June 1989 Volume 8 Number 6

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MONITORING TIMES

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Grove Enterprises

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- Hurricane Hunters!
- Soviet Republics
- Sporting Frequencies
- The New Air Force One

and much more...

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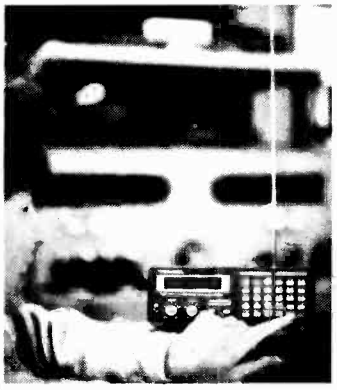
MONITORING TIMES

USAF

It's calm skies now, but these are the crews that challenge the tempest - p.7



The new Realistic PRO2005 brings a world of excitement to your doorstep - p.12

Refresh your knowledge of aero terms - p.42

New offerings from Opto-electronics - p.88

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How to hear -- and understand -- vital data reports provided by those intrepid Hurricane Hunters from Keesler AFB.

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The PRO2005 stacks up very, very well against its popular predecessor. Compact, yet powerful, there seems little to criticize.

The Russian Bear in Trouble
by Kyle Henderson 15

Gorbachev has let the genie out of the bottle, and the Soviet Republics will never again be totally silent. There's no better time to listen!

SPORTS! by Lynn Burke 20

What's your pleasure -- golf? racing? baseball? -- Well, here's how to "Tune in the Good Stuff."

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A potpourri of QSLs from the Committee to Preserve Radio Verifications.

DEPARTMENTS

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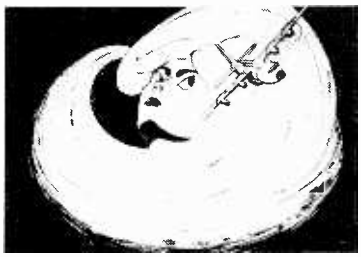
ON THE COVER: The new PRO-2005 appears at the Sylva, NC, fire department (Photo by Harry Baughn)

Inside this Issue

• "It's like flying into a brick wall." That's how one veteran Hurricane Hunter describes the trip into the eye of a storm. Below, says *Monitoring Times* staff writer Larry Van Horn, the ocean churns with waves that tower over *60 feet high.* This is raw excitement, men and women living on the fine line between life and death. Fortunately, too, it's excitement you can tune in on your shortwave radio. Join us as we take the wildest ride on earth with the Hurricane Hunters.



USAF photo

• They came from one end of Tbilisi's main streets, hundreds of Russian soldiers, each banging loudly on their long metal shield. At the other end of the street, thousands of Soviet Georgians, who for a week had been peacefully demonstrating for more independence from Moscow. • As the two groups met, Alex Raley, a public school administrator from South Carolina, stood on the fourth-floor balcony of the Hotel Tbilisi and watched while one of Soviet leader Mikhail S. Gorbachev's worst nightmares came true. By sunrise, nineteen 19 people lay dead or mortally wounded. • European DXpert Kyle Henderson takes us on a shortwave tour of the Soviet Republics where, more and more, the most popular chant is "Russians go home!"

• The PRO2004 is dead! Long live the PRO2005! That's another chant, heard not in the Soviet Republics but among sophisticated scanner enthusiasts from one end of North America to the other. The '2004 was a great scanner. But how will the '2005 stack up? *Monitoring Times* dives in with both feet and gets you the information you need to know before you buy.

• For almost thirty years, the Boeing 707 has provided transportation for presidents of the United States. This year, however, George Bush will inaugurate a brand new Air Force One, a Boeing 747. Inside is 4,000 square feet of interior space and enough food and water to feed 70 passengers and a 23-member crew for a week without resupply. This is quite a plane and Dave Jones -- acting something like a *Monitoring Times* version of Robin Leach on *Lifestyles of the Rich and Famous* -- takes us on a tour.

Going into retirement

• Also on the agenda is a review of the Cougar mini portable world receiver. East meets west with this AM, FM, LW, shortwave radio. The other Larry, Larry Miller, takes a look at the crazy things they're doing in Houston to bring in ratings. Would you believe a "moon-in?" • And, of course, there's much, much more! So take a few minutes. Kick your shoes off. Set a spell. And get ready to explore the world of communications with America's favorite radio magazine, *Monitoring Times*. Y'all come back now!

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LETTERS

Robert L. Rankin of Tonganoxie, Kansas, writes to say that he enjoyed Henri Walser's wartime reminiscences in the April edition of *Monitoring Times*, "especially his recollection of the station that called itself *Soldatensender Calais* ("Armed Forces Radio, Calais").

The station enjoyed great success in confounding the Nazis by pretending to be a geniune German station but Mr. Walser states that, as far as he knew, the story of *Soldatensender Calais* has "never been told." The station, he says, was "most probably operated by the British across the channel." This was indeed the case.

"*Soldatensender Calais* began broadcasting as a "German" station on August 24, 1943, from Crowborough in the United Kingdom. It used a 600 kw mediumwave transmitter, formerly the property of the BBC. A smaller portable transmitter was located just across the channel and synchronized with Calais in order to confuse enemy attempts to DF [direction find] the transmit location.

"Actually, the story of this and other British 'black' radio operations has been told in some detail in a book entitled, *Black Boomerang*. The author, Sefton Delmer, was a British journalist who grew up in Germany and who headed up *Soldatensend Calais* and other, similar, British operations. The book was published in 1962 by Viking Press but it should be available in libraries. It makes for intriguing reading."

"What's the real story on the big, 10-page article about shortwave in *Insight* magazine?" asks Peter Carag. "Listen to shortwave? After reading that sleeper, I'm sure people would rather watch paint dry.

"What really fascinates me is that this almost intentionally dull article would come precisely at a time when so-much other pro-shortwave material was making its way into the national press. Maybe that was the point. Maybe someone in Washington wanted to down-play shortwave listening so no one would listen."

I'm intrigued by your letter, Peter. What I thought curious about the article was that it was written like a USIA [United States Information Agency, parent organization of the Voice of America] press release.

Marty Blaise writes to says that he wants to try and encourage those who may be new to mediumwave (AM) DXing.

"Because I live in Houston, Texas, where there are about 30 powerhouse AM and FM stations," he says, "I thought that they would make DXing impossible. But AM DXing is possible! Even in a metropolitan area!

"Not counting the locals or semi-locals, I've logged 95 different stations on AM including 17 different states, Mexico, Cuba and the Netherland Antilles."

Marty doesn't have the best equipment, either, but is able to really make it sing. "I use a Radio Shack DX-440 and a Select-A-Tenna. I even live in an apartment.

"Use a digital receiver," he advises. "learn about nulls, catch multiple station IDs on the hour with close listening, . . .

[See continuation on p. 100, plus the summer schedule for the Thunderbirds and Blue Angels!]

"Several years ago I sent you a photograph of my monitoring post. Now I would like you to see the revised version." So says a letter from Harry Abery, Jr. of Hartford, Connecticut.

Holy cow! Look at that picture!

"I was lucky enough to be able to obtain the (old) radio console from the police department where I'm a radio dispatcher.

"I use two Uniden BC760 XLTs 100 channel programmable scanners, a Yaesu FT-747GX transceiver for amateur, utility and world band, a Robyn 40-channel AM/SB CB transceiver plus an MFJ Computer interface for CW/RTTY with my Tandy 1000TX 640K computer system. A Maxon 35-watt business base station completes the transceivers. Everything is paneled-in to the console.

"I'm only using a Sony AN-1 active antenna right now but I hope to put up a 10 through 160 amateur beam as soon as I get my ham ticket. I enjoy the radio hobby now as much as I did when I started back in 1942. Thanks for a great magazine!"

COMMUNICATIONS

War of the Worlds II

Community groups have condemned a radio hoax on Scottsdale, Arizona, station KSLX in which listeners were led to believe that a riot was in progress.

The Friday morning broadcast, by announcers Jeanne Sedello, Bob Boze Bell and David K. Jones, included reports that local Pima-Maricopa Indians had taken over the community college and torched an Abco supermarket. Some listeners who were also in on the act had been told prior to 7:00 a.m. to use their imagination and call in their own fanciful reports from the field.

Apparently the whole thing sounded very realistic and the broadcast quickly got out of control. Police finally became involved when Sedello announced that a gunman had broken into the studio and was holding her hostage. Those who had not heard the disclaimer jammed police 911 lines to report what they heard.

"There will be no police determination of criminal responsibility," Scottsdale police officer Mark Barnett said, "but the broadcast raises serious questions of corporate responsibility."

Tribal spokesman Ivan Makil called the broadcast "completely irresponsible, deeply offensive to Indians and borderline racist." There was no comment from the station. (*The Phoenix Gazette* via Pat Lacey, Tempe, Arizona)

ET Is Not Coming

Investigators going over the remains of the collapsed National Radio Astronomy Observatory radiotelescope say that it was "thrown together."

Tony Rothman, writing on the subject in *Scientific American*, said that the 300 foot unit was "hurriedly constructed" in 1962 because work on a more sophisticated 150-foot telescope was behind schedule. But instead of lasting for a few years, it remained in service for "two to three times its design life."

A three-engineer panel praised maintenance of the telescope despite a unique set of problems. One was that birds like to roost in the receiver horn, far above the surface of the dish.

To avoid climbing the antenna to clear out the nests, someone installed an electronic scarecrow that produced loud noises, some of them sounding like cosmic bleeps and whistles. Tourists were told that the sound, which was audible for long distances, were signals being received from deep space. (*The Charleston Gazette* via Rick Robinson, Charleston, WV)

Lawnmowers and Microwaves

We at *Monitoring Times* are often impressed by the level of expertise exhibited in the projects submitted for our "Experimenter's Workshop" column. After receiving a truly impressive design, though, someone inevitably breaks the ice by asking, "But can he make a shortwave radio out of a lawnmower?" The folks at *RF Design* magazine did one better.

In their March issue, reader David Pacholok showed how to create a powerful 250 watt amateur television transmitter out of a microwave oven.

Spending less than $200 and using only parts readily available from consumer electronic supply houses, Pacholok showed how the oven power source, a magnetron tube, could be "tamed down" to provide power for the transmitter.

A circuit called a modulator, which controls power and frequency, is placed where the food would go.

Editors at *RF Design* stress that this is a project to be attempted only by a skilled engineer -- not a radio amateur. Leaking microwave radiation can be extremely dangerous. (*New York Times* via Ed Hesse, North Merrick, NY)

Save The QSLs!

People die. But QSLs don't have to. In nutshell, that's the message from Jerry Berg, Chairperson of the Committee to Preserve Radio Verifications (CPRV).

For fifty cents, Berg and his friends will send you a sticker to affix to your QSL album or container. The sticker contains a message that, while not "legal," expresses your wishes that the QSLs be donated to CPRV when you are "no longer able to enjoy them."

The cards are then carefully archived at the Boston headquarters of the First Church of Christ, Scientist, publishers of *The Christian Science Monitor* and operators of shortwave stations WCSN, KYOI and WSHB.

Make sure that your QSLs get the treatment they deserve when you're dead and no longer able to care for

CPRV

COMMITTEE TO PRESERVE RADIO VERIFICATIONS

My QSL collection is very important to me. It is my wish that, when I am no longer able to enjoy my QSLs, my family will donate them to the Association of North American Radio Clubs "Committee to Preserve Radio Verifications," Box 54, Caledonia, NY 14423, so that my QSLs will be preserved for the enjoyment of other radio hobbyists.

Signature _____ Date _____

them. For more information on this interesting project, write CPRV, P.O. Box 54, Caledonia, NY 14423.

Jail: He Threatened Panama!

Panamanian officials have announced the arrest of a U.S. citizen accused of running an anti-government radio station in Panama City. Officials said that Kurt Frederick Muse, a 39 year old businessman, was responsible for broadcasting "Voice of Liberty" programs over radio and TV.

Some $350,000 worth of equipment was confiscated from seven different apartments from which Muse allegedly made the transmissions. The programs, reported the National Department of Investigations (DENI), were produced on U.S. military bases in Panama. (*The Houston Post* via Daniel Bazan, Houston, Texas)

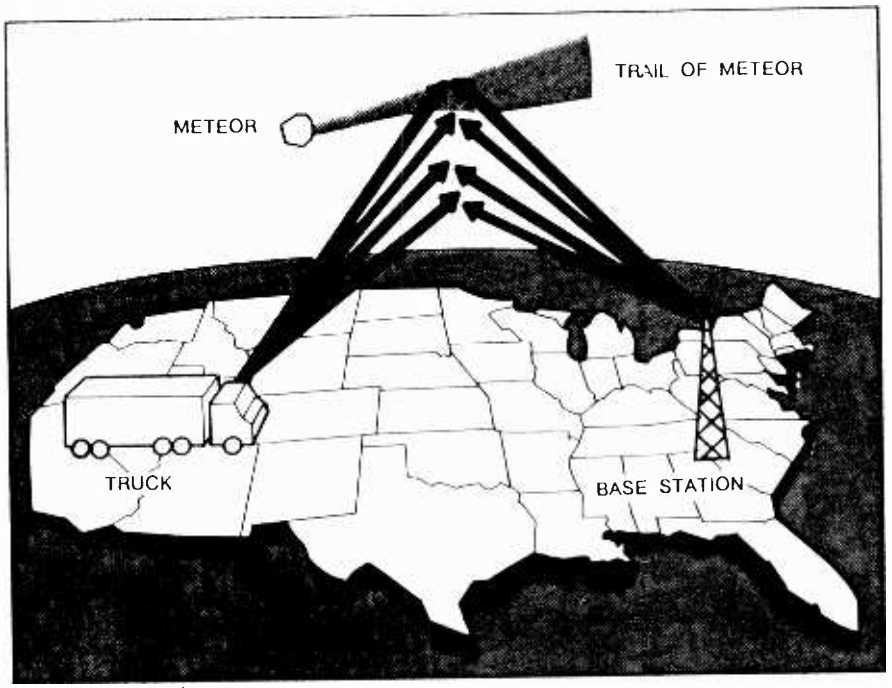
Radio, Meteors and Trucks

Truck drivers for North American Van Lines will now be keeping in touch with the home office via meteors. Fifty of its trucks will be able to bounce messages off these visitors from outer space using a technology called "meteor scatter."

As meteors pass through the earth's atmosphere, most leave behind billions of dust-sized particles. The signals are then reflected off these trails.

The problem is that these trails are short-lived. Signals reflected off the trails of large meteors last only for a second or two. Those bounced off smaller ones last milliseconds. As a result, it can take up to ten minutes to receive a message, depending on the quality of the trails. In one system, messages are limited to about 32 characters.

GTE Corp., which has been working on meteor communications



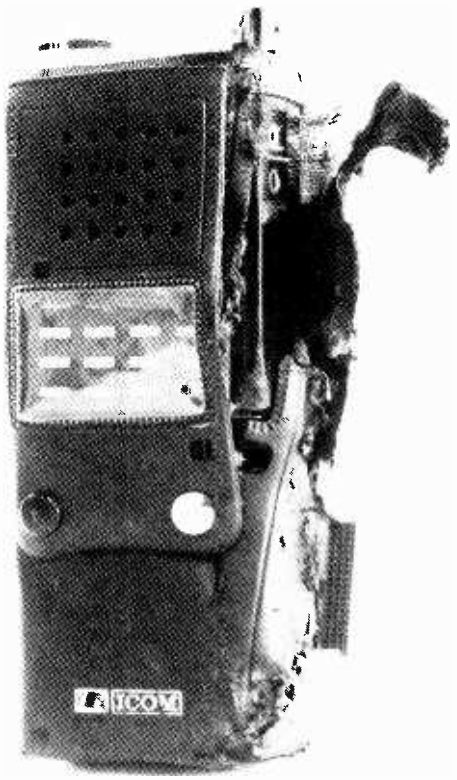
systems for several years, acknowledges that the technology has its drawbacks but notes that it also has major advantages.

These include the fact that they are hard to jam, difficult to intercept and would not be disabled by a nuclear blast. (*Boston Globe* via D. Edis, Dennis Pond, MA)

Saved His Life

When Fred Henning mounted his 1983 Honda Goldwing motorcycle recently, he probably wasn't even thinking about this wonderful hobby of radio. A short time later, however, a car made a U-turn in front of him and Henning dropped the bike, sliding some 60 feet through the intersection. Unbelievably, he escaped with only minor cuts and bruises.

To what does he attribute this miraculous event? Faith in God? Luck? No, when Fred Henning was able to pick himself up and pull himself together, he found that his IC-u2AT handheld absorbed the majority of the impact. Yes, friends, putcha hands on the radio! ICOM saved Fred Henning's life! Yea-uh!



You can communicate with other *Monitoring Times* readers. The next time you see an item about radio in a magazine or newspaper, clip it out and share it with the rest of us! Send it to Communications Editor, P.O. Box 98, Brasstown, NC 28902. You'll be glad you did.

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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, 1989.

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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 1⅝" H x 7⅜" D. Model **BC 590XLT-T** is a similar version without the 800 MHz. band for only $194.95. Order your scanner from CEI today.

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MP6000XL-T *Regency* 60 Ch. marine transceiver... $209.95
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List price $799.95/**CE price $299.95/SPECIAL**
16 Channel • 25 Watt Transceiver • Priority
The *Regency* 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 **RH606B-T** is available for $429.95. A UHF 15 watt, 16 channel version of this radio called the **RU156B-T** 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 compliment 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-T *Uniden* 40 Ch. Portable/Mobile CB... $83.95
PRO330E-T *Uniden* 40 Ch. Remote mount CB... $104.95
PRO500D-T *Uniden* 40 Channel CB Mobile $38.95
KARATE-T *Uniden* 40 channel rescue radio $53.95
GRANT-T *Uniden* 40 channel SSB CB mobile.... $166.95
MADISON-T *Uniden* 40 channel SSB CB base... $244.95
PC122-T *Uniden* 40 channel SSB CB mobile..... $119.95
PRO510XL-T *Uniden* 40 channel CB Mobile..... $38.95
PRO520XL-T *Uniden* 40 channel CB Mobile..... $56.95
PRO530XL-T *Uniden* 40 channel CB Mobile..... $79.95
PRO540E-T *Uniden* 40 channel CB Mobile..... $97.95
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PRO710E-T *Uniden* 40 channel CB Base $119.95
PRO810E-T *Uniden* 40 channel SSB CB Base... $174.95

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RD500-T Uniden visor mount radar detector..... $74.95

Bearcat® 200XLT-T

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

Bearcat® 800XLT-T

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

Bearcat® 145XL-T

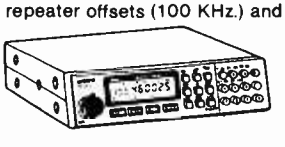
List price $189.95/**CE price $94.95/SPECIAL**
10-Band, 16 Channel • No-crystal scanner Priority control • Weather search • AC/DC
Bands: 29-54, 136-174, 406-512 MHz.
The *Bearcat* 145XL is a 16 channel, programmable scanner covering ten frequency bands. The unit features a built-in delay function that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

President® HR2510-T

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

NEW! President® HR2600-T

List price $599.95/**CE price $299.95/SPECIAL**
10 Meter Mobile Transceiver • New Features
Delivery for this new product is scheduled for June, 1989.
The new *President* HR2600 Mobile 10 Meter Transceiver is similar to the *Uniden* HR2510 but now has repeater offsets (100 KHz.) and CTCSS encode.



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800 MHz. mobile scanner SPECIAL!

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FBW-T Frequency Directory for Western U.S.A..... $14.95
RFD1-T Great Lakes Frequency Directory..... $14.95
RFD2-T New England Frequency Directory..... $14.95
RFD3-T Mid Atlantic Frequency Directory $14.95
RFD4-T Southeast Frequency Directory..... $14.95
RFD5-T N.W & Northern Plains Frequency Dir. $14.95
ASD-T Airplane Scanner Directory..... $14.95
SRF-T Survival Radio Frequency Directory $14.95
TSG-T "Top Secret" Registry of U.S. Govt. Freq.... $14.95
TTC-T Tune in on telephone calls..... $14.95
CBH-T Big CB Handbook/AM/FM/Freeband..... $14.95
TIC-T Techniques for Intercepting Communications ... $14.95
RRF-T Railroad frequency directory $14.95
EEC-T Embassy & Espionage Communications.... $14.95
CIE-T Covert Intelligence, Elect. Eavesdropping ... $14.95
MFF-T Midwest Federal Frequency directory..... $14.95
A60-T Magnet mount mobile scanner antenna..... $35.95
A70-T Base station scanner antenna $35.95
A1300-T 25 MHz.–1.3 GHz Discone antenna..... $109.95
USAMM-T Mag mount VHF ant. w/ 12' cable $39.95
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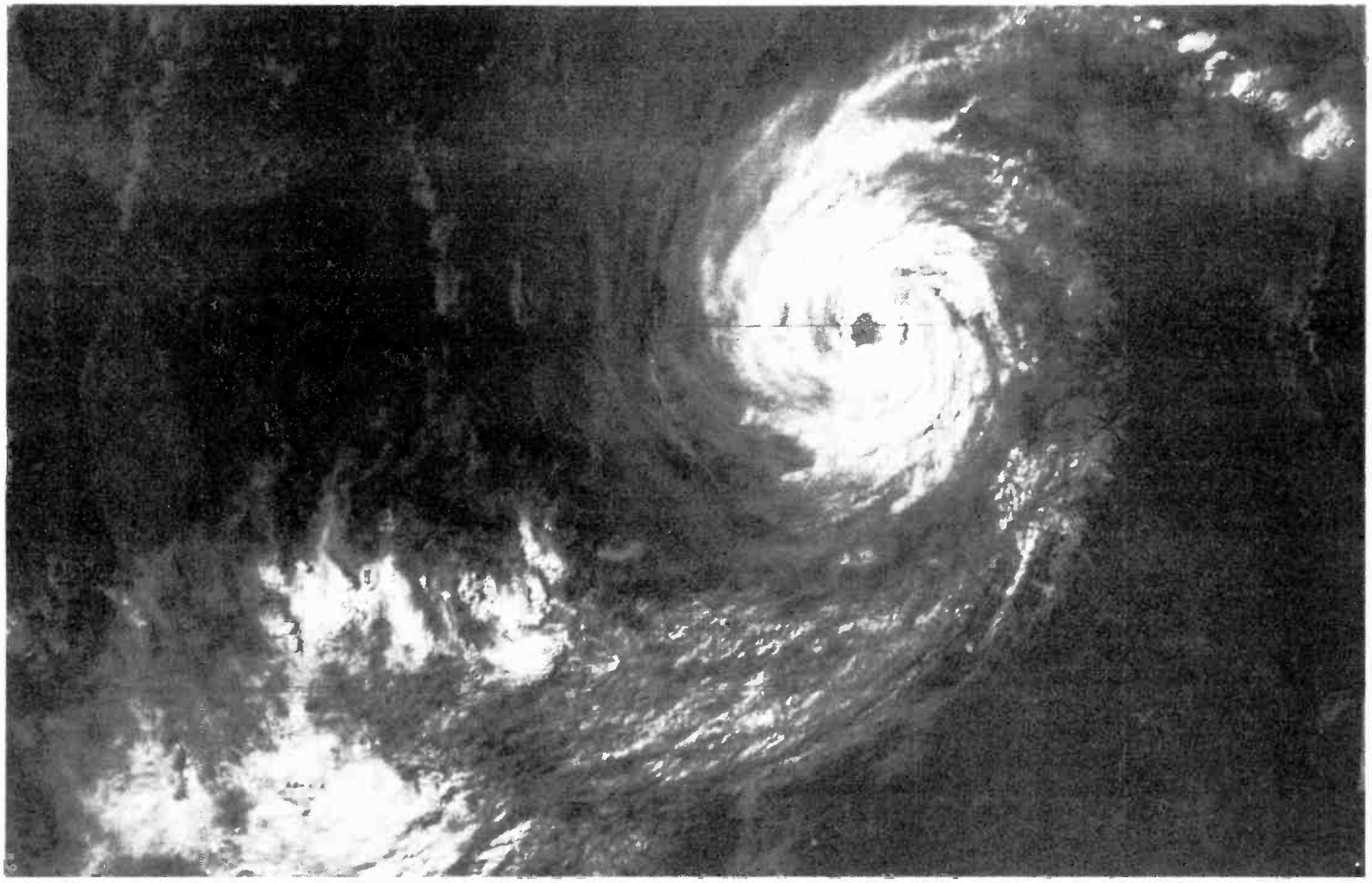


U.S. Air Force

Listening to the Hurricane Hunters

Super Hurricane Gilbert on a crash course with Mexico (above). Below, a WC-130 on the ramp at Keesler AFB in Biloxi, Mississippi, from the 53rd WRS, radio callsign "Gull"

U.S. Air Force

by Larry Van Horn

It usually starts out as a ripple on the weather charts, an area of brighter clouds on the satellite photos. To trained forecasters at the National Hurricane Center (NHC) in Coral Gables, Florida, it represents the beginning of one of nature's most destructive storms.

More data is needed to confirm what satellite imagery shows. The area under investigation is an isolated sector of the middle Atlantic Ocean. There are not a lot of weather stations here. Ship reports, however, indicate freshening winds in the area. Computer charts of air pressure and other meteorological parameters point to the formation of a tropical depression.

But still the NHC wants more information -- wind, temperature, pressure, humidity, and the "state of the sky" data -- so that a valid forecast can be made. The Hurricane Center calls for the services of the U.S. Air Force (USAF) and the National Oceanic and Atmospheric Administration (NOAA) Hurricane Hunters.

There are only two U.S. Air Force units that will fly into a hurricane. Both of these squadrons are based out of Keesler AFB in Biloxi, Mississippi.

Known as the "Hurricane Hunters," Keesler's 53rd Weather Reconnaissance Squadron (WRS) is part of the Military Airlift Command's 23rd Air Force. Flying a modified version of

HURRICANE HUNTER FREQUENCIES
TABLE 1

NOAA Aircraft to Miami Monitor (KJY74):
3407 5562 6673 8876 10015 13354 17901 21937

AIR-TO-AIR COMMUNICATIONS:
123.050 MHz Primary VHF
304.800 MHz Secondary UHF
4701 kHz Back-up HF

USAF GCCS Stations (commonly heard working hurricane hunters):	
Albrook AFB, Panama:	3137 6683 8993 11176 15015 18019
Ascension Aux AF:	6753 8993 11176 13244 15015
Lajes Field, Azores:	3081 4746 6750 8967 11271 13244
Loring AFB, ME:	3074 6738 8964 11179 13214
MacDill AFB, FL:	4746 6750 8993 11246 13244 18019
McClellan AFB, CA:	3067 6738 8989 11239 13201 18002

CENTER/VORTEX MESSAGES
TABLE 2

Due to the importance of the Center/Vortex message, very little encoding is done by the Weather Officer aboard the aircraft. This one is very easy to figure out and provides the listener with some very interesting information.

The message is divided into sections preceded by a mission identifier (Gull 10, Teal 32, NOAA 42, etc) and observation number.

Section/Data to be passed:

A Date and Time of fix (UTC)

B Latitude of the vortex (degrees, minutes north and south)
Longitude of vortex (degrees, minutes east and west)

C Minimum height (millibars and meters)

D Maximum surface wind (degrees and nautical miles)

F Maximum flight level wind near center (degrees and knots)

G Bearing and range from center of maximum surface wind (degrees and nautical miles)

H Minimum sea level pressure (millibars)

I Maximum flight level temperature (degrees C)/Pressure altitude (meters)/Absolute altitude outside the eye (meters)

J Maximum flight level temperature (degrees C)/Pressure altitude (meters)/Absolute altitude inside the eye (meters)

K Dewpoint temperature (degrees C)/Sea surface temperature inside eye (degrees C)

L Eye character (closed wall, poor defined, open SW, etc)

M Eye shape/orientation/diameter:
Eye shape (C-circular; E-elliptical)
Orientation of the major axis in tenth of degrees (01 = 010 to 190; 17 = 170 to 350)
Transmit diameter in nautical miles.

Examples: C8 (Circular eye; eight miles in diameter); EO9/15/5 (Elliptical eye major axis 090-270 degrees); length of the major axis 15 nm, length of minor axis 5 nm; CO8-14 (Concentric eye diameter inner eye 8 nm; outer eye 14 nm

N Confirmation of fix (coordinates and time)

O Fix determination by:

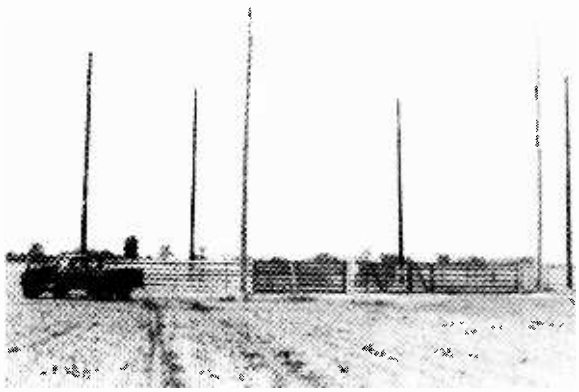
1 = penetration
2 = radar
3 = wind
4 = pressure
5 = temperature

Fix level:

0 = surface
1 = 1500 feet
2 = 200 mb
3 = 300 mb
4 = 400 mb
5 = 500 mb
7 = 700 mb
8 = 850 mb
9 = other

P Navigation fix accuracy/meteorological accuracy (nautical miles)

Q Remarks



One of the antenna arrays at Elk Horn, Nebraska, for the Air Force Air Weather Service, HF Regional Broadcast station.

US Air Force

the C-130 Hercules (WC-130), the Hurricane Hunters have been collecting data on the atmosphere for 44 years, covering millions of square miles of the Atlantic, Caribbean, Gulf of Mexico, and Pacific.

Hurricane Hunters also fly storm missions on the Gulf of Alaska and along the U.S. eastern seaboard during winter months. Each can save countless lives and millions of dollars in property. But what is truly amazing is that the squadron has amassed some 112,000 accident-free hours in support of these missions.

Virtually unknown to the public is the unit's work in support of America's space program. A special camera mounted aboard one of the WC-130s films the space shuttle from takeoff to solid rocket booster separation and then tracks one of the two boosters to splashdown.

The Hurricane Hunters also have a reserve counterpart at Keesler. The 815th Weather Reconnaissance Squadron (WRS) is known as the "Storm Trackers." The 815th averaged 820 flying hours into tropical storms from 1976 to 1984.

The 1985 storm season, however, was not an average year. There were four tropical storms and *seven* hurricanes. Six hurricanes and two tropical storms made landfall on the U.S. mainland. The 815th logged 1,265 flying hours.

