substituted unless CEI is instructed differently. A \$5.00 additional handling fee will be charged for all orders with a merchandise total under \$50.00. Shipments are F.O.B. CEI warehouse in Ann Arbor, Michigan. No COD's. Most items listed have a manufacturer's warranty. Free copies of warranties on these products are available by writing to CEI. Non-certified checks require clearance. Not responsible for typographical errors.

Mail orders to: Communications Electronics, Box 1045, Ann Arbor, Michigan 48106 U.S.A. Add \$12.00 per scanner for U.P.S. ground shipping and handling in the continental U.S.A. For Canada, Puerto Rico, Hawaii, Alaska, or APO/FPO delivery, shipping charges are two times continental U.S. rates. If you have a Discover, Visa, American Express or MasterCard, you may call and place a credit card order. 5% surcharge for billing to American Express. Order toll-free in the U.S. Dial 800-USA-SCAN. In Canada, dial 800-221-3475. FAX anytime, dial 313-971-6000. If you are outside the U.S. or in Michigan dial 313-973-8888. Order from CEI today.

Scanner Distribution Center™ and CEI logos are trademarks of Communications Electronics Inc. Sale dates 3/15/90 - 9/30/90 AD #020890-A Copyright © 1990 Communications Electronics Inc.

For credit card orders call
1-800-USA-SCAN

COMMUNICATIONS ELECTRONICS INC.

Consumer Products Division
P.O. Box 1045 □ Ann Arbor, Michigan 48106-1045 U.S.A.
For orders call 313-973-8888 or FAX 313-971-6000

The BBC's Pamela Creighton

by Alison Johnston

"Crisis Creighton" is what they call her in Bush House. It's strange, but when something awful happens, newsreader Pamela always seems to be the one to announce it to the world. The Challenger spacecraft exploding, the deaths of two popes in the same year, the nuclear accident at Chernobyl, the assassination of Mrs. Gandhi: "Even her son didn't believe it till he'd heard it from us," says Pamela.

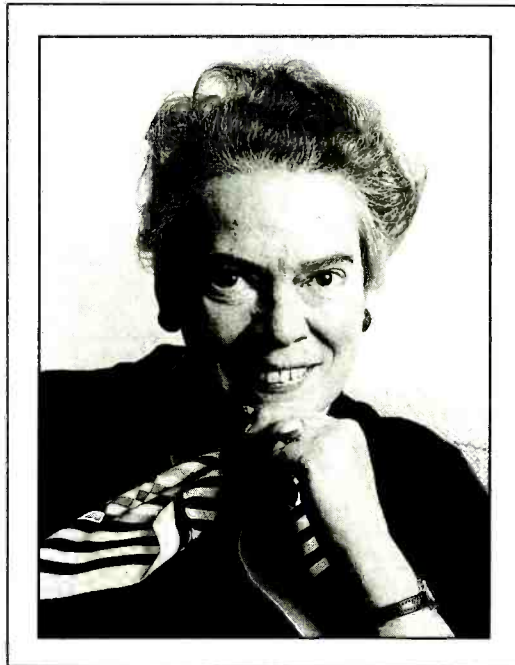
Mrs. Gandhi's death was a difficult announcement for her. Born of English parents in Delhi in 1933, her family had moved in the same circles as the Gandhis, and as a child she mixed with their children. Her father, a steam engine designer and engineer with the Midland Railway, was asked by the British government to go out to India in 1922 to help build the North Western Railway at Peshawar, near Rawalpindi. Here he and Pamela's mother started their married life -- with very little besides a tent and a motorbike with sidecar.

So how did Pamela make the leap from Delhi to the Bush House newsroom? Her father had a lot to do with it. By 1955 she had finished her education in England and the family had returned from India for good. She planned to take up a career in hotel work in South Africa but her father -- an astute man by all accounts -- sensed that she would be unhappy with the political situation there and sent her an ad from the *Daily Telegraph*.

The BBC was advertising for studio managers. To please her father, Pamela filled in the application form -- and got the job! A keen listener to the World Service in India, she expressed an interest in what was then the External Services and began work as a studio manager/announcer for the BBC North American Service.

Those were the days when women were not considered fit to read the news. For

one thing, their voices were thought too high and so not authoritative enough. Women were allowed on the air but tended to read recipes and items about knitting. After all, says Pamela ironically: "What



woman knew anything about the news?"

It was as late as the 1970s that things began to change. Women had started to appear on television -- they were, after all, decorative! Pamela was determined that if there were any chance of women being permitted to read the news, she would be in at the beginning. And so she was, becoming in 1972 only the second female newsreader on World Service.

So what is the attraction of this often nerve-wracking job? "Being able to give people the opportunity of listening to the truth, in areas where they've never heard the truth in their lives," says Pamela.

The skill of imparting news is not one

she feels can be taught. "You've got to be interested in passing on information. The feeling must come from inside. It can't be put on you. You must be yourself and only then can you begin to communicate with other people.

"I suppose it's like the difference between a great actor and a darned good performer. There's something a great actor has which comes from inside."

The usual advice to a novice is to imagine reading the news to one person but, she prefers to think in terms of a collection of different people: "one person sitting here, another standing over there, another working there, someone reading there -- some of them very well informed, others who know nothing of what I'm telling them."

She has obviously managed this art of communication to an extraordinary extent. Traveling on a bus from Alexandria to Cairo, Pamela was tapped on the shoulder from behind by someone who had heard her voice and asked: "Do you broadcast?" "Yes." "Are you with the BBC?" "Yes." "Are you Pamela Creighton?" Right again.

There have been moments, though, when Pamela might have wished the ground would open up and swallow her -- like the time she was announcing for the North American Service and faded out a football match before the closing moments.

It wasn't just any football match. It was the World Cup final between England and West Germany in 1966. The match had gone into extra time with the score standing at two-all. Pamela, conscious that the next program, classical music, was scheduled, let the football run as long as she dared but made the fatal decision to abandon the match, moments before Geoff

Hurst scored the clincher for England.

"The whole of Bush House exploded. I went through the worst week of my life -- I really thought I was finished. To me Brahms had seemed more important than football. I learned a lesson then -- that football is sacrosanct."

She has been guilty of few howlers since, but does recall her husband, who also used to work for the BBC, once announcing: "This is the British Broadcasting Corporation Cas-tration."

A familiar voice to millions of listeners, Pamela receives about five letters a week from all over the world, answering each one personally from her back kitchen in Twickenham.

"I find some of them very moving. People write from abject pov-erty, managing to beg or borrow money for a stamp and airmail letter and ask me things like: 'Can I be your adopted son? Can you send me a watch? How can I get to England?' They don't so often want to marry me -- they all want me to be their mother!" says Pamela a little ruefully.

It was a lonely experience for her when she left India in 1945 to attend Cheltenham Ladies College. Intensely homesick, she detested, above all, sport. She had contracted typhoid in India and survived thanks to her father, who had seen that all the family were inoculated.

There were no drugs in those days, only the body's ability to fight the disease. Her doctor warned her: "You'll get better but you're going to be very large." That put an end to the ballet dancing at which she had excelled, and made sport difficult.

"One term," she announces proudly, "I managed to be 'ill' every Thursday." Thursday was "gym." History, geography, and English were her favorite subjects but her burning ambition was to be a brain surgeon. She had to drop that idea when she realized the astronomical cost to her parents of paying for a further nine years of training.

***"You must
be yourself
and only
then can
you begin to
communicate
with people."***

Traveling back and forth from India to school in England gave Pamela a taste for travel which has never left her. The Middle East is a favorite destination -- especially Egypt and Jordan -- with Cyprus a close runner-up.

What about unwinding after work? She is an avid stamp collector: "Of course, it's a great bonus working at the Bush House." Gardening is another passion, shared

by her husband who grows chrysanthemums.

The garden is a long rambling one with a rustic wooden gate at the bottom leading to a further wilder patch and overlooked by several sad-looking horse-chestnut trees, lopped by the 1987 hurricane.

As I left her house in leafy Twickenham, hastily avoiding the on-slaught of rugby fans arriving for the England-Fiji International, it struck me what a good thing it was that Pamela Creighton's career had not ended in 1966 over a "mere" football match! The BBC World Service would have been much the poorer.



Reprinted from "London Calling."

STOCKS.....OPTIONS.....FUTURES

Turn Your PC Into A MARKET QUOTATION MONITOR

New book covers complete information on financial news and market quotes for your PC.

Topics include:

- Data Encryption
- Password Methods
- Receiver Unit Design

Covers quotation processing and data broadcasting from the trading floor to the desktop. \$19 plus \$2 S/H (includes demo diskette).

Send for FREE catalog of

- DATA RECEIVER KITS
- QUOTE DISPLAY SOFTWARE
- DESCRAMBLING UTILITIES

303-223-2120 (anytime)

DATArx

111 E. Drake Rd, Suite 7041
Fort Collins, CO 80525

LOG MORE RTTY

with the Essential RTTY
Frequency List

Over 1,000 active RTTY listings with call, location, speed, shift, etc.
\$10.95 + \$2 s/h, \$3 foreign.

**Radioteletype Monitoring -
The Complete Guide**

Makes tuning in RTTY easy; Just \$9.95 plus \$2 s/h, \$3 foreign. Both books \$18 plus shipping. Catalog \$1, free with order.

**TIARE PUBLICATIONS
P.O. Box 493-G
Lake Geneva, WI 53147**

INPUT and FEEDBACK

When it comes from our readers, it's our favorite terminology. Send us your QSLs, pics of your monitoring post, your letters to the editor; let the columnists know your tips, experiences, and opinions! **MT** will be all the better for it.

Shortwave Broadcasting

Glenn Hauser

Box 44164-MT
Tucson, AZ 85733

AFGHANISTAN Radio Afghanistan, English to Southeast Asia, has been retimed to 0930-1030 UTC, via Soviet relays on 17720 and 15350; also announced on 4940 (Victor Goonetilleke, Sri Lanka, Radio Netherlands *Media Network*)

ALBANIA (non) Ex-King Zog's son, now living in South Africa, plans clandestine shortwave broadcasts, unknown whence but his organization is based in Paris (*Austrian SW Panorama* and *RNMN*)

ANTIGUA Four harmonics were all audible around 2218, BBC x 4 on 23900 and x 2 on 30780; Deutsche Welle seconds on 30210, 30820 (Hauser, AZ)

ARMENIA Local programming from Yerevan on 4810 can be heard until blocked by South Africa at 0300; but one night during the conflict with Azerbaijan only music was heard from 0211 (Hans Johnson, GA)

AUSTRALIA Is Radio Australia's *Communicator* kaput or just on summer vacation? It's been replaced by reruns of *Bright Sparks*, about the early history of radio in Australia, Sat. 1030, Sun. 1430, Mon. 0730 (*DX Listening Digest*)

AZERBAIJAN Radio Baku domestic service on 4785 from 0215 until a Moscow relay at 0300 (Hans Johnson, GA, RCI SWL Digest) Another program on 4957.7, around 0400 in Russian (Brian Alexander, PA, *NASWA Journal*) During the uprising, the two services were combined (Jonathan Marks, *RNMN*)

AZORES Radio Clube do Angra, 909 kHz, has been relayed by a utility transmitter on 13584, heard often as early as 1730 and as late as sign-off just after 0200 with two anthems (8 *Play-DXers*, mostly in Italy)

BAHRAIN (non) Radio Bahrain relayed via Sulaibiyah, Kuwait, daily 1130-1230 on 15505 in Arabic (Leigh Morris, Adelaide, Radio Australia Japanese *DX Time*)

BANGLADESH English from Radio Bangladesh: 0800-0830 and 1230-1300 on 15195, 11705; 1815-1900 on 15255, 11705, the last pair also carrying other languages between 1315 and 2000. Home service: 0000-0330 and 1230-1600 on 4879.9, 0430-0905 on 15535, 0900-1235 on 7079.9, 1230-1730 on 15535, which alternates with 15520 (Victor Goonetilleke, *UADX*) 15533 and 4880 at 1235 (Craig Seager, *Australian DX Nws*). 15257 from 1358 to 1545 and 1700-2000 in various languages (Ernie Behr, Kenora, Ont., RCI *SWLD*)

BHUTAN BBS has finally made it to North America. Heard on 5023.4 between 1315 and 1500 sign-off, with IDs on the quarter-hour; squeezed between China on 5020, Cuba on 5025 (Ed Kusalik, Alberta, *DX Spread*) Also audible one morning only from 1449 to 1501 (Bruce MacGibbon, OR, *DX Spread* ed.)

BOLIVIA Radiodifusora Tarabuco is a new station in the town of the same name, heard at 0030 to 0200 variable on 5215, announced as 5216 (Hirotugu Nabeshima, Peru, *Radio Nuevo Mundo*)

BOTSWANA Radio Botswana plans to use three 50 kW shortwave transmitters from Sebele, Near Gaborone on three frequencies simultaneously, chosen from 3350, 4820, 5955 and 7255; and there will be independent sideband feeders for AM and FM relays elsewhere (Ted Makgekene, RB Director General, *International Broadcast Engineer via OzDX*)

BRAZIL Radio Anhanguera is heard until about 0300 on 11833 variable; just below El Espectador, Uruguay on 11835 until 0200 (Ernie Behr, *DXLD*)

BULGARIA Radio Sofia's anticipated English schedule for

March 4-24 (after which times shift one hour earlier and some frequencies change): North America, 0000-0100 on 11680, 15330; 0400-0500 on 11720, 11735. Europe, 0730-0800 on 11720, 15160, 17825; 1930-2000 on 9700, 11660, 15330; 2130-2200 on 9700, 11660, 15330; 2230-2330 on 11680, 15330. Africa, 0400-0500 on 11765, 15160, 15310; 1530-1630 on 11735, 15310, 17825; 1830-1930 on 11735, 15310, 17825 (via John Carson, OK)

CAMBODIA (non) Democratic Kampuchean Radio is a completely different station from Voice of Democratic Kampuchea, which it resembles; believed to support the anti-Heng Samrin group, but not VODK's Pol Pot. Heard at 1800-1855 on 6974, no doubt from China as it made frequency change at same time as Radio Beijing. D.K.R. was the name of the Cambodian government station in 1977 (Yoshinori Kato, Radio Japan *DX Corner*)

CAMEROON Radio Cameroon, Yaounde, seems off shortwave now, not heard for some time on 4850, 6060 or 9745. Both Douala and Bertoua are also inactive. Garoua uses 7240 all day and Buca, Bafoussam, are operating on full shortwave schedules (C. Aryommu, Nigeria, *Sweden Calling DXers*)

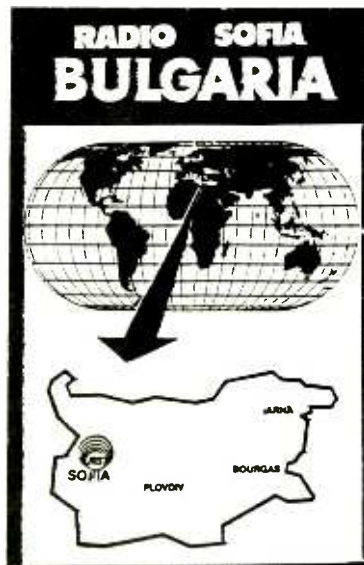
CANADA Some, but not all airings of RCI *SWL Digest* have been shifted temporarily to 24 hours later until March 24, in order to accommodate a special series on Saturdays. So until then, listen for *SWLD* at these UTC days and times: Sun. 0037, 0337, 2137, 2233, 2307, Mon. 0107, Tue. 1333, 1907, Wed. 0407. After that, 0337 and 2137 should move back to Saturday; 2233 should become Sat. 2107; 0107 should return to UTC Sun.

A Matter of Survival is the special series, with David Suzuki on the environment: Fri. 2207, Sat. 0307, 2137, 2207, Sun. 0107, Fri 1333.

RCI's German service got another reprieve. Check 21545, 17820, 15325, 13650, 7235, 5995 at 1730-1800 to hear whether it survives with commercial underwriting, or has ceded its timeslot to Russian.

COLOMBIA (non?) Radio Patria Libre was on 6300 with coo-coo chimes and ID at 0115 (Hans Johnson, GA, *DXLD*) Now varies around 6290 at 0030-0115 daily (BBC Monitoring)

COSTA RICA Radio for Peace International has dropped 25947 but it could resume in March or April; the one-hour break between afternoon and evening broadcasts has been eliminated so evening shows appear one hour earlier. At 2000-2330 and 2330-0300, 21566 and 13660 are used, with 7375 joining at 2330. Then from 0315, 7375 USB comes back with another repeat until 0645, sometimes later; this applies to weekdays. On weekends, 1800-2330 on 21566 and 13660, 2330-1030 on 7375. As a result, our *WORLD OF RADIO* is now scheduled: Fri. 2000, 2330, Sat. 0315, 0645, 1015?, 1930; UTC Sun. varying widely 0030-0230 plus further repeats; 2230; Tue. 2230; Wed. 0200, 0545. If missing on 7375, try 7425, where heard one evening by Terry Palmersheim, WA.



CZECHOSLOVAKIA Radio Prague has resumed the interval signal it used until 1948, from Dvorak's New World Symphony (Bruce MacGibbon, and Christos Rigas, *W.O.R.*)

CHILE Radio Nacional, still in the hands of the military government, may be privatized after March 14; has been using 15139.5 only, at 0930-1215, 1500-1815, 2140-0330. Other stations may be returned to original owners: Radio Corporacion to the Socialist Party; Radio Balmaceda to the Christian Democrats; and Radio Magallanes to the Communists (Gabriel Ivan Barrera, Radio Nederland *Radio-Enlace*) Radio Magallanes announced its broadcasts via Moscow ended, in anticipation of resuming operations in Chile itself (*Austrian SW Panorama*)

A new station has been heard on 5825, Radio Tencan (?) Evangelica, at 0136-0304 with religion (Barrera, RN *Radio-Enlace*)

DENMARK (non) Radio Denmark's new relays via Norway are to run on this complete schedule of 25-minute broadcasts: 1530 on 15310, 11845. 1630 on 15220, 17790. 1730 on 21705, 15220, 9655. 2130 on 15165, 11850, 9605. 2230 on 11850. 2330 on 9605. 0030 on 9610. 0130 on 11925, 9615. 0230 on 15305, 9565. 0430 on 11865, 9585. 0630 on 15160, 5980. 0730 on 21730, 15165. 0930 on 17740. 1030 on 25730, 21705, 15165. 1130 on 25730, 21705. 1230 on 21705, 15165. 1330 on 21710 (*World of Radio*) Note 15165 is still among the frequencies, but no longer from Denmark.

DJIBOUTI Radio France International will have three 500-kW shortwave relay transmitters on the air from here by the end of 1990, primary coverage a 5 megameter radius from Jibuti (as BBC Monitoring spells it).

ECUADOR It's rare for a mediumwave harmonic from here to make it all the way to North America, but Radio Francisco Orellana was heard on 2060 kHz, announcing 1030, around 0500 (Don Moore, MI, *DXLD*)

HCJB hopes to install new SSB transmitters in Pifo next month, two in operation, one as standby; rhombic antenna for one, another connectable to any existing antenna; main target Europe but also as back up for Americas (Brent Allred, HCJB, *DXLD*)

DXPL is offering a new "World by 2000 Confirmed Stations Award" if you send photocopies of QSLs from at least five of the eleven stations operated by HCJB, FEBC, TWR, ELWA, from at least three of the organizations in five different continents (*Index International* via John Carson, OK)

ETHIOPIA Voice of Ethiopia covered VOA and ABC on 9660, in English at 1800-1826 (Don Moman, Alberta, *Fine Tuning*)

GREECE Voice of Greece has consolidated the Australian services at 2100-2150 and 2200-2250, eliminating the break on 9425, but 9395 and 7430 still go off at 2150. The same consolidation goes for North America, at 0000-0350 on 9420, 9395, 7430 (Christos Rigas, Chicago) They use two 100-kW transmitters at Avlis, beamed 323 and 285 degrees and relay by phone line to a 250-kW VOA transmitter at Kavala, limited capacity since it has no antennas for North America, but beams 355 degrees. English news at 0130 and 0340.

The first program of Radiophonikos Stathmos Makedonias relays mediumwave with a new rhombic antenna at 315 degrees toward Europe on 11595. Its other 35-kW transmitter is beamed 115 degrees to Cyprus and the Mideast on 9935; both from 1000 to 2300 on weekdays, 0600-2230 on Saturday, Sunday, Greek holidays. It also uses the VOA Kavala 250 kW on 9425 at 1900-2100, to Europe at 355 degrees, with news in Greek, Old Greek folk songs, modern Greek songs, American jazz and pop (John Babbis, Silver Spring, MD)

GUAM AWR has announced that KSDA will install a third high-power transmitter this year, at least 100 kW, to enhance broadcasts to East Asia (Arthur Ward, *WDXC Contact*)

GUINEA Radio Conakry on 4899.8 from 2050 to 2330 in French and venaculars (Dario Monferini, Italy, *Play-DX*)

ICELAND Rikisutvarpid's schedule of domestic program relays on USB: 1215-1245 on 15790, 15767, 13861, 11418; 1410-1440 on 15767, 13855, 13830; 1855-1930 on 13855, 11418, 9268, 7870, 3295; 1935-2010 on 15780, 15767, 13855; 2300-2355 on 13855, 11418, 9286 (BBC Monitoring) That's 9268, and it usually closes around 2330 (Ernie Behr, Ont.)

INDONESIA One-time reception of RRI Ujung Pandang on 9551, abruptly fading in at 0156 and out at 0215 seemed to correlate with the Newcastle earthquake, immediately after it happened (Bob Padula, Australia, *DXLD*)

IRAN Islamic Republic of Iran Broadcasting, in English; 1130-1225 on 11790, 9685; 1930-2030 on 9022, 6030 (via Kevin Klein and Tom McKeon)

KBS **KOREA, SOUTH** Topics on **IRIB** *Listeners' Forum*, Fridays on Radio Korea: March 2 and 9, personal tips on proper ways of studying for life-long education; March 16, 23, 30, if you were granted another life, how would you live it? Contribute by letter or tape to *Listeners' Forum*, English Service, Radio Korea, KBS, Seoul, Korea; or fax to Seoul 781-3799 (via Tom Kuca, NY)

MOROCCO The VOA relay station, now under construction, should be prefaced with "USS" like the *Courier* of the 1950s. This station also "floats". So far it has required half a mountain of fill to get the foundation tops above sea level. Some wag in engineering suggested that now that they have cut the mountain down they should use that for the station site and forget the tidal lake. And it seems some problem has developed with the foundations and that all have had to be jack-hammered out and will be replaced. At this rate the cost of the station is sure to rise far above the published price of more than \$200,000,000. With all the glasnost', why build the station anyway? (*Review of International Broadcasting*)

NAMIBIA (non) Voice of Namibia, SWAPO clandestine programs via Zambia and Zimbabwe have been discontinued. They were also dropped in 1989 from Ethiopian and Tanzanian shortwave facilities (BBC Monitoring)

NETHERLANDS (non?) A new unofficial station is Quality Radio, heard Sundays at 0900-1100 and 1900-2100 on 9985; 500 watts. Address is P.O. Box 85455, The Hague 2508 CD, Holland (RCI *SWL Digest*)

NEW ZEALAND Radio New Zealand International inaugurated its new 100-kW transmitter on schedule with 0400 UTC "bless this transmitter" prayers in Maori and English -- another missionary broadcaster in the making? Or just another country where church and state are not separate. Then numerous greetings from officials and stations on various Pacific islands. At 0555, 17680 switched to 9850 for opening of the Commonwealth Games. Just before 0400, the old 7.5 kW transmitter on 17705 was supposedly switched off for the last time, following an unpublicized hour of reminiscences about the old Radio New Zealand (Bruce MacGibbon, OR & gh) The tentative schedule for 5 March to 5 May 1990 (alternates in parentheses): Polynesia 1700-1900 on



DX Helper

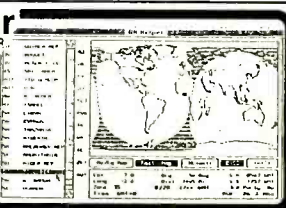
Macintosh Software W7HP

MUF Map • MUF Plot
Gray Line • Great Circle
Prefix, Zone, Oblast
WWW Alert • CW Drill

\$39.95 Info
ppd \$1

AntennasWest
Box 50062-M, Provo, UT 84606

(801) 373-8425 See band openings on the map before they happen!



Shortwave Broadcasting

17730 (17680 or 15150), 0300-0600 on 17705 (17680 or 15485). Melanesia 1905-2100 on 17730 (17680 or 15485), 0630-0930 on 15485 (11780 or 9850). General Service 2100-2400 on 17730 (17680 or 15485) (A H Marr, RNZ) 15485 has utility interference, and other broadcasters are on 17705 and 17730. They should stick with clear 17680.

POLAND Radio Scandinavia is expected to undertake a four-week test via Radio Polonia facilities, Saturdays at 1030-1200 on 9675, 9860, 11815 with Top 40 music (*Sweden Calling DXers* and *RNMN*) The station/program had previously broadcast via Andorra and Italy

ROMANIA Two weeks after the execution of Ceausescu Radio Bucharest also abolished its identification signal due to its association with the old regime. The new one is called "Lion Cubs" (Bruce MacGibbon, *DX Spread*) Continued poor reception of the evening broadcasts supposedly for North America leads monitors here to try those targeted elsewhere, and with better results: best at 0645-0715 for the Pacific on 15335, with 17805 also audible (Larry Shewchuk, Winnipeg, *DXLD*) Best at 1500 on the South Asian beam, 15250 (Bob Rankin, Tonganoxie KS) New IS at 1458, best on 15250, parallel 15335, weak on 17720, under Chinese jammer on 17745 (Ernie Behr, Ont.) Best at 1730 on 15365 (Bruce MacGibbon, OR)

This must be a first in international broadcasting: Radio Bucharest said it had not been allowed to transmit the real Romania under Ceausescu, apologized for a daily flood of lies and misrepresentations for 25 years (*Austrian SW Panorama*)

SRI LANKA Summary of clandestine activity: JVP Radio, 4432, has been busted. Voice of the Tamil Homeland, an operation of the EPRLF, the Indian-backed provincial government in the northeast, in Tamil 0130-0215 on 6740-6750 variable, again at 1030-1115, subject to jamming. Same station runs the Revolutionary Voice in Sinhala on 6300 at 0230-0300, 1130-1200 on Saturday, Sunday, Wednesday. Nidihasa Handa, anti-JVP station on 5304 at 0100-0145, and on 7010 at 0330-0415, the same three days and sometimes others. The 6300 outlet is very strong in Colombo, at least 5 kW. A new station also belonging to the EPRLF, called Voice of Eelam, is on 7000 kHz daily at 0200-0300 and 1300-1400, the last quarter of each in English; quite strong in Colombo, probably from Jaffna (Victor Goonetilleke, *RNMN*, *UADX*, and *Media Network*)

SUDAN Radio Omdurman on 11635, ex-11625, with English news until 1956 (Bob Padula, Australia, *RCI SWLD*)

(non) Radio SPLA, announcing daily broadcasts in English and another language, on 9550 and 11710 from 1300, English ID at 1359 (Gary Schlager, TX)

SWEDEN Though intended for South Asia, Radio Sweden's new 11760 at 0100-0130 in English is very good, even overriding Havana (Bill Peek, NC)

Thanks to the Swedish welfare system, Radio Sweden's DX editor George Wood is on paternity leave in California until July. This should result in more shortwave DX news and less computer, satellite and miscellaneous media news on the *Sweden Calling DXers* broadcasts compiled by his substitutes; listen Tuesdays at 1540, UTC Wednesdays 0110 and 0240.

Just before departing, George revealed that \$9 million had been granted for three new shortwave transmitters to replace the old ones from 1992 to 1994. The 17-year-old units are worn out; the new ones will be SSB-capable (*World of Radio*)

TAWAN (non) Voice of Free China's planned summer relay schedule via WYFR in Florida, March 25 to September 29, in English: 5950 at 0200-0400 on 355 degrees, with a second transmitter added at 0300-0400 on 285 degrees. 5950 also at 0700-0800, 285. 9680 at 0200-0400 beamed 315. 11740 at 0200-0300 at 222. 15440 and 17845 at 2200-2300 at 44 degrees, all 100 kW

(WYRF via *DXLD*)

THAILAND The home service on 4830 went off the air, then came back a few weeks later carrying the foreign service, including English at 1130-1230, parallel 9655 and 11905 (Victor Goonetilleke, Sri Lanka, *RNMN*)

TURKEY Ankara Police Radio moved again, heard on 7370, opening at 0455 (Brian Alexander, PA, *Fine Tuning*)

UKOGBANI The most active AFRTS relay frequency lately has been 9334.4 LSB, heard at 0500-0630 parallel 9242.3 (Ernie Behr, Ont., *DXLD*) 9334.2 LSB at 2052 (Russ Sampson, Canouan, Grenadines) 9334 LSB at 0850 past 0930 (Larry Russell, MI)

These transmissions are SSB feeders from Barford to Lajes in the Azores, by the US Defense Communications Agency heard regularly on one or two of these during 1989: 4042.2-U, 5377.5-U, 7571.8-L, 7910.0-U, 9242.4-L, 9334.3-L, 9929.3-L, 10537.8-L, 13651.3-L, 16041.3-L, 18741.3-L. Other frequencies reported elsewhere during 1988-1989, but not heard by me: 5230.2-L, 5370.5-U, 7565.5-U, 7568.9-U, 9239.3-U, 9926.3-L, 9934.1-U, 19291.4-L (Peter Schoeltzel, *DSWCI Shortwave News*)

USA WWCW, Nashville, sends its program schedule; 15690 until 0200, then 7520. Not all of it is preacher after preacher. *Program Guide* airs Monday-Friday at 1305-1310, Tuesday-Saturday 0305-0310. *New Horizons Radio Travelogue*, about U.S. cities, Mon-Fri 1605-1610. *Israel Press Review*, Sat. 1945-2000, Sun. 1930-1945. *Beth Chaim* (a "Christian Jew" program?) Mon-Fri 2030-2045. *Traditional Latin Mass*, Sun. 1700-1730; *What Catholics Believe*, Sun. 1730-1800, Mon. 0200-0230. The campy *Unshackled*, salvation stories complete with Hammond organ, weekdays 2300-2330, Saturday 1600-1630, Monday 0230-0300. *Dramatized Scriptures*, weekdays 1945-2000.

Non-English segments: Weekdays 2330-2400 Spanish; 0130-0145 Tue & Sat Spanish, Wed French, Thu German, Fri Arabic; 0145-0200 Tue-Sat Mandarin. Sun 2345-2415 French. The overall transmission schedule is 1300-0600 weekdays, 1500-0600 weekends (*Review of International Broadcasting*)

Voice magazine, the bimonthly with VOA articles and schedules, is in great demand around the world, but funding for it has run out. It will continue only if it can be privatized (*ANARC Newsletter*)

USSR Kazakh Radio, domestic service program one has resumed old frequency 4545 after several years on 4610, heard at 1450-1615, parallel 11950, 9780, 6180, 5970, the last two unheard in Japan for a long time (Yoshinori Kato, *Radio Japan DX Corner*)

Radio Station Peace & Progress, English schedule anticipated for March 4-25: Europe, 2200-2259 on 9610, 7360, 7215, 6145, 4795. Southeast Asia, 1300-1359 on 17870, 17840, 17635, 15535, 15520, 15420, 15330, 15130, 11870. Southwest Asia, 1630-1659 on 15320, 12065, 11910, 9705. Africa, 1630-1659 on 17565, 15585, 11980, 11850 (via John S. Carson, OK)

VIETNAM Several southern provinces during the war years were consolidated into fewer larger ones. Now they are separate again, making more provincial shortwave stations possible. Nghia Binh is divided into Quang Ngai and Binh Dinh; Phu Khanh into Phu Yen and Khanh Hoa; Binh Tri Thien into Quang Binh, Quang Tri and Thua Thien (Isao Ugusa, Japan, *World of Radio*)

Glenn Hauser invites you to listen to his broadcasts; see CANADA, and COSTA RICA, above. WORLD OF RADIO is also scheduled on WRNO, New Orleans: UTC Thu 0130, 1630; Fri 0000, 0130; Sat 0400; Sun 0030, 2130 -- on 15420 before 0000, then 7355, and after 0400 on 6185. Times vary widely, so stay tuned if not heard at first. All WRNO times move one hour earlier by UTC and some frequencies change the first Sunday in April due to DST. Also check out Glenn's publications REVIEW OF INTERNATIONAL BROADCASTING and DX LISTENING DIGEST. Samples in North America are \$2 each, elsewhere 7 IRCs or US\$3. Ten-issue subscriptions US\$21 each or both for US\$40. Overseas airmail, \$27, \$29 or \$31 depending on the zone; remittances must be in US\$ and on a US bank, or by postal money order, to Glenn Hauser, Box 44164-MT, Tucson, AZ 85733, USA.

Broadcast Loggings

Let other readers know what you're enjoying. Send your loggings to **Gayle Van Horn**, c/o MT, P.O. Box 98, Brasstown, NC 28902. English broadcast unless otherwise noted.

0028 UTC on 9925

BELGIUM: B.R.T. Comic opera and Flemish folk music program. (John Carson, Norman, OK)

0041 UTC on 9600

PORTUGAL: Radio Renascença. Portuguese. Religious discussions and interviews to station ID. Fair signal quality with interference until 0117 UTC sign-off. (Robert Landau, Secaucus, NJ)

0110 UTC on 9575

ITALY: R.A.I. International news and UNICEF report on Third World children and their problems. Parallel frequency 11800 kHz audible. (Bob Fraser, Cohasset, MA)

0112 UTC on 5930

CZECHOSLOVAKIA: Radio Prague. National news and ID. Editorial discussing events of 1968 and 1989. (George Neff, Lutz, FL) Monitored at 0300 UTC on 7345 kHz. (John Carson, Norman, OK)

0135 UTC on 9875

AUSTRIA: Radio Austria International. In depth interview on the end of the superpower influences in Europe. (Bob Fraser, Cohasset, MA) Audible on 6155 kHz at 0543 and 9870 kHz at 0230 UTC. (John Carson, Norman, OK)

0300 UTC on 3380

MALAWI: Malawi BC Corp. Chichewa. Closing notes of Malawi anthem, and opening program bits. Tone signal and station ID for fair signal quality. (Sam Wright, Biloxi, MS)

0308 UTC on 9765

USSR: Ukraine. Radio Kiev. Editorial asked "Was Afghanistan the Soviet Vietnam?" and discussion on Soviet republics. Monitored on 0300 UTC on 7400 kHz. (John Carson, Norman, OK) Audible on 9765 kHz at 0050 UTC with "Ukraine Today." (Bob Fraser, Cohasset, MA)

0356 UTC on 7400

USSR: Radio Yerevan. Russian. Male/female announcer duo with chat, ID, and interval signal at 0359 UTC. International news topics at 0400. (John Carson, Norman, OK)

0410 UTC on 4976

UGANDA: Radio Uganda. Very weak signal, making out bits of news items on Uganda. Station ID and fading during an African music tune. A real strainer to copy this time.-ed.

0435 UTC on 15170

TAHITI: Radio Tahiti. French. Male/female announcer duo with friendly talk and Tahitian music program. (Tim Johnson, Galesburg, IL)

0450 UTC on 3275

VENEZUELA: Radio Mara. Spanish. Excellent Latin music program to "Radio Mara" ID at 0455 UTC, and local ads and comments. (Frank Mlerzwinski, Mt. Penn, PA)

0557 UTC on 14918

KIRIBATI: Radio Kiribati. Country and western music, followed by island news and IDs to signal fade out at 0620 UTC. (Tim Johnson, Galesburg, IL) 0556 UTC signal tone and island music to local time check. Clear ID with news and weather.-ed.

0620 UTC on 4835

MALI: Radiodiffusion Malienne. French. Numerous announcements and ID noted as "ici Malienne." Native African music program. (John Carson, Norman, OK)

0626 UTC on 6095

MOROCCO: VOA Tangier relay. "VOA Sunday Morning" show featuring music from Belinda Carlisle. Poor reception with co-channel station interference. (Robert Landau, Secaucus, NJ)

0730 UTC on 9545

SOLOMON ISLANDS: S.I.B.C. Island merchant commercials, station ID and national news. (Tim Johnson, Galesburg, IL)

0750 UTC on 9580

AUSTRALIA: "Waltzing Matilda" interval tune opener for "Pacific Beat" show and international newscast at 0800 UTC. (John Carson, Norman, OK)

1005 UTC on 4830

VENEZUELA: Radio Tachira. Spanish. Latin vocals and instrumentals to ID. Utility interference throughout programming. (Harold Frodge, Midland, MI)

1036 UTC on 6160

CANADA: CBN. Newfoundland weather forecast, "Weekend Arts Magazine" show featuring local comedy entertainment. (George Neff, Lutz, FL)

1105 UTC on 11735

NORTH KOREA: Radio Pyongyang. Commentary on the unshakable faith in socialism and the ongoing struggle against US capitalism. (George Neff,

Lutz, FL) Audible on 15115 kHz at 0015 UTC. (Bob Fraser, Cohasset, MA)

1153 UTC on 3395

PAPUA NEW GUINEA: New Britain-Radio East New Britain. Pidgin. Lady DJ features country and rock oldies. Local PNG time check and ID. Monitored other PNG stations on 3220/3245/3385/ and 4890 kHz. (Harold Frodge, Midland, MI)

1500 UTC on 4775

INDONESIA: Java-Radio Republik Indo-Jakarta. Indonesian. Station ID and news coverage to tune-out, with fair signal quality.-ed.

1541 UTC on 25790

SOUTH AFRICA: Radio RSA. Discussion of Aquaculture and news headlines in brief. Station sign-off at 1555 UTC. Monitored at 1557 on 21535 kHz in Chichewa and English. (John Carson, Norman, OK)

1837 UTC on 13610

KUWAIT: Radio Kuwait. News in progress at tune-in with ID break at 1837 UTC. Co-channel interference from Abu Dhabi on 13605 kHz. (Stephen Price, Conemaugh, PA)

1844 UTC on 12005

TUNISIA: RTT Tunisia. Arabic. Closing Arabic music to clear ID as "ida' au alghumhuriya at Tunisiyya." (Stephen Price, Conemaugh, PA)

1916 UTC on 11915

BRAZIL: Radio Guacha. Portuguese. Local ads and tropical classics to a telefax service. Newscast "Noticias Internacional" with BBC remote to news at 1920-1923 UTC. Station ID "Gaucha." (Harold Frodge, Santos, Brazil)

1920 UTC on 9535

QATAR: Qatar Broadcasting Service. Arabic. Great Middle Eastern music program with ID break. (Tim Johnson, Galesburg, IL)

2000 UTC on 9870

SAUDI ARABIA: B.S.K.S.A. Arabic. Opening station ID and newscast with an excellent signal! (Stephen Price, Conemaugh, PA)

2024 UTC on 9022

IRAN: Voice of the Islamic Republic. Excellent reception to hear news headlines and blast of the USA for their Panama involvement. (Stephen Price, Conemaugh, PA) Monitored also on 15084 kHz. (Lance Micklus, Essex Junction, VT)

2031 UTC on 5952

YEMEN ARAB REPUBLIC: Radio San'a. Arabic. Middle Eastern music to clear ID at 2100. International news, Holy Koran recitations and anthem to 2109 sign-off. (Robert Landau, Secaucus, NJ)

2052 UTC on 15046

PIRATE: Samurai Radio. Pop music and address given as "P.O. Box 628, Stanesville, WV 25444." Station sign-off at 2057 UTC. DJ also gave frequency quote of 6200/6245 kHz. Signed back on at 2157 UTC. (Harold Frodge, Midland, MI)

2059 UTC on 7290

IRAQ: Radio Baghdad. Arabic. Sign-on with ID and closing anthem. National newscast at 2103 UTC amid heavy amateur radio transmissions. (Stephen Price, Conemaugh, PA) Monitored on 15400 kHz at 1745 UTC. (Kannon Shanmugan, Lawrence, KS)

2102 UTC on 15045

PIRATE: Voice of the Purple Pumpkin. Station ID "You're listening to the original, the one, the only Voice of the Purple Pumpkin broadcasting from the Purple Valley." Beatles and pop oldies to 2129 UTC. Station sign-off at 2141 UTC, followed by a sign-on from pirate Samurai Radio. (Harold Frodge, Midland, MI)

2105 UTC on 9950

SYRIA: Radio Damascus. Close down with news headlines and ID as "This is the broadcasting service of the Syrian Arab Republic Damascus Radio." Parallel 12085 kHz heard with poor signal quality. (Stephen Price, Conemaugh, PA) Monitored on 12085 at 2013. (Tim Johnson, Galesburg, IL)

2140 UTC on 9700

BULGARIA: Radio Sofia. "Spectrum" program features reports on Sofia's botanical gardens and the oldest national puppet theater. (Bob Fraser, Cohasset, MA)

2300 UTC on 15180

USSR: Lithuania. Radio Vilnius. National news and letters from listeners. Program feature on the history of Lithuania to 2327 sign-off. Heard on 7400 kHz at 2258-2309 UTC. (John Carson, Norman, OK)

2331 UTC on 7410

PIRATE: Voice of the Abnormal. Wolfman Jack type announcer with lots of yelling and Peter Lorre skit. Sign-off at 2347 UTC. No address given for this broadcast. (Harold Frodge, Midland, MI)

2335 UTC on 11825

ALBANIA: Radio Tirana. Discussion about Albanian socialist economy. Excessive interference from VOA sign-on at 2343. (John Carson, Norman, OK) Monitored on 9760 kHz at 2330 UTC. (George Neff, Lutz, FL)

2349 UTC on 4899

GUINEA: Radiodiffusion Nationale. French. African highlife music to "Ici Conarky" id, newscast and music to anthem at 2359 UTC. (Sam Wright, Biloxi, MS)

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

A Special Message to Shortwave Broadcast Listeners:

If you're like most shortwave listeners, hearing a new country is something of a thrill. Shortwave broadcast listeners, for example, have their share of rare and exotic targets to hear. Unfortunately, many of these can be found only on the lower frequency bands and that means that as spring approaches, these stations become harder to hear. Utility listeners don't have this problem.

The bottom line is -- and I am admittedly biased in favor of utility DXing -- that the Utility World offers more exotic targets for the country chaser than the broadcast bands do. When was the last time you logged, much less verified, Amsterdam and St. Paul Islands, Antigua and Barbuda, Bahamas, Bahrain, Barbados, Bermuda, Bhutan, Diego Garcia, Canary Island, Cape Verde, Caroline Islands, Cayman Islands, Christmas Island, Cocos (Keeling) Islands, Comoros, Cook Island, Dominica, Easter Island, Falkland Islands, Fiji, Gibraltar, Greenland, Grenada, Hawaii, Hong Kong, Howland Island, Iceland, Ireland, Jamaica, Jarvis Island, Johnston Island, Kerguelen Island, Madeira, Niue Island, Phoenix Island, Pitcairn Island, Puerto Rico, Reunion and dependencies, St. Christopher and Nevis, St. Helena, St. Lucia, St. Pierre and Miquellon, St. Vincent and the Grenadines, Samoa (American and Western), Singapore, Solomon Islands, Turks and Caicos and Tuvalu?

One well-known and very hard-core shortwave broadcast DXer has recently set his hand to utility DXing. I won't use his name here for fear of reprisals from his broadcast DX buddies, but this gent who is one of the best around. And he has been listening to the utility bands and liking it. To quote him, "It was nice to hear Djibouti and Khartoum working aircraft on 11300 since I no longer hear them on the shortwave broadcast bands."

Well, shortwave listeners, is your mouth watering yet? A lot of these targets are easy to hear (anytime of the year and on more than one frequency at a time) and yes, they do verify correct reception reports.

Look over some of the loggings in this month's column. Put the headphones back on and give utility band DXing a whirl of your radio dial and "Try it, you'll like it."

Plain White Envelopes in the Mail

I get nervous when a plain white envelope with no return address comes in the mail. It could be from anywhere: bill collectors, the IRS, the CIA maybe.

Recently, I received one of these terrifying plain white envelopes at the house. This time, however, it was a good one. Where did it come from? The stamp wasn't even cancelled so I couldn't tell. But after carefully opening the envelope, inside I found one sheet of paper, typed and unsigned. Boy, was this one interesting piece of paper.

To whoever sent this, I understand and appreciate you

taking the time to send it. SAC and Navy monitors pay attention, this is for you and I am only going to print this once. This is what the piece of paper had written on it:

JCS EMERGENCY ACTION MESSAGES

"Larry, you have mentioned these broadcasts many times in your column and loggings as broadcasted by SAC and the Navy. Thought you would like to read what the company policy says about these EAM broadcasts."

"JCS (Joint Chiefs of Staff) Emergency Action Messages (EAMs) contain key instructions or information from high-level authority and have predetermined formats (pro forma). Such messages are transmitted by various communications systems and normally carry FLASH precedence. They are vital messages of an extremely time-sensitive nature, and rapid processing is mandatory to obtain the fast reaction required by their content. Usage and handling procedures are of higher classification and have been issued by the JCS to those who have a need to know."

Well, to whoever sent this, thanks, even if it did come in a plain white envelope. The next time you are monitoring a SAC or Navy frequency and hear the operator repeating: "Alpha Six Charlie Two, I say again..." remember, you are listening to an EAM and you might want to keep the above statement in mind.

Bill Brinkley was surprised to note my surprise about the McClellan GCCS frequency of 10.112 several months ago. Bill says that McClellan has used Mystic Star (VIP/Presidential HF network) frequencies for over a year now for "discrete frequencies" for high traffic and highranking flights like "Head Dancer" and some SAM (Special Air Missions -- VIP) flights. The following frequencies have been used:

6730 6760 6780 7997 8050 8992 9320 (often)
10112 (often) 11035 11156 11249 11413 18060

Hickham is also on the bandwagon by using 18146 for Head Dancer flights. Bill believes that Andrews uses the USAF GCCS stations such as McClellan as relay stations. They backhaul the comms to Maryland via land line. If the lines are down, the station can come and give AUTOVON connections to Andrews.

Thanks, Bill, but I am still surprised, as I didn't realize what was going on here. Appreciate the update on the USAF Global Command and Control Station at McClellan and I am sure our readers do, too.

Another Convert Wants Info

"I am a retired USAF-06 and was Chief-US Mission in



SAC Photo

JCS Emergency Action Messages are of an extremely time-sensitive nature and carry a higher classification ... Pictured is General Bennie Davis, Emergency Action Officer during an actual mission.

Colombia and Commander-USMAAG-Peru through 1981," says John Smitherman, a supporter of my wife Gayle's shortwave loggings column, who lives in Gainesville, Florida.

John says, while he was "down there, I talked with the world, the US in particular, on my Collins equipment."

"Panama usually acted as our relay point and did our patches to everywhere," Smitherman said. "At Lima, we were OAE21 and Panama was AHF4." Well, John got to wondering, "Can I possibly pick up those transmissions in Gainesville? If anybody knows, I'm sure it is you, Larry," said our new convert.

Well, John, thanks for the vote of confidence. I would be interested in talking to you about this further so feel free to drop me a line about this net sometime. Meanwhile, back at the USMAG, here's the scoop. The USMAG net in Latin America is alive and well. They are operating pretty much daily on several frequencies and still running phone patch traffic for embassy and military attaches throughout Latin America.

The exciting part about this net is you just never know what you are going to hear. During the Panama invasion, this net was very active with some real neat stuff. Even as I speak, some discussions about the US Navy-Colombia-and Drug interdiction is going on. This is just a great place to hang out when something is happening in Latin America.

The frequencies to check out are as follows:

3503	Channel 1
7430	Channel 2 Night Primary
10935	Channel 3
13937	Command
13950	Channel 4 Day Primary
20885	Channel 5 Day Secondary

As John pointed out, this is quite an extensive network. Stations in embassies throughout Latin America utilize the frequencies above. Below is a list of the current call signs heard on the net:

AHF4	Howard AFB, Panama
LOU21	Buenos Aires, Argentina

VPL1D5	Belize City, Belize
CPP67	La Paz, Bolivia
CEF5U1	Santiago, Chile
5KO225	Bogota, Colombia
ACB	Rio de Janeiro, Brazil
TI2USA	San Jose, Costa Rica
HIP491	Santo Domingo, Dominican Republic
HCUS1	Quito, Ecuador
YS1HUKE	San Salvador, El Salvador
TDMG3	Guatemala City, Guatemala
ACH54	Port-Au-Prince, Haiti
HR1MN	Tegucigalpa, Honduras
YN1AFM	Managua, Nicaragua
ZPM261	Asuncion, Paraguay
OAE21	Lima, Peru
CXC20	Montevideo, Uruguay
YWA6	Caracas, Venezuela
AHF1B	Unidentified, has been heard airborne
AHF1A	Unidentified, possibly El Salvador
AHF5	Unidentified, possibly Panama
TGHM1	Unidentified, possibly Guatemala

John, I hope this helps, and any information about this network you can share, or a point of contact down there, would be appreciated. Thanks for the letter, and welcome to the "Utility World."

Speaking of Embassies

Monitoring Times' own RTTY columnist, Jack Albert, has contributed the following new embassy frequencies for RTTY equipped stations:

Egyptian Embassy, Washington, DC	11240 KHz	ARQ mode
US State Department, Washington, DC	14638 KHz	425/75 RTTY

Thanks, Jack, and as always we appreciate you checking in with your RTTY intercepts. Speaking of digital modes, Bill Buchsbalm in Okinawa is hooked on digital modes.

"Multi-mode controllers such as the AEA PK-232 should carry an addiction warning," he says. "I have spent the last four days chained to my radio gear."

Bill is using a shack full of equipment over on Okie Rock and as the following intercepts confirm, it's working well for him.

3670.2	RJTD-Tokyo, Japan, weather RTTY 50 baud almost continuous
5102.4	Similar to 3670.2 but not continuous
6433.5	Unid RTTY 50 baud passing four-letter groups
6915.2	Xinhua (China) News Service with English news at 1030
7863.2	Another five-figure group weather RTTY channel 50 baud
9458.9	Unid CW station sending typhoon warning -- South China Sea
10168.2	Another five-figure weather RTTY station -- Korea/Japan
10523.5	North Korean news service in French at 1310 RTTY
11520.0	Another five-figure weather RTTY station -- Korea/Japan
11536.0	North Korean news service in French at 1321 RTTY
13563.0	3MA22-Central News Agency, Taiwan, with reference other operating frequencies 10235, 13563, 7695, 16224, 10960
14367.0	Xinhua news service in English RTTY
14547.5	Kyodo news service, Japan, with Asian sports news RTTY
14595.0	Kyodo news service with English news
16384.0	XVN43-Vietnam news service with French news, also 13372
20960.0	Kyodo news service with English news and sports RTTY

Thanks for the list, Bill, and I hope to hear more from Okie Rock in the future. Now it's time to see what you, our readers, have heard this month in the utility world . . . till next month, good DX and 73.

Utility Loggings

Abbreviations used in this column

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

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

- 4369.8 WLP-Rodgers City Radio, Michigan, at 0256 in USB with weather report. (Dix, NY)
- 4448.5 Group Key West working USCGC Taurus and others on channel 3-alpha 4, at 1356 during SAR south of the Florida Keys. Switched to 7773.5 as primary due to interference on frequency. (Larry Riffle, Key West, FL)
- 4562.5 JWT-Stavanger Radio, Norway, at 2356 with V CW marker. (Dix, NY)
- 4670.0 Victor-Lima-Bravo-Nine station heard at 0252. (William J. Burghardt, NJ) *This is an Israeli Moshad station.-ed.*
- 5020.0 Single letter HF beacon -- "K" in CW right atop Radio Moscow. (William J. Brinkley, Belmont, CA)
- 5422.5 Group Key West working Lighthouse Dry Tortugas on channel 3 alpha 3 at 0015 requesting latest info on Yugoslavia cargo ship Marvo Vetranc grounded on a coral reef. (Riffle, FL)
- 5696.0 CG Alrstation San Francisco working CAMSPAC advising that phones are out and that CG 1480, 2129, and 1480 are on the scene with ops normal at 0134 in USB. Also CG 1496 calling COMSTA Miami with Mayday at 0029. (Helo crashed into the water, no injuries but they need immediate assistance-CG 1717 enroute) in USB. (Battles, NH)
- 5700.0 Monitored a slow "Skyking" like broadcast in USB at 1332. (Fraser Bonnett, Kettering, OH)
- 6287.0 95TMW working 98HRS at 0027 in CW. (Dix, NY)
- 6518.8 USS Dwight D. Eisenhower working NMN-Portsmouth, Virginia, at 2052 in USB. (Battles, NH)
- 6577.0 Teal 57 heard in USB working Piarco (Trinidad) with position report over 16.3N 57.2W and estimating Barbados at 0815. Aircraft from the 815th Weather Recon Squadron out of Keesler AFB, Mississippi. (Garie Halstead, Saint Albans, WV)
- Spanish female four-digit number station heard at 0224. (Dix, NY)
- 6719.9 4ZY working B6W and VOL working B6W at various times in USB. (EM3 Doug Graham, Virginia Beach, VA) *Welcome to Ute World, Doug, nice to see a fellow swapee here.-ed. (alias the Chief.)*
- 6817.0 Andrews AFB working Air Force One advising "We are having a shortwave phase up to 15 MHz for the next 30 mikes" heard in USB at 1326. (Battles, NH) *??-ed.*
- 6943.0 RGZ44 called by UDH33 in CW at 0112. (Dix, NY) *Obviously these stations are Russian, but I have nothing else on them, Jack.-ed.*
- 6968.5 NNNOZTT at 2315 controlling Region 2 Navy MARS traffic net in USB. (Joe Doakes, 100 J. Kligenfuss Drive, Mars, PA) *Welcome back, Joe.-ed.*
- 7480.0 BAW calling COB and sending V's in CW at 0124. (Dix, NY) *My guess, Jack, is that these stations could be from Cuba and China. Anybody else-ed.???*
- 7635.0 Empire 529 working Northeast 40 and exchanging info on thermal printing at 0128 in USB. (Dix, NY)
- 7763.0 English female four-digit number station at 0134. (Dix, NY)
- 7773.5 COMSTA Miami working USCGC Padre and others on channel 3 alpha 8 at 1415 during SAR for missing Customs officer aboard downed Blackhawk helo near 23.5N 80.3W. Used 381.0 UHF for a/c to a/c comms during SAR. See 4448.5. (Riffle, FL)
- Cutters Dauntless, Hamilton, Bear, Nunivac, and many others with COMSTA San Juan, Portsmouth, and Coast Guard Mobile Central 4 heard at 0259 in USB. Used frequency over a week. (Bill Frantz, Thomasville, GA)
- USCGC Bear working ships near San Juan, Puerto Rico. (John Klaff)
- 7831.0 Bird Song working WAR-46 with Autovon phone patch to Offutt Headquarters in USB at 0106. (Believe this was a Looking Glass aircraft due to the QSO I monitored, talking with National Command Authority). (Battles, NH)
- 7952.0 UHF3-Yeyskstaro Radio, USSR, transmitting standard meteo coded CW messages at 0143. (Dix, NY)
- 8185.0 ASCOT 5523 working Portishead Radio (UK) with SELCAL check in USB at 0204. (Battles, NH)
- 8294.2 WFZ-Morgan City, Louisiana, clearing with the augusta in USB at 2116.

- (Neal Perdue, Madison, AL)
- 8456.0 ROT-Moscow Naval Radio, USSR, sending a CW CQ marker at 0313. (Dix, NY)
- 8459.0 YDI-Constanta Radio, Romania, heard at 0101 with a CQ CW marker. (Dix, NY)
- 8474.0 HCG-Guayaquil Radio, Ecuador, at 0124 with V CW marker. (Dix, NY)
- 8485.0 4XO-Haifa Radio, Israel, with a CQ CW marker at 0124. (Perdue, AL)
- 8486.0 IDQ-Rome Naval Radio, Italy, at 0055 with CW marker. (Dix, NY)
- 8542.0 PKX-Jakarta Radio, Indonesia, at 1026 with CQ CW marker. (Dix, NY)
- 8562.5 German female four-digit numbers station at 0611. (Dix, NY)
- 8567.0 XDA-Mexico Radio, Mexico, with CQ CW marker at 1015, sloppy fist. (Perdue, AL)
- 8610.0 UXNB-Arkhangelsk Radio, USSR, at 2355 with DE CW marker. (Dix, NY)
- 8619.0 VRN-Cape D'Aguliar Radio, Hong Kong, with DE CW marker at 1057. (Dix, NY)
- 8655.0 UAI3-Nakhodka Radio, USSR, heard at 1100 with a V CW marker. (Dix, NY)
- 8690.0 3DP2-Suva Radio, Fiji, at 0929 in CW with CQ marker. (Dix, NY)
- 8825.0 Santa Marle Radio at 2345 directing flights to Caracas, Venezuela, to use the following route across the Atlantic Ocean: 35N 17W, 33.3N 20W, 28N 30W, 21.2N 39.3W, 21N 40W, 17.45N 45W, 13.5N 56W at 31,000 feet at mach .82. (Doakes, PA)
- 8855.0 Eastern 010 heard in USB at 0623 working Maiquetia with position report over ISANI. Estimating Canaima at 0640. (Halstead, WV)
- 8866.0 Unid stations at 0111 in USB using call signs like 607C/098F/134D plus dozens more. All in English with some in Spanish accents. One made comment "Good luck to you and all of us." If this a pirate fishing fleet, they are pretty big. (Doyle, CT)
- 8891.0 Reykavik, Iceland Aeradio working Gander Aeradio in USB at 0144. (Perdue, AL)
- 8903.0 ATC Brazzaville, Congo, working Speedbird 55 in USB at 0047. (Dix, NY) *ICAO AF-4-ed.*
- 8918.0 New York Oceanic working several flights due to stuck mic on 8846.0 in USB at 1921. (Battles, NH)
- 8968.0 Mobil 2 working Youngstown with a QSO about a laptop computer working better than the expensive Motorola gear. (I believe these were USN units) in USB at 1925. (Battles, NH)
- 9006.0 Cape Radio working MAC 185 in USB at 2358 with phone patch. Trenton Military came up on frequency with the following announcement, "This is a CANFORCE Canadian military frequency only" -- Cape Radio moved to 10780. (Battles, NH)
- 9023.0 WHX-45 working KLB-70 with a QSO in USB at 1738. (New call signs here -- anybody have any ideas?) (Battles, NH)
- 9124.0 Dragon Metro working Mountain Metro in USB at 1355. (Anybody know who this is?) (Battles, NH)
- 9130.0 Unknown accented female with five-letter groups at 2214 (Friday) in USB. At 2224, "end of message, end of transmission." (Doyle, CT)
- 9180.0 Radio Moscow feeder in USB transmitting English world service then into an unid language at 2330. (Robert Confino, Douglasville, PA)
- 10194.0 Various FEMA stations heard at various times in USB. (Klaff)
- 10295.0 FSB-Paris, France, Interpol with CW marker at 2355. (Doyle, CT)
- 10478.0 NB calling EX and DC at 2313 in USB. Told all stations standby for radio check. These stations were weak, then YC came on for a radio check, he was strong. (Doyle, CT)
- 10493.0 Various FEMA stations heard at various times in USB. (Klaff)
- 10780.0 India 9 India working Uniform 1 Echo with clear and green comms in USB at 0029. (Battles, NH) *Definitely USN probably associated with ballistic missile test off the Cape, Bill.-ed.*
- 11007.5 Trenton Military working Century 50 with phone patch traffic to Raymond 24 (Tinker AFB, OK) at 1603 in USB. (Battles, NH)
- 11154.5 Single letter HF beacon "K" in CW. (Brinkley, CA)
- 11176.0 USAF GCCS Albrook, Panama, setting up phone patch for >>>>Federal Express Flight 5 <<<<< (a collect call) to "somewhere near Memphis Naval Air Station"; Fedex 5 passed coded info as well as fuel/position/estimated ground time; crew indicated that "we were working our tails off down there" at 0135 in USB. (Could this have been the US-Colombian anti-drug airlift?) (Confino, PA) *Probably so, Robert.-ed.*
- 11191.0 Hershey (NAS Key West) working Mona Lisa and Gangster in the clear and secure at 0230 requesting radio checks. (Riffle, FL)
- 11222.0 American 37 working Stockholm Radio testing SELCAL in USB at 2145. (Battles, NH)
- 11244.0 LHT8 calling KOVD in CW at 2322. (Dix, NY) *Anybody know who these stations are, also note KOAT and others.-ed.*
- 11267.0 Two unidentified USN units advising that "The fire is out" in USB at 2358. (Battles, NH)

- 11295.0 FSB-Paris (St. Martin Abbat), France, Interpol station with ARQ Idler and CW call sign ID at 2324. (Dix, NY)
- 11300.0 Seychelles ATC receiving flight info regarding aircraft flight from Abu Dubai from Nairobi ATC at 0040 in USB. (Dix, NY)
- 11359.0 RFNV-Moscow Air, USSR, at 0119 in CW transmitting METAR info. (Dix, NY)
- 12210.0 German female 5/4 digit number station heard at 0012. (Dix, NY)
- 12246.0 Cape Radio attempting phone patch for MAC 185 but frequency not receivable at 2354 in USB. (Battles, NH)
- 12254.0 P7X with a QRA CW marker at 0019. (Dix, NY)
- 12560.0 Fishing fleets discussing sea conditions, catches. Jamaican accents and Jamaican locations in USB at 1430. (Frantz, GA)
- 12653.0 CBV-Valparaiso Naval Radio, Chile, at 0130 with a CQ CW marker. (Perdue, AL)
- 12686.0 PKE-Amboina Radio, Indonesia, heard at 1118 sending a CW CQ marker. (Dix, NY)
- 12781.0 TAH-Istanbul Radio, Turkey, sending a DE CW marker at 0353. (Perdue, AL)
- 12887.5 EAD44-Aranguez Radio, Spain, with CW ID at 0427. (Perdue, AL)
- 12924.8 UDK2-Murmansk Radio, USSR, sending CW telegrams in Russian at 0004. (John DeCarter, Fayetteville, NC)
- 12947.0 UFB-Odessa Radio, USSR, at 0103 working 4KA in CW. (Dix, NY)
- 12961.0 GXH-Thurso Naval Radio, Scotland, in CW with LCMP-2 broadcast at 0105. (Dix, NY)
- 12967.0 A6A with B6B and K6M66 conducting military-type radio checks, maintenance reports, etc. Another group with similar IDs heard on 12970 in USB. Both stepping on each other. (Frantz, GA)
- 13047.0 SVA-Athens Radio, Greece, heard at 0409 in CW with a DE marker. (DeCarter, NC)
- UAI3-Nakhodka Radio, USSR, at 1101 with V CW marker. (Dix, NY)
- 13205.0 Cathay 289 working Universal Radio requesting weather forecast for Frankfurt and other German cities in USB at 2330. (Battles, NH)
- 13244.0 Gull 27 working MacDill GCCS at 1553 in USB. Gull said "The Russians are flying today using the ID Aeroflot 5333." (J.R. Miller, Ariss, Ont, Canada) *Welcome aboard, JR, hope you report often.-ed.*
- 13247.0 Andrews AFB, Maryland, working SAM 203 in USB at 2315. SAC units Deep Cut and Pure Gold came up on frequency and were told to find a new frequency by Andrews. (Guess we know who has priority!) (Battles, NH) *You are right, Bill, I heard Air Force One run some SAC command post off this frequency when they were up.-ed.*
- Venus 7 working Head Shop in USB at 1927 requesting secure voice check with diversity added to the signal (sounded like DOE transport type audio). (Battles, NH)
- Whisker 50 calling McClellan. MacDill answered and initiated a phone patch to Discard only after Whisky 50 gave its full tail number. (Bonnert, OH)
- 13254.0 Sierra Zero Delta working Halifax Military with EAM type coded message in USB at 2018. (Battles, NH)
- 13291.0 New York Aeradio working SAM 60202 at 2132 in USB. (Doyle, CT)
- 13306.0 Speedbird 255 working Santa Marie Aeradio with a position report in USB at 1750. (DeCarter, NC)
- 13630.0 Various FAA stations heard at various times. (Klaff)
- 13996.0 Various Red Cross stations heard at various times. (Klaff)
- 14450.0 WGY 917 (St. Croix) working WGY 912 (Mt. Weather, VA) and WGY 901 (Maynard, MA) FEMA unit 917 on scene of hurricane disaster. 901 was in his car running phone patches with 912. SATCOM downlink was 263.575 but intermod problems due to so many emergency transmitters up in the same area. At C247 in USB. (Another FEMA station heard on 5211.) (Battles, NH)
- 14686.0 Ambush working Allas (DEA) in USB at 1452 with phone patch to Warrior Personnel. (Battles, NH)
- 14928.0 8BY-Unid station heard at 1645 in CW with: VVV de 8BY/034/623/716/473/967. Who? (Dix, NY)
- 15015.0 Bear 91 working USAF GCCS Albrook with phone patch to Aficanno? Air Base Honduras at 2110 in USB. (Battles, NH)
- 15031.0 Bison 07 Bravo working Trenton Military requesting a weather report in USB at 2201. (Battles, NH)
- 15044.0 Foxtro working Kelly 1 and Kelly 3 with data test in USB at 1947. Boxcar 1 working Quixote in USB at 2356 advising that 1100 Airborne MPs arrived and "We're very crowded down here (believe in St. Croix). (Battles, NH)
- 15048.0 Agar 18 working OTH Backscatter requesting a chirp at 30 MHz in USB at 1504. (Battles, NH) *Now that is unusual, Bill.-ed.*
- 16870.0 RIT-Moscow Naval Radio, USSR, in CW with "VVV RMAT de RIT QSA 1m1k." (Dix, NY)
- 16887.5 SPH41-Gdynia Radio, Poland, heard in CW with CQ/QSX marker at 1823. (Perdue, AL)

Super Amplifier

Order PRE-1
Only \$59⁹⁵
Plus \$2 UPS
\$5 Canadian
Air Parcel Post

It has been our experience that most hand held scanning radios suffer from a lack of sensitivity due to antenna and power limitations.