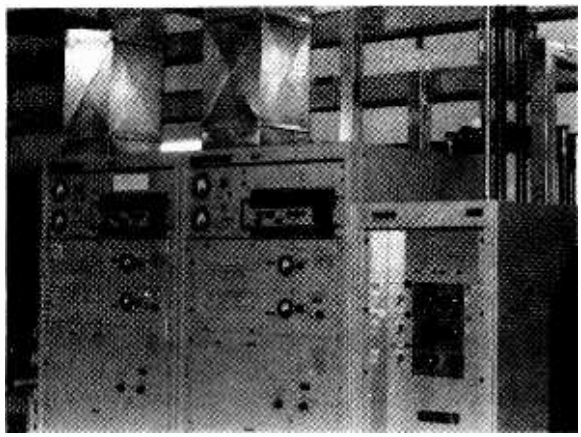
Due to government budget cuts, one of the long time weather recon squadrons covering the Pacific has quit flying weather missions. The "Typhoon Chasers" out of Andersen AFB, Guam, no longer fly into tropical storms. The same story is now happening to the 53rd WRS.

Pentagon officials say they no longer need the hurricane hunting missions because of advances in weather satellite technology. The folks at the National Hurricane Center disagree. They feel that the satellite information compliments the aircraft recon information, but not enough to replace them.

Still, as time goes on, familiar call signs have faded from the weather recon scene. The Typhoon Chasers' call sign of "Swan" is no longer in pursuit of Pacific storms. The Hurricane Hunters familiar "Gull" call sign might also become a thing of the past very soon. The Storm Trackers use the call sign "Teal."

There is another group of storm trackers that is operated by NOAA. This group flies two P-3 Orion four turboprop engine aircraft. These P-3 aircraft are about the size of a Boeing 737 jetliner. Their call sign is "NOAA**" ("**" indicates numbers).

NOAA** is most often heard in voice contact with the "Miami Monitor." Table 1 lists some of the more active frequencies. Listeners should keep in mind that these are utility transmissions and the frequencies listed in Table 1 have no pattern in their use. It's catch as catch can.



The transmitter at Elk Horn, Nebraska.

US Air Force

Into the Eye, Looking At Death

Exactly what is it that Hurricane Hunters do that makes it worth sending men and machines into the jaws of death?

According to the National Hurricane Center, there are certain meteorological parameters important for the formation of a tropical depression and its future development. The Hurricane Hunters fly into the storm, sometimes as low as 500 feet above the churning ocean, taking vital measurements. The data is transmitted in coded (not encrypted) on shortwave radio back to the forecasters at the NHC.

When the storm is far from land or shipping lanes, a penetration to the very center, or "eye," is made every 12 hours. The closer the storm comes to landfall, the more frequent these "fixes" are made. Finally, they become hourly until the storm dissipates over land or swerves out into the colder waters to die.

Although each storm is different, most will have moderate to severe turbulence and thunderstorms with large amounts of hail and lightning. The spiral bands of the thunderstorm merge in a circle around the eye, forming a unique phenomena called the wall cloud or "eye wall." This is the focus of the hurricane hunter's mission, to find the most severe weather of the storm.

It is the penetration through this formidable rampart of thunderstorms that is the most hazardous part of the mission. The aircraft must be taken right through this wall to reach the center of the storm.

The eye itself -- anywhere from 5 to 50 miles in diameter -- is cloud free, calm and serene compared to the periphery of the storm. Most hurricane hunter missions penetrate the eye at between 5,000 and 10,000 feet. From 10,000 feet, the view of the ocean below is spectacular. Observers have clearly seen waves to 60 feet churning on the ocean surface below.

One television meteorologist who had a chance to ride into Hurricane Gilbert in 1988 said that calm is a relative term in the eye of the storm. Riding in the eye of the storm is not as bad as going into the storm; however, the plane still bounces around like a ping pong ball due to vertical winds that measure up to 60 mph. But even that "calm" is short lived as you leave the eye wall. As one observer said, "It's like slamming into a brick wall."

Surface pressure is determined by the release of an instrument known as a "dropsonde," a small metal cylinder packed with meteorological measuring equipment. The dropsonde is coupled to a small UHF radio transmitter. Released at 19,000 feet, it falls to the water below at 5,000 feet per minute, radioing back to a receiver on the aircraft such information as temperature, humidity, and air pressure. This provides the NHC with a vertical profile of the storm at a particular point within the storm.

Data around the storm is as valuable as that taken from within the eye. For this reason the hurricane hunting aircraft fly large X-shaped patterns across the whole storm. A mature hurricane can involve more than one million cubic miles of atmosphere. It's a lot of sky to fly even under good

RECCO WEATHER CODE FORMAT TABLE 3

I will attempt to describe the format in AWS Form 35, which is used by the hurricane hunter aircraft when they transmit reports (encoded) back to NHC via SSB/HF radio-phone patch usually via MacDill AFB in Florida.

The "format" is five number groups each having a specific meaning. The information is not classified, but just put into this format for convenience in sending the data.

First, I will give the "positions" of the data in the five number groups with a descriptor and reference to a "LIST", if required. Next, I will give the "LISTs" referred to for further breakdown of data. After you "decode" a transmission or two it will become clear what the personnel on the aircraft are trying to transmit back to NWS.

Group 1 "9XXX9" - see LIST 1.

Group 2 "GGGGid" GGGG = GMT time of observation, id = dew point indicator - see LIST 2.

Group 3 "YQLaLaLa" Y = day of week (Sunday = 1), Q = octant - see LIST 3, LaLaLa = Latitude degrees and tenths.

Group 4 "LoLoLoBfc" LoLoLo = Longitude degrees and tenths, B = turbulence - see LIST 4, fc = flight conditions - see LIST 5.

Group 5 "HaHaHaDtDa" HaHaHa = altitude of aircraft to nearest decameter, Dt = type of wind - see LIST 6, Da = method of obtaining wind - see LIST 7.

Group 6 "DDFFF" DD = wind direction at flight level (tens of degrees true), FFF = wind speed at flight level in knots.

Group 7 "TTTdTdW" TT = temperature - whole degrees C., TdTd = dew point - whole degrees C. W = present weather - see LIST 8.

Group 8 "/JIIHH" /="indicator," J = index to HHH - see LIST 9, HHH = geopotential height/ d vale or SLP per index J.

Group 9 "1KnNsNsNs" 1="indicator," Kn = number of cloud layers, NsNsNs = amount of clouds - see LIST 10.

Group 10 "CHsHsHtHt" C = cloud type - see LIST 11, HsHs = altitude of base - see LIST 12, HtHt = altitude of top - see LIST 12. (This group may be repeated several times until next "1," "4," "6," "7," "8," or "9" indicator.)

Group 11 "4DDFF" 4="indicator," DD = direction of surface wind - tens of degrees true, FF = surface wind speed in knots.

Groups using 6, 7, 8, 9 indicators are seldom if ever used, and will not be delved into. (exception is group 1 above)

LIST 1 222 = sec one observation without radar. 555 = sec three observation with/without radar. 777 = sec one observation with radar.

LIST 2
0 = no dew point capability/acft below 10,000 meters
1 = no dew point capability at or above 10,000 meters.
2 = same as 0 with temperature below -50 degrees C.
3 = same as 1 with temperature below -50 degrees C.
4 = dew point capability, acft below 10,000 meters.
5 = dew point capability, acft at or above 10,000 meters
6 = same as 4, temperature -50 degrees C. or less.
7 = same as 5, temperature -50 degrees C. or less.

LIST 3
0 = 0 degree - 90 degree W, Northern hemisphere.
1 = 90 degree W to 180 degree W, Northern hemisphere.
2 = 180 degree - 90 degree E, Northern hemisphere.
3 = 90 degree E - 0 degree E, Northern hemisphere.
4 = not used.
5 = same as 0, Southern hemisphere
6 = same as 1, Southern hemisphere
7 = same as 2, Southern hemisphere
8 = same as 3, Southern hemisphere

LIST 4
0 = none
1 = light turbulence
2 = moderate in clear air, infrequent
3 = moderate in clear air, frequent
4 = moderate in cloud, infrequent
5 = moderate in cloud, frequent
6 = severe in clear air, infrequent
7 = severe in clear air, frequent
8 = severe in cloud, infrequent
9 = severe in cloud, frequent

TABLE 3 cont'd

LIST 5
0 = clear
1 = clouds, tops < 10,000 feet
2 = clouds, tops 10,000-18,000 feet
3 = clouds, tops over 18,000 feet
4 = clouds, bases < 10,000 feet
5 = clouds, bases 10,000-18,000 feet
6 = clouds, bases above 18,000 feet
7 = between layers, no clouds at flight level
8 = in and out of clouds
9 = clouds all the time
/ = impossible to determine due to darkness

LIST 6
0 = spot wind
1 = average wind
/ = no wind reported

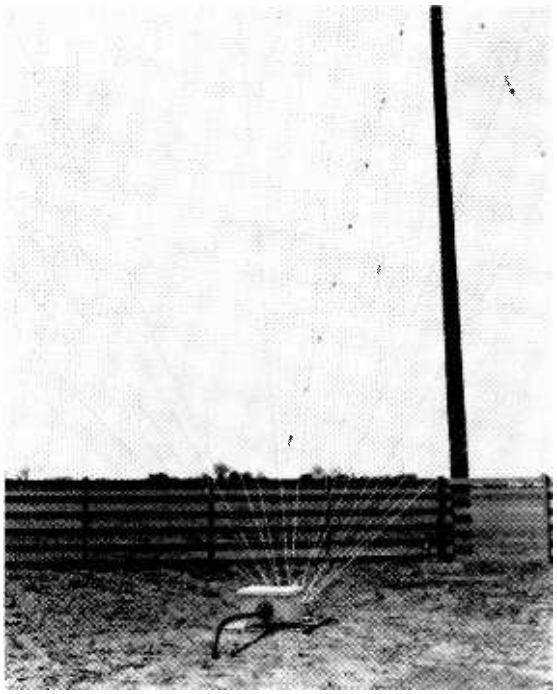
LIST 7
0 = winds obtained using doppler radar or inertial systems
1 = winds obtained using other navigation equipment/techniques
/ = navigator unable to determine wind

LIST 8
0 = clear
1 = scattered
2 = broken
3 = overcast/undercast
4 = fog/dust/haze
5 = drizzle
6 = rain
7 = snow or rain or mixture
8 = showers (continuous or intermittent)
9 = thunderstorms
/ = unknown for any cause (i.e. = darkness)

LIST 9
0 = sea level press in whole millibars
1 = altitude 200 mb surface in geopotential decameters
2 = same for 850 mb
3 = same for 700 mb
4 = same for 500 mb
5 = same for 400 mb
6 = same for 300 mb
7 = same for 250 mb
8 = D-value in geopotential decameters; if negative 500 is added to HHH
9 = no absolute altitude available or geopotential data not within accuracy requirements

LIST 10
0 = zero
1 = 1 Okta or less
2 = 2 Oktas
3 = 3 Oktas
4 = 4 Oktas
5 = 5 Oktas
6 = 6 Oktas
7 = 7 Oktas
8 = 8 Oktas or sky completely covered
9 = Sky obscured or cloud amount cannot be estimated

LIST 11
0 = cirrus
1 = cirrocumulus
2 = cirrostratus
3 = altocumulus
4 = altostratus
5 = nimbostratus
6 = stratocumulus
7 = stratus
8 = cumulus
9 = cumulonimbus
/ = cloud type unknown due to darkness or other causes



Close-in shot of one antenna base at Elk Horn Air Weather Service
US Air Force

conditions but during a hurricane it has been described as similar to "a thunderous train ride."

Storm reconnaissance missions can last anywhere from eight to 16 hours, depending on how far the crew must fly to reach the tempest. These are extremely fatiguing missions, but after fifteen hours of rest on the ground, the crew is called upon to do it again.

Do they realize the risk? Jan Zysko, Chief Engineer of a NOAA hurricane hunter says, "Certainly there are risks involved in doing this. There are calculated risks and we weigh the options and the risk."

To offset those risks, Jan says, "We are getting data underneath the storm that the satellite doesn't see and that lessens the risk to the public, which is what our missions are all about."

Why do they do it? Jeff Masters, NOAA Flight Meteorologist, says, "The storm is a very spectacular sight and it is an experience that cannot be equaled on this planet. It is amazing what I see when I am up there."

The USAF hurricane hunter crew aboard the WC-130 consists of six people -- the pilot (the aircraft commander), copilot, navigator, flight engineer, weather officer, and dropsonde system operator.

The weather officer, a professional Air Force meteorologist, along with the navigator, directs the course of the flight during the penetration to remain clear of thunderstorms. It is the weather officer who computes the weather data, encodes the observations in a special format and transmits the data to the NHC in Coral Gables.

The types and formats of observations are set forth in the National Hurricane Operations Plan (NHOP) that is issued each year. The codes that the missions used is also contained in this publication. To increase the monitor enthusiast's enjoyment of the hobby, an understanding of the codes used by the hurricane hunters can help. Tables 2 and 3 give the most frequently heard coded messages passed by USAF and NOAA hurricane hunting crews.

Monitors can use these codes to translate messages heard from these aircraft to get a unique picture of a storm. The most interesting to monitor is the center/vortex message which is passed when the aircraft penetrates the eye of the storm. This format is listed in Table 2.

Table 3 gives the most commonly used message you will hear being passed between Miami Monitor and the hurricane hunting aircraft. This message is the RECCO symbolic message form. These are routine observations made at selected points in the aircraft's mission into the hurricane.

Why do Hurricane Hunters risk such hazardous duty? One reason is an experience that cannot be equaled anywhere else.

US Air Force

According to the NHOP, USAF and NOAA aircraft will normally transmit recon observations through USAG GCCS stations via phone patch to Miami. These GCCS stations will often provide a discrete frequency for the aircraft to operate with their station during the flight. A good watch on the GCCS frequencies listed in Table 1 will assist the monitor in tracking the progress of the flight.

NOAA aircraft also use discrete frequencies listed in Table 1 to communicate directly to Miami. Don't be surprised by what you will hear on these channels. While the Air Force quit the practice, NOAA still offers rides during hurricane missions in their aircraft for the media. It is not uncommon to hear a television or radio station's chief weatherman talking to the studio live during a newscast from a NOAA plane about the storm he is riding out. These can provide some very interesting details about life aboard a Hurricane Hunter in a storm.

Tables 4 and 5 give some additional information about not only this year's storm names but the classes of warnings that the National Hurricane Center will issue.

This article will help the listener follow the progress of the storm long before the National Hurricane Center passes its next bulletin. When these violent storms come this season, you can follow the daring exploits of the Hurricane Hunters.

mt

A lot of folks helped with the preparation of this article. I would like to thank the National Weather Service, Slidell, LA - Mr. Frank Revitte; the Public Affairs Office at Keesler AFB, Biloxi, MS - Sgt Prince; NOAA National Hurricane Center, Coral Gables, FL; and the Headquarters Air Weather Service Public Affairs Office, Scott AFB, IL - MSGT David Black, Maj. Clayton and Chief John Hahn for their assistance and valuable insights in preparing this article and the feature on the Air Force HF Regional Broadcast stations.

Weather message copied by Bill Earecsson, Virginia

```
NNNN
2005
SAxx77 KAWN 242000 RTD05
HEX SA 1956 40 SCT 100 SCT 250 SCT 7 130/90/71/2303/991=
BAB SA 1955 30 SCT 10 124/889/2005/990/*30 SCT=
BAD SA 1955 35 SCT E100 BKN 250 BKN 7 116/9 /73/2904/988=
BKF SA 1955 60 SCT 70 139/77/22/0000/010=
DMA SA 1955 70 SCT 50 132/90/48/2006/005=
DYS SA 1955
50 SCT 15 165/83/54/3402/007=
FFO SA 1955 40 SCT E80 BKN 120 OVC 12 154/64/53/E1506/999=
FST SA 1955 25 SCT 15 163/70/51/3604/003=
GFA SA 1955 65 SCT 100 SCT 250 SCT 45 137/62/35/0410/994=
LIZ SA 1955 50 SCT 30 084/56/31/3213G21/977=
LUF SA 1955 CLR 40 145/89/42/0000/999=
MHR SA 1955 CLR 12 8
8/80/48/2608/991=
MYR SA 19 30 SCT 250 BKN 4H 131/85/8/1906/992/TCU N=
NID SA 1956 C
R 40 130/88/36/1301/998=
NJK SA 1955 X 12 128/91/48/1002/991/H1=
NKX SA 1956 X M23 BKN 7 166/71/56/3505/002/H2=
NTD SA 1955 24 SCT 8 170/72/57/2109/003/LAG PK 67/55/2109=
OZR SA 1955 X 30 SCT E120 BKN 6H 141/90/75/2705/995/H1=
POB SA 1955 X 40 SCT 250 SCT 5H 116/92/73/2008/987/H2=
RIV SA 1955 X 2H 164/73/56/2906/003/H2=
RME SA 1955 28 SCT E250 BKN 20 175/64/41/3110G16/004=
SBD SA 1956 X 21/2H 157/74/58/2703/002/H3=
SUU SA 1955 =/ 25 SCT 15 139/68/50/2524G30/994/RBD2 K25 SC     PK WND 2432/43=
SZL SA 1955 45 SCT 15 155/72/51/1401/000=
VAD SA 895 35 SCT 250 OVC 7 139/90/73/2401/995=
```

TABLE 3 cont'd

LIST 12

00	= less than 100
01	= 100 feet
02	= 200 feet
03	= 300 feet etc.
49	= 4900 feet
50	= 5000 feet
51	= 55 not used
56	= 6000 feet
57	= 7000 feet etc.
79	= 29,000 feet
80	= 30,000 feet
81	= 35,000 feet
82	= 40,000 feet etc.
89	= greater than 70,000 feet
//	= unknown

NOTE: Some sections may be passed over or skipped depending on type of observation. You will have to decode a few times to get the "hang" of it.

1989 TROPICAL STORM/HURRICANE NAMES (ATLANTIC/CARIBBEAN/GULF OF MEXICO TABLE 4

Allison	Barry	Chantal	Dean	Erin	Felix
Gabrielle	Hugo	Iris	Jerry	Karen	Luis
Marilyn	Noel	Opal	Pablo	Roxanne	Sebastian
Tanya	Van	Wendy			

GENERAL HURRICANE TERMS HEARD ON HURRICANE HUNTER CHANNELS TABLE 5

Saffir rating scale:

Category	Central Pressure (mb)	Winds (mph)	Tidal Surge (ft)
1	>980	74-95	4-5
2	965-979	96-110	6-8
3	945-964	111-130	9-12
4	920-944	131-155	13-18
5	<920	>155	>18

TROPICAL CYCLONE - General term for cyclones originating over tropical oceans. These may include tropical depressions, tropical storms and hurricanes.

TROPICAL DEPRESSION - Tropical cyclone with winds less than 39 mph (34 knots)

TROPICAL STORM - A tropical cyclone with sustained winds of 39 to 73 mph (er to 63 knots). Storms are named when they reach this strength.

HURRICANE - A tropical cyclone with sustained winds of 74 mph (64 knots) or greater.

MAJOR HURRICANE - A tropical cyclone with sustained winds of 101 to 135 mph (88 knots to 107 knots).

A Compact Powerhouse -

The New PRO2005

Years ago, we considered ourselves lucky if our scanner covered more than one band of frequencies. Today, wide frequency coverage is routine and options literally undreamed of just a few short years ago are available today at very affordable prices.

One of these very advanced and very affordable scanner radios was the Radio Shack PRO2004. The '2004, often touted as "the most popular high-performance scanner ever made," dominated the market with its "incredible" 300 channel memory, rapid 16-channel-per-second scanning and superior interference rejection.

Now, however, the PRO2004 is gone, replaced by the Radio Shack PRO2005. How does the '2005 stack up? Very, very well.

The new PRO2005 is functionally identical to its predecessor, but with a total of 400 memory channels. And it can accurately described as a compact version of the PRO2004. Measuring only 8-1/2"W x 3"H x 8"D, and weighing a scant 4-3/4 pounds, the '2005 offers a more refined layout of the original circuitry, complete with state-of-the-art surface mount components.

With a more vertical front panel than its predecessor and wrapped in a plastic jacket rather than the '2004's metal cabinet, the '2005 has full-stroke, rubberized keys -- a great improvement over the membrane keypad on the earlier version. Hinged front feet allow the unit to lie flush on a desktop or tilt up for better viewing.

Frequency range is very wide: 25-520, 760-823.945, 851-868.945 and 896-1300 MHz, any mode (AM, narrowband FM, wideband FM). As with its predecessor, cellular frequency coverage has been deleted at the factory but may be restored by clipping one lead of a diode (D502, found on the inside corner of the front panel).

Up-conversion design, using a 610 MHz first IF stage, virtually eliminates images from appearing in the receiver's listening range, a common problem with most other scanners.

A telescoping whip is provided for indoor use; the scanner is also equipped with a BNC connector for the attachment of an outdoor antenna. A top-cover-mounted speaker delivers plenty of audio.

Powering Up

As with all Realistic desktop scanners, the PRO2005 has a 120V AC cord permanently wired to it; wrapping it up inconspicuously for mobile installation may be inconvenient, but at least you'll never lose it. A rear-panel jack allows direct connection of 12-volt power for mobile applications, but no mounting accessories are included.

Sensitivity

Readers will be happy to learn that the sensitivity of the new PRO2005 is improved, at least in our random sample. We compared the PRO2005 with two PRO2004s, a Bearcat BC200XLT and an ICOM R7000. The '2005 trounced the '2004s in virtually every frequency range and was essentially equal to the 200 and 7000.

The published specifications show narrowband FM as 0.5 microvolts from 25-1100 MHz, increasing to 3 microvolts at higher frequencies. AM and wideband FM are less impressive, increasing to 2-5 microvolts (AM) and 3-10 microvolts (WFM).

The tradeoff for high sensitivity is greater susceptibility to intermod interference from strong signal overload, the Achilles' heel of all competitively-priced consumer receiving equipment. A 10 dB attenuator switch on the rear panel should be engaged for dense signal environments.

Selectivity

The 2005 has approximately the same ability to reject adjacent channel interference as the ICOM R7000. Since VHF/UHF channel allocations are not nearly as close spaced as on shortwave, scanner selectivity is rarely a problem.

Searching and Scanning

Scan/search speed is still 16 channels per second (8 if slow speed is selected). Since it was easily increased to 30 on the 2004 by replacing the microprocessor time-base crystal and installing a diode (provided for in that model), we assumed it would be faster on this latest version.

To get to the ceramic resonator on the 2005, you must remove the front panel (four screws), remove the logic board (several wires and a half-dozen screws) and unsolder a shield plate. It's far easier to

enter your favorite frequencies in channels 1-20 once again into channels 21-40 so they are rescanned twice as often, a trick which effectively doubles your scanning speed.

A two-second scan delay feature is selectable for any channel, allowing the receiver to wait for a reply after stopping on a transmission.

When searching between two upper and lower limit frequencies for new signals, up to ten search-located channels may be stored for later recall or monitoring. Search increments of 5, 12.5 or 50 kHz may be selected by the user to match frequency allocations on any band.

"Zeromatic Tuning," a Tandy term for window detection, assures that the unit will stop dead center on a detected signal, displaying its actual frequency, rather than stopping early on the edge of the signal which is strong enough to break squelch, a characteristic of many other scanners.

"Birdies," or false signals produced by the scanner's own circuitry, lock up the search routine periodically on any scanner. A list of the more prominent frequencies on which this occurs is printed in the instruction manual. A "sound squelch" button on the PRO2005 prohibits the scanner from stopping on any signal that has no sound associated with it.

400 Memory Channels

Frequencies, modes and scan delay may be stored in ten forty-channel memory banks which may be brought up in any combination for up to 400 channels of sequential scanning. Any one channel may be designated priority (the scanner automatically defaults to channel 1 priority at turn-on). Temporarily-undesired channels may be locked out by a front-panel key.

That Annoying Beep Tone

Some people like it, but we are driven to distraction by a prominent "beep" emanating from the speaker every time a key is pressed. It can be disabled or reduced easily on the PRO2005.

A look inside the top front will reveal a 15 pin connector with a center gray wire. The wire may be cut midway, leaving room for the insertion of a resistor to quieten the tone, a miniature switch to choose beep/no beep, or resoldering later if you change your mind.

Alternatively, to avoid cutting anything, the plug may be carefully removed from its socket and the gray wire's connector pin (number eight) may be bent down so that when the socket is reattached the tone circuit will not connect. It may be straightened up later if you change your mind, but don't do that too often!

The Bottom Line

The PRO2005 is a compact powerhouse. Its 400 memory channels, wide frequency coverage, good sensitivity, up-conversion design and reasonable cost make it an excellent choice for virtually any application, mobile or base.

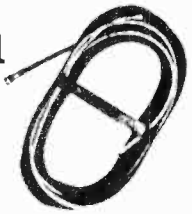
The PRO2005 is now available for $419.95 from Radio Shack outlets, or for $389 plus $5 shipping from Grove Enterprises (PO Box 98, Brasstown, NC 28902; MC/VISA/COD phone orders toll-free, 1-800-438-8155).

mt

VACATION PACKAGE:
Set Up in Your Car or Cottage!

The Grove Hidden Antenna

For improved indoor scanner reception!



Although designed to attach to the powerful Grove PRE-3 signal booster, the Hidden Antenna may be used alone with your scanner, replacing the plug-in whip, for improved signal reception.

This five-foot, thin-profile, flexible wire antenna can be hung in a corner, behind a drape -- just about anywhere out of sight.

Comes fully assembled with 20 feet of coax and F male connector (*NOTE:* We will substitute the connector of your choice for $5.00).

Order ANT-6

Only **$9.95**

Free shipping in U.S. and Canada

Boost those weak scanner signals!

Power Ant III Wideband Preamplifier

The Grove PRE-3 Power Ant is a powerful signal booster for scanners. Equipped with a high gain (up to 25 dB), low noise (2 dB nominal), solid state amplifier stage, the PRE-3's front panel control allows custom selection of amplification.

Two output connections (type F) allow you to use two receivers on one antenna at the same time! Requires 12 VDC, 40 ma power source.

Recommended Accessories: ACC-20 Universal Power Adaptor; ANT-5B Omni Antenna or ANT-6 Hidden Antenna; ACC-60 receiver cable (you specify connector or receiver model, one for each receiver); ACC-90 Mobile DC cord.

Order PRE-3

Only **$49.00**

$2 UPS/$3 U.S. Parcel Post
$4 Canadian Air P.P.

Bearcat BC760XLT

2" high by 7" wide and deep, ideal for mobile or base installations. User-programmable search ranges, five priority channels, individual channel lockout and delay, direct channel access, external antenna jack, optional CTCSS tone-squelch decoder. Mobile mounting kit, DC cord, AC wall adaptor, plug-in whip, and operating manual included.

29-54, 118-174, 406-512, 806-952 pre-programmed search -- just push a button to find active police, fire, aircraft, maritime, emergency, and weather channels!

One hundred memory channels; backlighted controls for night use.

Order SCN-12
Retail $399.95

Only **$259.00**

$5 UPS Shipping/
$10 U.S. Parcel Post
$15 Canadian Air P.P.

OPTIONS

Signal Boosting Preamplifier
ACC-98 *(plug-in)* $34.95

CTCSS Tone Squelch Decoder
ACC-96 $60.00

On/Off Switch *(for use with decoder)*
ACC-97 $8.95

Installation
For Acc-96 and/or 97 $10.00

Bearcat BC200XLT

Special Sale!

The optimum hand-held scanner!

- Equipped with detachable nicad battery pack, leather holster and AC wall charger/adapter.
- Covers 29-54 MHz, 116-174 MHz, 406-512 MHz and 806-960 MHz (cellular omitted at the factory, but instructions supplied for restoration).
- 200 memory channels, instant weather scan, ten priority channels and search.
- Sharp selectivity and high sensitivity.

Get extra battery pack for 1/2 price with purchase of scanner
Only $19.50
as long as supply lasts

Order SCN 9

Only **$259**

Plus $5 UPS/$10 U.S. Parcel Post
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Order Today!

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Call 1-704-837-9200 or for MC, Visa and COD orders only: 1-800-438-8155

DXing the Soviet Republics

The Russian Bear in Trouble

by Kyle Henderson

"A Soviet sausage," says *Insight* author Henrik Bering-Jensen, "is a curious object to behold. Small and shriveled to begin with, the poor thing turns limp and grayish after a couple of days in the fridge."

As the result of such complaints, the weekly magazine *Literaturnaya Gazeta* launched an investigation. What the staff found was that the sausages contained bits of cowhide and bones with plenty of salt added to cover the nasty taste. In some instances, nails, sand and glass had been added for extra nourishment.

In response to what is evidently a conspiracy among consumers, Soviet sausage makers then barred state inspectors from entering the processing plants.

Anxious to avoid any charges of political bias, the magazine responded by hiring a panel of 30 cats to taste-test the sausages "since cats are generally considered neutral in the debate over restructuring the Soviet economy."

"Cats have always loved sausage ever since people invented them," stated the magazine. "So why, for God's sake, wouldn't they eat this sausage? And why in the world should we?"

Clearly, the Soviet public has lost patience -- and gained courage.

But not all of Russia's debates are nearly so amusing. In Moscow and Leningrad, demonstrators demanding a multi-party democracy in the Soviet Union were met by 2,000 police backed up with dogs.

Perhaps the biggest challenge to Mikhail Gorbachev's *perestroika* began in the republics. In Armenia and Azerbaijan, long-simmering religious/ethnic tensions boiled over into massive riots, leaving scores of dead. In the Baltic, Estonian legislators stopped just short of declaring independence from the Soviet Union. And in Georgia, hundreds clashed with police while demanding a multi-party democracy.

Whether major or minor demands, they all add up to a problem of immense importance to the USSR. Surely the USSR cannot and will not grant full independence to such republics as Latvia, Estonia, and Lithuania -- the ones which seem to have gone furthest along that road. Yet the Kremlin cannot clamp down and return things to the way they once were, either.

The bottom line, however, is that the genie is out of the bottle. Finding a satisfactory middle ground is one of the great questions now facing Gorbachev. All of which makes for on-going drama in our nightly news and a natural draw for the shortwave listener.

So here is a review of the Soviet Republics from a broadcasting viewpoint, exclusive of the Russian Soviet Federated Socialist Republic itself and Moldavia, which has no shortwave outlets that we know of, though apparently it did at one time.

Some of the republics have some sort of foreign service on shortwave, usually aired over the transmitters of Radio Moscow -- and likely as not to be sited outside of the particular republic. Even so, these are the most easily received from a program standpoint, assuming one can get a fix on at least one current frequency since, like those of Radio Moscow, they tend to change with the changing shortwave seasons.

Other republics use shortwave only for national or local coverage and are thus usually much harder to hear. Some transmitters are used for Radio Moscow, Radio Mayak, and Radio Peace and Progress, but these change frequently and are hard to keep up with. Even QSLs from Radio Moscow which give the site may not be accurate.

Speaking of QSLs, the DXer will find it is possible to obtain these for all of the republics, although it is no easy task. Most, if not all of the republics can be QSLed directly, though it may take several attempts for some of them.

One thing we might watch for in the future is an improved reply rate from some of these tougher stations as republics gain more breathing room. English language reports will usually work.

ARMENIAN SSR

Armenia, long ago a part of the Kingdom of Asia Minor, is the smallest of the republics. Nearly 80 people died in riots last year over the question of Nagorno-Karabakh, an enclave within neighboring Azerbaijan, which has a predominantly Armenian population that was the target of discrimination. Moscow turned down Armenia's request to annex the region.

Radio Yerevan has a foreign service aired over Radio Moscow's facilities. There is a daily half hour broadcast to North America aired at 0330-0400, with the last five minutes or so in English.

Except in higher sunspot years, this broadcast, which airs on higher band frequencies at late evening hours, is heard poorly, if at all. In the last year or two there have been quite a number of reports on it. Check 13645, 15180, and 15455. Local home service broadcasts are at 0200-2200 on 4040 and 4990 and 1300-2000 on 4810. 4040 is a real DX catch, but it has been heard in North America.

Yerevan is a fair QSLer. Reports go to 5 Mravian St., Yerevan 375025, Armenian SSR.

AZERBAIJAN SSR

Riots occurred here over the Nagorno-Karabakha question, too. The Azerbaijanis are mainly Shitite Muslims and, for centuries, were ruled by the Mongols and Persians.

There's no foreign service from Radio Baku but the home service can sometimes be heard. It's scheduled at 0200-2200 on 4785 and 4958. There were a few logs on 4785 around 0200 this past winter. Radio Baku's address is Ul. M. Guzeira 1, Baku 370011, Azerbaijan SSR.

BYELORUSSIA

Also known as White Russia, this central European USSR republic is more ethnically in tune with the Soviet mainstream than most.

The foreign service of Radio Minsk is not heard well in North America. It airs in Byelorussian at 1830-1900 on 6010, 6090,

6165, and 7330; and 2130-2200 on 6085, 6165, 6185. On some Saturdays these are in German instead. The home service airs from 0200-2200 on 7210, 9645, 9795, and 11995 in Byelorussian and Russian and in Byelorussian at 0600-1100 on 9545 and 9725. Radio Moscow also makes use of the Minsk transmitter site.

QSLs from this one are often tough. Write Ul. Krasnaya 4, Minsk 220807, Byelorussian SSR.

ESTONIA

This republic, along with Lithuania and Latvia, have never been recognized by the U.S. as being part of the Soviet Union and Washington quietly hopes all three will one day achieve full independence. An independent popular front political party has been declared in Estonia, and the legislature has declared the republic's sovereignty and its right to veto Soviet laws.

Estonia, with its access to Finnish TV reception is one of the more western leaning of the republics. The Finns and Estonians are also ethnically and linguistically close.

Radio Tallin is one of the tougher republic broadcasters to hear. Its 50 kilowatt transmitter on 5925 is in use (in Swedish) from 0800-0900 and 1600-1630 weekdays and in Swedish and Estonian from 2105-2205. Home service programs in Estonian air from 0930-2100.

As you'll see in this month's edition of the International DX Report on page 24, Estonia has just added a once-a-week English broadcast, Mondays at 2030 UTC on 5925 kHz. Occasional QSLs are received from Eesti Radio, Lomonossovi 21, 200100 Tallin 1, Estonian SSR.

GEORGIA

As this is written, Soviet leaders must be singing "Georgia on My Mind" but not about the land of peach trees and Ted Turner. Eighteen were killed during nationalist demonstrations in Georgia last April.

Radio Tbilisi's limited foreign service is aimed at the middle east and airs Tuesday/Thursday at 0600-0730 and Saturday/Sunday at 1600-1730 on 5930. Home service broadcasts are at 0200-2100 in Georgian, Russian, and other local languages on 5040 which is heard on very rare occasions, though not in a long time.

Reception reports to 61 Lenin Str., Tbilisi 380015, Georgian SSR.

KAZAKH

Second largest of the republics, Kazakh was under Mongol rule for some five centuries. One-third of the population is Muslim. The region is a major supplier of wool, cattle, and wheat. Nationalist riots killed two and injured 200 back in 1986.

Radio Alma Ata has no foreign service but the home service can sometimes be heard. It's scheduled at 0100-2000 on 4610, 5970, 9780, and 11950 and 0000-1800 on 5035, 5260, 5960, and 9505. Forget the high frequencies. Best bet are 4610, 5035, and 5260 in our early morning hours.

KIRGHIZ

This mountainous central Asian republic has been part of the Soviet Union since 1924. The population is about 50 percent Muslim.

Frunze Radio has no foreign service and the home service is very difficult to hear. It is scheduled at 0000-2000 on 4010 and 4050. From the standpoint of just wanting to get this republic QSLed, it's probably easiest to chase down the Radio Moscow transmitter site at Frunze. This has recently used such frequencies as 15510, 15585, and 17635, though those can change any time.

Frunze seldom verifies directly. Write Dom Radio, Pr. Molodoy Gavardii 63, 720885 Frunze 10, Kirghiz SSR

LATVIA

A popular front party now exists here, too. Latvia was Christianized by the Livonian Knights in the thirteenth century and has been dominated by the Poles, Swedes, Russians, and Germans at various times since. Like its two sister republics, it enjoyed a few years of independence prior to World War II.

Radio Riga's foreign service is on in Latvian at 0830-0925 and 2100-2200 Sundays, 2020-2050 and 2130-2200 Wednesdays. In Swedish on Tuesday/Thursday from 2020-2050 and 0800-0830 Sunday and Russian 1500-1600, all on 5935. Various Soviet radio services air on this channel at other times between 0300-2000.

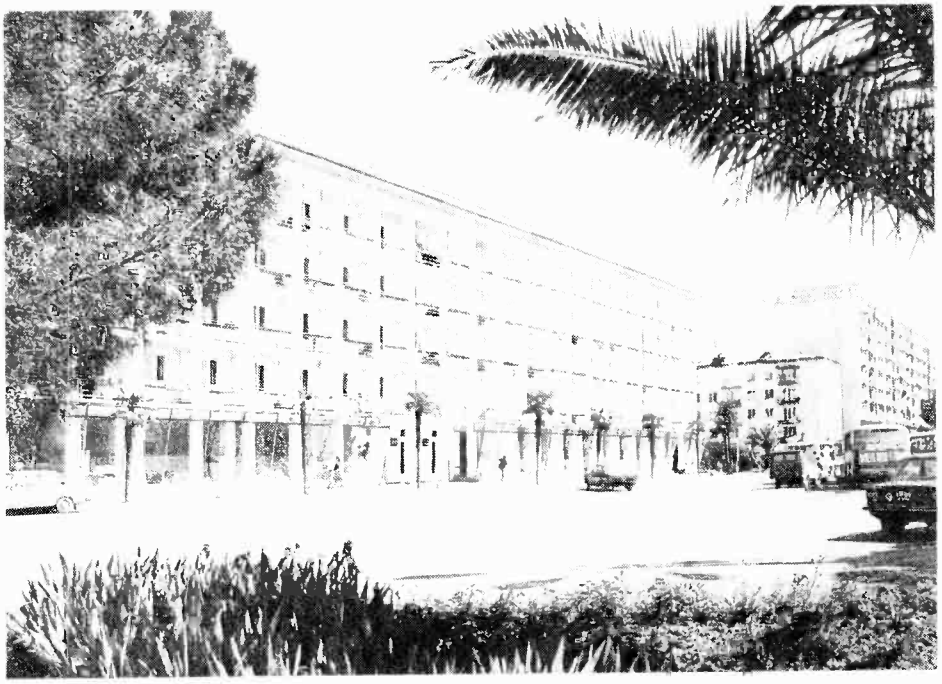
Radio Riga is a pretty good QSL prospect. The address is just Box 266, Riga, Latvian SSR.

LITHUANIA

A nationalist party, the Sajudis, founded last year, had its candidates get the vast majority of votes in elections last spring. In medieval times, Lithuania was one of the largest states in Europe.

Radio Vilnius' programs are fairly easily heard since it has a service to North America, though over Radio Moscow's facilities. Currently, this airs at 2200-2230 (2300-2330 in winter months) on 9765, 9860, 15240, 15455, and 17665. The rarely reported home service is on 9710 at 0300-2200.

Mineral water gallery at the Jermuk spa, Armenian SSR



The Hotel Tbilisi in Sikhumi, Georgian SSR

TADZHIK

The Tadzhik majority in this central Asian republic are Sunni Muslims. Tadzhik has been a part of the USSR since 1924.

Home service programs from Tadzhik Radio in Dushambe air at 0000-2000 on 4635 and 0000-1300 on 4975. Frequent checks of 4635 in the 0000-0300 time block should turn this up eventually.

The address is Tadzhik Radio, U. Chapanevla 25, 734025 Dushambe, Tadzhik SSR.

TURKMEN

Another republic with a Sunni Muslim majority, it's largely desert and was once part of Persia.

Ashkhabad Radio operates a home service on 4825 from 0000-2000 and was heard by some U.S. and Canadian DXers this past winter around 0200. Programs are in Turkmen and Russian.

Address: Dom Radio, Ashkhabad, Turkmen SSR.

UKRAINE

Nationalist elements appear to be increasing in strength here, still spurred in part by the Chernobyl nuclear incident, among other things. The Ukraine supplies a quarter of the USSR's foodstuff.

The Radio Kiev foreign service via Radio Moscow facilities is heard quite well most of the time. Currently at 0030-0100 and 0300-0330 on 7165, 7335, 7400, 9800, 13645, 15180, and 15455 in English. Home service broadcasts in Russian and Ukrainian run from 0200-2200 on 4940 and are heard only on occasion. Major Radio Moscow transmitter sites are located at Lvov and Simferopol.

Radio Kiev is a very reliable verifier. Write to the station at Radio Center, Kiev, Ukrainian SSR.

UZBEKISTAN

Muslim demonstrations demanding more representation in the government took place earlier this year. Uzbek has been a part of the USSR since 1918. The people are largely Sunni Muslim.

Although Radio Tashkent's foreign service is directed to Southeast Asia, it can be well heard in North America at times. It is scheduled at 1200-1230 (best) and 1330-1400 on 5945, 7275, 9540, 9600, and 11785 (latter two best). The home service is on 4850 at 0000-1830 but is almost never heard in North America.

Radio Tashkent is a good verifier. Address: Khorezmskaya 490, 700047 Tashkent, Uzbek SSR.

Note: Be sure to add "USSR" as the final line in each of the addresses.

Certainly the increasing demands for more and more national freedom, ethnic recognition, and personal rights counts as one of the major trends of the late twentieth century. Keeping a close eye (and ear) on developments in this area will provide important clues as to how far Moscow is willing to carry its new, more enlightened approach to domestic and foreign affairs.

mt

ЭФИР БЕЗ «ЧЕРНЫХ ДЫР»

В Министерстве связи СССР около 50 лет существовал секретный отдел, который в последние годы сотрудники между собой называли — служба Крестьяниновой. Наталия Евгеньевна Крестьянинова четверть века осуществляла руководство радиопередающими устройствами, предназначенными для создания искусственных помех иностранным радиостанциям по всей территории СССР.

Ведение подрывного радиовещания одной страной на другую началось еще в двадцатые годы. Почти одновременно появилась и радиозащита. Так, в 1923 году в Париже передатчиками, установленными на Эйфелевой башне, создавались искусственные помехи радиовещанию Берлина. Передачи нацистской Германии пытались глушить Австрия в 1934 году станция в Клайпеде противодействовала подрывным передачам против Литвы, которые велись из Кенигсберга.

В 1937 году в Женеве международная конференция под эгидой Лиги наций подготовила конвенцию об использовании радиовещания в интересах мира. Статьи международного договора, в частности, подтверждали право каждого государства запрещать и без промедления прекращать все радиопередачи, которые могут побудить граждан данной территории к актам, противоречащим внутреннему порядку и безопасности. Конвенцию приняли 22 страны. Среди воздержавшихся ее оказались Германия, Италия, Япония. США. Спустя два года в нашей стране была создана специальная служба для глушения радиопослухов. В каждой союзной республике в краевых и большинстве областных городов круглосуточно дежурили радиостанции, наводя помехи вещанию.

К примеру, в Москве это делалось так. На Таганке размещалася так называемый контрольно-корректировочный пункт. Работа велась в четыре смены. На профессиональных приемниках оператор находил, например, голос радиостанции «Свобода», по прямой связи давал команду радиопередающей станции «Первый передатчик с антенной номер один включить на частоту 5995 килогерц». В эфире появлялись шумы.

В зависимости от текущих событий и политической обстановки в мире на пункт поступали особые распоряжения о том, какие передачи «бить», а какие не трогать.

Н. Крестьянинова показывает мне теперь уже ненужную документацию своей службы. Вот карта «Направления работы иностранных радиостанций, ведущих вещание на СССР». В ней указаны местонахождения радиопередатчиков. Например, «Голос Америки» вещает на нас из США, Англии, ФРГ, Греции, Марокко и Филиппин, «Би-би-си» — из Англии, Кипра, Омана... На всех языках советских республик ведет передачи «Свобода» — «Свободная Европа». На русском, украинском, узбекском, языках народов Прибалтики и Закавказья — «Голос Америки», на русском и грузинском — «Голос Израиля». Всего на СССР работают сегодня 38 радиостанций из 28 стран. По объему передач на первом месте «Свобода». В течение суток она звучит в эфире 71 час, «Голос Америки» — 29 часов 45 минут, «Радио Пекина» — 15 часов 35 минут...

СОВЕРШЕННО СЕКРЕТНО

И вот теперь служба радиопротиводействия вновещанию полностью ликвидирована. Однако наивно было бы думать, что с нашей перестройкой и новым мышлением изменились задачи наших зарубежных «голосов» и отныне они действуют исключительно в интересах борьбы за мир, свободу и взаимопонимание. По-прежнему в эфире наряду с честными, объективными и доброжелательными передачами можно натолкнуться на ложь, фальсификацию, подтасовку. Все эти приемы из арсенала «психологической войны», разумеется, не способствуют доверию между странами.

Тем не менее было принято решение об упразднении «службы Крестьяниновой». Думается, это решение находится в полном соответствии с политикой гласности, открытости, проводимой советским руководством. Во-первых, большинство радиослушателей способно самостоятельно понять, где правда, а где ложь, где информация, а где ловкое манипулирование «фактами». Во-вторых, отныне незачем тратить деньги на содержание и работу «глушилок».

Как же будут использованы высвободившиеся радиопередатчики и оборудование?

— Часть бывших «глушилок» решили задействовать для трансляции в Москве радиопередач всех союзных республик,— рассказывает первый заместитель начальника Главного управления космической и радиосвязи Минсвязи СССР А. Варбанский.— С 14 марта на коротковолновых диапазонах 31 и 49 метров зазвучали в эфире голоса Украины, Белоруссии, Молдавии и прибалтийских республик, с 21 марта подключается Азербайджан, Армения и Грузия, еще через неделю — Казахстан и республики Средней Азии. Перечень частот новых радиопередач будет публиковаться в еженедельнике «Говорит и показывает Москва».

Сейчас совместно с Министерством геологии СССР изучается вопрос о применении в Государственной геосистеме коротковолновой связи. Она позволит передавать в центр из объектов полевые геофизические данные для последующей их обработки и принятия решений.

Уже поступили предложения организовать рекламный радиоканал о деятельности кооперативов, информационную медицинскую службу, молодежное вещание, программу специально для водителей... Словом, бывшие «глушилки» без работы не останутся.

Б. ЛИПИЯ.

г. Москва.

РЕДАКЦИОННАЯ КОЛЛЕГИЯ

Airwaves without "Black Holes"

1989 marks an important anniversary in the world of shortwave radio. It was fifty years ago that the Soviet Union set up its first jamming station. Since that time, jammers -- transmitters used to block incoming foreign radio stations -- have flourished in the land of Lenin.

Actually, the Soviet commitment to jammers is not surprising. It is only natural that any nation that so obviously believes in the power of radio -- listen to how many frequencies Radio Moscow uses on shortwave -- would fear it with equal conviction.

Last fall, however, the Soviets turned off their jammers. The occasion was hailed as historic, yet another dramatic sign of the government's commitment to glasnost. Late this spring, in a surprising editorial, Pravda described the Soviet jamming operation, how it worked and how it is being used today. The original article is reproduced above; the English translation, below.

For about the last fifty years, within the USSR Ministry of Communications, there has existed a secret department which employees have recently taken to referring to as "Krestyaninova's Service." For a quarter of a century Natalya Evgenevna Krestyaninova was in charge of the radio broadcasting equipment designed to create artificial obstacles to foreign radio broadcasts throughout the USSR.

Subversive radio broadcasting from one country to another began as early as the 1920s. Jamming started up almost simultaneously. Thus, in 1923 in Paris, artificial hindrances to Radio Berlin were created by means of transmitters attached to the Eiffel Tower. Austria attempted to jam broadcasts from Nazi Germany. And in 1934 a station in Klaiped took counter measures against subversive programs aimed at Lithuania from Koenigsberg.

At an international conference in Geneva in 1937, under the auspices of the League of Nations, a convention governing the use of radio broadcasting for peaceful means was prepared. Articles in this international treaty specifically confirmed the right of every state to ban and summarily put a stop to all radio broadcasts which could incite the citizens of a given country to actions endangering domestic order and security.

Twenty-two countries adopted the convention. Among those countries which did not sign the convention were Germany, Italy, Japan and the US. Two years later a special service was set up in the USSR to jam "radio voices." Signallers worked round the clock, blocking foreign radio broadcasts in every Union republic, and in every district and the majority of oblast capitals.

In Moscow, for example, it was organized in the following way. At the Taganka, a so-called control-correctional center was established an operated by teams of four shifts. Using professional receivers an operator would locate, for example, the voice of "liberty" and would directly instruct a broadcasting station: "Turn the first transmitter, antenna No. 1, to 5,995 kilohertz." The airwaves would then be filled with noise. Depending on current events and the world political situation the center received special instructions on which programs to "hit" and which to leave alone.

And now the foreign broadcast jamming service has been completely liquidated. However, it would be naive to think that the goals of the foreign "voices" have changed along with the new thinking and perestroika and that nowadays they operate exclusively in the interests of peace, freedom, and mutual understanding. Just as before, one finds along with honest, objective and well-meaning programs, lies, falsifications and distortions. These devices from the 'psychological war' arsenal hardly encourage the development of trust between countries.

Nevertheless, the decision was taken to shut down "Krestyninova's service." This decision is in complete accord with the Soviet leadership's policy of glastnost and openness. In the first place, the majority of radio listeners are more than capable of deciding for themselves between truth and lies, between information and cunning manipulation of the facts. In the second place, it is no longer necessary nowadays to set up and maintain jammers.

What will the freed-up radio transmitters and equipment now be used for? The first deputy of the head of the Main Department of Space and Radio Communications of the USSR Ministry of Communications, A. Barbansky, announced that it had decided to use some of the former "jammers" to relay radio programs from the Union republics in Moscow.

As of March 14 the voices of the Ukraine, Byelorussia, Moldavia, and the Baltic republics were heard on the airwaves in the 31 and 49 meters shortwave band. On March 21, Radio Azerbaijan, Armenia, and Georgia, will be aired together with Kazakstanb and the Central Asian Republics a week later. The frequencies of the new radio broadcasts will be listed in a new weekly publication, *Govorit i pokazyvaet Moskva* ["Moscow Speaks and Shows].

Now, in conjunction with the USSR Ministry of Geology, the question of the application of shortwave communications in the state geosystem is being considered. It would make it possible for field geophysical data to be transmitted from various installations to the center, which would later be processed and used as a basis for decision-making.

It has already been proposed to set up an advertising radio channel to cover the activities of cooperatives, information medical services, youth programs, and a special program for drivers... In a word, the former "jammers" will not be left idle.

-- B. Iipiya, Moscow.

Editor's note: The jammers of the Soviet Union have not been left idle. During recent unrest in the republics, subsequent to publication of this article, some jammers have been reactived against the U.S.-backed Radio Liberty.

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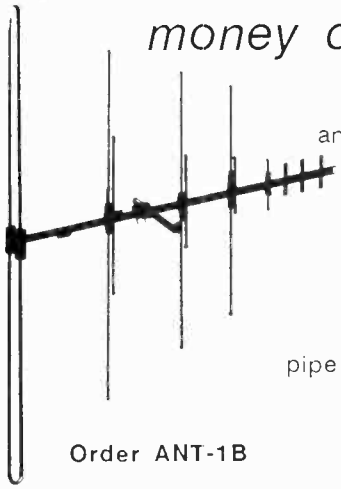

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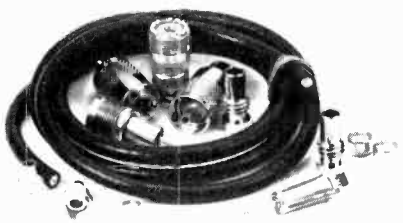

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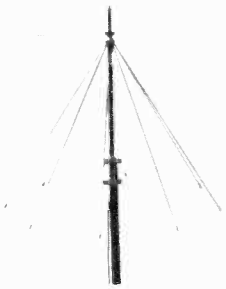

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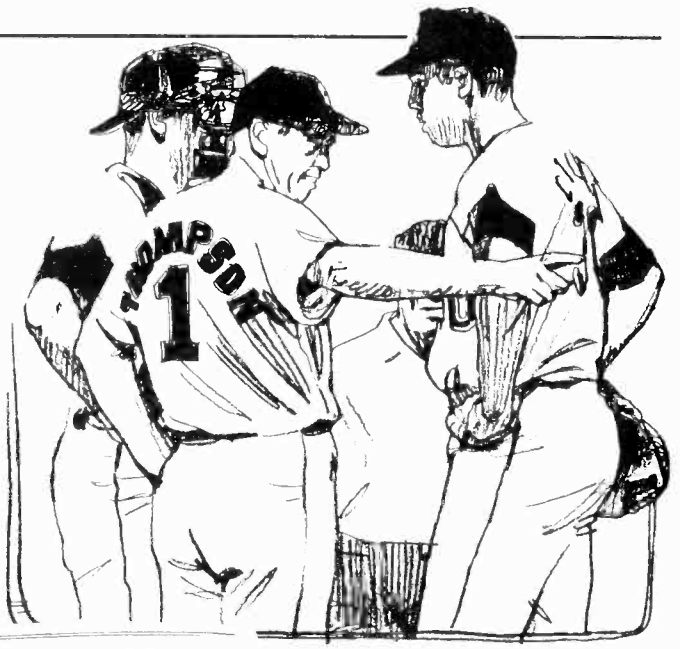
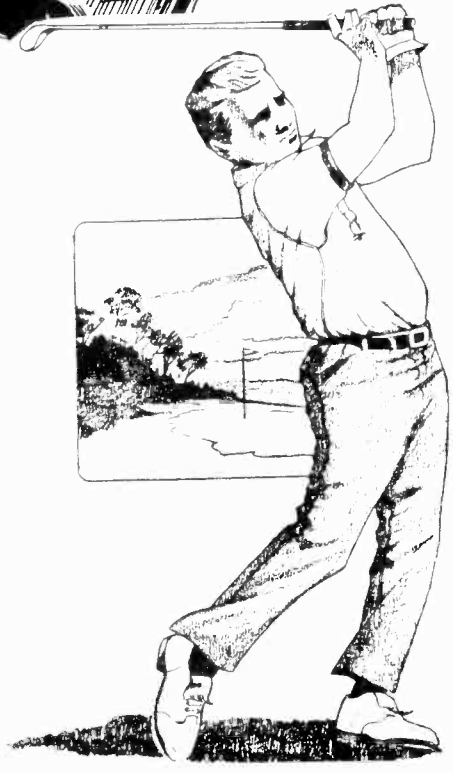




by Lynn Burke

"Something looks strange on your left side. Better figure on a pit stop in the next couple of laps."

"Smith is a dead pull hitter. Move Johnson about five steps closer to the foul line in left field."

"We need security in section 203 on the loge level . . . quick!"

The first time I used my scanner to follow action at an athletic event, I came away convinced of the value of marrying scanners and sports.

A friend and I spent a day at a professional golf tournament not long ago with the express purpose of figuring out what could be heard.

So what did we hear? Lots. Probably the biggest benefit was the ability to know what was going on around the course, almost as it happens.

For example, this tournament was held at Kingsmill, near Williamsburg, Virginia, the home course of 1988 money leader Curtis Strange. As we stood in the shade around the sixteenth green, a huge roar erupted from somewhere back on the course. As everyone else looked at each other, we heard one of the scorers radio back to their base, "Strange eagled 14." Several minutes later, the leaderboards updated Strange's score.

When rain began to fall, we listened to PGA Tour officials discussing the option of stopping play. And we heard the television announcers' play-by-play that went out throughout the country, plus their off-camera comments during commercial breaks.

Finally, we used the scanner to find the best route to work our way through the throng of cars and get back on the highway.

Armed with a list of frequencies or an idea of ranges of frequencies to scan, you can be in the know before everyone else. You'll monitor information that simply won't appear on the 6 p.m. news or the next day's newspaper. You'll hear, as they say, "the good stuff."

Well, now we've posed a question. Where do you find frequencies?

Unfortunately, no single source exists, such as *TV Guide*. *Monitoring Times* carries articles, and scanner-oriented newsletters present frequency lists, but that's about it.

From a couple of years worth of collecting and compiling such frequencies, though, I can offer some generalities.

For events that move from site to site, begin by monitoring the itinerant frequencies. For example, the PGA Tour uses 151.625 as its operational frequency, while a security company at the same tournament used 464.55.

Then expand your scan to the business frequencies below 470 MHz. According to information I have, you'll find little usage of 800 megahertz, except in auto racing. More and more of the NASCAR drivers are moving up and one team reportedly purchased scrambling equipment to stop other teams from listening in on communications.

You'll find split frequencies used, such as 464.3375, and you'll find simplex communications, too, on the 465-470 segment of the band normally used for repeater inputs. Table 3 shows some selected frequencies.

It takes concentration. A friend says he works so hard at monitoring and verifying frequencies at auto races that he sometimes doesn't see much of the race. But he comes away from the race knowing lots more than if he had left his scanner at home.

If you are interested in monitoring at auto races and have a scanner with at least 100 memories, try this trick. If a driver in car 73 uses 463.875, program that frequency in channel 73. That way when the scanner picks up a signal, you can automatically match the frequency to a car number. If you have a 200-channel scanner, program

TABLE 1

Itinerant, low-powered and local control business frequencies

151.505, 151.625, 154.540, 154.570, 154.600, 464.325, 464.375, 464.425, 464.475, 464.525, 464.550, 464.575, 464.675, 464.775, 464.875, 464.925, 464.975

TABLE 2

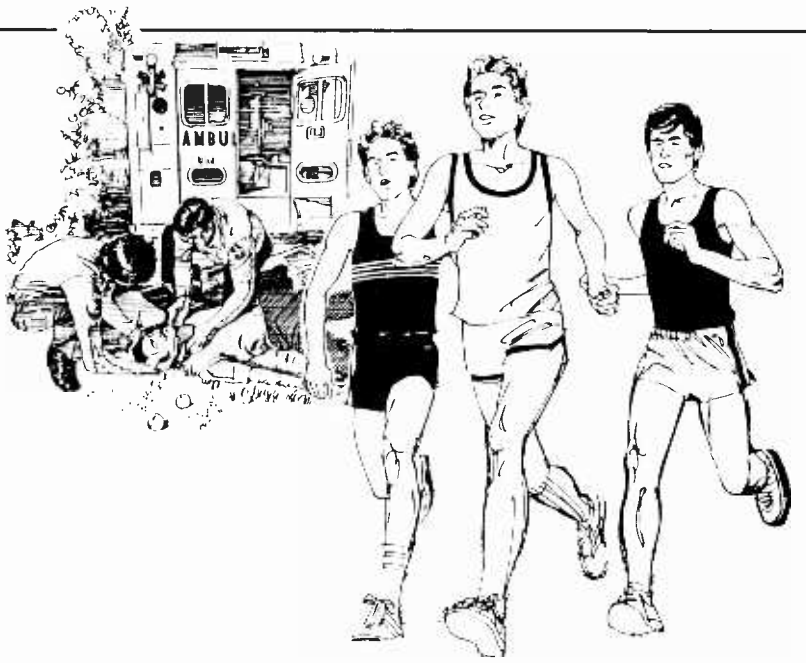
Frequency bands to search

151.490 - 151.955
154.490 - 154.625
461.000 - 470.000
800 band

TABLE 3

Selected sports frequencies

151.625	Chicago Bears
151.625	County Stadium, Milwaukee, Wisconsin
151.625	Los Angeles Dodgers
151.625	LPGA Tour officials
151.625	PGA Tour officials
151.685	Cleveland Browns
151.715	Dodger Stadium, Los Angeles, California
151.775	Philadelphia Eagles
151.775	San Francisco 49ers
151.895	Dover Downs, Dover, Delaware
154.540	Squaw Valley Ski Area, Tahoe, California
154.540	New York Giants
154.600	Buffalo Bills
154.600	Boston Garden
155.025	Metrodome, Minneapolis, Minnesota
461.100	Orange Bowl, Miami, Florida
462.025	NASCAR - F5
463.500	Squaw Valley Ski Area, Tahoe, California
464.325	Atlanta Braves
464.375	Oakland Coliseum
464.500	NASCAR - F1, used for scoring/administration
464.550	NASCAR - used for scoring/administration
464.625	Championship Auto Racing Teams F1 - fire/safety
464.625	Arlington Park, Chicago, Illinois (security)
464.6375	Baltimore Orioles
464.750	Championship Auto Racing Teams F2 - pace cars
464.775	NASCAR - F2
464.900	NASCAR - F3
467.025	NASCAR - F6
467.750	New York Rangers
467.800	Market Square Arena, Indianapolis, Indiana
467.900	New York Islanders
468.850	Bristol International Raceway, Bristol, Tennessee
469.500	NASCAR - F4
469.5875	Chicago Cubs



administrative and other frequencies in the banks above 100.

Some things are automatic. Stadiums, arenas, and tracks all have security and operations frequencies. A lot is routine -- "more beer," "more hot dogs," "a lost child," -- but when something happens, these become the frequencies to monitor.

Are you a baseball fan? The next time a television camera pans through a dugout, see if anyone holds a walkie-talkie. Chances are he is communicating with someone in the press box who helps out determining defensive alignments.