Introducing the GRE Super Amplifier™. The Super Amplifier™ is a compact pre-amp designed to work with hand held scanners and amplify the reception of the VHF/UHF bands (from 100MHz to 1GHz) as high as 20db. The Super Amplifier™ has an adjustable gain which is controlled from the back of the unit and allows for a constant amplification level of up to 20db through all frequencies. As with all other GRE products, you will find the quality and design of the Super Amplifier™ to be of the highest standard.

Specifications and Features

- Frequency Range: 100MHz to 1GHz
- Adjustable Gain: 0 - 20db
- Input: BNC Connector
- Output: BNC Connector
- Power: 9 Volt battery or adapter
- Power Indicator: LED
- Dimensions: 68 MM x 34 MM x 37MM
- Output Impedance Load: 50 Ohms

Grove Enterprises, Inc.
1-800-438-8155 VISA, MC, COD
1-704-837-9200

P.O. Box 98
Brasstown, NC
28902

- 17013.0 5BA-Nicosia Radio, Cyprus, heard in CW at 1530 with a CQ marker. (Dix, NY)
- 17079.0 HLF-Seoul Radio, South Korea, heard at 1150 with a CW CQ marker. (Dix, NY)
- 17184.8 9YL-North Post Radio, Trinidad at 1205 with CQ CW marker. PKE-Amboina Radio, Indonesia, at 1209 with CQ CW marker. (Dix, NY)
- 18012.0 CRW 315 working Trenton Military in USB at 1614 with phone patch to company ops in Toronto. (Can't picture a USAF GCCS doing this for our commercial flights) CRW is Crown Air in Toronto, Ontario. (Battles, NH)
- 18171.0 Various US Customs stations heard at various times. (New/special channel?) (Klaff)
- 18594.0 Omaha 07 working Ambush in USB at 0007 (Customs on a former SAC channel!!!) (Battles, NH)
- 19757.0 Various FEMA stations heard at various times here on channel Fox-46. (Klaff)
- 20284.0 SPW-Warsaw Radio, Poland, at 1626 with DE CW marker. (Dix, NY)
- 20890.0 Omaha 68 working Slingshot in USB at 1958. (Customs again on another SAC channel). (Battles, NH)
- 21964.0 Honolulu Aeradio working various aircraft over the Pacific at 0000 in USB, secondary frequency was 13273. Numerous responses heard from aircraft, several turned over to Tokyo on 133.7 or 133.73. (Burghardt, NJ)
- 22312.0 ASM-Bahrain Radio at 12213 with DE CW marker. (Dix, NY)
- 22382.0 KOAT calling HKMR in CW at 1123. (Dix, NY)
- 22386.0 JCT-Choshi Radio, Japan, at 2310 with a CQ CW marker. (Dix, NY)
- 22422.0 UVA-Unid USSR sending CQ CW marker at 1504. (Dix, NY)
- 22435.0 UFL-Vladivostok Radio, USSR, heard at 0133 with a CQ CW marker. (Dix, NY)
- 22474.0 VIS3-Sydney Radio, Australia, at 0150 with V CW marker. (Dix, NY)
- 22452.0 XSD-Guanozhou Radio, China, at 0146 with CQ CW marker. (Dix, NY)
- 22463.0 JCU-Choshi Radio, Japan, with CQ CW marker at 0135. (Dix, NY)
- 22583.0 ZLB-Awarua Radio, New Zealand, with DE CW marker at 2346. (Dix, NY)
- 23312.0 ASM-Bahrain Radio, Bahrain, with a CW De marker at 1920. (Dix, NY)

The Scanning Report

Bob Kay

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

Monitoring Mobile Data Terminals

Concealed within the darkness of an abandoned warehouse, two drug dealers were discussing the details of their next illegal shipment. Hiding within thirty feet of the two men, a Federal Drug Enforcement Agent watched and listened.

Having missed his check-in time by 20 minutes, the DEA agent realized that if he didn't call in soon, other agents would storm the building and ruin his chance to hear some very valuable information.

Unable to use his two-way radio, he pulled a gadget from his pocket that resembled a small calculator. After pressing the "on" switch, a lighted LCD display silently blinked the word "ready." Within seconds after entering his access code, he was connected to the main computer at DEA headquarters. On the dispatcher's console, a small computer screen suddenly displayed the following message: "Agent #2, okay. Must maintain radio silence."

"He's okay!" the dispatcher immediately yelled. "He checked in on his portable data terminal."

Does the above scenario sound as if it belongs in a future time? Actually, it could have happened last year. It was June 1988 when Motorola introduced the KDT 840. The unit is a hand-held data terminal that contains a miniature FM transmitter and receiver. In some states, police officers are using the KDT 840 to perform routine license and vehicle ID checks.

After the information is correctly keyed in, the officer presses the "send" button and the data is then transmitted to a main computer. As the main computer locates the information, it simultaneously alerts the dispatcher of the location and nature of the patrol officer's request. A few seconds later, the main computer relays the data back to the hand-held data terminal and the patrolman writes out the ticket. The entire process is accomplished without voice communications and without assistance from the dispatcher.

As you read this, I know what you're thinking. "Can these data channels be decoded?" If you are referring to decoding equipment that can be purchased off the shelf, the answer is "not yet."

The majority of mobile data terminal transmissions are not encrypted. The terminals are designed to simply provide wireless data communications between field personnel and a central computer. When used for law enforcement, mobile data terminals are generally assigned to an existing police frequency. This frequency is commonly referred to as a "data" channel.

To help you understand how portable data terminals function, let's look inside Motorola's KDT 840. The KDT 840 features a 160 character backlit LCD display. The unit is battery powered, contains an FM transmitter and receiver, an internal antenna and weighs less than 30 ounces. As already mentioned, the unit can store up to 96 K of downloaded information from a host computer.

In the cities of New York, Chicago, and Los Angeles, Motorola data systems are supported by a network of antennas and repeater sites that allow the KDT 840 and similar Motorola products to be accessed from anywhere within city limits. The system is referred to as Motorola's "Data Radio



Can mobile data terminals be monitored? Bob Kay thinks you can; however, he needs your help.

Network."

The KDT 840 sends information in standard ASC computer format. The information is sent in "bursts." A more common name for this type of emission mode is "Packet Communications." Some of you probably realize that ham radio buffs have been using "packet radio" for several years.

The stumbling block to capturing and decoding the KDT 840's signal is the sending speed. Most computers are made to handle baud rates between 300 and 1200. The KDT 840 has a baud rate of 9600. Although that is rather fast, it wouldn't be impossible to produce a program that would make the transmission accessible to a home computer.

The idea of monitoring mobile data terminals on a home computer has also intrigued *Monitoring Times* publisher, Bob Grove. When I contacted Bob, he confirmed my findings and agreed with the idea of developing a software program. Bob further explained that the hobbyist would need to connect an interface between the scanner and the computer.

After checking the market, I found that several manufacturers had already produced a scanner interface for the ICOM R-7000. If I had a program specifically designed for mobile data terminals, I could have given it a try. Without such a program, it was impossible to continue.

If you are thinking about designing a custom program, there's one more problem that should be considered. Data terminals from different manufacturers are not compatible. A G.E. terminal would not work on Motorola's Data Radio Network. That would seem to indicate the need for separate software packages for each manufacturer.

As you begin to explore the data frequencies in your area, don't keep your trials and errors a secret. If you send your findings to the "Scanning Report," I'll do my best to sort through the information and to take a crack at solving mobile data monitoring. But I can't do it alone. It would take years for me to discover the information that you guys could provide in a matter of days.

It doesn't matter if you're a software engineer or just a "tinkerer." Everyone is invited to send in their findings and questions. Unless you request anonymity, I'll make your letter available to other hobbyists who are also trying to monitor data terminals. And for a #10 SASE, I'll provide you with an updated progress report. So don't just sit there, let's explore the data frequencies and find out what we've been missing!

MT Treasure Hunt

Are you interested in winning a pocket-size battery-operated tape-saver device? If so, Capri Electronics has provided two of their "ScanRecords" for the March/April Treasure Hunt.

The ScanRecord features a small beige-colored plastic case about four inches long, two inches wide, by two inches deep. The front panel incorporates a dial control for adjusting sensitivity, a red LED indicator, and a toggle switch for controlling the delay time.

After making an hour-long recording from a PRO-2004, the quality of the taped conversations was flawless. One of the most unique features on the ScanRecord was the addition of an A/B switch that totally eliminated the need to remove the control cable from the recorder. Simply flip the switch and the tape player could be manually operated.

The solid state construction of the ScanRecord was another pleasant surprise. Since a contact relay wasn't used, the switching operation was completely silent -- a nice feature if you're making a recording in the same room where you are sleeping.

With a 9-volt battery installed, the ScanRecord became completely portable. When accompanied by a hand-held scanner and pocket tape recorder, the hobbyist can easily make recordings at emergency scenes, air shows, or during camping trips.

The ScanRecord does not have an internal speaker or volume control. To hear the action while recording, simply use a dual-jack adapter with an ear phone or extension speaker.

Priced at \$47.00, the ScanRecord is the most moderately priced and most desirable tape-saver device on the market. To order your very own ScanRecord, contact Capri Electronics, 1238 Highway 160-B, Box 589, Bayfield, Colorado 81122, or call 303-884-9084.

Short on cash? No need to worry. Simply send in the answers to the following clues and keep your fingers crossed:



This battery-operated tape saver device will be yours if you win the new treasure hunt!

1. In the December '89 Scanning Report, name the fourth company listed in the "Christmas Wish List."
2. Can cellular coverage be restored to Radio Shack's PRO-34? Yes or no.
3. What is the channel spacing on VHF low band?
4. In the November '89 issue of *MT*, there is a hidden scanning article that is not mentioned in the index. What is the title of the article?
5. For VHF/UHF monitoring, which cable exhibits the lowest loss per foot: RG 58/U or RG-6?

Send your answers to the Treasure Hunt, P.O. Box 98, Brasstown, NC 28902. To have your answers verified, please include an SASE. Incorrect entries will be discarded.

Frequency Exchange

Rodger West is a disabled scanner buff who has sent in over 600 frequencies for northwestern Wisconsin and eastern Minnesota. Here is a sample:

NW WISCONSIN/E MINNESOTA

151.010/156.015	Wisconsin snow plows
151/265	Minnesota DNR fire spotting planes
151.415	DNR statewide repeater
156.000	Wisconsin emergency government repeater
163.410/164.500	Locks and Dams
164.250	Croix River National Scenic Riverway and Park
171.575	Minnesota State Patrol aircraft
408.675	Croix River National Riverway portables

During the winter months, Rodger is a "shut in," and would appreciate swapping frequencies with other readers. To contact Rodger, simply write to the Frequency Exchange, P.O. Box 98, Brasstown, NC 28902.

If you're a railroad fan and live near Thornton, Colorado, I've got a page of confidential frequencies for the Rocky Mountain Railroad. The frequencies were submitted by a railroad detective who has asked to remain anonymous.

To receive the list, just send an SASE to the Frequency Exchange. That's right, it's free! But don't delay. Letters postmarked after March 31st must include a buck to cover copying and handling costs.

Here's a peek at what I have:

ROCKY MT. RAILROAD

160.245	Mobile phone (PBX-2) Cheyenne Mountain
160.335	Mobile phone (PBX-4) North of Monument Hill
161.370	Dispatcher link -- Frick and LaJunta
161.490	York Canyon
160.575	Mechanical Department
452.825	Dispatcher link -- Sherman Hill

Another "secret" scanner listener from Colorado wrote in to say that he hasn't been able to monitor the A-7s that fly out of the Buckley ANG base.

Can anyone help out? In exchange for your help, our secret listener has provided the following list:

BUCKLEY ANG

Buckley ANG A-7s -- "Redeye"	
Buckley ANG Helicopters -- "Outlaw"	
Air Force 737s (T43) for navigator training -- "Bobcat"	
Tower	121.0/289.6
Ground	121.6/275.8

App/Dep 119.3/307.3
 Opns 372.2
 Range Ctl 287.3 "Airburst"
 VIP Notification Lowry AFB
 Command Post 253.625
 Ramp CTL 148.215
 DOD Police 148.625
 Crash 173.075
 Base Cdr 148.325
 Ordinance 148.515
 Fueling 148.45
 MPs 150.225
 Fire Dept 173.5875
 Base Trans 149.205
 Tactical Special Use
 268.1 381.4 296.7 (Usually AM, may be
 NFM, or WFM voice mode)

303.0 Used for intercom channel between A/C in a cross
 country flight
 32.45 ANG A-7s air to air
 32.75 ANG Helicopters air to air
 32.85 ANG A-7s air to air
 36.45 ANG A-7s air to air
 41.45 ANG A-7s air to air
 41.75 ANG Helicopters Ops
 142.40 Air/Air/Ground ANG Helicopters

Ready for a change of climate? Let's visit with Laura
 Quarantello. Laura lives in San Diego and sent in the
 following:

SAN DIEGO, CALIFORNIA

453.925 SD Sheriff-North
 453.500 SD Sheriff-East
 453.950 SD Sheriff-South
 453.750 SD Sheriff-Coast
 154.310 SD Fire Dispatch
 153.785 SD Fire Rescue Paramedics
 154.235 Rancho Fire Dispatch
 154.025 City of Escondido Police
 154.325 City of Escondido Fire Dispatch
 151.190 California Department of Forestry
 168.750 Cleveland National Forest
 462.975 Lifelight Air Rescue
 453.200 SD Wild Animal Park Security
 453.800 SD Wild Animal Park Monorail
 151.895 SD Zoo Security
 151.460 SD Zoo Maintenance

464.425 SD Zoo Security, primary
 461.725 Checkmate Protective
 461.725 NCI Protective
 461.825 Pinkerton Security
 151.715 Vista Patrol
 45.700 Animal Regulations Office
 45.900 Animal Regulations Office
 155.820 Department of General Services
 155.940 Department of General Services Pagers
 450.437 KNDS-TV Channel 39 Dispatch
 450.337 KFMB-TV Channel 8 Dispatch
 161.700 KGTV-TV Channel 10 Dispatch

In her letter Laura pointed out that she is a new subscriber
 and that she will contribute frequencies on a regular basis.
 Welcome aboard, Laura!

Since March is a windy month, let's wrap up the Frequency
 Exchange with a visit to the windy city of Chicago:

CHICAGO

151.00 Chicago Department of Transportation
 151.295 Chicago Park District, West Shops
 151.625 Business use
 155.115 Cook County Zoo
 159.09 State Attorney General
 159.405 Chicago Park Zoo (low power)
 450.2875 Shadow Traffic
 171.825 Museum of Science and Industry (wireless mics)
 461.50 Salvation Army Canteen Service

If you want the Frequency Exchange to visit your town,
 simply send your frequency listings to the Frequency Exchange,
 P.O. Box 98, Brasstown, NC 28902.

Air Force Tower

The Air Force has plans to build a 299 foot tower in
 central Ohio. The tower site, which will be unmanned, can
 relay emergency and wartime messages among strategic military
 facilities. The tower will occupy about 11 acres and it will also
 include fences and three small shelters. (News clipping from
 Norman Wittschen III)

Blast from the Past

Bob DiCorcia, from Franklin Park, New Jersey, needs your
 help. Bob has a ROBYN model 8+8/16 crystal controlled
 scanner, but he doesn't have the owner's manual. If you have
 the manual, don't send it to the Scanning Report. Simply send
 in an SASE and I'll put you in touch with Bob.

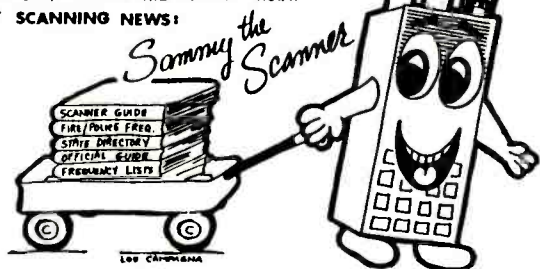
Wrap Up

We started off with mobile data terminals, offered free scan-
 ning equipment in the Treasure Hunt, provided loads of
 frequencies for various areas and gave you the nationwide
 vehicle tracking frequency. You expect more from *Monitoring
 Times* and we do our very best to bring you the latest informa-
 tion available.

However, we can't do it alone. All the columnists need
 your support. Without your ideas, comments and news clip-
 pings, we wouldn't be the most popular magazine in the busi-
 ness. So don't keep your monitoring expeditions a secret.
 When you share them with a *Monitoring Times* Columnist, you
 share them with the World!

CHECK OUT YOUR FAVORITE SCANNER DEALER
 OR LOOK OUT FOR ADVERTISEMENTS FOR A LIST OF
 PUBLICATIONS ON SCANNER GUIDES AND FREQUENCY
 DIRECTORIES. SOME HAVE REGIONAL COVERAGE
 WHILE SOME COVER THE ENTIRE U.S.A.

NORTHEAST SCANNING NEWS:



212 W. Broad St., Paulsboro, NJ 08066



EEB THE NATION'S #1 SWL SUPPLIER

ORDERS 800-368-3270



NEW

ICOM R9000 THE ULTIMATE RECEIVER

- 100 kHz to 2000 MHz
- CRT Multi-Function Display
- Spectrum Slope ± 100 kHz
- 1000 Memories-10 Banks of 100
- 4 Antenna Inputs
- Watch ICOM Ads for Detailed Specifications
- Suggested List \$5495 Call for Quote



NEW

PANASONIC RFB 65-SSB



\$259.95

Top of the Line Portable Now with CW/SSB • .155-30 MHz
• 36 Memories • Keyboard Entry
RFB40 \$189.95 RFB20 \$119.95
RFB10 \$89.95

NEW

SANGEAN ATS-808



PLL-All Band LW-MW-SW-FM
• 45 Memory Keyboard Entry
• Compact Size FM Stereo with Headset
Introductory Priced \$229.95

NEW

SONY ICF SW20



Compact AM-FM 7 SW Bands
• Shirt Pocket Size (Replaces ICF4920)
Price \$99.95 + \$5 UPS

NEW

GRUNDIG 500



• Synchro Detection • All Band All Mode • Superb Audio
• Keyboard Entry
Introductory Priced \$499.00 + \$5 UPS

FREE

1989 Catalog. Get All The Details. 36 Pages. Sent 1st Class. **FREE in USA. Canada \$1.00. All Others \$3.00.**

ICOM

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

ICR71A \$849.00 + \$12 UPS



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

ICR7000 \$1019.00 + \$12 UPS

JRC-NRD

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

NRD525 \$1179.00 + \$12 UPS



KENWOOD

The **KENWOOD R5000** is the new high performance receiver from the leader in communications technology. 150 kHz to 30 MHz. 100 memories. Keyboard entry. AM, FM, USB/LSB, CW, FSK. VHF 108-174 Opt VC20.

\$849.95 + \$10 UPS

The **KENWOOD R2000** 150 kHz to 30 MHz. 10 memories. AM, FM, SSB, CW. VHF 118-174 MHz opt VC10.

R2000 \$649.95 + \$10 UPS



YAESU

FRG8800 offers functionality and operating convenience for the serious shortwave listener. 150 kHz to 29.999 MHz. Direct keyboard entry. Dual Clocks/Timers. Wide/Narrow Filter. 12 Memories. AM, SSB, CW, FM. VHF 118-174 MHz option \$119.95. FRG8800 \$649.95 + \$10 UPS

FRG9600 VHF/UHF General Coverage Receiver. 60-905 MHz. 100 Memories. FRG9600 \$529.95 + \$6 UPS



GRUNDIG

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

New Low Price \$849.00 + \$12 UPS

The **Satellit 400**, with its rounded corners and smooth lines is the obvious "style leader" in personal portables, covers all shortwave bands plus MW and FM. 24 Memories. Keyboard Entry.

New Low Price \$319.55



SANGEAN

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

ATS803A \$199.95 + \$4 UPS

SG789. Slightly larger than SONY ICF 4920 same coverage plus stereo w/headset. SG789 \$69.95 + \$4 UPS

MS101. All new mini set similar to Panasonic RFB10. 9 Band, AM, FM, 7SW, stereo w/headset MS101 \$79.95 + \$4 UPS

MS103. Same as MS101, 9 SW Bands. MS103 \$99.95 + \$4 UPS



CLOSE-OUT

JIL SX 400 Close Out Save \$300. 26-500 MHz (.1-1300 MHz w/opt. call) Digital keyboard - Readout memory scan 13.8 VDC. Much More Call. SX400 List \$695 while they last **\$399** + \$6 UPS

SONY - THE ONE AND ONLY

ICF2010 is the market leader of portables, our best selling portable. Full coverage. .15 to 30 MHz. FM 76-108 MHz, Air Band 116-136 MHz. AM, FM, CW, SSB. Sync Detection. 32 Memories. Keyboard Entry. Many Features.

ICF2010 \$369.95 + \$6 UPS



ICF2010



ICFSW1S



ICF2003

ICFSW1S. The newest in miniaturization only 2 3/4" x 4 3/4". Tests show it as best of sub-compact case, active antenna, world AC Power Pack, Phone, SWL Book, Travel with the "SYSTEM" or just the Radio. Complete coverage to 30 MHz FM 88-108. Keyboard Entry. LCD Readout/Clock.

ICFSW1S \$319.95 + \$4 UPS

ICF2003 delivers most performance of all portables in the mid-size class. .15-30 MHz. AM, CW, SSB. 76-108 MHz FM. 10 Memories. Keyboard Entry. Paperback book size. Optional AC Adapter.

ICF2003 \$279.95 + \$4 UPS

PRO 80 looks like a scanner • Covers .15-108 MHz + 115-223 MHz with supplied converter • Multi-Mode AM-FM-CW-SSB • 10 Memories • 4AA Power Opt Nicad EAC Adapter.

PRO80 \$399.95 + \$4 UPS

MAGNAVOX

D2999. 146-30 MHz FM 88-108. Keyboard entry. 16 Memories. Multi-mode AM, CW, SSB, FM, Scan. 12/24 Hour clock.

D2999 \$299.95 + \$6 UPS



D2935. Rated best value in a portable (IBS). Covers all SW Bands. .146-30 MHz, 9 Memories. AM, FM, CW, SSB. Keyboard Entry.

\$189.95

ANTENNAS

DATONG AD370 HF. 1-30 MHz outdoor active, rated #1 by IBS.

AD370 \$129.95 + \$4 UPS

SONY AN1 HF. 1-30 MHz outdoor active. Our #1 seller for 3 years.

AN1 \$84.95 + \$6 UPS

EAVESDROPPER. Outdoor passive trapped dipole. 9 SW Bands. 43 ft. long. 100 ft. lead. Everything you need. Best Seller

SWL \$59.95 + \$4 UPS

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

NOVEX NEW PRODUCTS

CRIS 600C. Computer Radio Interface System. The ultimate HITECH computer (IBM PC) system for control, logging, scanning, spectrum analysis. Using most current radios. Free CRIS Newsletter (CALL).

CRIS R7000 \$499.95 + \$8 UPS

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

Prices from \$79.95 + \$5 UPS

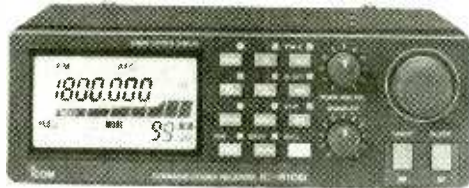


ELECTRONIC EQUIPMENT BANK
NEW RETAIL LOCATION
137 CHURCH ST. N.W.
VIENNA, VA 22180

ORDERS: 800-368-3270
LOCAL TECH: 703-938-3350
FAX: 703-938-6911

- PRICES SUBJECT TO CHANGE
- PRICES DO NOT INCLUDE FREIGHT
- SORRY, NO CODs
- RETURNS SUBJECT TO 15% RESTOCK FEE

what's new?



ICOM Releases Three New Radios

The IC-R72

ICOM's new IC-R72 is scheduled for release this month. The follow-up to the very popular IC-R71A, the 'R72 is a compact (9.5" wide by 3.7" high by 9.0" deep) all-mode receiver that covers everything from 100 kHz to 30 MHz in SSB, AM and CW modes. And FM receiving mode is also available by adding an optional UI-8 FM receiver unit.



Sensitivity is reported to be high. In addition, the 'R72 boasts 100 dB dynamic range, 101 memory channels (actually 99 memory channels and two independent scan edge memories. Operating frequency and mode can be stored into any memory channel.), and the same PLL circuitry found on the state-of-the-art (and rather expensive) IC-R9000.

Other features include built-in RF attenuator and preamplifier, a noise blanker, a built-in clock with timer function plus multiple scan functions.

ICOM officials tell us that the new IC-R72 will be available this month although the price of the unit has not yet been set.

The IC-R100

The IC-R100 is compact, wideband receiver designed for both home and mobile use. It provides continuous coverage from 100 kHz to 1856 MHz in AM, FM, and wide FM modes. Tuning is by either a keyboard or tuning control or by one of 121 memory channels. 100 memory channels store operating frequencies, mode and even RF attenuator and preamplifier settings. Twenty scan edge memory channels are used for specifying 10 pairs of frequency ranges, plus one independent memory channel used for priority scan.

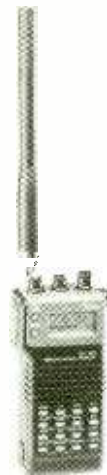
The IC-R100 also features three separate antenna connectors, a built-in preamplifier and attenuator, and a built-in 24 hour clock with a variety of timer functions. The IC-R100 is also scheduled to be available this month but again, no price is yet available.

IC-R1 Scanner

Finally, ICOM offers the IC-R1 wideband mini-handheld. Providing continuous coverage from 100 kHz to 1300 MHz (with AM, FM, and Wide-FM modes), the 'R1 measures just 1.9" wide x 4.0" high by 1.4" deep. The unit is powered by built-in NiCds or an optional battery pack.

Scanning functions include programmed scan, memory scan, selected mode memory scan, and auto memory write scan. Tuning is by either keyboard, rotary tuning control or by one of 100 memory channels. There's also a 24 hour clock/timer, a power-saver function, adjustable LCD

contrast, a signal indicator, and an external DC power jack with battery charge capability. ICOM bills the IC-R1 as "the world's smallest full-featured receiver." It will be at dealers this month.



You can get free literature on any of these new ICOM receivers by dialing toll-free 1-800-999-9877. Leave your name, address and the name of the radio that you'd like literature about. It's free and open 24 hours a day.

Your Favorite Music

Anyone who travels cross-country by car knows that finding a good radio station in an unfamiliar area can be a major headache. Up until now, the only answer was a bottle of aspirin or a copy of Dr. Bruce Elving's superb *FM Atlas* station directory.

Now comes the Technics CQ-ID90 car stereo. Stored inside this remarkable radio is an ID Logic unit with information for over 4,500 AM and over 4,900 FM stations from more than 5,100 U.S. cities (virtually every city with a population of 10,000 or more.)

Here's how it works. For example, if you are traveling

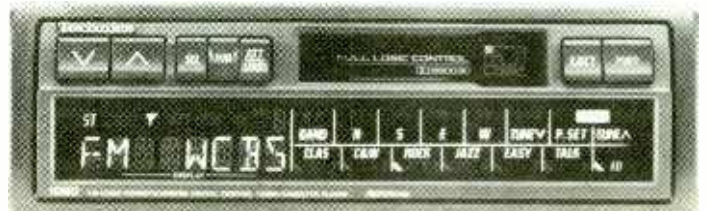
from New York to Boston, all you do is tell the radio that you're traveling north, that you like rock music. The ID Logic automatically locks onto the six strongest stations playing rock. As the user continues to travel, the ID Logic continues to find the strongest stations (although every 60 miles you must reset a "directional" button) and provide "a constant stream" of rock 'n roll.

Six program formats can be chosen -- classical, Country and Western, Rock, Jazz, Easy Listening, and Talk. Stations broadcasting with less than 1 kW are not stored in the radio. The Technics CQ-ID90 will be available this May. Suggested retail is expected to ring in at around \$800.00.



Scanner Mod Handbook

The *Scanner Modification Handbook* is a collection of more than 20 scanner modifications developed, refined, tested and compiled into a 160 page book by communications engineer Bill Cheek. Change a chip, add a switch and your PRO-2004 or PRO-2005 becomes a superscanner with 6,400 channels -- your PRO-34 handheld suddenly has a 3,200 channel capability!



Other mods restore frequencies, add S-meters, improve squelch action, disable the "beep," protect from voltage surges, interface a scanner with any communications receiver (for fine tuning, noise limiting, SSB reception, etc.), and more. Other mods are for BC-200 XLTs, BC-750 XLT. and BC-950XLT.

With some ingenuity, other scanners might also be modified. Each includes photos, charts, diagrams and step-by-step instructions. According to the author, all of these modifications can be performed by the average electronics hobbyist.

There are also chapters on scanning and the law, how cellular phone systems work (includes frequency charts), plus scanner tips, hints, and techniques. How to get emergency power for a scanner, and more.

The *Scanner Modification Handbook* is available for \$17.95 plus 1.20 book rate or 2.30 UPS shipping from DX Radio Supply, P.O. Box 360, Wagontown, PA 19376.

Weather Max

Weather Max is a VHF weather monitor radios that delivers up-to-the-minute NOAA weather information 24 hours per day from over 390 locations. Also known as Midland model 74-102, the radio can provide continuous monitoring or be set to come on only when NOAA is announcing dangerous weather conditions.



For more information on the Weather Max, visit your local Midland radio dealer.

Computer Control for ICOM R7000s

Owners of ICOM IC-R7000s can now control their radios using an IBM computer. The Systems and Software International RCSS (Remote Computer Scanning System) provides computer-based intelligent control over the 'R7000 plus frequency database support.

The RCSS runs on any IBM compatible computer with 640k bytes of RAM, EGA or VGA graphics card and monitor, and one available RS-232 communications port.

Install the RCSS and a drawing of the front of an ICOM IC-R7000 will appear on your computer monitor. All you do is use your mouse or keyboard to manipulate the radio just as if the radio itself

modes and more.

The RCSS for IBM compatible computers is available for \$239 and includes software, user manual, external interface, and all necessary interconnecting cables. (A Macintosh version has been available since 1987).

For more information, call 703-680-3559 or write Systems and Software International at 4639 Timber Ridge Drive, Dumfries, Virginia 22026.

Azimuth World RadioSphere

Azimuth Communications is offering a hand-blown, 12 inch, clear acrylic world sphere that shows ham radio DX prefixes, world radio zones, latitude and longitude, the International Date Line, cities, countries and more.

Land masses are gray, oceans are clear and lettering is red. Nomenclature for

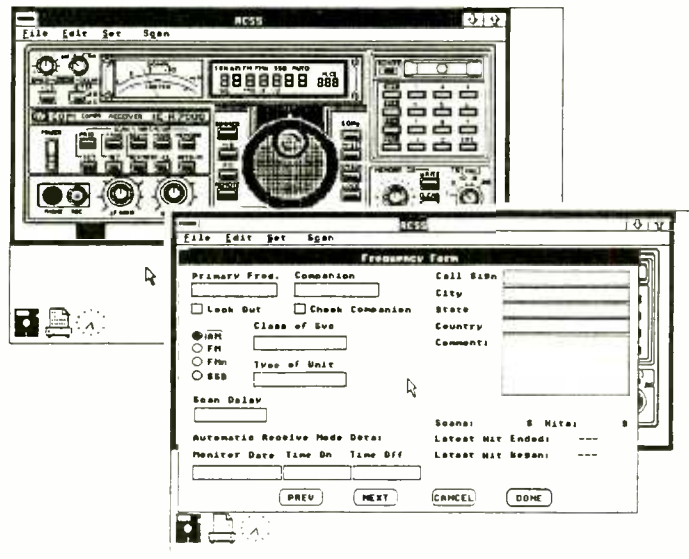


countries and cities is in black.

The World RadioSphere would make a handsome addition to any radio room. And it can be yours for \$119.95 (plus \$6.95 shipping and handling) from Azimuth Communications Inc, 3555 Fourth Street, Santa Rose, California 95405.

MFJ Multiple DC Outlet

The MFJ-1112 Multiple DC Power Outlet connects directly to your 12 volt DC power supply to give you six pairs of heavy duty binding posts for connecting your accessories. RF bypassing keeps RF out of the power supply from the DC line outlet. The attractive black aluminum cabinet measures a sleek 13.5" by 2.75" by 2.5" and comes with a one year guarantee. You can get your Multiple DC Power Outlet for \$24.95 from your favorite radio store or by calling MFJ at 1-800-647-1800.



was being operated. Features include automatic detection and storage of all active frequencies encountered by the receiver while scanning, storage of unlimited banks of frequencies (each bank holds 1000 frequencies), unattended operation, various scanning



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

Putting the Computer to Use

Every now and then I come upon a bit of statistical information that gets my juices flowing.

Recently I read someplace that something on the order of one out of every four homes now has a personal computer. Further, within the next few years, this number can be expected to jump to 50 percent of all households.

If we take a quick look around at the kind of folks who read *Monitoring Times*, I think we might find that well over 50 percent of our readers currently have a high-priced electronic abacus on their desk tops.

This is going someplace, right, Uncle Skip?

Well now, knowing that a lot of folks out there have home computers, it might do some good to take a look at some of the possibilities for using those systems in support of the monitoring hobby.

The great promise of the home computer is that it can reduce the hassle surrounding a lot of daily tasks. But Old Uncle Skip's personal observations indicate that a lot of those machines tend to sit around collecting dust instead of data. So warm up your keyboards, friends; it's time to check out --

UNCLE SKIP'S GUIDE TO COMPUTERS AND DXING

SYSTEMS

If you can believe everything you read in computer magazines, the home computer market has distilled down to three systems. Commodore's Amiga, Apple's Mac, and just about everybody else's PC-MS/DOS clones.

These systems do, in fact, represent the current state of the personal computer art. However, there are many other computers that have been somewhat left in the technological dust while still remaining fine home systems.

Commodore's 64 and 128 systems along with the various Apple II systems probably account for the largest block of home user computers out there. While not on the cutting edge of technology, these "eight-bit" personal computers are more than adequate for all manner of tasks that a radio hobbyist might throw in their direction. Also, these systems have tens of thousands of pieces of software available to them, many of which are of very low cost. Some are even free.

The point is, if your home system meets all

of your current computing needs, you do not have to run out and buy into the latest technology (at a cost in excess of one thousand dollars). Instead you can spend your money on improved receivers. If you already own a state-of-the-art PC, don't get your nose out of joint. You will find that most of what Old Uncle Skip has to share will apply to you, too.

SOFTWARE SOURCES

These days software is everywhere. Because this whole process of building up a software library might be new to the beginner, let's review the kind of software that is out there.

COMMERCIAL SOFTWARE -- This is the stuff you see in the stores. This type of software is copyrighted and very often copy-protected, so that you cannot indiscriminately make a dozen copies and give them to your friends. Because of production costs, this is the most expensive kind of software. A word to the wise; just because a piece is commercial doesn't mean it is better than a shareware or public domain piece of software. Compare carefully before you lay down your dinero!

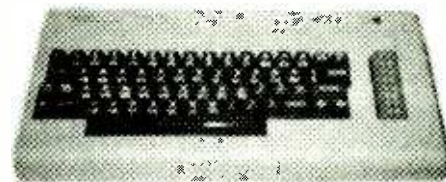
SHAREWARE -- This is one of the neatest concepts around! While it flies in the face of traditional marketing, it flies like an eagle. In this scheme, the software author makes the software available for copying and distribution through Bulletin Boards and User Groups. You can copy it and share it with your friends.

All the author asks is that, if you like the piece, you send the author a small fee to offset development costs and to provide you, the user, with updates and improvements. By eliminating the commercial software distributor, the author and user work together to keep good software on the market.

There are shareware word processors and data bases that make many commercially produced programs look sick. Shareware is also the best way to locate useful software for some of the less popular home computers.

PUBLIC DOMAIN -- These are programs that are available for free or, if purchased through a public domain software house, for a nominal copying charge. In this case, free does not always indicate cheap. Several excellent and useful radio hobbyist programs can be found in the public domain.

This software can usually be downloaded, via modem, off of both commercial and noncommercial on-line systems. Also, many computer user groups maintain large public domain libraries for use by their membership.



Don't let that Commodore sit around collecting dust when it could be collecting data!

DATABASE PROGRAM *The ultimate log book*

Basically, anything you currently write down as a form of record keeping for your radio hobby can be entered into a database. This information will be in a form that will allow for many uses far beyond the traditional file card pile. Don't forget, disks take up a lot less room.

Database programs are usually equally useful and frustrating. I say this because most of these software packages will require configuration and then data entry of your collection of information in order to make them useful. I must also say that no matter how boring or lengthy the initial start-up process may be, hang in there, Compadre! Once you get your data all compiled, you will then be able to massage it in an infinite number of ways.

Now how would a DXer make use of a database? How about a log that allows you to call upon information by date, frequency, time, country, or any one of a hundred other possible field titles. How about files within that base that list stations heard, stations confirmed, and (most importantly) stations you want to hear. Your "Hit List" file may contain information about the best times and frequencies you might want to enter into your scanner every time a parade or sporting event occurs in your home town.

No matter what system you have at home, it should be fairly easy to locate several database programs. Test drive a few until you settle on one that works best for your application.

WORD PROCESSORS

Let's put the cards right on the table! Old Uncle Skip could never have become the master of radio publishing that he is today without the aid of his trusty word processor.

Think of a word processor as a typewriter that can cover a multitude of sins. It is able to do this by allowing you to preview your document prior to committing it to print. Depending upon the sophistication of your particular word processing package, you will

find yourself able to juggle, massage, and improve upon your text in any number of ways. Most useful to some of us "pros" is the spell checking features included in many WP packages.

Now as to DX useful tasks, a word processor will allow you to develop "form letters" that can be utilized in sending out QSL reports. Likewise, Utility DXers can develop Prepared Form Cards useful in assuring confirmation from difficult sources.

If you are in this hobby for any length of time, you will find yourself corresponding with a lot of folks. Your word processor will help you better than any typewriter ever could.

Also, like the database program, the word processor can cut down on your personal paper chase by allowing you to store information on disks or tape instead of in bulky file cabinets.

Most systems have dozens of word processors available for your use. Old Uncle Skip has made one observation, though. People tend to stick with one word processor even though better ones may come along. I guess it has to do with needing to relearn all the various commands that make word processing so useful. So pick your first word processor carefully, it's kind of like getting married without all of the benefits.

SUPPORTIVE SOFTWARE

It may not surprise you that some of the pioneers of personal computing were also radio hobbyists. One of the first readily available programs written in BASIC is called MINIMUF. It is a program that gives the user the Maximum Usable Frequency for radio communication at any given time. This little gem is in the public domain too, and has been translated into every system-specific variation of BASIC. In other words, no matter what computer you use, MINIMUF will be there to help you with your radio listening.

With availability varying from system to system, many other similar programs have been written. Everything from antenna and circuit design programs to software that will give you antenna headings for any location on the planet. Even those folks who enjoy tracking satellites will find software to aid in their search.

A good source for tracking down this kind of software could be a neighborhood amateur radio operator. Don't rule out your local computer user group as a resource.

EDUCATIONAL SOFTWARE

You will find dozens of programs out there to help you learn or relearn such basic skills as mathematics and typing. All of these are quite useful because there is no more patient tutor than a home computer. They never get mad, they just tell you to try again until you get it right.

ALPHA DELTA Model DX-EE Limited Space High Performance Multi-Band Dipole



- "No-Trap" design provides exceptional broad spectrum receive coverage from 5 MHz thru 30 MHz. Covers world-band broadcasts and "utility" frequencies in a single antenna.
- 2 kW transmit capability in the 7, 14, 21, and 28 MHz ranges without a tuner. Broad HF range transmit coverage with a widerange tuner.
- Designed for rooftop, attic, and condo installations where space is at a premium. Only 40 ft. overall length.

• kW size components, stainless steel hardware, and 12 GA. copper wire means the Model DX-EE has less loss than light-duty receive-only antennas. The Alpha Delta design concept does not permit the use of small, lossy traps as found in other brands. If you put RF power in the small trap-type models they will "smoke"—not what you want in a precision antenna!

• Frequency selection in the Model DX-EE is by a combination of special broadband RF choke-resonators and full size radiators on

various ranges. An antenna loaded with a number of traps in each wire is so narrow-banded, its useful ranges are severely limited.

• Special hardware and connector arrangement on the Model DX-EE accepts either balanced or coax feed. With other brands you have to make a choice of models.

• The instructions with Model DX-EE show how to tune it for transmit. For receive applications no tuning is necessary. Since it comes assembled, just take it out of the box, put it up and enjoy great DX!

Model DX-EE . . . \$84.95 ea. at your Alpha Delta dealer. Add \$4.00 shipping & handling for direct orders in the U.S. Exports quoted.



ALPHA DELTA COMMUNICATIONS, INC.



P.O. Box 571, Centerville, Ohio 45459 • (513) 435-4772



A useful skill in this hobby is geography. It helps to know where Fiji and Mauritania are to make your MINIMUF and Beam Heading programs useful. There are many geography tutors out there in computer land. There is even one commercial program, "Where in the World Is Carmen Sandiego," that turns learning geography into a great game.

Anyone out there interested in working toward any class of amateur radio license will be pleased to know that there are all manner of software packages written to help you bone up on both the code and theory portions of these tests.

No matter what skill you want to brush up on, you should be able to find a few programs that will bring you patiently up to speed.

ON-LINE SERVICES *Tapping into cyberspace*

Once your computer has all the attachments that allow it to operate in a useful fashion around the old homestead, you will find one more accessory will serve to open up an entire world to you. A MODEM (short for Modulator/Demodulator) will allow you to connect your computer to your telephone line in order to access information from other computer systems. These systems break down into two groups.

Commercial systems such as Compuserve, Q-Link, Prodigy, and GENIE charge a fee for access and subsequent connect time to allow you to acquire information from them. Many of the public domain programs we have discussed before can be found in the on-line libraries of these systems.

Noncommercial systems are those set up by dedicated computer enthusiasts who charge no fee but set certain basic ground rules for access and participation.

A word of caution to new modem users. These puppies can run your phone bill up real quick. Pay attention to your connect time so you don't bankrupt yourself.

ONWARD AND UPWARD

As you grow in your knowledge of both the computer and radio hobbies, you will find many exciting ways to use your receiver and computer together. You will find that you can build or purchase interface boards that allow your computer to translate code, RTTY, FAX, and packet radio signals off the air. If you are the proud owner of one of those new-fangled receivers that have a computer port, you will discover that you can use your computer as an almost infinite memory resource.

So there you have it, folks. Wade on in, the water ain't that deep!



Gettin' it together

Exploring the world of federal frequencies can be interesting. The biggest problem is knowing where to listen. But once you do start finding new frequencies, you find yourself in the midst of another problem: how to organize your discoveries for future use. There is nothing more nerve racking than having to look for a specific UHF DEA frequency amongst scraps of paper, post-its, or whatever. It is time to get yourself organized.

Believe old Rod when I tell you that in the future you will not regret this and you will suffer less pain in the long run. Trust me.

First of all, if you own a computer there are several very good ways to organize your frequencies. The way you organize your notes will depend on your computer and the programs you have available.

Those of you with word processing capability might find it useful to organize a complete list of frequencies like you would see in the *Police Call* book. The Consolidated Frequency Table that appears there is a very good starting point, and having everything set up in frequency order complements the frequency searches I talked about last month. You can set pages in your word processor to appear as in Figure 1.

With a word processed frequency list, it is easy to add new frequencies, expand your notes, etc. Some of you might ask what A# means. Well, I like to code things and for me, the "A" means that the frequency is active in my area. The "#" means that I have confirmed the usage of that frequency in my area. You can be real innovative in this respect and use letters and symbols for all kinds of things in your frequency listings.

Several things you should include when adding notes to your list and monitoring include:

1. Is this a repeater input, output, or simplex frequency?
2. Is this a link repeater? (A repeater that links other repeaters)
3. Has the agency using this frequency used

a frequency designator when referring to this frequency? (i.e. -- Alpha channel, F1, channel 2B, etc.). Really helpful when maneuvering around a government radio system.

4. Especially on unknown channels, what unit designators are you hearing? You might be able to reference these designators with known channels and at least figure out who you are hearing.
5. Note the location of the repeater and/or office/base using the frequency. A lot of times things of this sort are heard on the air while units are communicating with each other.
6. Make a note what the frequency is being used for (i.e. -- maintenance, surveillance, dispatch, security channel, etc.). By actually listening close to a channel's conversation, a lot of times you can determine what a channel is being used for.

Word processing your frequency list does have some drawbacks. If you decide later on that you want to list your frequencies by the transmitting agency voice frequency then you are going to have to retype your information or do some heavy duty editing on your frequency list. Overall, if all you have is a word processing program, you will find that using it to process your frequency list is a much better proposition than pen and paper methods.

Another avenue open to computer users is the database. While databases can be complicated, the database offers the best of all worlds to keep scanner records. A database can do a lot more than any word processing program. The major problem is learning how to use the program and deciding what data fields will be set up and how they will look.

Once your data is entered, you can then sort the databases by frequency, no matter what order you enter the data in. Also if properly coded, you could sort by agency, location, or any combination based on how you set the database up.

Another nice feature of most databases is that you can take the data and import (bring into) it to a word processor to further edit the information. All in all, a database is a good way to store the results of your scanning searches and local discoveries.

If you don't own a computer, the best way I have found to organize notes is to set up a notebook by frequency as I demonstrated with the word processor setup. Grab a copy of *Police Call* and set up your written list by frequency. Then you can make notes on each frequency as to what is there, if it is active, and any other information you glean from monitoring the frequency. Of course, you will not be able to manipulate the data like you would with a computer, but at least you can keep some sort of record for future use.

These are only some of the ways to record data on what you are hearing on the scanner. I would be interested in hearing from some of you as to the methods you use. I will be happy to pass them on to the rest of the *MT* family of readers through this column. The address is in the masthead.

Air Route Traffic Control Centers

I just got a letter from a frustrated fedfile buff and he asks: "Rod, I want to listen to military aircraft on my scanner, but I don't know where to start looking. What do you suggest?"

The best place to start, folks, is with the FAA's ARTCC. To put that into nongovernmental language -- that's the Federal Aviation Administration's Air Route Traffic Control Center frequencies.

Throughout the country, the FAA has placed remote transmitters linked to several central centers via microwave. These remote transmitters feed radio comms and radar information to and from the center.

Controllers at the center can then control selected slices of airspace and the aircraft within that airspace from a central location. These central centers are all a part of the ARTCC system. In fact, pilots often refer to these center control facilities as "Center" over the air. This system is the FAA's way of handling aircraft traversing the country from airfield to airfield.

By monitoring these ARTCC frequencies, the mil monitor can sometimes pick up other frequencies when one controller hands off the flight to another controller. Each center divides up the airspace that they are responsible for into sectors, and assigns a controller and set of frequencies to that sector.

Figure 1

Frequency	Service	Notes
162.400 A#	Weather Broadcast	NOAA Weather Radio-24 hour continuous
162.450	UAR UER	
162.475	Weather Broadcast	NOAA Weather Radio
162.500	UFA	
162.550	Weather Broadcast	NOAA Weather Radio
162.6125	UAF UGF UIP UNS	

A controller handling that sector will handle not only civilian aircraft on the VHF-Air Band, but also military aircraft in the 225-400 MHz military aircraft band. Usually the civilian and military frequencies are paired together and a controller's voice goes out on both frequencies simultaneously.

Normally what you hear will be routine reports of the aircraft's position and altitude. Also, in times of severe weather, the aircraft might ask the ARTCC controller to move around the bumpy stuff. If the aircraft is having some sort of trouble, you will hear that sort of comms also. All-in-all, the FAA's ARTCC frequencies are a great place to start one's venture into the world of military aircraft monitoring. These FAA centers basically cover all the airspace in the continental US.

Starting this month, I am offering a complete list of these center frequencies. This list for each center includes: all the remote sites (locations) within the center and both VHF civilian and military frequencies.

If you would like this complete list for the whole continental US-FAA centers, then drop me a line c/o *Monitoring Times* in Brasstown and mark it CENTER, c/o Rod Pearson. Ch, yeah, I'm not rich, so please include \$2.00 to cover postage, reproduction, and handling.

If you aren't rich either, then here is a good deal: Send your list of federal/military frequencies and I will ship the CENTER list to you for just an SASE and two 25 cent stamps. The CENTER list is the federal government's latest on the ARTCC system and is current as of a month ago, so you are getting the latest goodies.

Big Easy Frequencies

Monitoring Times' own Larry Van Horn of Utility World fame has sent his own list of the local scene in New Orleans, the Big Easy. Larry says that New Orleans has a lot of military/government activity. The next time you go to the Big Easy for Mardi Gras, you might want to drag your scanner and this list along and give a listen between parades.

Thanks, Larry, for the nice list, and I hope we see more fed frequencies from the Big Easy real soon.

With Larry's list I will close this month's fedfile. Be sure to send your freq list to the column and also order your ARTCC Center list. Till next month, 73, and it's time to get a cubo . . . or two.



WOW!

Have you seen U.S. Scanner News

The fastest growing all scanner magazine on the market today.

Try it, you'll like it.

Send \$7.50 for a 6 month sample subscription, \$15.00 for a One year subscription, Two years \$29.00, Three years \$43.00. Foreign subscription \$19.50 per year.

Payment must be included with order.
(Washington state residents add 7.6% tax.)

Bob's Publications
P.O. Box 1103
Vancouver, WA 98666

CITIZEN'S GUIDE TO SCANNING

Bob Kay's Best Selling Book

A complete guide to scanning by popular *MT* columnist Bob Kay. A soup-to-nuts book complete with exhaustive frequency lists. A great book for anyone who scans -- wants to. \$12.95 + 1.20 book rate or 2.30 UPS from DX Radio Supply, Box 360, Wagontown, PA 19376.

What if my *MT* is late?

If your copy of *MT* doesn't show up on your doorstep, give it until the 10th of the month, and then call us. We can replace up to two issues per year, but give the Post Office a chance!

Monitoring the Big Easy

NAS New Orleans (Belle Chase)

ATIS (Automatic Terminal Identification System -- 276.2

Approach/Departure -- 123.85 256.9

NAS Tower -- 118.7 126.2 126.3 340.2 360.2

NAS Ground -- 126.2 382.8

USCG at NAS -- 165.2625 165.3375 171.2375 (Repeat of marine channel 16 and

CG unit to unit) 171.3375 381.7 381.8 383.9

NAS Weather -- 265.8

VA-204 Base Radio -- 301.3 (Naval Reserve A-7E squadron)

Search and Rescue -- 282.8

Ground Control Approach frequency -- 308.4

Navy -- 139.50 Base Security/140.10 Fire and Crash/140.075 Naval Investigative Service repeater input/140.775 NIS repeater output/148.325 Joe Ellen Smith Hospital paging/148.350 Naval Support Activity Security/148.275 Naval Support Activity Security Tactical/138.82 138.85 140.50 140.65 140.8 142.675 148.575 149.01 149.350 150.75 150.375 261.8 271.4 275.4 275.7 283.4 285.8 290.0 305.8 307.7 312.2 313.8 320.2 355.8 339.6 348.1 358.6 413.025

Air National Guard -- 149.235 138.1 148.575 150.225 163.4875 163.5125 165.0125 165.1125 165.1375 155.280 Medical ambulances/271.2 351.2 413.3 413.4

New Orleans Moissant Int'l Airport

Flight Service Station -- 255.4

Approach/departure -- 256.9 269.2 284.7 290.3

Tower -- 254.3

FAA -- 165.875 169.300

New Orleans Army Reserve

38.89 150.750 163.000 (page) 163.025 163.5375

Houston ARTCC Center -- 380.2 and 343.9 (West)/269.5 (East)/279.6 (Popup)

Camp Shelby -- 297.1 275.6 (NORDO or No radio)/298.6 (Clairborne primary)

Eagle G Discrete -- 277.4 287.1 (Gulfport Approach)

Southern Seaplane Base (Belle Chase) -- 32.05 40.8 264.2 267.8 358.2

Going home to Canada

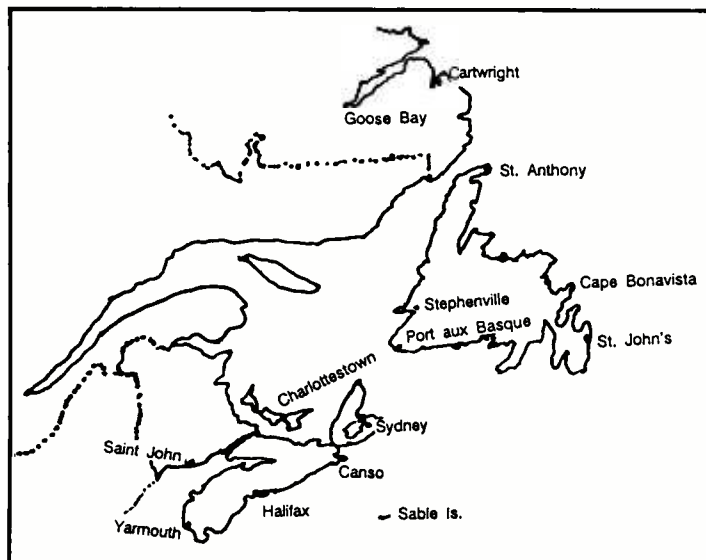
Since it has been a while since we looked at my own native land, I thought that we might investigate some of what the Atlantic provinces of Canada have to offer. All frequencies are in kilohertz.

First, the following listings show what the Canadian Coast Guard has to offer in Morse code.

406	VOJ	Stephenville CG Radio	Stephenville, NF
416	VOK	Labrador CG Radio	Cartwright, NF
420	VCP	St. Lawrence CG Radio	St. Lawrence, NF
430	VOO	Comfort Cove CG Radio	Comfort Cove, NP
444	VOK	Labrador CG Radio	Cartwright, NF
446	VCS	Halifax CG Radio	Halifax, NS
448	VCM	St. Anthony CG Radio	St. Anthony, NF
450	VAU	Yarmouth CG Radio	Yarmouth, NS
460	VON	St. John's CG Radio	St. John's, NF
464	VCO	Sydney CG Radio	Sydney, NS
478	VON	St. John's CG Radio	St. John's, NF
484	VCS	Halifax CG Radio	Halifax, NF
489	VAU	Yarmouth CG Radio	Yarmouth, NS
489	VCM	St. Anthony CG Radio	St. Anthony, NF
489	VCO	Sydney CG Radio	Sydney, NS
4285.0	VCS	Halifax CG Radio	Halifax, NS
6491.5	VCS	Halifax CG Radio	Halifax, NS
8440.0	VCS	Halifax CG Radio	Halifax, NS
12874.0	VCS	Halifax CG Radio	Halifax, NS
16948.5	VCS	Halifax CG Radio	Halifax, NS
22387.0	VCS	Halifax CG Radio	Halifax, NS

On Single Sideband try looking for the following:

2514	VCM	St. Anthony CG Radio	St. Anthony, NF
2514	VCP	St. Lawrence CG Radio	St. Lawrence, NF
2514	VCS	Halifax CG Radio	Halifax, NS
2514	VOJ	Stephenville CG Radio	Stephenville, NF
2514	VOK	Labrador CG Radio	Cartwright, NF
2514	VOK	Labrador CG Radio	Hopedale, NF
2514	VON	St. John's CG Radio	St. John's, NF
2514	VOO	Comfort Cove CG Radio	Comfort Cove, NF
2530	VCA	Charlottetown CG Radio	Harrington, PE
2530	VCO	Sydney CG Radio	Sydney, NS
2538	VAU	Yarmouth CG Radio	Yarmouth, NS
2538	VCP	St. Lawrence CG Radio	St. Lawrence, NF
2538	VOK	Labrador CG Radio	Cartwright, NF
2538	VOK	Labrador CG Radio	Hopedale, NF
2538	VON	St. John's CG Radio	St. John's, NF
2538	VOO	Comfort Cove CG Radio	Comfort Cove, NF
2582	VAU	Yarmouth CG Radio	Yarmouth, NS
2582	VCA	Charlottetown CG Radio	Harrington, PE
2582	VCM	St. Anthony CG Radio	St. Anthony, NF
2582	VCO	Sydney CG Radio	Sydney, NS
2582	VCP	St. Lawrence CG Radio	St. Lawrence, NF
2582	VCS	Halifax CG Radio	Halifax, NS
2582	VOJ	Stephenville CG Radio	Stephenville, NF
2582	VOK	Labrador CG Radio	Cartwright, NF
2582	VOK	Labrador CG Radio	Hopedale, NF
2582	VON	St. John's CG Radio	St. John's, NF
2582	VOO	Comfort Cove CG Radio	Comfort Cove, NF
2598	VAU	Yarmouth CG Radio	Yarmouth, NS
2598	VCM	St. Anthony CG Radio	St. Anthony, NF



2598	VCO	Sydney CG Radio	Sydney, NS
2598	VCP	St. Lawrence CG Radio	St. Lawrence, NF
2598	VCS	Halifax CG Radio	Halifax, NS
2598	VOJ	Stephenville CG Radio	Stephenville, NF
2598	VOK	Labrador CG Radio	Cartwright, NF
2598	VOK	Labrador CG Radio	Hopedale, NF
2598	VON	St. John's CG Radio	St. John's, NF
2598	VOO	Comfort Cove CG Radio	Comfort Cove, NF
4376	VOK	Labrador CG Radio	Cartwright, NF
4410.1	VCS	Halifax CG Radio	Halifax, NS
6518.8	VCS	Halifax CG Radio	Halifax, NS
8787.1	VCS	Halifax CG Radio	Halifax, NS
13138	VCS	Halifax CG Radio	Halifax, NS
17242.2	VCS	Halifax CG Radio	Halifax, NS

If you are interested in radiotelex transmissions, the following frequencies of VCS in Halifax might interest you:

4353.0	13090.5
6497.5	17212.5
8708.0	22590.0

The Royal Canadian Navy has its major Atlantic coast base at Halifax, and they broadcast information in CW and radiotelex on a regular basis. Frequencies for CFH include:

438	8697
4255	12726
6430	16926.5

Remember that all of the stations using Morse Code are equipped with 500 kHz, and all of the Single Sideband-equipped stations have 2182 kHz.

Next, for those living in or visiting the area with a scanner, the following are among the VHF frequencies which are used. All stations and all transmitter sites also use 156.800 MHz. Frequencies are megahertz.

156.5500	VAZ 3	Canso Canal Lock	Canso, NS
156.5500	VAZ 3	Canso Canal Lock	Canso, NS
156.5500	VCA17	St. John's Traffic	St. John's, NF
156.5500	VCA73	St. John's Traffic	St. John's, NF
156.5750	XLI71	Fundy Traffic	Saint John, NB
156.6000	VBJ20	Halifax Traffic	Halifax, NS
156.6000	VCA73	St. John's Traffic	St. John's, NF
156.6000	XLI70	Placentia Traffic	Placentia, NF
156.6000	XLI71	Fundy Traffic	Saint John, NB
156.6000	XLM44	Port aux Basque Traffic	Port aux Basque, NF
156.7000	VBJ20	Halifax Traffic	Halifax, NS
156.7000	XLI70	Placentia Traffic	Placentia, NF
156.7000	XLI71	Fundy Traffic	Saint John, NB
156.7000	XLM44	Port aux Basque Traffic	Port aux Basque, NF
161.6500	VAU	Yarmouth CG Radio	Western Head, NS
161.6500	VAU	Yarmouth CG Radio	Lorneville, NB
161.6500	VCA	Charlottetown CG Radio	Charlottetown, PE
161.6500	VCA	Charlottetown CG Radio	Pt. Escuminac, NB
161.6500	VCM	St. Anthony CG Radio	Pointe Riche, NF
161.6500	VCM	St. Anthony CG Radio	Conche, NF
161.6500	VCO	Sydney CG Radio	Sydney, NS
161.6500	VCO	Sydney CG Radio	Fox Island, NS
161.6500	VCP	St. Lawrence CG Radio	St. Lawrence, NF
161.6500	VCS	Halifax CG Radio	Halifax, NS
161.6500	VOJ	Stephenville CG Radio	Pine Tree, NF
161.6500	VOJ	Stephenville CG Radio	Ramea Island, NF
161.6500	VOK	Labrador CG Radio	Goose Bay, NF
161.6500	VON	St. John's CG Radio	St. John's, NF
161.6500	VON	St. John's CG Radio	Cape Bonavista, NF
161.6500	VOO	Comfort Cove CG Radio	Comfort Cove, NF
161.7750	VCA	Charlottetown CG Radio	Cape Egmont, PE
161.7750	VAU	Yarmouth CG Radio	Yarmouth, NS
161.7750	VAU	Yarmouth CG Radio	Cape Blomidon, NS
161.7750	VCM	St. Anthony CG Radio	l'Anse aux Meadows, NF
161.7750	VCO	Sydney CG Radio	Cape North, NS
161.7750	VCO	Sydney CG Radio	Sable Island, NS
161.7750	VCP	St. Lawrence CG Radio	Cape Pine, NF
161.7750	VCP	St. Lawrence CG Radio	Fortune Head, NF
161.7750	VCS	Halifax CG Radio	Ecum Secum, NS
161.7750	VOJ	Stephenville CG Radio	Sopers Crossing, NF
161.7750	VOK	Labrador CG Radio	Cartwright, NF
161.7750	VON	St. John's CG Radio	Hearts Content, NF
161.7750	VOO	Comfort Cove CG Radio	Twillingate, NF
161.8000	VAU	Yarmouth CG Radio	Yarmouth, NS
161.8000	VAU	Yarmouth CG Radio	Western Head, NS
161.8000	VAU	Yarmouth CG Radio	Lorneville, NB
161.8000	VAU	Yarmouth CG Radio	Cape Blomidon, NS
161.8000	VAU	Yarmouth CG Radio	Grand Manan, NB
161.8000	VCA	Charlottetown CG Radio	Charlottetown, PE
161.8000	VCA	Charlottetown CG Radio	Cape Egmont, PE
161.8000	VCM	St. Anthony CG Radio	l'Anse aux Meadows, NF
161.8000	VCO	Sydney CG Radio	Cape North, NS
161.8000	VCO	Sydney CG Radio	St. Columba, NS
161.8000	VCP	St. Lawrence CG Radio	Cape Pine, NF
161.8000	VCP	St. Lawrence CG Radio	Fortune Head, NF
161.8000	VCS	Halifax CG Radio	Ecum Secum, NS
161.8000	VOJ	Stephenville CG Radio	Sopers Crossing, NF
161.8000	VOK	Labrador CG Radio	Cartwright, NF
161.8000	VON	St. John's CG Radio	Hearts Content, NF



MIL-SPEC COMMUNICATIONS

P.O. Box 461 Wakefield, RI 02880 Call Today (401) 783-7106

Military Surplus & New Communications Gear

Covering DC to Daylight at Discount Prices!