If you see a Los Angeles Dodger game in person, try monitoring 151.625, a frequency reported in use for that. Who knows, you might hear Tom Lasorda himself.

I noticed the same thing while watching a hockey match on television the other night. One of the coaches on the bench wore a headset, undoubtedly talking to someone perched high above the ice.

And you could even monitor conversations between National Football League officials talking to instant replay officials. Frequencies for the wireless microphones used to announce penalties and information to the crowd by the referee fall in the 180-210 range normally used by television channels 7-13 and not in hand-helds, but I haven't seen any listings for instant replay communications. Still, if you want to check that portion of the band out, use a portable radio with a slide rule dial that covers the TV band.

With the scanner I've heard football coaches in the press box talking to the coaches on the sidelines, too. Let me tell you, this stuff can get hilarious because some of those communications definitely weren't meant for public consumption.

While most of this is fun, there's a serious side also. Injuries take place, especially at race tracks. Rescue squads and fire equipment staff larger events and can be found on appropriate fire and medical frequencies. I would program the 155 MHz and 463 MHz medical frequencies.

If you live in an area near a ski resort, you'll probably be able to monitor operations easily. These frequencies might be used for search-and-rescue operations.

Consider the type of event you're monitoring. When the America's Cup sail races took place in San Diego, the marine frequencies in the 156 and 157 range surely bristled with information.

Any kind of community event might draw participation from amateur radio operators. At one large half-marathon foot race here, one of the local clubs donated its services for communications and made heavy use of two meters between 144 and 146 MHz.

The key word, though, is patience.

mt

Lynn Burke is *RCMA*'s Sports Communications editor.

CQ RV Showcase

For information on the Committee to Preserve Radio Verifications, contact Jerry Berg at 38 Eastern Avenue, Lexington, MA 02173.

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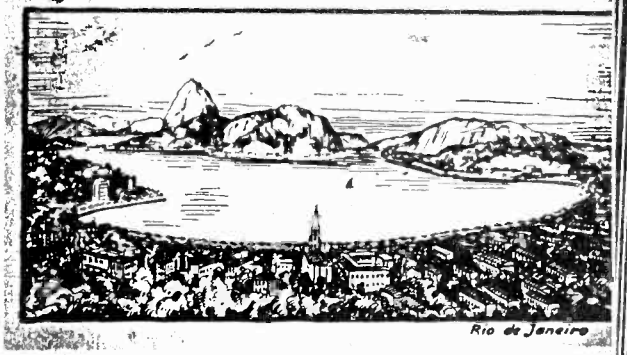
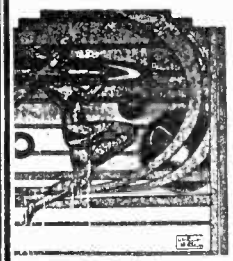


Rio de Janeiro



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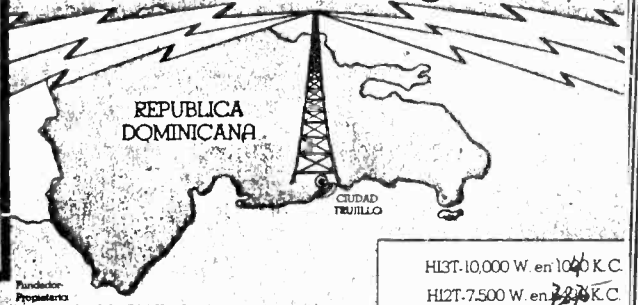

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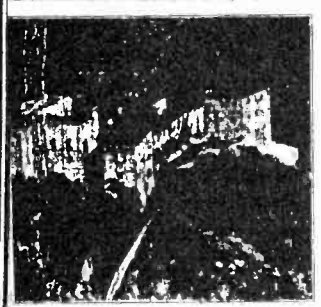

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ABU DHABI English at 2200-2400 UTC moved up to 13605 this spring, along with 11965. Frequencies may be even higher this summer.

AUSTRIA ORF has shuffled English programming, so that *Shortwave Panorama* goes out only Sundays at 1030 UTC on 21490 and 15450 kHz; 1130 on 6155, 13730, 15450, 17870; 1430 on 6155, 11780, 13730, 21490. Of these, only 17870 is for North America but good reception beyond the east coast is unlikely. Instead, we hear 13730 and 21490 fairly well at 1430, and the program has been expanded to 24 minutes.

Report from Austria occupies the same slots other days, and every night at 0130 on 13730, 9875, 9870; 0530 via Canada on 6015 (which suffered VOA interference from 6020). Austria hopes to set up a relay exchange with China, making it a three-way deal with Canada (*WOR*).

BOLIVIA Radio 21 de Diciembre is back, on 6081.3 at 1005. (Julian Anderson, Argentina, RCI *SWL Digest*) But Radio San Gabriel is on 6078.8 varying to 6081.1, heard from 0909 to 1105 (Takayuki Inoue Nozaki, *Relampago DX SWLD*).

BRAZIL Radio Vale do Rio Madeira, heard at 0000 on 3205 (Rafael Rojas Foinquinos, Peru, *Pampas DXing*). Rarely heard elsewhere due to interference.

CAMEROON CRTV, Garoua, has been using 7240 rather than 5010 daily until 2303 sign-off with a typically lame rendition of their national anthem (Bob Hill, MA, *SWLD*).

CANADA RCI plans to join the 13 MHz crowd July 1, replacing 9755 with 13720 to Latin America at 0100-0300 (Sunday and Monday 0200); add 13680, though it seems unlikely to propagate to Africa, at 1800-2000; and add 13660 at 2000-2130 to Europe, in all cases from Sackville at 100 kilowatts.

On 13 meters, 21545 remains in use until 1700, then 21675 until 2100. The 17820 frequency, long synonymous with Sackville, is switched to the Sines, Portugal, relay this season at 1330-1500, while Sackville uses new 17795.

On 19 meters, keep sites straight this way: 15325 is Daventry, England, from 1330 to 1630, then Sackville; 15305 is Sines at 1330-1500, then Sackville; 15160 at 1330-1500 is Sackville (*WOR*).

RCI in English at 1300, Japanese at 1330 heard on 5220. This must be a feeder brom Beijing to the new relay at Xi'an, China (Ed LaCrosse, CA, *SWLD*).

CHINA Contrary to previous plans, the new relay via Canada at 0400 has been on 11840, slightly less satellite delay than via French Guiana on 11685. The Mali relay continues on 9770 and 11715 at 0000 and 0300; Spain on 9690 at 0300; direct from China on 15540 at 1100, 1200, and 0000; 15510 and 0300; 15195 at 0400; 7405 at 1400 and 1500.

COLOMBIA Radio Cadena Nacional, Bogota, heard at 1430 on 45.7 MHz (Arctic Radio club, Sweden, via *Play-DX*). Probably a studio-transmitter link, revealed by those terrific high MUFs.

Ecos del Atrato de Caracol, reactivated after ten years on 5019.67, from 0300 to sign-off at 0404 (Ernie Behr, Ont. *SWLD*).

Centro Todelar en Arauca, rarely heard, 4925 at 2350 until closing at 2400 (Kenneth Olofsson, Sweden, *Shortwave Bulletin*).

La Voz de los Centauros ofen audible on fourth harmonic 23820 kHz in the afternoons, and as late as 0330 with news, when fundamental 5955 is still inaudible. (Hauser, TX)

COSTA RICA Radio for Peace International adjusted to 21565, parallel 25945 weekdays 2100-2400, weekends 1800-2400; parallel 13663 weeknights 0100-0400, though better heard when 25945 tested then. Also on 25945 and 7375 weekdays around 1500-1800. Six to eight *University of the Air* courses should now be under way, including one on entrepreneurship taught by Wayne Green of *73* magazine fame. (By the way, a female would be an entrepreneuse . . .)

CZECHOSLOVAKIA Soviet-bloc stations never went out of their way to promote Atheism, but now Radio Prague has a *Christian Comment* program following news and commentary on Saturday (UTC Sunday) after 0100 and 0300 on 5930, 6055, 7345, 9540, 9625, 11990 (via John Carson, OK, WOR).

CHILE Radio Nacional has resumed an international service (only in Spanish) at 2330-2400 on 15140 (Carlos Toledo Verdugo, Chile, Radio Nederland *Radio-Enlace*).

DENMARK The government has approved continuing shortwave broadcasts (*DSWCI* "SW News" via Andy Sennitt, Radio Netherlands *Media Network*). Unclear if this actually means via Norway.

ECUADOR Human alertness is required when punching up frequencies. Among many stations exhibiting dyslexia is HCJB, caught one day from tune-in at 1811 for several hours on 21740.6 instead of 21470.6. (Hauser, TX)

ESTONIA Another country adds English: *Estonia This Week* is heard Mondays at 2030-2100 on 5925, 1034; even in Europe reception is poor due to Prague on 5930 (Andy Sennitt, *RNMN*).

INDIA A recent schedule received from All India Radio, Hyderabad, shows 0025-0215 and 1200-1740 on 4800; 0230-0400 or 0435 on 6120; 0415-1145 on 7140 (Scott Edwards, CA *SWLD*)

ISRAEL Voice of Israel never seem to admit it, but at 1900-2100 Sunday-Tuesday only, some of the frequencies scheduled for Network B shortwave relays split off to carry Network A instead (Dave Kernick, Caversham, England, *WOR*)

JORDAN Difficult-to-QSL Radio Jordan required special tactics. One of my college students took a report to the station for me, but armed guards surrounding it wanted to take him to Military Intelligence Headquarters to discuss the strange documents.

Instead, his father contacted the head of broadcasting, but the matereial sent did not include a QSL! Next try: via the father of the student's fiancee. This time it worked for me and Mitch Sams. Do you have to arrange a marriage for every QSL above 180 countries verified? Hi!! (John Bryant, OK *Fine Tuning*)

KIRIBATI Radio Kiribati replaced 14802 with 14918 kHz, monitored at 0926-0955, 1825-1900 (Ed LaCrosse, CA *SWLD*). Also at 0633-0659 (Bruce MacGibbon, OR, *DX Spread*) and 0615-0627 (Niel J Wolfish, Ont). On 14917.72 USB, from opening at 0556 with music, 0601 news relay in English, 0618 music, 0631 English talk and Pacific news to 0700 fadeout; weak signal and rarely heard (Ernie Behr, Ont, *SWLD*).

LESUTU BBC relay replaced 9515 with 11940 to southern Africa at 0430-1745 (*BBC Waveguide*)

MOROCCO RTM's Chaine-Inter has English Sundays at 1900-2000 on 11920. Saturdays at 1630 on 17595, Going to Work in English is heard, lessons for French speakers, but aired within the English program. (Dave Kernick, Caversham, England)

RTVM heard on second harmonic 30670 in Arabic at 1732

(Mitch Sams, KS, *FT*)

MOZAMBIQUE Emissao Nacional on 6111.7 from 2140 to closing at 2206, parallel 7242.5. It's unlikely either runs more than 1 to 5 KW, despite far higher powers listed (Bob Hill, MA, *SWLD*) Earlier measured on 6111.7 and 7240.9 at 0310 (Dave Clark, *DX Ontario*)

NETHERLANDS Radio Netherlands tentatively plans a series on professions for the Wednesday documentaries in June.

NETHERLANDS ANTILLES A complaint sent to Media Network finally resulted in the sudden disappearance of all th Bonaire spurs previously reported; guess they finally got the message. Now let's do something about Cuba which continues to mess up the bands with defective transmitters and spurs (Ernie Behr, *WOR*).

NORWAY Radio Norway International's May-September schedule shows cutbacks; English half-hours Sundays on fewer transmissions, including these to North America: 0800 on 15165, 1200 on 15325, 1600 on 17780, 15310, 1700 on 17780, 2300 on 15190. Also, Spanish is "temporarily suspended" due to funding problems, even though it has been only 5 minutes a week (Andrew Duffy, North Bay, Ont., *WOR*).

All broadcasts are now half an hour rather than half a sesquihour; up to three separate programs to different targets (Andy Sennitt, *RNMN*). That would seem to free the second half of each hour for Radio Denmark relays, as previously proposed.

QATAR QBS heard on 21565 until 1305, probably from 0800; then switches to 17825 until 1705 (Dave Kernick, England, *SWLD*)

SAIPAN Contrary to schedule, KYOI heard on new 9530 in English until 1355 sign-off (Glenn Hauser, TX) Is on reduced schedule to allow transmitter work, 1000-1400 only on 9530 (*Sweden Calling DXers*). KYOI now entirely satellite-fed from Boston (RNMN) A second transmitter should be on the air later this year.

SINGAPORE SBC sends out questionaires to help them improve reception overseas. You may request one from SBC, P.O. Box 42, Ferrer Road, Singapore 9128. English schedule is: 2200-1605 (to 1800 on Friday, Saturday, eve of holidays) on 11940, 5052; unlisted frequency 5010 works at 2200-0100, 1000-1600 daily (Lim Kong Jin, Malaysia, *DX Spread*)

SOUTH AFRICA Radio RSA very strong from opening at 0400 on 4965 in Afrikaans, gone by 0516 check (Alan Laves, TX, *FT*) New service to Namibia as it becomes independent, now scheduled 0350-0515 on 6130, 4965; 0500-0900 on 11805, both in Afrikaans; 0900-1400 in English on 11805; 1400-1555 in Kavango on 11805; 1600-2100 in Ovambo on 6130 and 4965. Note that SWABC itself has used 4965 at other times. (Andy Sennitt, *RNMN*) Thus greatly augmenting Radio RSA's amazingly small output in Afrikaans.

SWEDEN Radio Sweden has retimed both its North American broadcasts: 1530 on 21610, 17880; 0300 on 9695, 11705; but it can still be heard at 1400 on 21610 when beamed to Asia/Australia. The same are targets of a new broadcast at 0100 on 15390, 17790.

RSI's Dancing Bear

SYRIA Damascus in English at 2005-2105 on new 17710 and 15095 (Ernie Behr, SWLD) But 15095 mixes with Israel (Bruce MacGibbon, *DXS*) Er, Zionist Entity, as Syria would say.

TAIWAN Voice of Free China's program *Taiwan Economic Report* is running a survey; write them for a copy. A tie or scarf is the prize for answering four or more questions correctly, an iron-on decal for less than four, deadline June 30. Hints will be given periodically on the show, at half past the hour on Wednesday or Thrusday, and on the daily news (Bruce MacGibbon, *DX Spread*).

TONGA TBC is scheduled 1730-1000 UTC on 5050 with 1 kW (Chris Rogers, *OzDX*). Heard with Radio Australia news relay at 0800, then island music (four Australian *OzDxers*). Tentatively at 0650 (Mitch Sams, KS, *FT*). Possible only during window when Impacto, Costa Rica, and its open carrier are gone, usually 0700-0900; below noise level most days; once rose above it at 0820-0850 with sports, cigarette ads, local news in English until Radio Los Andes came on at 0850 (Bill Sparks, CA *FT*).

TURKEY Istanbul Polis Radyosu is active, heard on 6325.1 from 1530 to closing at 1559 (Takayuki Inoue Nozaki, Japan, *SWLD*). First report in ten years (Andy Sennitt, *RNMN*).

UKOGBANI Contrary to previously announced plans to keep it until July, BBC turned 18080 over to the hams at the end of March, replacing it with 17640.

USA CSM has fired all but a handful of 61 full-time employees at *Monitoradio* and the shortwave world service. The financial burden of the daily TV news program makes this necessary. A new consolidated radio program for overseas, produced by a much smaller staff, is the result (*RNMN*).

The FCC has revoked the construction permit for NDXE, but Dickson Norman is filing a petition for reconsideration (Rob Horvitz, *RNMN*). And Norman is one of the speakers expected at ANARCON, July 14-17 in St. Petersburg Beach, Florida, at the Dolphin Beach Resort. He now feels the 1990s will be the decade for commercial shortwave to develop.

VOA faces an audience relations disaster. It no longer supports VOA fan clubs in many countries, and accepts no new entries on the mailing list for *Voice* magazine. Instead, applicants are screened to determine if they would be "productive recepients," and then they are put on a waiting list (*WOR*).

VOA has finally entered the 13 MHz band, in Spanish on unannounced 13775 until 1400. The new VOA-Pacific program in English is scheduled Mondays 2110-2200 on 15185, 11965, 9525. Is that UTC Sunday or Monday?

USSR We're glad that jamming is gone, but such transmitters have been converted to broadcasting, further congesting the bands. Following the cessation of jamming, careful monitoring revealed more than 96 newly-introduced shortwave frequencies, from 5905 to 21830 carrying home services (Wolfgang Buschel, West Germany, *WOR*).

Radio Station Peace and Progress in English through Sept. 2: to Europe, 2100-2129 on 15240, 11980, 9820, 9550, 7420, 7340. Asia, 1400-1429 on 17645, 17635, 17610, 15220, 11890. Southwest Asia, 1630-1659 on 12055, 11910, 11695, 6110, 6135. Africa, 1630-1659 on 17615, 17595, 11775, 11670, 9830 (Bill Matthews, OH, *NASWA*).

VATICAN There seem to be a financial crisi, as Vatican Radio is requesting donations and selling CDs. If the budget gets tighter, the station is expendable *(RNMN)*.

VENEZUELA After many years of silence, Ecos del Torbes has reactivated 9640, heard at 0040 and 0907, better than parallel 4980 (Bob Hill, MA *SWLD*).

For more news, listen to WORLD OF RADIO on WRNO, New Orleans: Thurs 1430 UTC (sometimes) on 11965; 2300 on 13720; UTC Sat 0300 on 6185; Sat 2330 on 13720; Sun 2030 on 15420; on Radio for Peace Int'l, Costa Rica: Tues and Thurs 1700 on 25945, 7375; Tues 2300, Fri 2100, Sat and Sun 1800 and 2100 on 25945, 21565; UTC Wed 0300 and Sat 0100 on 21565, 13663.

Check out GH's publications DX LISTENING DIGEST and REVIEW OF INTERNATIONAL BROADCASTING. Samples $2 each in NA, $3 or 7 IRCs elsewhere. Subs are $21 each in NA, or both for $40, from Glenn Hauser, Box 1684-MT, Enid, OK 73702.

Broadcast Loggings

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

English broadcast unless otherwise noted.

0000 UTC on 4825
Brazil: Radio Cancao Nova. Portuguese. Male announcer with pop hits. Interference from another Brazilian station, Radio Educadora. Station ID with call letters and frequency. (Frank Hillton, Charleston, SC)

0000 UTC on 6090
Luxembourg: Radio Luxembourg. English service by lively lady DJ, playing light rock from Aerosmith and Mike and the Mechanics. (Bob Hurley, Baltimore, MD)

0007 UTC on 9565
United States: Voice of the OAS. Spanish. Newscast plus feature on Mexico, including Mexican music. Strong signal through sign-off at 0029 UTC. (Robert L. Landau, Secaucus, NJ)

0010 UTC on 4901
Bolivia: Radio San Ignacio. Spanish. Pop music to station ID. Identification included frequency, meter band, station name and address. (Aboe Thaliep, Batang, Indonesia)

0030 UTC on 15140
Chile: Radio Nacional de Chile. Spanish. American and Spanish pop tunes. Station ID at 0035 UTC. (Nick Terrence, Huntington, NY) (Bob Hurley, Baltimore, MD)

0040 UTC on 7400
USSR: Radio Kiev. "Open Studio" program interview with British student at Kiev University. Also heard on parallel 9765 kHz. (Bob Fraser, Cohasset, MA) (Bob Hurley, Baltimore, MD)

0043 UTC on 7265
Germany: FRG, Sudwestfunk (tentative). German. ARD Nachtrock programming US rock music. Good signal. (Robert L. Landau, Secaucus, NJ)

0045 UTC on 11715
China: Radio Beijing. Interesting and informative program on "The Making of Chinese Musical Instruments," narrated by a woman with explanations by the makers. Beautiful interpretive music to demonstrate the instruments. ID at 0050 UTC, time check and sign-off at 0056. (Leslie Edwards, Doylestown, PA) Monitored on 3985 kHz from 2200-2230 UTC. (Nick Terrrence, Huntington, NY)

0055 UTC on 4850
Venezuela: Radio Capital. Spanish. Spanish musical tunes with a weak signal, but ID audible at 0100 UTC. (Nick Terrence, Huntington, NY) Monitored 0122 UTC with pop tunes. (Robert L. Landau, Secaucus, NJ)

0110 UTC on 5567
Colombia: Radio Nueva Vida. Spanish. "A Mighty Fortress" and mention of Family Radio, Oakland, California. Ballads and suddenly off the air at 0130 UTC. (Sheryl Paszkiewicz, Manitowoc, WI)

0130 UTC on 11490
Clandestine: Voice of Unity. Pushto/Dari. Constant talk and short intervals of music. ID, frequency, and address. Poor audio and noted jamming evident for this pro-Afghan rebel broadcast. High pitch and heaving blasting tone for one minute and off the air at 0230 UTC. (Frank Mierzwinski, Mt. Penn, PA)

0135 UTC on 4845
Guatemala: Radio Ke'kchi. Spanish. Mixture of bouncy music and religious program. Schedule, frequency, and station ID. Sign-off at 0201 UTC. (Guy Atkins, Issaquah, WA)

0140 UTC on 9655
Cuba: Radio Havana. Interview with poet Nancy Marihone to station ID. (Bob Fraser, Cohasset, MA)

0200 UTC on 11745
Brazil: Radio Nacional Bras. News of Brazilian politics to 0207 UTC. Contemporary easy-listening Latin music and retrospective on literature and art in northeastern Brazil. Monitored to 0230 UTC. (Bob Hurley, Baltimore, MD) *Welcome to MT!-ed.*

0202 UTC on 4835
Guatemala: Radio Tezulutlan. Spanish. Wonderful marimba music with excellent signal! Station ID and brief talks during music breaks. (Guy Atkins, Issaquah, WA)

0217 UTC on 5020
Madagascar: Radio Madagasikara. Malagasy. Sudden fade up at 0217 UTC with soft sung vocals. Repeated playing of tape revealed a quick "Radio Madagasikara" ID at 0222 UTC. Musical bridge at 0227, followed by French announcement to 0250 fade out. First time logged! (Guy Atkins, Issaquah, WA)

0245 UTC on 3240
Ecuador: Radio Antena Libre. Quechua. Program comments between music breaks, and clear "Radio Antena Libre" ID. Latin music to 0302 and sign-off. Interference observed from co-channel African station. (Frank Mierzwinski, Mt. Penn, PA)

0305 UTC on 4965
Namibia: Radio South West Africa. Afrikaans. Musical instrumentals, commercials, and story read. (Sheryl Paszkiewicz, Manitowoc, WI)

0320 UTC on 4830
Venezuela: Radio Tachira. Spanish. Radio mystery play and two anthems at 0358 UTC. Sign-off routine at 0400 UTC. (Bob Hurley, Baltimore, MD) (Nick Terrence, Huntington, NY)

0330 UTC on 4800
South Africa: Radio Five. Weather news and forecast, and listener's phone-in music contest. (Frank Mierzwinski, Mt. Penn, PA)

0330 UTC on 5040
Venezuela: Radio Maturin. Spanish. Chime tones between talk, and ID repeated several times. (Frank Mierzwinski, Mt. Penn, PA)

0331 UTC on 3215
South Africa: Radio Oranje. Station editorial and local ads. Music oldies of "As Time Goes By" and "I Didn't Know What Time It Was." Tobacco commercial and time check at 0350 UTC, with radio-telegraph interference. (Frank Mierzwinski, Mt. Penn, PA)

0333 UTC on 9395
Greece: Voice of Greece. Greek/English. Greek folk songs to English ID, and international news. Promotional for station contest, with remainder of program in Greek. (Harold Frodge, Midland, MI)

0335 UTC on 4920.4
Ecuador: Radio Quito. Spanish. Station news and promotionals. Commercial for Nacional Banco. Lady begins local news and chat. (Frank Hillton, Charleston, SC)

0403 UTC on 4800
Ecuador: Radio Popular (tentative. Spanish. News report mixing with a co-channel soccer game in Spanish. Program news and religious choral music. (Rod Pearson, St. Augustine, FL) *Heard any good utes lately, Rod?-ed.*

0415 UTC on 4910
Zambia: Radio Zambia (ZBC). English/Vernaculars. Native African vocals to lady's "Radio Zambia" ID. Highlife music and "ZBC" ID. Still trying to get this one verified! (Frank Hillton, Charleston, SC) (Harold Frodge, Midland, MI)

0445 UTC on 4755
Colombia: Caracol Bogota. Spanish. News stories on Bogota, Cartagena, and Medellin, followed by international news and ID. (Frank Hillton, Charleston, SC)

0500 UTC on 4850
Cameroon: Radio Cameroon-Yaounde. French/Vernaculars. African highlife music. Fair to poor signal quality, as two announcers talk about Cameroon. Increasing interference from upper sideband. (John Bougerois, Thibodaux, LA)

0526 UTC on 4915
Ghana: Ghana Broadcasting Corp. (GBC). African instrumental melody and choral national anthem. Station ID at 0530 UTC. Good morning greetings to listeners. Parallel frequency 3350 kHz weak, and not heard on 3366 or 3240 kHz. (Rod Pearson, St. Augustine, FL) Monitored at 2220-2230 on 4915 kHz. (Harold Frodge, Midland, MI)

0530 UTC on 5020
Niger: La Voix Du Sahel. French. African choral national anthem to flute melody. Station sign-on ID, with location and frequency. Holy Koran to 0535 UTC, announcements, and native vernacular music. (John Bougerois, Thibodaux, LA)

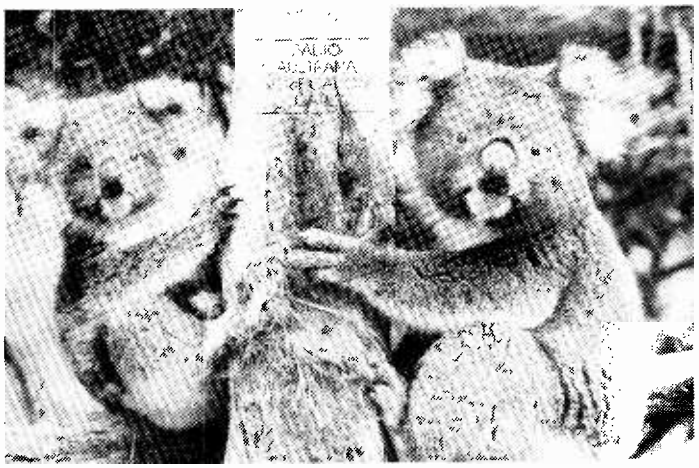
0601 UTC on 4890
Senegal: ORTV-Du Senegal. French. Several mentions of "Dakar" at tune-in. Brief Koran with signal fade out by 0610 UTC. (John Bougerois, Thibodaux, LA)

0610 UTC on 15170
Tahiti: Radio Tahiti. French/Tahitian. French news items. Tahitian music intros for exotic island music! No parallel frequency 11825 kHz heard for weeks. (Frank Hillton, Charleston, SC)

0627 UTC on 4825
Mauritania: OR-TV De Mauritanie (ORTM). Arabic. Mauritanian guitar melody for interval signal. Guitar song and Arabic sign-on. ID with frequency, city, and program intros. Holy Koran and Arabic music monitored to 0640 UTC. -ed.

0634 UTC on 6025
Nigeria, Radio Nigeria-Enugu. Vernaculars. Two men engaging in a conversation to program announcements at 0657 UTC. Five signal pips, English ID, and newscast. (Sheryl Paszkiewicz, Manitowoc, WI)

0920 UTC on 3322
Indonesia: Kalimantan (Borneo), Radio Republik Indonesia-Palangkaya. Indonesian. Instrumental music and programming announcements at 0925 UTC. Pop tunes, regional news and music program called "Musik Pelepas Lelah." (Aboe Thaliep, Batang, Indonesia)



This Radio Australia verification card comes from John Carson of Norman, Oklahoma

0945 UTC on 4900
Indonesia: Java, Radio Republik Indonesia-Surakarta. Indonesian. Children's music program and station IDs. Also heard on 2440 kHz at 1034 UTC with IDs, Arabic music, and feature "Family News." (Aboe Thaliep, Batang, Indonesia)

1000 UTC on 6010
Brazil: Radio Inconfidencia. Portuguese. South American music and several IDs from male/female announcer duo. (Frank Mierzwinski, Mt. Penn, PA)

1005 UTC on 3170
Indonesia: Java, FOX Radio. Indonesian. Pop music and local Enggran advertiser. Indonesian pop music and ID as "Inilah FOX Radio, Purwakrta yang bekerja oada 3170 kHz, di pancarkan dair: Jalan Ahmad Yani No. 34 Purwakrta, Jawa Barat." (Aboe Thaliep, Batang, Indonesia) This is a new commercial station in Purwakarta, West Java.-ed.