- AR-2515 Wide Coverage Scanner\$679
- AR-2002 Scanner\$455
- AR-900 Scanner w/cellular\$276
- ICOM R-71A HF Scanning Receiver\$850
- Collins R390A (Reconditioned/Calibrated) \$750*
- Japan Radio NRD-525\$1,150
- Sony ICF-2010\$318
- Sony ICF-2003\$245
- Sony Pro-80\$350
- RACAL RA-6790 (GM)/R-2174CALL
- Realistic PRO-2005 Scanner\$399
- 3TF7 Ballast Tube - Brand New!\$40
- Bearcat BC-200XLT - w/Cellular restoration\$275

* Cost includes Federal Express Shipping

FREE DELIVERY TO YOUR DOOR!

**WE OFFER REPAIR SERVICE • MANUALS • BROKERING
PROFESSIONAL MONITORING STATION
SEND \$2.00 FOR CATALOG CREDITED TO PURCHASE**

161.8000	VOO	Comfort Cove CG Radio	Twillingate, NF
161.9000	VAU	Yarmouth CG Radio	Yarmouth, NS
161.9000	VAU	Yarmouth CG Radio	Western Head, NS
161.9000	VAU	Yarmouth CG Radio	Lorneville, NB
161.9000	VAU	Yarmouth CG Radio	Cape Blomidon, NS
161.9000	VAU	Yarmouth CG Radio	Grand Manan, NB
161.9000	VCA	Charlottetown CG Radio	Charlottetown, PE
161.9000	VCA	Charlottetown CG Radio	Cape Egmont, PE
161.9000	VCA	Charlottetown CG Radio	Pt. Escuminac, NB
161.9000	VCM	St. Anthony CG Radio	Pointe Riche, NF
161.9000	VCM	St. Anthony CG Radio	Conche, NF
161.9000	VCO	Sydney CG Radio	Sydney, NS
161.9000	VCO	Sydney CG Radio	Fox Island, NS
161.9000	VCO	Sydney CG Radio	Kilkenny Lake, NS
161.9000	VCP	St. Lawrence CG Radio	St. Lawrence, NF
161.9000	VCS	Halifax CG Radio	Halifax, NS
161.9000	VCS	Halifax CG Radio	Kingsburg, NS
161.9000	VOJ	Stephenville CG Radio	Pine Tree, Tab1 NF
161.9000	VOJ	Stephenville CG Radio	Ramea Island, NF
161.9000	VOK	Labrador CG Radio	Goose Bay, NF
161.9000	VON	St. John's CG Radio	St. John's, NF
161.9000	VON	St. John's CG Radio	Cape Bonavista, NF
161.9000	VOO	Comfort Cove CG Radio	Comfort Cove, NF
161.9500	VAU	Yarmouth CG Radio	Scotch Mountain, NB
161.9500	VCA	Charlottetown CG Radio	Pt. Escuminac, NB
161.9500	VCS	Halifax CG Radio	Halifax, NS
161.9500	VCS	Halifax CG Radio	Ecum Secum, NS
161.9500	VCS	Halifax CG Radio	Kingsburg, NS

That's all for this month. Happy hunting until next time.

The Amateur Service

For years the amateurs have been bragging about the public service they provide. Whatever the disaster, hams are there with quick, efficient and life-saving communications. Hurricanes, tornados, floods or earthquakes, hams are there, doing their thing.

Several months later, the ham magazines are filled to overflowing with kudos. Over there are pictures of WX2B5 and his friends smiling from inside a rain-drenched tent. A few pages further are full-length reports on the disaster and how hams saved the day.

You see this sort of thing over and over again. The problem is that all of this great publicity is occurring in the ham magazines, a clear-cut case of preaching to the converted. Sure, we all like to have our fellows give us a nice pat on the back, but the bottom line is that hams spend altogether too much time patting themselves on the back. As a result, the general public knows -- and cares -- little about hams.

The public likes CB

Over the years, I have learned that most folks feel CB serves the public better than hams. They will point out the many coffee breaks that various CB clubs put on during holidays, the volunteer work CBers do with the handicapped and disadvantaged, the crime prevention teams that are manned by CB operators and the excellent traffic reports available on CB -- not to mention the many rescue teams staffed by CB operators.

The reason for all of this is that CBers are regular citizens who are involved with their community. And they are well liked by the press because they are visible and willing to talk like normal people (I know CBers talk funny, but think about it!).

On the other hand, hams like to appear better than CBers, and too often act like snobs. Ask a ham what the difference is between him and a CB operator, and you will hear "Hams have licenses, know all about electronics and can understand Morse code." In addition the ham will go on about the awards he has earned, power he runs and DX worked. Ho hum. John Q Public could care less.

What is needed?

It's time to show a different side of amateur radio. For example, amateur radio provides a springboard for the youth of the world to learn about technology. We have a great opportunity to help ease world tensions and join diverse societies into a cooperating

international community. Amateur radio truly has the potential of easing many of the earth's burdens.

What to do

Almost every ham club has given classes on how to get a ham ticket. That's nice, but what we've already found out is that the general public doesn't give a hoot about ham radio. There is little use putting an ad in the local news paper telling everyone your club is going to give ham classes if there is little or no interest in the hobby. Let's try something different.

What we need is a way of telling our story to everyone (just like the CBers). For example, I am sure that at least 99 percent of the ham clubs in the world has at least one member who can teach the average homeowner how to make simple electrical repairs, or how to put up a good TV antenna. How about telling the local Boy Scout troop how to go about receiving international shortwave stations?

Is it possible for the local ham club to host a coffee break? Could we teach basic electronics, or how about a class for new computer users? Or, how do I use my microwave oven? Anyone care about Solar power?

Not only can we present technology to the public, we could do such wild things as having our resident expert put on classes on fly fishing, wood carving, swimming or anything! Whatever it is, we must get the public's attention and let them know we are out here and willing to help make their life better! Let's be regular people, not snobs!

What's the benefit?

As we all recognize, amateurs are indeed skilled people. We have interests and talents in many areas and there is no reason we cannot use this reservoir of skills to introduce the public at large to the hobby.

Every time we have contact with the public there is an opportunity to tell them who we are and what we do. Let's get their attention and then sell them on hamming. As I have said many times before, we need new amateurs if this hobby is going to progress!

Fantastic Antenna Revisited

Do you recall the two meter quad I mentioned in the October column? A recent letter from the antenna's producer,

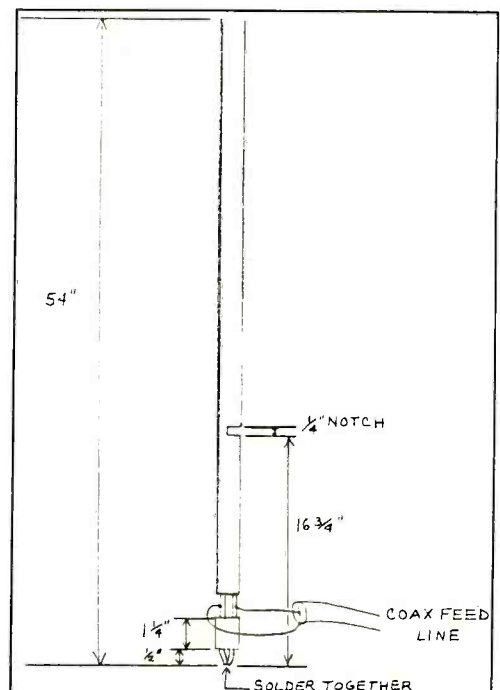
John Dickson, W4NON, informed me of a price increase in the basic five element quad due to material prices being upped. The new price is now \$50.00 plus \$7.00 s/h (in the 48 states). Additional elements are \$5.00 each (up to 8). Even at the fifty dollar price, I know of no other antenna that performs as well in that price range.

I have recently received an additional three elements for my own five element quad and will report on the eight element antenna in an upcoming issue.

This nifty antenna is available from John Dickson, W4NON, 111 Old Hickory Point, Greenville, SC 29607 (other bands/types also available).

Speaking of Two Meter Antennas

Figure one illustrates a nice two meter J antenna. The idea for this antenna has been circulated on packet radio for some time now. It's a good antenna for portable/emergency operation, and if you are looking to save some bucks will do a nice job at the home station, too. Of course the



2-Meter J Antenna

Make antenna from 300 ohm TV twinlead. Tape all exposed wires. This antenna should work well when scaled to other VHF bands.

antenna can be scaled up or down to any other frequency. The following description and information are exactly as received via my local PBBS.

TV Twinlead 2M J pole antenna copied from UUCP:

The following is a description of a J-Pole antenna made from 300 ohm TV twin-lead. Quite a few of the local hams have successfully built one or more of these antennas. The antenna has several advantages which include improved performance for 2 meter HTs, portability, and last, but never least, they are inexpensive.

1. Start with 54-1/2 inches of TV twin lead (do not use foam core twinlead).
2. Strip 1/2 inch of insulation from the bottom and solder wires together.
3. Measure 1-1/4 inches from the soldered end and strip insulation on both sides. This is the connection point for 50 ohm coax feed-line.
4. Measure 16-3/4 inches from bottom and cut out a 1/4 inch notch on one side.
5. Feed with 50 ohm coax. Tape coax at feedpoint for strength and weather protection.

You may add an alligator clip to the plastic at the top (don't short top wires) to hang the antenna from a convenient support. (James Burks, KA5QYV).

Old Sol

The solar flux has been doing some unusual things lately. The flux has dropped to rather low levels recently (about 170). Hopefully, solar activity will begin to smooth out a bit.

WB8SMC/8 Special Event Station

The FAROUT ARC of Dayton, Ohio, will operate a special event station from St. Patrick, Ohio, during the period 1700 UTC March 17, 1990 to 1700 UTC March 18, 1990. St. Patrick, Ohio, is the only town in the U.S.A. with the name of Saint Patrick!

Frequencies will be (±5kHz). RTTY 3620, 7090, 14090, 21090, and 28090. CW 3735, 7135, 14135, 21135, and 28135. SSB 3870, 7270, 14270, 21370, and 28370. (How about some Novice CW freqs? de N3IK)

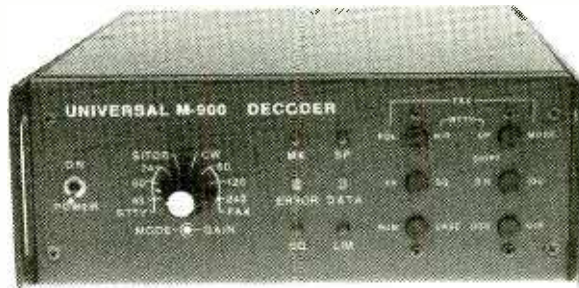
The FAROUT ARC will QSL 100% to amateurs and listeners alike. Shortwave listeners must indicate who WB8SMC was in contact with at the time of monitoring. To QSL, send an SASE to: FAROUT ARC, P.O. Box 9181, Dayton, OH 45409-9181. For additional information contact Charlie Cotterman KA8OQF, 26, Mello Ave, Dayton, Ohio 45410.

MIR

Recent reports have indicated that QSL cards for contacts with MIR have finally been mailed out. Best information says they have been worth the wait.

There has been no information on when or if MIR will resume operations in the two meter ham band. From all indications there is a great deal of work that must be done to update MIR and the Cosmonauts have been too busy to attempt amateur communications.

**AFFORDABLE RTTY-CW-FAX
From Universal**



The Universal M-900 is just right for the listener who wants an easy-to-use, affordable converter to decode all the basic shortwave transmission modes. The M-900 receives Morse code from ships coastal stations and hams. It also decodes regular (Baudot) RTTY still used by many international press agencies, weather stations and aero concerns. Both Sitor modes are also included to monitor maritime, diplo. and Amtor traffic. The M-900 even provides high resolution FAX images (to printer port only), so you can SEE pictures, maps, photos, and marine charts from around the world. A complete system will require your receiver, a monitor, a 12 VDC power supply and cables. A printer is also required for FAX mode only. Please write for full technical details including special system pricing. The M-900 alone is \$549.95

Universal Radio
1280 Aida Drive Dept. MT
Reynoldsburg, OH 43068
Toll Free: 800 431-3939
In Ohio: 614 866-4267

Universal has been serving radio enthusiasts since 1942. We carry all major lines of shortwave and amateur equipment.
52 p. SWL Cat. is \$1 ppd
48 p. HAM Cat. is \$1 ppd

Rites of Spring

Springtime is upon us and it's time to start looking for improved propagation on the VHF/UHF bands. As we move into warmer weather Sporadic E will allow DX on the VHF bands to be worked fairly easily.

The catch to all of this is to know when the E_s is occurring. One way of doing this is to use a scanner and set it up with freqs of two meter repeaters not active in your area. Check the repeater directory and program freqs of repeaters that cannot normally be heard; since repeaters are not always active, it pays to punch in as many of the simplex frequencies as your scanner will allow. Then when you start hearing activity you will know something is up.

Circuits

A few years ago I included a schematic for a simple tube type CW rig in "On The Ham Bands." I also made an offer of sending two complete plan sets for simple rigs to anyone interested. Several hundred replies kept me busy for a long time.

If you are interested in seeing more circuits please send a card or note to me c/o *Monitoring Times* in Brasstown. Let me know the type of circuits and era you are interested in. I have many plan sets for rigs from the 20's to modern times and will reproduce them in the column if there is adequate interest.

Additionally I am very interested in receiving circuits and ideas from you. Interesting and functional circuits will be published as time and space allow.

That's all for March gang - see ya next month. 73, Ike, N3IK



AUSTRALIA

Radio Australia, 9580 kHz. Full data "Australian Bicentennial Commemorative" card and personal note from Michael Taft, Correspondence Officer. Received in 21 days for an English report. Station address: P.O. Box 428G, G.P.O. Melbourne, Victoria, Australia. (Nick Terrence, Huntington, NY)

BERMUDA

Bermuda Harbour Station, 87623 kHz. Full data prepared card. Received for a utility report and return postage. Verification signer, A.W. Atwood. Station address: Cable & Wireless Ltd., P.O. Box 151, Hamilton 5, Bermuda. (Fraser Bonnett, Kettering, OH)

CAYMAN ISLANDS

Cayman Brac-"CBC," 415 kHz. Full data prepared card. Received for a utility report and one US dollar (which was returned). Verification signer, John Foster. Station address: Gerrard Smith International Airport, Airport Officer, Civil Aviation Dept., Cayman Brac, Cayman Islands. (Hank Holbrook, Dunkirk, MD)

ECUADOR

HCJB, 15155 kHz. Full data color card featuring Ecuadorian postage stamps. Verification signer, Glen Voltshadt, Director of Broadcasting. Also received sticker and program schedule. Received in 23 days for an English report and two US mint stamps. Station address: Box 691, Quito, Ecuador. (Robert Hurley, Baltimore, MD)

GHANA

Ghana Broadcasting Corp., 3366 kHz. Full data multicolored QSL card. Verification signer, E. Leneal, for the Director General. Received in 40 days for an English report. Station address: The Propagation Engineer, GBC Monitoring Station, P.O. Box 1633, Accra, Ghana, Africa. (Frank Mierzwinski, Mt. Penn, PA)

ISRAEL

KOL Israel, 11585 kHz. Full data card, program schedule, and station logo, without verification signer. Received in 27 days for an English report. Station address: External Service, P.O. Box 1082, 91 010 Jerusalem, Israel. (Robert Hurley, Baltimore, MD)

JORDAN

Radio Jordan, 9560 kHz. Full data card with an illegible signature. Received in 349 days for an English report. Station address: P.O. Box 909, Amman, Jordan. (Nick Grace, Harvard, MA) (Bill Estes, Huntsville, AL)

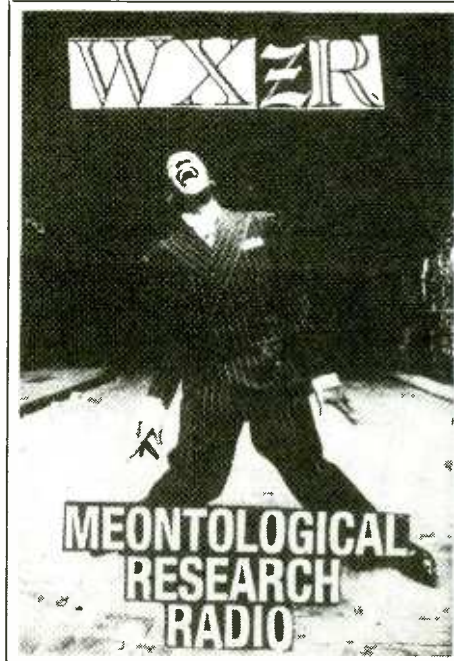
MADAGASCAR

Radio Netherland Relay, 17715 kHz. Full data card, without verification signer. Received for an English report and one IRC. Station address: P.O. Box 222, 1200 JG Hilversum, Holland. (Fraser Bonnett, Kettering, OH)

PIRATE

Free Radio One, 7415 kHz. Full data QSL letter and information sheets, without verification signer. Received for an English report. Station address: 3434 North Pacific Highway, Medford, Oregon 97501. (Michael Cook, Scarborough, Ontario, Canada)

WXZR, 7435 kHz. Full data card and personal letter from Klaus Kinski, QSL Director. Also



Talk about variety ...! Nick Grace logs both pirate WXZR and Siberia! Here's proof.

received a paper poster and a "styrofoam award." Received in 13 days for an English report and three US mint stamps. Station address: WXZR, P.O. Box 628, Stanesville, West Virginia 25444. (Nick Grace, Harvard, MA)

SHIP TRAFFIC

AEL Europa-DKQP, 500 kHz (container ship). Full data prepared card. Received for a utility report, one IRC, and one US mint stamp. Ship address: Thien & Heyenga Vereederungs Und Begrachtungs, GmbH Radiosen 6, Postfach 106240, D-2000 Hamburg 1, Federal Republic of Germany. (West German ship # 159 QSLed!) (Hank Holbrook, Dunkirk, MD) Bravo, Hank!!-ed.

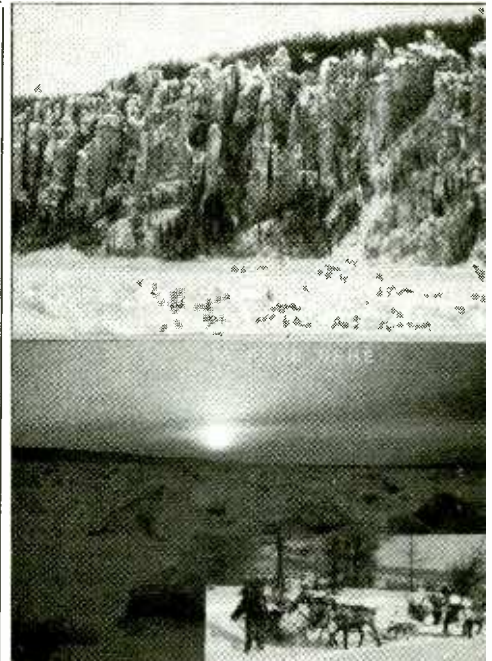
HMS Newcastle-GQIH, 16463 kHz (Royal Navy Destroyer). Full data prepared form card with ship's stamp and ship fact sheet. Verification signer, Signal Communications Officer. Received in 25 days for an English utility report, souvenir postcard, and return postage (unused). Ship address: c/o BFPO Ships, London, England. (Richard Albright, Merced, CA)

M/S Abitibi Clairborne-DDRC, 16587 kHz (West German newsprint carrier). Full data prepared form card and ship fact sheet. Verification signer, Bertram Guenther, Radio Officer. Received in 38 days for a German utility report, souvenir postcard, and one U.S. dollar for postage. Ship address: c/o Weser Schiffsahrts-Agentur GmbH & Co., Langestrass 22, 2880 Brake, Federal Republic of Germany. (Richard Albright, Merced, CA)

M/V Pharos-DDDQS, 16587 kHz (West German bulk hauler). Full data prepared form card and a zerox photo of the ship. Verification signer Hans-Dieter Boehm, Radio Officer. Received in 28 days for a German utility report and a souvenir postcard. Ship address: c/o F/Laeisz Schiffahrtsgesellschaft GmbH & Co., Trostbruecke 1, 2000 Hamburg 11, Federal Republic of Germany. (Richard Albright, Merced, CA)

Sealand Achiever-WPKD, 500 kHz (container vessel). Full data prepared card. Received for a utility report and return postage (US mint stamps). Ship address: Sealand Service, Inc., P.O. Box 800, Iselin, NJ 08830. (Hank Holbrook, Dunkirk, MD)

USS Missouri-NNNOCK. MARS Station, 14467 kHz, (battleship Maritime Mobile). Full data yellow QSL card, ship's photo, friendly note and ship fact sheet. Verification signer, Scott. Received in



11 days for an English utility report, souvenir postcard, and return postage (unused). Station address: FPO San Francisco, CA 96689-1120. (Richard Albright, Merced, CA)

SOUTH AFRICA

Radio Five, 4880 kHz. Full data card with dual station logo, without verification signer. Received in 25 days for an English report. Station address: Broadcasting Centre, Auckland Park, Johannesburg 2000, Republic of South Africa. (Frank Mierzwinski, Mt. Penn, PA)

SYRIA

Radio Damascus, 12085 kHz. Full data QSL, and program schedule, without verification signer. Received in 377 days for an English report and one IRC. Station address: Ommayad Square, Damascus, Syria. (Tom Czaja, Mequon, WI)

UNITED KINGDOM

Portishead Marine Radio, 87654 kHz. Partial data QSL. Verification signer, Lawrence Bennett. Received for a utility report and return postage. Station address: BTI Coastal Station, Highbridge, Somerset TA93JY United Kingdom. (Fraser Bonnett, Kettering, OH)

UNITED STATES

New Orleans Coast Guard Comm. Station, 5696 kHz. Full data QSL. Verification signer, Byron E. Croley. Received for a utility report and return postage. Station address: 4640 Urquhart St., New Orleans, Louisiana 70117. (Fraser Bonnett, Kettering, OH)

WOM Pensuco AT&T Radio, 131442 kHz. Partial data QSL card. Verification signer D.D. Bean. Received for a utility report and return postage. Station address: 1350 NW 40th Ave., Fort Lauderdale, Florida 33313. (Fraser Bonnett, Kettering, OH)

WYFR, 5950 kHz. Full data card with station logo and schedule, without verification signer. Received in 12 days for an English report. Station address: 290 Hegenberger Road, Oakland, California 94621. (Robert Hurley, Baltimore, MD)

USSR

Siberia, Radio Yakutsk, 7345 kHz. Full data postcard with a personal note in Russian and a souvenir postcard. Verification signer Aleksandra Borisova. Received in 298 days for one English follow-up report and three souvenir brochures. Station address: Dom Radio, Ordzhonikidze 48, Yakutsk 677812 USSR (Nick Grace, Harvard, MA)

NextDay Reception Reports

Two-Color Printing
Rainbow Cardstock
100 200 300
\$19.95 \$24.95 \$29.95

Specify: Receiver
Antenna
Your 40-Word Personal Message

5 full pages of report and QSL, Postpaid
New York City, New York

For Full Catalog, SEE Address on Back of This Card

• Command Attention • Send Clear Reports • Speed Replies • Save Time •
Box 50062-M • Provo, UT 84605 • Antennas West

A New Piccolo System

Last year I built equipment to copy a multitone British RTTY system known as Piccolo. This year, for the last several months, I have been looking at a new type of piccolo which I believe is being used by the French. Testing was done on 18,184 and 20,170 kHz (LSB) using piccolo, and a voice (also LSB) was in French from 0400 to about 0900 UTC. (I'm looking for someone who can translate the French.)

One *Monitoring Times* contributor believes that this new piccolo signal is coming from Cuba. Perhaps a French-speaking embassy? I don't know if the French call it piccolo. But I know one thing! It's not the British system. I came to this conclusion after extensive analysis of the signal.

The system consists of 12 tones (the British use 6, see Figure 1); a low group (tones 1 to 8) and a high group (tones 10 to 12). Tone 9 is an idle tone and is sent at the beginning of the transmission and in between pauses when the operator is "hunting and pecking" for the next key on the teletype.

Simple math is the key to this multitone system. If you multiply the low tone group by the high tone group, you'll come up with 32 and that's the exact number of combinations that are used in standard RTTY.

The French piccolo is asynchronous but has the characteristics of a synchronous system. Standard five unit Baudot, which is used in RTTY, is asynchronous because it has one start bit and one and a half or two stop bits. A synchronous system doesn't have start and stop bits but relies on a clock signal to keep the system timed.

Sometimes the clock signal can be extracted from the data (SITOR mode "B" uses this method). In the French system, the tones alternate from the low group to the high group and that tells the modem which tone is the start tone, which tone is the end tone, and the timing of the signal.

A French piccolo modem would probably work this way:

- 1) Send the first tone from the high group.
 - a) The receive end modem will decode it and flag it as the first tone for the first character. Store it and wait for the second tone.

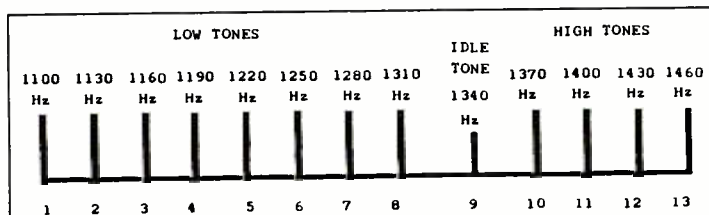


Fig. 1 - The tones used in the French Piccolo system

- 2) Send the second tone from the low group.
 - a) The receive end modem will decode it and flag it as the second tone for the first character.
 - b) Using the first and second tone, go to a lookup table and send the appropriate character to the tty.
 - c) Wait for the next tone which will be the first tone of the next character (the high tone group).

The steps shown above would probably be used in the software of the modem which may have an on-board microprocessor. Of course, this is just speculation. I'm showing it so that you can understand how this system probably works. However, I'm not speculating about the tones. I know which ones are being sent because I have been analyzing the signal using a modified Universal M7000 as a frequency to voltage converter and the Tandy 1000TL computer modified to work as a DC (direct current) storage oscilloscope.

When I was receiving the piccolo signal, the M7000 was set up with a 360 Hz shift. A jack (that I added) on the rear apron of the M7000 which goes to the filter/tone decoder circuit (otherwise known as the FSK detector) was connected to the computer's audio or A to D (audio to digital) circuit. Using the sound software that was supplied with the computer, I was able to display what looks like a DC staircase or step signal (see Figure 2). This was saved on a computer disk. I sent a copy of the disk to a colleague for analysis.

I also copied what I thought were "RYs" being sent during the test. I figured that tones 5, 7, 11, and 12 were being sent. When I gave this information to my colleague, he came up with a chart which could be the tone to character conversion table. But we aren't sure! As soon as a decoder is built and we can further examine the tones more thoroughly, a more accurate table will be constructed. That depends on whether

or not the data is encrypted. Here's the table.

		FIRST TONE SENT				
		TONE #	10	11	12	13
1		?	A	B	C	
2		D	E	F	G	
SECOND TONE	3	H	I	J	K	
SENT	4	L	M	N	O	
	5	P	Q	R	S	
	6	T	U	V	W	
	7	X	Y	Z	?	
	8	?	?	?	?	

Notice that in the table above, we don't have the "Letters," "Figures," "space" and the "idle" commands that are normally used in RTTY. That's because we don't know where they fit in the table. Also, notice that RYs fit the table very well. An "R" would be tones 12, 5 and "Y" would be tones 11, 7. The figures such as 1, 2, ?, or bell that is used in normal RTTY would match the same letters in the ITU standard.

Conclusion

With this new discovery, I hope that manufacturers of RTTY equipment (like Infotech, for example) will come up with a unit that can receive the British or French system. Maybe this article will spark some interest and inspire them to develop it so that hobbyists like ourselves can stay on top of the latest technologies.

NNN

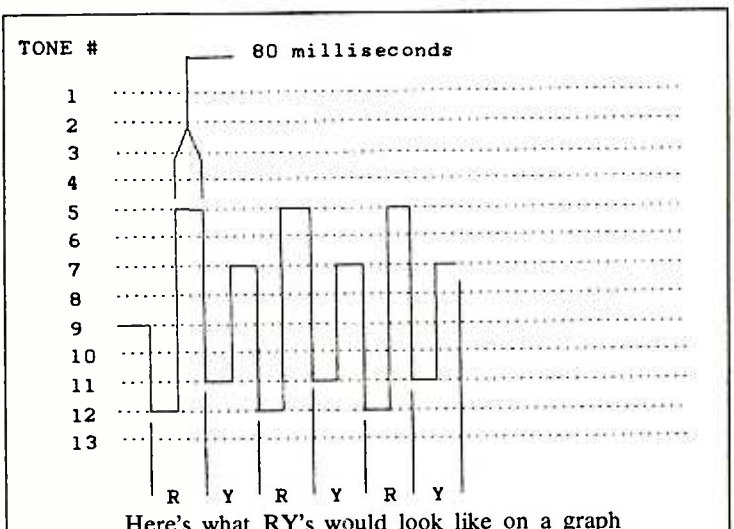


Fig. 2 - I copied something similar to this chart using a Universal M-7000 and an Tandy 1000TL

Videotext via Satellite

Last month we wrote about World System Teletext (WST) which is used by Electra Teletext on G1,18. This type of videotext is displayed by any Zenith television with a built-in decoder and is intended for the cable and home satellite industry.

Are there any other videotext services sent via satellite? You bet! Some of these services are designed for cable distribution only, others are designed for TVRO only and still others are a combination of both.

X-Press X-Change

One of the more technologically intriguing developments in satellite delivered data is offered by X-Press Information Services, Ltd. of Denver, Colorado. The services are called X-Press X-Change (the basic service) and X-Press Executive (the premium service). Delivered via subcarrier on G1 7 and 18, X-Press services are very sophisticated one-way electronic information services providing 24 hour access for a one time software charge and, in the case of Executive, a monthly subscriber fee.

How it works

Whether you sign up for Executive or X-Change, you'll get a kit which includes software, splitter, receiver, RS-232 cable, RF cables, and installation information. The Executive version includes a decoder module which allows one to access specific, and very detailed financial information (more on this later). Using your own IBM, Apple, Atari, or Amiga computer (see chart), you're now ready to receive a bewildering assortment of financial information and news.

X-Change

The basic service gives you financial news headlines and quotes on stocks for all North American exchanges three times a day. In addition, X-Change gives you wire service reports from the U.S., Canada, USSR, PRC, Opec countries, Japan, Mexico (in Spanish), West Germany, France, and Taiwan.

You'll also get sports information on U.S. and Canadian pro and college sports and, as

X-Press Software works with the following computers:

IBM	PC XT AT PS/2
	and 100 percent compatibles
Apple	IIC IIe
MacIntosh	512K 512K Enhanced
	Plus SE
Atari	ST 520ST 1040ST
	Mega ST Mega ST4
Amiga	500 1000 2000

the brochure says, "...shopping, lifestyles, hardware and software news, entertainment news, TV listings, horoscopes, people, editorials...on-going conferencing on a variety of topics...technical bulletins, user tips, schedules of file transfers..." Whew!

Executive

But that's just the beginning of this service. With the Executive kit you'll get all of the above plus updated information on interest and money rates, mutual fund quotes, stock quotes (on a 15 minute delay), seven daily reports on active and volatile issues, options quotes; commodities and futures quotes; precious metals prices and futures; ten daily updates on global and U.S. business and financial news with reports and commentaries from *Business Week Magazine*.

There are also customized features which allow you to track up to 128 securities on your "personal portfolio pages. Optional software allows you to set limit alarms to advise you of important price movements..." Clearly, this is an important tool for those who aren't still shell shocked from events of October 1987.

For more information and X-Press TVRO kit prices, call 800-7PC-NEWS.

C-SAT PAD Service

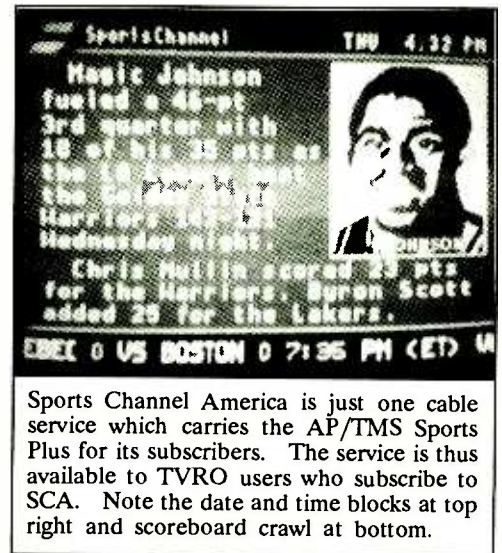
C-SAT, formerly K-SAT, is the grass roots home dish organization which has an audio service on S3,9 6.8 MHz audio. In addition to the audio service, C-SAT transmits Public Access Data (PAD) on the same frequency Thursdays at 11 p.m. ET (300 or 1200 baud); Saturday at 3:30 p.m. ET (300 baud) and Sunday at 5:30 p.m. ET (1200 baud). They also provide a computer bulletin board at 213-947-5307 (300, 1200, 2400 baud).

This PAD service is an excellent way to keep up with home satellite information and news. Topics on the service may range from telecommunication, public domain modem programs, transcripts of legislation and much more.

To receive the PAD service you'll need a computer of any kind, a matching modem for 300 or 1200 baud, communications software, and a cable to connect your computer to your modem. This may not be quite as easy as it seems but don't worry, help is on the way. C-SAT offers a manual for receiving the C-SAT PAD which includes instructions on making your own modem-satellite receiver interface cable and how to hook it all together.

For the C-SAT PAD manual send \$5.00 to C-SAT Broadcasting, Inc., 225 W. Lockerman Street, Dover, DE 19901. It's a pretty good price for satellite delivered data.

AP/TMS Information Services



Sports Channel America is just one cable service which carries the AP/TMS Sports Plus for its subscribers. The service is thus available to TVRO users who subscribe to SCA. Note the date and time blocks at top right and scoreboard crawl at bottom.

Long a dominant player in the print media, The Associated Press has steadily strengthened its position in audio and data transmissions by taking advantage of satellite's ability to deliver cheaply to its ever growing communications network.

The AP is not an overnight sensation. It has taken 70 years from the time its first teleprinters clacked away at an astounding 60 WPM (a standard used today in RTTY) to the present high speed data transmission on two pairs of wires at 2,570,000 WPM.

In fact, the AP is so active in the field of satellite-delivered services that for purposes of this article I'll cover just the basics of what the AP offers to cable systems. Details on other services will be covered in a future column.

AP Cable Videotext

AP/TMS is a joint venture of The Associated Press and The Tribune Company of Chicago. The service provides three cabletext services to the cable industry. These are full color graphics enhanced computer generated screens.

Programming is on a thirty minute information cycle and includes:

AP News Plus -- A summary of national and international news with a host of features including weather maps, sports, and business reports.

AP Sports Plus -- Features sports schedules, scores, stories, stats, odds, and a continuous sports score crawl at the bottom of the screen.

AP Business Plus -- Features a NYSE crawl, business news, government reports, market indexes, and a host of other financial reports.

These services are sent to cable systems throughout the country via very small satellite receive-only antennas or by land line and are unavailable to TVRO users.

However, AP Sports Plus is available to TVRO users who subscribe to any of the Sports Channel services. Look to Satcom F4

for Sports Channel America (10), Sports Channel New York (7), SportsVision (9), Sports Channel Ohio (11), Sports Channel Florida (16), Sports Channel Los Angeles (17), and Sports Channel New England (23).

A similar service, though not connected to AP/TMS is the computer generated sports news service offered in the mornings by the New England Sports Network (NESN) on F4,13.

MAILBAG

Frank Sonnek, K0JM, of Aberdeen, South Dakota, has a question about signal drift on FM/SCPC when using an ICOM 7000 off the 950-1450 MHz IF of the Block Downconverter.

Frank, I think any drift in that setup would be the fault of the LNB and not the ICOM. As I understand it, all LNBS will exhibit some amount of drift when receiving SCPC. The reason for this is mostly design parameters. These days all LNBS are drift free for video purposes. Any small amount of frequency drift simply won't be seen on the video. For FM/SCPC reception, however, some LNBS will have less drift than others. My thanks also to Frank for sending a clipping of a 21 inch multi-system monitor TV with remote. This set features on-screen display, automatic-off timer, audio/video connections, and handles full color transmissions in PAL and NTSC. Listed price is \$469. For more information on this and a catalog of other hard to find video equipment, call 47th Street Photo at 800-221-3513. This would be a great set to have for watching those BBC broadcasts in PAL on W5,15.

Richard Graham of Fitchburg, Massachusetts, wants to get double duty use from a Realistic Pro 2005 scanner by using it for SCPC reception as well.

It's a great idea, Richard, but I'm afraid it won't work. The main reason is that what's needed is analog tuning capability for FM/SCPC. The problem is that the scanner tunes through discrete frequencies in steps whereas the ICOM 7000, for example, slides right through the desired frequencies. The second problem is audio quality. Both the Pro 2005 and the ICOM 7000 were designed to provide that familiar non-HiFi audio which is necessary in two-way communications. That's fine if you are listening only to news, but many SCPC fans are there for the music.

The best compromise remains the Heil SC-One which essentially has it all: easy tuning and decent fidelity. Which is not to say it's perfect. In addition, what we would all like to see in the SC-One is a switchable narrower bandwidth filter and a second tuning section for stereo.

TRANSPONDER NOTES

Spacenet 2 has become quite an active satellite with the addition of two impulse pay-per-view VCII encrypted channels. Drive-In

Soup up with our Super Amplifier!!



Introducing a brand new product, the **Super Amplifier™** is a compact pre-amp designed to work with scanners and it amplifies the reception of the VHF/UHF bands (from 100MHz to 1GHz) as high as 20db. The **Super Amplifier™** has an adjustable gain which is controlled from the back of the unit and allows amplification level of up to 20db through all frequencies, equipped with a bypass switch to return to normal scanning frequencies. As with all other GRE products, you will find the quality and design of the **Super Amplifier™** to be of the highest standard.

Specifications and Features

- Frequency Range: 100MHz to 1GHz
- Adjustable Gain: 0 - 20db
- Input: BNC Connector
- Output: BNC Connector
- Power: 9 Volt battery or adapter
- Power Indicator: LED
- Dimensions: 68 MM x 34 MM x 37MM
- Output Impedance Load: 50 Ohms
- Bypass Switch

For more information, or a dealer near you (new dealers are welcome), contact GRE America, Inc. at the address below.



GRE America, Inc.

GRE America, Inc.
425 Harbor Blvd.
Belmont, California 94002

Telephone (415) 591-1400
Outside CA: (800) 233-5973
Fax: (415) 591-2001



Cinema (1) and Rendezvous (3) are both operated by Graff Communications.

In addition, CNN/Telemundo has been active on 18 with Spanish language news; NBC affiliate, WPTF, in Raleigh, North Carolina, has been on 12. Channel America continues on 5; the ever-popular SCOLA is still on 19 with the USIA and its eclectic schedule of state department briefings, VOA transmissions, and C-SPAN programming on 21. Shipboard Satellite (10) has apparently been scuttled.

Other items of note: Turner Program Services have been active on G2, 4; RAI TV from Italy is seen on F2,20 as well as afternoon transmissions on F3,4. French TV can be found on F2,24.

An article in Satellite Business News suggests renewed interest in Direct Broadcast Satellite (DBS) from several companies. The last such effort was the now defunct USCI service which offered five channels via KU. The report says that one firm, using its own signal compression technology, will launch a 36 channel Ku service utilizing only two Ku channels. Touchtone Video Network is said to be planning a C-Band DBS service on Telstar 303 in conjunction with Uniden Corporation of America. Each of these planned services would use their own scrambling systems which would not be compatible with the current VCII defacto standard.



Something for Everyone



Rising to the top in a hurry - KQAL operations manager Guy Hamernik and program director Cory Malles



"Let's Rap" director Jennifer Lauren and producer Christian Peterson put on a lively show.



"You can do everything up here! There's no limit on what you can do!" Excitement can be felt in every word when Guy Hamernik talks about KQAL. "We have rock shows and jazz shows and classical shows. News, talk, and sports. It's alternative radio!"

Three years ago, as a college freshman, Guy discovered KQAL, and jumped at the opportunity to become a broadcaster. After some basic training off the air, he earned an air slot and soon became Music Director during the summer. Fifty people now work under his leadership as Operations Manager of the station. "The popcorn system," as Guy calls it, "really can send you to the top in a hurry."

KQAL is loaded with ingenuity, enthusiasm, and big smiles. As the voice of Minnesota's Winona State University, it's the source of a collection of diversified programs limited only by the student broadcasters' vivid imaginations. Using an all-volunteer staff and a new 1800-watt transmitter atop a bluff in Garvin Heights, the station can be heard all over Southeast Minnesota and parts of Wisconsin on 89.5 FM. Listeners tune in from up to 75 miles away!

Since it signed on the air on December 13, 1975, KQAL has gone through quite a metamorphosis. Guy tells us: "The station was all rock. It was a traditional juke-box college station. We discovered that when we offer more to the community, we get more back. And we get a lot more listeners!" So the station changed its tune, and the students and the townspeople loved it.

KQAL's sound is as personal as the students who create it. "Our rock is a combination of everything. Our jazz isn't just classical jazz," Guy explains. "We play contemporary jazz and mix in new age music and even reggae and blues." The students learn almost as much in the studios as they do in class.

Besides becoming experienced broadcasters, KQAL volunteers are self-taught musicologists. Guy notices that "The majority of what is played is the disk jockey's choice. The jocks become very alternative minded. You learn a lot by just playing it yourself and experimenting. You develop your own taste." And while the students learn, the audience does too.

Guy is amazed at the station's impact. "Jazz is making a big plus and record companies love us. We've developed new markets for them." Peter Krall, another KQAL staffer concurs: "We're the only station that plays it all. Everything from progressive rock to classical. I love music, and that's why I'm here."

Ambition only begins with the music. Three hours every morning, KQAL produces "Wake Up, Winona," combining local news with national and worldwide events reported

by the Associated Press via satellite. Business, agricultural, and sports news are also blended in, along with a variety of music.

Its nighttime companion, "Dateline Winona," wraps up the day, and there's twenty minutes of news at noon, as well. Although the voices may be young, the sound is professional and competitive. Many student voices combine with a variety of other sources to create very impressive and comprehensive coverage of current events.

Tuesday nights at 6:30 p.m., listeners take the air on KQAL's talk show, "Let's Rap." Directed by Jennifer Lauren and produced by Christian Peterson, telephone callers provide exciting, and sometimes loud, feedback about all sorts of issues. Its sister show, "Political Forum," airs Thursday nights at the same time, and takes governmental issues by the horns. Jennifer and Christian love creating very lively, and sometimes controversial, programming responsive to the "Star City" of Winona.

For an international flavor, Germany's Radio Deutsche Welle and Britain's BBC spice up KQAL with transcribed concerts and talk shows. The Longhorn Radio Network from the University of Texas at Austin is also heard on KQAL weekly. Defying categorizations are their ingenious offerings like "Little City in Space." Described as an eye-opening hour of 21st century news, sports, and entertainment from aboard Earth's first orbiting city, it is the only children's TV show for adults on radio.

Exclusive sports coverage of WSU's Warriors is paramount on KQAL, with live broadcasts of football, basketball, baseball, softball, and even high school sports. Sports fans also crave "Saturday Night Scoreboard," combining a tally of weekend game results with telephone call-ins. "The Warrior Show" hands the microphones over to team members each Sunday night.

KQAL Sports Director Rick Thiesse really gets into his Saturday nights on the air with Winona's fans. "On 'Scoreboard' anything goes! We talk with our listeners mostly about pro and college sports, and we make our picks for next week's games. No one else does what we do. All the radio stations in the area just play top 40 or oldies. KQAL is a radio station where you can hear things you've never heard before."

Winona's radio alternative is looking forward to the future, too. Now that their transmission facilities have been upgraded, the next step will be installing two new downlinks to receive satellite delivered entertainment. KQAL is completely remodeling their studios and installing brand new equipment to improve the sound and the station's atmosphere further.

Imagine what you could do with a radio station filled with 50 motivated and daring

broadcasters testing their wings. Turn on KQAL and watch these students fly! Nationwide, there are hundreds of college radio stations on FM between 88 and 92 kHz, each with a personality all its own. Take a listen. You'll probably like what you'll hear!

Bits and Pieces

✓ Broadcasting is about to gain a new dimension. We are all familiar with over-the-air radio and television. The 1980s brought us cable television and radio, providing distant and different signals never seen nor heard before. Now that 1990 is here, are you ready for DCRs?

Digital Cable Radios will probably be the next frontier of broadcasting. What compact disks are to vinyl records, DCRs are to today's radios. By using a satellite transmitted data stream, you will soon be able to receive packaged music formats, without commercials, in perfect digital quality. Disk jockeys will be extinct, and commercials will be unheard of. You'll be able to hear a new release just like you order a pay-per-view movie today, or you can subscribe to a service, like you do to HBO.

No copyguard scheme is planned, so your DCR hookup will be instantly compatible with your new DAT digital audio tape recorder or your existing analog cassette machine. DCR receivers are already available with up to 98 channels of programming. Broadcast stations will be encouraged to digitize and join the new system, making the offerings almost endless. Sounds like the future will sound really good!

✓ As a twist on a current trend of radio broadcasters using TV newscast audio for their news coverage, two stations in Philadelphia have turned things around. Independent Channel 17, WPHL-TV has signed an agreement with KYW Newsradio 1060 that will allow Channel 17 to televise three 60 minute newscasts produced by KYW radio nightly. In return, Channel 17 will air commercials for KYW newsradio. Turn on your TV and watch the radio!

Mailbag

✓ Can a radio station cause cancer? Marshall Spiller of Glendale, Colorado, sent in an unnerving article from the Denver *Post* about KYGO FM's 100 kilowatt transmitter.

Square dance caller Beryl Main and his wife Maclma lived near the KYGO tower atop Lookout Mountain in Golden, Colorado, for nearly 20 years. Beryl now suffers from a non-Hodgkins lymphoma, and experts say that the cause was prolonged exposure to strong fields of radio frequency energy. The transmitter tower has since been moved to another loca-

tion, and the case is scheduled to be heard in U.S. District Court in Denver.

Similar cases have been noted in San Francisco and Hawaii. The massive Mount Sutro tower, with nine television and four FM stations perched upon it, is said to be the cause of more trouble. The San Francisco Department of Public Health claims that children under fifteen, living in the nearby Noe Valley and Eureka Valley neighborhoods, developed cancers at twice the expected rate. Significant increases of cancer occurrence were also found in Honolulu residents who lived next to a "hot" tower radiating many transmissions.

Since so little is currently known about the effects of high-intensity radio frequency energy, the issue is shrouded in mystery.

Most previous court cases concerning transmission effects have been secretly settled out of court, with sealed documents, so that no case laws are written setting precedents for future trials. There is no federal safety standard for radio frequency radiation to date.

✓ The BBC and Radio France International can be heard, via satellite, on several American radio stations, and The Voice of America may not be far behind. Herb Gesell of Amityville, New York, mailed us a report from New York's *Newsday* about a recent U.S. District Court ruling in Des Moines, Iowa.

NBC News President Michael Gartner charged that a federal ban on the dissemination of VOA programming in the U.S. violated the First Amendment. The court dismissed the suit, saying that the ban applies only to VOA's parent, the U.S. Information Agency.

Therefore, although the government cannot distribute VOA programming, nothing is stopping domestic broadcasters from rebroadcasting the shows as they like. Watch for VOA news reports and features in local newscasts in the future.

New Station Grants

These are the frequencies that will activate soon: Lowell, Arizona, 101.9; Tallahassee, Florida, 88.9; St. Simons Island, Georgia, 92.7; Mount Vernon, Indiana, 106.7; Emporia, Kansas, 99.5; Folsom, Louisiana, 104.9; Caledonia, Minnesota, 94.7; Campbell, Missouri, 107.5; LaMonte, Missouri, 97.1; Ogdensburg, New York, 98.7; Winston-Salem, North Carolina, 880; Harrison, Ohio, 104.3; Nyssa, Oregon, 98.7; Charleston, South Carolina, 100.7; Crossville, Tennessee, 102.5; East Ridge, Tennessee, 107.9; Burnet, Texas, 92.5; Johnson City, Texas, 107.9; Fairlawn, Virginia, 890; and Moneta, Virginia, 880. Courtesy of *The M Street Journal*.

WRTH 90 -- HOT OFF THE PRESS!

Save \$4.00

Comprehensive, country-by-country guide to shortwave radio stations around the world. 576 pages include addresses, frequencies, schedules, station IDs, and more. Reg. 19.95. Just \$15.95 + \$1.55 book rate from DX Radio Supply, Box 360, Wagontown, PA 19376.

For Sale

A San Francisco Bay area broadcast school and cable FM network is on the block. This profitable ten-year-old business has lots of expansion potential, with modern studios and offices. The school is approved by the San Francisco Department of Education. Asking price is \$375,000. Call J. Bryan at 415-935-5100.

A full-time mid-Michigan AM is for sale. It's the only station serving a city of 14,000. The building and land are included for an asking price of \$235,000. Contact: M. St. Cyr at 517-487-5986.

Want to start a brand new station? A large AM construction permit is available located in a major market area in the west. When built, it will have tremendous nighttime coverage. Call C. Hall at 801-374-6809.

International Bandscan

The New Zealand government will not require existing radio stations to bid for their own frequencies. Parliament has proposed that these broadcasters maintain their right to operate, as they now do, for the next 20 years.

The BBC World Service is now on the phone in Australia for stations who want to use the service for recording news and features. Those living down under can call 0055-1434 to hear London calling.

La Voz de Nicaragua is still heard on parallel frequencies of 780 and 660 kHz, and can be occasionally received in North America.

Spain's Euskadi Irratia is broadcasting in the Basque language on 1197, 1161, 1072, and 1062 kHz at 0000 GMT daily. Their old frequency of 1296 kHz has been abandoned.

The BBC will launch their new Radio 5 on August 27, 1990, serving all of Great Britain on 693 and 909 kHz, and at the same time Radio 2 will become a VHF FM only service, in stereo, nationwide in the 88 to 90.2 MHz region.

Until next month, happy trails!



Credits: Thanks to the entire cast at KQAL, Winona, Minnesota; Steve McGreevey and Herb Balfour; The Longwave Club of America, and The British DX Club. *Radio World* magazine and readers Marshall Spiller, Herb Gesell, W. Earl Doan, Ruth Hesch, and Allen Lesser for additional information.

And the Wrath of Judah Was Felt Throughout the Land!

In this case we are not talking ancient Biblical history, folks. Rather we refer to ace pirate chaser Judah Mansbach and his associates in the FCC's New York City office. Mansbach takes his work seriously. He has vowed to get all the New York area pirates. So far he does not appear to be doing too badly.

One pirate told us he knew Mansbach was just waiting for him to go on the air. Had he done so that night, he is sure he would have been located within half an hour. His station may be headed for mothballs, at least for the foreseeable future. We understand, on good authority, others are also getting quite nervous.

The closings last year of Brooklyn-based WHOT and WJPL did much to enhance Mansbach's reputation as the "Pirate Buster." However, WHOT and WJPL have company. Among Mansbach's other trophies in 1989 were WJQR, WRQX, and WMCR. We hear rumors that there may have been others, including at least one New Jersey-based station, while another New York area station, WNYS-AM, appears to have been a recent victim.

In a lengthy article on pirates appearing in the *New York Daily News*, Mansbach openly boasted of knowing the whereabouts of several stations and then proceeded to give reporter Jon Kalish their locations. He threatened one station operator with jail time if caught, claiming he is "an old customer of ours."

Making Mansbach's job easier is the feud that has broken out among some of the stations. According to the *Daily News* article, "Mansbach admits that a confidential informant aided in the JPL bust."

So, if you happen to be listening to your favorite pirate some evening, and in the background you hear a knock on his door, chances are you are not his only audience. Judah Mansbach and his friends may have also been enjoying the show.

Our thanks to Gregg Allinsen, Herb Gesell, Joe Cieslewicz, Steve from Manhattan (the real one!), and several folks who will have to remain anonymous for their contributions to the above report. Your efforts are deeply appreciated.

And now a Public Service announcement

We have been advised that the famous and faithful Hilo, Hawaii, maildrop has been closed. All stations who used the Hilo drop can be reached via P.O. Box 452, Wellsville, NY 14895. We might also note again that the Beaver Falls, Pennsylvania, drop has been replaced by P.O. Box 628, Slanesville, WV 25444. Recently we heard one station still announcing the old and now incorrect address.

Intrigue, secret stuff, and clandestine matters

A tip of the hat to DX South Florida's Bob Wilkner who managed to log Radio Nacional de Panama on 1015 kHz before, during, and after the American invasion. Bob heard pro-Noriega and Sandinista news, among other things.

Interestingly enough, although there were widespread reports that the transmitter was destroyed by the invading forces, Bob still heard a carrier after the audio had disappeared. It will also be fascinating to see what is ultimately done, if anything, with the shortwave transmitters Cuba was installing for Radio Nacional.

In Connecticut, Bob Thomas got his Panamanian news in a unique way. At 0600 he got extensive coverage of the American military activity on Radio Cultura do Para from Belem, Brazil. This

WNIS-AM Norfolk, Virginia's Pat Murphy is a well-known talk-show host and frequent contributor to "The Outer Limits." Rumor has it the young lady with him is already an expert DXer. She certainly got practice on her numbers during the invasion of Panama!

station often puts in a decent signal if not blocked by Radio Impacto.

From Virginia Pat Murphy reports extensive numbers transmissions on 6825 and 6840 kHz during the Panama invasion. These frequencies, long suspected of being used by American intelligence organizations, are normally quiet during weekdays, but sprung to life as Noriega was on the run.

Meanwhile, do not forget the Eastern European situation. You can follow the latest news from Romania around 0200 on 5990. During that country's revolution, Florida's Terry Krueger heard a special multilanguage tape attacking the dreaded dictator Ceausescu, who later was executed by the revolutionary government.

There is still plenty of clandestine activity in various parts of the world. Krueger logged Voice of the Communist Party of Iran on 4480 at 0400. Out in California, Harold Ericson found the El Salvador clandestine Radio Venceremos on 6344 at 0152. David Crawford in Florida writes that pro-Contra Radio Misco has reactivated on 5560 at 2325 UTC. This one broadcasts to the Indians of eastern Nicaragua. In addition to Spanish, you will hear Miskito and, with some luck, maybe a little English.

We recently reported that the Dominican Republic's Radio Clarin had returned to shortwave on 9950, and was carrying the anti-Castro program *La Voz de la Federacion* at 0100. After a few days it



TIARE PUBLICATIONS SALE

SWL Forms (10 in all)

List: \$10.00 plus \$2.00 shipping

DX Radio Supply price: 8.00 + .90

Scanner Listeners' Handbook

List: \$14.95 plus \$2.00 shipping

DX Radio Supply price: 13.95 + 1.25

1990 Pirate Radio Directory

List: \$7.95 plus \$2.00 shipping

DX Radio Supply price: 5.99 + .90

Catalogue 25 cents

**DX Radio Supply, P.O. Box 360
Wagontown, PA 19376**

disappeared. However, we have it on good authority it probably will return, although most likely on a different frequency. So look around, and don't forget to check the morning hours as well as evenings.

The Euro-Scene

Europirates continue to make it across the Atlantic. Terry Krueger got a nice catch in Rainbow Radio, which was running a German and English tape on 6315. Terry had the station for several hours between 0426 and 0730. Rainbow Radio is German operated, but has used transmitter sites in both Germany and France. Krueger may also have had Scottish pirate Radio Stella on 6320 around 0300.

It appears that in Massachusetts, Harold Butcher got himself a Dutch pirate, Pirate Free Broadcasting Service, on 15050 kHz from 0500 to 0730. The station gave the address of P.F.B.S., Box 19074, 3501 AB Utrecht, The Netherlands.

Meanwhile, everybody is hearing Scotland's Weekend Music Radio, and on just about every frequency. Harold found it on 6310, 13690, and 15043. Among other places, Krueger logged them on 6313 and 13630. This writer came across them on 15043 around 0645 UTC, while Pat Murphy found them there at 1330 UTC.

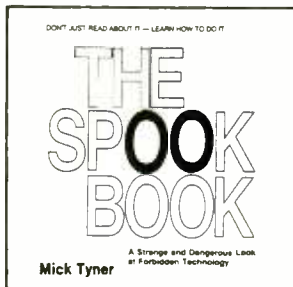
The domestic situation

You do not have to go to Europe to have plenty to hear! Hope Radio International, which also identifies as Hope Radio 16, is being widely reported. Bob Thomas found them on 7410, while Georgia's Bill Frantz, Ohio's Fraser Bonnet, and this writer came across them on 7415. The station now appears to be using the Slanesville drop and possibly a Florida address as well.

Pat Murphy, Terry Krueger, and this writer all found Voice of the North on 15047 around 1900. You can reach this one through Slanesville. Murphy also logged Secret Society Radio on 7412 at 2300. It uses the Baltimore drop: Box 6527, Baltimore, MD 21219.

Fraser Bonnet logged Pirate Radio UK on 7413, while here in central Florida they

STRANGE DANGEROUS FORBIDDEN



PUBLISHED JANUARY 1989, THE SPOOK BOOK DELVES INTO THE WORLD OF FORBIDDEN KNOWLEDGE. NOT A REHASH OF OLD INFORMATION, BUT A FRESH LOOK AT "HOW TO":

- ELECTRONIC SURVEILLANCE
- REARM HAND GRENADES
- AMATEUR ROCKET WEAPONS
- JAMMING RADAR
- TEFLON BULLETS
- DOZENS OF TOPICS

\$34.95 ppd. 8½ x 11, 258 pgs.

SEND \$3.00 FOR CATALOG (FREE WITH ORDER)

DISTRIBUTORS OF:

- NON-LETHAL WEAPONS
- HI TECH ELECTRONICS
- CONTROVERSIAL PUBLICATIONS
- INTELLIGENCE EQUIP. PLANS
- INFECTION CONTROL PRODUCTS
- TOO MUCH TO LIST HERE

SEND CHECK OR MONEY ORDER TO:

ADVANCED ELECTRONIC TECHNOLOGIES

SUITE 173M, 5800-A N. SHARON AMITY RD., CHARLOTTE, NC 28215
PH. (704) 534-2258 FAX (704) 545-9061



England's Martin Lester sends along a copy of the QSL issued by British pirate Radio 48.

were discovered on 15063. This one appears to be relayed by East Coast Pirate radio, which also logged here on 15063. Try the Baltimore drop for both. Fraser already has an ECPR QSL, and recently received one from the WYMN, which is staffed entirely by women.

Fraser had Free Radio Indiana on 7415 at 0000 UTC, with an address of Box 8, English, IN 47118. He also notes WHBH, Hill Billy Heaven, on 7415 and Voice of Stench on 7410. It appears WHBH does

not like VOS and moved to 7410 in an apparent jamming attempt. Earlier it blocked Hope Radio 16 on 7415.

What else? Terry Krueger got himself an amusing all-Spanish pirate IDing as Radio Mexico. It was using 7425 at 0546 and announcing the Slanesville drop. So, you can see there is truly something for everyone. Happy listening everybody!



Starting Out New

According to my mail, quite a few people use a Sony 2010 as their starting receiver for beacon DXing. For that reason, I felt that my own recent experience might prove helpful.

I took a trip to southern California. Because I was going to be there for almost two weeks, I thought I should be able to do some DXing. I bought a Sony 2010 to take along. (Actually, I had wanted to get a 2010 for some time, and this was an excellent excuse to go ahead and get it.) Things worked out just about as I had expected and there was ample time for DXing.

I found myself very much in the position of a newcomer to the hobby. I didn't know what I was going to hear on the air, and I didn't know much about the receiver I was using. I was faced with the same double-learning process that every newcomer has to put up with.

My positive assets were my experience with my home location and other communications receivers, my knowledge of Morse Code, and my reference materials. Fortunately, I had a copy of the brand new 1990 edition of *The Aero/Marine Beacon Guide*, so beacon references were all in a single volume.

Like a newcomer, I turned on the receiver and began to dial up and down the band to see what could be heard. Experience immediately made a contribution. Beacons send Morse code and code is heard better with a tone from a BFO. This means setting the mode for either sideband or code. The 2010 has only two settings: USB and LSB/CW. I chose the USB initially because beacons usually have an upper sideband, even though some have double sidebands. This helped get me started.

The process was simple. Tune up the band starting from about 190 kHz. In some other location, I might have started at 200, but there are some military beacons below 200 kHz in southern California. You may not expect to hear them, but you never know whether this may be the time they are on.

It wasn't the time they were on, but it only cost me a few minutes to learn this. If you gamble those few minutes, every now and then there is a nice payoff of a rare beacon added to your personal list.

When a beacon was heard, I simply moved slowly up the dial as the tone of the beacon dropped lower and lower until it faded away completely. This was the carrier frequency of the beacon. I proved

this by switching to LSB/CW and noticing that the tone became higher as I moved up in frequency. Thus, I could be sure that the fade of the tone was zero-beating the carrier frequency. Now I could note the ID and the frequency and refer to my *Beacon Guide* to identify that particular beacon.

As expected, most of the beacons were from southern California and primarily

Joe Woodlock finds out how it feels to be a beginner

from the Los Angeles area. However, my very first evening of DXing produced one from Arizona and another from Nevada. That gave me some high hopes that weren't quite realized over the next several days. Except for one from Boise, Idaho, a couple of days later, all the rest were from California.

With the mountains forming a reasonably good block to the east and distances to the west limited by the Pacific Ocean, there wasn't a lot of antenna alignment needed. The antenna was usually set for the north and south directions. In the case of a built-in low-frequency antenna on the 2010, or any other receiver with a built-in antenna, antenna alignment consists of turning the receiver in a circular direction.

The strongest reception is in the direction of the front and back, or the broad side of the built-in loop or rod. The narrower sides are the null points because they are the ends of the built-in rod.

There are three sequenced marine beacons on 302 -- L from Point Loma, O from Point Arguello and V from Point Vicente. Theoretically, they are supposed to rotate through twice in each six minute period. The sequence is supposed to be L at minutes 1 and 4, then V at minutes 2 and 5 and finally O at minutes 3 and 6. I never heard O at all. The other two seemed to wander in their timing and were on simultaneously at one stage.

This did prove the value of antenna

direction. My location in Gardena was just right to null one and get the other at almost maximum sound. By moving the receiver back and forth, I could establish that both were operating at the same time period. Practice nulling a strong station. You may be surprised to find something else on that very same frequency.

If you have infinite time, I suppose you can just go up and down the dial in random fashion and eventually hear most everything that it is possible to hear from your location. I only had ten days, so the process had to be speeded up. I went through the *Aero/Marine Beacon Guide* and checked the state code. If it was CA (California) I made an additional check of latitude.

What I had heard just tuning the dial suggested that I had a pretty good chance at beacons up to 35 degrees north. So, if the latitude was less than 35 degrees north, I wrote down the frequency and the ID.

There were almost 50 beacons on this list. I cross-checked these against the ones already logged. This identified the ones that would be new catches. I tuned to these frequencies and rotated my receiver (changed antenna direction) slowly as I listened. Several were faint, but they were heard and logged. The net result was seven additional beacons that I might have missed. I also heard two others that weren't on the list. They were from a little further north in California.

There is only one danger in listening for a specific beacon. Sometimes, because we want to hear a particular beacon so badly, we think we've heard it based on the least little bit of code. Normally, for this reason, I listen on a random basis. I identify the ID and then try to determine if it exists on or near that frequency. If so, I have a new catch; if not, I go back and listen again. Sometimes what I have heard is a combination of parts of the IDs of two more common beacons.

In the case of listening for the possible beacons in California, I made doubly sure that I was hearing the ID properly and completely. There were a couple of other possible catches, but I just wasn't sure of the ID.

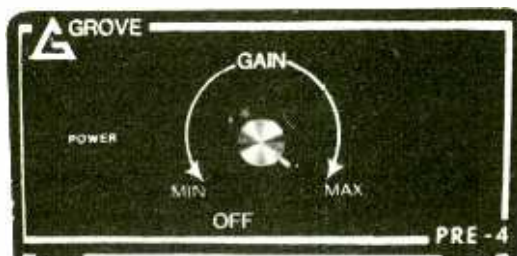
If you have a 2010, go beacon hunting. If you are considering one, it can be a good receiver. Put some effort into it, and you will be surprised how lucky you can get with a Sony 2010.



From Grove Enterprises The Leader in Listening Accessories



For Scanning Enthusiasts



GROVE PRE4 SCANNER BOOSTER

Bring in those weak, distant signals with the new Grove PRE4 Scanner Booster. A powerful tool for the serious scanner listener, the PRE4's transistorized, low-noise amplifier adds up to 20 dB of gain to those hard-to-hear signals. A front panel control allows you to customize the amount of amplification. Mounts indoors or out.

Using two scanners? The PRE4 has two jacks for simultaneous operation of any two 25–1300 MHz radios! In fact, the Grove Scanner Booster is perfect for any scanner, general coverage VHF/UHF receiver – even TV and FM.

The new Grove PRE4 Scanner Booster is now available from Grove Enterprises for \$69.00 plus \$2.00 UPS or \$3.00 parcel post. Requires optional 9–18 VDC/30ma power supply, \$9.95. Interconnect cable(s) for your scanner(s) \$7.50 each. (State model or connector required.)

(Not recommended in strong signal areas.)



GROVE FTR4 SCANNER FILTER

Interference. It's getting to be a real problem. But you don't have to put up with it any more.

Grove's new FTR4 Scanner Filter, equipped with F connectors, can reduce or even eliminate interference – no matter where it's coming from. Customize the settings yourself on the convenient dipswitch. Choose the reject/pass characteristics you need. A switchable 10 dB attenuator reduces RF saturation in dense signal environments while a high-pass filter removes shortwave bleed-through. The FTR4 comes with complete instructions.

The crystal clear 30 to 1000 MHz listening you have always dreamed about is now available!

The FTR4 Scanner Filter is just \$49.00 plus \$2.00 UPS or \$3.00 parcel post. (Scanner interconnect cable required, \$7.50. Specify your model or antenna connector. Input adapters: BNC, \$5.00, Motorola, \$7.50.)

Improve Your Shortwave Reception



THE NEW TUN4 MINITUNER PLUS

Grove Enterprises has taken two of their most popular products and combined them into one. The result is a listening tool so powerful that it improves reception over the entire 100 kHz to 30 MHz range! It's the all new TUN4 from Grove Enterprises!

Tune in that weak station. Then switch on the TUN4's low-noise, high-gain transistor amplifier. Peak the tuning control and hear an astounding improvement in signal strength.

You can also switch the TUN4 between two antennas, two receivers or even remove it from the circuit altogether – all at the touch of a switch. Fine tune your listening with the Grove TUN4. Just \$99.00 plus \$2.00 UPS or \$5.00 parcel post. Requires 12 VDC power supply, \$9.95. (Interconnect cable for your receiver, \$7.50 each. PL259 supplied unless otherwise specified.)

Business Hours: 9am–5pm EST Monday through Friday
Orders Only 1–800–438–8155 • Information 704–837–9200
Send orders to Grove Enterprises • PO Box 98, Brasstown, NC 28902

program

guide

MT Program Team

Sunday

March 4th, 11th, 18th, 25th

- 0005 Christian Science Monitor: Herald of Christian Science. Religious programming explaining the doctrine of Christian Science.
- 0008 Radio Canada Int'l: Innovation Canada. Bob Cadman looks at Canada's new ideas and technological developments.
- 0030 BBC: Composer of the Month. Profiles of great composers and selections from their works.
- 0030 Radio Australia: Book Reading. Serialized readings from popular books.
- 0038 Radio Canada Int'l: Coast to Coast. Aldo Marchini looks at opinions of Canadians on issues affecting them.



Aldo Marchini is host to Radio Canada International's "Coast to Coast" and "L'attitude"

- 0101 BBC: Play of the Week. Hour-long drama selections.
- 0105 Christian Science Monitor: Herald of Christian Science. See S 0005.
- 0108 Radio Canada Int'l (Latin America): Innovation Canada. See S 0008.
- 0108 Radio Canada Int'l (United States): Shortwave Listeners' Digest. Ian MacFarland presents DX news and features.
- 0130 Radio Australia: At Your Request. Dick Paterson plays music requests.
- 0130 Radio Canada Int'l: Music Spot. The latest in popular music.
- 0138 Radio Canada Int'l (Latin America): Shortwave Listeners' Digest. See S 0108.
- 0138 Radio Canada Int'l (United States): Spotlight on Science. Bob Cadman examines the latest developments in science and technology.
- 0205 Christian Science Monitor: Herald of Christian Science. See S 0005.
- 0209 BBC: British Press Review. Survey of editorial opinion in the British press.
- 0215 BBC: Feature. Programming on various subjects.
- 0230 BBC: The Ken Bruce Show. A mix of popular music and entertainment news.
- 0230 Radio Australia: Music/Information. Overnight music, interspersed with news.
- 0300 Radio Canada Int'l: Listeners' Corner. Ian MacFarland presents listener comments, questions, and music requests.
- 0305 Christian Science Monitor: Herald of Christian Science. See S 0005.
- 0313 Radio Australia: Back Page. Brendon Telfer covers sporting issues of the Asian/Pacific region.
- 0315 BBC: From Our Own Correspondent. In-depth news stories from correspondents worldwide.
- 0330 BBC: Quiz. A quiz show of a topical nature.
- 0330 Radio Australia: Music/Information. See S 0230.
- 0352 Radio Canada Int'l: Music. Selections by Radio Canada International announcers.
- 0405 Christian Science Monitor: Herald of Christian Science. See S 0005.
- 0430 BBC: Feature. Programming on various subjects.
- 0430 Radio Australia: Back Page. See S 0313.
- 0445 BBC: Personal View. A personal opinion on topical issues in British life.
- 0505 Christian Science Monitor: Herald of Christian Science. See S 0005.
- 0509 BBC: Twenty-Four Hours. Analysis of the main news of the day.
- 0513 Radio Australia: Music of Radio Australia. Selections by Radio Australia announcers.

Kannon Shanmugam,
Program Manager
4412 Turnberry Circle
Lawrence, KS 66047

Jim Frimmel
Willow Park, Texas

Dale Vanderpoel
Ft. Lauderdale, Florida

- 0530 BBC: Financial Review. A look back at the financial week.
- 0530 Radio Australia: Women of Asia. Patti Orfino speaks with Asian women about their lives and issues affecting them.
- 0540 BBC: Words of Faith. People share how their scripture gives meaning to their lives.
- 0545 BBC: Letter from America. Alistair Cooke's distinctly British view of America.
- 0605 Christian Science Monitor: Herald of Christian Science. See S 0005.
- 0630 BBC: Jazz for the Asking. A jazz music request show.
- 0630 Radio Australia: Australian Country Style. Eric Scott surveys the Australian country music scene.
- 0705 Christian Science Monitor: Herald of Christian Science. See S 0005.
- 0709 BBC: Twenty-Four Hours. See S 0509.
- 0713 Radio Australia: Music of Radio Australia. See S 0513.
- 0730 BBC: From Our Own Correspondent. See S 0315.
- 0730 Radio Australia: World of Country Music. A look at country music from all around the world.
- 0745 BBC: Book Choice. Short reviews of current or future best-sellers.
- 0750 BBC: Waveguide. How to hear the BBC better.
- 1105 Christian Science Monitor: Herald of Christian Science. See S 0005.
- 1113 Radio Australia: Music of Radio Australia. See S 0513.
- 1115 BBC: From Our Own Correspondent. See S 0315.
- 1130 BBC: Composer of the Month. See S 0030.
- 1130 Radio Australia: One World. Michael Wagner reports on environmental issues of the Asian/Pacific region.
- 1201 BBC: Play of the Week. See S 0101.
- 1205 Christian Science Monitor: Herald of Christian Science. See S 0005.

LEGEND

- * The first four digits of an entry are the program start time in UTC.
- * The time is followed by the station name, program name, and a brief summary of the program's content.
- * Some listings may be followed by "See X 0000." The letter stands for a day of the week:

S=Sunday M=Monday
T=Tuesday W=Wednesday
H=Thursday F=Friday
A=Saturday

The four digits stand for a time in UTC. Listeners should check back to that date and time to find out more about that particular program.

- * All broadcasts are listed in chronological order, starting on Sunday at 0000 UTC and ending on Saturday at 2359 UTC.
- * All days are in UTC. Remember that if you are listening in North

American prime time, it is actually the next morning UTC. For example, if you are listening to a program at 7:01 pm [EST] on your Thursday night, that's equal to 0001 UTC and therefore Friday morning UTC.

We suggest that you tune in to a program a few minutes before the schedule start time, as some stations have tentative schedules which may slightly vary. We invite listeners and stations to send program information to the program manager at the address above.

program guide

- 1208 Radio Canada Int'l: Current Affairs. In-depth news programming.
- 1227 Radio Australia: Tattslotto Results. Do you have the winning number? Tune in and find out.
- 1230 Radio Australia: Soundabout. Young, contemporary music from Australia and around the world.
- 1305 Christian Science Monitor: Herald of Christian Science. See S 0005.
- 1309 BBC: Twenty-Four Hours. See S 0509.
- 1313 Radio Australia: Sports Report. Results and reports on sporting events from the world over.
- 1330 BBC: Sports Roundup. The day's sports news.
- 1330 Radio Australia: Music of Radio Australia. See S 0513.
- 1345 BBC: Personal View. See S 0445.
- 1401 BBC: Feature. Programming on various subjects.
- 1404 Radio Canada Int'l: Sunday Morning. A three-hour magazine program, covering virtually everything under the sun.
- 1405 Christian Science Monitor: Herald of Christian Science. See S 0005.
- 1430 BBC: Anything Goes. Sounds from the BBC archives as requested by listeners.
- 1430 Radio Australia: Communicator. The latest developments in the media and communications world.
- 1505 Christian Science Monitor: Herald of Christian Science. See S 0005.
- 1513 Radio Australia: Music of Radio Australia. See S 0513.
- 1515 BBC: International Recital. A series of concerts from the BBC Concert Hall in London (except March 25th: Concert Hall, classical music performances from the world's great halls).
- 1530 Radio Australia: Education Focus. Education issues of the Asian/Pacific region, with Trevor Robertson.
- 1553 Radio Canada Int'l: Reports/Commentaries. An in-depth look behind the news headlines.
- 1605 Christian Science Monitor: The Sunday Service. A religious service from the First Church of Christ, Scientist, in Boston.
- 1615 BBC: Feature. Programming on various subjects.
- 1630 Radio Australia: Music of Radio Australia. See S 0513.
- 1645 BBC: Letter from America. See S 0545.
- 1645 Radio Australia: Sports Report. See S 1313.
- 2305 BBC: Words of Faith. See S 0540.
- 2308 Radio Canada Int'l: Shortwave Listeners'

- Digest. See S 0108.
- 2310 BBC: Book Choice. See S 0745.
- 2313 Radio Australia: Sports Report. See S 1313.
- 2315 BBC: Letter from America. See S 0545.
- 2330 BBC: Feature. See S 1401.
- 2330 Radio Australia: Music/Information. See S 0230.



The Christian Science Monitor studios in Boston, Massachusetts.

- 0145 BBC: Musical Feature. A program on a musical topic.
- 0205 Christian Science Monitor (Canada/Central America): The Sunday Service. See S 1605.
- 0206 Christian Science Monitor (East Africa): News Focus. In-depth news analyses focusing on major stories in the news.
- 0209 BBC: British Press Review. See S 0209.
- 0215 BBC: Andy Kershaw's World of Music. Exotic and innovative music from the world over.
- 0230 BBC: Science in Action. The latest in scientific developments.
- 0230 Radio Australia: Music/Information. See S 0230.
- 0234 Christian Science Monitor (East Africa): Kaleidoscope. News features and special segments on a variety of topics.
- 0304 Radio Canada Int'l: L'attitude. Aldo Marchini presents a look at the arts in Canada.
- 0306 Christian Science Monitor (East Africa): One Norway Street. Current affairs reports from correspondents worldwide.
- 0313 Radio Australia: Sports Report. See S 1313.
- 0315 BBC: Good Books. A recommendation of a book to read.
- 0330 BBC: Anything Goes. See S 1430.
- 0330 Radio Australia: Ring the Bells. Details not available at press time.
- 0334 Christian Science Monitor (East Africa): Letterbox. Staff members respond to listener letters.
- 0404 Radio Canada Int'l: Coast to Coast. Issues and opinions affecting Canadians.
- 0405 Christian Science Monitor (Canada/Central America): The Sunday Service. See S 1605.
- 0406 Christian Science Monitor (East Africa): News Focus. See M 0206.
- 0430 BBC: Off the Shelf. A reading selected from the best of world literature.
- 0430 Radio Australia: Matters of Faith. Dallas Adair examines the doctrines and beliefs of Asian/Pacific faiths.
- 0434 Christian Science Monitor (East Africa): Kaleidoscope. See M 0234.
- 0445 BBC: Talks. Short talks on various subjects.
- 0506 Christian Science Monitor (East Africa): One Norway Street. See M 0306.
- 0509 BBC: Twenty-Four Hours. See S 0509.
- 0513 Radio Australia: Music of Radio Australia. See S 0513.
- 0530 BBC: Waveguide. See S 0750.
- 0530 Radio Australia: This Australia. Documentaries about the land "down under".
- 0534 Christian Science Monitor (East Africa): Letterbox. See M 0334.
- 0540 BBC: Words of Faith. See S 0540.

Monday

March 5th, 12th, 19th, 26th

- 0005 Christian Science Monitor: The Sunday Service. See S 1605.
- 0008 Radio Canada Int'l: Listeners' Corner. See S 0300.
- 0030 BBC: In Praise of God. A half-hour program of worship.
- 0030 Radio Australia: Just Out. Rob Hoskin plays recent Australian music releases.
- 0101 BBC: Feature. Programming on various subjects.
- 0108 Radio Canada Int'l: Listeners' Corner. See S 0300.
- 0130 Radio Australia: Music/Information. See S 0230.

- 0000 BBC: Newsdesk
- 0000 Christian Science Monitor: News
- 0000 Kol Israel: News
- 0000 KVOH: UPI News [T-A]
- 0000 Radio Australia: International Report
- 0000 Radio Beijing: News
- 0000 Radio Canada Int'l: News [S-M]; World at 6 [T-A]
- 0000 Radio Havana Cuba: Int'l News [M-A]
- 0000 Radio Moscow: News
- 0000 Radio New Zealand Int'l: News
- 0000 Radio Yugoslavia: News
- 0000 Spanish National Radio: News
- 0000 Voice of America: News
- 0000 WWC: USA Radio News [M-F]
- 0000 Radio Pyongyang: News
- 0010 Radio Beijing: News About China
- 0030 Christian Science Monitor: News [T-F]
- 0030 Radio Budapest: News
- 0030 Radio Canada Int'l: News [S-M]
- 0030 Radio Havana Cuba: Newsbreak [M-A]
- 0030 Radio Moscow (World Service): News In Brief
- 0030 Radio Netherlands: News [T-S]
- 0030 Voice of America (Americas, E.Asia): News (Special English) [T-S]
- 0030 Voice of America (E.Asia): News (Special English) [M]
- 0045 Radio Berlin Int'l: News
- 0051 Spanish National Radio: News Summary [S]
- 0055 KUSW: News [T-S]
- 0055 WRNO: ABC News [W-H, A]
- 0100 BBC: News Summary
- 0100 Belize Radio One: Network News
- 0100 Christian Science Monitor: News
- 0100 Deutsche Welle: World News
- 0100 Kol Israel: News
- 0100 KVOH: UPI Radio News [T-A]
- 0100 Radio Australia: World and Australian News
- 0100 Radio Canada Int'l: News [S-M]
- 0100 Radio Havana Cuba: Int'l News [M-A]
- 0100 Radio Japan: News
- 0100 Radio Moscow: News
- 0100 Radio New Zealand Int'l: News
- 0100 Radio Prague: News
- 0100 Radiotelevisione Italiana: News
- 0100 Spanish National Radio: News
- 0100 Voice of America: News
- 0100 Voice of Indonesia: News
- 0100 WWC: USA Radio News [T-S]
- 0115 Radio Havana Cuba: Cuban Nat'l News [M-A]
- 0130 Christian Science Monitor: News [T-F]
- 0130 Radio Budapest: News
- 0130 Radio Havana Cuba: News [M-A]

NEWS GUIDE

This is your guide to news broadcasts on the air. All broadcasts are daily unless otherwise noted by brackets. These brackets enclose day codes denoting days of broadcast. The codes are as follows:

S = Sunday
T = Tuesday
H = Thursday
A = Saturday
M = Monday
W = Wednesday
F = Friday

We invite listeners and stations to send program information to the program manager.

program

guide



Radio Australia is bucking the tide -- going for more local emphasis; of the staff MT featured back in 1988, such as these staffers at the international desk, how many remain?

- 0545 BBC: Recording of the Week. A personal choice from the latest classical music releases.
- 0606 Christian Science Monitor: News Focus. See M 0206.
- 0630 BBC: Feature. See S 1401.
- 0630 Radio Australia: Music of Radio Australia. See S 0513.
- 0634 Christian Science Monitor: Kaleidoscope. See M 0234.
- 0706 Christian Science Monitor: One Norway Street. See M 0306.
- 0709 BBC: Twenty-Four Hours. See S 0509.
- 0713 Radio Australia: Pacific Sunrise. Business and export development in the Pacific basin.
- 0730 BBC: Feature. See S 1615.
- 0730 Radio Australia: Communicator. See S 1430.
- 0734 Christian Science Monitor: Letterbox. See M 0334.
- 1106 Christian Science Monitor: One Norway Street. See M 0306.
- 1113 Radio Australia: Music of Radio Australia. See S 0513.
- 1115 BBC: Health Matters. New developments in the world of medical science and fitness.
- 1130 BBC: The Ken Bruce Show. See S 0230.
- 1130 Radio Australia: Land and Culture. Indigenous issues in Australia presented by Trevor Robertson.

- 1134 Christian Science Monitor: Letterbox. See M 0334.
- 1206 Christian Science Monitor: News Focus. See M 0206.
- 1215 BBC: Screenplay. A film quiz show hosted by Iain Johnstone (except March 26th: Quiz, a quiz show to be announced).
- 1230 Radio Australia: Soundabout. See S 1230.
- 1230 Radio Canada Int'l: North Country. Sports, weather, and the stock market report.
- 1234 Christian Science Monitor: Kaleidoscope. See M 0234.
- 1234 Radio Canada Int'l: Innovation Canada. See S 0108.
- 1245 BBC: Sports Roundup. See S 1330.
- 1306 Christian Science Monitor: One Norway Street. See M 0306.
- 1308 Radio Canada Int'l: Current Affairs. In-depth news programming.
- 1309 BBC: Twenty-Four Hours. See S 0509.
- 1313 Radio Australia: Sports Report. See S 1313.
- 1330 BBC: Feature. See S 1615.
- 1330 Radio Australia: Music of Radio Australia. See S 0513.
- 1334 Christian Science Monitor: Letterbox. See M 0334.
- 1405 BBC: Outlook. Conversation, controversy, and color from Britain and the rest of the world.
- 1406 Christian Science Monitor: News Focus. See M 0206.

- 1425 Radio Australia: Stock Exchange Report. Financial news from Sydney and other exchanges.
- 1430 BBC: Off the Shelf. See M 0430.
- 1430 Radio Australia: Points of Law. Details not available at press time.
- 1434 Christian Science Monitor: Kaleidoscope. See M 0234.
- 1445 BBC: Feature. See S 0215.
- 1506 Christian Science Monitor: One Norway Street. See M 0306.
- 1513 Radio Australia: Pacific Sunrise. See M 0713.
- 1515 BBC: Feature. See M 0101.
- 1530 Radio Australia: Music of Radio Australia. See S 0513.
- 1534 Christian Science Monitor: Letterbox. See M 0334.
- 1545 Radio Australia: Word of Mouth. Oral histories of Australians.
- 1606 Christian Science Monitor: News Focus. See M 0206.
- 1615 BBC: Good Books. See M 0315.
- 1630 BBC: Health Matters. See M 1115.
- 1630 Radio Australia: Music of Radio Australia. See S 0513.
- 1634 Christian Science Monitor: Kaleidoscope. See M 0234.
- 1645 BBC: The World Today. News analysis on a selected location or event in the news.
- 1645 Radio Australia: Sports Report. See S 1313.
- 2305 BBC: Commentary. Background to the news from a wide range of specialists.
- 2306 Christian Science Monitor: One Norway Street. See M 0306.
- 2308 Radio Canada Int'l: Current Affairs. See M 1308.
- 2310 BBC: Financial News. News of commodity prices and significant moves in currency and stock markets.
- 2313 Radio Australia: Sports Report. See S 1313.
- 2315 BBC: Feature. Programming on various subjects.
- 2330 BBC: Multitrack 1. Tim Smith presents what's hot on the British pop music charts.
- 2330 Radio Australia: Music/Information. See S 0230.
- 2334 Christian Science Monitor: Letterbox. See M 0334.

Tuesday

March 6th, 13th, 20th, 27th

- 0006 Christian Science Monitor: News Focus. See M 0206.

news guide cont'd from p.57

- 0130 Radio Moscow (World Service): News In Brief
- 0150 HCJB: News [T-A]
- 0151 Radio Veritas Asia: World News [M-F]
- 0151 Spanish National Radio: News Summary [S]
- 0155 HCJB: News [S]
- 0155 KUSW: News [T-S]
- 0155 Radio Veritas Asia: World News [A]
- 0155 Voice of Indonesia: News In Brief
- 0200 BBC: World News
- 0200 Christian Science Monitor: News
- 0200 Deutsche Welle: World News
- 0200 HCJB: News [M]
- 0200 Kol Israel: News
- 0200 Radio Australia: International Report
- 0200 Radio Berlin Int'l: News
- 0200 Radio Bras, Brasilia: News
- 0200 Radio Bucharest: News
- 0200 Radio Havana Cuba: Int'l News [M-A]
- 0200 Radio Kiev: News
- 0200 Radio Moscow: News
- 0200 Radio New Zealand Int'l: News [A-S]
- 0200 Radio RSA: News
- 0200 RAE, Buenos Aires: News
- 0200 Swiss Radio Int'l: News
- 0200 Voice of America: News
- 0200 Voice of Free China: News and Commentary
- 0200 WWCR: USA Radio News [T-A]
- 0215 Radio Cairo: News
- 0230 Christian Science Monitor(E.Africa):News [M]
- 0230 Christian Science Monitor: News [T-F]
- 0230 Radio Finland: Northern Report [T-A]
- 0230 Radio Havana Cuba: Newsbreak [M-A]
- 0230 Radio Moscow (World Service): News In Brief
- 0230 Radio Pakistan: News (Special English)
- 0230 Radio Portugal: News [T-A]
- 0230 Radio Tirana, Albania: News
- 0245 Radio Berlin Int'l: News
- 0255 KUSW: News [T-S]
- 0300 BBC: World News
- 0300 Belize Radio One: News
- 0300 Christian Science Monitor: News
- 0300 Deutsche Welle: World News
- 0300 HCJB: News [T-A]
- 0300 Radio Australia: World and Australian News
- 0300 Radio Beijing: News
- 0300 Radio Canada Int'l: News [M-F]
- 0300 Radio for Peace Int'l: News [T,A]
- 0300 Radio Havana Cuba: Int'l News [M-A]
- 0300 Radio Japan: News
- 0300 Radio Moscow: News
- 0300 Radio New Zealand Int'l: News [A-S]
- 0300 Radio Prague: News
- 0300 Voice of America: News
- 0300 Voice of Free China: News and Commentary
- 0300 WRNO: ABC News [F]
- 0309 BBC: News About Britain
- 0310 Radio Beijing: News About China
- 0315 Radio Cairo: News
- 0315 Radio France International: News
- 0315 Radio Havana Cuba: Cuban Nat'l News [M-A]
- 0330 Christian Science Monitor(E.Africa):News [M]
- 0330 Christian Science Monitor: News [T-F]
- 0330 Radio Berlin Int'l: News
- 0330 Radio Havana Cuba: News [M-A]
- 0330 Radio Moscow (World Service): News In Brief
- 0330 Radio Netherlands: News [T-S]
- 0330 Radio Tirana, Albania: News
- 0330 UAE Radio, Dubai: News
- 0350 Radio Yerevan: News
- 0350 Radiotelevisione Italiana: News
- 0355 KUSW: News [T-S]
- 0400 BBC: Newsdesk
- 0400 Christian Science Monitor: News
- 0400 Deutsche Welle: World News

program

guide

BULLETIN BOARD

PUT ANOTHER SHRIMP ON THE RADIO: At a time when radio stations are (thankfully) shifting toward a more worldly approach, Radio Australia has bucked the trend and moved toward more regionally oriented programming.

Their schedule has been completely revamped in the past few months, with music and information programming dominating the "morning" programs (2300-0400 UTC) and features in the "evening" (0400-0800, 1100-2300 UTC).

This increased emphasis on regional programming might make Radio Australia programming of less interest to North American listeners. The new program lineup is included in this month's program guide.

VOICE OF AMERICA SHUTS OUT LISTENERS: The Voice of America essentially has cut off subscriptions to "Voice," their program guide. Thus, up-to-date details on America's official shortwave stations must be gleaned through hours of painstaking monitoring.

The *MT* program section is collecting data on the Voice and will present full program information in the near future.

POST ON THE BULLETIN BOARD: If you have information or opinion on shortwave radio programs, we'd love to hear from you. Send your short comments to Kannon Shanmugam at the address on page 56.

- 0030 BBC: Megamix. A compendium of music, sport, fashion, health, travel, news and views for young people.
- 0030 Radio Australia: Music/Information. See S 0230.
- 0030 Radio Canada Int'l: As It Happens. A detailed look at the people and events making news, from a Canadian perspective.
- 0034 Christian Science Monitor: Kaleidoscope. See M 0234.
- 0101 BBC: Outlook. See M 1405.
- 0106 Christian Science Monitor: One Norway Street. See M 0306.
- 0125 BBC: Financial News. See M 2310.
- 0130 BBC: Short Story. Brief tales written by BBC listeners.
- 0130 Radio Australia: Music/Information. See S 0230.
- 0134 Christian Science Monitor: Letterbox. See M 0334.
- 0145 BBC: Europe's World. A magazine program reflecting life in Europe and its links with other parts of the world.
- 0200 Radio Canada Int'l: As It Happens. See T 0030.
- 0206 Christian Science Monitor: News Focus. See M 0206.

- 0209 BBC: British Press Review. See S 0209.
- 0215 BBC: Network UK. A look at the issues and events that affect the lives of people throughout the UK.
- 0230 BBC: Sports International. Feature program on a topic or person making sports headlines.
- 0230 Radio Australia: Music/Information. See S 0230.
- 0234 Christian Science Monitor: Kaleidoscope. See M 0234.
- 0306 Christian Science Monitor: One Norway Street. See M 0306.
- 0308 Radio Canada Int'l: Current Affairs. See S 1208.
- 0313 Radio Australia: Sports Report. See S 1313.
- 0315 BBC: The World Today. See M 1645.
- 0330 BBC: John Peel. Tracks from newly released albums and singles from the contemporary music scene.
- 0330 Radio Australia: Music/Information. See S 0230.
- 0334 Christian Science Monitor: Letterbox. See M 0334.
- 0404 Radio Canada Int'l: Innovation Canada. See S 0008.
- 0406 Christian Science Monitor: News Focus. See M 0206.

- 0430 BBC: Off the Shelf. See M 0430.
- 0430 Radio Australia: World of Country Music. See S 0730.
- 0434 Christian Science Monitor: Kaleidoscope. See M 0234.
- 0445 BBC: New Ideas. A radio shop window for new products and inventions.
- 0455 BBC: Book Choice. See S 0745.
- 0506 Christian Science Monitor: One Norway Street. See M 0306.
- 0509 BBC: Twenty-Four Hours. See S 0509.
- 0513 Radio Australia: Music of Radio Australia. See S 0513.
- 0530 BBC: Financial News. See M 2310.
- 0530 Radio Australia: Points of Law. See M 1430.
- 0534 Christian Science Monitor: Letterbox. See M 0334.
- 0540 BBC: Words of Faith. See S 0540.
- 0545 BBC: The World Today. See M 1645.
- 0606 Christian Science Monitor: News Focus. See M 0206.
- 0630 BBC: Musical Feature. A program on a musical topic.
- 0630 Radio Australia: Music of Radio Australia. See S 0513.
- 0634 Christian Science Monitor: Kaleidoscope. See M 0234.
- 0706 Christian Science Monitor: One Norway Street. See M 0306.
- 0709 BBC: Twenty-Four Hours. See S 0509.
- 0710 Radio Australia: Music of Radio Australia. See S 0513.
- 0730 BBC: Europe's World. See T 0145.
- 0730 Radio Australia: Monitor. A look at the impact of science and technology on society.
- 0734 Christian Science Monitor: Letterbox. See M 0334.
- 0745 BBC: Network UK. See T 0215.
- 1106 Christian Science Monitor: One Norway Street. See M 0306.
- 1113 Radio Australia: Music of Radio Australia. See S 0513.
- 1115 BBC: Waveguide. See S 0750.
- 1125 BBC: Book Choice. See S 0745.
- 1130 BBC: Megamix. See T 0030.
- 1130 Radio Australia: Business Horizons. Peter Hannam reviews business and trade in the Asian/Pacific region.
- 1134 Christian Science Monitor: Letterbox. See M 0334.
- 1206 Christian Science Monitor: News Focus. See M 0206.
- 1208 Radio Canada Int'l: Current Affairs. See S 1208.
- 1215 BBC: Multitrack 1: Top 20. See M 2330.
- 1230 Radio Australia: Soundabout. See S 1230.

- 0400 HCJB: News [M-A]
- 0400 Radio Australia: International Report
- 0400 Radio Beijing: News
- 0400 Radio Berlin Int'l: News
- 0400 Radio Bucharest: News
- 0400 Radio Canada Int'l: News [M-F]
- 0400 Radio Havana Cuba: Int'l News [M-A]
- 0400 Radio Moscow: News
- 0400 Radio New Zealand Int'l: News
- 0400 Radio RSA: News
- 0400 Radio Tanzania: News
- 0400 RAE, Buenos Aires: News
- 0400 Swiss Radio Int'l: News
- 0400 Voice of America: News
- 0400 WWCR: USA Radio News [M-A]
- 0405 Radio Pyongyang: News
- 0410 Radio Beijing: News About China
- 0425 Radiotelevisione Italiana: News
- 0430 Christian Science Monitor(E.Africa):News [M]
- 0430 Christian Science Monitor: News [T-F]
- 0430 Radio Havana Cuba: Newsbreak [M-A]
- 0430 Radio Moscow (World Service): News in Brief
- 0430 Radio Netherlands: News [M-A]
- 0430 Radio Tirana, Albania: News
- 0445 Radio Berlin Int'l: News
- 0455 KUSW: News [S, T-F]

- 0455 Radio Tanzania: News
- 0500 BBC: World News
- 0500 Christian Science Monitor: News
- 0500 Deutsche Welle: World News
- 0500 HCJB: News [S-M]; Latin American [T-A]
- 0500 Kol Israel: News
- 0500 Radio Australia: World and Australian News
- 0500 Radio Havana Cuba: Int'l News [M-A]
- 0500 Radio Japan: News
- 0500 Radio Moscow: News
- 0500 Radio New Zealand Int'l: News
- 0500 Spanish National Radio: News
- 0500 Voice of America: News
- 0500 WWCR: USA Radio News [T-A]
- 0515 Radio Havana Cuba: Cuban Nat'l News [M-A]
- 0530 Christian Science Monitor(E.Africa):News [M]
- 0530 Christian Science Monitor: News [T-F]
- 0530 Radio Bucharest: News
- 0530 Radio Havana Cuba: News [M-A]
- 0530 Radio Moscow (World Service): News in Brief
- 0530 UAE Radio, Dubai: News
- 0550 HCJB: News [T-A]
- 0551 Spanish National Radio: News Summary [S]
- 0555 HCJB: News [S]
- 0555 KUSW: News [S, T-F]
- 0600 BBC: Newsdesk

- 0600 Christian Science Monitor: News
- 0600 Deutsche Welle: World News
- 0600 HCJB: News [M]
- 0600 Radio Australia: International Report
- 0600 Radio Berlin Int'l: News
- 0600 Radio Havana Cuba: Int'l News [M-A]
- 0600 Radio Korea: News
- 0600 Radio Moscow: News
- 0600 Radio New Zealand Int'l: News
- 0600 Voice of America: News
- 0605 Radio Pyongyang: News
- 0615 Radio Berlin Int'l: News
- 0615 Radio Canada Int'l: News [M-F]
- 0630 Christian Science Monitor: News [M-F]
- 0630 Radio Finland: Northern Report [T-A]
- 0630 Radio Havana Cuba: Newsbreak [M-A]
- 0630 Radio Moscow (World Service): News in Brief
- 0630 Radio Polonia: News
- 0630 Radio Tirana, Albania: News
- 0630 Swiss Radio Int'l: News
- 0645 Radio Bucharest: News
- 0645 Radio Canada Int'l: News [M-F]
- 0655 HCJB: News [M-A]
- 0655 KUSW: News [S]
- 0700 BBC: World News
- 0700 BRT, Brussels: News [M-F]

program

guide

- 1234 Christian Science Monitor: Kaleidoscope. See M 0234.
- 1245 BBC: Sports Roundup. See S 1330.
- 1306 Christian Science Monitor: One Norway Street. See M 0306.
- 1309 BBC: Twenty-Four Hours. See S 0509.
- 1313 Radio Australia: Sports Report. See S 1313.
- 1330 BBC: Network UK. See T 0215.
- 1330 Radio Australia: Music of Radio Australia. See S 0513.
- 1330 Radio Canada Int'l: North Country. See M 1330.
- 1334 Christian Science Monitor: Letterbox. See M 0334.
- 1334 Radio Canada Int'l: Shortwave Listeners' Digest. See S 0108.
- 1345 BBC: The Story Lives On. See S 0430.
- 1405 BBC: Outlook. See M 1405.
- 1406 Christian Science Monitor: News Focus. See M 0206.
- 1425 Radio Australia: Stock Exchange Report. See M 1425.
- 1430 BBC: Off the Shelf. See M 0430.
- 1430 Radio Australia: Interaction. An exploration of the experiences of multicultural Australia, with Nick Kaye.
- 1434 Christian Science Monitor: Kaleidoscope. See M 0234.
- 1445 BBC: Musical Feature. See M 0145.
- 1506 Christian Science Monitor: One Norway Street. See M 0306.
- 1513 Radio Australia: Music of Radio Australia. See S 0513.
- 1515 BBC: A Jolly Good Show. Dave Lee Travis presents listener record requests and dedications, and the UK's top ten albums.
- 1530 Radio Australia: AgriNews. News about agriculture of the Asian/Pacific region, with Denis Gibbons.
- 1534 Christian Science Monitor: Letterbox. See M 0334.
- 1553 Radio Canada Int'l: Reports/Commentaries. See S 1553.
- 1606 Christian Science Monitor: News Focus. See M 0206.
- 1615 BBC: Omnibus. A half-hour program on practically any topic.
- 1630 Radio Australia: Music of Radio Australia. See S 0513.
- 1634 Christian Science Monitor: Kaleidoscope. See M 0234.
- 1645 BBC: The World Today. See M 1645.
- 1645 Radio Australia: Sports Report. See S 1313.
- 2305 BBC: Commentary. See M 2305.
- 2306 Christian Science Monitor: One Norway Street. See M 0306.



"Health Matters" has become a permanent weekly series on the BBC, news enough to make host Janet Davey smile.

- 2308 Radio Canada Int'l: Current Affairs. See S 1208.
- 2310 BBC: Financial News. See M 2310.
- 2313 Radio Australia: Sports Report. See S 1313.
- 2315 BBC: International Recital (except March 27th: Concert Hall). See S 1515.
- 2330 Radio Australia: Music/Information. See S 0230.
- 2334 Christian Science Monitor: Letterbox. See M 0334.

Wednesday

March 7th, 14th, 21st, 28th

- 0006 Christian Science Monitor: News Focus. See M 0206.
- 0030 BBC: Omnibus. See T 1615.
- 0030 Radio Australia: Music/Information. See S 0230.
- 0030 Radio Canada Int'l: As It Happens. See T

- 0030.
- 0034 Christian Science Monitor: Kaleidoscope. See M 0234.
- 0101 BBC: Outlook. See M 1405.
- 0106 Christian Science Monitor: One Norway Street. See M 0306.
- 0125 BBC: Financial News. See M 2310.
- 0130 BBC: Feature. Programming on various subjects.
- 0130 Radio Australia: Music/Information. See S 0230.
- 0134 Christian Science Monitor: Letterbox. See M 0334.
- 0145 BBC: Country Style. David Allan presents British country music.
- 0200 Radio Canada Int'l: As It Happens. See T 0030.
- 0206 Christian Science Monitor: News Focus. See M 0206.
- 0209 BBC: British Press Review. See S 0209.
- 0215 BBC: Health Matters. See M 1115.
- 0230 BBC: Musical Feature. A program on a musical topic.
- 0230 Radio Australia: Book Reading. See S 0030.
- 0234 Christian Science Monitor: Kaleidoscope. See M 0234.
- 0306 Christian Science Monitor: One Norway Street. See M 0306.
- 0308 Radio Canada Int'l: Current Affairs. See S 1208.
- 0313 Radio Australia: Sports Report. See S 1313.
- 0315 BBC: The World Today. See M 1645.
- 0330 BBC: Discovery. An in-depth look at scientific research.
- 0330 Radio Australia: Music/Information. See S 0230.
- 0334 Christian Science Monitor: Letterbox. See M 0334.
- 0404 Radio Canada Int'l: Shortwave Listeners' Digest. See S 0108.
- 0406 Christian Science Monitor: News Focus. See M 0206.
- 0430 BBC: Off the Shelf. See M 0430.
- 0430 Radio Australia: Music of Radio Australia. See S 0513.
- 0434 Christian Science Monitor: Kaleidoscope. See M 0234.
- 0445 BBC: Country Style. See W 0145.
- 0506 Christian Science Monitor: One Norway Street. See M 0306.
- 0509 BBC: Twenty-Four Hours. See S 0509.
- 0513 Radio Australia: Music of Radio Australia. See S 0513.
- 0530 BBC: Financial News. See M 2310.
- 0530 Radio Australia: Education Focus. See S 1530.

news guide cont'd from p.59

- 0700 Christian Science Monitor: News
- 0700 Radio Australia: World and Australian News
- 0700 Radio Havana Cuba: Int'l News [M-A]
- 0700 Radio Japan: News
- 0700 Radio Moscow: News
- 0700 Radio New Zealand Int'l: News [A-S]
- 0700 Radio Tirana, Albania: News
- 0700 Voice of Free China: News and Commentary
- 0715 Radio Havana Cuba: Cuban Nat'l News [M-A]
- 0730 Christian Science Monitor: News [M-F]
- 0730 Radio Havana Cuba: News [M-A]
- 0730 Radio Moscow (World Service): News in Brief
- 0730 Radio Netherlands: News [M-A]
- 0755 KUSW: News [S]
- 0800 BBC: World News
- 0800 Christian Science Monitor: News
- 0800 Radio Australia: International Report
- 0800 Radio Finland: Northern Report [T-S]
- 0800 Radio Korea: News
- 0800 Radio Moscow (World Service): News
- 0800 Voice of Indonesia: News
- 0805 Radio Pyongyang: News

- 0830 Christian Science Monitor: News [M-F]
- 0830 Radio Finland: Northern Report [T-S]
- 0830 Radio Moscow (World Service): News in Brief
- 0830 Radio Netherlands: News [M-A]
- 0830 Swiss Radio Int'l: News
- 0845 Radio Berlin Int'l: News
- 0855 KUSW: News [S]
- 0855 Voice of Indonesia: News in Brief
- 0900 BBC: World News
- 0900 BRT, Brussels: News [M-F]
- 0900 Christian Science Monitor: News
- 0900 Deutsche Welle: World News
- 0900 Radio Australia: World and Australian News
- 0900 Radio Japan: News
- 0900 Radio Moscow (World Service): News
- 0900 Radio New Zealand Int'l: News
- 0930 Christian Science Monitor: News [M-F]
- 0930 Radio Moscow (World Service): News in Brief
- 0955 KUSW: News [S]
- 1000 BBC: News Summary
- 1000 Christian Science Monitor: News
- 1000 Radio Australia: International Report
- 1000 Radio Berlin Int'l: News
- 1000 Radio Moscow (World Service): News
- 1000 Radio New Zealand Int'l: News
- 1000 Radio Tanzania: News

- 1000 Swiss Radio Int'l: News
- 1000 Voice of America: News
- 1030 Radio Moscow (World Service): News in Brief
- 1030 Radio Netherlands: News [M-A]
- 1030 UAE Radio, Dubai: News
- 1045 Radio Berlin Int'l: News
- 1055 KUSW: News [S]
- 1100 BBC: World News
- 1100 Christian Science Monitor: News [M-F]
- 1100 Deutsche Welle: World News
- 1100 Kol Israel: News
- 1100 Radio Australia: World and Australian News
- 1100 Radio Beijing: News
- 1100 Radio Finland: Northern Report [T-F]
- 1100 Radio Japan: News
- 1100 Radio Korea: News
- 1100 Radio Moscow (World Service): News
- 1100 Radio New Zealand Int'l: News
- 1100 Radio RSA: News
- 1100 Swiss Radio Int'l: News
- 1100 Trans World Radio, Bonaire: News [M-F]
- 1100 Voice of America: News
- 1105 Radio Pakistan: News (Special English)
- 1109 BBC: News About Britain
- 1110 Belize Radio One: News Summary [T-F]
- 1110 Radio Beijing: News About China

program

guide

- 0534 Christian Science Monitor: Letterbox. See M 0334.
- 0540 BBC: Words of Faith. See S 0540.
- 0545 BBC: The World Today. See M 1645.
- 0606 Christian Science Monitor: News Focus. See M 0206.
- 0630 BBC: Meridian. The world of the arts, including music, drama, and books.
- 0630 Radio Australia: Ring the Bells. See M 0330.
- 0634 Christian Science Monitor: Kaleidoscope. See M 0234.
- 0706 Christian Science Monitor: One Norway Street. See M 0306.
- 0709 BBC: Twenty-Four Hours. See S 0509.
- 0713 Radio Australia: Music of Radio Australia. See S 0513.
- 0730 BBC: Development '90. Aid and development issues.
- 0730 Radio Australia: Land and Culture. See M 1130.
- 0734 Christian Science Monitor: Letterbox. See M 0334.
- 1106 Christian Science Monitor: One Norway Street. See M 0306.
- 1113 Radio Australia: Music of Radio Australia. See S 0513.
- 1115 BBC: Country Style. See W 0145.
- 1130 BBC: Meridian. See W 0630.
- 1130 Radio Australia: Science File. Science, medicine, and technology news for the Asian/Pacific region.
- 1134 Christian Science Monitor: Letterbox. See M 0334.
- 1206 Christian Science Monitor: News Focus. See M 0206.
- 1208 Radio Canada Int'l: Current Affairs. See S 1208.
- 1215 BBC: Musical Feature. A program on a musical topic.
- 1225 BBC: The Farming World. Issues in agriculture.
- 1227 Radio Australia: Tattsiotto Results. See S 1227.
- 1230 Radio Australia: Soundabout. See S 1230.
- 1234 Christian Science Monitor: Kaleidoscope. See M 0234.
- 1245 BBC: Sports Roundup. See S 1330.
- 1306 Christian Science Monitor: One Norway Street. See M 0306.
- 1309 BBC: Twenty-Four Hours. See S 0509.
- 1313 Radio Australia: Sports Report. See S 1313.
- 1330 BBC: Development '90. See W 0730.
- 1330 Radio Australia: Just Out. See M 0030.
- 1330 Radio Canada Int'l: North Country. See M 1330.
- 1334 Christian Science Monitor: Letterbox. See M

- 0334.
- 1334 Radio Canada Int'l: L'Altitude. See M 0304.
- 1405 BBC: Outlook. See M 1405.
- 1406 Christian Science Monitor: News Focus. See M 0206.
- 1425 Radio Australia: Stock Exchange Report. See M 1425.
- 1430 BBC: Off the Shelf. See M 0430.
- 1430 Radio Australia: innovations. Desley Blanch reports on inventions and innovative practices.
- 1434 Christian Science Monitor: Kaleidoscope. See M 0234.
- 1445 BBC: Business Matters. See W 0430.
- 1506 Christian Science Monitor: One Norway Street. See M 0306.
- 1513 Radio Australia: Music of Radio Australia. See S 0513.
- 1515 BBC: Feature. See M 2315.
- 1530 BBC: Comedy Feature. A program of - well, comedy! (except March 28th: Two Cheers for March, a satirical look back at the month just past).
- 1530 Radio Australia: Matters of Faith. See M 0430.
- 1534 Christian Science Monitor: Letterbox. See M 0334.
- 1553 Radio Canada Int'l: Reports/Commentaries. See S 1553.
- 1606 Christian Science Monitor: News Focus. See M 0206.
- 1615 BBC: Musical Feature. See T 0630.
- 1630 Radio Australia: Music of Radio Australia. See S 0513.
- 1634 Christian Science Monitor: Kaleidoscope. See M 0234.
- 1645 BBC: The World Today. See M 1645.

- 1645 Radio Australia: Sports Report. See S 1313.
- 2305 BBC: Commentary. See M 2305.
- 2306 Christian Science Monitor: One Norway Street. See M 0306.
- 2308 Radio Canada Int'l: Current Affairs. See S 1208.
- 2310 BBC: Financial News. See M 2310.
- 2313 Radio Australia: Sports Report. See S 1313.
- 2315 BBC: Good Books. See M 0315.
- 2330 BBC: Multitrack 2. Graham Bannerman presents new pop music records, interviews, news, and competitions.
- 2330 Radio Australia: Music/Information. See S 0230.
- 2334 Christian Science Monitor: Letterbox. See M 0334.

Thursday

March 1st, 8th, 15th, 22nd, 29th

- 0006 Christian Science Monitor: News Focus. See M 0206.
- 0030 BBC: You Asked For It (except March 1st, 29th: Two Cheers...). See W 1530.
- 0030 Radio Australia: Music/Information. See S 0230.
- 0030 Radio Canada Int'l: As It Happens. See T 0030.
- 0034 Christian Science Monitor: Kaleidoscope. See M 0234.
- 0101 BBC: Outlook. See M 1405.
- 0106 Christian Science Monitor: One Norway Street. See M 0306.
- 0125 BBC: Financial News. See M 2310.



The English language staff at Radio Canada International (L to R): David Smith, Bob Caman, Jim Craig, Gillian MacCormack, Ian McFarland.

- 1120 Belize Radio One: News Summary [A]
- 1125 Belize Radio One: News Summary [M]
- 1130 Christian Science Monitor: News
- 1130 Radio Moscow (World Service): News in Brief
- 1130 Radio Netherlands: News [M-A]
- 1152 Radio RSA: News in Brief
- 1155 KUSW: News [S]
- 1200 BBC: News Summary [S]; Newsreel [M-A]
- 1200 Christian Science Monitor: News [M-F]
- 1200 Radio Australia: International Report
- 1200 Radio Beijing: News
- 1200 Radio Berlin Int'l: News
- 1200 Radio Bucharest: News
- 1200 Radio Canada Int'l: News
- 1200 Radio Finland: Northern Report [T-F]
- 1200 Radio Moscow (World Service): News
- 1200 Radio New Zealand Int'l: News
- 1200 Radio Polonia: News
- 1200 Radio Tashkent: News
- 1200 Radio Yugoslavia: News
- 1200 Swiss Radio Int'l: News
- 1200 Voice of America: News
- 1210 Radio Beijing: News About China
- 1230 BRT, Brussels: News [M-S]
- 1230 Christian Science Monitor: News
- 1230 Radio Berlin Int'l: News

- 1230 Radio France Int'l: News
- 1230 Radio Moscow (World Service): News in Brief
- 1230 Radio Polonia: News
- 1230 Trans World Radio, Bonaire: News [M-A]
- 1300 BBC: World News
- 1300 Belize Radio One: News
- 1300 Christian Science Monitor: News
- 1300 Christian Science Monitor: News [M-F]
- 1300 Radio Australia: World and Australian News
- 1300 Radio Bucharest: News
- 1300 Radio Canada Int'l: World Report [M-F]
- 1300 Radio Finland: Northern Report [T-A]
- 1300 Radio Moscow (World Service): News
- 1300 Radio RSA: News
- 1300 Radio Tanzania: News [A-S]
- 1300 Trans World Radio, Bonaire: News [S]
- 1300 Voice of America: News
- 1300 WWCR: USA Radio News [M-F]
- 1305 Radio Pyongyang: News
- 1315 Radio Berlin Int'l: News
- 1325 HCJB: News [M-F]
- 1330 Christian Science Monitor: News [M-F]
- 1330 Radio Moscow (World Service): News in Brief
- 1330 Swiss Radio Int'l: News
- 1330 UAE Radio, Dubai: News
- 1330 Voice of America: News (Special English)

- 1345 Radio Berlin Int'l: News
- 1352 Radio RSA: News in Brief
- 1400 BBC: Summary [A-S]; Five-Minute News [M-F]
- 1400 Christian Science Monitor: News
- 1400 Radio Australia: International Report
- 1400 Radio Beijing: News
- 1400 Radio Berlin Int'l: News
- 1400 Radio Canada Int'l: News [S]
- 1400 Radio France International: News
- 1400 Radio Japan: News
- 1400 Radio Korea: News
- 1400 Radio Moscow (World Service): News
- 1400 Radio Peace and Progress: News
- 1400 Radio RSA: News
- 1400 Voice of America: News
- 1400 WWCR: USA Radio News [M-F]
- 1405 Radio Finland: Northern Report [T-A]
- 1405 Radio Pyongyang: News
- 1410 Radio Beijing: News About China
- 1425 HCJB: News [M-F]
- 1430 Christian Science Monitor: News [M-F]
- 1430 Radio Moscow (World Service): News in Brief
- 1430 Radio Netherlands: News [M-A]
- 1430 Radio Polonia: News
- 1430 Radio Prague: News
- 1445 Radio Berlin Int'l: News

program

Index

- 0130 BBC: Waveguide. See S 0750.
- 0130 Radio Australia: Music/Information. See S 0230.
- 0134 Christian Science Monitor: Letterbox. See M 0334.
- 0140 BBC: Book Choice. See S 0745.
- 0145 BBC: Society Today. A weekly look at the changes in Britain.
- 0200 Radio Canada Int'l: As It Happens. See T 0030.
- 0206 Christian Science Monitor: News Focus. See M 0206.



Barry Clarke and Brian Hadden of Australia's English Service.

- 0209 BBC: British Press Review. See S 0209.
- 0215 BBC: Network UK. See T 0215.
- 0230 BBC: Assignment. Examinations of current topical issues.
- 0230 Radio Australia: Music/Information. See S 0230.
- 0234 Christian Science Monitor: Kaleidoscope. See M 0234.
- 0306 Christian Science Monitor: One Norway Street. See M 0306.
- 0308 Radio Canada Int'l: Current Affairs. See S 1208.
- 0313 Radio Australia: Sports Report. See S 1313.
- 0315 BBC: The World Today. See M 1645.
- 0330 BBC: Screenplay (except March 29th: Quiz). See M 1215.
- 0330 Radio Australia: Music/Information. See S 0230.
- 0334 Christian Science Monitor: Letterbox. See M 0334.

- 0404 Radio Canada Int'l: L'attitude. See M 0304.
- 0406 Christian Science Monitor: News Focus. See M 0206.
- 0430 BBC: Off the Shelf. See M 0430.
- 0430 Radio Australia: Music of Radio Australia. See S 0513.
- 0434 Christian Science Monitor: Kaleidoscope. See M 0234.
- 0445 BBC: Andy Kershaw's World of Music. See M 0215.
- 0506 Christian Science Monitor: One Norway Street. See M 0306.
- 0509 BBC: Twenty-Four Hours. See S 0509.
- 0513 Radio Australia: Music of Radio Australia. See S 0513.
- 0530 BBC: Financial News. See M 2310.
- 0530 Radio Australia: AgriNews. See T 1530.
- 0534 Christian Science Monitor: Letterbox. See M 0334.
- 0540 BBC: Words of Faith. See S 0540.
- 0545 BBC: The World Today. See M 1645.
- 0606 Christian Science Monitor: News Focus. See M 0206.
- 0630 BBC: Musical Feature. See W 1215.
- 0630 Radio Australia: At Your Request. See S 0130.
- 0634 Christian Science Monitor: Kaleidoscope. See M 0234.
- 0640 BBC: The Farming World. See W 1225.
- 0706 Christian Science Monitor: One Norway Street. See M 0306.
- 0709 BBC: Twenty-Four Hours. See S 0509.
- 0713 Radio Australia: Music of Radio Australia. See S 0513.
- 0730 BBC: Mediawatch. Keith Hindell monitors developments in communications.
- 0730 Radio Australia: Science File. See W 1130.
- 0734 Christian Science Monitor: Letterbox. See M 0334.
- 0745 BBC: Network UK. See T 0215.
- 1106 Christian Science Monitor: One Norway Street. See M 0306.
- 1113 Radio Australia: Music of Radio Australia. See S 0513.
- 1115 BBC: New Ideas. See T 0445.
- 1125 BBC: Book Choice. See S 0745.
- 1130 BBC: Serial. A reading from a book of interest.
- 1130 Radio Australia: AgriNews. See T 1530.
- 1134 Christian Science Monitor: Letterbox. See M 0334.
- 1206 Christian Science Monitor: News Focus. See M 0206.
- 1208 Radio Canada Int'l: Current Affairs. See S 1208.
- 1215 BBC: Multitrack 2. See W 1830.

- 1230 Radio Australia: Soundabout. See S 1230.
- 1234 Christian Science Monitor: Kaleidoscope. See M 0234.
- 1245 BBC: Sports Roundup. See S 1330.
- 1306 Christian Science Monitor: One Norway Street. See M 0306.
- 1309 BBC: Twenty-Four Hours. See S 0509.
- 1313 Radio Australia: Sports Report. See S 1313.
- 1330 BBC: Network UK. See T 0215.
- 1330 Radio Australia: Music of Radio Australia. See S 0513.
- 1330 Radio Canada Int'l: North Country. See M 1330.
- 1334 Christian Science Monitor: Letterbox. See M 0334.
- 1334 Radio Canada Int'l: Spotlight on Science. See S 0138.
- 1345 BBC: Folk in Britain/Jazz Scene UK. A look at folk or jazz music on the British Isles.
- 1405 BBC: Outlook. See M 1405.
- 1406 Christian Science Monitor: News Focus. See M 0206.
- 1425 Radio Australia: Stock Exchange Report. See M 1425.
- 1430 BBC: Off the Shelf. See M 0430.
- 1430 Radio Australia: Monitor. See T 0730.
- 1434 Christian Science Monitor: Kaleidoscope. See M 0234.
- 1445 BBC: Mediawatch. See H 0730.
- 1506 Christian Science Monitor: One Norway Street. See M 0306.
- 1513 Radio Australia: Music of Radio Australia. See S 0513.
- 1515 BBC: The Pleasure's Yours. Gordon Clyde presents classical music requests.
- 1530 Radio Australia: Business Horizons. See T 1130.
- 1534 Christian Science Monitor: Letterbox. See M 0334.
- 1553 Radio Canada Int'l: Reports/Commentaries. See S 1553.
- 1606 Christian Science Monitor: News Focus. See M 0206.
- 1615 BBC: Assignment. See H 0230.
- 1630 Radio Australia: Music of Radio Australia. See S 0513.
- 1634 Christian Science Monitor: Kaleidoscope. See M 0234.
- 1645 BBC: The World Today. See M 1645.
- 1645 Radio Australia: Sports Report. See S 1313.
- 1605 BBC: Commentary. See M 2305.
- 2306 Christian Science Monitor: One Norway Street. See M 0306.
- 2308 Radio Canada Int'l: Current Affairs. See S 1208.
- 2310 BBC: Financial News. See M 2310.

news guide cont'd from p.61

- 1500 BBC: Newsreel
- 1500 Belize Radio One: News [M-A]
- 1500 Christian Science Monitor: News
- 1500 Deutsche Welle: World News
- 1500 Radio Australia: World and Australian News
- 1500 Radio Beijing: News
- 1500 Radio Bucharest: News
- 1500 Radio Japan: News
- 1500 Radio Moscow (World Service): News
- 1500 Radio RSA: News
- 1500 Voice of America: News
- 1500 WHRI: News [M-A]
- 1500 WWCR: USA Radio News
- 1505 Radio Pyongyang: News
- 1510 Radio Beijing: News About China
- 1525 HCJB: News [M-F]
- 1526 Radio Veritas Asia: World News [M-A]
- 1530 BRT, Brussels: News [M-S]
- 1530 Christian Science Monitor: News [M-F]
- 1530 Deutsche Welle: African News [M-F]
- 1530 Radio Moscow (World Service): News in Brief
- 1530 Radio Prague: News

- 1530 Radio Tirana, Albania: News
- 1530 Swiss Radio Int'l: News
- 1545 Radio Berlin Int'l: News
- 1545 Radio Canada Int'l: News
- 1552 Radio RSA: News in Brief
- 1600 BBC: World News
- 1600 Christian Science Monitor: News
- 1600 Deutsche Welle: World News
- 1600 Radio Australia: International Report
- 1600 Radio France International: News
- 1600 Radio Korea: News
- 1600 Radio Moscow (World Service): News
- 1600 Radio Polonia: News
- 1600 Radio Portugal: News [M-F]
- 1600 Radio Tanzania: News
- 1600 Voice of America: News
- 1600 WWCR: USA Radio News [M-F]
- 1609 BBC: News About Britain
- 1625 HCJB: News [M-F]
- 1630 Christian Science Monitor: News [M-F]
- 1630 Radio Moscow (World Service): News in Brief
- 1630 Radio Netherlands: News [M-A]
- 1630 Radio Peace and Progress: News
- 1630 Radio Polonia: News
- 1630 UAE Radio, Dubai: News

- 1630 Voice of America (except Africa): News (Special English)
- 1645 Radio Berlin Int'l: News
- 1655 KUSW: News [M-F]
- 1700 BBC: World News [S-F]; News Summary [A]
- 1700 Belize Radio One: News [M-F]
- 1700 Christian Science Monitor: News
- 1700 Radio Australia: World and Australian News
- 1700 Radio Japan: News
- 1700 Radio Moscow (World Service): News
- 1700 Voice of America: News
- 1705 Radio Pyongyang: News
- 1715 Radio Canada Int'l: News
- 1730 BRT, Brussels: News
- 1730 Christian Science Monitor: News [M-F]
- 1730 Radio Bucharest: News
- 1730 Radio Moscow (World Service): News in Brief
- 1730 Radio Prague: News
- 1730 RAE, Buenos Aires: News
- 1730 Swiss Radio Int'l: News
- 1755 KUSW: News [M-A]
- 1800 BBC: Newsdesk
- 1800 Belize Radio One: Headline News [M-A]
- 1800 Christian Science Monitor: News
- 1800 Kol Israel: News
- 1800 Radio Australia: International Report

program

guide

- 2313 Radio Australia: Sports Report. See S 1313.
- 2315 BBC: Music Review. Classical music events and developments from around the world.
- 2330 Radio Australia: Music/Information. See S 0230.
- 2334 Christian Science Monitor: Letterbox. See M 0334.

Friday

March 2nd,9th,16th,23rd,30th

- 0006 Christian Science Monitor: News Focus. See M 0206.
- 0030 BBC: Musical Feature. Programming on various musical subjects.
- 0030 Radio Australia: Music/Information. See S 0230.
- 0030 Radio Canada Int'l: As It Happens. See T 0030.
- 0034 Christian Science Monitor: Kaleidoscope. See M 0234.
- 0101 BBC: Outlook. See M 1405.
- 0106 Christian Science Monitor: One Norway Street. See M 0306.
- 0125 BBC: Financial News. See M 2310.
- 0130 BBC: Folk in Britain/Jazz Scene UK. See H 1345.
- 0130 Radio Australia: Music/Information. See S 0230.
- 0134 Christian Science Monitor: Letterbox. See M 0334.
- 0145 BBC: The Learning World. A look at news, views, and ideas of those involved with education.
- 0200 Radio Canada Int'l: As It Happens. See T 0030.
- 0206 Christian Science Monitor: News Focus. See M 0206.
- 0209 BBC: British Press Review. See S 0209.
- 0215 BBC: Seven Seas. A weekly program about ships and the sea.
- 0230 BBC: Serial. See H 1130.
- 0230 Radio Australia: Music/Information. See S 0230.
- 0234 Christian Science Monitor: Kaleidoscope. See M 0234.
- 0306 Christian Science Monitor: One Norway Street. See M 0306.
- 0308 Radio Canada Int'l: Current Affairs. See S 1208.
- 0313 Radio Australia: Sports Report. See S 1313.
- 0315 BBC: The World Today. See M 1645.
- 0330 BBC: Focus on Faith. Comment and discussion on the major issues in the worlds



David Allan hosts "Country Style" on the BBC.

- of faith.
- 0330 Radio Australia: Music/Information. See S 0230.
- 0334 Christian Science Monitor: Letterbox. See M 0334.
- 0404 Radio Canada Int'l: Spotlight on Science. See S 0138.
- 0406 Christian Science Monitor: News Focus. See M 0206.
- 0430 BBC: Off the Shelf. See M 0430.
- 0430 Radio Australia: Music of Radio Australia. See S 0513.
- 0434 Christian Science Monitor: Kaleidoscope. See M 0234.
- 0445 BBC: Folk in Britain/Jazz Scene UK. See H 1345.
- 0506 Christian Science Monitor: One Norway Street. See M 0306.
- 0509 BBC: Twenty-Four Hours. See S 0509.
- 0513 Radio Australia: Music of Radio Australia. See S 0513.
- 0530 BBC: Financial News. See T 0125.
- 0530 Radio Australia: Interaction. See T 1430.
- 0534 Christian Science Monitor: Letterbox. See M 0334.
- 0540 BBC: Words of Faith. See S 0540.
- 0545 BBC: The World Today. See M 1645.
- 0606 Christian Science Monitor: News Focus. See M 0206.
- 0630 BBC: Meridian. See W 0630.
- 0630 Radio Australia: Music of Radio Australia. See S 0513.
- 0634 Christian Science Monitor: Kaleidoscope. See M 0234.
- 0706 Christian Science Monitor: One Norway Street. See M 0306.
- 0709 BBC: Twenty-Four Hours. See S 0509.
- 0713 Radio Australia: Music of Radio Australia. See S 0513.
- 0730 BBC: Feature. Programming on various subjects, particularly of historical importance.
- 0730 Radio Australia: Innovations. See W 1430.
- 0734 Christian Science Monitor: Letterbox. See M 0334.

- 1106 Christian Science Monitor: One Norway Street. See M 0306.
- 1113 Radio Australia: Music of Radio Australia. See S 0513.
- 1115 BBC: The Learning World. See F 0145.
- 1130 BBC: Meridian. See W 0630.
- 1130 Radio Australia: Education Focus. See S 1530.
- 1134 Christian Science Monitor: Letterbox. See M 0334.
- 1206 Christian Science Monitor: News Focus. See M 0206.
- 1208 Radio Canada Int'l: Current Affairs. See S 1208.
- 1215 BBC: Feature. See F 0730.
- 1230 Radio Australia: This Australia. See M 0530.
- 1234 Christian Science Monitor: Kaleidoscope. See M 0234.
- 1245 BBC: Sports Roundup. See S 1330.
- 1306 Christian Science Monitor: One Norway Street. See M 0306.
- 1309 BBC: Twenty-Four Hours. See S 0509.
- 1313 Radio Australia: Sports Report. See S 1313.
- 1330 BBC: John Peel. See T 0330.
- 1330 Radio Australia: Music of Radio Australia. See S 0513.
- 1330 Radio Canada Int'l: North Country. See M 1330.
- 1334 Christian Science Monitor: Letterbox. See M 0334.
- 1334 Radio Canada Int'l: Coast to Coast. See S 0038.
- 1405 BBC: Outlook. See M 1405.
- 1406 Christian Science Monitor: News Focus. See M 0206.
- 1425 Radio Australia: Stock Exchange Report. See M 1425.
- 1430 BBC: Off the Shelf. See M 0430.
- 1430 Radio Australia: Land and Culture. See M 1130.
- 1434 Christian Science Monitor: Kaleidoscope. See M 0234.
- 1445 BBC: Talks. See M 0445.
- 1506 Christian Science Monitor: One Norway Street. See M 0306.
- 1513 Radio Australia: Music of Radio Australia. See S 0513.
- 1515 BBC: Music Review. See H 2315.
- 1530 Radio Australia: Science File. See W 1130.
- 1534 Christian Science Monitor: Letterbox. See M 0334.
- 1553 Radio Canada Int'l: Reports/Commentaries. See S 1553.
- 1606 Christian Science Monitor: News Focus. See M 0206.
- 1615 BBC: Science in Action. See M 0230.