1030 UTC on 6065
Colombia: Radio Super. Announcers chat and intros for American tunes, including station ID. (Frank Mierzwinski, Mt. Penn, PA)

1150 UTC on 4800
Guatemal: Radio Buenas Nueva. Spanish. Station ID during religious programming formnat. Weak/fair signal quality. (Nick Terrence, Huntington, NY) Monitored at 0117-0127 on 4799.8 (Guy Atkins, Issaquah, WA)

1300 UTC on 7355
United States: KNLS-Alaska. Musical note melody to sign-on at 1300 UTC. Music titles, IDs, and vintage 50s rock n roll. (Mike Holgate, Lake Oswego, OR) *Welcome to MT, Mike.-ed.*

1306 UTC on 11900
Saipan: KYOI (tentative). "Herald of Christian Science" program plus U.S. pop music. Fair signal strength through bottom of the hour. (Robert L. Landau, Secaucus, NJ)

1400 UTC on 15575
Korea-South: Radio Korea. International news to 1415 UTC, and "Shortwave Feedback" show from 1445-1500. (Nick Terrence, Huntington, NY)

1504 UTC on 2325
Australia: Northern Territory Service, VL8T-Tennant Creek. U.S. pop music and "this is ABC Radio" ID at 1514 UTC. Parallel frequency 2485 kHz (VL8K-Katherine) slightly stronger, and parallel 2310 kHz (VL8A-Alice Springs) much weaker. (Guy Atkins, Issaquah, WA)

1523 UTC on 4002.7
Indonesia: Sulawesi, Radio Republik Indonesia-Padang. Indonesian. Arabic music and announcements to musical gongs at 1530 UTC. Possible mentions of Padang to 1547 fade out. (Guy Atkins, Issaquah, WA) (Aboe Thaliep, Batang, Indonesia)

1552 UTC on 7269.9
Indonesia: Java, Radio Republik Indonesia-Jakarta. Indonesian. Easy-listening music to station ID. News to anthem at 1606, low modulation signal level. (Guy Atkins, Issaquah, WA)

1630 UTC on 15435
United Arab Emirates: UAE Radio and TV-Dubai. News about Israel, Sudan, and Yugoslavia. Station ID for the English service, followed by Middle-eastern music, sign-off at 1644 UTC. (Jim Boehm, San Antonio, TX) (Nick Terrence, Huntington, NY)

1635 UTC on 17620
France: Radio France International. Sunday "Letterbox" program with interesting question/answer sessions on France. Music by French singers, hosted by Phillip and Vivian to 1654 UTC sign-off. (Leslie Edwards, Doylestown, PA)

1743 UTC on 15140
United States: KJES. Group Bible verses recited. Clear ID and address given about every two minutes. "KJES, Vado, New Mexico, 88072," with slight audio distortion. (Sheryl Paszkiewicz, Manitowoc, WI)

1855 UTC on 15175
Netherlands: Radio Netherlands. Media Network program audible on parallel frequency 6165 kHz at 0252 UTC. (Chris Hulse, Eugene, OR) Monitored "Happy Station" program on 9895 kHz at 2030 UTC. (Bob Fraser, Cohasset, MA)

1905 UTC on 15270
Ecuador: HCJB. "Happiness Is" program discussing the life of Brazilian fishermen, and plight of the Ona Indians at Tierra del Fuego. (Bob Hurley, Baltimore, MD) Monitored on 3220 kHz at 0305-0331 UTC. (Frank Mierzwinski, Mt. Penn, PA)

1920 UTC on 15215
Algiers: RTV Algeriene/Radio Algiers. English pop tunes to ID at 1945 UTC. Closing English service comments, IDs, schedule, and address. Spanish programming began at 2000 UTC. (Frank Mierzwinski, Mt. Penn, PA)

2015 UTC on 9435
Israel: KOL Israel. Intersting Part 2 of program on the history of ham radio. (Bob Fraser, Cohasset, MA)

2045 UTC on 11620
India: All India Radio (AIR). Local news and Indian music to international newscast. Editorial on India's economy and panel of students are quizzed on Indian facts. (Leslie Edwards, Doylestown, PA) "This Week in Parliament" heard on 11620 kHz at 2210 UTC. (Harold Frodge, Midland, MI)

2100 UTC on 9835
Jordan: Radio Jordan. Arabic. ID at the hour, with a recheck at 2300 UTC indicating increased reception quality. (Stephen J. Price, Conemaugh, PA) Additional Arabic programming heard on 11955 kHz at 0749-0800 UTC. (Chris Hulse, Eugene, OR)

2130 UTC on 9700
Bulgaria: Radio Sofia. "Spectrum" program on astronomy, discussing the asteroid belt, suffering from a poor signal. (Bob Hurley, Baltimore, MD) *Thanks for your informativelogs, Bob!-ed.* -- DX Program monitored at 0025 UTC on 11720 kHz. (Bob Fraser, Cohasset, MA)

2225 UTC on 4830
Gabon: African No. 1. French. American rhythm and blues tunes. Fair signal quality and "Gabon" ID at 2230 UTC. (Nick Terrence, Huntington, NY) (Harold Frodge, Midland, MI)

2235 UTC on 4940
Cote D'Ivoire: Radiodiff.-TV Ivoirienne. French. Classical instrumental music, with ID breaks. Continued piano classics and signal fades. Sign-off routine of IDs, schedules, and frequencies. National anthem and off at 0000 UTC. (Frank Mierzwinski, Mt. Penn, PA)

2240 UTC on 6190
Switzerland: Swiss Radio International. Medical news from Africa, and the role of the Red Cross. Discussion on Moslim residents of Switzerland, station ID at 2259 UTC. (Jim Boehm, San Antonio, TX)

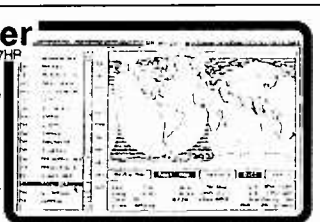
2328 UTC on 6000
Brazil: Radio Guaiba. Portuguese. Brassy 40s era big band music. National news, with frequent ID breaks, suffering from a signal! (Nick Terrence, Huntington, NY)

2329 UTC on 9735
Paraguay: Radio Nacional. English/Spanish. Clear station ID to lively folk music at 2336 UTC. (Leslie Edwards, Doylestown, PA)

2345 UTC on 21740
Australia: Radio Australia. "Monitor" program on the Australian space exploration program. Interview with Cat. Tech professor on the continuing mission of the Voyager spacecraft. (Richard D. Cuff, Allentown, PA)

2355 UTC on 21555
Costa Rica: Radio for Peace International. "Red Cross Roads" feature discussing work with the handicapped in the Orient, and yellow fever vaccinations in Peru. Discussion on relief efforts in Beirut to sign-off at 0005 UTC. (Bob Hurley, Baltimore, MD) (Harold Frodge, Midland, MI)

Special thanks to all the contributors this month . . . please keep up the listening! --Gayle.



Utility World

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

The Big Three

While I was going through the mail this month, regular *MT* logging contributor Rod Pearson in St. Augustine, Florida, gave me an idea for this month's content section.

Rod writes, "Hey, Larry, how about telling all us Ute beginners about some good utility references we should have on the shelf that will make this utility listening hobby more enjoyable."

Okay, Rod, just like the old TV series use to say, "You asked for it, you got it."

The first thing the beginner is going to find out is that no one reference covers it all. The shortwave broadcast listener might be able to get away with buying a copy of *Passport* or the *World Radio TV Handbook* and pretty much stop at that.

But in the Utility World, we have no such equivalent. I think this is because listening to utility transmissions is very dynamic and changes occur constantly. Due to the frequency of publication, these "standard references" just cannot keep up; it's that dynamic.

Another reason I find that the "standard references" do not cover it all is due to the perspective of the authors that write the books. I call these "standard references" the 'big three.'

Just which books do I list as the 'big three,' you say? Well, here goes. These are not listed in any order of preference.

Ferrell's Confidential Frequency List, 7th Edition
Compiled by Geoff Halligey, 376 pages

Guide to Utility Stations, 1989, 7th Edition
By Joerg Klingenfuss, Approximately 494 pages

The Shortwave Directory, 5th Edition
By Bob Grove, 236 pages

So there they are, the 'big three.' All these publications have been around for a while and in my opinion, each has its place in the market. The first question the potential purchaser has to ask himself is "What kind of utility monitoring am I interested in"? This might color your decision on buying any or all of the 'big three.'

The *Confidential Frequency List*, or *CFL* for short, covers the 4-28 MHz spectrum in "by frequency" order. A lot of listeners (me included) just spin the dials. When I find something that interests me, I stop, attempt to ID the channel, and if it is something I really get interested in, hang around a while to get the flavor of the conversation.

This particular book is good for the general band scanner, but, alas, if you are looking for something in particular, forget it. Try flipping through the book for a particular SAC channel, say "Juliette," and you will be there a while. The international call sign cross reference added to this edition for the first time was a nice extra touch, however.

The overall coverage of the *CFL* runs the full gambit of ute listening, but according to some sources, inaccuracies have crept into this edition. Still, for the general band scanning bunch, this isn't a bad publication.

Guide to Utility Stations by Joerg Klingenfuss is a very interesting publication in its own right. It's packed with a lot of information -- maps, charts, ITU rules and regs, a "by frequency" list and call sign cross reference to name a few.

The premise of this book is that it is based on the current logs of one man, Joerg Klingenfuss, in West Germany. It is also based on a certain period of time; the old "No log older than a certain period or it is not used" prevails. Joerg also only tends to list CW, RTTY, and FAX modes, and pretty much stays away from any military and numbers stations.

A major aggravation for me is the lack of a station list transmitting on a particular aeronautical channel. What you usually find listed for a particular aero channel is the purpose of the channel (ie.-ICAO AF Channel/ W I/IV, etc.). But if you are a marine CW, RTTY, or FAX buff, this book is pretty sound. Just keep in mind that it does not carry a U.S. view of the spectrum.

Recently Joerg gave his opinion on numbers type stations in another shortwave publication and why he does not include them in his publications. He states he will not include them because "no one has ever received a verification or contacted such stations." Joerg also says that all we write about concerning these stations over here in America is "assumptions, guesses, and nonsense."

His view on military, tactical, and numbers stations is quite clear, and if you buy his book looking for this information, forget it. Military and governnment monitoring buffs will not find their taste catered to here.

Finally, there is Bob Grove's *Shortwave Directory*. It is a U.S. Government/military buff's delight. For as long as I have known Bob, and that is a bunch of years now, Bob absolutely loves this kind of listening.

I guarantee that I can think of nothing that will send Bob to the receiver faster than an interesting military or government frequency. There lies the strong point of the *Shortwave Frequency Directory*; it's loaded with that kind of ute information.

Bob also thinks about the guy who is tracking down that SAC Juliette channel. The majority of the book is broken down into sections. You will find on one page all the information about the SAC channels; in another section, the U.S. Navy, and so forth. He has also included a "by frequency" list in the blue pages.

If you are a CW marine coastal nut, forget this book however. As Bob will be the first to admit, there are holes. The marine coverage only deals with the basics, and no attempt has been made to generate complete coverage of this type of Ute listening.

As you can see, these books offer a variety, but do not give the monitor the whole picture. There are other references that cover certain aspects of utility listening that deserve mention here also.

A difficult aspect in utility listening is trying to QSL or get a verification letter or card from a utility station. Until the publication of the two volume *Utility QSL Address Guide*, even getting an address was a challenge.

Now that Daryll Symington and John Henault have published these unique publications, QSLing utilities will at least be easier from the address standpoint. This publication deserves space on the radio room bookshelf for the QSLer. I might add that Joerg Klingenfuss's *Guide to Utility Stations* also includes a section with addresses.

I have been miffed over the years at the lack of a good marine

ship list and address reference. Not only are ITU publications expensive, but they are inaccurate. Consequently, I do not see a lot of folks actively verifying ships. The dean of ship QSLers has to be Hank Holbrook. Maybe one of these days Hank will make a guest appearance and tell us some of his secrets in QSLing ships.

For ship buffs, an even bigger mystery is Soviet ship monitoring. As you can see from the pages of this column every month, there are some hard core Soviet ship watchers. Sam Ricks, John Biro, and Tom Roach spend hours peering through the veil of Soviet secrecy listening and studying Soviet ship movements. They are assisted by a unique list of Soviet ship call signs published by Jason Berri.

The *Shortwave Directory* is available from Grove Enterprises. The *Shortwave Directory*, as well as the other titles, is available from DX Radio Supply. In fact, utility monitors should probably have a copy of DX Radio Supply's latest catalog. The cost is quite reasonable -- 50 cents in coin -- and it contains a very interesting selection of books with plenty of utility titles to keep your pocketbook busy. Drop them a note at:

DX Radio Supply
P.O. Box 360
Wagontown, PA 19376

Now for the exotic. Satellite listeners, who are Commodore 64 owners, will be happy to know that long time *MT* reader Rich Newbould has developed a satellite program that will give the listener look angles for geostationary satellites based on location.

This is a nifty little program and the cost is unbelievable. A complete program listing (papercopy) can be obtained for $2.00. If you don't like typing in the program, then a copy on disk can be purchased for $4.00 (the $4.00 gets you the mailer, diskette, postage, and instructions).

Rich developed the program personally and I must say that it works super. Thanks, Rich, for all your time and for the great price, too. Send your dough to:

R.W. Newbould
3179 Churchview Avenue
Peh, PA 15227.

And, yes, Matilda, satellite transmissions are classified under the category of utility monitoring.

Well, so much this month for utility aids and references. Next month I will discuss the art of verifying utility stations, a beginner's guide.

In The Mailbag

A few months back, we ran a piece on the inform/cemetery nets in Europe. A couple of errors sneaked into the list that was published. Please note the following changes:

A19	9414 or 9477 (unconfirmed)
A20	10139
A21	11100

A17 has now been confirmed as 7740 (not as previously supposed). A new cemetery net frequency is 18362.0 kHz. Many thanks to Ute World regular, Mr. UK. As always, it is good to hear from you and we appreciate your valuable contributions to the column.

Mr. U.K. also passes along the following information concerning USAF station AJE-Croughton, England. This station still transmits AFRTS network feeds on various sidebands of its MUX signal. This is about the only way to hear AFRTS on shortwave anymore.

Mr. UK says this station is in Croughton, not Wolvey. "I don't know where everyone gets the name Wolvey from. The place does not exist; it's about 30 miles from Croughton," says Mr. UK. It is possible that it used to be used by the USAF many years ago, but there is certainly nothing there now. *(It is listed in the Klingenfuss book -ed.)* Frequencies are as follows:

5230.2	LSB	5370.5	USB	5377.5	LSB	7565.5	USB
7568.9	USB	7571.8	LSB	9239.25	USB	9242.2	LSB
9934.1	USB	9926.3	LSB	9929.3	LSB	10537.8	LSB
13651.3	LSB	16041.4	LSB	19291.4	LSB		

All these have been noted during the last couple of years. They are normally found on one of the sidebands of the station's MUX signals.

Mr. UK and Chris Kirby (also in England) both provided information on Royal Flight call signs. Mr. UK writes, "As the Royal Family seems to generate a lot of interest in the United States, and I keep reading about various call signs associated with the "Queen's Flight," here is the complete listing:"

RAINBOW HRH	The Duke of Edinburgh acting as captain of an aircraft
UNICORN HRH	The Prince of Wales acting as captain of an aircraft
LEOPARD HRH	The Duke of York acting as captain of an aircraft
KITTYHAWK	Aircraft of the Queen's Flight being used for a Royal Flight. (i.e. carrying Her Majesty, the Queen)
KITTY	Positioning flights or when carrying minor Royals

The call sign, ASCOT, used by the RAF transport aircraft is an acronym of Air Support Command Operational Task (number), (i.e. Ascot 913). This call sign is also used by the aircraft of the 32nd Squadron at RAF Northolt.

Chris Kirby also says that I fell into a trap in the February column that has caught many others. I confused the RAF with the Fleet Air Arm, which, Chris says, would have caused quite a few heart attacks in Whitehall. The Fleet Air Arm has been totally independent for some 50 years having escaped from a brief period under RAF control.

There are four Royal Naval Air Stations: Culdrose, Yeovilton, Lee On Solent, and Prestwick, housing some 16 squadrons as well as a number of smaller special service units. Chris also says that the mention of the Royal Naval Air Service was "also a little outdated." This is because of the amalgamation of the RNAS and the Army Air Corps that formed the RFC on April Fool's Day, 1914, and the RNAS has not existed since.

Finally, the call signs in the GY* series are issued exclusively to Royal Navy units. GYA is Royal Navy, Whitehall; GYU is Royal Navy, Gibraltar, etc. The RAF calls are in the MK* series; MKS, MKK, and MKT are RAF London. Thanks for the update, Chris, and be sure to check in often. I'm looking forward to seeing some of your logs.

Mr. UK drops back in with this little profile on NATO E-3 Sentry aircraft.

NATO operates 18 E-3 aircraft from Geilenkirchen, West Germany, and they use HF extensively for command and control. The net call sign is "DHN 66" and the command post is called "Magic." Aircraft use the call sign "Magic **" (** two digits, the first figure is often a six).

Commonly heard frequencies include: 4542, 4758, 6762.5, 11270.5, 15050, and 17996.5.

Thanks again for the input, Mr. UK, and with that, it's time to check what else our readers are hearing in the Utility World.

Utility World

Utility Loggings

Abbreviations used in this column

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

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

2182.0 Canadian Coast Guard station on Prince Rupert heard in USB at 0705 advising of an imminent broadcast on 2054 kHz. Broadcast on 2054 consisted of weather and notice to mariners, and traffic for an unidentified fishing barge. (Hulse, OR)

2261.0 NMF-USCG COMSTA Boston, Massachusetts, working CG 1472 in USB at 0130. (Battles, NH)

2670.0 USCG Group San Diego, California, in USB at 0506 with a marine weather broadcast and marine warnings including the warning of a bridge closing. (Chris Hulse, Eugene, OR)

USCG North Bend, Oregon, in USB at 0504 with marine weather and warnings. (Hulse, OR)

USCG Corpus Christi, Texas, with a marine information bulletin in USB at 0233. (Battles, NH)

2716.0 HMCS Ojibwa SS-72 (submarine) working UHM Halifax in USB at 2033. (Battles, NH)

3030.0 Fishing vessels with no call signs (bootleggers) using USB at 2108. (Battles, NH)

3123.0 NMF-USCG COMSTA Boston, working CG 1472 in USB at 0121 (also used 5692.0). (Battles, NH)

3306.9 Unidentified station in USB mode asking Foxtrot if he is reading the transmission at 0748. (Hulse, OR) *Not sure, Chris. Anybody know who this is? Welcome back to the column, Chris, please report often.-ed.*

4250.0 Numbers/letters style broadcast (male voice, British accent) in USB at 0100. (Robert Hurley, Baltimore, MD) *Welcome to the column, Robert.-ed.*

4428.7 NMC-USCG COMSTA Pt. Reyes, California, with marine info broadcast in USB at 0430. (Battles, NH)

4560.0 Submarine Onandaga (HMCS) working Halifax Military (Canada) in USB at 1848. (This same unit was heard working Portsmouth, New Hampshire, tug control on VHF marine channel 12. (Battles, NH)

4593.0 English female number station heard at 0100. (Hurley, MD)

5571.0 Slingshot working 533 in USB at 0236 giving locations of possible targets. (Dan Rich, Tempe, AZ) *This is a U.S. Custom channel, Dan. Welcome to Utility World, Dan. PLease report often.-ed.*

5680.0 Plymouth Rescue (UK) working rescue 153 and 51 in USB at 0101. (Battles, NH)

Canadian 899 working Rankin Inlet in USB at 0104 (interference from Plymouth). (Battles, NH)

5685.0 Unidentified station in CW "OA7S de F1GH" at 0413. (Dix, NY)

5690.0 DHM 95 - "Lahr Military," West Germany Volmet for the Canadian Forces radio sending weather at 0416 in USB. (Dix, NY)

5696.0 USCG San Juan working Rescue 1711 in USB at 0045. Also heard USCG AIRSTA Clearwater working CG 1435. (Battles, NH)

6393.5 Unidentified Australian marine coastal station VHI -- sending a CQ CW marker at 1249. (Dix, NY) *Anybody know who this is?-ed.*

6550.0 Rockwell Flight Service working Saudi 003, Jeddah Radio, in USB at 0813 conducting frequency tests. Swithced to 8822.0, then back to 6550.0. (Larry Riffle, Key West, FL)

6679.0 Auckland, New Zealand Volmet with a broadcast in USB at 0653. (Hulse, OR)

6714.0 King 88 working Operations, requested to know if Jolly aircraft was enroute. Using USB at 0014. (Battles, NH)

6738.0 USAF GCCS station Thule AFB, Greenland, working Rainbow 2 with phone patch traffic in USB at 0406. (Battles, NH)

6761.0 Air Force 3 calling for a radio check at 0425 in USB. Who is AF3??? (Hulse, OR) *Good question, Chris. Readers, any help?-ed.*

6926.0 Unidentified operator heard in Spanish in USB at 0748. Fellow WNE TON at length, shouting "Nombre" and repeating "Tango Alpha Juliett Uniform November" and more alphabet in English. This operator shouted into the ether for 10-15 minutes, very little evidence to this eavesdropper of another side of the conversation. (Hoozis, Far West)

6990.0 Unidentified conversations in Russian in LSB at 0750. Sounds like a crowd in a large hall. Probably marine boat chatter and radiotelephone operations from a Pacific fishing fleet. Vague coin box sounds and odd ringing sounds in typically Russian poor audio quality. I judge Russian because of the words "nyet, da, and dos spedanya," but could be Polish or Bulgarian. No operator seems present in the lulls between contacts. At least, not like American operators. (Hulse, OR)

7492.7 Radio Moscow news feed heard in English at 0638 in LSB. (Hulse, OR) I have nothing on this channel, Chris. Might be a new one.-ed.

7527.0 Hammer working Omaha 37 in USB at 0252 giving Omaha 37 target locations. Omaha 37 reported he was going dark. At 0340 Desert Base called 37 to see if he was having problems working the DF equipment. 37 reported no problems. (Rich, AZ)

8112.0 Unidentified CW station transmitting the following, "WAM TA TA GT TA GT TA GT TA GT TA GT," into five character coded groups using cut numbers, W-U-D-T-A-N-R-M-G-I. Closed with "AR AR AR SK SK SK" AT 0236. (Jim Boehm, San Antonio, TX)

8158.4 Single letter HF beacon, "K" sent in CW at 1242. (Boehm, TX)

8241.5 Sailing yacht "Ariane" WSP-2141 working NMN with a report of an object under vessel moving at six knots. Ariane believes possible submarine, as they were buzzed by anti-submarine aircraft and requested NMN check. Object later left in an unknown direction. Using USB at 1935. (Battles, NH)

8453.0 XSM-Xiamen Radio, PRC heard with a hand-sent CQ CW marker at 1211. (Dix, NY)

8465.0 6YI-Kinglon Radio, Jamaica, heard at 2149 with a CQ CW marker. (Dix, NY)

8472.0 SUP-Port Said Radio, Egypt, sending a V CW marker at 2126. (Dix, NY)

8473.0 HLG-Seoul Radio, South Korea, at 1120 with a CQ CW marker. (Dix, NY)

8484.0 HLF-Seoul Radio, South Korea, heard at 1138 with a CQ CW marker. (Dix, NY)

8511.0 UKK3-Nakhodka Radio, USSR, at 1134 sending a DE CW marker, then a traffic list. (Dix, NY)

8512.6 VHI-Australian marine station sending the following marker, "VVV DE VHI 1/2/3/4/5/6/7." (Dix, NY) *Anybody know who this is?-ed.*

8522.0 9WW20-Kuching Radio, Malaysia, sending a CW CQ marker at 1142. (Dix, NY)

8522.5 FFL-St. Lys Radio, France, at 0008 with a CQ CW marker. (Dix, NY)

8545.0 DZF-Manila (Bacoor) Radio, Phillipines, monitored sending a CW CQ marker at 1128. (Dix, NY)

8590.0 XVS-Ho Chi Minh City Radio, Vietnam, with a CQ CW marker at 1223. (Dix, NY)

8634.0 VTG-Bombay Naval Radio, India, sending a V CW marker at 1236. (Dix, NY)

8646.0 VTP-Vishakpatnan Naval Radio, India, sending a V CW marker at 1254. (Dix, NY)

8686.0 HSA2/4-Bangkok Radio, Thailand, sending at 1141 a CQ CW marker. (Dix, NY)

PKB-Belawan Radio, Indonesia, heard at 1238 with a CQ CW marker. (Dix, NY)

8694.5 HMC-unidentified marine coastal station sending a CQ CW marker at 1155. (Dix, NY) *This is probably a North Korean, Jack. Anybody want to take a stab at this one.-ed.*

8825.0 San Juan, Puerto Rico aeroradio working Kiwani 149 (?) in USB at 0615. Pilot had a Spanish accent. (Hulse, OR)

8828.0 Tokyo, Japan Volmet broadcast heard in USB at 0611; sounds mechanical -- a composite tape. (Hulse, OR) *It's computerized, Chris.-ed.*

8903.0 ATC Aeroradio N'Djamena, Chad, heard working Zambian 005 getting

a position report at 0316 in USB. This is ICAO area AF-4. (Dix, NY)

8984.0 Rescue 1703 working Canvasback with a position report 18 16N/108 05W in USB. (Scott Golladay, Everett, WA) *Thanks for the logs, Scott.-ed.*

9222.0 Spanish female number station heard at 0009 (Friday UTC). (Dix, NY)

10057.0 US Navy P-3 aircraft enroute NAS Barbers Point, Hawaii, from NAS Moffitt Field, California, working San Francisco aeroradio. 6673 was given as the secondary frequency. (Golladay, WA) *Call sign, Scott?-ed.*

10066.0 Aero channel -- ICAO SEA-1 (Southeast Asia) Kunming was heard doing a SELCAL check with an unidentified aircraft which the female operator called repeatedly with no luck. This same frequency can be heard here on the west coast from 1400 to 1500 UTC (and often later) daily. I most often hear Kunming, PRC; Dhaka, Bangladesh; Calcutta, India; Rangoon, Burma; and Madras, India, talking to each other (usually, but not always, in English) or to aircraft in flight. On rare occasions I even get Ho Chi Minh City or Saigon, as it was called when I was stationed there some years back. (Tom Roach, San Jose, CA)

11176.0 Alrevac 40637 working USAF GCCS station Ascension Island with a phone patch to Format at 1953. (Battles, NH)

11186.0 NAS Key West working the aircraft carrier USS Lexington (Spartan) in USB at 1445 regarding rough seas and the cancellation of liberty. Crew remaining on shore to be airlifted by helo back to the carrier. (Riffle, FL)

11192.0 Ascot 4980 working Ranger Base in USB at 1732. (Same aircraft heard calling Trenton (Canada) Military on 11233.0). (Battles, NH)

11225.0 Zulu One Sierra working Charlie Six Sierra. No contact, so tried to contact Hotel One Victor at 0608. (Golladay, WA)

12270.0 Unidentified "Mark IV" multi-frequency shift keying six-tone (Piccolo) transmission. Two channels, lower on standby, upper with traffic. 500/520 Hz tones. (Boehm, TX)

12519.5 UVXP-Krasnokamsk, a cargo vessel 482 feet by 30 feet which has a maximum speed of 17.5 knots was heard at 0222 using 170/50. (Roach, CA)

12521.5 The Amurskij Zaliv, a fish carrier heard at 0704 with family message traffic using 170/50. (Roach, CA) *Call sign, Tom?-ed.*

12703.0 XFL-Mazatlan Radio, Mexico, at 2111 sending CW CQ marker. (Dix, NY)

12718.5 VWM-Madras Radio, India, sending a CQ CW marker at 1203. (Dix, NY)

12747.0 Female operator in USB at 0016 repeating "Mike India Whiskey Two." (Dix, NY) *Probably a navy TAC channel, Jack.-ed.*

12750.0 VHI-unidentified Australian coastal station sending a V CW marker at 1211. (Dix, NY)

12752.0 C6N-Nassau Radio, Bahamas, with a CQ CW marker at 0200. (Dix, NY)

12790.0 XFS2-Ciudad Madero Radio, Mexico, sending a hand-sent CQ CW marker. (Dix, NY)

12795.0 UXN8-Arkhangelsk Radio, USSR, sending DE CW marker at 2230. (Dix, NY)

12678.0 UQB-Kholmsk Radio, USSR, with a CQ CW marker at 2201. (Dix, NY)

12800.0 HSA3/HSA23-Bangkok Radio, Thailand, at 1233 with a CW CQ marker. (Dix, NY)

12834.0 DZP-Manilla (Novaliches) Radio, Phillipines, heard at 1336 with a CW CQ marker. (Dix, NY)

12843.0 HLO-Seoul Radio, South Korea, heard at 0211 in CW with a CQ marker. (Dix, NY)

12888.0 DZF-Manilla (Bulacan) Radio, Phillipines, sending a CW CQ marker at 2228. (Dix, NY)

12923.1 HLW2-Seoul Radio, South Korea, with a CW CQ marker at 1118. (Dix, NY)

12948.0 JJF-Tokyo Naval Radio, Japan, sending a CW marker at 2230. (Dix, NY)

12970.5 PKB-Belawan Radio, Indonesia, sending a CQ CW marker at 0051. (Dix, NY)

12969.0 XSV-Tianjin Radio, PRC, at 2237, with a CQ CW marker. (Dix, NY)

13060.5 7OA-Aden Radio, South Yemen, heard at 1357 with a DE CW marker. (Dix, NY)

13201.0 USAF GCCS station at Thule AFB, Greenland, working MAC 18352 with a phone patch to Format in USB at 1755. (Battles, NH)

13204.0 Andrews AFB, Maryland, working SAM 970 in LSB at 2340 with a phone patch to Crown. Switched to 6756 USB at 2350 due to static. (Riffle, FL)

13312.0 Rockwell Flight Service working Jeddah One Bravo adn Jeddah operations in USB at 2105. Jeddah requested Rockwell go to 11288.0 for a frequency check. Rockwell responded that they were only allowed to receive and could not transmit on 11288.0 (probably because of U.S. Customs service use at the time). (Riffle, FL)

13247.0 WAR-46 (Fort Richie, Maryland) working Neon Gas in USB at 2309 on Whiskey 109 with a net test. (Riffle, FL)

13330.0 LDOC at Heathrow transmitting weather to a Speedbird aircraft in USB at 1320. (Dix, NY)

14360.0 KWS 78 -- Department of State Radio -- Athens, Greece, monitored sending a CW QRA marker. (Mark Vargas, Bronx, NY) *Welcome to the column, Mark. Please report often.-ed.*

14477.2 Single letter HF beacon -- "K" sent in CW at 1226. (Boehm, TX)

15041.0 Andrews AFB, Maryland, working SAM 200 in USB at 2303 with phone patch traffic regarding itinerary for a general's upcoming Turkish visit. (Riffle, FL)

15044.0 Kelly One working Foxtrot in USB at 2155 testing secure FM voice satellite downlink on frequency 295.875 MHz. Alpha joined the net and was aboard unknown aircraft. Also used the frequencies 6550 and 17964 kHz HF. (Riffle, FL)

15651.0 Spanish female number station heard at 1706 (Friday UTC). (Dix, NY)

15655.4 Single letter HF beacon -- "U" sent in CW at 0428. (Boehm, TX)

16702.5 UUBH-Aleksei Chuev using RTTY 170/50 sending one of the fishing fleets five-digit "numbers" messages which are characterized by starting with "20102." The second and fifth group of numbers is a five-digit group that is unique to the vessel (the Chuev uses 84338), and the seventh group represents the month and year of the data referenced. Other than that, the messages are "Greek" to me. The Chuev also sent another "numbers" message which I believe indicated she was at 54 51N/150 54E or in the sea of Okhotsk off the west coast of Kamchatka. (Roach, CA)

16695.5 ESKK-Geroi Eltigena was noted at 53 38N/16 10W (off west coast of the United Kingdom) at 0146 using 170/50. (Roach, CA)

17017.5 KPH-San Francisco Radio, California, heard at 0101 with a CW traffic list and marker. (Adam Gott, Alameda, CA)

17022.4 WLO-Mobile Radio, AL with weather for the Gulf of Mexico and schedule in CW at 0055. (Gott, CA)

17198.5 KFS-San Francisco Radio, California, with a CW V marker at 0012. (Gott, CA)

17216.0 WCC-Chatham Radio, Massachusetts, with a CW frequency marker at 2357. (Gott, CA)

18023.0 Andrews AFB, Maryland, working SAM 26000 in LSB at 1915 with phone patch traffic to Crown regarding data link. (Riffle, FL)

18027.0 Swordfish 15 calling Halifax Military for a radio check on "18 upper." Announces a switch to "Dil" then nothing heard at 2209 in USB. (Hulse, OR)

Red Dog operations, Brewmaster and Trenton Military with NORAD operations in USB at 1601. (Battles, NH)

18525.0 KKN 50 -- Department of State Radio -- Remington, Virginia, with a CW QRA marker, simulcast 16363.0. QSX channels 43/69/45/49 at 1239. (Boehm, TX)

20124.0 USAF GCCS station McClellan AFB, California, working Reprimand, setting up an RTTY link using USB at 2019. (Battles, NH)

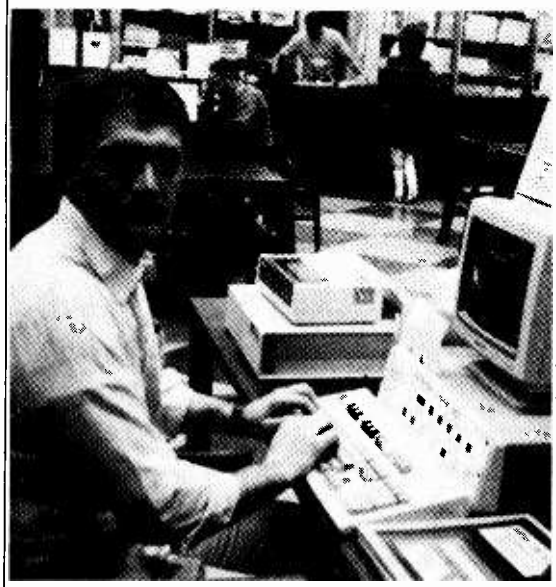
20876.3 Two female operatiors in communications using LSB at 2025. (I believe this is the National Science Foundation Net). No call signs used. (Battles, NH) *You are probably right, Bill.-ed.*

22476.0 NMO-USCG COMSTA Honolulu, Hawaii, heard at 2151 with a CW V marker. (Gott, CA)

23250.0 COMUK Maintenance working Trenton (Canada) Military with a radio check in USb at 0231. (Battles, NH)

The Scanning Report

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



I looked around. Before me an empty computer terminal stood waiting. Dare I try it? Would I be caught?