1800 Radio Bras, Brasilia: News	1900 Deutsche Welle: World News	2000 Kol Israel: News
1800 Radio Canada Int'l: News	1900 HCJB: Latin American News [M-F]	2000 KVOH: UPI News [S]
1800 Radio Kiev: News	1900 Radio Australia: World and Australian News	2000 Radio Australia: International Report
1800 Radio Korea: News	1900 Radio Canada Int'l: News [M-F]	2000 Radio Havana Cuba: Int'l News [M-A]
1800 Radio Moscow (World Service): News	1900 Radio Havana Cuba: Int'l News [M-A]	2000 Radio Jordan: News
1800 Radio RSA: News	1900 Radio Japan: News	2000 Radio Moscow (World Service): News
1800 Radio Tanzania: News	1900 Radio Moscow (World Service): News	2000 Radio New Zealand Int'l: News
1800 Voice of America: News	1900 Radio New Zealand Int'l: News	2000 Radio Polonia: News
1800 WWCR: USA Radio News [A]	1900 Radio Portugal: News [M-F]	2000 Radio RSA: News
1803 Radio Jamahiriyah, Libya: News Headlines	1900 Radio RSA: News	2000 Voice of America: News
1815 Radio Berlin Int'l: News	1900 Radio Tanzania: News	2000 Voice of Indonesia: News
1830 Belize Radio One: Network News	1900 Spanish National Radio: News	2005 Radio Pyongyang: News
1830 Christian Science Monitor: News [M-F]	1900 Voice of America: News	2015 Radio Berlin Int'l: News
1830 Radio Finland: Northern Report [M-F]	1930 Christian Science Monitor: News [M-F]	2025 Radio Havana Cuba: Cuban Nat'l News [M-A]
1830 Radio Kuwait: News	1930 Radio Berlin Int'l: News	2025 Radiotelevisione Italiana: News
1830 Radio Moscow (World Service): News in Brief	1930 Radio Bucharest: News	2030 Christian Science Monitor: News [M-F]
1830 Radio Netherlands: News [M-A]	1930 Radio Budapest: News	2030 Radio Havana Cuba: News [M-A]
1830 Radio Polonia: News	1930 Radio Canada Int'l: News [M-F]	2030 Radio Korea: News
1830 Radio Yugoslavia: News	1930 Radio Havana Cuba: Nat'l News [M-T]; Newsbreak [W-A]	2030 Radio Moscow (World Service): News in Brief
1830 Swiss Radio Int'l: News	1930 Radio Moscow (World Service): News in Brief	2030 Radio Netherlands: News [M-A]
1830 Voice of America: News (Special English)	1935 Radiotelevisione Italiana: News	2045 Radio Berlin Int'l: News
1847 Radio Jamahiriyah, Libya: News	1950 HCJB: News [M-F]	2052 Radio RSA: News in Brief
1852 Radio RSA: News in Brief	1955 KUSW: News [M-A]	2055 KUSW: News [M-A]
1855 KUSW: News [M-F]	2000 BBC: World News	2055 Voice of Indonesia: News in Brief
1900 BBC: News Summary	2000 Christian Science Monitor: News	2100 BBC: News Summary
1900 Christian Science Monitor: News		2100 Belize Radio One: News [M-F]

program

Guide

- 1630 Radio Australia: Music of Radio Australia. See S 0513.
- 1634 Christian Science Monitor: Kaleidoscope. See M 0234.
- 1645 BBC: The World Today. See M 1645.
- 1645 Radio Australia: Sports Report. See S 1313.
- 2305 BBC: Commentary. See M 2305.
- 2306 Christian Science Monitor: One Norway Street. See M 0306.
- 2308 Radio Canada Int'l: Current Affairs. See S 1208.
- 2310 BBC: Financial News. See M 2310.
- 2313 Radio Australia: Music/Information. See S 0230.
- 2315 BBC: Worldbrief. A roundup of the week's news headlines and human-interest happenings.
- 2330 BBC: Multitrack 3. Sarah Ward surveys the British contemporary music scene.
- 2330 Radio Australia: At Your Request. See S 0130.
- 2334 Christian Science Monitor: Letterbox. See M 0334.

Saturday

March 3rd, 10th, 17th, 24th, 31st

- 0005 Christian Science Monitor: Herald of Christian Science. See S 0005.
- 0030 BBC: From the Weeklies. A review of the weekly British press.
- 0030 Radio Australia: Word of Mouth. See M 1545.
- 0030 Radio Canada Int'l: As It Happens. See T 0030.
- 0045 BBC: Recording of the Week. See M 0545.
- 0101 BBC: Outlook. See M 1405.
- 0105 Christian Science Monitor: Herald of Christian Science. See S 0005.
- 0125 BBC: Financial News. See M 2310.
- 0130 BBC: Feature. Programming on various subjects.
- 0130 Radio Australia: Interaction. See T 1430.
- 0145 BBC: Book Choice. See S 0745.
- 0150 BBC: New Ideas. See T 0445.
- 0200 Radio Canada Int'l: As It Happens. See T 0030.
- 0205 Christian Science Monitor: Herald of Christian Science. See S 0005.
- 0209 BBC: British Press Review. See S 0209.
- 0215 BBC: Network UK. See T 0215.
- 0230 BBC: People and Politics. Background to the British political scene.
- 0230 Radio Australia: This Australia. See M 0530.

- 0300 Radio Canada Int'l: Innovation Canada. See S 0008.
- 0305 Christian Science Monitor: Herald of Christian Science. See S 0005.
- 0313 Radio Australia: Music/Information. See S 0230.
- 0315 BBC: The World Today. See M 1645.
- 0325 Radio Canada Int'l: Shortwave Listeners' Digest. See S 0108.
- 0330 BBC: The Vintage Chart Show. Paul Burnett presents top ten hits from the music charts of yesteryear.
- 0350 Radio Canada Int'l: Music Spot. See S 0130.
- 0405 Christian Science Monitor: Herald of Christian Science. See S 0005.
- 0430 BBC: Here's Humph! All that jazz with Humphrey Lyttelton.
- 0430 Radio Australia: Business Horizons. See T 1130.
- 0445 BBC: Personal View. See A 0030.
- 0505 Christian Science Monitor: Herald of Christian Science. See S 0005.
- 0509 BBC: Twenty-Four Hours. See S 0509.
- 0513 Radio Australia: Music of Radio Australia. See S 0513.
- 0530 BBC: Financial News. See M 2310.
- 0530 Radio Australia: Arts Roundabout. Arts in Australia, past and present.
- 0540 BBC: Words of Faith. See S 0540.
- 0545 BBC: The World Today. See M 1645.
- 0605 Christian Science Monitor: Herald of Christian Science. See S 0005.
- 0630 BBC: Meridian. See W 0630.
- 0630 Radio Australia: Just Out. See M 0030.
- 0705 Christian Science Monitor: Herald of Christian Science. See S 0005.
- 0709 BBC: Twenty-Four Hours. See S 0509.
- 0713 Radio Australia: Music of Radio Australia. See S 0513.
- 0730 BBC: From the Weeklies. See F 2315.
- 0730 Radio Australia: One World. See S 1130.
- 0745 BBC: Network UK. See T 0215.
- 1105 Christian Science Monitor: Herald of Christian Science. See S 0005.
- 1113 Radio Australia: Music of Radio Australia. See S 0513.
- 1115 BBC: Feature. See A 0130.
- 1130 BBC: Meridian. See W 0630.
- 1130 Radio Australia: Matters of Faith. See M 0430.
- 1205 Christian Science Monitor: Herald of Christian Science. See S 0005.
- 1208 Radio Canada Int'l: Current Affairs. See S 1208.
- 1215 BBC: Multitrack 3. See F 2330.
- 1227 Radio Australia: Tattslotto Results. See S 1227.

SUGGESTIONS? SOMETHING MISSING?

Let us know your corrections, additions, and suggestions of what you'd like to see to Program Manager Kannon Shanmugam at 4412 Turnberry Circle, Lawrence, Kansas 66047.

- 1230 Radio Australia: Ring the Bells. See M 0330.
- 1245 BBC: Sports Roundup. See S 1330.
- 1305 Christian Science Monitor: Herald of Christian Science. See S 0005.
- 1309 BBC: Twenty-Four Hours. See S 0509.
- 1310 Radio Australia: Sports Report. See S 1313.
- 1330 BBC: Network UK. See T 0215.
- 1330 Radio Australia: Music of Radio Australia. See S 0513.
- 1345 BBC: Short Story. See T 0130.
- 1401 BBC: The Ken Bruce Show. See S 0230.
- 1405 Christian Science Monitor: Herald of Christian Science. See S 0005.
- 1430 BBC: Sportsworld. Saturday sports, including a preview of English and Scottish soccer matches.
- 1430 Radio Australia: Women of Asia. See S 0530.
- 1505 Christian Science Monitor: Herald of Christian Science. See S 0005.
- 1513 Radio Australia: Music of Radio Australia. See S 0513.
- 1515 BBC: Sportsworld. Saturday sports, including direct reports from more than a dozen key soccer contests.
- 1530 Radio Australia: One World. See S 1130.
- 1553 Radio Canada Int'l: Reports/Commentaries. See S 1553.
- 1605 Christian Science Monitor: Herald of Christian Science. See S 0005.
- 1615 BBC: Sportsworld. Commentary on an English or Scottish soccer match.
- 1630 Radio Australia: Music of Radio Australia. See S 0513.
- 1645 Radio Australia: Sports Report. See S 1313.
- 2305 BBC: Words of Faith. See S 0540.
- 2305 Christian Science Monitor: Herald of Christian Science. See S 0005.
- 2308 Radio Canada Int'l: Innovation Canada. See S 0008.
- 2310 BBC: Book Choice. See S 0745.
- 2313 Radio Australia: Back Page. See S 0313.
- 2315 BBC: A Jolly Good Show. See T 1515.
- 2330 Radio Australia: Music/Information. See S 0230.

news guide cont'd from p.63

- 2100 BRT, Brussels: News
- 2100 Christian Science Monitor: News
- 2100 Deutsche Welle: World News
- 2100 KVOH: UPI Radio News
- 2100 Radio Australia: World and Australian News
- 2100 Radio Bucharest: News
- 2100 Radio Finland: Northern Report [M-F]
- 2100 Radio Japan: News
- 2100 Radio Moscow (World Service): News
- 2100 Radio New Zealand Int'l: News
- 2100 Radio Peace and Progress: News
- 2100 Radio Yugoslavia: News
- 2100 Spanish National Radio: News
- 2100 Swiss Radio Int'l: News
- 2100 Voice of America: News
- 2130 Christian Science Monitor: News [M-F]
- 2130 KVOH: UPI Headline News
- 2130 Radio Budapest: News
- 2130 Radio Canada Int'l: News
- 2130 Radio Moscow (World Service): News in Brief
- 2130 Swiss Radio Int'l: News
- 2155 KUSW: News [M-F]

- 2200 BBC: Newshour
- 2200 Christian Science Monitor: News
- 2200 KVOH: UPI Radio News
- 2200 Radio Australia: International Report
- 2200 Radio Berlin Int'l: News
- 2200 Radio Canada Int'l (Asia): News
- 2200 Radio Canada Int'l (Western Europe): News [A-S]; The World at Six [M-F]
- 2200 Radio Havana Cuba: Int'l News [M-A]
- 2200 Radio Moscow (World Service): News
- 2200 Radiotelevisione Italiana: News
- 2200 RAE, Buenos Aires: News
- 2200 Voice of America: News
- 2200 Voice of Free China: News and Commentary
- 2230 Christian Science Monitor: News [M-F]
- 2230 Kol Israel: News
- 2230 KVOH: UPI Headline News
- 2230 Radio Havana Cuba: Cuban Nat'l News [M-A]
- 2230 Radio Moscow (World Service): News in Brief
- 2230 Radio Polonia: News
- 2230 Radio Tirana, Albania: News
- 2230 Voice of America: News (Special English)
- 2245 Radio Berlin Int'l: News
- 2255 KUSW: News [M-A]
- 2300 BBC: World [A-S]; Five-Minute News [M-F]

- 2300 Belize Radio One: News [M-F]
- 2300 Christian Science Monitor: News
- 2300 KVOH: UPI Radio News
- 2300 Radio Australia: World and Australian News
- 2300 Radio Canada Int'l: News
- 2300 Radio for Peace Int'l: News [F]
- 2300 Radio Japan: News
- 2300 Radio Moscow: News
- 2300 Voice of America: News
- 2300 Voice of Turkey: News
- 2305 Radio Polonia: News
- 2305 Radio Pyongyang: News
- 2330 BRT, Brussels: News
- 2330 Christian Science Monitor: News [M-F]
- 2330 KVOH: UPI Headline News
- 2330 Radio for Peace Int'l: News [M]
- 2330 Radio Jamahiriya, Libya: News
- 2330 Radio Kiev: News
- 2330 Radio Korea: News
- 2330 Radio Moscow (World Service): News in Brief
- 2330 Radio Tirana, Albania: News
- 2335 Voice of Greece: News [S]
- 2355 KUSW: News [M-A]
- 2355 WRNO: ABC News [F]

MT Monitoring Team

Greg Jordan,
Frequency Manager

7009 Brandemere Lane, #1
 Winston-Salem NC 27106-2846

Richard A. Keen

Colorado

Colin Miller

Ontario, Canada

Larry Miller

Pennsylvania

frequency

section

0000 UTC [7:00 PM EST/4:00 PM PST]

0000-0025	Radio Finland, Helsinki	9645	11755		
0000-0030	M Radio Norway International, Oslo	15165			
0000-0030	BBC World Service, London, England	5965	5975	6005	6175
		6195	7145	7325	9580
		9590	9915	11750	11945
		11955	15260	15360	17875
		17830			
0000-0030	Kol Israel, Jerusalem	9930	9435	11605	
0000-0030	Radio Moscow N. American Service	6000	6045	7115	7150
		9685	9720	12050	15425
		17605	17700	17720	21470
0000-0050	Radio Pyongyang, North Korea	15115	15160		
0000-0055	Radio Beijing, China	9665	9770	11715	
0000-0100	Adventist World Radio, Costa Rica	9725	11870		
0000-0100	Adventist World Radio-Asia, Guam	15125	15225		
0000-0100	All India Radio, New Delhi	6055	7215	9535	9910
		11715	11745	15110	
0000-0100	CBC Northern Quebec Service, Can	9625	(ML)		
0000-0100	CBN, St. John's, Newfoundland, Can	6160			
0000-0100	CBU, Vancouver, British Columbia	6160			
0000-0100	CFCF, Montreal, Quebec, Canada	6005			
0000-0100	CFCN, Calgary, Alberta, Canada	6030			
0000-0100	CHNS, Halifax, Nova Scotia, Canada	6130			
0000-0100	Christian Science World Svc, Boston	7400	9850	13760	
0000-0100	CKWX, Vancouver, British Columbia	6080			
0000-0100	CFRB, Toronto, Ontario, Canada	6070			
0000-0100	FEBC Radio Int'l, Philippines	15480			
0000-0100	KUSW, Salt Lake City, Utah	15580			
0000-0100	T-A KVOH, Rancho Simi, California	17775			
0000-0100	Radio Australia, Melbourne	15160	15240	15320	17750

		17795	21740		
0000-0100	Radio Beijing, Beijing, China	15130	17715	17855	
0000-0100	Radio Canada International, Montreal	5960	9755		
0000-0100	Radio Havana Cuba	11820			
0000-0100	Radio Luxembourg, Junglinster	6090			
0000-0100	Radio Moscow World Service, USSR	7135	7370	9510	9790
		9815	12005	11800	15170
		15295	15420	17570	17610
		17655	17775	21690	21790
		17890			
0000-0100	Radio Sofia, Bulgaria	15330	11680		
0000-0100	Radio Tonga, Kingdom of Tonga	5030v			
0000-0100	Spanish National Radio, Madrid	9630	11880		
0000-0100	Voice of America-Americas Service	5995	9775	9815	11580
		11740	15205		
0000-0100	Voice of America-Caribbean Service	6130	9455	11695	
0000-0100	Voice of America-East Asia Service	7120	9770	11760	15185
		15290	17735	17820	
0000-0100	WHRI, Noblesville, Indiana	7315	9495		
0000-0100	WINB, Red Lion, Pennsylvania	15145			
0000-0100	WRNO Worldwide, Louisiana	7355			
0000-0100	WWCR, Nashville, Tennessee	15690			
0000-0100	WYFR, Okeechobee, Florida	5985	9505	15440	
0004-0015	S Radio Nacional, Venezuela	5020	9540	11695	11850
0003-0045	BBC English by Radio, London, Eng	6195	7145	11945	15280
		17875			
		9925			
0003-0055	BRT, Brussels, Belgium	5965	5975	6005	6175
0003-0100	BBC World Service, London, England	7325	9580	9590	9915
		11750	11955	15260	15360
0003-0100	HCJB, Quito, Ecuador (alt. prog.)	15230			
0003-0100	T-S Radio Budapest, Hungary	6110	9520	9835	
		11910	15160		
0003-0100	Radio Kiev, Ukraine	7400	9765	15180	
		17665	17690		
0003-0100	Radio Moscow N. American Service	6000	6045	7115	7150
		7310	9685	9720	12050
		15425	17605	17700	17720
		21470			
0003-0100	Radio Netherlands Int'l, Hilversum	6020	6165	15315	
0000-0100	Radio for Peace Int'l, Costa Rica	7375	(+13660	21566	T-A)
0003-0100	HCJB, Quito, Ecuador	9745	11775	15155	
0004-0100	Radio Berlin Int'l, East Germany	6080	11890	13690	
0004-0100	Radio Korea, Seoul, South Korea	15575			
0005-0100	Vatican Radio, Vatican City	6150	9605	11780	

LEGEND

- * The first four digits of an entry are the broadcast start time in UTC. The second four digits represent the end time.
- * In the space between the end time and the station name is the broadcast schedule.

S=Sunday M=Monday T=Tuesday W=Wednesday
 H=Thursday F=Friday A=Saturday

If there is no entry, the broadcasts are heard daily. If, for example, there is an entry of "M," the broadcast would be heard only on Mondays. An entry of "M,W,F" would mean Mondays, Wednesdays and Fridays only. "M-F" would mean Mondays through Fridays. "TEN" indicates a tentative schedule and "TES" a test transmission.

The last entry on a line is the frequency. Several codes may be found after a frequency as follows:

- * SSB indicates Single Sideband transmission.
- * v after a frequency indicates that it varies
- * Notations of USB and LSB (upper and lower sideband transmissions) usually refer only to the individual frequency after which they appear.
- * [ML] after a frequency indicates a multi-lingual transmission containing English-language programs. All other frequencies may be assumed to be English language programs directed to various parts of the world.
- * Listings followed by an asterisk (*) are for English lessons and do not contain regularly scheduled programming.

We suggest that you begin with the lower frequencies that a station is broadcasting on and work your way up the dial. Remember that there is no guarantee that a station will be audible on any given day. Reception conditions can change rapidly, though, and if it is not audible one night, it may well be on another.

HOW TO USE THE PROPAGATION CHARTS

Propagation charts can be an invaluable aid to the DXer in determining which frequencies are likely to be open at a given time. To use the propagation charts, choose those for your location (they are divided into east coast, midwest and west coast of North America). Then look for the one most closely describing the geographic location of the station you want to hear.

Once you've located the correct charts, look along the horizontal axis of the graph for the time that you are listening. The top line of the graph shows the Maximum Useable Frequency [MUF] and the lower line the Lowest Useable Frequency [LUF] as indicated on the vertical axis of the graph.

While there are exceptions to every rule (especially those regarding shortwave listening), you should find the charts helpful in determining the best times to listen for particular regions of the world. Good luck!

frequency

section

0100 UTC [8:00 PM EST/5:00 PM PST]

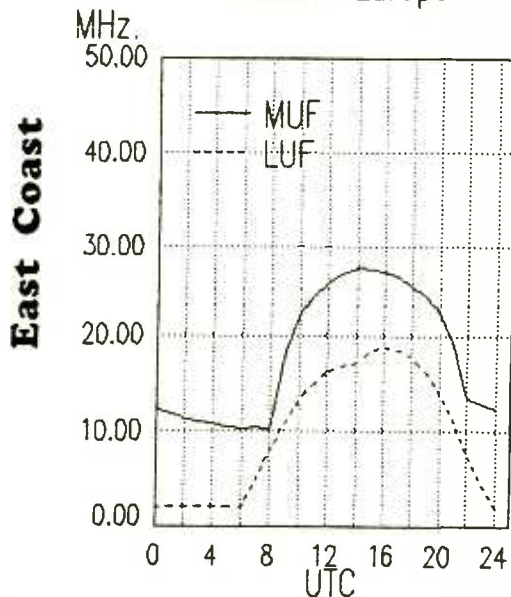
0100-0105	Vatican Radio, Vatican City	6150	9605	11780
0100-0115	All India Radio, New Delhi	6055	7215	9535 9910
		11715	11745	15110
0100-0125	RAI, Rome, Italy	9575	11800	
0100-0125	Kol Israel, Jerusalem	9930	9435	11605
0100-0125	Radio Netherlands Int'l, Hilversum	6020	6165	15315
0100-0130	CBC Northern Quebec Service, Can	9625	(ML)	
0100-0130	HCJB, Quito, Ecuador (alt. prog.)	15230		
0100-0130	Lao National Radio, Vientiane	7113v		
0100-0130	Radio Berlin Int'l, East Germany	6080	11890	13690
0100-0130	Radio Canada International, Montreal	5960	9755	
0100-0130	Radio Moscow N. American Service	6000	6045	7115 7150
		7310	9685	9720 12050
		15425	17605	17700 17720
		21470		
0100-0130	Radio Sweden, Stockholm	7225	9640	
0100-0145	BBC World Service, London, England	5965	5975	6005 6175
		7135	7325	9580 9590
		9915	11750	11955 15260
		15360	21715	
0100-0145	Radio Yugoslavia, Belgrade	6005	5980	11735
0100-0150	Deutsche Welle, Koin, West Germany	6040	6145	9565
		9735	11865	
0100-0157	Radio Prague, Czechoslovakia	5930	7345	9540 11680
		11990	13715	
0100-0200	M-F BBC (For China, Mongolia, Japan)	15280	21715	
0100-0200	CBN, St. John's, Newfoundland, Can	6160		
0100-0200	CBU, Vancouver, British Columbia	6160		
0100-0200	CFCF, Montreal, Quebec, Canada	6005		
0100-0200	CFCN, Calgary, Alberta, Canada	6030		
0100-0200	CHNS, Halifax, Nova Scotia, Canada	6130		
0100-0200	Christian Science World Svc, Boston	7400	9850	13760
0100-0200	CKWX, Vancouver, British Columbia	6080		
0100-0200	CFRB, Toronto, Ontario, Canada	6070		
0100-0200	FEBC Radio Int'l, Philippines	15480		
0100-0200	HCJB, Quito, Ecuador	9745	11775	15155
0100-0200	KUSW, Salt Lake City, Utah	15580		
0100-0200	T-A KVOH, Rancho Simi, California	17775	(ML)	
0100-0200	T-A RAE, Buenos Aires, Argentina	9690	11710	
0100-0200	Radio Australia, Melbourne	17630	21525	15240 15320
		15395	17715	17750 17795
		21740		

0100-0200	S.M Radio Canada International, Montreal	5960	9535	9755 11845
		11940		
0100-0200	Radio Havana Cuba	11820		
0100-0200	Radio Japan, Tokyo	17755	17810	17845
0100-0200	Radio Luxembourg, Junglinster	6090		
0100-0200	Radio Moscow World Service, USSR	7135	9790	9815 11800
		15140	15170	15295 15420
		17570	17610	17655 17675
		17775	17825	17890 21635
		21690	21790	
0100-0200	Radio New Zealand	15485	17705	
0100-0200	Radio for Peace Int'l, Costa Rica	7375	(+13660	21566 T-A)
0100-0200	Radio Tonga, Kingdom of Tonga	5030v		
0100-0200	Spanish National Radio, Madrid	9630	11880	
0100-0200	Voice of America-Americas Service	5995	9775	9815 11580
		11740	15205	
0100-0200	Voice of America-Caribbean Service	6130	9455	
0100-0200	Voice of America-East Asia Service	7115	7205	9740 11705
		15250	21525	
0100-0200	Voice of Indonesia, Jakarta	11755	11788	
0100-0200	WHRI, Noblesville, Indiana	7315	9495	
0100-0200	WINB, Red Lion, Pennsylvania	15145		
0100-0200	WRNO Worldwide, Louisiana	7355		
0100-0200	WWCR, Nashville, Tennessee	15690		
0100-0200	WYFR, Okeechobee, Florida	5985	9505	9680 15440
0130-0140	M-A Voice of Greece, Athens	7430	9395	9420
0130-0200	Radio Austria International, Vienna	9870	9875	13730
0130-0200	Radio Moscow N. American Service	6000	6045	7115 7150
		7310	9685	9700 9720
		12050	15425	17605 17700
		17720	21470	
0130-0200	Radio Veritas-Asia, Philippines	15220	15360	
0145-0200	BBC Alternative Programming, London	5965	9580	11955 15380
0145-0200	BBC World Service, London, England	5975	6005	6175 7135
		7325	9590	9915 11750
		15260	15360	21715
0155-0200	Vatican Radio, Vatican City	7125	9645	11750

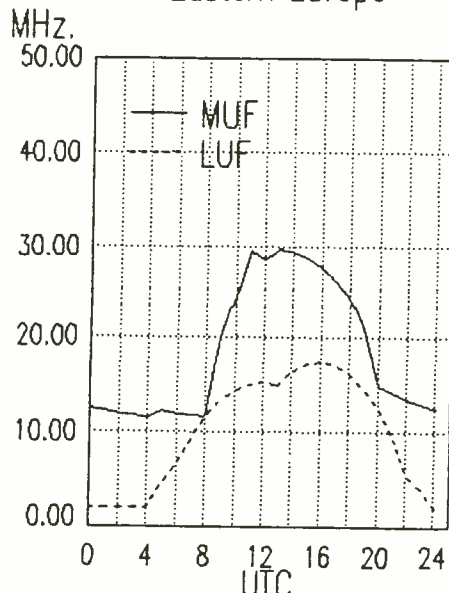
0200 UTC [9:00 PM EST/6:00 PM PST]

0200-0215	Vatican Radio, Vatican City	7125	9645	11750
0200-0220	Radio Veritas-Asia, Philippines	15220	15360	
0200-0225	Kol Israel, Jerusalem	9435	9930	11605

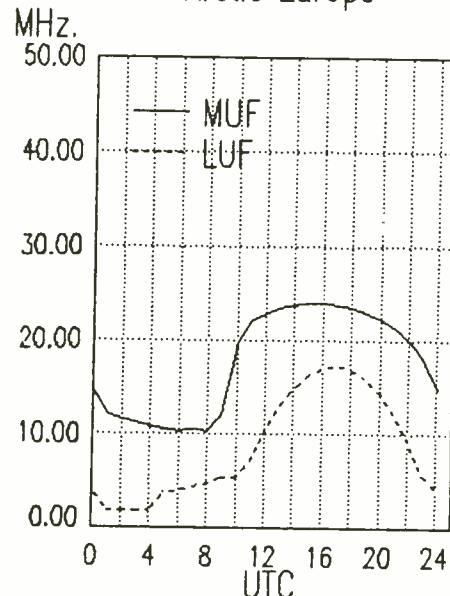
East Coast To
Western Europe



East Coast To
Eastern Europe



East Coast To
Arctic Europe



frequency

section

0200-0230	BBC Alternative Programming, London	9580	11955	15380	
0200-0230	BBC World Service, London, England	5975	6005	6050	6110
		6175	7135	7325	9590
		9915	11750	12095	15260
		15360	15390	21715	
0200-0230	M-F FEBC Radio Int'l, Philippines	15480			
0200-0230	S Radio Budapest, Hungary	6110	9520	9835	
		11910	15160		
0200-0230	Swiss Radio International, Berne	6095	6135	9725	9885
		12035	17730		
0200-0245	Radio Berlin Int'l, East Germany	6080	11890	13690	
0200-0250	Deutsche Welle, Koln, West Germany	6035	7285	9615	9690
		11965	11945		
0200-0250	Radio Bras, Brasilia, Brasil	11745			
0200-0300	Adventist World Radio-Asia, Guam	13720			
0200-0300	CBC Northern Quebec Service, Can	9625	(ML)		
0200-0300	CBN, St. John's, Newfoundland, Can	6160			
0200-0300	CBU, Vancouver, British Columbia	6160			
0200-0300	CFCF, Montreal, Quebec, Canada	6005			
0200-0300	CFCN, Calgary, Alberta, Canada	6030			
0200-0300	CHNS, Halifax, Nova Scotia, Canada	6130			
0200-0300	Christian Science World Svc, Boston	9455	9850	13760	
0200-0300	CKWX, Vancouver, British Columbia	6080			
0200-0300	CFRB, Toronto, Ontario, Canada	6070			
0200-0300	HCJB, Quito, Ecuador	9745	11775	15155	
0200-0300	KUSW, Salt Lake City, Utah	15580			
0200-0300	Radio Australia, Melbourne	17630	15240	17715	17750
		17795	21740	15395	21525
		15320			
0200-0300	Radio Bucharest, Romania	5990	9510	9570	11830
		11940	6155		
0200-0300	Radio Calro, Egypt	9475	9675		
0200-0300	M-F Radio Canada International, Montreal	9535	9755	11845	11940
0200-0300	Radio Havana Cuba	9710	11820		
0200-0300	Radio Luxembourg, Junglinster	6090			
0200-0300	Radio Moscow N. American Service	6000	6045	7115	7150
		7310	9685	9700	9720
		12050	15425	17700	17720
0200-0300	Radio Moscow World Service, USSR	7135	7370	9780	12045
		15140	15170	15295	15420
		17570	17590	17610	17655
		17675	17775	17825	17890
		21635	21690	21790	
0200-0300	Radio RSA, Johannesburg, S. Africa	9580	9615	11935	15120
0200-0300	Radio Tonga, Kingdom of Tonga	5030v			

COMPUTERIZE YOUR SHACK

Control up to eight digital radios simultaneously from your MS-DOS microcomputer! We offer a series of software/hardware packages that interface with most current synthesized rigs.

ICOM: IC-781, 765, 761, 751A, 735, 725, R71A, R7000, 271, 371, 471, 1271, 275, 375, 475, 575, CI-V

KENWOOD: TS-940, 440, 140, R-5000, 680, 711, 811

YAESU: FT-767, 757 GXII, 757 GX, 747, 9600, 736

JRC: NRD 525

COLLINS: 651 S1

Datacom couldn't be simpler. Knowledge of MS-DOS is not necessary — the installation program does it all! Datacom allows complete control of your rig from the keyboard.

A few of its many features:

- Adds scan function to radios that don't allow this from front panel.
- Adds frequency and associated info memory limited only by disk storage.
- Tabular screen display of all the channels stored in memory, along with a full description of each including: mode (LSB, USB, FM, etc.), eight character alphanumeric description, signal bandwidth.
- Full featured logging utility.
- Able to automatically log hits while sweeping.
- Color coded program for ease of use (will run on a monochrome system).
- Menus for amateur, AM-FM broadcast, television broadcast, S/W, aviation, marine, with most popular frequencies stored.

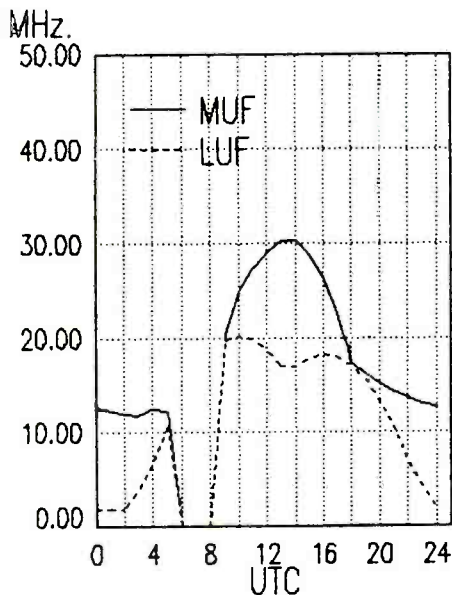
Call or Write today for more information

AVAILABLE FOR IBM PC, XT, AT, 80386 256K RAM
1 SERIAL PORT AND 1 FLOPPY MINIMUM

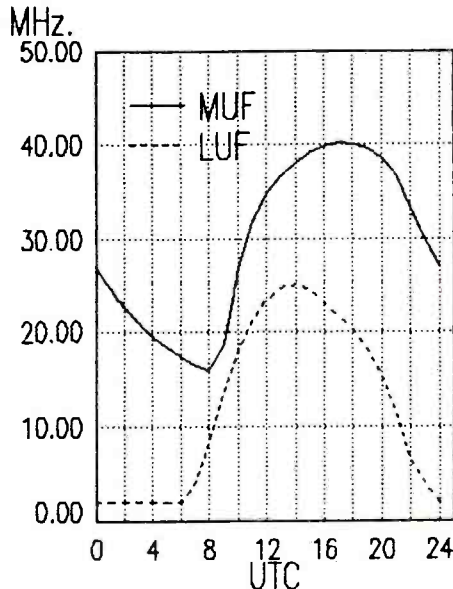
PROGRAM WITH INITIAL LIBRARIES	99.95
RS-232 TO TTL INTERFACE ONLY (NEEDED IF DON'T HAVE MANUFACTURERS INTERFACE)	
EXTERNAL INTERFACE ALLOWS 4 RADIOS (NOW WITH SQUELCH DETECT CIRCUITRY)	129.95
INTERNAL PC INTERFACE W/1 SERIAL & 1 RADIO PORT	129.95
SPECTRUM ANALYZER MODULE	(CALL FOR PRICE)
COMPLETE SYSTEMS INCL. RADIO, INTERFACE, COMPUTER, AVAILABLE	(CALL FOR PRICE)

DATAKOM, INT. 8081 W. 21ST LANE • HIALEAH, FL 33016
AREA CODE (305) 822-6028

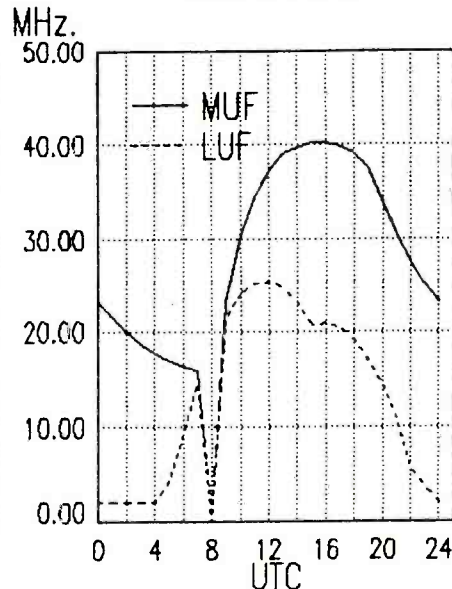
East Coast To
Middle East



East Coast To
West Africa



East Coast To
Central Africa



East Coast

frequency

section

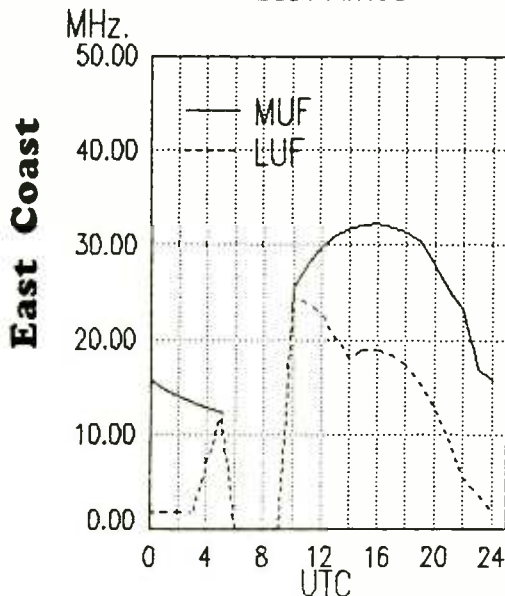
0200-0300	RAE, Buenos Aires, Argentina	9690	11710	
0200-0300	Voice of America-South Asia Service	7115	7205	9740 11705
		15250	21525	
0211-0230	IRR Voice of the Democratic Alliance of Burma (clandestine: Thal/Burmese border)	7137V		
0200-0300	Voice of Free China, Taiwan	5950	7445	9680 11740
		11860	15345	
0200-0300	WHRI, Noblesville, Indiana	7315	9495	
0200-0300	WRNO Worldwide, Louisiana	7355		
0200-0300	WWCR, Nashville, Tennessee	7520		
0200-0300	WINB, Red Lion, Pennsylvania	15145		
0200-0300	WYFR, Okeechobee, Florida	5985	9505	15440
0215-0225	Radio Nepal, Katmandu	5005	7165	(alt. 3230)
0230-0245	W,HRadio Budapest, Hungary	6110	9520	9585 9835
		11910	15160	
0230-0300	BBC World Service, London, England	5975	6005	6050 6175
		7135	7325	9915 11750
		11955	12095	15260 15360
		21715		
0230-0300	T-A Radio Portugal, Lisbon	9600	9680	9705 11840
0230-0300	Radio Sweden, Stockholm	9695	11705	
0230-0300	Radio Tirana, Albania	9760		
0245-0300	Radio Berlin Int'l, East Germany	6080	11785	11890 15125
0245-0300	Voice of Eelam (clandestine: Tamil rebels in Sri Lanka)7000			

0300 UTC [10:00 PM EST/7:00 PM PST]

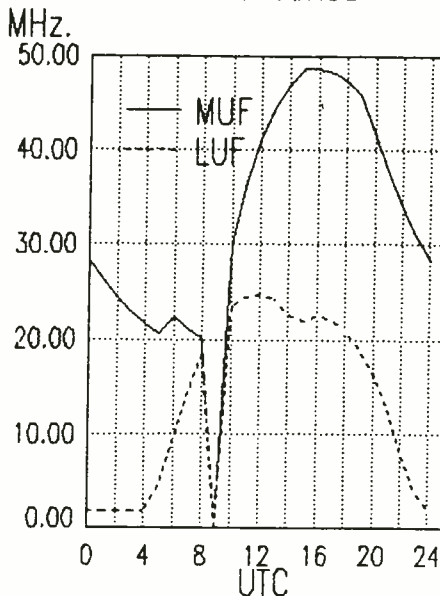
0300-0315	BBC English by Radio, London	11730	11740	15420
0300-0315	BBC World Service, London, England	3255	5975	6005 6050
		6175	6190	6195 7135
		7325	9410	9600 9670
		9915	11750	11760 11845
		11955	12095	15220 15260
		15310	15420	17705 21715
0300-0330	Radio Berlin Int'l, East Germany	6080	11785	11890 15125
0300-0330	Radio Cairo, Egypt	9475	9675	
0300-0330	Radio Canada International, Montreal	9645		
0300-0330	Radio Japan, Tokyo	9645	17825	15325
0300-0330	Radio Kiev, Ukraine	7400	9765	17690 15180
		17665		
0315-0330	Radio for Peace Int'l, Costa Rica	7375	USB	
0300-0350	Deutsche Welle, Koln, West Germany	6085	6120	9545 9605
0300-0355	Radio Beijing, China	9690	9770	11715 17855

0300-0357	Radio Prague, Czechoslovakia	5930	7345	9540 11680
		11990	13715	
0300-0400	CBC, Northern Quebec Service, Can	9625	(ML)	
0300-0400	CBN, St. John's, Newfoundland, Can	6160		
0300-0400	CBU, Vancouver, British Columbia	6160		
0300-0400	CFCF, Montreal, Quebec, Canada	6005		
0300-0400	CFCN, Calgary, Alberta, Canada	6030		
0300-0400	CHNS, Halifax, Nova Scotia, Canada	6130		
0300-0400	Christian Science World Svc, Boston	9455	9850	13760
0300-0400	CKWX, Vancouver, British Columbia	6080		
0300-0400	CFRB, Toronto, Ontario, Canada	6070		
0300-0400	Faro del Caribe, San Jose, Costa Rica	5055		
0300-0400	HCJB, Quito, Ecuador	11775	15155	
0300-0400	KUSW, Salt Lake City, Utah	9815		
0300-0400	Radio 5, Johannesburg, South Africa	4880		
0300-0400	Radio Australia, Melbourne	17630	15395	15240 15320
		17715	17750	17795 21740
		21525		
0300-0400	Radio Cultural, Guatemala	3300		
0300-0400	Radio Havana Cuba	9710	11820	
0300-0400	Radio Japan, Tokyo	5960	11870	17810
0300-0400	Radio Moscow N. American Service	6000	6045	7115 7150
		7310	9685	9700 12010
		12050	15425	17700
0300-0400	Radio Moscow World Service, USSR	7135	9815	11710 11765
		11800	11995	13715 15140
		15170	15295	15420 17570
		17590	17610	17655 17675
		17775	17825	17855 17890
		21635	21690	21790
0300-0400	Radio New Zealand, Wellington	17680		
0300-0400	Radio Oranje, South Africa	3215		
0300-0400	RAE, Buenos Aires, Argentina	11710	9690	
0300-0400	Trans World Radio, Bonaire	9535	11930	
0300-0400	Voice of America-Africa Service	6035	7280	9525 9575
		11835		
0300-0400	Voice of Free China, Taiwan	5950	7445	9680 9765
		11745	15345	
0300-0400	WHRI, Noblesville, Indiana	7315	9495	
0300-0400	WRNO Worldwide, Louisiana	7355		
0300-0400	WWCR, Nashville, Tennessee	7520		
0300-0400	WYFR, Okeechobee, Florida	6065	9505	15566
0310-0325	Vatican Radio, Vatican City	11725		
0310-0327	Red Cross Basling, Switzerland	6135	9725	9885 12035
	Tuesday and Friday after last Sunday of the month.			

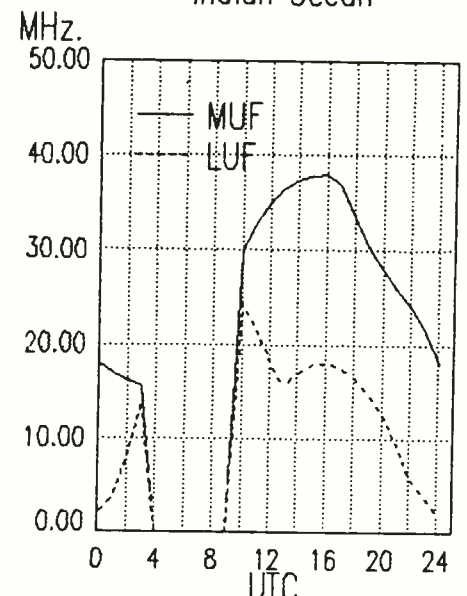
East Coast To East Africa



East Coast To South Africa



East Coast To Indian Ocean



frequency

section

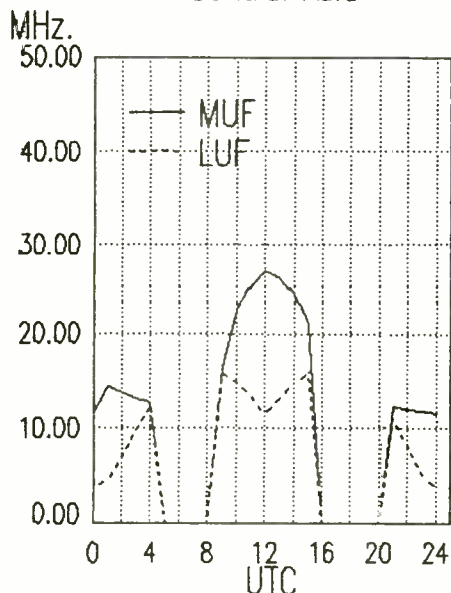
0315-0330	BBC World Service, London, England	3255	5975	6005	6050				
		6175	6190	6195	7135				
		7325	9410	9600	9670				
		9915	11750	11760	11845				
		11955	12095	15220	15260				
		15310	17705						
0315-0345	Radio France International, Paris	3965	6045	7135	7175				
		7280	9550	9745	9790				
		9800	11705	11995					
0330-0400	BBC Alternative Programming, London	3255	6005	6190	9600				
		11730	11845	15420					
0330-0400	BBC World Service, London, England	5975	6175	6195	9410				
		9670	9915	11760	11955				
		12095	15310						
0330-0400	Radio Berlin Int'l, East Germany	9730	13610	15240					
0330-0400	A,S Radio Canada International, Montreal	9645							
0330-0400	Radio Netherlands Int'l, Hilversum	9590	11720						
0330-0400	Radio Tirana, Albania	9760							
0330-0400	United Arab Emirate Radio, Dubai	11940	15400	15435	17890				
0330-0340	All India Radio, New Delhi	3905	4860	9610	11830				
		11870	11890	15305					
0340-0350	M-A Voice of Greece, Athens	7430	9395	9420					
0350-0400	RAI, Rome, Italy	11905	15330	17795					
0349-0357v	Radio Yerevan, Armenia	7400	9765	15180					
		17690	17665						

0400-0430	Swiss Radio International, Berne	6135	9725	9885	12035				
0400-0430	Trans World Radio, Bonaire	9535	11930						
0400-0430	Voice of America-Africa Service	6035	7280	9525	9575				
		11835							
0400-0445	Radio Berlin Int'l, East Germany	11785	15125						
0400-0450	Deutsche Welle, Köln, West Germany	7225	7150	9765	9565				
		11765	13790						
0400-0450	Radio Pyongyang, North Korea	13650	15180	17765					
0400-0455	Radio Beijing, China	11695							
0400-0500	CBC, Northern Quebec Service	9625	(ML)						
0400-0500	Radio for Peace Int., Costa Rica	7375	USB						
0400-0500	CBN, St. John's, Newfoundland, Can	6160							
0400-0500	CBU, Vancouver, British Columbia	6160							
0400-0500	CFCF, Montreal, Quebec, Canada	6005							
0400-0500	CFCN, Calgary, Alberta, Canada	6030							
0400-0500	CHNS, Halifax, Nova Scotia, Canada	6130							
0400-0500	Christian Science World Svc, Boston	9455	9840	13760	17780				
0400-0500	CKWX, Vancouver, British Columbia	6080							
0400-0500	CFRB, Toronto, Ontario, Canada	6070							
0400-0500	HCJB, Quito, Ecuador	11775	15155						
0400-0500	KUSW, Salt Lake City, Utah	9815							
0400-0500	Radio 5, Johannesburg, South Africa	4880							
0400-0500	Radio Australia, Melbourne	21525	21740	15395	15240				
		15320	17715	17795	17750				
0400-0500	Radio Beijing, China	11695	11840	15195					
0400-0500	Radio Havana Cuba	5965	9710	11760	11820				
0400-0500	Radio Moscow World Service, USSR	6000	7135	7150	7310				
		7150	7390	9530	9765				
		9795	11765	11955	11995				
		12055	15140	15280	15295				
		15420	15455	15480	17570				
		17590	17600	17610	17625				
		17655	17676	17775	17825				
		17855	21635	21680	21690				
		21790							
0400-0500	Radio New Zealand, Wellington	17680							
0400-0500	Radio Oranje, South Africa	3215							
0400-0500	Radio Sofia, Bulgaria	15160	15310	11720	11765				
		11735							
0400-0500	M-A WMLK Bethel, Pennsylvania	9465							
0400-0500	Radio Tonga, Kingdom of Tonga	5030v							
0400-0500	Voice of America-Middle East Service	3980	5995	6040	6140				
		7170	7200	11785	15205				
0400-0500	TP Voice of Hope via KFBS, Guam	15225							
0400-0500	Voice of Turkey, Ankara, Turkey	9445	17760						

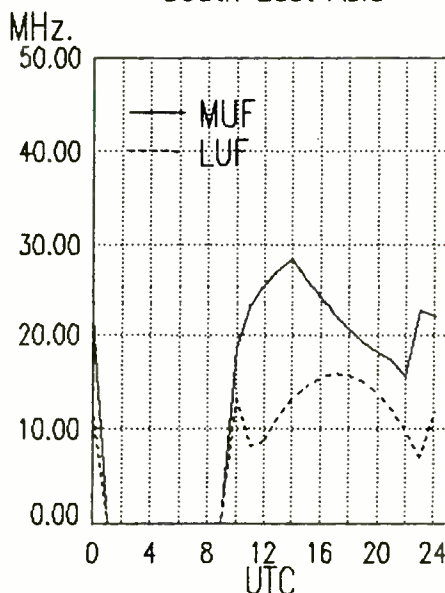
0400 UTC [11:00 PM EST/8:00 PM PST]

0400-0410	M-F Radio Zambia, Lusaka	4910			
0400-0410	RAI, Rome, Italy	11905	15330	17795	
0400-0415	Radio Berlin Int'l, East Germany	9730	13610	15240	
0400-0425	Radio Cultural, Guatemala	3300			
0400-0425	Radio Netherlands Int'l, Hilversum	9590	11720		
0400-0430	BBC World Service, London, England	3255	3955	5975	6005
		6175	6180	6190	6195
		7105	9410	9600	9610
		9670	9915	11760	11955
		12095	15070	15245	15280
		15310	15420	17885	21715
0400-0430	Radio Bucharest, Romania	5990	9510	9570	11830
		11940	6155		
0400-0430	Radio Canada International, Montreal	11790			
0400-0430	Radio Moscow N. American Service	9825	9895	11790	12050
		15180			

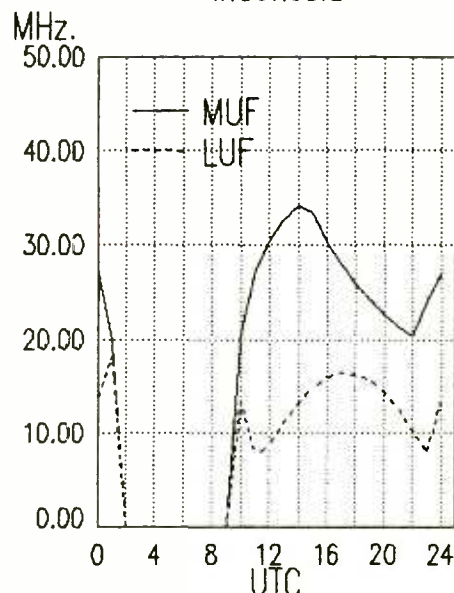
East Coast To
Central Asia



East Coast To
South East Asia



East Coast To
Indonesia



East Coast

frequency

section

0400-0500	WHRI, Noblesville, Indiana	7315	9495
0400-0500	WRNO Worldwide, Louisiana	6185	
0400-0500	WVCR, Nashville, Tennessee	7520	
0400-0500	WYFR, Okeechobee, Florida	6065	9505
0425-0440	RAI, Rome, Italy	5990	7275
0430-0455	Radio Netherlands Int'l, Hilversum	9815	13700
0430-0500	BBC Alternative Programming, London	6005	6190 9600 11940
		15400	15420
0430-0500	BBC World Service, London, England	3955	5975 6180 6195
		9410	9915 12095 15070
		15245	15280 15310 21715
0430-0500	Radio Moscow N. American Service	7230	9505 9825 9895
		11790	12050 15180
0430-0500	Radio for Peace, Costa Rica	7375	13660
0430-0500	Radio Tirana, Albania	9480	11835
0430-0500	Voice of America-Africa Service	6035	7280 9525 9575
0445-0500	Radio Berlin Int'l, East Germany	11785	13690 15125
0455-0500	Voice of Nigeria, Lagos	7255	

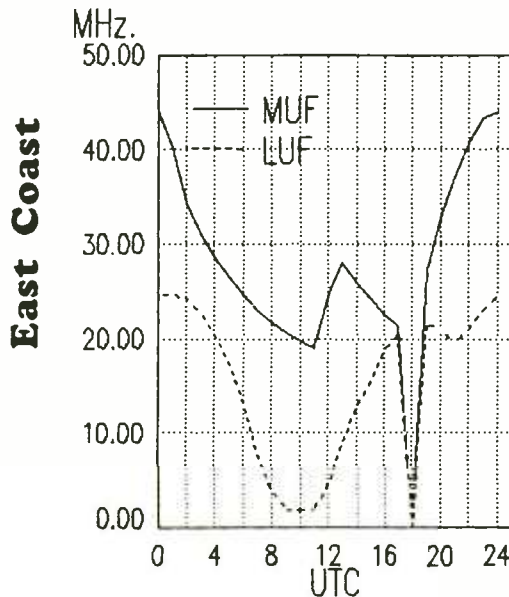
0500-0600	CFCN, Calgary, Alberta, Canada	6030	
0500-0600	CHNS, Halifax, Nova Scotia, Canada	6130	
0500-0600	M-AWMLK Bethel, Pennsylvania	9465	
0500-0600	Christian Science World Svc, Boston	9455	9840 13760 17780
0500-0600	CKWX, Vancouver, British Columbia	6080	
0500-0600	CFRB, Toronto, Ontario, Canada	6070	
0500-0600	HCJB, Quito, Ecuador	6230	9745 11775
0500-0600	KUSW, Salt Lake City, Utah	6175	
0500-0600	Radio Australia, Melbourne	21525	21740 15240 15395
		17715	17750 17795
		15320	
0500-0600	Radio Havana Cuba	5965	11760 11820
0500-0600	Radio Japan, Tokyo	11870	17810 17825 17890
0500-0600	Radio for Peace Int., Costa Rica	7375	USB
0500-0600	Radio Moscow World Service, USSR	7130	7135 7150 7310
		7390	9765 9795 11765
		11785	11800 11995 12055
		13715	15140 15280 15295
		15320	15420 15455 15480
		17570	17590 17600 17610
		17625	17635 17655 17665
		17675	17725 17775 17825
		17855	17890 21450 21635
		21680	21690 21790

0500 UTC [12:00 AM EST/9:00 PM PST]

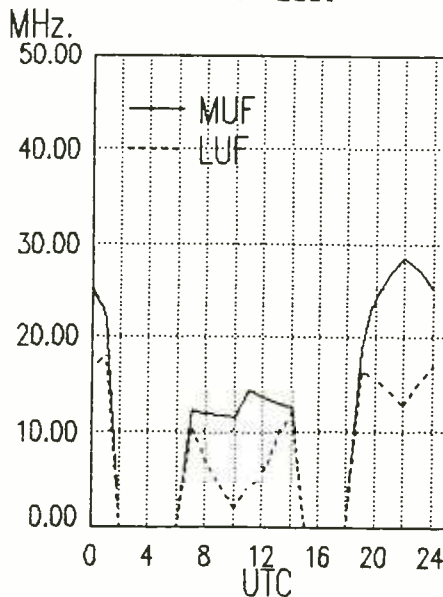
0500-0505	Radio Oranje, South Africa	3215	
0500-0515	Kol Israel, Jerusalem	7460	9435 11588 11655
		17630	
0500-0515	Vatican Radio, Vatican City	15190	17730
0500-0520	Radio 5, Johannesburg, South Africa	4880	
0500-0530	Radio Berlin Int'l, East Germany	11785	13690 15125
0500-0600	Radio Jordan, Amman	13655	
0500-0530	Radio Moscow N. American Service	7230	9505 11790 17770
		15180	11770
0500-0530	Voice of America-Middle East Service	5995	6060 6140 7170
		7200	9670 9700 9740
		11925	15205
0500-0545	BBC World Service, London, England	3955	5975 6005 6180
		6190	6195 7120 7230
		9410	9580 9600 9640
		11760	11940 12095 15070
		15245	15280 15310 15400
		15420	17885 21470 21715
		9915	
0500-0550	Deutsche Welle, Koin, West Germany	5960	6120 9670 9700
0500-0555	Radio Beijing, China	11840	
0500-0600	CBU, Vancouver, British Columbia	6160	
0500-0600	CFCF, Montreal, Quebec, Canada	6005	

0500-0600	Radio New Zealand, Wellington	17680	
0500-0600	Radio Tonga, Kingdom of Tonga	5030v	
0500-0600	Spanish National Radio, Madrid	9630	
0500-0600	Voice of America-Africa Service	3990	6035 7280 9540
		9575	
0500-0600	Voice of America-Middle East Service	3980	5995 6040 6060
		7170	7200 11785 15205
0500-0600	Voice of Hope via KFBS, Guam	15225	
0500-0600	Voice of Nigeria, Lagos	7255	
0500-0600	WHRI, Noblesville, Indiana	7315	9495
0500-0600	WRNO Worldwide, Louisiana	6185	
0500-0600	WVCR, Nashville, Tennessee	7520	
0500-0600	WYFR, Okeechobee, Florida	5985	11580 13695 15566
0510-0600	Radio Oranje, South Africa	7285	
0525-0600	Radio 5, Johannesburg, South Africa	11885	
0530-0545	BBC English by Radio, London	6050	6150 7210 9750
0530-0600	Radio Austria International, Vienna	6015	6155 13730 15410
		21490	
0530-0600	Radio Bucharest, Romania	15380	17720 17745
0530-0600	UAE Radio Dubai	15435	17830 21700

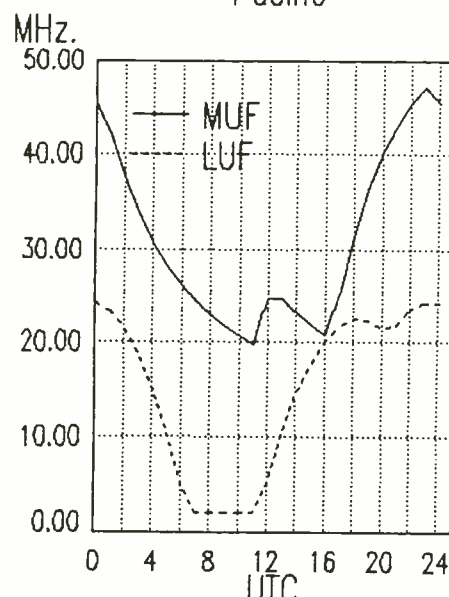
East Coast To
Australia



East Coast To
Far East



East Coast To
Pacific



frequency

section

0530-0600	Radio Moscow N. American Service	7175 7185 7230 7270 9895 11790 17770 11770 15180
0545-0600	BBC World Service, London, England	3955 5975 6180 6190 6195 7120 7230 9410 9580 9600 9640 11760 11940 12095 15070 15245 15280 15310 15400 15420 17885 21470 21715
0555-0600	Voice of Malaysia, Kuala Lumpur	6175 9750 15295

0600-0700	Radio Moscow World Service, USSR	6175 7130 7135 7310 9450 9515 9765 9795 11765 11775 11800 11880 11995 11995 12010 12055 13650 13715 15140 15150 15170 15280 15295 15320 15420 15435 15465 15455 15465 15480 15500 17570 17590 17600 17610 17625 17655 17665 17675 17700 17735 17775 17825 17890 21635 21690 21680
-----------	----------------------------------	--

0600-0700	Radio Tonga, Kingdom of Tonga	5030v
0600-0700	Voice of America-Africa Service	3990 6035 6080 6125 7280 9530 9540 9575 11915

0600-0700	Voice of America-Middle East Service	3980 5965 5995 6060 6095 6140 7170 7200 7325 9715 11785 11805 11925 15195
-----------	--------------------------------------	--

0600-0700	Voice of Hope, Lebanon	6280
0600-0700	TP Voice of Hope via KFBS, Guam	15225
0600-0700	Voice of Malaysia, Kuala Lumpur	6175 9750 15295
0600-0700	S WRNO Worldwide, Louisiana	6185
0615-0630	M-F Radio Canada International, Montreal	6050 6150 7155 9740 9760 11840

0615-0630	Vatican Radio, Vatican City	15190 17730
0615-0700	Radio Berlin Int'l, East Germany	15240 17880
0630-0700	Radio Australia, Melbourne	21740 21525 17715 15395 15240 15160

0630-0700	BBC Alternative Programming, London	9600 11940 15400 17740
0630-0700	BBC World Service, London, England	3955 5975 6180 6190 6195 7120 7150 7230 9410 9580 9640 11760 11955 12095 15070 15245 15280 15310 15360 15420 17640 17710 17885 17790 21470 21715

0630-0700	Radio Polonia, Warsaw, Poland	6135 7270 15120 9675 9860
0630-0700	Radio New Zealand, Wellington	12030 15430 17570 21520
0630-0700	Swiss Radio International, Berne	5875 7260 11945
0645-0700	BBC English by Radio, London	5875 USB
0645-0700	A Radio for Peace Int., Costa Rica	7375 USB
0645-0700	GBC Radio, Accra, Ghana	6130
0645-0700	HCJB, Quito, Ecuador	9610 11835 (all 6050)

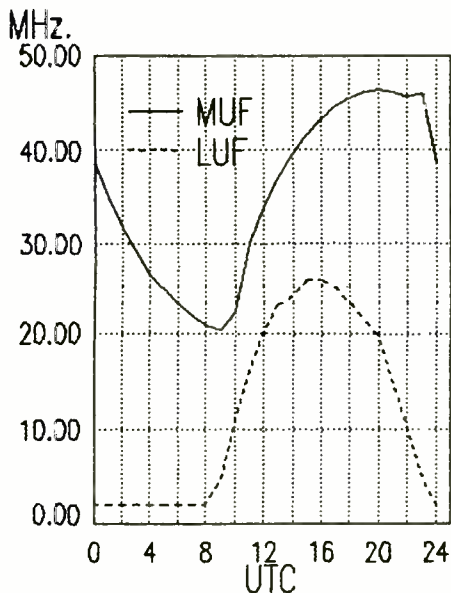
0600 UTC [1:00 AM EST/10:00 PM PST]

0600-0615	Vatican Radio, Vatican City	6185 9645
0600-0630	BBC World Service, London, England	3955 5975 6180 6190 6195 7120 7150 7230 9410 9580 9600 9640 11760 11940 11955 12095 15070 15245 15280 15310 15360 15400 15420 17640 17710 17740 17790 17885 21470 21715

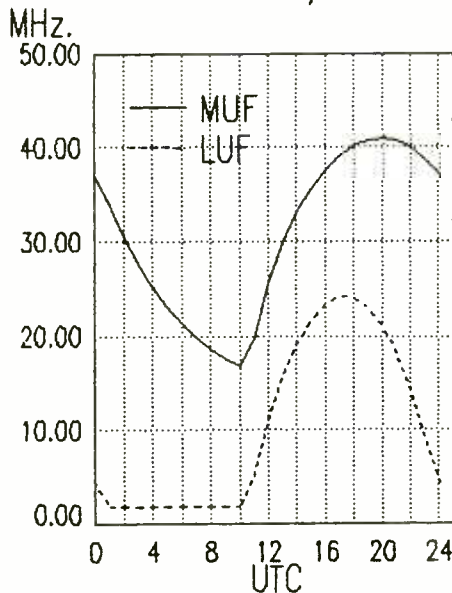
0600-0700	Radio Pyongyang, North Korea	15180 13650
0600-0650	CBU, Vancouver, British Columbia	6160
0600-0700	CFCF, Montreal, Quebec, Canada	6005
0600-0700	M-A WMLK Bethel, Pennsylvania	9465
0600-0700	Radio Mediterranean, Malta	9765
0600-0700	CFCN, Calgary, Alberta, Canada	6030
0600-0700	CHNS, Halifax, Nova Scotia, Canada	6130
0600-0700	Christian Science World Svc, Boston	9455 9850 11980
0600-0700	CKWX, Vancouver, British Columbia	6080
0600-0700	CFRB, Toronto, Ontario, Canada	6070
0600-0630	S Radio Norway International, Oslo	5980 15165
0600-0645v	Radio For Peace, Int., Costa Rica	7375 USB
0600-0645	Radio Berlin Int'l, East Germany	5965 6115 9645 13610
0600-0650	Deutsche Welle, Köln, West Germany	1765 13790 15185 17875
0600-0700	HCJB, Quito, Ecuador	6230 9745 11775
0600-0700	KUSW, Salt Lake City, Utah	6175
0600-0630	Radio Australia, Melbourne	11910 21740 15160 15240 21525 15395 17715