Walking into the information center, I was immediately impressed by the high, white ceilings, marbled walls and brightly waxed floor. Directly ahead and centered in the room was a long wooden service counter. Working behind it, several employees were busily performing routine office tasks.

To my left there was an empty desk with a computer terminal. On the screen the word "ready" was quietly blinking in a sea of green colored light. To me, it was a beacon, a lighthouse that could guide me into a world of information and intrigue.

As I stood there, I felt the anticipation mounting within. Should I do it? Could I do it? If I did, it would be a scene right out of the movies. Whatever I was going to do, I had to do it quick. The opportunity wasn't going to last forever.

Pulling the chair away from the desk, I cautiously eased myself onto its padded seat. Placing my fingers on the keyboard, I took one more look around -- all clear. It was time for *Monitoring Times'* scanning columnist to do some serious snooping.

Tap, tap, tap, tap, the rhythmical sound of the keyboard responded to my fingers as I typed, "Frequency Allocation." After pressing the "enter" button, the screen momentarily flashed "searching." Within a few seconds, it displayed a long list of agencies beneath the title of "Radio Frequency Allocations."

Moving the cursor down the list, I stopped at "Frequency Allocations, Federal Government," and pressed the "enter" key. As I was about to write down the displayed information, the flashing on-screen cursor automatically highlighted another instruction. "To save information, press "print" to copy."

This was incredible! It was better than the movies. Feeling a little more confident, I decided to go for the gusto. "Tap, tap, tap, S-t-e-a-l-t-h B-o-m-b-e-r" and then "enter." The screen once again displayed "searching."

As I waited for the information to be retrieved, a disturbing thought came to mind. "Was someone monitoring this computer from another room? Would certain key words trigger a hidden alarm?" If so, the word "Stealth" would surely bring an armed escort to my desk.

Suddenly, the screen was filled with Stealth reference files. Wow! I couldn't find the "print" button fast enough. As I ripped off the list, I eased back in the chair and became intrigued by some of the information. According to the printout, Stealth technology began way back in the late 1950s.

"Sir, excuse me."

Looking up, I was confronted by a tall, middle-aged gentleman dressed in a three piece suit.

"The Feds have found me," I thought.

"Will you be using the terminal again?" he politely asked from behind a wide smile.

"Uh, no . . . not at all," I nervously stammered as I rose from the chair.

Nodding his head in a gesture of thanks, he sat down at the terminal, cleared the screen, and began pecking away at the keys.

Walking up to the information counter, a young lady greeted me in an eager, but subdued, voice.

"May I help you?" she whispered.

As I pushed the printout across the counter, she picked it up and studied it for a moment.

"This might take a few minutes to locate. Where will you be sitting?"

I pointed to the nearest table and said, "Oh, right over there."

"Fine, I'll bring the information to your table in a few minutes."

Sitting down, I folded my arms across my chest and waited. A few minutes later, she placed several books on my table.

"These books are from the early nineteen seventies," she began. "But they are the only references that we have on federal frequency allocations."

"Okay, these will give me a start," I said.

"We do have a card on file, listing a more current edition, but for some reason, it's listed as being permanently removed."

"That's fine," I whispered. "Anything on Stealth?"

Placing my printout on the table, she pointed to several handwritten notations.

"I've written down several microfilm reference numbers," she began. "If you want to see the actual film, simply take this to the microfilm counter."

"Okay, thanks for your help," I said.

"No problem," she said, smiling. "If you need help again, simply step up to the information counter."

As I have already mentioned, I prefer to call it "snooping." The city of Philadelphia calls it "The Free Library." And as the name implies, use of the computerized library system is free to everyone. Information from books, magazines, and newspapers from around the nation can be quickly and accurately referenced in a matter of seconds.

The new computerized system has even gained the attention of the FBI. Librarians across the nation recently protested an FBI letter that asked for help in identifying possible spies using local libraries. Although it's doubtful that anyone could stumble onto any government secrets, it's quite possible to obtain a small fragment of information that can be later used to solve a more complex security puzzle.

Like scanning, the new computerized library system was intriguing, exciting, and informative. If I wanted to know more about a company or agency that I was scanning, the new

computerized library was at my disposal. The library even had restricted areas that required a special ID badge!

ID BADGE REQUIRED FOR RESTRICTED AREAS

In the microfilm files, I found information concerning *Monitoring Times* and Grove Enterprises. Even Publisher Bob Grove could not escape the computer. There was a file mentioning his books and several reviews of his equipment.

What about Stealth? Here's a brief synopsis of what I found:

1. Stealth aircraft have been flying since 1977.
2. The F-19 Stealth is powered by two General Electric F404-HBs.
3. Maximum weight; 30,000 pounds.
4. Wing span, 24'-0".
5. Total length, 48'-6".
6. Maximum speed, 1.4 Mach.
7. Cruise speed, .92 Mach
8. Armed with Maverick missiles, "Smart Bombs."
9. The outer skin of Stealth is a composite of fiberglass and Kevlar. Micro circuits and antennas are incorporated into the surface.
10. Stealth aircraft have night mission and day mission coloration. The night mission color is flat black. The day mission color is Gull Gray.

The books on Federal Frequency Allocations were interesting, but not too informative. Individual frequencies were not listed. The books simply separated different agencies by specific bands.

I was more intrigued by the missing reference source. Why was there a card indicating that the books had been permanently removed? Was it due to the reclassification of government frequencies by the Reagan administration?

Well, one out of two wasn't bad. Besides, I had another idea. Returning to the information counter, the same girl greeted me again.

"Need something else?" she whispered.

"Would it be possible to reference a magazine editor?" I asked.

"Oh, sure it is. In fact, you can do it yourself on the computer."

"Really? How would I go about doing that?" I whispered back.

"Well, there's a little trick to it," she began. "After you enter the editor's name, type a slash and then the state where he lives."

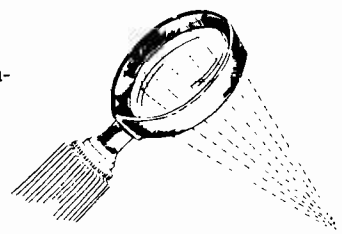
"What will that do?" I asked.

"That will narrow the search to one state and the computer will be able to give you a more comprehensive list of facts on the individual."

"Oh boy, good stuff," I whispered back.

Departing the counter, I headed straight for the nearest open terminal and sat down at the keyboard. Staring into the screen, I snickered under my breath and typed L-a-r-r-y J. M-i-l-l-e-r/P-A

MT Treasure Hunt #2



The response to our first Treasure Hunt was overwhelming. My local post office doesn't use my box anymore. They simply throw bags of mail at me from behind the counter.

Before I officially open the second hunt, everyone should understand that the first hunt is closed. The correct answer for the April and May Treasure Hunt was the cordless phone frequency of 46.61.

Everyone that responded with the correct answers before May 31 received the frequency allocation guide for various agencies between 30 and 1200 MHz. The guide was neatly typed, reduced to wallet size, and then enclosed in plastic. It's quite handy when you're out in the field and need to remember the search limits for a particular agency.

If you missed the first Treasure Hunt, or if you simply can't live without one, the frequency guide is available for two dollars and an SASE.

For the June and July Treasure Hunt, the folks at Naval Electronics have provided two HTS-1 "Audio Boosters." I mentioned the HTS-1 Audio Booster in my January 1989 column. If you missed that edition, the HTS-1 is an amplified speaker that can be carried right along with your scanner radio. The unit is powered by four internal AA batteries and it also incorporates an internal shut-off feature. When there isn't a transmission taking place, the HTS-1 shuts down to conserve the batteries. Since the unit is portable, it can be used in the basement, garage, or anyplace where increased audio is needed.

Having difficulty hearing your scanner in mobile operation? The HTS-1 can easily raise scanner communications above existing road noise. Better yet, the HTS-1 can also be powered from the vehicle's 12 volt battery.

Ready for the clues? Okay, here we go:

1. Look at the March 1989 cover of MT. What is the marital status of the gentleman sitting at the console?
2. What is his name?
3. List his job title in three words.
4. What is he writing?
5. Grab the January 1989 issue and find the page number that featured the HTS-1.
6. Go back to the March 1989 issue. Turn to the page number that you discovered in clue #5. What is the title of the column on that page?

Not too difficult, eh? During this Treasure Hunt, remember that there can only be two winners. So don't send an SASE. Both winners will be selected by a random drawing. Send your answers to: Treasure Hunt, P.O. Box 173, Prospect Park, PA 19076.

As with all Treasure Hunts, this one will also last two months -- June and July. Both winners and a new Treasure Hunt will be announced in the August issue. Good luck!

Frequency Exchange

From the dry lands of Arizona, John Moran wrote in to ask for your help. John indicates that the Salt River Project (SRP) serves Phoenix and the surrounding communities with irrigation water and hydroelectric power. The dams are along the Salt and Verde rivers and the flood gates are controlled by telemetry signals. Can anyone share the telemetry frequencies with John?

For those readers interested in monitoring the activities of the SRP, here are a few of John's confirmed frequencies:

451.250 Irrigation operations
451.20 Irrigation construction and maintenance crews
451.575 Power dispatch -- very active during power failures.

In West Virginia, Kevin Angus requested help in finding frequencies for the following stations:
WTAE Channel 4 News; KDKA Channel 2 News;
WPXI Channel 11 News

It seems that Kevin must have missed the October 1988 edition of *Monitoring Times*. In that particular issue, we featured an article by John F. Combs titled "Broadcasting's Secret Frequencies." The author provided a long list of broadcast frequencies between the following ranges: 450.05-450.925 and 455.05-455.925.

Crank up your scanner, Kevin, and search the airways for those elusive frequencies. In the meantime, readers who already have the above frequencies can share them with Kevin and thousands

of other readers by sending them to the Frequency Exchange, P.O. Box 173, Prospect Park, PA 19076.

Two recently discovered FBI frequencies for the New York area were sent in by Larry Zilliox of northern New Jersey: 414.100 and 414.350 MHz.

If there is a scanner club within one hundred and fifty miles of Knoxville, Tennessee, Dan Debusk wants to join. Although Dan has several current frequency guides for the Knoxville area, he points out that most of the listings are out of date. Anyone care to help?

Wrapping up this month's Frequency Exchange is a request from a reader named Russell. Russell wants to exchange frequencies for the Houston/Galveston, Texas, area. If you are monitoring the Lone Star State, drop me a note with your list and I'll get you in touch with Russell.

Code Book Scanner

Richard Shipbaugh wrote in to the Scanning Report and asked if anyone had a code book for the "Tennelec Memoryscan" scanner radio. Manufactured by Tycol Communications, the Memoryscan was an early vintage, noncrystal radio that required a code book to enter frequencies.

Apparently the code book listed the codes for over 4000 frequencies in the VHF and UHF bands. Instead of punching in the direct frequency, the user matched the frequency to a code and then entered the special code into the scanner.

Rich says that without the book, the scanner if virtually useless. If you can help, don't be afraid to send your "code cracking " information to the Scanning Report.

Mistaken Identity

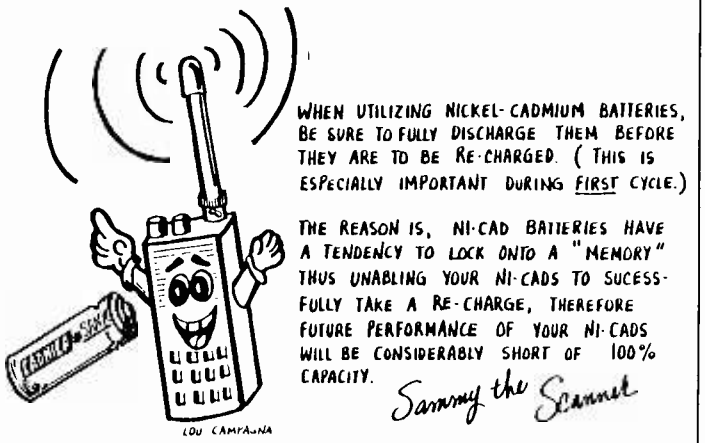
Can cellular phones be monitored on an image frequency between 454 and 455 Megahertz? I don't think so. However, Larry L. Hardie from Seattle, Washington, wrote in to say that he has been hearing cellular conversations between these two frequency limits.

I think Larry is confusing cellular calls with the mobile telephone service that operates on 454 Megahertz. Anyone have any other ideas?

IDing the Cordless Phone Channels

A lot of readers, including Paul Haka from Haines City, Florida, have asked me to identify the cordless channels by number and frequency. It seems that a growing number of manufacturers are listing a channel number on their phones rather than a specific frequency. Here's a list of channels and the related frequencies for both the handset and base:

Channel 1 46.61-49.67	Channel 2 46.63-49.845
Channel 3 46.67-49.86	Channel 4 46.71-49.77
Channel 5 46.73-49.875	Channel 6 46.77-49.83
Channel 7 46.83-49.89	Channel 8 46.87-49.93
Channel 9 46.93-49.99	Channel 10 46.97-49.97



Courtesy of *Northeast Scanning News*

Scanning the Races

Use em, print em, and get my name right! These were the only conditions that Disc Jockey Pat Murphy placed on the following list of NASCAR race frequencies.

Pat works at radio station WNIS in Norfolk Virginia. If you're in the area, tune in 850 on the AM dial and listen in!

NASCAR Race Car Team Frequencies

CAR	DRIVER	FREQ	ALTERNATE FREQS
01	Mickey Gibbs	467.1375	
1	Dale Jarrett	464.700	469.700 464.475 469.475
2	Ernie Irvan	466.650	
3	Dale Earnhardt	469.0125	464.0125
4	Rick Wilson	464.300	
5	Geoff Bodine	851.500	
6	Mark Martin	468.5625	463.925 463.400
7	Alan Kulwicki	461.150	466.150
8	Bobby Hillin Jr.	856.800	
9	Bill Elliott	853.500	
10	Ken Bouchard	468.5125	
11	Terry Labonte	855.525	855.575
12	Mike Alexander	451.900	464.3125 469.3125
14	A.J. Foyt	456.9125	468.1875 463.550 463.1875
15	Brent Bodine	460.9875	
16	Larry Pearson	452.600	463.775
17	Darrell Waltrip	851.575	856.500
21	Kyle Petty	463.6125	468.4625 463.4875 463.4625
23	Eddie Bierschwale	462.675	
25	Ken Schrader	856.925	851.575
26	Ricky Rudd	468.4875	
27	Rusty Wallace	465.7875	463.900 468.900
28	Davey Allison	457.600	468.700 463.5625 468.5625
29	Cale Yarborough	464.600	469.600
30	Mike Waltrip	466.300	461.300
31	Joe Ruttman	468.9375	
33	Harry Gant	461.6875	461.975 466.975 464.525 464.875
41	Joe Booher	469.975	
43	Richard Petty	464.800	469.800
44	Sterling Marlin	461.875	466.875
47	Morgan Sheppard	466.200	
50	Greg Sacks		
52	Jimmy Means	467.925	469.925 464.400 464.925
55	Phil Parsons	468.775	469.450 464.450
67	Buddy Arrington	464.075	469.075
68	Derrike Cope	464.025	
71	Dave Marcis	467.825	
75	Neil Bonnett	468.975	463.975
77	Ken Ragan	461.825	469.225
80	Jimmy Horton	463.4375	
83	Lake Speed	859.825	463.775 468.775
88	Buddy Baker	466.700	461.700
90	Benny Parsons	467.162	
92	David Sosobee	464.5625	
98	Brad Nofsinger	461.525	461.450

NASCAR 464.500 CH. 1
NASCAR 464.775 CH. 2
NASCAR 464.900 CH. 3
NASCAR 469.500 CH. 4
NASCAR 462.025 CH. 5
NASCAR 467.025 CH. 6

NASCAR Scoring 467.800
ESPN (Cameras) 461.3125
ESPN (Car Mike) 152.960
ESPN (Satellite Feed) 466.650
MRN (Motor Racing Network) 454.000

what's new?

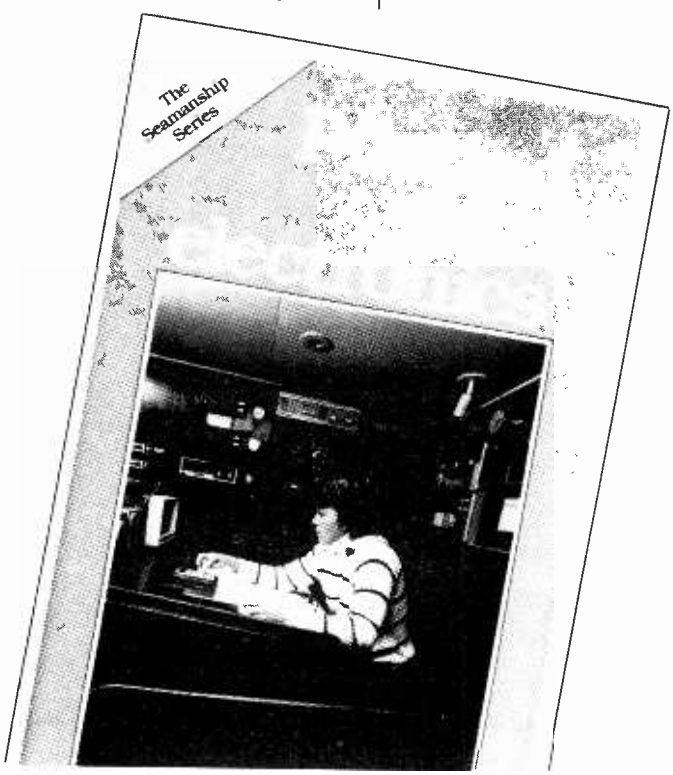
Piloting with Electronics

In one sense, *Piloting with* Electronics by Luke Melton is not a radio book. But for anyone interested in monitoring longwave beacons and other maritime navigation aids, it is. In fact, author Luke Melton's superbly written and easy-to-understand text gives real life to some otherwise rather mundane signals.

Imagine, if you will, sailing along the Gulf Stream on a compass heading of 325 degrees. It's midnight and you're on watch. You tune in the radio beacon on 322 kHz at Government Cut in Miami and you take a reading. The moonlight ripples across the deep green water... With a little imagination, you might even feel the salt spray in your face.

Piloting with Electronics is great reading and perfect for anyone who dreams of sailing the open seas -- even if you do all your boating from the comfort of your shack.

Piloting with Electronics is available for $9.95 plus $2.00 UPS from DX Radio Supply, P.O. Box 360, Wagontown, PA 19376.



Panasonic RF-B65

Panasonic's new RF-B65 is a multi-band (AM/FM/LW/SW) mini-portable, boasting 36-station preset, keypad, rotary, up/down manual, scanner and meter band direct access tuning.

Whichever you choose, the information is shown on an LCD display.

What makes the RF-B65 one major step ahead of the older RF-B60 is the addition of single sideband (SSB). And while few broadcast stations use SSB, you really can't monitor utility or ham transmissions without it.

The Panasonic RF-B65 retails for $279.95 and is available from your favorite radio dealer.

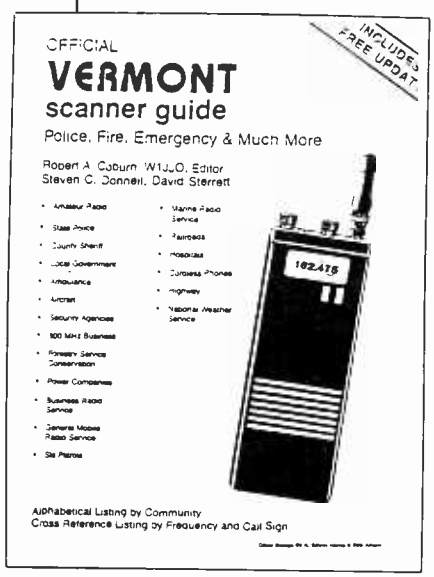
Scanning in Vermont

It is not difficult to understand that, due to relative populations, many scanner frequency directories are available for highly-populated areas, while low density regions are often ignored. Coburn's most recent edition, the *Official* Vermont Scanner Guide, will be welcome in low-profile Vermont.

Featuring easy-to-read print, the directory lists communities alphabetically, presenting service, licensee's name, call sign and frequency. A frequency cross reference makes it easy to identify an unknown heard on the air.

An introductory section presents lists of frequencies commonly used for medical, broadcast, CB, mobile phones, boats, aircraft, railroads, state police and fire. Separate ten code lists help the listener monitor several of these services.

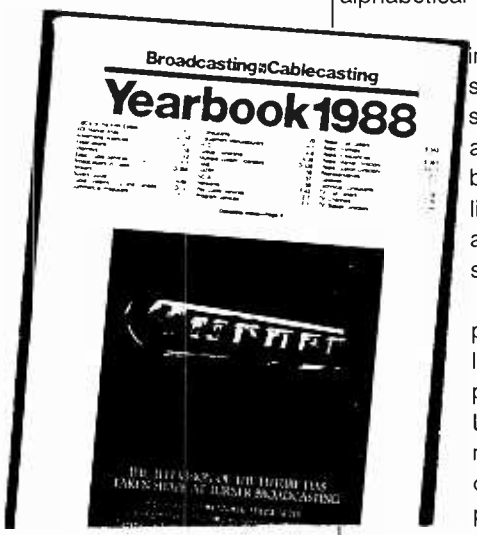
Edited by Robert A. Coburn, the Vermont edition is $14.95 plus $2.05 shipping from Official Scanner Guide, PO Box 712, Londonderry, NH 03053.



The Ultimate BC Reference

Most industries have their "bible"; for US radio and television professionals it's the *Broadcasting/Cablecasting Yearbook*, an annual encyclopedic reference for the electronic media. Although imposingly large, it is conveniently -- and usably -- divided into discrete chapters:

(A) "The Fifth Estate" follows the evolution of the broadcasting industry, describing emerging technologies, laws and regulations, government regulating agencies' involvements, and lists of multiple-held broadcasting stations with ownership details.



(B) AM/FM radio stations details, including US international broadcasting operations (Voice of America, American Forces Radio and Television Service, Radio Free Europe, Radio Liberty). A cross reference by call letters and frequency includes antenna heights and power outputs.

A table of FM allotments is provided along with a guide to the 259 Arbitron US radio markets.

(C) The TV section of the Yearbook is a detailed listing of television broadcasting facilities nationwide, including names and addresses, areas of dominant influence, official circulation figures, lists of independent and affiliated stations, histories of station transfers, stereo and low power experimental TV stations, channels and call letters, and a detailed commercial look at "The Television Marketplace".

(D) A detailed list of cable TV companies around the US and Canada includes FCC rules and regulations pertinent to that service. Listings are alphabetical by state and city.

(E) Interested in broadcasting satellites? This shorty chapter has a chart of the birds in orbit and lists network users along with their specialty services.

(F) Program producers are listed, with contact personnel, for all US and Canadian networks. A table of stations by program format is included.

(G) Advertising agencies and marketing firms are listed here.

(H) The "Technology" section alphabetically lists hundreds of manufacturers and suppliers of broadcasting equipment and accessories, and includes a "yellow pages" buyers guide.

(I) Since broadcasting is such a specialty, qualified resource personnel are required. This section lists consultants and services for every aspect of broadcasting.

Quite a book. Expensive ($110), but consummate -- from Broadcasting Publications, 1705 DeSales St., NW; Washington, DC 20036. Ph. 202-659-2340.

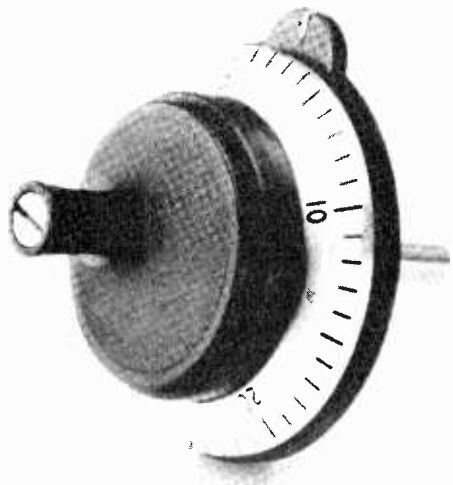
One Good Turn . . .

The model TC-48 Turns Counter Dial is designed to drive Roller Inductors but may be used with any device needing multi-turn counting like variable capacitors or potentiometers.

One revolution of the drive knob indicates one turn on the TC-48's zero to forty eight scale. It is designed for panel mounting and for use with 1/4 inch drive shafts.

Hardware and complete mounting instructions are included. The price is $25.50 each plus shipping.

For more information, write to Kilo-Tec at P.O. Box 1001, Oak View, CA 93022.



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

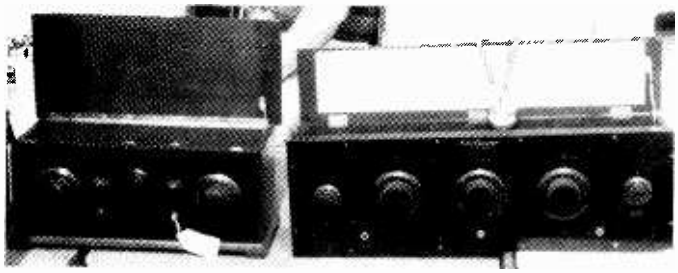
T.J. "Skip" Arey WB2GHA
P.O. Box 644
Waterford Works, NJ 08089

Uncle Skip Talks No Code

As most folks who have run across me on the bands or at radio get-togethers know, there is nothing I enjoy more than talking. The subject matter isn't all that important. I'll flap my gums on any old topic. If the ARRL awarded a Platinum Ragchewers Certificate, I'd surely be in the running for it. Maybe that is why I have tried to shy away from "The Great Amateur Radio No Code Debate" for so long. The fact is Old Uncle Skip just doesn't work CW all that much.

So what's the point, Uncle Skip???

Amateur Radio is one of the greatest aspects of the radio hobby. It has given me many hours of enjoyment. My wife can attest to the fact that it keeps me off the streets. I've been licensed since I was a mere tyke, and I have probably fried more equipment than any five other hams have owned. Yet it would seem that Amateur Radio is in a spot of trouble. Lots of commercial operations are beginning to covet the ham bands as sources for more revenue. The amateur Radio Service just took a big kick in the bands, losing some of the 220 MHz band to business operations. In spite of the monumental lobbying efforts and the multitude of letters to our congress people, the simple fact is that Ham Radio could not generate enough clout to block the change.



Will code become as obsolete as these fine old radios? . . . Will anyone care?

Several folks have pointed out that the statistics have not been running in Ham Radio's favor for some time. We just aren't making enough little hams to take the place of those who leave the service. And of those licensed today, only a percentage could be considered really active. Is it any wonder the ARRL can't fire up the lobby machine to fight off hostile takeovers?

Behind the Rising Sun

Amateur Radio is supposed to exist for the purposes of building our country's supply of trained technicians and engineers. (Says so right on the label, read the rule book.) Yet we lag behind Japan in all aspects of technical education. Could the fact that Japan has a no code ham license (and with it more "active" hams per capita) have anything to do with it?

At the risk of sounding more paranoid than usual, are we really talking about the survival of our nation's world economic and political status and not simply the survival of a hobby?

CODE IS JUST A MODE

Back in the mid-seventies, there was an effort to get a no-code "digital" license off the ground. The idea was to take advantage of the ITU ruling that code proficiency was not needed for amateur operations above 30 MHz. A lot of hams mobilized against this proposal for fear that the then-recent CB fad would fill the ham bands with all manner of riff-raff.

What made this silly was, at the same time, ham radio was showing a surge of licensure as novice classes swelled with those same CBers. And as for riff-raff, you can hear some pretty bad operating tactics most any day on 75 or 40 meters. By the way, quite a few of those CB people went on to become A-1 operators.

As the surge of CB died to a dull roar, ham radio stagnated. The next benefit came in the form of "enhanced" privileges for novice class folks, including voice operation of ten meters. The increased interest, largely built around the ability to talk instead of click, has even brought Radio Shack back into the ham business.

It would seem the trend is fairly clear. Most people see code as little more than a barrier to their participation in what otherwise would be a rewarding and exciting hobby. England established a no-code license and their service is showing the first real growth since the sixties. Canada is well on the way to their no-code privileges and I am sure we can expect our North American cousins to show the same growth.

The modern Amateur Radio operator can choose from 19 modes of operation from the mundane to the exotic. To some degree, a ham must show some understanding of the theory and operation of these modes. But only A1A -- Morse Code -- requires a demonstration of competency.

With the proper license I can set up a Slow Scan TV system with impunity and the only person who will judge my competency is the station receiving my signal. Maybe that is where we need to go with code. Let it stand as a mode and let people's ability to operate in that mode continue to be judged and improved by fellow hams. Nobody is going to communicate with someone with a lousy fist anyway.