0600-0700	Radio Jordan, Amman	13655
0600-0700	Radio Moscow N. American Service	7175 7185 7230 9505 9825 11790

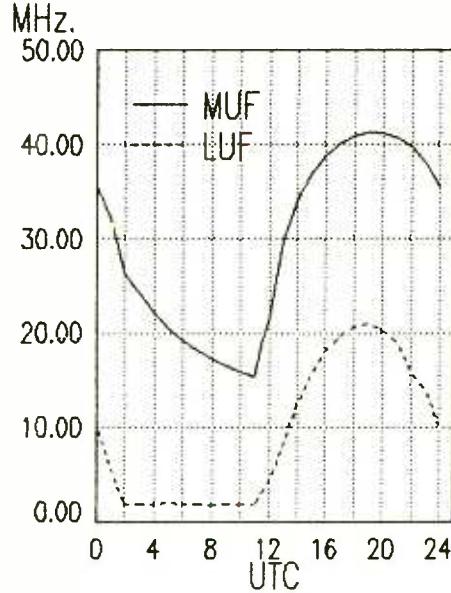
East Coast To South America



East Coast To Central America/Caribbean



East Coast To West Coast



East Coast

frequency

section

0645-0700	Radio Bucharest, Romania	21550	11940	15335	17720
		17805	15250		
0645-0700	M-F Radio Canada International, Montreal	6050	6150	7155	9740
		9760	11840		

0700 UTC [2:00 AM EST/11:00 PM PST]

0700-0715	Radio Bucharest, Romania	21550	11940	15335	17720
		17805	15250		
0700-0730	BBC World Service, London, England	3955	5975	6180	6190
		6195	7120	7150	7230
		7325	9410	9580	9600
		9640	11760	11940	11955
		12095	15070	15245	15280
		15310	15360	15420	17640
		17710	17740	17885	17790
		21470	21660	21715	
0700-0800	A Radio for Peace Int'l, Costa Rica	7375	USB		
0700-0750	Radio Pyongyang, North Korea	15340	11335		
0700-0800	Voice of Hope, Lebanon	6280			
0700-0800	Radio New Zealand	9860			
0700-0800	CBU, Vancouver, British Columbia	6160			
0700-0800	CFCF, Montreal, Quebec, Canada	6005			
0700-0800	CFCN, Calgary, Alberta, Canada	6030			
0700-0800	CHNS, Halifax, Nova Scotia, Canada	6130			
0700-0800	Christian Science World Svc, Boston	9455	9840	11980	
0700-0800	CKWX, Vancouver, British Columbia	6080			
0700-0800	CFRB, Toronto, Ontario, Canada	6070			
0700-0800	GBC Radio, Accra, Ghana	6130			
0700-0800	HCJB, Quito, Ecuador	9610	11835	(alt. 6050)	
0700-0800	KNLS, Anchor Point, Alaska	9785			
0700-0800	KUSW, Salt Lake City, Utah	6135			
0700-0730	Radio Australia, Melbourne	21740	9655	21525	15160
		15395	17715	15240	
0700-0800	Radio Japan, Tokyo	15325	17765	17810	17890
		21690			
0700-0800	Radio Jordan, Amman	13655			
0700-0800	Radio Moscow N. American Service	7175	7185	7230	9505
		9825			
0700-0800	Radio Moscow World Service, USSR	7130	7135	7310	9450
		9515	9795	11705	11745
		11765	11800	11995	12010
		12055	13715	15140	15150
		15170	15260	15280	15295

0700-0800	Radio Tonga, Kingdom of Tonga	5030v			
0700-0800	Voice of Free China, Taiwan	6130	9745	11925	
0700-0800	TP Voice of Hope via KFBS, Guam	15225			
0700-0800	Voice of Malaysia, Kuala Lumpur	6175	9750	15295	
0700-0800	S WRNO Worldwide, Louisiana	6185			
0710-0800	HCJB, Quito, Ecuador (S. Pacific Sv.)	6130	9745	11925	
0715-0730	BBC English by Radio, London	11860	15105		
0715-0730	Vatican Radio, Vatican City	15190	17730		
0715-0800	S FEBA, Mahe, Seychelles	15275	17820		
0730-0745	BBC English by Radio, London	3975	6010	7210	9825
0730-0800	ABC, Alice Springs, Australia	2310	(ML)		
0730-0800	ABC, Katherine, Australia	2485			
0730-0800	ABC, Tennant Creek, Australia	2325	(ML)		
0730-0800	Radio Australia, Melbourne	21525	17715	15395	15160
		9655			
0730-0800	Radio Sofia, Bulgaria	11720	15160	17820	
0730-0800	BBC Alternative Programming, London	9600	11860	15105	
0730-0800	BBC World Service, London, England	5975	6190	7150	7325
		9410	9640	11760	11940
		11955	12095	15070	15280
		15310	15360	15420	17640
		17710	17740	17790	21660
		21715			
0730-0800	M-F BBC World Service, London, England	6180	17885	21470	15245
0730-0755	Radio Finland, Helsinki	6120	9560	11755	
0730-0800	Radio Netherlands Int'l, Helsinki	9630	15560		
0730-0800	Swiss Radio Int'l European Service	3985	6165	9535	

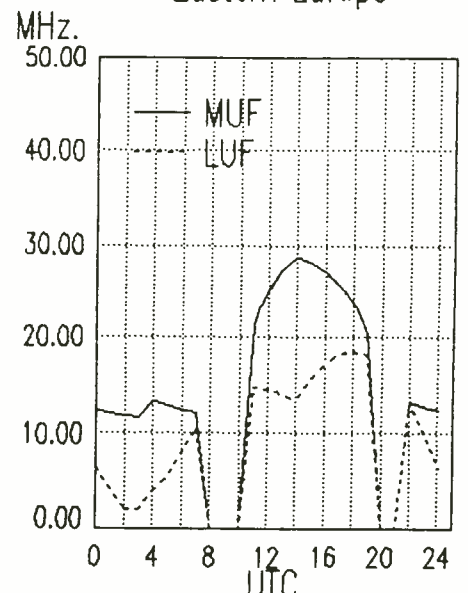
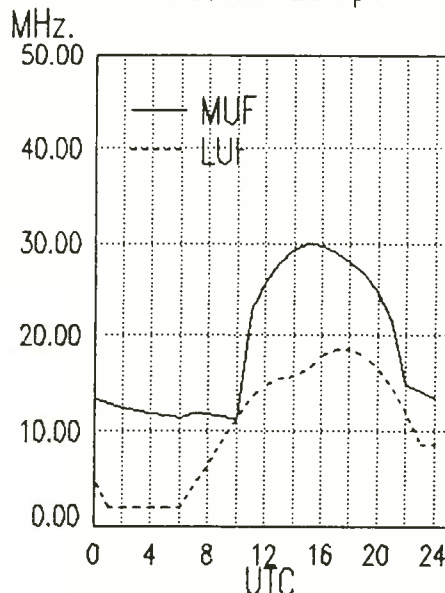
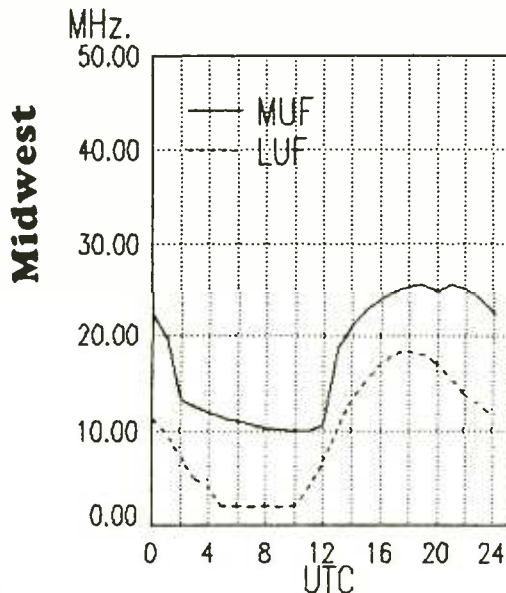
0800 UTC [3:00 AM EST/12:00 AM PST]

0800-0825	M-F BRT, Brussels, Belgium	6035	11695	21815	
0800-0825	Radio Netherlands Int'l, Hilversum	9630	15560		
0800-0825	Voice of Malaysia, Kuala Lumpur	6175	9750	15295	
0800-0830	S Radio Norway International, Oslo	15165			
0800-0830	Voice of Islam, Dhaka, Bangladesh	15195	11705		
0800-0900	ABC, Alice Springs, Australia	2310	(ML)		

East Coast To
Alaska

Midwest To
Western Europe

Midwest To
Eastern Europe



frequency

section

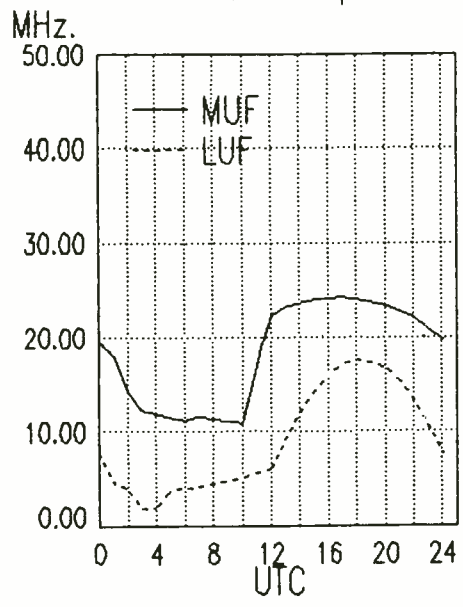
0800-0900	ABC, Katherine, Australia	2485			
0800-0900	ABC, Perth, Australia	15425			
0800-0900	ABC, Tennant Creek, Australia	2325 (ML)			
0800-0900	A Radio for Peace Int., Costa Rica	7375 USB			
0800-0900	Voice of Hope, Lebanon	6280			
0800-0900	CBN, St. John's, Newfoundland, Can	6160			
0800-0900	CBU, Vancouver, British Columbia	6160			
0800-0900	CFCF, Montreal, Quebec, Canada	6005			
0800-0900	CFCN, Calgary, Alberta, Canada	6030			
0800-0900	CHNS, Halifax, Nova Scotia, Canada	6130			
0800-0900	Christian Science World Svc, Boston	9455 17855			
0800-0850	Radio Pyongyang, North Korea	15180 15160 11830			
0800-0900	CKWX, Vancouver, British Columbia	6080			
0800-0900	CFRB, Toronto, Ontario, Canada	6070			
0800-0900	HCJB, Quito, Ecuador(alt.S.Pac.Svc.)	6130			
0800-0900	HCJB, Quito, Ecuador (S. Pacific Sv)	9745 11925			
0800-0900	KNLS, Anchor Point, Alaska	7355			
0800-0900	KTWR, Agana, Guam	15200			
0800-0900	KUSW, Salt Lake City, Utah	6135			
0800-0830	Radio Australia, Melbourne	9580 9655 21525 15395			
		17715 17750 15160 11930			
		13655			
0800-0900	Radio Jordan, Amman	7130 7135 7310 9450			
0800-0900	Radio Moscow World Service, USSR	9795 11625 11705 11745			
		11765 11800 12010 12055			
		15140 15150 15170 15260			
		15280 15295 15320 15345			
		15420 15455 15465 15500			
		15530 17570 17580 17600			
		17605 17610 17620 17625			
		17635 17655 17665 17700			
		17735 17765 17776 17810			
		17840 17855 17890 21450			
		21635 21680 21690 21725			
		21790			
0800-0900	Radio New Zealand, Wellington	9860			
0800-0900	Radio Tonga, Kingdom of Tonga	5030v			
0800-0900	Voice of Indonesia, Jakarta	11755 11788			
0800-0900	Voice of Nigeria, Lagos	7255			
0810-0820	Bayerischer Rundfunk, Munich	6085			
0800-0900	S WRNO Worldwide, Louisiana	6185			
0830-0900	Radio Australia, Melbourne	21525 17750 17715 15395			
		11930 11720 9655 9580			
0830-0840	All India Radio, New Delhi	5960 5990 6010 6020			
		6050 6065 6100 6140			

0830-0855	M-A Radio Netherlands Int'l, Hilversum	9770	7110 7140 7160 7250
0830-0900	Radio Austria International, Vienna	6155 13730 15450 21490	7280 7295 9610 11850
0830-0900	Radio Beijing, China	11775 15440 17710	15235 15250 17705
0830-0900	Radio Netherlands Int'l, Hilversum	17575 21485	9770
0830-0900	Swiss Radio International, Berne	9560 13685 17670 21695	
0845-0900	KTWR, Agana, Guam	15210	
0845-0900	Radio Berlin Int'l, East Germany	6040 6115 7185 9730	
0850-0900	All India Radio, New Delhi	5960 5990 6010 6020	
		6050 6065 6100 6140	
		7110 7140 7150 7160	
		7250 7280 7295 9610	
		11850 15235 15250 17705	

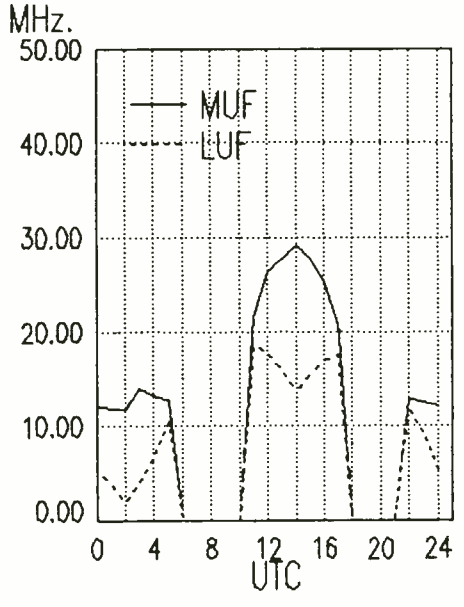
0900 UTC [4:00 AM EST/1:00 AM PST]

0900-0910	All India Radio, New Delhi	5960 5990 6010 6020	6050 6065 6100 6140
		7110 7140 7150 7160	7250 7280 7295 9610
		11850 15235 15250 17705	
0900-0920	ABC, Perth, Australia	15425	
0900-0925	BRT, Brussels, Belgium	9925	
0900-0925	Radio Finland, Helsinki	17800 21550	
0900-0925	Radio Netherlands Int'l, Hilversum	17575 21485	
0900-0930	KTWR, Agana, Guam	15200	
0900-0930	Radio Beijing, China	11775 15440 17710	
0900-0930	S Radio Norway International, Oslo	17740	
0900-0950	Deutsche Welle, Koin, West Germany	6160 9650 15410 11945	17780 17820 21600 21650
		21680	
0900-1000	ABC, Alice Springs, Australia	2310 (ML)	
0900-1000	ABC, Katherine, Australia	2485	
0900-1000	ABC, Tennant Creek, Australia	2325 (ML)	
0900-1000	S Adventist World Radio, Portugal	9670	
0900-1000	A Radio for Peace Int., Costa Rica	7375 USB	
0900-1000	S Radio Bhutan, Thimpu	5023v	
0900-1000	Voice of Hope, Lebanon	6280	
0900-1000	BBC World Service, London, England	5975 6045 6180 6190	6195 7325 9410 9660
		9740 9750 9760 11750	
		11760 11940 12095 15070	

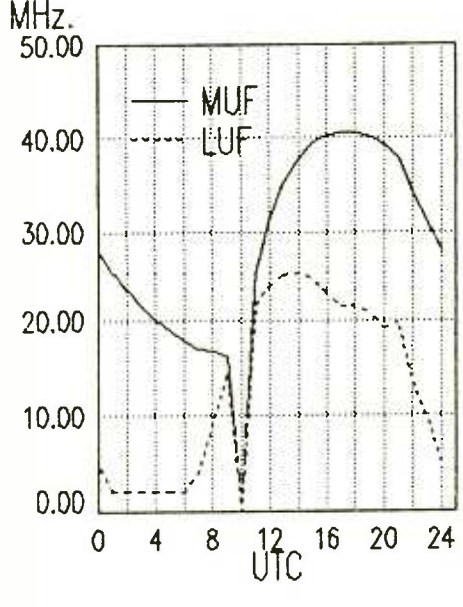
Midwest To Arctic Europe



Midwest To Middle East



Midwest To West Africa



Midwest

frequency

section

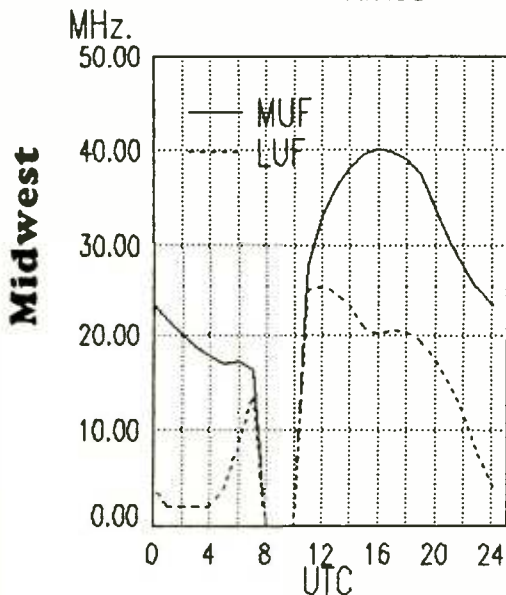
		15245	15285	15310	15360
		15400	15420	17640	17705
		17790	17885	21470	21660
		21710	21715		
0900-1000	CFCF, Montreal, Quebec, Canada	6005			
0900-1000	CFCN, Calgary, Alberta, Canada	6030			
0900-1000	CHNS, Halifax, Nova Scotia, Canada	6130			
0900-1000	Christian Science World Svc, Boston	9455	17855		
0900-1000	CKWX, Vancouver, British Columbia	6080			
0900-1000	CFRB, Toronto, Ontario, Canada	6070			
0900-1000	FEBC Radio Int'l, Philippines	11850			
0900-1000	HCJB, Quito, Ecuador (alt. S. Pac. Sv.)	6130			
0900-1000	HCJB, Quito, Ecuador (S. Pac. Serv.)	9745	11925		
0900-1000	KUSW, Salt Lake City, Utah	6135			
0900-0930	Radio Australia, Melbourne	9580	9655	9760	11720
		15415	17715	11930	6020
0900-1000	Radio Japan, Tokyo	17810			
0900-1000	Radio Jordan, Amman	13655			
0900-1000	Radio Metro, Johannesburg, S. Africa	11805			
0900-1000	Radio Moscow World Service, USSR	7130	7305	9450	9780
		9875	11800	12010	12055
		11705	11765	12055	15140
		15150	15260	15260	15666
		15320	15345	15405	15435
		15455	15460	15465	15490
		15500	15520	15530	15560
		15580	15595	17570	17580
		17600	17605	17610	17625
		17645	17655	17665	17675
		17700	17735	17765	17775
		17810	17840	17890	21450
		21635	21660	21680	21690
		21725	21800		
0900-0930	Radio New Zealand, Wellington	9860			
0900-1000 UN	Radio Tanpa, Nagara, Japan	3925			
0900-1000	Radio Tonga, Kingdom of Tonga	5030v			
0900-1000	Voice of Nigeria, Lagos	7255			
0900-1000	WHRI, Noblesville, Indiana	7355	9495		
0900-1000 S	WRNO Worldwide, Louisiana	6185			
0920-1000	ABC, Perth, Australia	6140			
0930-1000	Radio Australia, Melbourne	15415	11930	9760	9655
		9580	6020	5995	
0930-1000	Radio Afghanistan, Kabul	17720	15350	4940	
0935-0945 IRR	Al-Quds Radio (Palestinian clandestine: Syria)	7460	(alt. 4320)	ML	

0930-0935	All India Radio, New Delhi	5960	5990	6010	6020
		6050	6065	6100	6140
		7110	7140	7160	7250
		7280	7295	9610	11850
		15235	15250	17705	
0930-0955	Radio Finland, Helsinki	15245	17800		
0930-0955	RRI Surabaya, Jawa Timur, Indonesia	2377			
0930-1000	BBC English by Radio, London	7180	11955	15280	17830
0930-1000	CBN, St. John's, New Foundland	6160			
0930-1000	KTWR, Agana, Guam	11805			
0930-1000	Radio Beijing, China	11775	15440	17710	

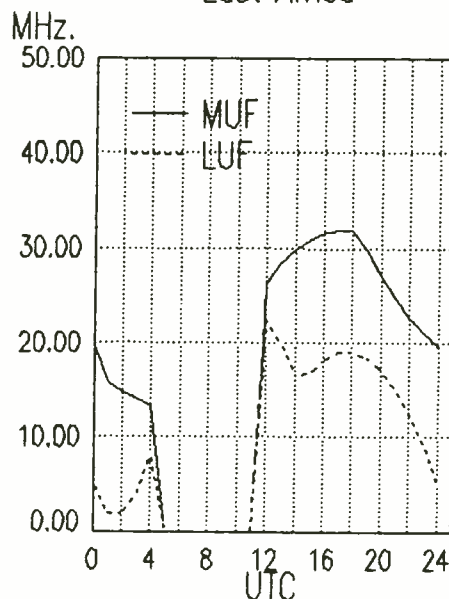
1000 UTC [5:00 AM EST/2:00 AM PST]

1000-1015	KTWR, Agana, Guam	11805			
1000-1015	M-F Radio Budapest, Hungary	6110	9585	9835	11925
		15160	15220		
1000-1025	M-F BRT, Brussels, Belgium	21810	26050		
1000-1030	Radio Afghanistan, Kabul	17720	15350	4940	
1000-1030 A	Radio for Peace Int'l., Costa Rica	7375	USB		
1000-1030	Voice of Vietnam, Hanoi	12010	15010	9840	
1000-1030	Radio Beijing, China	11775	15440	17710	
1000-1030	Swiss Radio International, Berne	9560	13685	17670	21695
1000-1045	Radio Berlin Int'l, East Germany	11890			
1000-1100	ABC, Alice Springs, Australia	2310	(ML)		
1000-1100	ABC, Katherine, Australia	2485			
1000-1100	ABC, Perth, Australia	9610			
1000-1100	ABC, Tennant Creek, Australia	2325	(ML)		
1000-1100	Adventist World Radio-Asia, Guam	13720			
1000-1100	All India Radio, New Delhi	11860	11915	15050	15335
		17665	21735		
1000-1100	BBC World Service, London, England	5975	6045	6180	6190
		6195	7325	9410	9660
		9740	9750	9760	11750
		11760	11940	12095	15070
		15285	15310	15360	15400
		15420	17640	17705	17790
		17885	21470	21660	21710
1000-1100	CBN, St. John's, Newfoundland, Can	6160			
1000-1100	CFCF, Montreal, Quebec, Canada	6005			
1000-1100	CFCN, Calgary, Alberta, Canada	6030			
1000-1100	CHNS, Halifax, Nova Scotia, Canada	6130			
1000-1100	Christian Science World Svc, Boston	9455	9495		
1000-1100	CKWX, Vancouver, British Columbia	6080			

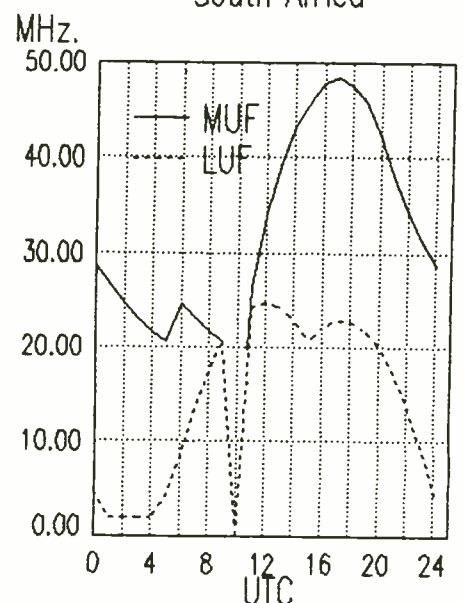
Midwest To
Central Africa



Midwest To
East Africa



Midwest To
South Africa



frequency

section

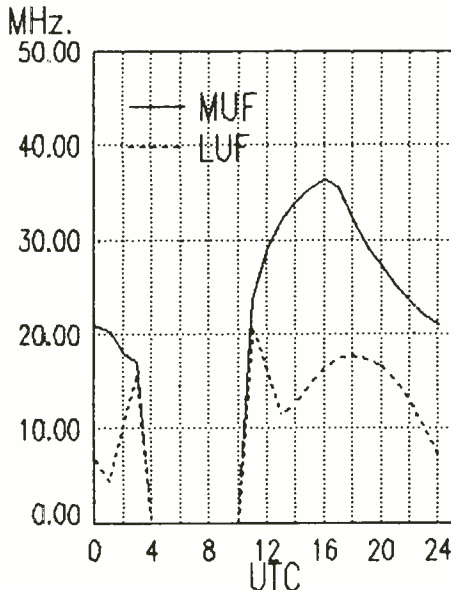
1000-1100	CFRB, Toronto, Ontario, Canada	6070			
1000-1100	FEBC Radio Int'l, Philippines	11850			
1000-1100	HCJB, Quito, Ecuador	9745	11925		
1000-1100	KTWR, Agana, Guam	11805			
1000-1100	KUSW, Salt Lake City, Utah	6135			
1000-1030	Radio Australia, Melbourne	9580	9655	15415	11930
		9770	5995	6020	
1000-1100	Radio Jordan, Amman	13655			
1000-1100	Radio Metro, Johannesburg, S. Africa	11805			
1000-1100	Radio Moscow World Service, USSR	7130	7300	9780	9875
		11705	11765	11800	12055
		15140	15150	15260	15280
		15320	15405	15435	15460
		15465	15500	15520	15530
		15590	17565	17570	17605
		17610	17625	17645	17665
		17700	17735	17765	17810
		17820	17840	17890	21660
		21680	21725	21800	
1000-1100	Voice of America-Caribbean Service	9590	11915		
1000-1100	Voice of America-Pacific Service	5985	11720	15425	
1000-1100	Voice of Nigeria, Lagos	7255			
1000-1100	S WRNO Worldwide, Louisiana	6185			
1030-1045	M-F Radio Budapest, Hungary	6110	9585	9835	11925
		15160	15220		
1030-1100	Radio Australia, Melbourne	15415	11930	9770	9580
		6020	5995		
1030-1100	Adventist World Radio, Forli, Italy	7230			
1030-1100	Radio Netherlands Int'l, Hilversum	6020	9505		
1045-1100	Radio Berlin Int'l, East Germany	6115			
1045-1000	S Radio Budapest, Hungary	7220	9585	9835	11910
		11925	15160	15220	

1100-1125	Radio Netherlands Int'l, Hilversum	6020	9505		
1100-1130	Voice of the Democratic Alliance of Burma (clandestine: Thai/Burmese border)	7137V			
1100-1130	Adventist World Radio, Forli, Italy	7230			
1100-1130	Koi Israel, Jerusalem	11585	15485	15650	17575
		17590	17685		
1100-1130	Radio Berlin Int'l, East Germany	6115			
1100-1130	Swiss Radio International, Berne	13635	15570	17830	21770
1100-1150	Radio Pyongyang, North Korea	11735	9977	9645	
1100-1150	Deutsche Welle, Koln, West Germany	15410	17765	17800	21600
1100-1155	Radio Beijing, China	9665			
1100-1200	ABC, Alice Springs, Australia	2310	(ML)		
1100-1200	ABC, Brisbane, Australia	9660			
1100-1200	ABC, Katherine, Australia	2485			
1100-1200	ABC, Perth, Australia	9610			
1100-1200	ABC, Tennant Creek, Australia	2325	(ML)		
1100-1200	CBN, St. John's, Newfoundland, Can	6160			
1100-1200	CFCF, Montreal, Quebec, Canada	6005			
1100-1200	CFCN, Calgary, Alberta, Canada	6030			
1100-1200	CHNS, Halifax, Nova Scotia, Canada	6130			
1100-1200	Christian Science World Svc, Boston	9455	9495		
1100-1200	CKWX, Vancouver, British Columbia	6080			
1100-1200	CFRB, Toronto, Ontario, Canada	6070			
1100-1200	KUSW, Salt Lake City, Utah	9850			
1100-1130	Radio Australia, Melbourne	11930	6020	6080	7215
		9580	9710	9770	11800
1100-1200	Radio Beijing, China	17855			
1100-1200	Radio Japan, Tokyo	6120	11815	11840	
1100-1200	Radio Jordan, Amman	13655			
1100-1200	Radio Moscow World Service, USSR	6000	7130	7305	9705
		9780	9875	11705	11765
		12055	15140	15150	15260
		15280	15320	15345	15460
		15465	15490	15500	15520
		15530	15560	17565	17645
		17665	17570	17605	17645
		17700	17735	17810	17840
		17890	21660	21680	21725
		21800			
1100-1200	Radio South Africa, Johannesburg	11805			
1100-1200	Voice of America-Caribbean Service	9590	11915		
1100-1200	Voice of America-East Asia Service	5985	6110	9760	11720
		15155	15425		
1100-1200	S WRNO Worldwide, Louisiana	6185			
1115-1145	Radio Nepal, Katmandu (External Svc.)	5005			

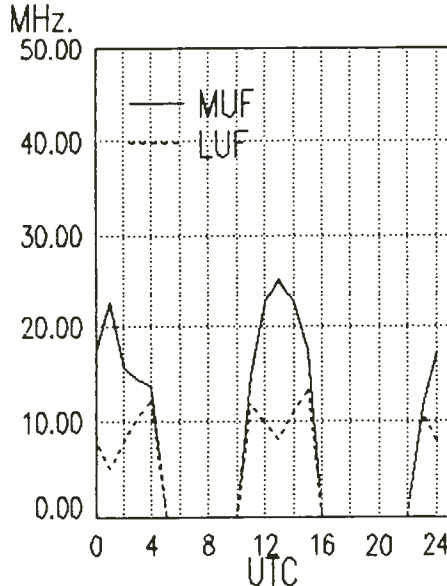
1100 UTC [6:00 AM EST/3:00 AM PST]

1100-1115	Radio Pakistan	21575	17555		
1100-1115	BBC World Service, London, England	5965	5975	6045	6180
		6190	6195	7325	9410
		9660	9740	9750	9760
		11750	11760	11775	11940
		12095	15070	15140	15310
		15420	17640	17705	17790
		17885	21470	21660	
		15285	15360	15400	

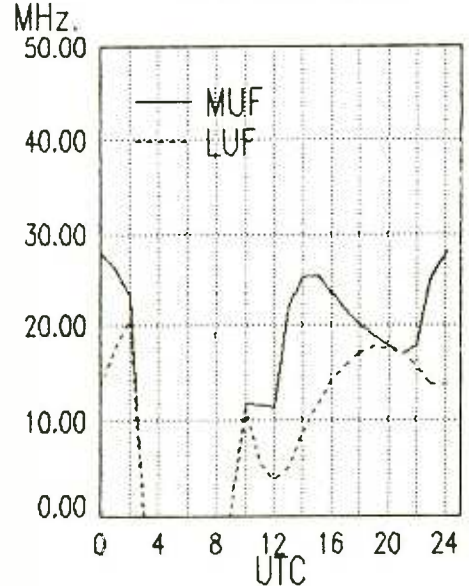
Midwest To
Indian Ocean



Midwest To
Central Asia



Midwest To
South East Asia



Midwest

frequency

section

1115-1130	BBC World Service, London, England	5965	5975	6045	6180	1200-1225	Voice of Islamic Republic of Iran	7190	7215	7230	9695
		6190	6195	7325	9410	1200-1230	Radio East Africa,	9585			
		9660	9740	9750	9760	1200-1230	Radio Norway International, Oslo	15165			
		11760	11775	11940	12095	1200-1230	Radio Tashkent, Uzbekistan, SSR	5945	9540	9600	11785
		15070	15140	15285	15310			15470			
		15420	15360	15400	17640	1200-1245	Radio Berlin Int'l, East Germany	6115	9665	13690	17780
		17705	17790	17885	21470	1200-1300	ABC, Alice Springs, Australia	2310	(ML)		
		21660	21710	25750		1200-1300	ABC, Brisbane, Australia	9660			
1115-1130	Vatican Radio, Vatican City	17840	21485			1200-1300	ABC, Katherine, Australia	2485			
1130-1140	Trans World Radio, Bonaire	9535	11930			1200-1300	ABC, Perth, Australia	9610			
1130-1145	BBC English by Radio, London	17810	21490			1200-1300	ABC, Tennant Creek, Australia	2325	(ML)		
1130-1145 A	Radio Budapest, Hungary	15190	6110	9835		1200-1300	Adventist world Radio, Costa Rica	9725	11870		
		15160	15220			1200-1300	BBC World Service, London, England	5965	5975	6045	6190
1130-1145	RRI Yogyakarta, Yogyakarta, Indonesia	5046						6195	7325	9410	9660
1130-1200	BBC World Service, London, England	5965	5975	6045	6190			9740	9750	9760	11750
		6195	7325	9410	9660			11760	11775	11940	12095
		9740	9750	9760	11760			15070	15140	15310	17640
		11775	11940	12095	15070			17705	17790	17885	21470
		15140	15310	15420	17640			21660	21710	25750	
		17705	17790	17885	21470	1200-1300	CBU, Vancouver, British Columbia	6160			
		21660	21710	25750		1200-1300	CFCF, Montreal, Quebec, Canada	6005			
1130-1200	HCJB, Quito, Ecuador	11740				1200-1300	CFCN, Calgary, Alberta, Canada	6030			
1130-1200	Radio Australia, Melbourne	11930	11800	9770	9710	1200-1300	CHNS, Halifax, Nova Scotia, Canada	6130			
		9580	7215	6080	6035	1200-1300	Christian Science World Service	6150	9465	11930	15285
1130-1200	Radio Thailand	11905	9655	4830		1200-1300	CKWX, Vancouver, British Columbia	6080			
1130-1200	Radio Austria International, Vienna	6155	13730	15430	21475	1200-1300	CFRB, Toronto, Ontario	6070			
1130-1200	Radio Netherlands Int'l, Hilversum	5955	9715	17575	21480	1200-1300	HCJB, Quito, Ecuador	11740	15115	17890	
		21615				1200-1300	KUSW, Salt Lake City, Utah	9850			
1130-1200	Voice of the Islamic Republic of Iran	7190	7230	9695		1200-1230	Radio Australia, Melbourne	11930	6080	7205	11800
1135-1140	All India Radio, New Delhi	6065	7110	9610	9675			7215	9580	9710	9770
		11620	11850	15320		1200-1300	Radio Beijing, China	9530	9665	11600	15450
1145-1200 A-H	BBC English by Radio, London	7180	15280			1200-1230	Radio Bucharest, Romania	15340	17720		
1150-1200 M-F	Radio Finland, Helsinki	15400	21550			1200-1300	Radio Jordan, Amman	13655			
		17700	17720	21470		1200-1300	Radio Moscow World Service, USSR	6000	7130	7305	9705
								9765	9780	9875	11705
								11765	12055	11745	15150
								15260	15305	15320	15345
								15465	15490	15500	15520
								15530	15560	17565	17570
								17605	17625	17645	17665
								17700	17735	17810	17820
								17840	17860	21660	21680
								21725	21800		
						1200-1300	Radio RSA, Johannesburg	17730	21535	21590	

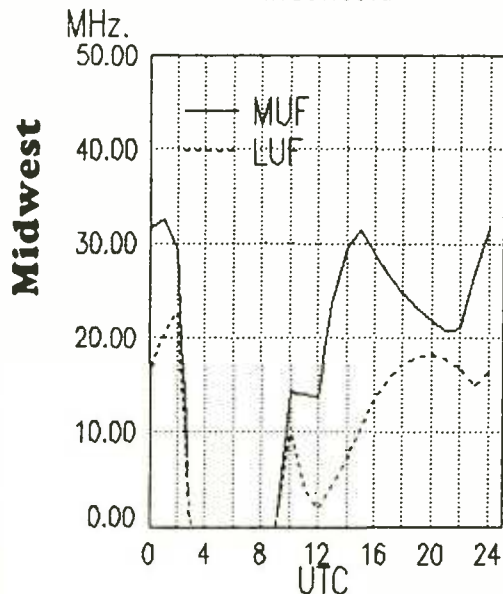
1200 UTC [7:00 AM EST/4:00 AM PST]

1200-1230	Radio Thailand	11905	9655	4830
1200-1215	BBC English by Radio, London	6065	9680	11920
1200-1215 M-F	Radio Finland, Helsinki	15400	21550	
1200-1215	Vatican Radio, Vatican City	17840	17865	21485
1200-1225	All India Radio, New Delhi	11620		
1200-1225	Radio Netherlands Int'l, Hilversum	5955	9715	17575
		21615		

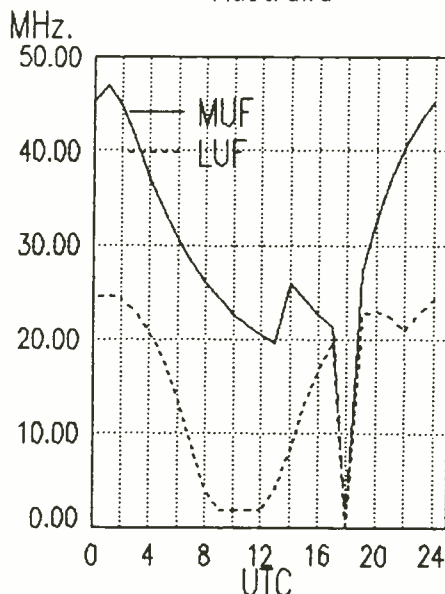
1200-1300 Radio RSA, Johannesburg

17730 21535 21590

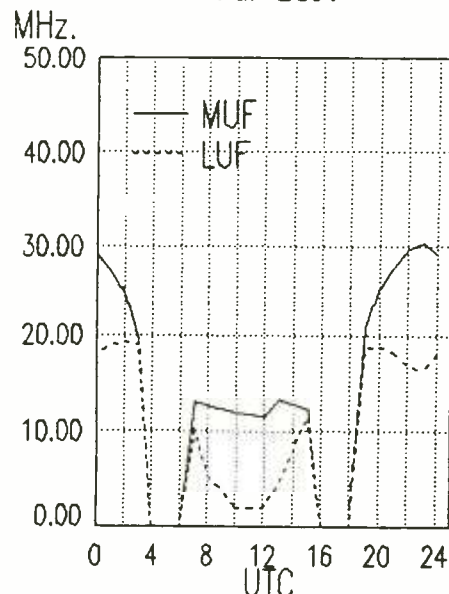
Midwest To
Indonesia



Midwest To
Australia



Midwest To
Far East



frequency

section

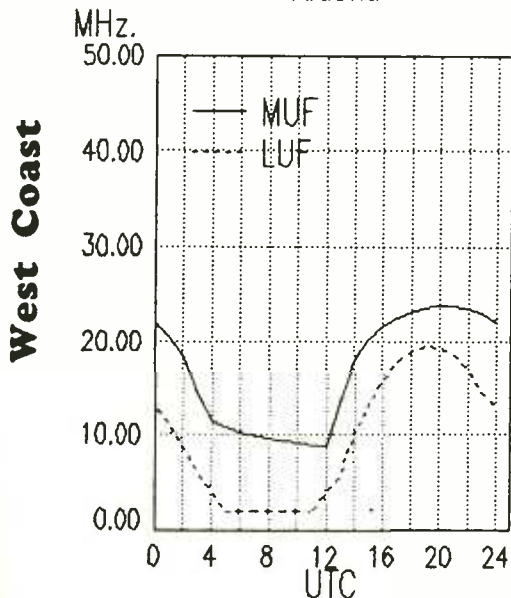
1330-1400	UAE Radio, Dubai	15320	17775	21605
1330-1400	Voice of Turkey, Ankara, Turkey	17785		
1330-1400	Voice of Vietnam, Hanoi	9840	15010	12010
1345-1400	Voice of Eelam (clandestine:northern Sri Lanka)	7000		
1345-1400	BBC World Service, London, England	5975	5995	6045 6190
		6195	7180	7325 9410
		9660	9740	9750 9760
		11750	11940	12095 15070
		15140	15310	15420 17640
		17705	17790	17885 21470
		21660	21710	25750
1345-1400	Radio Berlin Int'l, East Germany	11970	15440	17880 21465

1400 UTC [9:00 AM EST/6:00 AM PST]

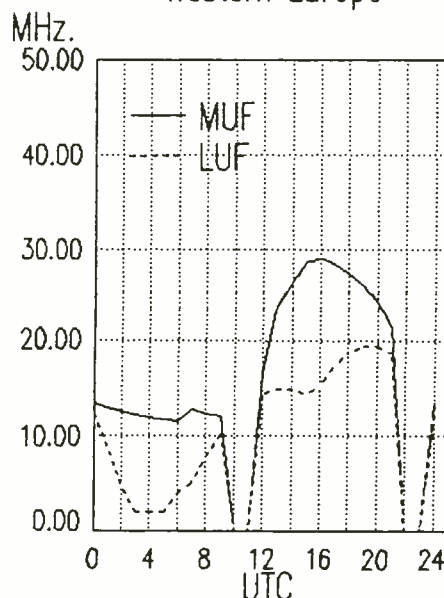
1400-1420	Radio Jordan, Amman	13655		
1400-1430	ABC, Alice Springs, Australia	2310 (ML)		
1400-1430	ABC, Tennant Creek, Australia	2325 (ML)		
1400-1430	BBC English by Radio, London	11860	15420	17740
1400-1430	Radio Berlin Int'l, East Germany	11980	15440	17880 21465
1400-1430	Radio France International, Paris	11925	21780	
1400-1430	S Radio Norway International, Oslo	21710		
1400-1430	Radio Polonia, Warsaw, Poland	6095	7285	
1400-1430	Radio Sweden, Stockholm	11905	17740	
1400-1430	Radio Tirana, Albania	9500	11895	
1400-1445	Radio Berlin Int'l, East Germany	6115		
1400-1455	Radio Beijing, China	7405		
1400-1500	Radio SPLA (clandestine: Sudan)	11710	9550	
1400-1500	ABC, Brisbane, Australia	9660		
1400-1500	ABC, Katherine, Australia	2485		
1400-1500	ABC, Perth, Australia	9610		
1400-1500	BBC World Service, London, England	5975	6045	6190 6195
		7325	9410	9660 9740
		9750	9760	11750 11940
		12095	15070	15140 15310
		17640	17705	17790 17880
		21470	21660	21710 25750
1400-1500	Voice of the Mediterranean, Malta	11925		
1400-1500	CBC Northern Quebec Service, Can	9625		
1400-1500	CBN, St. John's, Newfoundland	6160		
1400-1500	M-A CBU, Vancouver, British Columbia	6160		
1400-1500	CFCF, Montreal, Quebec, Canada	6005		
1400-1500	CFCN, Calgary, Alberta, Canada	6030		

1400-1500	CHNS, Halifax, Nova Scotia, Canada	6130		
1400-1500	Christian Science World Service	9530	13760	15385 17555
		21780		
1400-1500	CKWX, Vancouver, British Columbia	6080		
1400-1500	CFRB, Toronto, Ontario	6070		
1400-1500	FEBC Radio Int'l, Philippines	11850		
1400-1500	HCJB, Quito, Ecuador	11740	15115	17890
1400-1500	KUSW, Salt Lake City, Utah	9850		
1400-1430	Radio Australia, Melbourne	5995	11930	6080
		7205	9580	
1400-1500	S Radio Canada International, Montreal	9625	11720	11955 17820
1400-1500	Radio Japan, Tokyo	9505	11815	
1400-1500	Radio Korea, Seoul, South Korea	9570	9750	15575
1400-1500	Radio Moscow World Service, USSR	5980	7105	7170 7315
		7260	7345	9705 9755
		9795	9895	11705 11745
		11765	11850	15305 15320
		15345	15465	15560 17570
		17625	17665	17700 17735
		17810	17820	17840 17860
		21660	21680	21720 11840
1400-1500	Radio RSA, Johannesburg	11925	21535	21590 25790
1400-1500	Voice of America-East Asia Service	6110	9760	15155 15425
1400-1500	Voice of America-South Asia Service	7125	9645	9760 15205
		15395		
1400-1500	Voice of Nigeria, Lagos	7255		
1400-1500	WHRI, Noblesville, Indiana	9465	15105	
1400-1500	S WRNO Worldwide, Louisiana	11965		
1400-1500	WWCR, Nashville, Tennessee	15690		
1400-1500	WYFR, Okeechobee, Florida	5950	9705	11830 13695
		17640		
1405-1500	WYFR, Taiwan	11540		
1415-1500	M-A Radio Bhutan	5023v		
1415-1425	Radio Nepal, Katmandu	5005	7165	(alt. 3230)
1415-1500	Radio Jordan, Amman	9560		
1430-1500	Voice of Hope, Lebanon	6280		
1430-1500	Radio Australia, Melbourne	11930	9580	7205 6080
		6035	5995	
1430-1500	Voice of Myanmar (Burma)	5990v		
1430-1500	F ABC, Alice Springs, Australia	2310 (ML)		
1430-1500	F ABC, Tennant Creek, Australia	2325 (ML)		
1430-1500	Radio Austria International, Vienna	6155	11780	13730 21490
1430-1500	S Radio Finland, Helsinki	21550	15400	
1430-1500	Radio Netherlands Int'l, Hilversum	5955	13770	15150 17575
		17605		

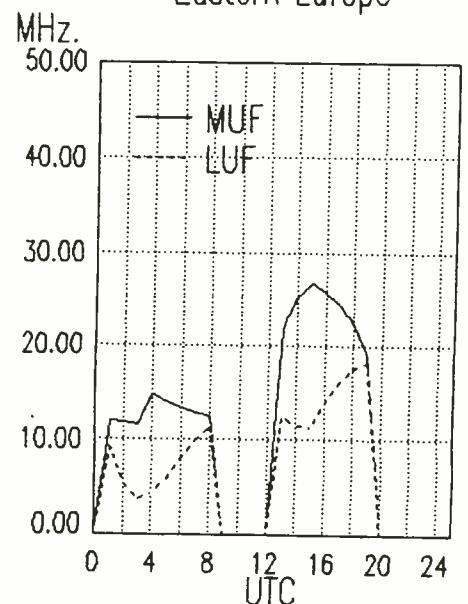
Midwest To
Alaska



West Coast To
Western Europe



West Coast To
Eastern Europe



frequency

section

1430-1500	Radio Prague, Czechoslovakia	11685 13715 15110 15155
		17840 21505
1445-1500	Radio Berlin Int'l, East Germany	9730
1445-1500	Vatican Radio, Vatican City	6248 7250 9645 11740

1500 UTC [10:00 AM EST/7:00 AM PST]

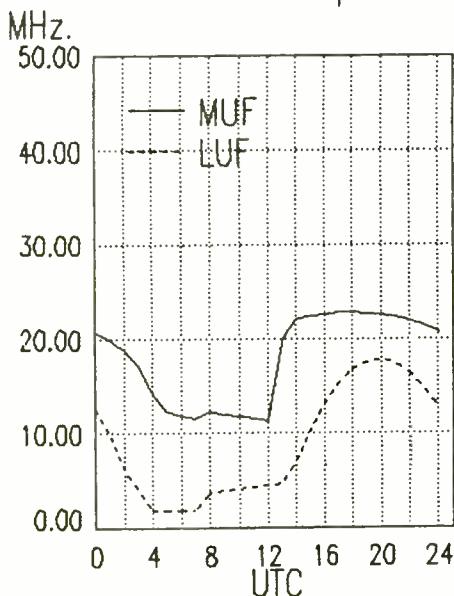
1500-1515	Vatican Radio, Vatican City	11955 15090 17870
1500-1515	WYFR, Taiwan	11550
1500-1525	Radio Netherlands Int'l, Hilversum	5955 13770 15150 17575
		17605
1500-1530	Radio Sweden, Stockholm	17740 11905
1500-1530	Radio Berlin Int'l, East Germany	9730
1500-1530	Radio Bucharest, Romania	15335 11940 15250 17720
		17745
1500-1530	Radio Veritas Asia, Philippines	9525 15445
1500-1550	Radio Pyongyang, North Korea	11750 9977 9640 9325
1500-1600	Radio Jordan, Amman	9560
1500-1550	Deutsche Welle, Koln, West Germany	9735 11965 17765 21600
1500-1555	Radio Beijing, China	7405 11795 15165
1500-1600	Voice of Hope, Lebanon	6280
1500-1600	F ABC, Alice Springs, Australia	2310 (ML)
1500-1600	ABC, Perth, Australia	9610
1500-1600	F ABC, Tennant Creek, Australia	2325 (ML)
1500-1600	BBC World Service, London, England	3915 5995 6180 6190
		6195 7180 7325 9410
		9515 9740 9750 9760
		11750 11940 12095 15070
		15260 15310 15400 17640
		17705 17880 21470 21660
		21710 25750
1500-1600	Voice of Myanmar (Burma)	5990v
1500-1600	CBC Northern Quebec Service, Can	9625 11720 (ML)
1500-1600	CBN, St. John's, Newfoundland	6160
1500-1600	CBU, Vancouver, British Columbia	6160
1500-1600	CFCF, Montreal, Quebec, Canada	6005
1500-1600	CFCN, Calgary, Alberta, Canada	6030
1500-1600	CHNS, Halifax, Nova Scotia, Canada	6130
1500-1600	Christian Science World Service	9530 13760 15385 17555
		21780
1500-1600	CKWX, Vancouver, British Columbia	6080
1500-1600	CFRB, Toronto, Ontario	6070
1500-1600	FEBA, Mahe, Seychelles	11865 15325
1500-1600	FEBC Radio Int'l, Philippines	11850

1500-1600	HCJB, Quito, Ecuador	15115 17890
1500-1600	T-S KNLS, Anchor Point, Alaska	7355
1500-1600	KTWR, Agana, Guam	11650
1500-1600	KUSW, Salt Lake City, Utah	15650
1500-1600	Radio Australia, Melbourne	5995 6035 15425 6080
		11930 7215 9580
1500-1600	S Radio Canada International, Montreal	9625 11720 11955 17820
1500-1600	M-F Radiodiffusion Nationale du Burundi	6140
1500-1600	Radio Japan, Tokyo	9505 11815 21700
1500-1600	Radio Moscow World Service, USSR	5980 7260 7345 9565
		9705 9755 9795 9830
		9895 11705 11745 11765
		11805 11840 11850 12015
		15305 15560 17665 17735
		17810 17840 21725 15475
1500-1600	Radio RSA, Johannesburg S. Africa	11925 21535 21590 25790
1500-1600	Voice of America-Middle East Service	9700 15205 15260
1500-1600	Voice of America-South Asia Service	6110 7125 9645 9700
		9760 15205 15260 15395
		7255
1500-1600	WHRI, Noblesville, Indiana	15105 21840
1500-1600	S WRNO Worldwide, Louisiana	11965
1500-1600	WWCR, Nashville, Tennessee	15690
1500-1600	WYFR, Okeechobee, Florida	5950 11830 13695 15215
		17640
1505-1530	Radio Finland, Helsinki	9640 15185
1515-1530	KTWR, Agana, Guam	11650
1530-1540	M-A Voice of Greece, Athens	11645 15630 17535
1530-1600	Radio Prague, Czechoslovakia	11990 13715 17840 21505
1530-1600	Radio Sofia, Bulgaria	11735 15310 15370 17825
1530-1600	Radio Sweden, Stockholm	17880 21610 21655
1530-1600	Swiss Radio International, Berne	3985 13685 17830 21630
1545-1600	BBC English by Radio, London	9635 11945
1545-1600	Radio Berlin Int'l, East Germany	11970 17880
1545-1600	Radio Pakistan	21740 21480 17895 17580
		15605 13665
1545-1600	Radio Canada International, Montreal	9555 11915 11935 13650
		15315 15325 17820 21545
1545-1600	Vatican Radio, Vatican City	15120 17730 21650

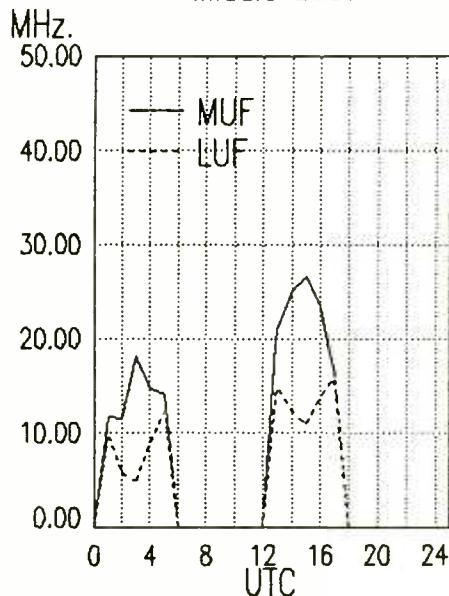
1600 UTC [11:00 AM EST/8:00 AM PST]

1600-1610	FEBA, Mahe, Seychelles	11865 15325
1600-1610	Vatican Radio, Vatican City	6248 7250 9645 11740

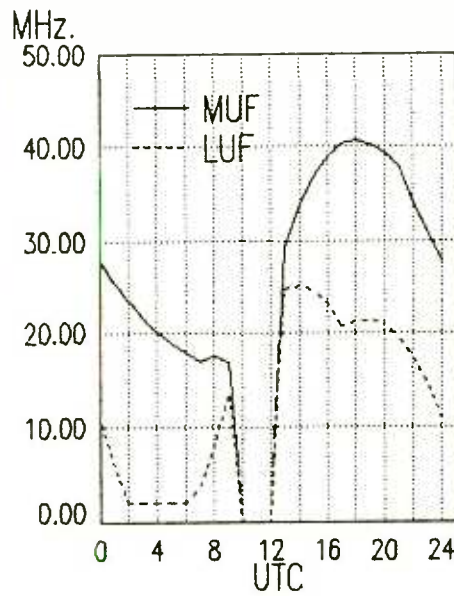
West Coast To
Arctic Europe



West Coast To
Middle East



West Coast To
West Africa



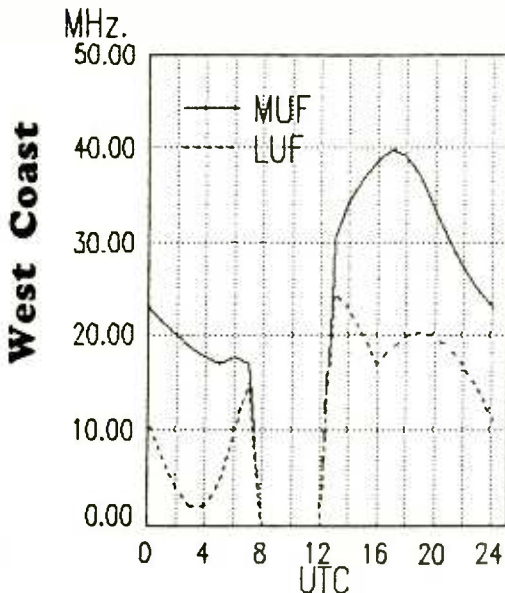
West Coast

frequency

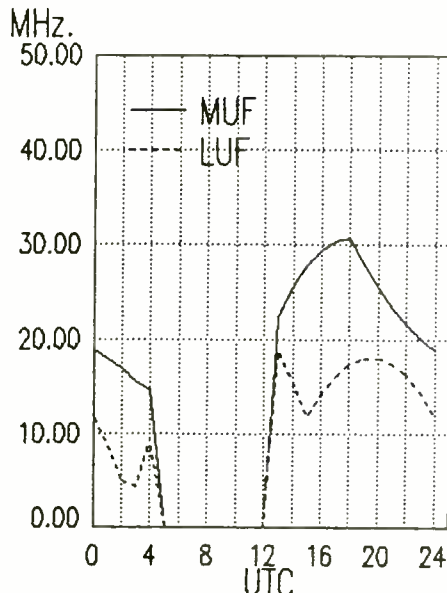
section

1600-1615	BBC World Service, London, England	3915	5975	5995	6180				
		6190	6195	7180	7325				
		9410	9515	9740	9750				
		9760	11750	11940	12095				
		15070	15260	15310	15400				
		17640	17705	17860	17880				
		21470	21660	21710	25750				
1600-1625	M-F Radio Finland, Helsinki	15400	21550						
1600-1630	Radio Deutsche Welle, Koln	21680	17825	15595	15105				
		7225	6170						
1600-1630	Radio Pakistan	17580	13665	15605	21740				
		17895	21480						
1600-1630	Radio Berlin Int'l, East Germany	11970	17880						
1600-1630	S Radio Norway International, Oslo	17765	21705						
1600-1630	Radio Polonia, Warsaw, Poland	6135	9540						
1600-1630	Radio Portugal, Lisbon	15210							
1600-1630	Radio Sofia, Bulgaria	11735	15310	15370	17825				
1600-1630	Voice of Vietnam, Hanoi	9840	15010	12010					
1600-1640	UAE Radio, Dubai	11790	15320	21605	15300				
1600-1650	Radio Pyongyang, North Korea	9325	11760						
1600-1700	F ABC, Alice Springs, Australia	2310	(ML)						
1600-1700	ABC, Perth, Australia	9610							
1600-1700	F ABC, Tennant Creek, Australia	2325	(ML)						
1600-1700	Adventist World Radio-Asia, Guam	11980	13720						
1600-1700	CBC Northern Quebec Service, Can	9625	(ML)						
1600-1700	CBN, St. John's, Newfoundland	6160							
1600-1700	KSDA, Guam	11980							
1600-1700	CBU, Vancouver, British Columbia	6160							
1600-1700	CFCF, Montreal, Quebec, Canada	6005							
1600-1700	CFCN, Calgary, Alberta, Canada	6030							
1600-1700	CHNS, Halifax, Nova Scotia, Canada	6130							
1600-1700	Christian Science World Service	15385	21640						
1600-1700	CKWX, Vancouver, British Columbia	6080							
1600-1700	CFRB, Toronto, Ontario	6070							
1600-1700	HCJB, Quito, Ecuador	15115	17890						
1600-1700	KTWR, Agana, Guam	11650	11910	13720					
1600-1700	KUSW, Salt Lake City, Utah	15650							
1600-1700	Radio Australia, Melbourne	11930	6035	6020	6080				
		7205	7215	9580	15245				
1600-1700	Radio Beijing, China	9570	15110	15130					
1600-1700	S Radio Canada International, Montreal	9625	11720	11955	17820				
1600-1700	Radio France International, Paris	6175	11705	12015	15360				
		17620	17795	17850					
1600-1700	Radio Jordan, Amman	9560							
1600-1700	Radio Korea, Seoul, South Korea	5975							
1600-1700	Radio Moscow World Service, USSR	5980	6165	7105	7170				
		7220	7260	7315	7345				
		9510	9705	9755	9795				
		9830	9885	9895	11765				
		11840	15475	17810	17840				
1600-1700	Trans World Radio via Nairobi, Kenya	11910							
1600-1700	Trans World Radio-Swaziland	15210							
1600-1700	Voice of America-Africa Service	7195	9575	11920	15410				
		15445	15580	15600	17785				
		17800	17870						
1600-1700	Voice of America-Middle East Service	3980	9700	15205	15260				
1600-1700	Voice of America-Asia Service	7125	9645	9700	9760				
		15205	15260	15395					
1600-1700	Voice of Nigeria, Lagos	7255							
1600-1700	WHRI, Noblesville, Indiana	15105	21840						
1600-1700	WINB, Red Lion, Pennsylvania	15295							
1600-1700	WRNO New Orleans, Louisiana	15420							
1600-1700	WWCR, Nashville, Tennessee	15690							
1600-1700	WYFR, Okeechobee, Florida	11830	13695	15215	15566				
		17612	21525	21615	17640				
1600-1650	Deutsche Welle, Koln, West Germany	6170	7225	15105	15595				
		17825	21680						
1615-1620	Vatican Radio, Vatican City	9645	11740						
1615-1630	BBC Africa Service, London	6005	6190	9595	11940				
		15400	17880						
1615-1630	BBC English by Radio, London	3975	6125	9750					
1615-1630	M,H Radio Budapest, Hungary	7220	9585	9835	11910				
		15160	15220						
1615-1700	BBC World Service, London, England	3915	5975	6180	6195				
		7325	9410	9740	11775				
		12095	15070	15260	15310				
		17640	17695	17860	21470				
		21660	21710	9515					
1625-1645	A,S Radio Finland, Helsinki	15400	21550						
1630-1655	M-ABRT, Brussels, Belgium	17580	21810						
1630-1700	Radio Station Peace & Progress, US	5980	17565	12065	11910				
		15585	9705						
		11745	11850	15320					
1630-1700	Radio Netherlands Int'l, Hilversum	15375	15570						
1630-1700	RAE, Buenos Aires, Argentina	11710	15345						
1645-1700	Radio Berlin Int'l, East Germany	7295	9730	15350	17780				
1645-1700	S Radio Finland, Helsinki	15400	21550						

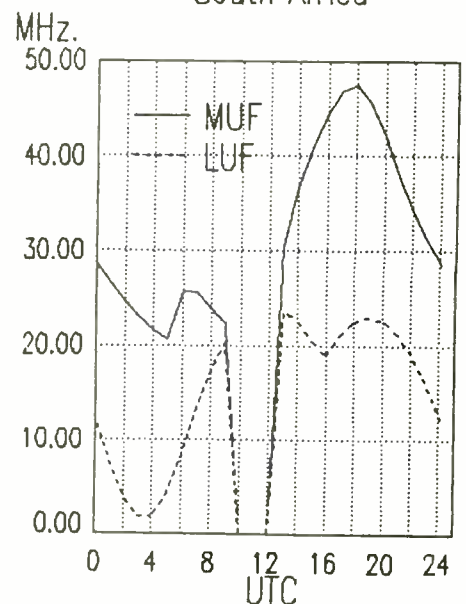
West Coast To
Central Africa



West Coast To
East Africa



West Coast To
South Africa



frequency

section

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

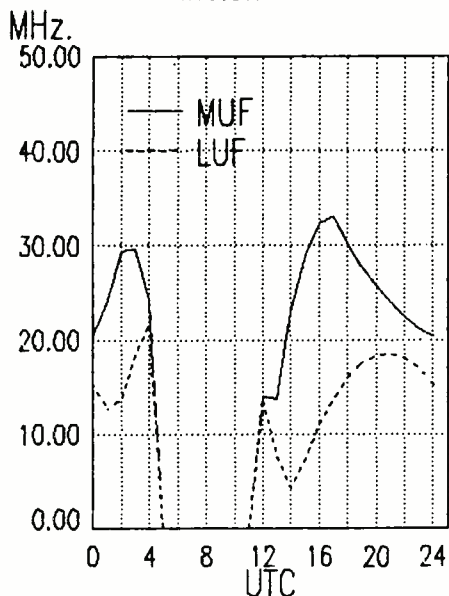
1700-1705	KTWR, Agana, Guam	11650			
1700-1715	BBC English by Radio, London	6065	7105	9605	11750
1700-1715	Swiss Radio Intl Europe Service(MO)	3985	6165	9535	
1700-1725	Radio Netherlands Int'l, Hilversum	15375	15570		
1700-1730	BBC English by Radio, London	3975	6125	7155	
1700-1730	Radio Berlin Int'l, East Germany	7295	9730	15350	17780
1700-1730	S Radio Norway International, Oslo	15305	21705		
1700-1730	RAE, Buenos Aires, Argentina	11710	15345		
1700-1745	BBC World Service, London, England	3915	5975	6180	6195
		7160	7325	9410	9515
		9740	12095	15070	15260
		15310	17640	17695	21470
		21660	21710		
1700-1750	Radio Pyongyang, North Korea	11750	9977	9640	9325
1700-1800	F ABC, Alice Springs, Australia	2310	(ML)		
1700-1800	ABC, Tennant Creek, Australia	2325	(ML)		
1700-1800	CBN, St. John's, Newfoundland	6160			
1700-1800	CBU, Vancouver, British Columbia	6160			
1700-1800	CFCF, Montreal, Quebec, Canada	6005			
1700-1800	CFCN, Calgary, Alberta, Canada	6030			
1700-1800	Radio New Zealand, Wellington	17680			
1700-1800	CHNS, Halifax, Nova Scotia, Canada	6130			
1700-1800	Christian Science World Service	15385	21640		
1700-1800	CKWX, Vancouver, British Columbia	6080			
1700-1800	CFRB, Toronto, Ontario	6070			
1700-1800	S-F WMLK Bethel, Pennsylvania	9465			
1700-1800	KUSW, Salt Lake City, Utah	15650			
1700-1800	Radio Australia, Melbourne	11930	6035	6020	6080
		7205	7215	9580	15245
1700-1800	Radio Beijing, China	9500	9570	11575	
1700-1800	Radio Japan, Tokyo	7140	9505	9535	11815
1700-1800	Radio Jordan, Amman	9560			
1700-1800	Radio Moscow World Service, USSR	5980	7105	7170	7220
		7260	7265	7315	7345
		9510	9565	9755	9685
		9795	9875	9885	11730
		11765	11840	15405	15475
		17840			
1700-1800	Voice of America-Africa Service	7195	9575	11920	15410
		15445	15580	15600	17785
		17800	17870		