The whole idea of Amateur Radio is that it is really supposed to allow you a place to be bad in! As an amateur on your own bands, you have the opportunity to make mistakes and learn from them so you won't be a problem as a professional. Hams can educate one another and, most important of all, experiment and improve the radio art (there's that rule book again).

Old Arguments Die Hard

Just as code is a tradition, some of the arguments in favor of CW have taken on legendary status. My favorite is, "You are in a plane crash far from civilization and your microphone is broken. You can touch your mike wires together and key your transmitter. If nobody knows code, nobody could come and rescue you."

I suppose my first response would be that the pilot should have filed a flight plan. Be that as it may, the whole idea is ludicrous. First, I don't think you are going to break any speed records keying two wires together. Even if I couldn't copy code normally, at low emergency speeds I might just be able to copy with the aid of a code chart.

But more importantly, if we had a large enough pool of engineering expertise (from increased amateur radio activity), maybe we could come up with enough "better mouse traps" so a pilot would never have to worry about getting into such a situation.

Another argument is that code is a good mode in bad conditions. True enough, but once again, in bad conditions speed is going to go way down to assure accuracy.

This argument continues to lose steam with each new development in error-correcting RTTY and packet. There are modern modes that will get the job done, so why aren't we forcing folks to take RTTY exams?

How about -- if you are forced to learn

code, you will eventually learn to love it and it will become your favorite mode? I have been told that having a near-death experience can be very beautiful but I'm not going to push the envelope just to check it out.

And, of course, the Russians are using a lot of code! Well, that is just great! While they are slogging along in CW, we can maintain the foundations of our national security with faster, more modern, and equally reliable modes.

And finally, code is good in emergencies. To this I must say poppycock! In real emergencies, speed is what counts. Voice is faster than code. Listen to your scanner, bunky. You don't hear a whole lot of CW on the action bands. That goes for most long distance emergency situations too. Beginning in 1993, the preferred mode of maritime distress communications will officially shift from CW to the GMDSS automated system.

Next time a major disaster hits, take a listen to the bands. Voice communication gets the job done. Also, don't be too surprised if you hear packet taking the lead in disaster communications. And for those times when nothing but code will do (as few as they may be), I find there are still a great many folks who actually enjoy the code mode. I am sure they will be there to help the rest of us along.

The Old Bottom Line

Let's call it as it is. The good old U.S. of A. needs more hams. The old ways of attracting and educating folks just isn't getting the job done. There is nothing sacred about CW. If we don't get up off our institutional prerogatives, we are going to be left in the dust technologically by more forward thinking countries. So what's it going to be, friends? As for Old Uncle Skip . . . Enter . . .

Uncle Skip's One and Only, Sure-to-Get-Him-Canned-From-the-ARRL, No Code License Plan

1. The ITU is right!!! Everything above 30 MHz should be code testless and a code free license should be developed ASAP.
2. Below 30 MHz, minimum code proficiency should be the rule with endorsements for higher code speeds effecting access to the CW portions of the band ONLY!!! All voice and non-CW modes should be available to people based upon knowledge of theory and rules, not code proficiency.
3. Testing should emphasize operating procedure, safety, and domestic and international regulations. Including 20 questions about the Volunteer Examiner Program is the biggest waste of paper in the hobby.
4. All licensing procedures should come from a perspective of creating maximum access to Amateur Radio. The more the merrier, folks. If it gets too crowded some of the crowd will invent a new mode around the problem. Everybody will win in the long run.

In real emergencies, speed is what counts.

If our bands are so crowded, how come we lost part of 220 MHz from lack of use? There is plenty of room for everybody, some of it in places we haven't even looked yet. Who knows what is possible above 300 GHz until enough Wiz Kids poke around up there?

Remember, Hams originally got the HF bands because "the experts" said they would be of no use to anybody.

As for the so called riff-raff, technology continues to advance at a rate so that the casual user won't stick around long enough to mess things up. Look at CB today. All the "Good Buddies" are off playing with other toys and the Citizen's Band is not such a bad place to play and work after all.

This topic is a bit intense for Uncle Skip's Corner, but it all comes back down to having fun playing radio. The institution of a no-code license will bring about an influx of thousands of excited new users who will make countless contributions to the hobby and the radio art. What could be more fun then to be part of this radio renaissance? Let's hear from you, folks; *Monitoring Times* reaches a lot of listeners who might be potential beneficiaries of a no-code plan. You could be the silent majority of this movement. Don't be. Drop us a line.

Dave Jones

430 Garnor Drive
Suffield, OH 44260

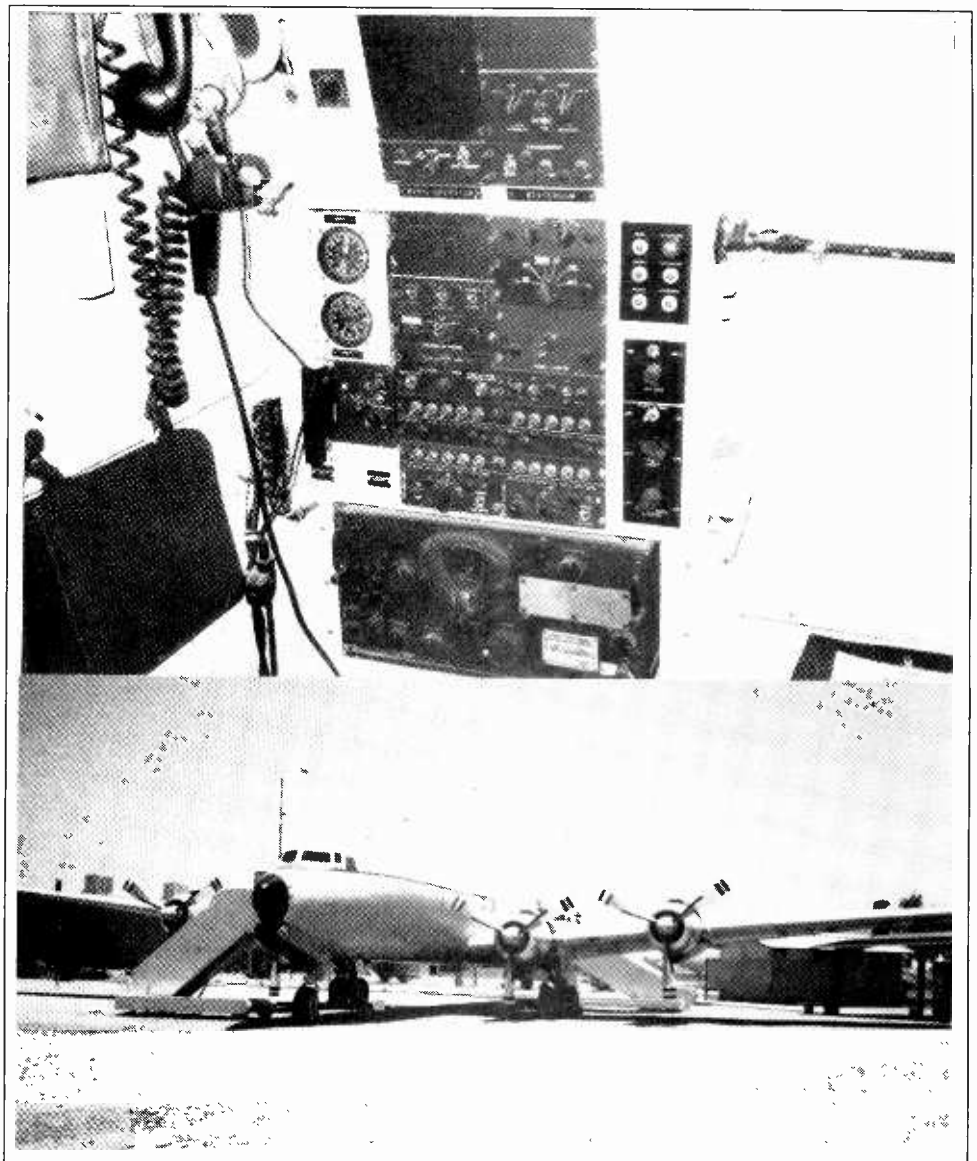
AIR FORCE ONE - *Changing with the times*

For almost thirty years, the Boeing 707 has provided transportation for presidents of the United States. For smaller airports, Presidents Kennedy and Johnson relied on a Douglas VC-118A "Liftmaster," a four engine prop. But when George Bush christens a new presidential aircraft this year, he will usher into service a new type of Air Force One -- a Boeing 747.

The 747s were constructed at Boeing Military Airplane's Wichita, Kansas, plant under the watchful eyes of the U.S. Secret Service and the Air Force. A 250 million dollar contract called for two outfitted 747s, each with 4,000 square feet of interior space.

By comparison, the 707 was a flying phone booth with a mere 1,300 feet each. The tripling of available interior space provides room for amenities and equipment that were limited or not possible with the previous model.

Initial published reports indicate that the new Air Force One has more than 100 telephones, 11 videocassette recorders, and 16 televisions, more than enough to indulge a little Presidential pleasure during long flights to the coast.



For smaller airports, Kennedy and Johnson used a Douglas VC-118A Liftmaster, shown here with its radio communication room. Compared to the new Boeing 747 now under contract, the luxuries of earlier years appear miniscule.

The Air Force One used by President Ford is a mere phone booth next to the aircraft that will be christened by President Bush.

Beyond the telephones and televisions are systems vital to our nation's security. In fact, one major change in the new presidential aircraft is the installation of a state-of-the-art communications system that can function as a mobile White House command center.

Air Force One communications may be monitored in the clear on the UHF NBFM ECHO-FOX channel pair. The ECHO-FOX channel pair is a semi-duplex system where ECHO is the ground-to-air link and FOX is the air-to-ground link. The frequency for ECHO is 407.850 and the frequency for FOX is 415.700.

The new presidential aircraft will still have the ECHO-FOX capability, however, satellite communications are believed to be the primary mode of communications with the new presidential aircraft.

As the accompanying photo shows, the difference in technology between the 747 aircraft, which will take U.S. presidents into the 21st century, and the Douglas VC-118A of the early and mid 60s is staggering.

The 747 has seven bathrooms and enough food and water to feed 70 passengers and a 23-member crew for a week without resupply. Small bunks are available for the flight crew and White House staffers and guests can get their rest on one of the 31 special "executive sleeper seats" have been installed. The media, confined to fourteen nonsleeper seats, will no doubt be even crankier than usual.

On Air Force One, rank clearly has its privileges. The president's suite, on the main deck near the nose of the aircraft, includes twin beds, a private bathroom with shower and a vanity/desk. Adjacent to the bedroom is the President's executive office. Equipped with a full desk, it also serves as a dinner table for two.

Not far from the office is a large conference/dining room. The table in the room can seat eight with six additional seats available on couches. Maps, films, and videos can be electrically displayed on the walls, creating a perfect setting for this airborn think tank.

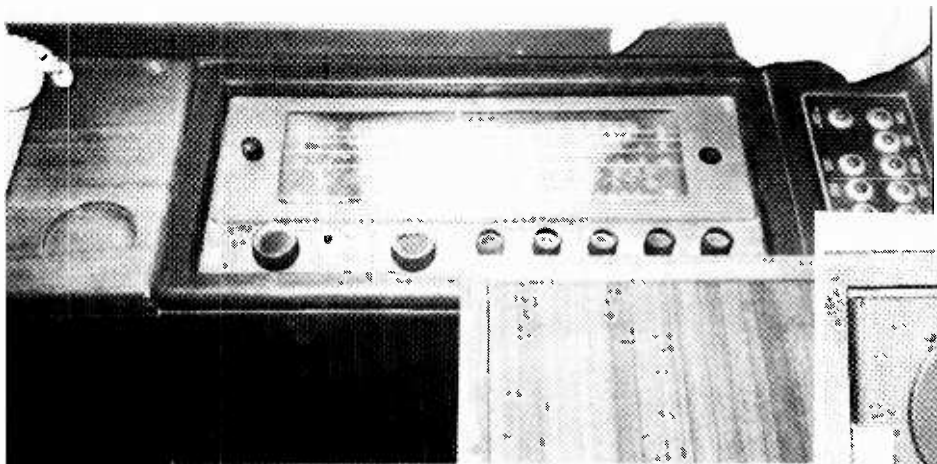
Special compartments have been designed for Secret Service agents, White House staff members, secretarial workers, and the media. The aircraft is also equipped with a complete medical emergency center, giving the President's physician far more to work with than just his carry-on "black bag." On-board laundry and dry cleaning round out the list of amenities aboard Air Force One.

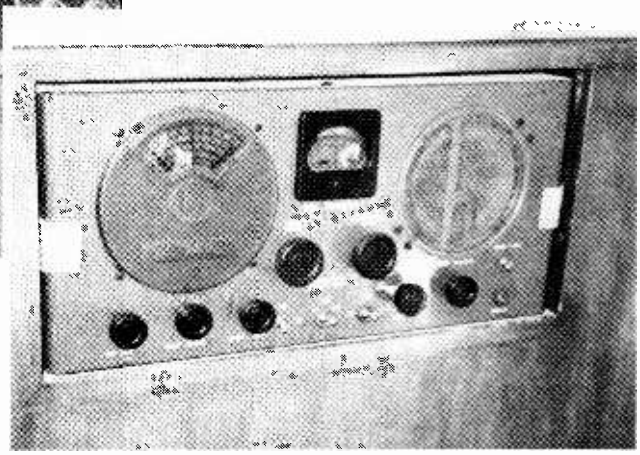
Practicality extends to airspeed and distance, as well. The 747 will have an 8,000 mile range without refueling and has been modified so as to accept mid-air refueling during extended flights. Too, the 747 will have a top speed of 640 mph. The 707, alas, could manage a top speed of no more than 600 mph top speed and 7,000 mile nonstop range.

In the past, Air Force One has provided radio monitors with some of the most exciting listening available anywhere on radio. It's an inside glimpse at the working of government at its highest echelon, a rare chance to hear the power in the raw.

mt

Photos by Dave Jones





Leftovers from another era: above, the Presidential Aircraft Hallicrafters All-band Radio used by Kennedy and Johnson; right, the Hallicrafter Sky Champion radio reserved for the press in the early sixties.

Jean Baker, KIN9DD

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

A Refresher Course

Aviation Terminology

The Sony ICF-2010 has probably done more to popularize aero monitoring than anything else. People who ordinarily wouldn't go to the expense of buying a specialized aero radio now have the opportunity to sample both the 116 to 136 MHz and the HF (shortwave) aero communications free of charge as part of the '2010's frequency coverage.

Add to that all of the new *Monitoring Times* subscribers that pour into the office every day and you've got a lot of people who could use a hand with aero communications terminology.

Back again, by popular demand, are the terms used most frequently by pilots and controllers.

AFFIRMATIVE -- Yes

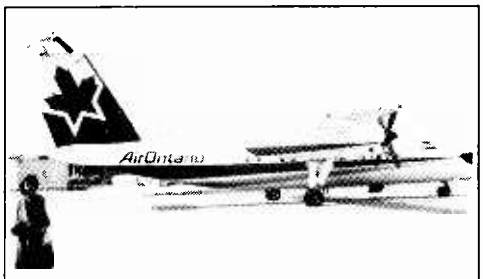
ARINC -- AERONAUTICAL RADIO, INC. A company which is owned by the airlines who make up the majority of their customers. They provide air/ground communications on a domestic and international basis. More about them in a future issue.

ARTCC -- Air Route Traffic Control Center

ATC -- Air Traffic Control

ATC CLEARS -- Used to relay an ATC clearance when given by other than an Air Traffic Controller. For instance, you will hear an ARINC operator say this when he relays a clearance from ATC to a flight he is working.

COMPANY TRAFFIC -- Term used by ATC to advise converging traffic that they work for the same company



Bert Huneault of Windsor, Canada, submits a photo of Air Ontario de Havilland

CHARLIE -- Used by pilots (more so on the HF bands than on VHF) in the same context as affirmative.

HEAVY -- Any aircraft capable of a takeoff weight of 300,000 pounds or more whether or not they are operating at this weight during a particular phase of flight. Aircraft belonging to this class include the Boeing 747, DC-10, L-1011, Airbus, Boeing 767, and others.

FLIGHT LEVEL -- Flight altitude which is based upon barometric pressure and expressed in the form of a three-digit number. As an example, flight level 330 would indicate that an aircraft is flying at thirty-three thousand feet.

HIGH FREQUENCY -- Aero communications are found in the HF bands between 2 and 22 MHz. Transmissions on these frequencies are almost always in upper sideband mode.

HOLD -- A predetermined maneuver which keeps aircraft within a specified airspace while awaiting further clearance from ATC.

HOT AREA -- Designated airspace over an active Military Operations Area (MOA) up to a predetermined flight level which civilians must not penetrate.

KNOT -- A unit of speed. One nautical mile is equal to 6,076.12 feet; a statute mile is equal to 5,280 feet. Pilots and air traffic controllers express airspeed (and ground speed) in knots.

NEGATIVE -- No

NORDO -- The literal translation is "no radio." Controllers will use this when referring to an aircraft whom they are trying to contact and the pilot (for one reason or another) isn't answering them.

ROGER -- This word means "I hear you" or "I heard you." Technically, it is supposed to mean "I have received all of your last transmission."

SELCAL -- A four-tone selective calling device utilized by aeronautical enroute ground stations (such as ARINC) to contact flights which have a SELCAL receiving unit on board. It can be used on the VHF and HF communications bands to alert a flight that a ground station wants to talk with them.

UHF -- Ultra-High Frequency. Used in this context, it refers to the portion of the spectrum used for military aviation communications, from 225 to 400 MHz.

VHF -- Very High Frequency. Aeronautical communications are found from 118.000 through 135.975; Navigation aids are allocated the portion from 108.000 through 117.975.

Collision Avoidance

By December 30, 1991, all commercial aircraft carrying more than 30 passengers must be equipped with the Traffic Alert and Collision Avoidance System (TCAS-II). These packages work by picking up signals from the position and altitude reporting transponders carried by other aircraft.

American Airlines decided to use the Allied-Signal Aerospace Company's Bendix/King TCAS II system for all 600 of its aircraft. Piedmont Airlines and Southwest Airlines have installed similar systems.

Some airlines, however, are protesting the ruling stating that the system can issue avoidance warnings only if the other aircraft is equipped with a transponder as not very many small aircraft carry transponders. Thus, even if a heavily-loaded 747 were equipped with TCAS-II, it is no guarantee against collision with a small Cessna.

The cost to the airlines for equipping their fleets with TCAS-II is estimated to be in the range of $806.3 million.

Reception Reports

Bill Kilee of Cruise Control, Oklahoma, would like to know if we can supply

the address for the Russian airline, Aeroflot. "Also," says Bill, "if it's not too much trouble, could you also tell me the address for Air Canada?"

Your wish is our command. Here is the address for Aeroflot, Air Canada and a handful of others.

AEROFLOT (Russia's national airline)
Leningradsky Prospekt, 37
Moscow, USSR

AIR FRANCE
1 Square Max Hymanss
Paris, 75015 France

BRITISH AIRWAYS
(Code name "Speedbird")
P.O. Box 10
Heathrow Airport
Hounslow, TW2JA
England

DELTA AIR LINES INC
Hartsfield International Airport
Atlanta, GA 30320 USA

CUBANA
Calle 23 No. 64, La Rampa
Vedado
Havana 4, Cuba

NORTHWEST ORIENT AIRLINES, INC
Minneapolis-St. Paul
International Airport
St. Paul, MN 55111 USA

JAPAN AIRLINES COMPANY, LTD
Tokyo Bldg. 7-3 Marunouchi
2 Chome Chiyoda-Ku
Tokyo 100, Japan

QUANTAS AIRWAYS, LTD
Quantas House
70 Hunter Street
Post Office Box 489
Sydney, N.S.W., Australia

AIR CANADA
Place Ville Marie
Montreal 113
Quebec, Canada

AIR NEW ZEALAND
Private Bag
Auckland 1, New Zealand

CATHAY PACIFIC
Union House
9 Connaught Road
Central
Hong Kong, Hong Kong

UNITED AIRLINES
P.O. Box 66100
Chicago, IL 60666 USA

KLM - ROYAL DUTCH AIRLINES, INC
Schiphol International Airport
Post Office Box 7700
Netherlands

CONTINENTAL AIRLINES, INC
LAX (Los Angeles Int'l Airport
Los Angeles, CA 90009 USA

TWA
Lambert Field
St. Louis, MO 63415 USA

SOUTH AFRICAN AIRWAYS
(Code name "Springbok")
South African Airways Centre
Johannesburg, Republic of
South Africa

For Your Information: Atlanta International

I just got back from Atlanta International where I worked on a feature article for a future issue of *Monitoring Times*. (More about that in an upcoming issue.) And while I was there, I had plenty of time to observe the goings-on at the airport.

Wow! It was quite a scene. Of course, having my handy pocket VHF/AM receiver with me, I was able to listen in on quite a bit of the action on the tower, approach, departure, and ground frequencies. If you live in the area or expect to be passing through the area, file away these frequencies.

Approach Control:	127.9, 118.35, 126.9, 127.25, 119.3, 121.0, 119.8
Departure Control:	125.0, 125.1
Tower:	119.1, 119.5, 123.85
Ground Control:	121.75, 121.9
Clearance Delivery:	121.6

Harry McIntyre, Air Traffic Manager of Atlanta International Airport's ATC Tower, reports that:

- The volume of air traffic worked at Atlanta TRACON (includes Tower, Approach, Departure, etc.) came to a total of 975,698 operations in 1988.
- 92 Air Traffic Controllers and 11 ATC Assistants are employed at Atlanta International Airport.
- There are 40 domestic and foreign airlines currently providing service to this airport.

That wraps up the column for this issue -- Don't forget to watch this space for more interesting and informative aero communications news next time.

Until then, 73 and out.

While in Atlanta for an upcoming interview, I gleaned some frequencies for those passing through.

Ike Kerschner, N3IK

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

The QSO

As we all know, the QSO is the major purpose of ham radio. The basic idea is to establish contact with another amateur. How long that contact is and what gets said during it -- that can vary considerably!

The minimum QSO -- pronounced "QUE so" -- for some activities like rare DX usually consists of an exchange of signal report and call letters. Let's say that the rare DX station is on the air and working his way through a big pile up of hams anxious to contact him. His normal response to your call will be "N3IK you're 5 and 9, over."

Your response should be, "Roger, you are 5 and 9 (or whatever his report is) in Pennsylvania. Thanks and 73." That's it. The rare DX station will frequently give QSL information during the time he is on the air. Wait for it.

Add A Little

Another type of brief QSO is the contest exchange. While certain information must be exchanged in order to have a bona fide contact, remember that the purpose of the contest is to work in as many contacts as possible.

The normal Field Day exchange, for example, is call, signal report and ARRL section. The station you work will respond with your call, roger, signal report, section and a request for confirmation.

Let's take a look at how this will sound when it is all put together. Assume that N3IK has called CQ FD (field day) on CW and is answered by WB4AA. N3IK responds: "WB4AA 579 EPA K." In turn, WB4AA says: "N3IK QSL 599 NFLA QSL?" Now N3IK says: "QSL 73 de N3IK QRZ?"

Often in the heat of a contest, 73 may not even be exchanged. As soon as N3IK confirms WB4AA's report by sending QSL or roger, he sends QRZ which means he is ready for the next contact so that any station hearing the exchange can send their call and make the next contact with N3IK.

Different contests require different exchanges. Some may require the participants to exchange a serial number and zone or ITU region. Others may ask you to send the year you were first licensed or the amount of power you are running. If contesting interests you, be sure to check the rules thoroughly and make yourself familiar with the required exchange.

Incidentally, remember the bash of the year is coming up the last weekend of June. If you have never participated in Field Day do it this year. Either get together with a local club, or find some friends who are willing to spend the weekend hamming and go to some remote location and join the fun!

Long Ones!

Now let's talk about what appears to be the most difficult QSO of all for some amateurs, the rag chew QSO. Rag chewing is simply getting to know the other ham better.

Talking about ham gear is not "getting to know" another ham. Describe your other hobbies, work or family. To be sure, very often some aspect of ham radio can be an interesting topic of conversation.

For example, when slow scan TV was first introduced (on the 11 meter amateur band), I built an SSTV rig. While I did not make many contacts on SSTV, it provided many hours of rag chewing with friends all over the world who were interested in the mode.

Make Friends!

During my QSOs, I usually talk about my other hobbies. While chatting with a VE4 on 40 meter CW one evening, I mentioned my interest in canoeing. His reply was, "Super!" He too was a canoeist and invited me to participate in a four day trek in northern Manitoba. I went and enjoyed a trip like none I have taken before or since -- and made a friend for life.

Not every rag chew will turn out like that but it is surprising how many invites you will receive to go fishing, hunting, camping, picture-taking or just plain touring.

A little time spent learning the art of QSO will enrich your life many times over.

Ike's Mailbag

I was pretty disgusted with all the carping going on about how easily ten meter rigs can be purchased. Some hams are scared to death that bootleggers will use these transmitters to take over the band. Lots of mail rolled in but very little of it brought anything new -- save one chap who happens to be a bootlegger.

A Bootlegger Talks Back

"Dear Ike," begins the letter. "I was really annoyed with your comments about unlicensed operators operating in the ten meter band.

"I would really like to become a ham, but cannot pass the code exam! So I became a CB operator. Well, you know what a mess the regular band can be so, like many others, I began to operate on frequencies above the regular CB band. I don't run a lot of power, my operations are clean and I am not hurting anyone.

"One of the big problems with operating on these frequencies is the HAMS. They run lots of power and come down to *our* frequencies and squash low power stations. In fact, the only time I operate in the ten meter ham band is when one of these stations forces me to. There are lots of hams that do this and I think they should be told to stay inside their own band!"

As you might imagine, the letter was unsigned. Comments anyone?

Moaners

Another letter is from a reader who, although he is a new ham, has been dialing about the amateur bands for some time. On one of the nets on the 20 meter phone band, members seem to spend all their time complaining about the Maritime Mobile net just a few kilohertz higher in frequency.

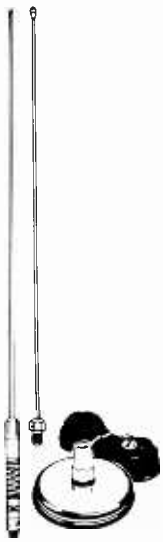
He goes on to comment about several other groups who spend all their on air time moaning about something or the other.

My response: Ham radio is a natural magnet for unhappy folks whose only enjoyment in life seems to be looking at the dark side of things. The only thing you can do about them is to ignore them.

Take the time to monitor public service nets or listen to the many other hams who are enjoying themselves by just meeting new folks and chatting with old friends. This hobby should be fun; if it isn't, then it's time to get out of it.

New Stuff

While at the Orlando (Florida) hamfest, I ran across a neat two meter mobile antenna manufactured by Valor Enterprises. It's called the CX-5814 and has some excellent features.



Model CX5814

What appealed to me most was the "no scratch" mag mount and the fact that the antenna came with both a 5/8 wave gain whip (3dB gain over quarter wave) and a quarter wave conventional antenna.

Why do you need two whips, you ask? Well, for the most part I do not like to have a lot of hardware on the roof of my car that advertises the fact that there are valuable radios inside. The quarter wave whip does an adequate job, but when the going gets tough the 5/8th wave antenna comes through with added range every time.

In addition to this, the quarter wave antenna travels nicely inside a brief case along with the mag mount so you can turn the rental car and HT into a decent mobile station on your next flying trip.

The magnet of this antenna has a no scratch plastic coating on it that does a super job of keeping the finish of your car from being marred. After I installed the unit on my car and gave the magnet the old yank test, I was not too sure the magnet was strong enough to hang together at high speed.

However, with the 5/8th wave antenna installed, it survived highway speeds for more than 2500 miles. Consequently I am most pleased with the antenna and recommend it to those of you who are looking for a good quality two meter antenna.

Valor manufactures a large line of quality antennas and accessories for everything from HF to Cellular. Of particular interest are their mobile and fixed scanner antennas and their combiners to turn your auto antenna into a scanner or CB antenna. Lots of neat goodies from these folks.

Write to them for a catalog and price list at LJ Electronic Industry, 123 East South Street, Harveysburg, Ohio 45032

No Code License Coming?

An ARRL study committee appointed to explore the implications of a codeless class of amateur radio license has submitted a report recommending its creation as an alternative means of entry into amateur radio.

The ARRL executive committee did not take a position on the substance of the report but authorized its publication in last month's issue of *QST* and referred it to the full board of directors for consideration.

The study committee stressed that its proposal -- if adopted -- would not cause anyone currently holding a license to lose privileges. Instead, it proposes a new class of amateur radio license with a written examination somewhat more comprehensive that the present Technician exam but with no requirement for a Morse code exam.

Holders would be given all the privileges now available to Technicians above 30 MHz except that 2 meter operation would be limited to frequencies between 144.9 and 145.1 MHz (digital modes only). Exams would be given only by accredited volunteer examiners and distinctive call signs would be assigned.

Keep your fingers crossed. This could be ham radio's last chance. We'll keep you posted. mt

the qsl report

Gayle Van Horn

P.O. Box 1088
Gretna, LA 70053-1088

Australia

Sydney Volmet, 11387 kHz. Full data card, without verification signer. Received in 50 days for an English utility report, two IRCs, and souvenir stamps. Station address: Supervisor-Flight Service, P.O. Box 211, Mascot, New South Wales, Australia. (Bob Combs, Campbell, CA)

VIS 26, Overseas Telecomm. Co., 8521 kHz. Full data QSL card, without verification signer. Received in 38 days for an English utility report, two IRCs, and souvenir stamps. Station address: Overseas Telecommunications Co., Box 7000 GPO, Sydney, New South Wales 2001 Australia. (Bob Combs, Campbell, CA)

Bonaire

Trans World Radio, 9535/11815 kHz. Full data "25th Anniversary" card. Verification signer, Sally Rork. Received in 23 days for an English report and one IRC. Also received a station packet of schedules, newsletters, pennant, and personal note. Station address: TWR, Bonaire, Netherlands Antilles. (Kenneth D. MacHarg, Jeffersonville, IN) (Walt Witkowski, Port Ewen, NY)

Canada

CFB Edmonton, Alberta, 9006 kHz. No data unconfirmed form letter, forwarded from Communication Command Headquarters, for an English utility report. Letter stated service regulations prohibit military confirmation of this transmission, signed by Sgt. Dixson, for Captain Commander. Headquarters address: Communication Command Headquarters, Ottawa, Canada, K1A OK2. (John Doe, Colorado Springs, CO)

China

CPBS 2, 11505 kHz. Full data QSL folder card, without verification signer. Received in 11 days for an English report and souvenir stamps. Station address: CPBS, Xi Chang An Jie 3, Beijing, People's Republic of China. (Bob Combs, Campbell, CA)

Costa Rica

Radio Impacto, 5030 kHz. Partial data station letter. Verification signer, Hector Requena C. Received in 30 days for a program tape recording and mint stamps. Also received a pennant and sticker. Station address: Apartado 497, San Pedro Montes De Oca, Costa Rica. (Fraser Bonnett, Kettering, OH)

Equatorial Guinea

Radio Africa-Bata, 9553 kHz. Partial data QSL card, without verification signer. Received in 500 days for an English report and one IRC. Station address: P.O. Box 851, Malabo, Equatorial Guinea, Africa. Reply received from Pierce International Communications, Inc. 10201, Torre Avenue, Suite 320, Cupertino, CA 95014. (Aboe Thaliep, Batang, Central Java, Indonesia)

Fiji

Dept. of Post and Telecomm., 8960 kHz. Partial data station letter. Verification signer J. Turaganivalu. Received in 35 days for an English utility report, two IRCs, and souvenir stamps. Station address: Dept. of Post and Telecommunications, P.O. Box 40, Suva, Fiji. (Bob Combs, Campbell, CA)

Bob Combs of California and Donn Mumma of Texas both received QSL cards from YVTO, Caracas, Venezuela. This one is Donn's.