1700-1800	Voice of America-Middle East Service	3980	6040	9700	9760
		11760	15205	15260	
1700-1800	Voice of America-South Asia Service	7125	9645	9700	15395
1700-1800	WHRI, Noblesville, Indiana	13760	15105		
1700-1800	WINB, Red Lion, Pennsylvania	15295			
1700-1800	WRNO, New Orleans, Louisiana	15420			
1700-1800	WWCR, Nashville, Tennessee	15690			
1700-1800	WYFR, Okeechobee, Florida	11830	13695	15215	
		17750	17885		
1709-1730	BBC Africa Service, London, England	6005	6190	9595	11940
		15400	17880		
1715-1800	Radio Pakistan	11570	9815		
1715-1730	Radio Canada International, Montreal	21545	17820	15325	13650
		5995	7235		
1730-1740	Radio Bayrak, Northern Cyprus	6150			
1730-1755	BRT, Brussels, Belgium	5910	11695		
1730-1800	Radio Austria International, Vienna	5945	6155	12010	13730
1730-1800	Radio Bucharest, Romania	15340	15365	17720	11940
1730-1800	Radio Prague, Czechoslovakia	9605	11685	11990	13715
		15110	17840	21505	
1745-1800	BBC World Service, London, England	5975	6180	6195	7160
		7325	9410	9740	12095
		15070	15310	15400	17640
		17695	17880		

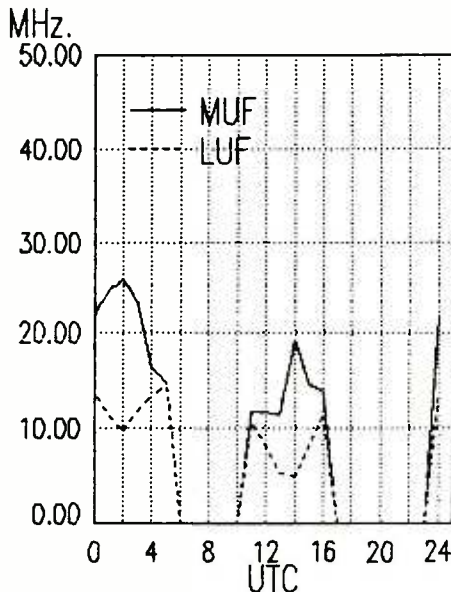
1800 UTC [1:00 PM EST/10:00 AM PST]

1800-1815	Kol Israel, Jerusalem	11585	11655		
1800-1830	BBC World Service, London, England	3255	3955	5975	6180
		6190	6195	7160	7325
		9410	9740	11750	12095
		15070	15310	15400	17640
		17695	17880		
1800-1830	S Radio Norway International, Oslo	15310			
1800-1830	Voice of Ethiopia, Addis Ababa	9660			
1800-1830	Radio Sweden, Stockholm	6065	7265		
1800-1830	Voice of Vietnam, Hanoi	12020	15010	9840	
1800-1845	Trans World Radio, Swaziland	15210			
1800-1850	Radio Bras, Brasilia, Brasil	15265			
1800-1900	F ABC, Alice Springs, Australia	2310	(ML)		
1800-1900	F ABC, Tennant Creek, Australia	2325	(ML)		
1800-1900	All India Radio, New Delhi	11935	15360		
1800-1900	CBN, St. John's, Newfoundland	6160			
1800-1900	CBU, Vancouver, British Columbia	6160			

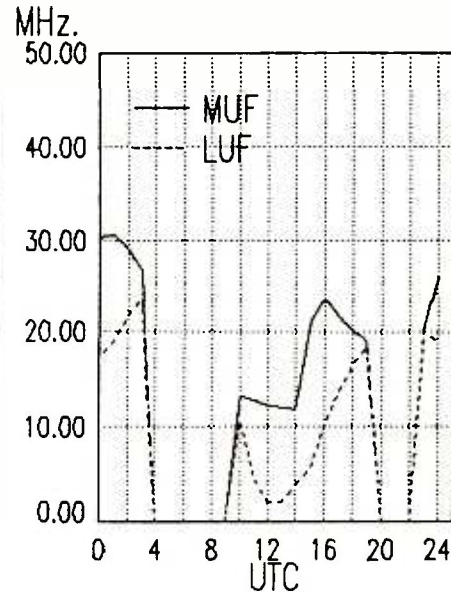
West Coast To
Indian Ocean



West Coast To
Central Asia



West Coast To
South East Asia



West Coast

frequency

section

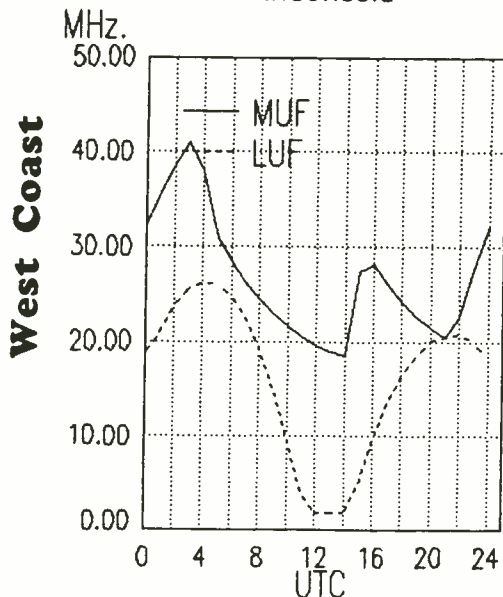
1800-1900	CFCF, Montreal, Quebec, Canada	6005			
1800-1900	CFCN, Calgary, Alberta, Canada	6030			
1800-1900	CHNS, Halifax, Nova Scotia, Canada	6130			
1800-1900	Christian Science World Service	9455	17770	21640	
1800-1900	CKWX, Vancouver, British Columbia	6080			
1800-1900	CFRB, Toronto, Ontario	6070			
1800-1900	KUSW, Salt Lake City, Utah	15650			
1800-1830	Radio Australia, Melbourne	11930	6035	6020	6080
		7205	7215	9580	15245
1800-1900 A.S	Radio Canada Int'l, Montreal	13670	17820	15260	
1800-1900	Radio Jordan, Amman	9560			
1800-1900	Radio Korea, Seoul, South Korea	15575			
1800-1900	Radio Kuwait, Safat, Kuwait	13610			
1800-1900	Radio Moscow World Service, USSR	5980	7105	7170	7260
		7345	9575	9685	9755
		9795	9830	9860	9875
		11765	11840	15405	15425
		15450	17570	21740	
1800-1900	CBC Montreal	9625			
1800-1830	Voice of Vietnam, Hanoi	15010	12010	9840	
1800-1900 S-F	WMLK Bethel, Pennsylvania	9465			
1800-1900	Radio New Zealand, Wellington	17680			
1800-1900	Radio RSA, Johannesburg, S. Africa	21535			
1800-1900 A.S	Radio for Peace Int'l, Costa Rica	13660	21566		
1800-1900	Voice of America-Africa Service	7195	9575	11920	15410
		15445	15580	15600	17785
		17800	17870	21585	
1800-1900	Voice of America-Middle East Service	6040	9700	9760	11760
		15205			
1800-1900	WHRI, Noblesville, Indiana	13760	17830		
1800-1900	WINB, Red Lion, Pennsylvania	15295			
1800-1900	WRNO, New Orleans, Louisiana	15420			
1800-1900	WVCR, Nashville, Tennessee	15690			
1800-1900	WYFR, Okeechobee, Florida	11830	13695	15215	17750
		17885			
1815-1900	Radio Bangladesh, Dhaka	15255	11705		
1815-1900	Radio Berlin Int'l, East Germany	7260	7295	9730	
1830-1855	BRT, Brussels, Belgium	5910	11695		
1830-1855	Radio Polonia, Warsaw, Poland	5995	6135	7125	7285
		9525	11840		
1830-1900	Radio Riyadh, Saudi Arabia	9705	9720		
1830-1900	Radio Australia, Melbourne	11930	9580	7215	7205
		6080	6035	6020	5995
1830-1900	Radio Afghanistan, Kabul	9635	7215	6020	
1830-1900	Radio Sofia, Bulgaria	11735	11840	15370	

1830-1900	Radio Tirana, Albania	7120	9480		
1830-1900	BBC Africa Service, London	3255	6005	6190	9630
		15400	17880		
1830-1900	BBC World Service, London, England	3955	6180	6195	7325
		9410	11750	12095	15070
1830-1900	Radio Berlin Int'l, East Germany	9665	13610	15145	15350
		17755			
1830-1900	Radio Netherlands Int'l, Hilversum	6020	15560	17605	21685
1830-1900	Swiss Radio International, Berne	9885	11955		
1830-1900	Swiss Radio Int'l European Service	3985	6165	9535	
1840-1850	M-A Voice of Greece, Athens	11645	12105	15630	
1845-1855	IRR RTV Guineenne, Conakry, Guinea	4702	7125v		
1845-1900	GBC Radio, Accra, Ghana	6130			
1850-1855	Africa No. 1, Gabon	15475			

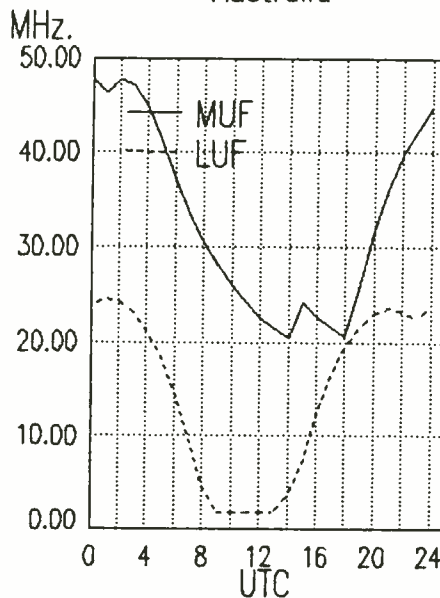
1900 UTC [2:00 PM EST/11:00 AM PST]

1900-1915	Radio Berlin Int'l, East Germany	9665	13610	15145	15350
		17755			
1900-1925	Radio Netherlands Int'l, Hilversum	6020	15560	17605	21685
1900-1930 M-F	Radio Canada Int'l, Montreal	13670	15260	17820	
1900-1930 T	Radio Budapest, Hungary	15160	11910	9835	9585
		7220	6110		
1900-1930	Radio Afghanistan, Kabul	9635	7215	6020	
1900-1945	Radio Omdurman, Sudan	11635			
1900-2000	CBC, Montreal	9625			
1900-1930	Radio Japan, Tokyo	9505	11850	15270	
1900-1930	Radio Kiev, Ukraine	6010	6090	6165	7115
1900-1930 S	Radio Norway International, Oslo	15220			
1900-1930 M-F	Radio Portugal, Lisbon	11740	15250	21530	
1900-1930	Radio Sofia, Bulgaria	11735	11840	15370	
1900-1930	Voice of Vietnam, Hanoi	9840	15010	12010	
1900-1950	Deutsche Welle, Koln, West Germany	11785	11810	13790	15390
		17810			
1900-2000	All India Radio, New Delhi	7412	11620	11935	15360
1900-2000	BBC World Service, London, England	3255	3955	6005	6180
		6190	6195	7160	7325
		9410	9630	11750	12095
		15070	15140	15400	17880
1900-2000	CBN, St. John's, Newfoundland	6160			
1900-2000	CBU, Vancouver, British Columbia	6160			
1900-2000	CFCF, Montreal, Quebec, Canada	6005			
1900-2000	CFCN, Calgary, Alberta, Canada	6030			
1900-2000	CHNS, Halifax, Nova Scotia, Canada	6130			

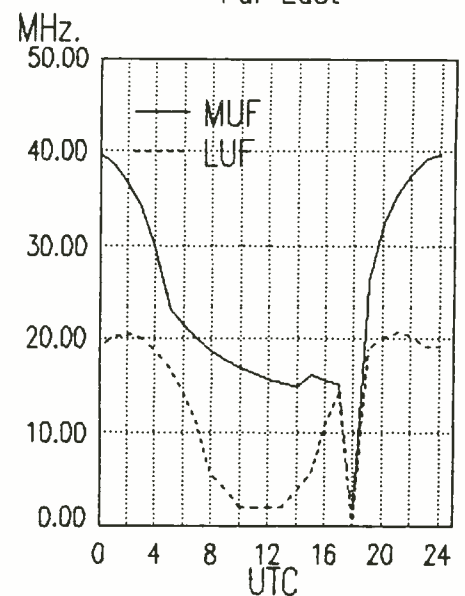
West Coast To
Indonesia



West Coast To
Australia



West Coast To
Far East



frequency

section

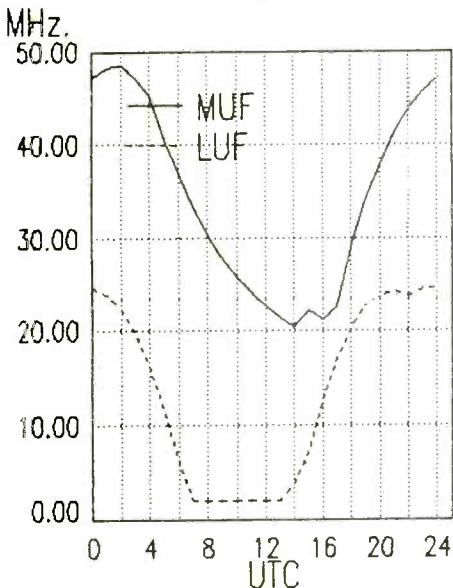
1900-2000	Christian Science World Service	9455	17770	21640
1900-2000	CKWX, Vancouver, British Columbia	6080		
1900-2000	CFRB, Toronto, Ontario	6070		
1900-2000	GBC Radio, Accra, Ghana	6130		
1900-2000	HJCB European Service, Ecuador	17790	15270	21470
1900-2000	KUSW, Salt Lake City, Utah	15650		
1900-2000	Radio Algiers, Alger	9535	15215	
1900-2000	Radio Australia, Melbourne	6035	11930	6080 7205
		7215	9580	6020
1900-2000	Radio Beijing, China	6955	9440	
1900-2000	Radio Havana Cuba	11800		
1900-2000	Radio Jordan, Amman	9560		
1900-2000	Radio Kuwait, Safat, Kuwait	13610		
1900-2000	Radio Moscow World Service, USSR	6905	6030	7105 7170
		9575	9685	9755 9795
		9820	9830	9860 9875
		9895	11765	11840 12010
		12050	15405	15425 15450
		17570	17840	
1905-2000	Radio New Zealand, Wellington	17680		
1900-2000 A,S	Radio for Peace Int'l, Costa Rica	13660	21566	
1900-2000	Radio RSA, Johannesburg, S. Africa	15230	17765	
1900-2000	Spanish National Radio, Madrid	15280	15375	15395
1900-2000	Voice of America-Africa Service	7195	15410	15445 15580
		15600	17785	17800 17870
		21485		
1900-2000	Voice of America-Middle East Service	6040	9700	9760 11760
		15205		
1900-2000	Voice of America-Pacific Service	9525	11870	15180
1900-2000	WHRI, Noblesville, Indiana	13760	17830	
1900-2000	WINB, Red Lion, Pennsylvania	15295		
1900-2000 S-F	WMLK, Bethel, Pennsylvania	9465		
1900-2000	WRNO, New Orleans, Louisiana	15420		
1900-2000	WWCR, Nashville, Tennessee	15690		
1900-2000	WYFR, Okeechobee, Florida	11830	13695	15215 15566
		17885	21615	
1920-1930 M-A	Voice of Greece, Athens	7430	9395	9425
1930-1945	Radio Finland, Helsinki	6120	9530	11755
1930-2000	Radio Austria International, Vienna	5945	6155	12010 13730
1930-2000	Radio Bucharest, Romania	9690	7195	6105 7105
1930-2000	Radio Budapest, Hungary	6110	7220	9585 9835
		11910	15160	
1930-2000	Radio Sofia, Bulgaria	9700	11660	15330
1930-2000	Radio Yugoslavia, Belgrade	5980	7215	11735
1930-2000	Voice of the Islamic Republic Iran	9022	11895	

1935-1955	RAI, Rome, Italy	7275	9710	11800
1945-2000	All India Radio, New Delhi	9755	11860	

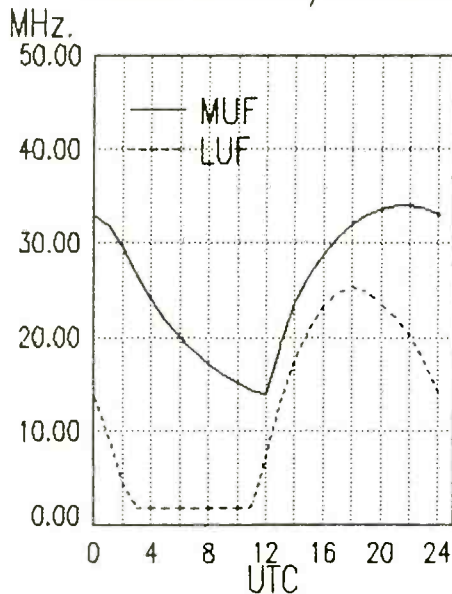
2000 UTC [3:00 PM EST/12:00 PM PST]

2000-2100	Radio New Zealand, Wellington	17680		
2000-2005	Vatican Radio, Vatican City	7250	9645	
2000-2030	BBC World Service, London, England	3255	3955	5975 6005
		6180	6190	6195 7160
		7180	7325	9410 9630
		11715	11750	12095 15070
		15140	15260	15400 17760
		17880		
2000-2030	Kol Israel, Jerusalem	9435	11605	15485 15640
		13750		
2000-2030	Radio Bucharest, Romania	9690	7105	7105 6105
2000-2030	Voice of the Islamic Republic Iran	9022	11895	
2000-2050	Radio Pyongyang, North Korea	6576	9345	9977 9640
2000-2100	Radio for Peace Int'l, Costa Rica	21566	13660	
2000-2100	Voice of Hope, Lebanon	6280		
2000-2100	All India Radio, New Delhi	7412	9755	9910 11620
		11860		
2000-2100 M-A	ABC, Alice Springs, Australia	2310		(ML)
2000-2100	ABC, Katherine, Australia	2485		
2000-2100 M-A	ABC, Tennant Creek, Australia	2325		(ML)
2000-2100	CBN, St. John's, Newfoundland	6160		
2000-2100	CBU, Vancouver, British Columbia	6160		
2000-2100	CFCF, Montreal, Quebec, Canada	6005		
2000-2100	CFCN, Calgary, Alberta, Canada	6030		
2000-2100	CHNS, Halifax, Nova Scotia, Canada	6130		
2000-2100	Christian Science World Service	9455	13770	15610 17555
		17770		
2000-2100	CKWX, Vancouver, British Columbia	6080		
2000-2100	CFRB, Toronto, Ontario	6070		
2000-2100	KUSW, Salt Lake City, Utah	15590		
2000-2030	Radio Australia, Melbourne	6035	7205	7215 9580
		9620	6020	
2000-2100	Radio Beijing, China	6920	9440	9920 11715
		15110		
2000-2100	Radio Havana Cuba	11800		
2000-2100	Radio Kuwait, Safat, Kuwait	13610		
2000-2100	Radio Jordan, Amman	9560		
2000-2100	Radio Moscow British Service	9685		

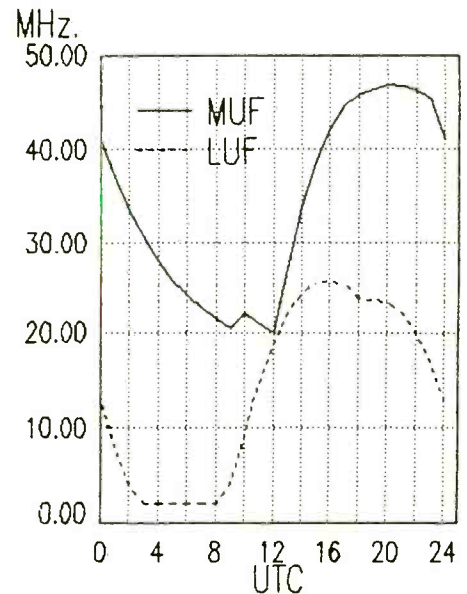
West Coast To Pacific



West Coast To Central America/Caribbean



West Coast To South America



West Coast

frequency

section

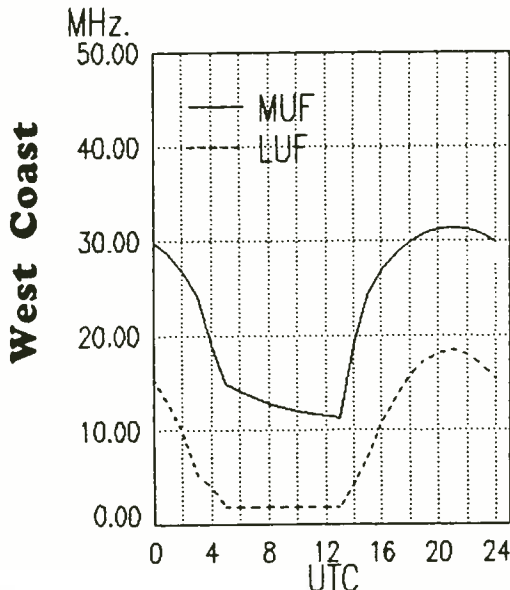
Have you heard what appears to be a former Radio Havana Cuba English announcer now coming over Radio Berlin International? Whoever he is, he's new, and there's a lot more changes coming up, especially at the end of March, when many stations will →

2000-2100	Radio Moscow World Service, USSR	5905	7290	9755	9795
		9860	9895	11685	11840
		12050	15405	15425	17570
2000-2100	Voice of America-Africa Service	7195	15410	15445	15580
		15600	17785	17800	17870
		21485			
2000-2100	Voice of America-Middle East Service	6040	9700	9760	11760
		15205			
2000-2100	WHRI, Noblesville, Indiana	13760	17830		
2000-2100	WINB, Red Lion, Pennsylvania	15185			
2000-2100	WRNO, New Orleans, Louisiana	15420			
2000-2100	WWCR, Nashville, Tennessee	15690			
2000-2100	WYFR, Okeechobee, Florida	9455	11830	13695	15215
		15566	17612	17845	
		21525			
2005-2100	Radio Damascus, Syria	9950	12085		
2015-2100	Radio Berlin Int'l, East Germany	9665	13610	15350	
2025-2045	RAI, Rome, Italy	7235	9575	11800	
2030-2100	BBC World Service, London, England	3955	5975	6005	6180
		6195	7180	7325	9410
		11715	11750	12095	15070
		15140	15260	15400	17760
		17880			
2030-2100	Radio Australia, Melbourne	9620	6020		
2030-2100	Radio Africa ?	7190			
2030-2100	Radio Korea, Seoul, South Korea	6480	7550	15575	
2030-2100	Radio Netherlands Int'l, Hilversum	9860	13700	15560	
2030-2100	M Radio Tallin, Estonian SSR	5925			
2030-2100	Voice of Vietnam, Hanoi	12020	15010	9840	
2040-2048	M-A Voice of Greece, Athens	9425	11645	9395	
2045-2100	All India Radio, New Delhi	7412	9550	9910	11620
		11715			
2045-2100	IBRA Radio, Malta	7110	7225		
2045-2100	Radio Berlin Int'l, East Germany	6115			
2045-2100	Vatican Radio, Vatican City	9625	11700	11760	15120
2050-2100	Vatican Radio, Vatican City	6190	7250	9645	

2100 UTC [4:00 PM EST/1:00 PM PST]

2100-2105	Radio Damascus, Syria	9950	12085
2100-2110	Vatican Radio, Vatican City	6190	7250 9645
2100-2115	BBC World Service, London, England	3955	5975 6005 6180

West Coast To Alaska



2100-2115	IBRA Radio, Malta	7225	6195	7325	9410	11750
2100-2130	Radio Beijing, China	11715	15110	12095	15070	15140 15260
2100-2125	Radio Netherlands Int'l, Hilversum	9860	13700	15400	15400	17715 17760 17880
2100-2130	Radio Berlin Int'l, East Germany	6115				
2100-2130	Radio Bucharest, Romania	9690	7195	7105	6105	
		5990				
2100-2130	Radio Budapest, Hungary	6110	7220	9585	9835	
		11910	15160			
2100-2130	Radio Japan, Tokyo	7140	11815	11835	15230	
		15270	17890			
2100-2130	Radio Korea, Seoul, South Korea	6480	7550	15575		
2100-2130	Radio Peace & Progress, USSR	4795	5905	6145	7140	
		7215	7340	7360	7420	
		7440				
2100-2130	Radio Berlin Int'l, East Germany	9665	13610	15340		
2100-2130	M Radio Ljubljana, Yugoslavia	5980	7240	9620		
2100-2130	Radio Sweden, Stockholm	9655	11705			
2100-2130	Swiss Radio International, Berne	9885	13635	15525	21705	
2100-2150	Deutsche Welle, Koin, West Germany	9670	11785	9765	13780	
2100-2200	CBN, St. John's, Newfoundland	6160				
2100-2200	CBU, Vancouver, British Columbia	6160				
2100-2200	Radio New Zealand, Wellington	17680				
2100-2200	Voice of Hope, Lebanon	6280				
2100-2200	CFCF, Montreal, Quebec, Canada	6005				
2100-2200	CFCN, Calgary, Alberta, Canada	6030				
2100-2200	CHNS, Halifax, Nova Scotia, Canada	6130				
2100-2200	Christian Science World Service	9455	13770	15610	17555	
		17770				
2100-2200	CKWX, Vancouver, British Columbia	6080				
2100-2200	CFRB, Toronto, Ontario	6070				
2100-2200	KUSW, Salt Lake City, Utah	15590				
2100-2200	Radio Australia, Melbourne	17795	9620	15160		
2100-2200	Radio Baghdad, Iraq	7290				
2100-2200	Radio Beijing, China	6920	9920	11500	11715	
2100-2200	Radio Jordan, Amman	9560				
2100-2200	Radio Moscow World Service, USSR	4060	5905	5950	6030	
		7170	7290	7350	9450	
		9620	9685	9730	9755	
		9780	9790	9795	9800	
		9820	9860	9870	9895	
		11685	11840	11850	17720	
		12050	15130	15405	15425	
2100-2200	Radio for Peace, Costa Rica	21566	13660			
2100-2200	RAE, Buenos Aires, Argentina	11710	15345			
2100-2200	Voice of America-Africa Service	7195	15410	15445	15580	
		15600	17785	17800	17870	
		21485				
2100-2200	Voice of America-Middle East Service	6040	9700	9760	11760	
		15205	11710			
2100-2200	Voice of America-Pacific Service	11870	15185	17735		
2100-2200	Voice of Turkey, Ankara, Turkey	9825				
2100-2200	WHRI, Noblesville, Indiana	13760	17830			
2100-2200	WINB, Red Lion, Pennsylvania	15185				
2100-2200	WRNO Worldwide, Louisiana	15420				
2100-2200	WWCR, Nashville, Tennessee	15690				
2100-2200	WYFR, Okeechobee, Florida	9455	11830	13695	15215	
		15566	17612	17845		
		21525				
2110-2200	Radio Damascus, Syria	15095	12085			
2115-2130	M-F BBC Caribbean Service, London	5975	15400	17715		
2115-2130	BBC World Service, London, England	3955	6005	6195	7180	
		7325	9410	11715	11750	
		12095	15140	15260		
2130-2200	BBC World Service, London, England	3955	5975	6005	6195	
		7325	9410	11750	12095	
		15140	15260			
2130-2145	BBC English by Radio, London	11945	15280			
2130-2200	BBC English by Radio, London	6125	7125	9635		
2130-2200	T-F BBC Falkland Islands Service, London	9915				
2130-2200	HCJB, Quito, Ecuador	15270	17790			
2130-2200	Radio Canada Int'l, Montreal	11880	113670	15150	17820	
2130-2200	Radio Sofia, Bulgaria	11660	153330	9700		
2145-2200	Radio Berlin Int'l, East Germany	6115				

change their times and frequencies to adjust to Summer Time in Europe and elsewhere. So keep your ears tuned to your radio, and your eyes tuned to MONITORING TIMES. When changes happen, we not only keep up with them, we get out in front!

frequency

section

2200 UTC [5:00 PM EST/2:00 PM PST]

2200-2205	Radio Damascus, Syria	15095	12085		
2200-2215	M-A ABC, Alice Springs, Australia	2310	(ML)		
2200-2215	ABC, Tennant Creek, Australia	2325	(ML)		
2200-2215	BBC English by Radio, London	11945	15280		
2200-2215	M-F Voice of America-Caribbean Service	9640	11880	15225	
2200-2225	BRT, Brussels, Belgium	5910	9925		
2200-2225	Radio Finland, Helsinki	6120			
2200-2225	RAI, Rome, Italy	5990	7235	9710	
2200-2230	ABC, Katherine, Australia	2485			
2200-2300	All India Radio, New Delhi	7412	9550	9910	11620
		11715			
2200-2230	S KGEI, San Francisco, California	15280			
2200-2230	S Radio Norway International, Oslo	15225			
2200-2245	Radio Berlin Int'l, East Germany	9730			
2200-2245	Radio Yugoslavia, Belgrade	7215	9620	9660	11735
2200-2250	Radio Baghdad, Iraq	7290			
2200-2300	BBC World Service, London, England	3915	3955	5975	6005
		6175	6195	7325	9410
		9570	9590	9595	9915
		11750	11955	12095	15140
		15260	15400		
2200-2300	CBC Northern Quebec Service, Can	9625			
2200-2300	CBN, St. John's, Newfoundland	6160			
2200-2300	CBU, Vancouver, British Columbia	6160			
2200-2300	CFCF, Montreal, Quebec, Canada	6005			
2200-2300	CFCN, Calgary, Alberta, Canada	6030			
2200-2300	CHNS, Halifax, Nova Scotia, Canada	6130			
2200-2300	Christian Science World Service	9465	15275	15300	15405
		17555			
2200-2300	CKWX, Vancouver, British Columbia	6080			
2200-2300	CFRB, Toronto, Ontario	6070			
2200-2300	KUSW, Salt Lake City, Utah	15580			
2200-2300	Voice of Hope, Lebanon	6280			
2200-2300	Radio Australia, Melbourne	15160	15240	15320	
		17795	21740		
2200-2300	Radio Beijing, China	3985			
2200-2300	Radio Canada Int'l Montreal	9760	11705	11945	15440
2200-2300	Radio New Zealand, Wellington	17680			
2200-2300	Radio Havana Cuba	7140			
2200-2300	Radio Moscow World Service, USSR	4060	5905	5950	
		6030	6045	6055	7150
		7170	7280	9450	9620
		9685	9755	9790	9820
		9860	9870	11840	11850
		12050	15130	15405	15425
		17570	17655	17700	17720
2200-2300	Radio for Peace Int'l, Costa Rica	21566	13660		
2200-2300	Radio Peace & Progress, USSR	4795	6145	7215	7360
		9610			
2200-2300	Radio Tonga, Kingdom of Tonga	5030v			
2200-2300	Voice of America-East Asia Service	7120	9770	11760	15185
		15290	15305	17735	17820
2200-2300	Voice of America-Eur/Pac. Service	9852	11805	15345	15370
		17610			
2200-2300	Voice of Free China, Taiwan	9850	11805		
2200-2300	Voice of U.A.E., Abu Dhabi, United Arab Emirates	9600	11985	13605	
2200-2300	WHRI, Noblesville, Indiana	13760	17830		
2200-2300	WINB, Red Lion, Pennsylvania	15185			
2200-2300	WRNO Worldwide, Louisiana	15420			
2200-2300	Radio Algiers, Algeria	9640			
2200-2300	WVCR, Nashville, Tennessee	15690			
2200-2300	WYFR, Okeechobee, Florida	11830	13695	15215	17612.5
		17845	21525		
2205-2220	Vatican Radio, Vatican City	9615	11830	15105	
2230-2300	Kol Israel, Jerusalem	9435	11605	13750	15615
2230-2300	Radio Polonia, Warsaw, Poland	5995	6135	7125	7270
2230-2300	Radio Mediterranean, Malta	6110			
2230-2300	Radio Sofia, Bulgaria	15330	11680		
2230-2300	Radio Tirana, Albania	7215	9480		
2230-2300	Swiss Radio Int'l, European Service	6190			
2245-2300	BBC English by Radio, London	7180	11945		
2245-2300	Radio Berlin Int'l, East Germany	5965	9730	13690	

2300 UTC [6:00 PM EST/3:00 PM PST]

2300-2315	BBC World Service, London, England	3915	5975	6175	6195
		7325	9570	9590	9915
		11750	11945	11955	15260
		17875			
2300-2315	FEBC, Manila, Philippines	6030			
2300-2330	Radio Mediterranean, Malta	6110			
2300-0000	Adventist World Radio, Costa Rica	9725	11870		
2300-2330	BBC English by Radio, London	6110	9825	11765	11820
		15390			
2300-2330	Radio Berlin Int'l, East Germany	5965	9730	13690	
2300-2330	Radio Norway International, Oslo	9605			
2300-2330	Radio Sofia, Bulgaria	15330	11680		
2300-2330	Radio Vilnius, Lithuania	7400	6100	9765	15180
		17665	17690		
2300-2345	WYFR, Okeechobee, Florida	5985	9505	15440	
2300-0000	A.S. Adventist World Radio-Asla, Guam	15125			
2300-0000	BBC World Service, London, England	5975	6175	6195	7325
		9570	9590	9915	11750
		11945	11955	15260	17875
2300-0000	CBN, St. John's, Newfoundland	6160			
2300-0000	CBU, Vancouver, British Columbia	6160			
2300-0000	CFCF, Montreal, Quebec, Canada	6005			
2300-0000	CFCN, Calgary, Alberta, Canada	6030			
2300-0000	CHNS, Halifax, Nova Scotia, Canada	6130	15405		
2300-0000	Christian Science World Service	9465	15275	15300	17555
2300-0000	CKWX, Vancouver, British Columbia	6080			
2300-0000	CFRB, Toronto, Ontario	6070			
2300-0000	KUSW, Salt Lake City, Utah	15580			
2300-0000	KVOH, Rancho Simi, California	17775			
2300-0000	Radio Australia, Melbourne	15160	15240	15320	
		17795	21740		
2300-0000	Radio Japan, Tokyo	11835	15195	17810	21610
2300-0000	Radio Korea, Seoul, South Korea	15575			
2300-0000	Radio Luxembourg	6090			
2300-0000	Radio Moscow N. American Service	6045	7115	7150	9685
		9720	12050	15425	17605
		17700	17720	21470	9870
2300-0000	Radio Moscow World Service, USSR	7135	7370	9510	9790
		11800	11985	12045	15130
		15140	15295	15420	17570
		17610	17655	17775	21690
		21790			
2300-0000	Radio New Zealand, Wellington	17680			
2300-2330	Radio for Peace, Costa Rica	21566	13660		
2300-0000	Radio Pyongyang, North Korea	11735	13650		
2300-0000	Radio Tonga, Kingdom of Tonga	5030v			
2300-0000	Voice of America-East Asia Service	7120	9770	11760	15185
		15290	15305	17735	17820
2300-0000	Voice of Turkey, Ankara, Turkey	9445	9665	9685	17760
2300-0000	Voice of U.A.E., Abu Dhabi, UAE	9600	11985	13605	
2300-0000	WHRI, Noblesville, Indiana	13760	17830		
2300-0000	WINB, Red Lion, Pennsylvania	15145			
2300-0000	WRNO, New Orleans, Louisiana	15420			
2300-0000	WVCR, Nashville, Tennessee	15690			
2300-2330	Radio Canada Int'l, Montreal	9755	11730		
2305-2355	Radio Polonia, Warsaw, Poland	5995	6135	7125	7145
		7270			
2315-2330	BBC World Service, London, England	5975	6110	6175	6195
		7145	7325	9570	9590
		9825	9915	11750	11765
		11820	11945	11955	15260
		15390	17875		
2330-0000	Voice of Vietnam, Hanoi	15010	12010	9840	
2330-0000	Radio for Peace Int'l, Costa Rica	7375	(+13660	21566	M-F)
2330-2345	BBC English by Radio, London	3915	6080	7180	11865
2330-0000	BBC World Service, London, England	5975	6110	6175	6195
		7325	9570	9590	9825
		9915	11750	11765	11820
		11945	15260	15390	17875
		6120	9760	11825	
2330-0000	Radio Tirana, Albania	6190			
2330-0000	Swiss Radio International, Berne	6190			
2335-2345	M-A Voice of Greece, Athens	9395	11645		

Sangean's New ATS-808 Portable

A few years ago, on a gorgeous day, I was strolling with my wife along the banks of the river Seine in Paris. Radio was the last thing I had on my mind...when, there it was. In an electronics store display was a neat-looking shortwave portable I had never seen -- or heard of -- before.

So much for romance in Paris. I brought the radio back to the States and inquired about to see whether any shortwave dealers had heard of this radio. No, they hadn't, but at least one -- Electronic Equipment Bank -- was interested and asked me for the name and address of the manufacturer. Naturally, I obliged, and the rest is history.

This was the Sangean ATS-803, later to be upgraded to the '803A, and now sold by the countless tens of thousands under that designation and many others, including Radio Shack's DX-440.

With the Magnavox D2935, sold outside the U.S. as the Philips D2935, having been discontinued, the '803A is now the least-costly serious world band portable on the market. Typically, it sells for just under \$200, and it's a fine midsized portable.

Sangean also makes a variety of smaller portables, none of which stands out in the marketplace the way the '803A does. So when Sangean announced it was coming out with a new "flagship" world band radio, ears perked up. For a little more money, one assumed, something even better than the '803A would be available.

After numerous delays resulting from a problem with one of the chips in the receiver, the first limited-quantity shipments of ATS-808 receivers recently began appearing on at least some dealers' shelves. By spring of this year, the receiver is expected to be widely available in quantity.

The '808 is about the size of the Sony ICF-2003. That is, it's more compact than the '803A. It also has a simpler front-panel layout than does the '803A. Yet, it has a number of advanced-technology aspects.

Sophisticated Tuning

For example, tuning is quite versatile. In addition to a pair of up/down slewing buttons, there's a two-speed tuning knob, with the speed, thankfully, being selected by the user, not some automatic VRIT circuit. There's also a three-function keypad -- default for choosing memory channels, another for direct frequency access, and yet another for selecting meter bands. The keys have exceptionally good feel and tactile response!

There are 45 memory channels in all. Of these, 18 work on shortwave.

Frequency coverage is all the way from 150 kHz to 30 MHz -- no gaps. And there's also stereo FM. Although the set comes with only one speaker, it also comes with a set of earpieces and a head wand to allow for true stereo to be heard.

The operator's manual is clearly written and easy to follow. The radio also comes with a "Wave Handbook" containing schedule information that is virtually identical to that found in the 1987 *World Radio TV Handbook*. Presumably because Sangean is located in Taiwan, there is no schedule included for Radio Beijing.

No Single Sideband; Only One Bandwidth

There is only one shortwave bandwidth, unlike the two found in the '803A. And there are no facilities for reception of single-sideband or CW signals. On the 803A, reception of SSB and CW is not only possible, but actually quite good by portable standards.

For travel, the '808 comes with a power lock switch and a soft case to protect the set from scratches. Surprisingly, however, the '808 has no carrying strap or handle whatsoever.

Alarm and Sleep Shutoff; No On/Off Timer

Travelers often use radios as alarm devices, and also to lull them to sleep. A radio, after all, can override the sorts of traffic and adjacent-room noises that keep light sleepers awake.

For that reason, the '808 has a sleep-shutoff control. It also comes with one timed-on control that will switch on either the radio or a buzzer. However, once the timer turns the radio on, the operator has to turn the radio off by hand. The timing facility is thus along the lines of an alarm clock, rather than the sort of true on/off timer found on various other world band radios, such as the Sony ICF-2010, or a VCR.

The LCD, which is unlit, has superior contrast and reasonably large frequency numbers. It also displays either of two 24-hour clocks, neither of which displays seconds numerically. Also displayed is the band, battery strength, and signal strength (in a non-standard 1-7 scale).

Power is from six "AA" cells, two of which are for the computer. No ac power supply is provided, but there is a socket in which one with suitable polarity may be connected. Sangean offers the ADP-808, which lists for \$7.99.

Finally, there is a simple high-low tone



control and a flip-out elevation panel to place the radio at a comfortable angle.

Broad Selectivity

Performance, overall, is not in the same league as that of the better competing compact models. Selectivity, for example, is only adequate, with 5 kHz heterodynes -- whistles -- clearly audible on most channels.

Good Sensitivity; Some "Ghosts"

Spurious signal rejection is also adequate, but hardly of "flagship" caliber. False "repeats" of world band stations occur on various frequencies -- between 6.2 and 6.3 MHz, for example -- sometimes at perfectly listenable levels.

Sensitivity is fine, however. Indeed, in this regard the '808 outperforms a number of compact and even larger portables. FM performance is also quite good.

Fast Tuning Mutes Receiver

Because tuning is in 1 kHz increments, there is always the potential problem of

"whoop-whoop" chuffing sounds appearing in concert with the speed in which the tuning knob is turned. A number of receivers have been faulted for this problem, so Sangean opted to avoid this problem by muting the receiver relatively greatly when the tuning knob is turned.

This does work well in eliminating "chuffing," but it also tends to mute the radio to the point where it is difficult to hear any stations without tuning quite slowly.

The Bottom Line

The kicker in all this is not the radio. It's an adequate little portable that in many ways has been carefully thought out. Rather, it's the price: \$299.95 list, or some \$60 more than the '803A. Even the '808's current street price is some \$30 or so over that of the 803A.

At a list price of around \$199.95, the '808 would be a worthy addition to the existing lineup of world band receivers. But at \$300, this set is clearly overpriced. There are similar, but better, compact offerings from Sony and Panasonic at lower prices. Even Sangean's own venerable

'803A, although it's a bit larger, is markedly superior.

It may well be that this is not the last we are to hear of this model. When Sangean's '803 first appeared, we faulted it for certain shortcomings, and not long thereafter they brought out an improved version.

It remains to be seen what, if anything, Sangean plans to do with its spanking-new '808, but possibilities range from adjustment of pricing to improvement of performance.

mt

You can hear Larry Magne's equipment reviews the first Saturday of each month, plus PASSPORT editors Don Jensen and Tony Jones the third Saturday, over Radio Canada's "SWL Digest." For North America, "SWL Digest" is heard at 8:10 PM ET on 5960 and 9535 kHz, with a repeat Tuesday at 8:30 AM ET on 9635, 11855 and 17820 kHz.

PASSPORT'S "RDI White Paper" equipment reports contain everything found during its exhaustive tests of communications receivers and advanced portables. These reports are now available in the U.S. from Universal Shortwave and EEB; in Canada from PIF, C.P. 232, L.d.R., Laval PQ H7N 4Z9; in Europe from Interbooks, 8 Abbot Street, Perth PH2 0EB, Scotland; and in Japan from IBS-Japan, 5-31-6 Tamanawa, Kamakura 247.

PC Control Over ICOM™ R7000 Receiver

The Remote Computer Scanning System™

The RCSS™ significantly enhances the ICOM™ R7000 receiver capabilities by providing automated PC control over the receiver scanning and memory functions.



Radio Control & Scanning Screen

Database Storage & Retrieval Screen

Features

- Automatic detection and storage of active frequencies & other information while scanning.
- Scan using user specified Tuning Steps from 10 Hz to 100 MHz.
- Scan by Mode, Class of Service, or Type of Unit.
- Scanning now resumes upon loss of carrier with user supplied delay.
- Unattended frequency monitoring by time and date.
- Memory expanded to 1,000 frequencies.
- Monitor half-duplex communications by specifying companion frequency.
- Mouse/Keyboard driven graphic user interface.

SYSTEMS & SOFTWARE
INTERNATIONAL LTD

Demo Version Available

To order or receive more information, contact us at 4639 Timber Ridge Drive, Dumfries, VA, 22026, USA.
Phone (703) 680-3559, Fax (703) 878-1460. RCSS™ is available for both IBM compatible & Macintosh computers.

Regency INF10 Scanner



Although labelled Regency, the Uniden Corporation of America purchased the assets of Regency a couple of years back, so it isn't unusual to observe that some Regency scanners bear a striking resemblance to Bearcats!

And so it is with the Regency INF10, a striking lookalike of the BC-1 reviewed last month, except the BC-1 allows CB channel reception as well as police. An entire series of scanners, in fact, bear striking similarities to one another, different only in minor respects.

Measuring only 5-3/16"W x 6-7/8"D x 1-5/8"H, the INF10 is intended for mobile operation, powered by 12 VDC; an optional AD 580U AC wall adaptor is available from Uniden dealers for indoor use. A Motorola antenna jack accommodates standard mobile antennas.

Conventional panel functions are present (combination volume and on/off switch, squelch control, scan/hold button, preprogrammed weather search button). Less familiar keys include STATE and POLICE, geared for the interstate driver.

As the driver enters a new state he simply presses the STATE key, either holding it down for two-letter state codes to scroll by, or by stepping one state at a time. Like the BC-1 reviewed earlier, the INF10 states move by quickly, so if you zip past your state, you have to wait for all fifty to scroll by again.

Hundreds of law enforcement frequencies on a state-by-state assignment basis are stored in ROM, scanned at some 90 channels per second. When an active frequency

is found the scanner stops, allowing reception. If the listener does not want that particular frequency he presses DELETE and it will be ignored in future scan sequences.

An LCD shows the status (WX, PO, etc.) or state (TX, NY, etc.); while all law enforcement low, high and UHF band frequencies are scanned, no frequency is ever displayed.

Sensitivity of the little receiver is excellent, averaging about 1/2 microvolt throughout, and the 3 watt audio amplifier should be enough to be heard in virtually any mobile environment.

The INF10 comes with a mobile mount kit and DC power cord as well as operating instructions and a warranty registration card. It is to be found in the \$110-\$120 price range from MT advertisers.

GRE "SUPER AMPLIFIER"

GRE America, famous for the PRO2004 and PRO2005 (and other) scanners which they manufacture and private-label for Radio Shack, also produces their own product line. Their popular "Super Converter" (800 MHz converter) is one of these; the new "Super Amplifier" for scanners is another.

Operating from an internal 9-volt battery (not supplied), the Super Amplifier can provide up to 20 dB (adjustable) signal gain from approximately 100 through 1000 MHz. It does not enhance 30-50 MHz low band reception as found on all scanners.

BNC connectors allow the Super Amplifier to connect directly between the portable scanner and its rubber ducky antenna for increased signal strengths over its intended frequency range. In our lab tests we found the unit to be most satisfactory, providing noticeable improvement of weak signals.

The unit is not confined to portable operation; it may be connected to a desktop or mobile scanner as well. An external power connector allows a 9-volt (not 12 V!) source to operate the unit for an extended period of time.

Using a nine-volt alkaline battery in intermittent application, 24 hours of useful battery lifetime may be expected.

GRE Super Amplifier, \$59.95 from Grove Enterprises and other *Monitoring Times* advertisers.



RADIOSCAN MAGAZINE

THE INTERNATIONAL MAGAZINE FOR THE HISPANIC RADIO AMATEUR

*Conozca el Interesante Contenido de
Radioscan Magazine*

¡Una revista editada en Español, para los radioaficionados!

...Y ya está a la venta el libro

"RADIOANTENAS"

Editado por Radioscan Corporation

Ordenelo hoy por sólo \$9.95

(+ \$2.00 por UPS in USA, ó \$5.00 por vía aérea)



¡GRATIS!

¡GRATIS!

**Escriba Hoy
Y Reciba un Ejemplar**

de
RADIOSCAN MAGAZINE

175 Fontainebleau Blvd. Suite 2K-5
Miami, FL 33172 • Ph. 551-7225 • Fax 551-1785

*YES, we are reaching the Growing Hispanic Market
in U.S.A and in 21 Countries.*

The World of Electronics

It is a place where you can try out a hands-free video game controller. You can test a high-tech, hand-held copier. There is even a new 120 inch television screen -- yes, that's 10 feet from corner to corner.

It's the winter wonderland of gadgets, the Consumer Electronics Show, located in Las Vegas, Nevada, and it displayed "what's hot" in electronic gadgetry for the 1990s.

Industry officials say that more than \$10 billion in orders were produced by the show. In fact, when combined with its summer counterpart in Chicago, the two Consumer Electronics Shows account for more than half the consumer electronics industry's total sales.

"The mood for 1990 is very upbeat," said show spokeswoman Cynthia Upson. "Retailers say that they expect a nice volume for the spring selling season." Factory sales for the electronics industry are expected to reach a record \$33.412 billion in 1990, up from 32.166 billion in 1989.

Love to Commute

They dub themselves the "90s Survival Guide for Commuters." And while you have to call a number (415-420-6666) in order to get the entire catalogue, their magazine advertisement was enough to catch the attention of the "Catalogues" crew. Now here are some real gadgets.



The Shirt That Scans

Proudly announced as "The First Stereo Sweatshirt," this heavy-duty white cotton sweatshirt has a built-in stereo speaker system. Says the ad, "it surrounds you with a terrific, safe stereo sound that sets your ears free to hear everything from singing birds to sirens."

In the picture, a male model is shown using the Stereo Sweatshirt with a Walkman but we all know that it could also be used with a scanner or shortwave portable.

Have your credit card ready, call 415-420-6666, specify your size (small, medium, large, or extra-large) and prepare to depart with



\$55.95 plus \$4.50 shipping to get yours.

Pocket Converter

"Love to Commute" also offers the Statpower Pocket converter, which it claims can provide portable 115 Volt AC power from any 12 volt battery source. According to the advertisement, Statpower will run "just about anything."

It's capable of producing 200 watts of peak power and 100 watts of constant power, all in a unit that fits in the palm of your hand. Built-in safety features include complete protection against overloads.

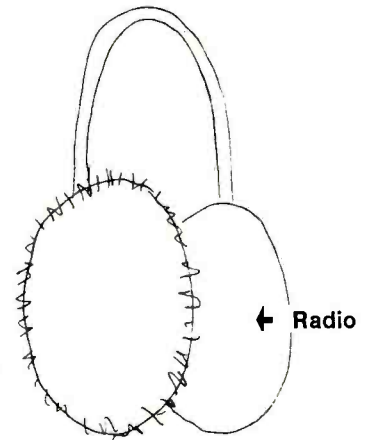
The Statpower Pocket Converter is \$179.95 plus \$5.50 shipping from the phone number listed above.

More for the Ears

On a similar note as the stereo sweatshirt is the "New Product Idea" that we received from a company called ISC. Apparently a solicitation to manufacturers, the ISC press release touts a Pennsylvania inventor who has "developed a pair of unique accessories which enable individuals to comfortably enjoy [their] favorite music and radio programs while outdoors, even in below-freezing temperatures.

The "unique" yet totally theoretical accessory is HEARMUFFS, and, as you might have guessed, are earmuffs with speakers inside.

The HEARMUFF is not yet available to the "more than 88 million households who represent a vast potential market for this product" so please, do not write to this magazine asking for details! We can provide no more information than is available in this column! Instead,



Artist's conception of the "Hearmuff"

contact ISC, Dept. PGH-1622, 903 Liberty Avenue, Pittsburgh, PA 15222.

A Modem Filter

BALLco Inc is offering a modem noise filter that, according to company officials, allows modems to function on telephone lines that previously could not be used for reliable data transfer.

The DigiFilter works with 300, 450, 1200, 2400 or 4800 baud internal or external modems and features a variable threshold. It's a compact device, housed in an RJ-11C connector assembly and it comes with a standard modular cable and double-sided adhesive for wall or computer/modem mounting.

You can get yours for just \$29.95 from BALLco Inc., P.O. Box 1078, Snellville, Georgia 30278-1078.

Advanced Wireless FM Intercoms

Broadcasting is something that gets in your blood. Some people need to do it. That's why there are so many pirates out there. Pirates have a need to broadcast that



Midland 72-008 "Hands-Free" Intercom

is so strong that they gladly risk substantial fines and even imprisonment in exchange for the euphoria of being on the air with illegal station.

There are, of course, others among us who would also like to broadcast but who can neither afford a real broadcast station nor who feel the *need* so strongly as to risk jail with an illegal, high-powered station.

Those of us who fit into the latter category might consider one of Midland's line of wireless FM intercoms. This is an easy-to-obtain, reasonably affordable FM alternative to the Part 15 AM transmitters specified in Karl Zuk's article found elsewhere in this issue.

Midland, for example, has a full line of wireless FM intercoms, ranging from one to three channels each. The most appropriate in terms of getting-the-job-done vs price is their single channel model 72-002. This unit features built-in noise filtering circuitry and a fully automatic squelch circuit to reduce interference.

As you've no doubt read in Bob Kay's column, these things seem to have incredible range and some people who use them for "broadcasting" add an antenna that (illegally) boosts their range.

For more information on these little transmitters, write Midland International Corporation, Consumer Communications Division, 1690 N. Topping, Kansas City, MO 64120.

"Catalogs" welcomes your participation. See something interesting in your pile of fresh junk mail? Clip it and send it in! Add your own comments.

Be sure to include the name of the catalog, the item's description, price and shipping information along with the phone order number. Send it to "Catalogs," P.O. Box 98, Brasstown, NC 28902.

Feeling Left Out?



Have your favorite communications (Police, Fire, etc) moved to the 800MHz band? Are the scanners available which access this band too expensive? If you are like many scanning enthusiasts, this can be a real dilemma. For those of you who are still in a futile search for 800 MHz coverage on your hand held scanning radio, GRE America, Inc. has a product for you. Introducing the newly developed **Super Converter™ II** which has all of the features that you have come to enjoy in our **Super Converter™ 8001** (810 - 912 MHz coverage, etc.), and more. The **Super Converter™ II** has a convenient switch which allows for an instant return to normal scanning frequencies without disconnecting the unit. It is also equipped with BNC connectors for easy adaptability to your handheld scanner.



Introducing the **Super Converter 8001™** from GRE America, Inc. The **Super Converter 8001™** once attached allows any UHF scanning or monitoring receiver to receive the 810 to 912 MHz band.

It has been our experience that most scanning radios suffer from a lack of sensitivity due to antenna and power limitations. Introducing the GRE

Super Amplifier™. The **Super Amplifier™** is a compact pre-amp designed to work with scanners and it amplifies the reception of the VHF/UHF bands (from 100MHz to 1GHz) as high as 20db.

The **Super Amplifier™** has an adjustable gain which is controlled from the back of the unit and allows amplification level of up to 20db through all frequencies, equipped with a bypass switch to return to normal scanning frequencies. As with all other GRE products, you will find the quality and design of the **Super Amplifier™** to be of the highest standard.



Wide range frequency (up to 1GHz) antenna is exclusively available from GRE America, Inc.

For more information, or a dealer near you (new dealers are welcome), contact GRE America, Inc. at the address below.

GRE America, Inc.



GRE America, Inc.
425 Harbor Blvd.
Belmont, California 94002

Telephone (415) 591-1400
Outside CA: (800) 233-5973
Fax: (415) 591-2001

World Probe

\$29.95 + S3 P & H

World Band Scanner Antenna

- Cuts Noise • Improves Reception • Indoors or Out •
- Works with all World Band Portables and Scanners •
- Sleek 6-ft Probe with Integral 25-ft Low-Loss Shielded Feedline •
- Fully Insulated and Weather Sealed • Decorator White Design •

AntennasWest Box 50062-M FREE Storage Pouch
801 373 8425 Provo, UT 84605 & Universal Connector Kit

TIARE PUBLICATIONS SALE

SWL Forms (10 in all)
List: \$10.00 plus \$2.00 shipping
DX Radio Supply price: 8.00 + .90

Scanner Listeners' Handbook
List: \$14.95 plus \$2.00 shipping
DX Radio Supply price: 13.95 + 1.25

1990 Pirate Radio Directory
List: \$7.95 plus \$2.00 shipping
DX Radio Supply price: 5.99 + .90

Catalogue 25 cents
DX Radio Supply, P.O. Box 360
Wagontown, PA 19376

Things you can do with Diodes

Diodes in one form or another have existed since the beginning of radio. Without them, we would not have radio as we know it today. The first receivers in the early days of radio were based on the diode action of galena or carborundum crystals, the surfaces of which were used in combination with a catswhisker contactor.

The junction of these two objects formed a rectifier diode that demodulated an amplitude-modulated broadcast signal (AM) and converted it to a pulsating dc current that caused an audio response in a pair of earphones. That crude receiver was known as a crystal set or crystal detector.

It is ironical that we had solid-state devices before we had vacuum tubes! Vacuum-tube diodes appeared, and they were used as rectifiers and detectors for decades to follow. The solid-state selenium and copper-oxide rectifiers appeared in midstream, but vanished in favor of modern solid-state diodes.

We now have all manner of solid-state diodes that are used as dc switches, power-supply rectifiers, voltage regulators (Zener diodes), signal detectors, balanced modulators and voltage-reference devices. Germanium and silicon diodes are the prevalent types today.

Diode Inner Structure

Modern diodes are the "point contact" or "junction" types. The former species is structured in a similar manner to the old galena/catswhisker type, because a tiny wire contactor touches a piece of germanium crystal within the glass body of the diode. The familiar 1N34A and 1N60 diodes fit this description.

A germanium diode conducts at a lower "barrier" voltage than does a silicon junction diode. This is typically 0.3 to 0.4 volt. A silicon diode conducts at approximately 0.7 volt. Also, the germanium diode exhibits

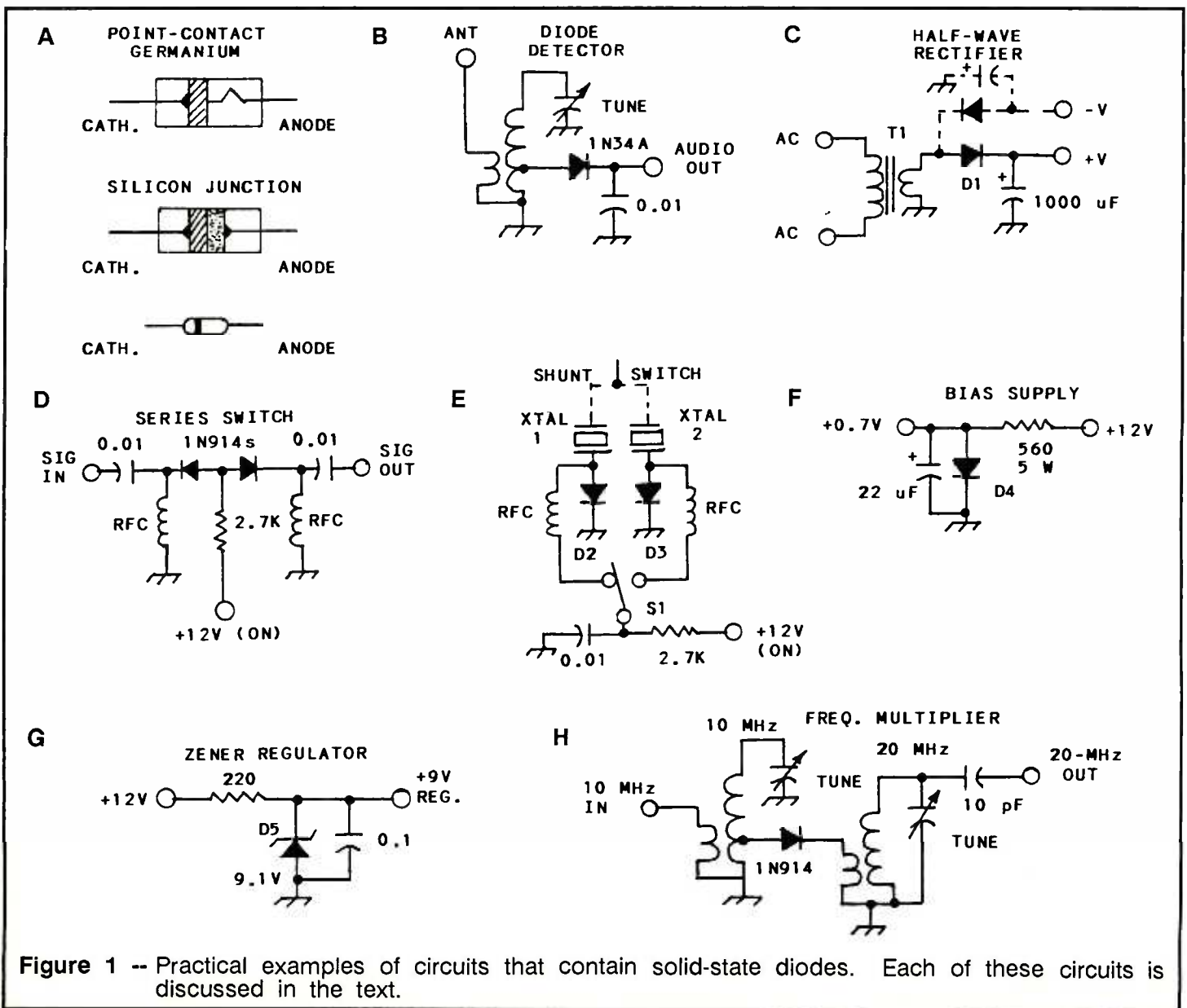


Figure 1 -- Practical examples of circuits that contain solid-state diodes. Each of these circuits is discussed in the text.

less internal capacitance than does its silicon brother.

These germanium traits make the diode ideally suited for weak-signal detection and use from VLF into the microwave frequencies. Radar receivers in WW II, for example, used germanium diodes as detectors immediately after the antenna.

Silicon diodes contain a junction or sandwich of P and N type crystal. The larger the diode the greater the junction capacitance. The small silicon diodes (such as the 1N914) have a capacitance of roughly 3.5 pF. Large rectifier diodes have much greater capacitance, owing to the increased junction size. This makes them unsuitable for signal detection except at very low frequencies.

All solid-state diodes have an internal resistance. Of major concern is the "forward resistance." This is measured from the anode to the cathode with a standard ohmmeter. Silicon diodes have resistances from, say, 5 to 15 ohms. It depends on the diode type and how it was manufactured. The back resistance (cathode to anode) is usually one to several megohms. Germanium diodes have a much lower back resistance (100,000 ohms or somewhat greater).

The combination of diode capacitance and forward resistance establish a time constant that determines how well or poorly the diode will perform at radio frequencies. The larger the time constant the lower the useful operating frequency. This time constant determines also the effectiveness of small diodes that are used as "high-speed switches." In other words, the greater the diode time constant, the slower the available switching time.

Diode Ratings

Of major concern to us is the PIV (peak inverse voltage) or PRV (peak reverse voltage). You will see both abbreviations used.

PIV or PRV ratings indicate the maximum instantaneous value of reverse voltage (cathode to anode) that can occur across the diode junction without damaging the device. One example of PRV is when rectifier diodes have a large capacitor (filter) connected to the output side of the diodes in a positive power supply, and the primary voltage to the transformer is turned off. The charge contained in the capacitor is presented to the diode cathodes while there is zero voltage on the anodes.

It is for this reason that rectifier diodes should have a much higher PRV rating than the maximum dc voltage in the power supply. I like to use, for example, 1000 PRV diodes in a 300-V power supply.

Diodes also have a maximum safe current rating. We need to pay close attention to

Add New Enjoyment To Your SW Receiver with the Portable MICRODEC™ Decoder

\$199

MICRODEC™ converts MORSE, RTTY, and ASCII to ALPHANUMERIC CHARACTERS

- Automatically tracks MORSE code speeds from 5 to 70 WPM
- Decodes 60,67,75,100 wpm RTTY and 110, 330 BAUD ASCII.
- Standard ASCII port to interface with your computer.
- Internal practice code oscillator.
- Standard cockpit green display. (red & yellow optional)
- Power switch/Volume control/Internal speaker

- Completely portable with optional NICAD rechargeable batteries mounted internally. — \$29.95
- Ultra compact and lightweight
1.5 H x 5.08 W x 5.25 L (1 pound w/batteries).
- Operates on DC voltages between 9 VDC and 15 VDC (9 VDC adapter provided at no cost).

SHIPPING AND HANDLING: Continental United States add \$8.50 for UPS ground. Florida residents add 6% sales tax. Other types of Express shipments and foreign destinations will be quoted on request.

METHODS OF PAYMENT: MasterCard, VISA, Money Orders, Certified Checks, and Personal Checks. Please note for personal checks we allow two weeks for checks to clear.

SOMERSET ELECTRONICS, INC.
1290 HIGHWAY A1A, SATELLITE BEACH, FL 32937 • ORDER & FAX: (407) 773-8097

this factor when replacing defective diodes or designing a circuit. If you build a 12-V dc power supply that is used to supply a circuit that draws two amperes, use diodes that are rated at five amperes or greater. This allows plenty of safety factor. The larger diodes don't cost much more than do the smaller ones. I use 50- or 100-PRV diodes in my 12-V power supplies.

Diode temperature is an important consideration also. No diode, during operation, should more than warm to the touch. If the diodes are hot, they should be affixed to a heat sink or replaced with huskier units, assuming there is no circuit fault that is causing excessive current flow.

Diode Applications

Figure 1 shows a number of practical applications for solid-state diodes. These are simplified illustrations to aid your understanding of how the diodes may be employed.

Circuit B demonstrates the simplicity of a diode detector that may be used to convert an AM radio signal to audio. Circuit C shows how to use a half-wave rectifier to obtain a positive or negative output voltage. The diode and the filter capacitor must be reversed (dashed lines) in order to obtain a negative output.

The circuit at D shows how two diodes may be used to serve as a series dc switch. The RF chokes (RFC) prevent the signal from being lost to ground.

Figure 1E shows how diodes can be used to select two or more crystals in an oscillator circuit. This type of circuit may be used also for switching other RF components, such as tuned circuits. Figure 1E is a simple 0.7-V positive bias supply, such as those used for linear Class-A RF amplifiers that use power

transistors. Two identical diodes used in series will yield 1.4 V, and so on. D4 in this circuit should be a 50 PRV, 1-A rectifier diode.

A Zener diode is shown at G of Figure 1. The series resistor should be chosen to cause approximately 18 mA of dc current to be drawn by D5 when using 400-mW or 1-W Zener diodes. Zener diodes are available for a large number of voltage values. Detailed information about designing Zener-diode regulators is found in *The ARRL Handbook*.

The final example in Figure 1 (H) shows how a small-signal diode may be used as a frequency multiplier. In this example we see a frequency doubler from 10 to 20 MHz. By selecting the proper tuned circuit after the diode we can make it work as a tripler or quadrupler. The diode output power decreases as the order of multiplication is increased.

Since the diode is a low-impedance device it is necessary to use it with the low-impedance interface shown in Figure 1H. In our example, we may add a transistorized amplifier at the doubler output in order to increase the power of the 20-MHz signal. Some excellent examples of diode frequency multipliers are provided in *Solid State Design for the Radio Amateur* (an ARRL, Inc. publication).

In Summary

I have merely skimmed the surface in this discussion. Diodes have many other applications, but page space does not permit us to explore further. I suggest that you photocopy these pages and file them in your notebook for future reference.

mt

Active Antennas

Active antennas have been around for many years. Most people think that any preamplified antenna system is an active antenna. Not so. Actually, active antennas are composed of a short whip (usually between 30 and 40 inches) coupled to an impedance-matching amplifier section designed to provide an adequate low-impedance match to the receiver coaxial antenna input over a wide range of frequency spectrum.

Robert Burhans presented a five-part series on active antennas in *Radio Electronics* in 1983. This is must reading for anyone interested in an in-depth look at how to design and construct an active antenna covering 150 kHz to 30 MHz.

There are few "true" active antennas on the market today. Inline Components (4521 Campus Drive, No. 113, Irvine, CA 92715) makes a couple of "real" active antennas. The Sony AN-1 and Datong AD-270 are other examples of active antennas.

While not all amplified antennas are active antennas, it has become a marketing game to designate the majority of these antennas systems as active antennas. The majority of the "active" antennas on today's market consist of a wide-band RF amplifier and a short whip antenna.

The gain of the RF amp is between 15 and 20 dB from 100 kHz to 30 MHz. This doesn't necessarily make a good antenna system. Dumping 20 dB of raw gain into the front end of a receiver is a true test of the dynamic range of the rig.

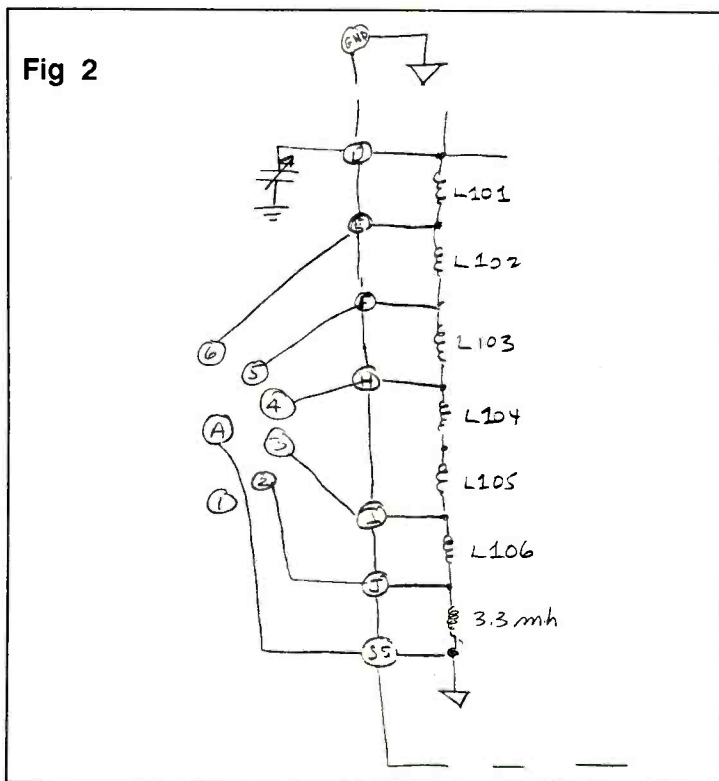
Unfortunately, most of the current rigs won't take too kindly to that tremendous RF gain at the antenna input. An increase in inter-modulation distortion and poor adjacent channel performance are just two of the problems that can surface when shoving 15-20 dB of raw gain into the antenna terminals of one of today's modern receivers.

Used with some discretion, an active (amplified) antenna system can benefit anyone interested in listening to the HF spectrum. Here's why. Many times, it is impossible for the active listener to erect an external wire antenna system. Likewise, there are times when the existing outside antenna system is in use on another receiver and we NEED to have another antenna system available.

Low profile active antennas are the Godsend to the condo-bound listener saddled with the less-than-sympathetic landlord. This not only means HF listeners but scanner enthusiasts too, for there are several active antennas for the VHF/UHF listener. Among them is the outstanding Dressler ARA-900 active antenna (available from Gilfer Shortwave, 52 Park Avenue, Park Ridge, NJ 07656) for use up through the 1 GHz range.



Fig 1



Heathkit has their HD-1424 active antenna that works very well across the HF spectrum. In this month's column Don Bell, WA2YQY, shows us a couple of mods that will definitely enhance the operation of this antenna system. I'll turn the column over to Don:

"When I travel, my Sony 2010 goes with me if at all possible. The Heath HD-1424 does too, but the antenna arrangement is clumsy. I had the Heath telescoping antenna available (SMA 2400-1) sold as an accessory to the IM-2410 freq counter, so it was an easy matter to remove the supplied antenna, enlarge the mounting hole, and install a chassis-mount BNC female connector (check local Radio Shack stores) to fit the new antenna. This antenna easily connects and everything fits in my briefcase, without having to carry a screw driver (see Figure 1).

"Unfortunately, the Sony 2010 drops down to 150 kHz and the Heath 1424 doesn't. It is relatively easy to add a 150-300 kHz band to the active antenna, especially when the unit is first built. The principal part needed is a 3.3 millihenry coil (Small Parts Center, 6818 Meese Dr., Lansing, MI 48911).

"Figure 2 is a partial schematic which shows the modifications. The following steps outline the modifications needed to add VLF coverage to the HD-1424.

"Locate the printed circuit board and sand the protective coating from the board in the areas shown and drill three holes (refer to Figure 3).

"Use a sharp knife to cut the foil on the dotted line. Check your work with a continuity meter to be sure you cut the foil cleanly and there are no shorts.

Monitoring Times invites you to submit your favorite projects for publication. For more information, contact Rich Arland, c/o MT, P.O. Box 98, Brasstown, NC 28902

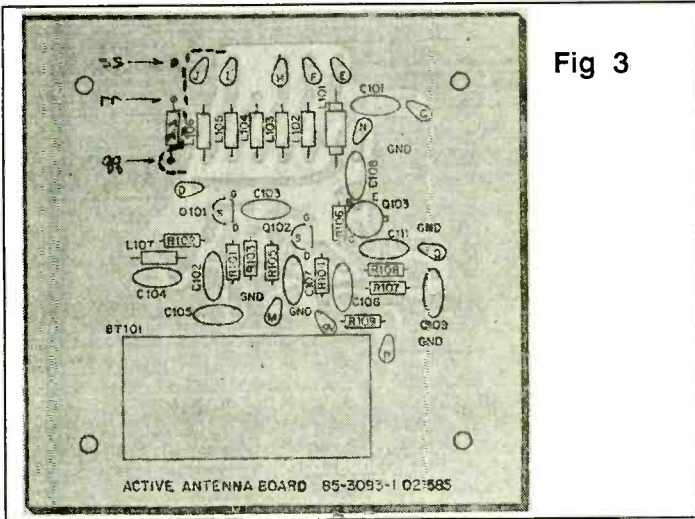


Fig 3

"When instructed to install and solder the RF coils (L101-106) to the board, install a 3.3 mH coil in holes QQ and RR. In my version, I fashioned some terminal posts from bare wire. I anticipated errors in my initial calculations of the coil's inductance, and wanted to be able to change values without removing the board.

"Install the 1-1/2 inch white wire in hole SS when the other wires are installed in hole I, J, etc. (Figure 2).

"When reinstalling the detent ring on the bandswitch, put it in position 6. This will give you a six position bandswitch instead of five. When installing the switch, temporarily mount the knob and turn the shaft fully clockwise. Install the switch full counter clockwise; the pointer should be below Band A.

"When wiring the switch, the white wire from hole SS goes to terminal A, the white wire from hole J to terminal 2, 1 to 3, etc. Figure 4 shows the completed unit.

"I chose not to try and add a scale to the front panel; but if you want, consider adding it below the tuning capacitor shaft. It's continuously rotatable, so it should work well.

"That's it. My unit tunes from 150 to 250 kHz on the added band and from about 230 kHz and up on band A, providing continuous coverage from 150 kHz to 30 MHz.

"The strongest station I can hear at my location is a weather station on 194 kHz (TUK). The preamp really brings it in... and attenuates all manner of junk from medium and shortwave broadcasts. If your receiver tunes below 150 kHz, consider a coil of more than 3.3 mH, or perhaps two additional bands (detent 7). It could be a little tight on the PC board, but I expect at the low frequencies coupled with long leads on top of the PC board, it won't matter. Try it -- you'll like it! The end result will be a versatile RF front end for your longwave, mediumwave, and shortwave receiver."

COMPUTERS + RADIO = FUN

ham radio Amateur Radio State-of-the-Art Publication

Try a subscription to Ham Radio Magazine for one year for just \$19.95. SAVE \$3 off the regular Ham Radio subscription rate of \$22.95 and \$10 off the newsstand price.

Ham Radio gives you more technical articles and the very best technical articles of the Amateur journals. Transmitters, receivers, antennas, as well as state-of-the-art design theory and practical articles. Ham Radio has got it all! In May there's our annual Antenna Issue — chock full of all kinds of antenna design ideas and projects. November brings the Receiver Issue — the very latest in receiver technology for the Radio Amateur. Many consider these two issues alone worth the price of a year's subscription.

And there's more! Monthly columns by: Joe Carr, K4IPV on the ins and outs of repairing and troubleshooting your radio; Bill Orr, W6SAI on antennas and antenna technology plus a lot more; noted HF/VHF operator and DX'er Joe Reisert, W1JR's world of VHF and UHF technology; and noted government propagation expert Garth Stonehocker, K0RYW on propagation.

There's even more — but you'll have to get a subscription to find out what it is.

Fill out the coupon today and send it in before you miss another issue! Remember — you not only get Amateur Radio's finest magazine, you also SAVE \$3.00 off the regular rate.

Special Trial Subscription Save \$3.00 off the regular rate of \$22.95/year

JUST \$19.95

Prices US Subscriptions only

Sure I'll give Ham Radio a try. Sign me up for a one year subscription. Just \$19.95 for 12 issues. That's a \$3 savings off the regular rate of \$22.95.

Start my New Subscription

Payment Enclosed Charge to MC VISA

Card Number _____ Expires _____

Signature _____

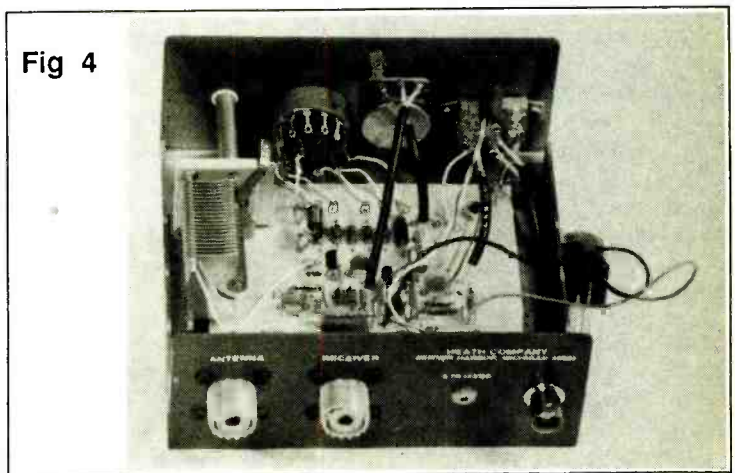
Name _____

Address _____

City _____ State _____ Zip _____

ham radio magazine, Dept. MT, Greenville, NH 03048

Fig 4



Many thanks, Don, for the words of wisdom. This is the type of input that will make this column a success. Remember, if you have a modification that you have done, and you think that it will be of benefit to *Monitoring Times* readers, send it along to "Experimenter's Workshop" via the Brasstown, NC address. Speaking of active antennas, I have modified a Datong AD-270 and will present these mods in a future column. In the meantime, grab your soldering iron and add 150 kHz to your Heath 1424 active antenna.

Next month an article inspired by *MT's* own "Uncle" Skip. Till next month, 73s es gud DX.

The Quickie Quad: More Gain-per-Element than a Yagi-Uda

It is not without good reason that the cubical quad antenna is one of the favorite beam antennas of amateur radio operators everywhere. Element for element, you usually get more signal gain from a quad than from the ever-popular Yagi-Uda type antennas. And the quad may be made using wire for the elements, whereas most configurations of the Yagi-Uda require that you use tubing for the elements.

Often the frame of the quad is made of long bamboo poles or fiberglass arms, giving the antenna an appearance something like a giant spider sitting atop a pole. But it is quite possible to construct the quad in an even easier manner by supporting its wire elements with ropes, somewhat as you do a long wire antenna (see Figure 1).

Of course, this means that the antenna will be fixed to point in just one direction, so you must be sure to point it toward the direction in which you want to use it.

If you have never used a beam antenna, I think you will be pleasantly surprised at the improvement in signal level a good beam can give you on weak signals. Also, with a beam such as the one described here, it is often surprising how much attenuation there is to signals not in the beam of the antenna! This is a great help in eliminating interference from undesired stations at times.

And, happily enough, this month's antenna is not too difficult to construct and erect. So why not give it a try and see for yourself what a beam antenna can do for your weak-signal reception?

LET'S BUILD ONE!

To build this antenna you need enough wire for two full-wavelength sized loops. The wire can be any good insulated or noninsulated copper or aluminum wire that is strong enough to serve. Probably you will want somewhere around number 14 size or larger, although smaller sizes will work if they are strong enough to hold up.

You will also need a lead-in cable made of 50 to 75 ohm coax. Add some guy ropes, a center insulator, eight strain insulators for the corners, some coax-type sealer and you're ready to start.

1. Determine the length for the reflector loop, the driven element loop, and the inter-element spacing from the formulas given in Figure 1.
2. Add four inches to the length found for the reflector loop in step one and cut one piece of wire to this length. This piece of wire will be made into the reflector loop.
3. Take the reflector-loop wire and, using a knife edge, scrape the ends bright for three inches from each end. Thread four strain insulators onto the wire and then wrap the bright three-inch ends around one another and solder them together to complete the loop (see Figure 1).
4. Measure the distance between the holes of your center insulator. This distance should be on the order of three inches or less, probably less. Whatever this distance is, subtract it from the length found for the driven element loop in step one. Now add four inches to this adjusted driven element length. This

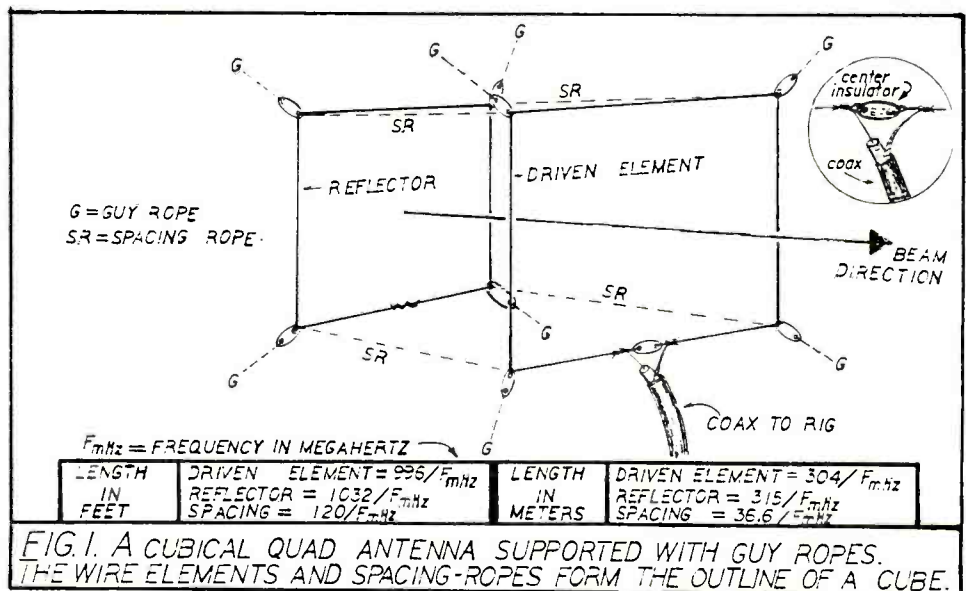
will give you the length to which you must cut the wire for the driven-element loop.

5. Cut the driven-element loop wire to length and scrape each of its ends bright for four inches. Thread four strain insulators onto this wire. Then attach one end of the loop to each end of the center insulator. Do this by slipping a brightened end of wire through the hole at one end of the insulator for two inches.

Then bend the end of the wire back around the insulator end and wrap it around the remaining exposed brightened wire and solder them together.

Repeat this for the other end of the wire in the other end of the insulator. When you are finished, the loop circumference will be the appropriate length for a driven element loop as determined in step 1.

6. Now take the coaxial cable and separate the braid and center conductor on one end (the other end should have a male plug to fit your receiver). Wrap and solder the coax center conductor to the brightened wire on one side of the driven-element loop at the center insulator, and the braid to the brightened



wire on the other side (see inset circle, Figure 1). Seal the cable end against weather with coax-type sealer.

- Cut light 1/8 inch diameter nylon or plastic guy ropes with sufficient length to separate the two wire loops by the spacing determined in step 1. Insert one end of one of these ropes into each of the strain insulators which you have sliding free on the loop. The rope is attached through the same insulator holes as the loop wires. Now tie these spacing ropes onto the insulators so that they space the insulators appropriately as shown in Figure 1.

Attach a guy rope to the remaining hole on each strain insulator. The length of these guy ropes will be determined by where your mounting points (poles, trees, towers, ground stakes, or whatever) are. Now you can give a box shape to the antenna by pulling out on these eight guy ropes simultaneously.

- So, using these last mentioned eight guy ropes, install the antenna so that it has its characteristic box shape. Or, omit one strain insulator per loop, and shape the loops as triangles with the peaks pointing upwards. The higher you can mount the antenna, the better; but if you can't elevate it, it will even work okay near the ground. Remember to aim it in the direction from which you wish to receive signals (see Figure 1).


When orienting your beam, you should keep in mind that you can't determine true direction to distant points on the globe from an ordinary flat map. You must either use a globe (be as precise as possible, it's tricky), a great-circle map, or one of the computer programs designed for giving you great circle bearings. Great circle maps for receiving locations in the USA can be found in the *ARRL Antenna Book*.

- As always, don't forget lightning protection if you live in lightning country. The minimum protection you should practice is never using an antenna during a storm, and disconnecting and grounding it when it is not in use.

The Best* Just Got Better!

The Eavesdroppers™ now includes our new Zap-Trappe™ Electronic Gas Tube Lightning Arrestors. Receive-only design shunts damaging transients to ground at only 1/7th the voltage buildup of the available 200 watt transmit-type arrestors, providing maximum solid state receiver protection.

Protect your investment - combine an excellent shortwave receiving antenna with the best receiver protection money can buy.



- Completely assembled and ready to use
- Only 42' overall length
- 8 trap circuits permit reception on all shortwave bands, 11-90 meters
- All connections soldered and enclosed in ultrasonically-welded, hermetically-sealed trap covers
- Includes 50' of 450 lb. test nylon rope

- Model T** includes 100' twinlead feedline
- Model C** includes weatherproofed center connector for your coax & coax sealant
- Either model \$79.95
- UPS for lower 48 states \$4.00
- COD add \$3.00, IL add 7% sales tax
- Foreign shipping quoted

**The best...built like an antenna should be." -Larry Magne in *World Radio TV Handbook*
 **Our best seller." -EEB in their recent ads and catalogs
 *Now in use in 45 countries." -Giffel Shortwave in 1983

Antenna Supermarket

PO Box 563 Palatine, IL 60078 Tel (708) 359-7092 Fax (708) 359-8161

At your dealer or direct • Visa & Mastercard accepted

- Plug the lead-in into your rig and enjoy reception of some formerly-uncopyable DX signals!

Need an easy and inexpensive antenna mast?

For testing last month's groundplane antenna, I built a version of an old-time wooden mast. It proved to be strong, works great, and the cost is moderate. The height can be made from very short on up to 40 feet or so. My 20 foot version, made of one inch by two inch softwood, has now withstood several winter storms using only three small nylon guy ropes for support!

If you'd like plans for this type of mast, send me a stamped, self-addressed business size envelope.

RADIO RIDDLES

Last Month: I asked you to give the adjective commonly used for describing antennas which resemble objects or letters

which have fallen down.

Well, if we see a friend lying down too often, we may think of him/her as lazy, and that's just what we think of antennas too! Antennas which resemble objects or letters which are lying down from their normal position are called "lazy" antennas.

Examples of this are the "lazy-H," which looks like an "H" on its side, the "lazy quad," an antenna with a single loop like the driven element of the cubical quad. But with the lazy quad, the loop has "fallen over" and has all its sides parallel to the ground.

Come to think of it, since the lazy quad is best for short-haul contacts while the cubical quad described above is great for long-haul DX, it may just be that the horizontal quad picks up mainly the nearby circuits because it actually is a bit lazy after all!

This Month: What relationship is there, if any, between the cubical quad beam and the Yagi-Uda beam? Get the answer to this and much more in next month's *Monitoring Times*. Till then, Peace, DX, and 73.



Q. My shortwave portable has an "SSB" mode; is this upper sideband (USB), lower sideband (LSB) or both? (Russ Boisvert, Johnstown, NY)

A. Both. When an SSB (upper or lower sideband) station is encountered, switch to

SSB and fine tune for most natural-sounding audio.

Q. Is there still a Morse code requirement for an amateur radio license? (Henry Orloff, LA, CA)

A. Sad to report, yes, although it is likely to be eliminated from an entry level license by sometime in 1991. The wheels of progress turn slowly, however, and the FCC has yet to consider all the petitions which are overwhelmingly in favor of such a license.

Q. What shortwave frequencies are used for NASA Space Shuttle missions? (Michael Kure, Needville, TX)

A. Since the shuttlecraft itself has no high frequency (shortwave) capability, only ground tracking stations will be heard on HF; voice will always be in single sideband (SSB), with upper sideband predominating.

Prior to launch, try listening to 10780 kHz (primary) and 5190 kHz (nighttime) for Cape Canaveral Air Force Station which handles all of NASA's ground tracking communications and call-ins from participating vessels and aircraft. The Air Force had to abandon their former 5810 nighttime frequency due to interference from a "spy numbers" station on 5810 and 5812 kHz.

After launch listen to various frequencies between 20.187 and 20.195 kHz for rebroadcasts of the astronauts voices to the tracking stations. Many alternative frequencies may be used as well, a comprehensive list of which is contained in my *Shortwave Directory*.

Q. I have just gotten started in facsimile reception and wonder where I can find out who is sending virtually continuous weather map FAX near 14980.1 kHz and covering the eastern hemisphere? (William Brown, USA Signal Corps)

A. Sounds like you may have latched on to RBV76 at Tashkent, USSR on 14982.5. An excellent guide to these FAX stations, along with listening tips, is Joerg Klingenfuss's *Guide to Facsimile Stations*, available from several MT advertisers.

Q. What will happen to the scanning hobby when all the police and government transmissions are trunked or encrypted? (Wm. Herman, Indianapolis, IN)

A. If the only thing you care to hear are encrypted agencies, you will probably take up another hobby. Others, however, will

Bob's Tip of the Month:

BC760XLT Cellular Restoration Update

While the procedure outlined last month will work to restore cellular coverage in late model BC760XLTs (BNC connector) and identical, late model, private labelled spinoffs like the BC950XLT and Regency R1600, there is one hitch: if power is disconnected while the on/off switch is left on, memorized channels will be lost. We discovered the fix for that, too.

The culprit is a chip resistor which, when left connected, discharges the memory backup cell. This 4.7K resistor, marked "472," is identified on the diagram below. It is preferably unsoldered using a solder wick or other remover, but may be crushed carefully with needle-nose pliers. Be sure not to damage the conductive foil to which it is attached.

Remember, any modification done to your scanner will void the warranty. While we try very hard to make sure that information is accurate, neither Grove Enterprises nor *Monitoring Times* assumes any liability for procedures or modifications described in their publications.

If you have not yet performed the procedure as described in the February issue, step 5 below eliminates the need for the jumper wire required previously. If you have already followed last month's procedure, simply remove the resistor as described in step 6.

BC760XLT Cellular Restoration (Revised Version):

TOOLS NEEDED: fine-tip soldering iron and small-gauge rosin-core solder, small Phillips screwdriver, sharp-pointed pick or sewing needle.

1. With the power cord disconnected, remove the four cover screws; remove the top cover only.
2. Locate the SANYO IC as shown in figure 1 (printed upside-down with the front of the radio facing you). A long row of solder pads just above the IC identifies pins 1-32 of the microprocessor.
2. Using the sharp-pointed tool, cut the two traces leading to pin 26 as shown in figure 2 to isolate that pin.
3. Solder-bridge pins 19 and 20 together as shown in figure 2.
4. Solder-bridge pins 26 and 27 together as shown in figure 2.
5. Solder-bridge the two side leads of the chip transistor just above pin 27 as shown in figure 2.
6. Unsolder (preferable) or crush to remove the 4.7 K chip resistor marked "472" and shown in figure 2.
5. Insert the power cord, turn the unit on, press MANUAL, 845., E; if 845.000 appears, the modification is complete. Reassemble. If ERROR appears, re-count the pins you modified and check the cut traces and solder bridges.

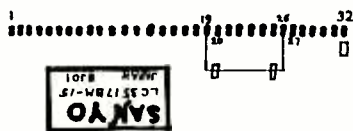
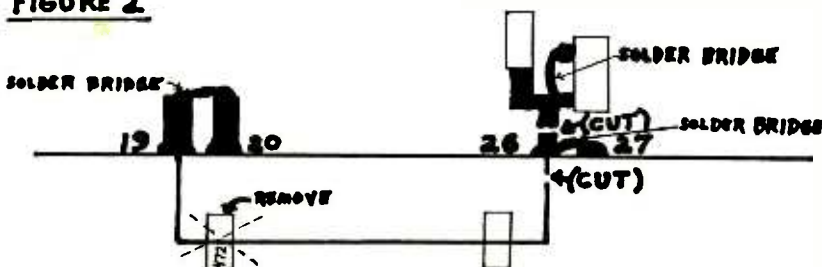


FIGURE 1

FIGURE 2



Questions or suggestions sent to "Ask Bob," c/o MT, are printed in this column as space permits. If you prefer a reply by return mail, you must enclose a self-addressed, stamped envelope.

continue to monitor the vast majority of transmissions which will remain in the clear -- fire, medical teams, local government, many police agencies and the myriad other licensees who don't feel the need or want to incur the expense to scramble their transmissions.

So far as trunking goes, one major scanner manufacturer has been working on a tracking scanner that solves that problem. MT will let you know when it's ready, but don't look for it soon.

Q. What is the tone used by the National Weather Service to open the squelch on their alarm receivers tuned to the 162.400-162.550 MHz channels? (Izak Luchinsky, Baltimore, MD)

A. 1050 Hz.

Q. Why is there no channel 1 on TV? (Robert Brock, Phoenix, AZ)

A. Channel 1 TV, 48-54 MHz, was reallocated by the FCC just after World War II to the land mobile services (30-50 MHz low band) and the amateur radio service (50-54 MHz six-meter band).

Q. I presently have a long outdoor dipole antenna for shortwave. Will an active antenna or preamplifier help signals come in even better? (Gavin Khoo, Singapore)

A. No. Modern receivers have excellent sensitivity and once you capture enough signal from the airwaves to overcome the receiver's own internally-generated noise, additional amplification does nothing more than raise the incoming noise (static) as well as the signal. You can accomplish the same thing by simply turning up the volume control!


Q. My AR900 scanner has a whimsical delay -- sometimes it works, sometimes it doesn't. How come? (Richard Greenstein, Bowie, MD)

A. Several AOR scanners use the same microprocessor which has a "glitch" in the software. It may wait 6 seconds after the signal drops out before resuming scan, or it may resume as soon as the carrier drops out. There is no fix.

Q. What is a simple formula to compute the length of an antenna? (Tom Rainville, Brooklyn, CT)

A. For the length in feet of a half-wave dipole, divide 468 by the frequency in megahertz; for a quarter-wave vertical or radial element, use half that number -- 234. For VHF and UHF measurements where inches would be more appropriate, simply multiply these two numbers by 12 (inches in a foot): use 5616 for half-wave elements (as in a beam) or 2808 for quarter-wave elements (as in a ground plane or mobile whip).

Now it's easy to see just why an amateur cuts his 7 MHz antenna to 67 feet and why a 155 MHz mobile whip is 18 inches long. While divergences of several percent are acceptable, stay as close to the values as practical.



GET A HOLD OF THINGS... WITH FMS (FREQUENCY MANAGEMENT SYSTEM)

FMS is a new software package for IBM PC's that will give you instant access to any information you want!

FMS - VIEW Frequencies By CALL

KG2575	33.1000
KG1884	47.8200
KG1305	152.7400
KG2000	163.2000
KG2120	
KG2530	
KG2344	

FMS - VIEW Frequencies By AGENCY

USA233	355.4000
USA233	378.9000
USA253	251.8000
USA253	141.8500
USA253	141.0500
USA253	141.3000
USA253	142.5900
USA253	146.6500
USA253	350.8500
USA253	271.5000
USA253	283.5000
USA253	294.7000
USA253	295.7000
USA253	322.3000
USA253	322.6000
USA253	382.8000
USA253	394.0000
USA253	241.4000

FMS - VIEW Frequencies By FREQUENCY

118.8500	Agency - FAA
118.8500	Description - TOWER-FAA/BSF
118.9000	City - FORT WAYNE
118.9000	State - IN
118.9000	Country - USA
118.9000	Lat/Lon - N40 58.7 / W 85 31.5
118.9000	Call/Code - FWA /
118.9000	Interest - 9
118.9000	Validity - 9
118.9000	Source - FAA
118.9000	Date - 88 1031

Scanner: PR02003 - X Bank - 7 Channel - 244
PR033 - X Bank - 7 Channel - 124
R71 - Channel -
R7000 - Channel -

Options - < > <PgUp> <PgDn> <A> <F> <E> <S> <D> <U> <R> <C> <K> <Q>


These are some of the screens available from FMS

With FMS you can:

- Organize and search by frequency, agency, call, city, & more!
- Large, friendly display will show you any information you desire.
- Keeps track of frequencies you have assigned in up to 4 scanners.
- Database size limited only by the size of your hard disk.
- It allows you to save calls, frequency codes, & acronyms used with each entry.
- Includes fields for Latitude, Longitude, & bearing from your OTH.
- Soon to come! - Control your ICOM R7000 or R71 from your database.
- And more!!!

2 disks include program & database structures
\$89.95 for entire package with manuals
Demo package available for \$22.95

Send check or money order to: Eagle's View
5019 Yorkshire Drive
Fort Wayne, Indiana 46806-3551



Q. Can an automotive AM/FM antenna be used successfully for scanner listening? (Jim Kalach, Waterbury, CT)

A. The 31" car antenna is a quarter-wavelength FM-band (88-108 MHz) whip and is ineffectual at most scanner frequencies. The fact that it will hear scanner signals at all testifies to the fact that even a wet kite string will bring in some signals!

When a properly designed scanner antenna is not feasible for mobile mounting, then a suitable multicoupler can be used with a car antenna to provide local scanner reception along with continued AM/FM reception.

Q. Where can I find add-on panoramic adaptors (spectrum display units) for various frequencies? (Fred Chapman, Fredericksburg, VA)

A. Electronic Equipment Bank (EEB) of Vienna, Virginia, is an MT advertiser with a line of these accessories in stock. Check them out.

Q. Is it possible to construct a home-brew interface to allow me to copy radioteletype and Morse code off the air using my IBM-compatible computer? (Gavin Khoo, Singapore)

A. Sure; articles for such projects appear from time to time in the amateur radio magazines. But there are several commercial units on the market at such low cost (and advertising in those same magazines) that it is hardly worth the effort.

LETTERS

continued from page 3

James Kelio of Milwaukee, Wisconsin, was kind enough to write and let us know about a different kind of radio ruckus going on in the Badger State. According to local newspaper reports, farmers in the Monfort area are demanding that Christian radio station WJTY move their tower.

The farmers say that ever since the tower went in, their livestock is "fidgety, nervous and under stress." One farmer even has a videotape of his cattle "swishing their tails, even though there are no flies to bother them." How 'bout that.

Robert Merrill of Syosset, New York, writes in to say that he's found a good frequency for daytime BBC listening. "As you know," he says, "the BBC doesn't have very many good frequencies for daytime reception of the BBC in the United States or Canada. However, from 1600 UTC (11:00 am EST) to 1745 UTC (12:45 pm EST), they use 9515 kHz. It is very clear and it is the only frequency they use at this time."

Wayne Heinen of Aurora, Colorado, wants us to let you know about meeting schedule for the Rocky Mountain Radio Listeners Club (RMRLC). Mark your



Christian radio producing discontented cows

calendars for March 18, April 22, May 20, June 17 and July 15th. The meetings are held at 1:00 PM at 14949 E. Alameda Dr, Room 1B. For more information, call Wayne at 699-6335 or write 4131 S. Andes Way, Aurora, Colorado 80013-3831.

Wayne also asks that we mention that

group's sponsor, Electronic Bit's 'N Pieces, 1462 Iola Street, in Aurora. Say "hello" to Bud the next time you're in town. Wayne says they're good people.

Phil Richardson of Anchorage, Alaska, saw Rab Cave's suggestion in the January issue of *Monitoring Times* about making an overlay for Sony ICF-2010 radios. By placing an overlay on the front panel of the radio, reasoned Rob, the user could instantly know what frequency was stored on each of the '2010's memory buttons.

"I can understand an overlay -- what a job! -- but why? The '2010 has an information plate in the back. A memo sheet listing station and frequency for each of the 32 memory channels is mounted on this plate. You simply slide it out when you wish to locate a memorized station and, 'voila,' there it is.

"The memo sheets can be ordered from any Sony dealer -- that's where I get mine. They are not cheap," continues Phil, "but if you use care and put down only what you really want, two or three sheets a year will do the job.." Many thanks, Phil. That back panel is really easy to miss.



"Now Available!"

The First Annual

CQ Amateur Radio Equipment Buyers Guide

The Active Ham's Complete Annual Reference Master

This valuable new master directory and buyer's guide will serve you day in and day out in searching out new gear, comparing new models, locating dealers near you and mail-order retailers around the country. It'll help you buy more wisely with its multi-reference concept to help you wend your way through the buying maze.

COMPLETE PRODUCT INFORMATION

It's a single-volume source book of the latest Amateur Radio gear all sectionalized by equipment type for easy reference by the seasoned editorial staff of CQ:

- Complete product descriptions.
- Technical specifications.
- Retail prices.
- Equipment photographs.

WHO'S WHO IN THE AMATEUR RADIO BUSINESS

It's a Buyer's Guide filled with the kind of support information you've always needed, but couldn't easily get: Dealer listings state-by-state (including branches), names and calls for key personnel, top lines carried, whether or not trade-ins are accepted or on-site repairs are made... and so on.

BUYING TIPS FROM THE EXPERTS

Great articles on the in's and out's of purchasing Amateur equipment. The experts give you the inside scoop on everything from

antennas to transceivers to making your first packet contact... and lots more.

ORDER YOUR BUYER'S GUIDE TODAY!

Don't miss the single most valuable buying guide in the Amateur Radio field. Send only \$3.95 today.

YES, please send my copy of AMATEUR RADIO BUYER'S GUIDE 1989 for only \$3.95 postage paid.

Date _____ Number of Copies _____

Name _____ Call _____

Address _____

City _____ State _____ Zip _____

Check MasterCard VISA

Card No. _____ Expires _____

Signature _____
(Signature required on all charge orders)

Mail to: CQ Communications, Inc.
76 North Broadway, Hicksville, NY 11801

MT

We close this issue with a letter from Don Storck of Hemlock, Michigan. Don says he was listening to communications from the space shuttle one morning on 3860 kHz when astronauts David Boles and Marsha Evon were preparing to perform an in-flight electrocardiogram.

Marsha, talking to Houston, was describing the technique as she worked on David, who had removed his shirt for the test. "All of a sudden," reports Don, "Marsha blurted out, 'David just said that when I'm done with him, he gets to do it to me!'" Houston, says our reader, didn't respond.

Knowing very well that we could get in trouble, we will follow Houston's lead.

mt

*Got a comment? We welcome your ideas, responses, and opinions regarding the world of radio. Letters should be addressed to **Letters to the Editor**, Monitoring Times, P.O. Box 98, Brasstown, NC 28902, and should include the sender's address and telephone number.*

CONVENTION CALENDAR

Date	Location	Club/Contact Person
Mar 3	Cave City, KY	Mammoth Cave ARC/ Joe Taylor N4NAS P.O. Box 858, Glasgow, KY 42141
Mar 3-4	Brownsville, TX	Texas State Conv/ David Woolweaver K5RAV 22105 77th Sunshine Strip, Harlingen, TX 79550
Mar 4	Charlotte, NC	Mecklenbury ARS/ Mary Biggs KA4EXP 8435 Rustwood Place, Charlotte, NC 28227
Mar 10	Absecon, NJ	Shore Points ARC/ SPARC P.O. Box 142, Absecon, NJ 08201
Mar 17-18	Fl. Walton Bch, FL	Playground ARC/ Frank Butler W4RH 323 Elliott Rd SE, Ft Walton Bch, FL 32548
Mar 18	Maumee, OH	Toledo Mobile RA/ Ronald Morris WB8ZIM 28141 Glenwood Rd, Perrysburg, OH 43551
Mar 23-25	Orlando, FL	N. Fla. Section Conv/ John Lenkerd W4DNU 1046 Turner Rd, Winter Park, FL 32789
Mar 23-25	Kearney, NE	NE State Conv/ Tim Lowenstein WA0PH/IVW P.O. Box 998, Kearney, NE 68848
Mar 25	Trenton, NJ	Delaware Valley RA/ Edward Vickner K2SNK 21 Running Book Rd, Trenton, NJ 08638
Mar 31	Charleston, WV	Charleston Area Hamfest/ William Kibler K8WMX 182 Monterey Dr, St. Albans, WV 25177
Apr 1	Grosse Pte Wds, MI	SE Michigan ARA/ Thomas Orlicki N8HLY 15835 Novara, Detroit, MI 48205-2515
Apr 6-8	California	41st Int'l DX Convention/ Don Minkoff NK6A 12567 Brooklake St., Mar Vista, CA 90066
Apr 7	Lebanon, PA	Appalachian Amateur Rpt/ Homer Luckenbill WA3YMU 105 Walnut St., Pine Grove, PA 17963
Apr 8	Raleigh, NC	NC State Convention/ Chuck Littlewood N4HF 2005 Quail Ridge Rd., Raleigh, NC 27609
Apr 14	Bowling Green, KY	KY Colonel's ARC/ Charles Martin AB4Y P.O. Box 9781, Bowling Green, KY 42102
Apr 27-29	Dayton, Ohio	Dayton Hamvention/ Bill Schmid WD3LOI 820 Dartmouth, Troy, OH 45373

Monitoring Times is happy to run brief announcements of radio events open to our readers. Send your announcements at least 60 days before the event to: Monitoring Times Convention Calendar, P.O. Box 98, Brasstown, NC 28902.

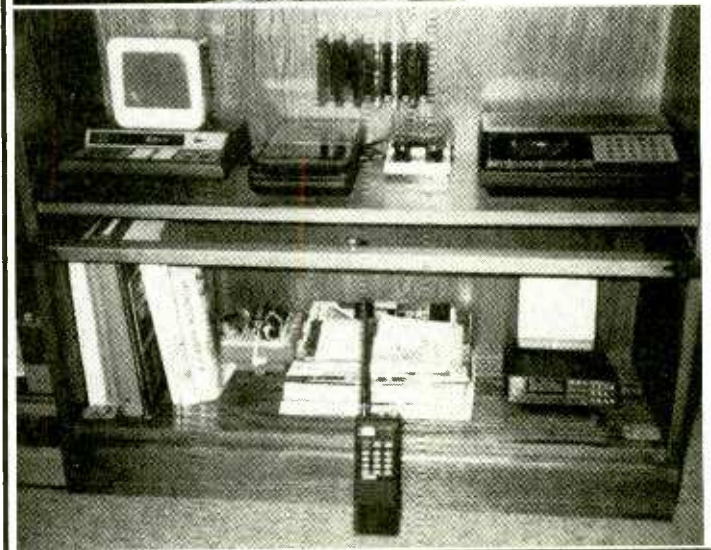
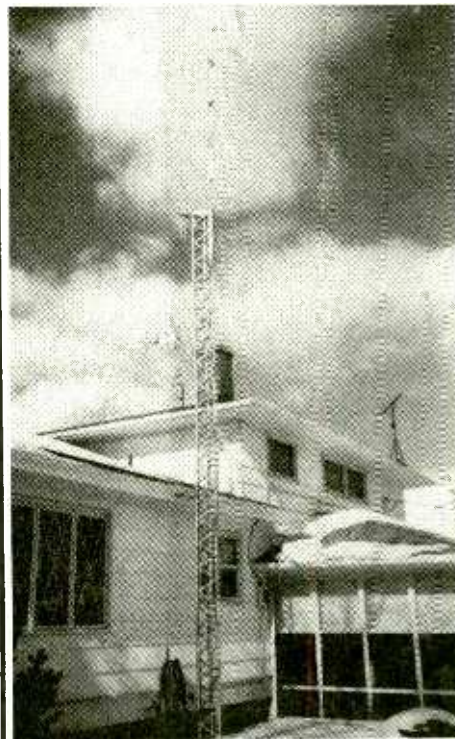
MONITORING POST PIN-UP

Officer David Dombrowski of the Tonawanda, New York, Police Department, says he's been a police officer for 13 years and a scanner owner for 20. His wife calls him "Mr. Scannerhead." (She's a dispatcher for the Kenmore Police.)

"Here's my set-up. One Cobra SR-900 with all the Town of Tonawanda government frequencies programmed, a Regency Z-60 with all the police, fire, first aid frequencies in Erie and Niagara Counties, attached to a Nite Logger to tape those special moments, a Regency TMR-8U in our bedroom to listen to area police agencies at night, especially the Kenmore police, Bearcat 50XL in my briefcase to listen to neighboring agencies while I work, a Bearcat 70XLT to carry around with me on my "off duty" hours.

"Oops, I forgot to mention the BC 760XLT, which I use for searching out new frequencies or listening to FM Communications' 21 channels. FM is a local communications company where I do part-time work. I guess I AM a 'scannerhead.'"

Do you have a photo of you and your monitoring post you'd like to share with MT readers? As David Dombrowski said, "I saw everyone else's monitoring posts, so I figured, Why not mine?!"



STOCK EXCHANGE

NON-COMMERCIAL SUBSCRIBER RATES: \$.25 per word - *Subscribers only*. All ads must be paid in advance to *Monitoring Times*.

All merchandise must be personal and radio-related.

COMMERCIAL RATES: \$1.00 per word payable with ad

1-3/4" SQUARE DISPLAY AD: \$35 per issue, payable in advance. Send camera-ready copy or copy to be typeset (reverse type not available).

Ads for Stock Exchange must be received 45 days prior to the publication date.

Monitoring Times assumes no responsibility for misrepresented merchandise.

INDEX OF ADVERTISERS

ACE Communications	19
Advanced Electronic Technologies	53
Alpha Delta	39
Antenna Supermarket	97
Antennas West	25,46,91
Antique Radio	16
Bob's Publications	41
Communications Electronics	21
CO Communications	100
Datacom	67
Data RX	23
DX Computing	5
DX Radio Supply	41,51,53,91
Eagle's View	99
Electronic Equipment Bank	35
Gilfer Shortwave	9
GRE America	49,91
Grove Enterprises	31,55
Ham Radio magazine	95
ICOM America	Cover IV
MilSpec Communications	43
Monitoring Times	Cover III
OPTOelectronics	Cover II
Palomar Engineering	9
Radio Electronics	17
Radio Scan	89
Radio Shack	15
Somerset Electronics	93
Systems & Software	87
Tiare Publications	23
Universal SW Radio	45

For Sale: GRUNDIG SATELLIT 500, like new, original carton, manuals, AC adapter - \$400. Victor Orlando, 1711 Robinson Ave., Havertown, PA 19083, [215] 853-2878.

JRC NRD-525 receiver ABSOLUTELY MINT condition. Listen to the best! \$825. Call [305] 872-9106 after 6 p.m. or leave message. Ken (KA1ZT/4)

WANTED: SONY ICF6700/6800. SELLING HALLICRAFTERS SX-28, good condition, needs electrical repairs, includes manual and matching speaker - \$75. S. MARSH, 1310 Garford Ave., Elyria, Ohio 44035.

HELP: Need frequency control/scan program for an NRD-515. Dead ends so far, so any info will be greatly appreciated. Willing to pay for program. Mark Gribble, P.O. Box 2959, Alexandria, VA 22301.

KENWOOD R2-1 wideband receiver and Micronath 12VDC regulated power supply. Both are mint, original boxes, under warranty - \$450 includes shipping. [203] 746-7663.

Save \$300 on ICOM R71A-HPXF with remote, original box, manual, in mint condition. Aligned and fully upgraded by EEB - \$800. [703] 503-8018 anytime.

"SUPER CONVERTOR" 11 8002 - as new - \$75 P.P. [913] 299-8932. Harry Simpson, P.O. Box 12096, Kansas City, Kansas 66112.

For Sale: COMMODORE 64 computer, MFJ-1225 interface, MFJ software &

AEA SWL Text cartridge. Allows HF reception of Baudot, ASCII, ARQ, FEC, and CW. \$175 includes shipping. J.L. Metcalf [606] 365-9042.

YAESU FRG-9600 - \$325. UNIDEN/REGENCY 200 Ch. R4030/200XLT Handheld - \$185. UNIDEN BC760XLT - \$185. AV801 A/T antenna 25-950 MHz - \$28. Shipping included. Keith [407] 260-2937.

YAESU FRG-8800 with 4 kHz wide filter. Perfect condition, original carton and manual - \$475. Bill Butler, RD1 Box 303, Reinholds, PA 17569 [215] 678-6729.

WANTED: DRAKE R-7A receiver and accessories. Alan N4LUS [301] 229-7069 evenings.

Wanted: RADIO FREQUENCY JAMMING: Knowledge and/or equipment, also highly sensitive hearing devices: surveillance or medical. Eugene Dell, 300 Bentwood Ave., Johnstown, PA 15904.

CAVEAT:

Franklin-Belle/Antennex

A letter received at press time from Jack L. Stone, President of Franklin-Belle Publishers, publishers of antennex of Corpus Christi, Texas, states that they have ceased operation and are returning checks uncashed to subscribers.

When readers are in the market, they look here to find your ad ... Will it be here?




**SHORTWAVE
HUGE CATALOG**

- Shortwave Receivers
- Antennas & Headphones
- Tuners, Preamps, Filters
- RTTY & FAX Equipment
- Books & Accessories

Send **\$1 to** **Universal Radio**
1280 Aida Drive
Reynoldsburg, OH 43068

**TABLE TOP ACTIVE ANTENNA
FOR SHORTWAVE RECEPTION**



Provides 15 to 25 db gain from 2 to 30 Mhz. 23" high. Complete with adapter cables and power supply. Simple, compact, and efficient. Great for use with full size or portable receivers. Send for information today.

\$34.95 + \$3.00 Shipping/Handling

CHILTON PACIFIC LTD
5632 Van Nuys Blvd. Ste# 222
Van Nuys, CA 91401

**BUGGED?
WIRETAPPED?**

Find out fast! Factory direct countermeasures equipment catalog \$1.

CAPRI ELECTRONICS
P.O. Box 589A
Bayfield, CO 81122
(303) 884-9084

**HEAR ALL THERE
IS TO HEAR
WHERE YOU LIVE**

25 MHz - 1500 MHz
Frequency Search Service


Send SASE to:
HEALD
6886 Jefferson St.
North Branch, MI 48461

Also: Heald's Scan-Rail \$9.95
Heald's Scan-Air \$9.95

RADIO ASTRONOMY

THE RADIO OBSERVER, a monthly 24-page "how-to-do-it" amateur radio astronomy magazine. Annual subscription \$24. We are also suppliers of technical books, components and modules for the radio astronomy discipline. For a sample magazine and a current brochure send \$2 to:

BOB'S ELECTRONIC SERVICE
7605 DELAND AVE.
FT. PIERCE, FL 34951
Phone: (407) 484-2118

 **twenty-five cents**

Would you pay twenty-five cents if it would help you hear more stations? One quarter (cash only) is all it takes to get one of the most comprehensive book catalogues in the radio business.

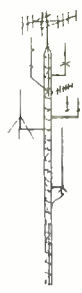
DX Radio Supply, P.O. Box 360, Wagontown, PA 19376. We're books. Only books. And we do it better.

NEU-COMM SCANNER HDQTRS

WE SELL THE BEST ANTENNAS AND CASES FOR YOUR SCANNING NEEDS. A CUSTOM CUT ANTENNA WILL ALWAYS WORK BETTER. FREQ AVAILABLE FROM 25 MHZ TO 900 MHZ UP TO 4 DB GAIN. MARCH SPECIAL 800 MHZ ANTENNA 5 DB GAIN \$22. CALL FOR OTHER SPECIALS. CUSTOM TOP QUALITY LEATHER CASE AVAILABLE FOR MOST SCANNERS INCLUDING BC-100/200. THESE ARE PROFESSIONAL CASES. THE BEST. WE NOW STOCK MORE SCANNING ACCESSORIES THAN EVER. ANTENNAS-BASE-MOBILE. SCANNER SALE FOR MARCH BC-200/LT \$239.95; BC-100 \$204.95; LARSON ANTENNA SPECIALISTS; MAXROO; ORA; COBRA; REGENCY; UNIDEN; RADAR DETECTORS; CB'S. ALL AT DISCOUNTED PRICES. MANY MORE. WRITE: CATALOG .75 STAMPS.

NEU-COMM, 1240 RIVERBREEZE BLVD
ORMOND BEACH, FLA 32178-4154
CALL: 1-904-441-6956 MON-SAT 10AM TO 8PM

**RADIO COMMUNICATIONS
MONITORING ASSOCIATION**



Since 1975
"The Radio Club for Scanner Owners!"

For Information Write:
R. C. M. A.
BOX 542
SILVERADO
CA 92676-0542

**Tired of all the
Static?**

Voicegate II
Receiver Noise Reduction

List \$199.95 Factory direct \$159.95 \$3.00 shipping
SASE for our free catalog or include \$3 (credited toward purchase) for a 30 minute demo cassette!

Jabco Electronics
Rt. Box 336, Alhambra, CA 91801

CB RADIO OWNERS!

We specialize in a wide variety of technical information, parts and services for CB radios. 10-Meter and FM conversion kits, repair books, plans, high-performance accessories. Thousands of satisfied customers since 1976! Catalog \$2.

CBC INTERNATIONAL
P.O. Box 31500MT, Phoenix, AZ 85046

**YOU
AIN'T HEARD
NOTHIN...YET!**

Largest selection of scanner frequency guides (federal, military, police, aero, etc.); AM/FM/TV broadcast directories; HF "ute" directories; Books on espionage, covert ops., bugging, wiretapping, surveillance, clandestine radio, & more!

BIG FREE CATALOG!

CRB RESEARCH
P.O. Box 56-MT
Commack NY 11725

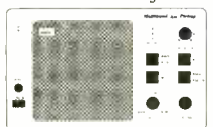
You Don't Have to
Create a
Masterpiece



to write for the
Monitoring Times!

We're looking for people with a story to tell, knowledge to share, enthusiasm for the hobby! Got an idea? Share it with the editor -- Write Larry Miller, Managing Editor, P.O. Box 98, Brasstown, NC 28902.

THE MAP *DX ability!*



The MAP improves your receiver's SELECTIVITY and AUDIO QUALITY without modifications

- Easy To Install
- Wide and Narrow Bandwidths
- Synchronous Detection
- Works with 455 kHz IF receivers

9815 - 61st South
Seattle, WA 98118
206-722-KIWA Write or call for free information

PRO-2004/5
Search and Store Modules

- Automatically find elusive frequencies. Internal no-holes installation, keyboard control, retain all present functions.
- Dual-mode Power Model PS-90 stores in the main memory channels with a DIP switch adjustable limit to 255 channels or only in the ten monitor ch. - \$44.95
- Model SS-45, Ten monitor ch. - \$24.95

Wired/Tested/Postpaid (US & Canada)
Check or MO, US funds, NC add tax

KEY RESEARCH
POB 5054M, CARY, NC 27511

QSL's.....

A whole new look in QSL cards: FULL COLOR!
Send \$1.00 for samples (refunded with order) to:
Lakeside QSL
P.O. Box 43043
Seven Points, Texas 75143

REPAIRS & MODIFICATIONS

SCANNERS, MONITORS & RECEIVERS

ALL WORK GUARANTEED

DROMEDARY TECHNICAL SERVICES

141 Jackson Road
Roopville, Georgia 30170
404-854-8846

An Electronic SHORTWAVE MAGAZINE
"Los Numeros" On-Line with **HAVANA MOON**

- Features • Departments • Special Interests • Newsletters • Software • FREE International E-Mail • The Usenet • Saturday Night Live With Havana Moon • Continual Updates



Join In The Fun — Call Today
Based On PORTAL
The AFFORDABLE On-Line System
Call 408/973-9111
Reaching Over Thirty Countries

HAM RADIO Q&A MANUAL

Contains all 1,932 questions, multiple choices and answers used in all FCC Amateur Radio Licenses. Novice—Extra Class \$9.95 postpaid. Money-back guarantee. VISA/MC orders accepted 10.00 a.m.-2.00 p.m. (817) 548-9594... or send check to W5YI, P.O. Box 565101, Dallas, TX 75356

HAM SELF-STUDY COURSE

Ham Radio Beginners now talk worldwide! Everything you need to become a ham operator. 112-p textbook, 2 audio code teaching cassettes... and more. \$21.95 postpaid. VISA/MC or check! Money-back guarantee.
W5YI, P.O. Box 565101, Dallas, TX 75356.

This could be
YOUR ad!

The Rise and Fall of Amateur Radio

In 1928, Paul Segal, W9EEA, wrote the Amateur's Code, a set of lofty ideals to which amateurs loyally subscribed: "The radio amateur is considerate... never knowingly operates in such a way as to lessen the pleasure of others. The amateur is friendly... patient operating when requested... advice and counsel to the beginner... cooperation and consideration for the interests of others. These are the hallmarks of the amateur spirit."

I recall that spirit when my interest in ham radio was first sparked some 40 years ago. Dave Crossley (W8BCO) and Tommy Tabler (W8WZH) invited me to their homes, let me talk on their rigs, taught me the theory, answered my questions, helped me with my code, welcomed me to the airwaves when I finally got my license. Here were grown-ups taking the time to encourage a kid to realize his dream. I was an apprentice; they were my mentors. To them I am eternally grateful.

For many years I have carried the torch, helping others into the magical world of radio communications. But now ham stores sell high-tech imported radios, not parts. Radio Shack has discontinued their code practice oscillators and keys, and their stores are staffed by non-technical salespersons. Mail-order parts houses are run by vendors, not service-oriented hobbyists.

Even the cohesion of the American Radio Relay League has disintegrated. Years of self-indulgent opposition to a code-free license has taken its toll. Even after the League finally capitulated when non-members were well on the way to establishing such a license, ARRL representatives at a recent hamfest openly confronted newcomers by wearing buttons reading, "SHUT UP AND LEARN THE CODE!"

It is tempting to point the finger of amateur radio's demise at the League, at competitive technology, at the code requirement and on and on. But there is one bit of introspection that hams seem to ignore: our image.

This past weekend I happened to tune to 14313 kHz, home of the International Maritime Mobile Service Net and, for nearly three years now, a ham war zone between old-guard territorialists.

During those few minutes of listening I was ashamed to be a ham. I have never heard such a trashbin of jeering and catcalls, physical threats, profanity and obscenity, ethnic slurs, name calling, jamming, whistling, belching and bathroom sounds, infantile chanting and other degenerate outbursts.

Other hams who happened to stumble across this festering pustule were equally disgusted. One commented, "This sounds like CB"! No; CB has never sounded this bad. Another ham reflected, "Now I know why they call this 'amateur' radio"! Right on target.

I envisioned at that moment a young boy or girl, inspired by the lofty portrayal of amateur radio as a benevolent, international fraternity of friendship, accidentally tuning across that frequency. What a dreadful thought! I felt guilty by association, fearful that by possessing an amateur radio license, I might be equated with these dregs.

The FCC is aware of the problem. Since amateur radio is required by law to be self-regulating, the Commission has ordered the adversaries to meet and sort out their differences. But this group will never arbitrate; compromise is not part of their vulgar vocabulary.

Amateurs around the country shrug their shoulders, incredulous as to why our numbers are shrinking and our frequencies are being taken away for use by other services. But instead of blaming some uncontrollable, external forces for killing amateur radio, we should look much closer. Perhaps, like a cancer, ham radio is dying from within.

- Bob Grove, WA4PYQ
Publisher



THE PROS SUBSCRIBE.



SHOULDN'T YOU?

Several professional monitoring agencies, in fact, have subscriptions to **Monitoring Times**. That's because every month **Monitoring Times** offers the latest in:

- ▶ International Broadcasting
- ▶ Utility Monitoring
- ▶ Scanners
- ▶ Shortwave and Longwave
- ▶ Satellites
- ▶ Electronic Projects
- ▶ Listening Tips
- ▶ Frequency Lists
- ▶ Broadcasting Schedules
- ▶ News-breaking Articles
- ▶ Features
- ▶ Exclusive Interviews
- ▶ Insights from the Experts
- ▶ New Product Reviews & Tests

Jammed with up-to-date information and concisely written by the top writers in the field, **Monitoring Times** is considered indispensable reading by top government agencies.

From longwave to microwave, if **you** are interested in communications, **Monitoring Times** is your foremost guide to international broadcasters; new equipment and accessories; profiles of government, military, police and fire networks; home projects; and tips on monitoring everything from air-

to-ground and ship-to-shore to radioteletype, facsimile and space communications.

Order your subscription today before another issue goes by: only \$18 per year in the U.S.; \$26 per year for foreign and Canada. For a sample issue, send \$2 (foreign, send 5 IRCs).

MONITORING TIMES

P.O. Box 98
Brasstown, N.C. 28902

Your authoritative source, every month.

- Yes, begin my subscription to Monitoring Times. I've enclosed a check.
- Send me a sample issue. Enclosed is a check for \$2.
- For MC/VISA orders, call 704-837-9200.

Name _____

Street _____

City _____

State _____

Zip _____

Introducing Wide Band Receivers...

ICOM has broken the barriers with its new line of wideband receivers built to go the distance. Introducing the IC-R1 handheld receiver, the IC-R72 HF receiver and the IC-R100 multi-purpose receiver.

IC-R1. The smallest wideband handheld available today, the IC-R1 continuously covers 100kHz—1300 MHz with AM, FM and Wide-FM modes. This tiny receiver measures just 1.9"W x 4.0"H x 1.4"D.

Easy operation is a snap with the IC-R1's Dual Frequency Selection (direct keyboard and rotary tuning). 100 memories and a 24-hour clock completes the world's smallest full-featured handheld receiver.

IC-R100. Install the IC-R100 at home or in your car. Listening pleasure is guaranteed with continuous coverage from 100kHz—1856MHz in AM, FM and wide FM modes. Monitor VHF air and marine bands, emergency services, government as well as amateur stations. 121 fully programmable memory



channels, multiple scanning system, an automatic noise limiter, built-in preamplifier and attenuator, clock with timer and built-in backup lithium battery make the IC-R100 the perfect package for mobile or base operation.

IC-R72. The IC-R72 continuously receives 100kHz—30MHz in SSB, AM and CW modes with very high sensitivity. An optional JI-8 provides FM reception. Additional

features include: Noise blanker, five scanning systems, AC/DC operation, internal backup battery, built-in clock and ICOM's DDS System. The IC-R72 boasts a 100 dB wide dynamic range while an easy-to-access keyboard provides convenient programming versatility. The easy to operate IC-R72 is superb for short wave listeners.

The IC-R1, IC-R72 and IC-R100 join ICOM's current line of professional quality receivers... the IC-R71A, IC-R7000 and IC-R9000. ICOM... expanding the horizons to bring you better technology, today. See the complete line of quality ICOM receivers at your local authorized ICOM dealer.

For a brochure on this or any other ICOM product, call our Toll-Free Literature Request Hotline 1-800-999-9877.


ICOM
First in Communications

...That Go The Distance.

CORPORATE HEADQUARTERS: ICOM America, Inc., 2380 - 116th Ave. N.E., Bellevue, WA 98004 Customer Service Hotline (206) 454-7619
CUSTOMER SERVICE CENTERS: 3150 Premier Drive, Suite 126, Irving, TX 75063 / 1777 Phoenix Parkway, Suite 201, Atlanta GA 30349 / 30701 85 Road, Unit 9, Richmond, B.C. V6V 2T4 Canada / 2380 - 116th Ave. N.E., Bellevue, WA 98004
All stated specifications are subject to change without notice or obligation. All ICOM radios significantly exceed FCC regulations limiting spurious emissions. R1R72190