India

All India Radio, 11620 kHz. Full data color card of Mughal Garden of Nishat in Kashmir, with illegible verification signer. Received in 62 days for an English report. Station address: External Services Division, Post Box 500, New Delhi, India. (Robert L. Landau, Secaucus, NJ)

Indonesia

Sumatera-Radio Republik Sibolga, 5257 kHz. No data station form letter. Verification signer, B.A. Tanjung. Received in 41 days after fourth Indonesian report and one U.S. dollar. Station address: RRI Stasiun Regional II Sibolga, Jln. Ade Suryani Nasution No. 11, Subolga, Sumatera Utara, Indonesia. (Richard L. Coday, Oildale, CA)

Iraq

Radio Baghdad, 15230 kHz. Full data color QSL folder, without verification signer. Received in 87 days after English follow-up report. Station address: P.O. Box 8145, Baghdad, Iraq. (Gordon Edwards, Lawrenceville, GA)

Jordan

Radio Jordan, 9560 kHz. Full data station logo card, without verification signer. Received in 30 days for an English report and one U.S. dollar. Also received Jordan flag decals. Station address: P.O. Box 909, Amman, Jordan. (Richard L. Coday, Oildale, CA)

Korea, South

Radio Korea, 15575 kHz. Full data color card of Chosun Dynasty pavillion, without verification signer. Received in 28 days for an English report. Station address: # 18, Yoido-Dong, Youngdungpo-gu, Seoul 150-790, Korea. (Robert L. Landau, Secaucus, NJ) (Kenneth D. MacHarg, Jeffersonville, IN)

Luxembourg

Radio Luxembourg, 6090 kHz. Full data QSL card of coat-of-arms/antennas, without verification signer. Also received three station stickers. Received in 16 days for an English report sent to English service. Station address: Radio Luxembourg (London) Ltd., 38 Hertford St., London W1Y 8BA, United Kingdom. QSL mailed from Luxembourg; earlier report sent directly to station was not answered. (Robert L. Landau, Secaucus, NJ)

Nicaragua

La Voz de Nicaragua, 5955 kHz. No data station form letter. Verification signers, Rodolfo Garcia G. and Freddy Lopez Quiroz, International Shortwave Department. Received in 72 days for an English reception report. Station address: Voice of Nicaragua, Managua, Nicaragua. (Frank Trumpy, Ames, IA) (John Delisle, Juno, FL)

Norway

Radio Norway International, 15310 kHz. Full data QSL card of "Skiing in the Mountains," with illegible verification signature. Received in 66 days for an English report. Also received a station emblem sticker and program schedules. Station address: Bj. Bjoernsons plass 1, 0340 Oslo, Norway. (Robert L. Landau, Secaucus, NJ)

Portugal

Radio Portugal, 9705/9660 kHz. Partial data map postcard, without verification signer. Received in 75 days for an English report and one IRC. Also received pocket calender, stickers, and program schedules. Station address: External Relations, Ave. Eng. Duarte Pacheco, 5 1000 Lisbon, Portugal. (Fraser Bonnett, Kettering, OH) (Kenneth D. MacHarg, Jeffersonville, IN)

Senegal

6WW, Maritime Service, 8992.5 kHz. Full data station letter, without verification signer. Received in 65 days for a French utility report, two IRCs, and souvenir stamps. Station address: Le Chef Des Stations Interarmees Des Transmissions De Yeumbeul et de Rufisque, B.P. 3024, Dakar, Senegal, Africa. (Bob Combs, Campbell, CA)

Vatican City

Radio Vatican, 6150/9605 kHz. Full data color card of Pope John Paul II, without verification signer. Received in 65 days for an English report. Station address: Vatican City, Vatican City State. (Robert L. Landau, Secaucus, NJ) (Fraser Bonnett, Kettering, OH)

Venezuela

Radio Rumbos, 4970 kHz. Full data QSL card. Verification signer, A. Serrano. Received in 139 days for a Spanish report, two IRCs, and souvenir stamps. Station address: Apartado 2618, Caracus 1010A, Venezuela. (Bob Combs, Campbell, CA) (Kenneth MacHarg, Jeffersonville, IN)

YVTO, 6100 kHz. Full data QSL card. Verification signer, Cn. Pedro Pablo Leon. Received in 33 days for a Spanish report, two IRCs, and souvenir stamps. Station address: Observatorio Naval Cagigal, Apt. 6745 Armada 84-DHN, Caracas 103, Venezuela. (Bob Combs, Campbell, CA)

Zaire

Banana Radio, Maritime Service, 8445 kHz. Full data station letter. Verification signer, Masudi Ketenca. Received in 93 days for an English utility report, two IRCs, and souvenir stamps. Station address: Regie des Voices Maritmes, Le Chef de la Station, B.P. 5, Banana, Zaire, Africa. (Bob Combs, Campbell, CA)

Jack Albert

203 York Place
New Lenox, IL 60451

RTTY on the Run

With the summer months upon us, I'm sure you'll be doing some traveling for that one or two week get-a-way. When I travel, I always pack my Sony ICF-2010. In fact, my Sony has traveled from Monterey, California, to Yellowstone National Park and southeast to Daytona Beach, Florida.

It fits well in my attache case, and it goes with me to work every day. While my co-workers and I are doing our paperwork, they listen to "rock-and-roll" or "Oldy Moldies." I, on the other hand, like to monitor NASA on 20.195 MHz. (There's plenty of activity during nonshuttle periods.)

I just purchased a new "mini" van and I already have my "antenna farm" option installed. I also have 12 volt outlets for my "Ham" rig and the ICOM R71 receiver. I will soon have a Universal M7000 running on battery and the TVM-96-2 Koyo video monitor (which is shown in the Universal SW catalog) will be converted to 12 volt operation as well. I'll show you how I did it in a future issue of *Monitoring Times*.

When you are traveling, you really don't need to pack along the M7000, a computer, a video monitor, an "all mode" TNC, or your complete station. You only need a receiver and a tape recorder. This method is "hit and miss" because you will record the signals and then play it back when you return home.

The problem is, you don't know if you are copying encrypted RTTY or if the tones are correct. But if you are good, you'll be able to recognize the baud rate and the approximate tones without a tuning aid. Because a RTTY station produces a distinct cadence, I can tell when they are sending RYs.

For example, when I was in Ocala, Florida, I was able to copy GLF22 on 14.355 (USB) sending RYs, using 50/425 (shift and baud). I recorded it and played back (when I returned home) into the M7000 and obtained a good copy. I also recorded an ARQ-E3 on 13.310 and a SITOR mode B station on 8.0501 which I believe is WLO (the AT&T ship to shore) in New York.

I had problems with both stations because the M7000 wouldn't stay synched to the taped signal. I think it was caused by the tape recorder's inability to maintain a perfect tape speed. It's important that you use a good quality tape recorder because the tape speed will affect the tones and the RTTY baud rate. Standard Baudot RTTY can tolerate a slight change because it uses a synchronous data.

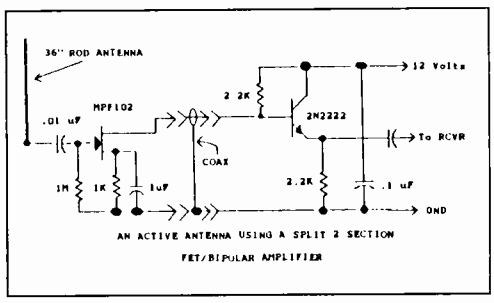
Other stations were the USIA on 10.2387 using 85/75 (while I was in Lexington, Kentucky), TASS on 14.9 using 50/425 and a very strong signal on 14.6362 (which was some sort of news agency) using 75/450. These were copied in Ocala, Florida, while I was visiting my "OM" (Old Man).

The picture shows my portable setup on the seventh floor veranda of the Royal Plaza Motel in the Walt Disney Resort near Orlando, Florida. The black box below the 2010 is the Burhans VLF converter and my home bred active antenna is barely visible behind the receiver. The antenna's base is made from PVC pipe.

In the "Magic Kingdom," I had fairly good copy on VLF but the HF bands were less than adequate. The French RTTY station on 15.1 kHz came in very good when the active antenna was held at a 45 degree angle from the railing of the veranda. The tape recorder is a General Electric model 3-5160A. I also copied RTTY in Daytona Beach while basking in the sun. Don't forget the suntan lotion!

You can also log your intercepts by simply jotting them down on a pocket note pad! Just enter the frequency, mode (RTTY, FDM, SITOR, mode A, or ARQ-E3), and the signal strength if your receiver has a meter. Again, if you are a veteran listener, you should be able to distinguish the modes.

When it's the wife's turn to drive, I just sit back in the passenger's seat and with the Sony in hand and my headphones on, logging signals. I use a Larson 2 meter 5/8 wave magnetic mount antenna with an F.E.T. amplifier (shown) for mobile reception. When we return home, I usually rush into the shack and try to copy the logged intercepts.



AN ACTIVE ANTENNA USING A SPLIT 2 SECTION FET/BIPOLAR AMPLIFIER

Over the past several years I have logged signals from all over the U.S.. I copied RTTY in far-away places such as Tuba City, Arizona, and Mexican Hat, Utah! I copied signals from Yellowstone to Washington, D.C.. My listening post included places like Carmel Beach, California, and Mt. Evans, Colorado (at 14.264 feet).

I can't fit the whole list in this article, but hopefully you'll get the idea. In all of my travels I have never heard signals as strong as they were in Lexington, Kentucky. Just about every RTTY station lit all ten LEDs on the Sony 2010. When I retire, guess where I'll move to! NNNN

Bedford Pennsylvania

9-8-88 12.25 a.m. EST

FREQ	MODE	LEVEL	NOTES
8.0547	PICCOLO	5	1 Chnl
8.3187	FDM	2	
8.5062	FDM	2	
8.5382	RTTY	6	
8.5422	RTTY	8	
8.9970	RTTY	8	
9.0892	RTTY	8	
9.1263	RTTY	9	
9.1334	FDM	9	SAME AS 10.309
9.2136	FDM	9	

Vienna, Virginia

9-8-88 10.55 p.m. EST

FREQ	MODE	LEVEL
7.9145	RTTY	8
8.4958	MORSE	9
8.6972	RTTY	5
9.150	RTTY	2
9.514	FAX	5
9.1903	RTTY	3
9.199	RTTY	4
9.210	RTTY	10

Lexington, Kentucky

9-13-88 9:08 a.m. EST

FREQ	MODE	LEVEL	NOTES
4.290	RTTY	10	
4.796	FDM	9	IDLE
5.079	RTTY	8	
5.800	RTTY	8	ENCRYPTED
6.326	MORSE	10	WNU32
6.395	RTTY	6	
6.501	RTTY	10	MARINE
6.7435	RTTY	10	
6.718	USB	1	QUEBEC
6.877	FDM	6	
6.975	RTTY	9	
7.334	RTTY	10	
7.335	AM	10	WRNO
7.455	RTTY	10	
7.732	FDM	4	IDLE
8.350	SITOR	10	
8.491	FEC	6	
8.630	MORSE	9	WCC
8.690	MORSE	9	CQ KLA
9.125	RTTY	1	RYs
9.286	FDM	3	
10.119	FDM	2	
10.305	FDM	2	
10.345	FDM	3	
10.709	RTTY	10	
10.904	FDM	6	

Ken Reitz, KC4GQA

Route 5, Box 156A
Louisa, VA 23093

"And now the weather ..."

Everything we do seems to hinge on the weather, particularly when it's the weekend. Even if we had all the gear needed to receive GOES weather satellite pictures, we'd still need expert interpretation.

There are several places to which a dish owner can turn for the national weather picture. Among these are The Weather Channel (G3,13), A.M. Weather (W4,17), RFD-TV (S1,23), and CNN (G1,7).

The king of them all is The Weather Channel. It is a 24 hour/day, slickly produced, computer enhanced, thoroughly blow-dried, and heavily commercialized unending weather report.

Low Budget Weather Channel

In shocking contrast is A.M. Weather, produced by Maryland Public Television and airing in 15 minute segments (from 6:45 a.m. to 9:45 a.m. EDT). A.M. Weather is populated by real meteorologists who have clearly not been the subject of a sponsor's focus group.

The on-air staff is forced to do a brisk businesslike presentation in an effort to cram all that they can into such a brief time. The result is that the A.M. Weather folks act like they're all double parked outside and finish the 15 minutes almost breathless.

Meanwhile, over at The Weather Channel, they're grappling with the opposite problem: how to fill twenty-four hours (a mere 96 to 1 ratio of Weather Channel to A.M. Weather.

Weather For The Moment

What to do? Well, first fill up half the time with commercials. You've seen these before: porcelain plates of Elvis, Hong Kong models of Rolls Royces, plastic kitchen jim-cracks ("It slices, it dices, it's virtually worthless!). Next load up on questionable weather connections for features such as: "Weather and Your House," "Weather and Your Pet," "Weather and Your House Plants," "Weather and Your Elvis Plates."

Want a more in-depth weather forecast than is provided by your local TV station? Here are your options.

The on-air staff is nearly too numerous to count. They're all graduates of the "Broadcast News" school of pretty personalities. The women are heavily rouged and the men are heavily moussed.

All except for John Hope. He is the elder statesman of The Weather Channel, whose white-haired, mustachioed presence lends real credibility to the channel. Hope is a retired meteorologist from the National Hurricane Center in Miami. The only trouble is he's only there during the hurricane season.

The Weather and Moo

In between these two are RFD-TV and CNN. CNN has no more to offer than your local over-the-air weather report. In fact, it has less, since it doesn't have your local weather. But RFD-TV is different. Don't look here to find out whether you should wear your chinos or your dockers to the club. RFD-TV weather is for real people whose farm mortgages depend on decisions made after watching the weather.

Great detail is given to items like soil moisture content levels, amount below average rainfall, and so on. This is serious weather forecasting and a good way for a nonfarmer to try to understand what's happening in agricultural America. This could also be an excellent channel for the sophisticated investor with interests in the commodity markets.

Satellite TV Basics Revisited

Worldwide communications satellites are lined up over the earth's equator at a distance of 22,300 miles in what is known as the "Clarke Belt", so named for the writer/scientist Arthur C. Clarke, who in 1945 put forth the idea that satellites in such an orbit could cover the whole planet for communications purposes.

These satellites travel at such a speed as to appear not to move. This is called geosynchronous orbit. Signals from the ground are sent to the satellite (uplinked) at one frequency and sent down (downlinked) at another. Most cable programming satellites operate in the C-band (3 GHz) while some new birds use Ku-band (12 GHz) or both.

This signal, at an output of somewhere between 4 and 40 watts, is beamed to the earth in a certain pattern (called a footprint) which covers a prescribed area of the earth. Locations near the center of the footprint will get higher signal levels than those toward the edge. Thus, people living in the center of the U.S. can get away with using much smaller C-band dishes than those on the edge.

These "dishes" are parabolic reflectors whose task it is to reflect as much of the captured signal into the wave guide of the feedhorn and into a Low Noise Amplifier (LNA) to be converted downward in frequency to something the receiver in the house can handle.

Satellite TV Takes Off

Over the past 11 years, 18 domestic satellites have crowded into the Clarke Belt above North America providing some 432 transponders. The result is hundreds of channels of video, over a hundred FM audio subcarriers, and countless telephone, SCPC, data, and similarly specialized narrow band transmissions.

Meanwhile, the burgeoning technology of the ever-present microprocessor has aided the TVRO industry immeasurably. Clunky "Model T" home dish systems which sold for $36,000 in 1979 are outclassed by systems smaller and superior in every way and costing anywhere from $500 to $2000. Indeed, systems made today are so simple and well designed that average folks can even do their own installations.

Changing for the Better

What has emerged recently is a future for satellite television. From a technological point, TVRO systems have never been better. From a programming point, there are more channels up and running now than three years ago.

Competition in the programming market place has resulted in ever cheaper subscription rates. There are all the same programs available on TV plus over one hundred channels not available "over the air" or through cable. In addition, we can tune in crystal clear FM signals from all over North America or enjoy the more esoteric facets of the hobby such as SCPC (single channel per carrier) reception.

With your dish and even the slightest effort you can find something you've never seen or heard before on any day.

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R2000 $649.95 + $10 UPS

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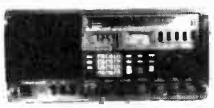
FRG9600 VHF/UHF General Coverage Receiver. 60-905 MHz. 100 Memories. **FRG9600 $529.95** + $6 UPS

GRUNDIG



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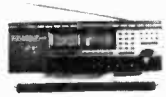
PRO80 $399.95 + $4 UPS

MAGNAVOX



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

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Larry Miller

P.O. Box 98
Brasstown, NC 28902

Houston's *Outrageous* Radio

> John Lander of KKBQ (FM 92.9) promised $50.00 to anyone who showed up at the opening of the Sam Houston toll road with underwear on their head. The result was what *The Houston Post* called a "massive" traffic jam. Lander also gave out St. Patrick's Day "Leprecondoms" and later held a "John Tower Happy Hour" at a local club.

> KRBE (FM 104.1) morning DJ Glenn Beck offered $1,000 to anyone who could send a raw egg intact through the U.S. mail. The contest ended abruptly when the U.S. Postal Service issued a "cease and desist" order because cracked eggs were gumming up the sorting machinery.

> Offended by disparaging remarks about Houston reportedly made by controversial television talk show host Morton Downey Jr., KLOL (FM 101.1) disc jockeys Mark Stevens and Jim Pruett organized a "moon-in." More than 600 loyal listeners showed up at lunch time to dutifully bare their behinds on cue for the camera.

A Manic Market

Consider the facts about the Houston market: In 1984, KKBQ sold for $36 million. In 1986, Majic 102 (KMJQ) went for $65 million. And analysts estimate that the combo of KLOL-FM and KTRH-AM would command over $80 million if it were for sale today, which it isn't.

At any of these stations, an increase of one single rating point will bring in $1 million in additional revenue. There are 32 commercial radio stations in Houston. Not surprisingly, competition is fierce.

"We need to get attention and cut through the clutter," says KLOL general manager Patrick Fant. "If we're controversial, we're cutting through the clutter."

Frank Newport, vice president of the Houston office of the Gallup Organization and a specialist in radio research agrees. "A station," he says, "defines itself in terms of age and gender and does what is necessary to deliver them. It doesn't take great research ability to figure out that an 18 to 34 year old male audience wants to talk about sex."

Sex, it seems, is one of two things that bothers the FCC. For ten years, the Federal Communications Commission applied a rather narrow definition of indecency, relying on comedian George Carlin's "Seven Dirty Words" monologue for guidance.

In 1987, however, under pressure from conservative groups, the Commission put stations on notice that anything depicting sexual or excretory activity in terms that are "patently offensive as measured by community standards" is barred from the airwaves.

According to Roger Holberg, a supervisory attorney in the FCC's enforcement division, the bureau last year received some 30,000 individual complaints about offensive material on the air. Fewer than 100 included a transcript or tape, evidence necessary to determine whether the material was "patently offensive."

"If we're called upon to defend ourselves, we can do it," says Fant. "But it's almost 1990... We're really a mirror of what adults say to each other." Adds Beck, "You don't make a million a year because you're a nice guy. You do whatever it takes to get those ratings."

Houston Post/Bruce Bennett

DJ's Jim Pruett and Mark Stevens staged a moon-in in Houston's outrageous radio war.

Dangerous Times

The news business can be dangerous to your health. According to The Committee to Protect Journalists, 24 journalists around the world were killed in 1988 and more than 90 were physically assaulted in the line of duty. Afghanistan was found to be the most dangerous beat with four newsmen -- one each from Japan, Norway, Pakistan and the Soviet Union -- killed there.

At a recent meeting, the FCC created an opportunity for as many as 200 new FM stations across most of the country. The new Class C3 stations, using up to 25 kW of power and antennas of up to 100 meters above average terrain, could be placed in communities where more powerful Class C2 stations would cause interference and less powerful class stations would be economically unfeasible.

A new satellite-delivered format targetted to small and medium-market stations will make its debut next month. For between $1,000 and $1,200 a month, stations will be able to select from Braiker Radio Services's adult contemporary, contemporary hit, oldies, or country formats.

A fifth format, called *Megaformat*, is expected to target adults age 30 to 50 and "recall the same excitement as when the medium allowed *The Lone Ranger* to ride right through the living room." Braiker expects to have 125 to 150 stations signed on by year's end.

Motorola has announced that 1470-WMBD in Peoria, Illinois, was the 500th station to use their C-QUAM AM Stereo broadcast system. According to the manufac-

turer, C-QUAM now out-numbers any competing AM stereo system "by a ratio of approximately 20 to 1 world-wide."

George Biggar, part of WLS's famous broadcast of the *Hindenburg* disaster, died recently at the age of 90. Biggar began his career at WLS in 1924.

New Station Grants

California: 107.9-Greenfield, 97.9-Salinas and 98.7-Winton, **Florida:** 105.5-Key Colony Beach, **Georgia:** 101.9-Cleveland, **Indiana:** 107.9-New Haven, **Maine:** 107.3-Old Town, **Missouri:** 97.1-Frostburg, **New York:** 90.3-Elmira, **North Carolina:** 102.5-Louisburg, **Oklahoma:** 99.7-Commerce, **Washington:** 740-Buckley, **West Virginia:** 92.5-Danville, **Wyoming:** 107.3-Kemmerer.

For Sale

Listed as a "Good Starter Station" is a Class A FM in Arkansas. The price is $360,000 and they want $173,000 down. For more information contact Terry Barnhardt at 404-534-0780. A well-equipped AM-FM combo in Iowa is going for $800,000. Contact R.E. Meador & Associates at 816-259-2544. There's an Alabama AM station available for $50,000 down. It's in a "small but active market." Broker John Hutson says it's a "good first station." If interested, call him at 704-274-8667.

Be an American BandScan Reporter. *See any stories about radio in the local paper? Send them to Monitoring Times, P.O. Box 98, Brasstown, NC 28902.*

International BandScan

● There's a new AM on the air in Dominica. *Downlink* says that 860-The Voice of the Island is on the air from 1015 to 0300 UTC. ● 640-Radiodiffusion Francaise D'Outre-Mer is now 24 hours a day. ● Anker Petersen says that he heard a new station on 1450 kHz IDing as "Radio Cachomay..." Based in Venezuela, it "probably" has a 24 hour schedule and "must be" at least 10,000 watts.

● Radio Gaucha in Port Alegre/Gauche River, Brazil, uses a 230 meter tower, the highest in Brazil. It runs 100 kW on 600 kHz. ● 1602-El Dakhla, Egypt, is running 10 kW. ● All Norddeutscher Rundfunk AM transmitters in West Germany now carry new NDR4 programming. ● Iran's 1539 kHz transmitter at Irib Khash has been carrying the external service in English at 1930 UTC.

● The 100 kW Voice of Kenya, Mombasa, has moved from 1017 to 1080 kHz.

● Portugual is reportedly cracking down on its pirates. Those caught will be disqualified from applying for a commercial license. ● 1296-Raybah, Sudan, is requesting reception reports. The address is P.O. Box 572, Omdurman. ● 1197-Radio Sweden is now broadcasting in Eskimo 1755 to 1800 and 711-Radio Tanzania, Mahembe, is testing from 0600 to 1500 UTC.

Credits and thanks to: *Broadcasting,* Fred Chesson, *Downlink,* Malcolm Kaufman, *The Houston Post* via Marty Blaise, Arnold Lawton, *M Street Journal,* Alan P. Masyla, Graham Maynard, Ross Miller, *Medium Wave News, Radio World.*

Dr. John Santosuosso

P.O. Box 1116
Highland City, FL 33846

The Voice of Communism

In the realm of things less mysterious, tapes of an old pirate quite active a few years ago are being heard again. This is the Voice of Communism, which also identifies as the Voice of Democracy. It was logged by this writer on 6275 kHz at 0423 with a program of comedy songs and skits, some of which would probably be X-rated.

Despite its name, the Voice of Communism is not pro-Marxist or anything of the sort. It became famous for parodies on Radio Moscow and life in the Soviet Union. Some of its efforts did show a good deal of creativity.

Whether recent loggings of this one are an effort by the station to reactivate, or this is just someone playing old tapes is not clear at the present time. The frequency of 6275 might be worth watching.

VOC used to receive some mail via the now closed Battle Creek, Michigan, maildrop. However, to the best of our knowledge, it never responded to any of it or QSLed any reports. Currently there is no way to contact the station.

Catch a Falling Star

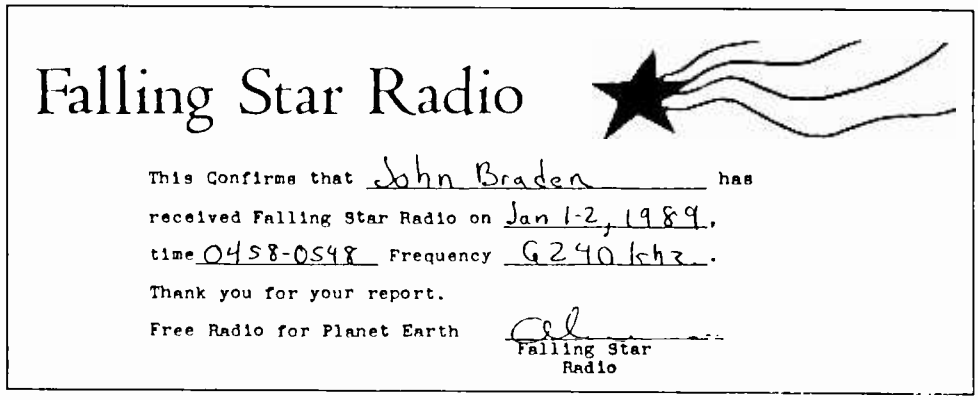
Falling Star Radio continues to be one of the more widely heard pirates around these days. Loyal contributor, Steve Rogovich of Virginia, heard them on 6240 kHz from 0457 to sign-off at 0527 UTC. In Massachusetts, John Braden logged them on the same frequency from 0458 to 0548 UTC.

John also reports receiving a QSL for a report sent to P.O. Box 1659, Gracie Station, New York, NY 10028 address. This writer can also claim to be a pleased recipient of a recent Falling Star QSL.

This does appear to be a station which is sensitive to current social and political issues. Previous broadcasts have made appeals for aid to Armenian earthquake victims. Steve notes the broadcast he monitored had the overpopulation of planet Earth as its theme.

You might also hear Falling Star reading letters from listeners, playing old Beatles tunes, or signing off with the famous William Tell overture. Old timers, such as this writer, may recall that was the theme song of the Lone Ranger.

Does Falling Star see itself as a "Lone Ranger" seeking to defend and protect those in need of help? Stay tuned to 6240. It could prove interesting.



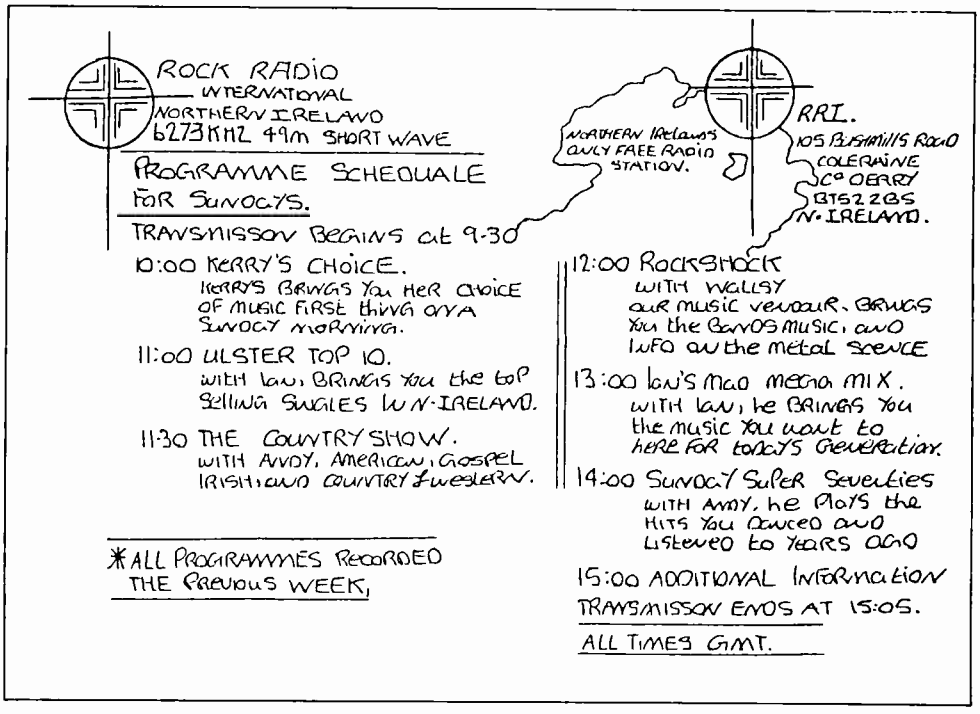
North of the Border

In British-controlled Northern Ireland there is one known active pirate. This is Rock Radio International, which began transmitting in December 1988 with 200 watts on 6272.5. It has already been logged at 0925 UTC and verified by our Europirate expert Gregg Bares of Connecticut. The station claims to be on "the North Coast of Northern Ireland." Gregg sent along a copy of the station schedule, which is reproduced here.

Gregg also logged and QSLed 65-watt Radio Pandora International on 6820 kHz. Since this one is in the Irish Republic, chances are it is no longer active. Still, it might be worth a try.

WENJ Active

Yes, WENJ is still quite active. John Braden also managed to log and QSL this one. He heard WENJ on 7415 kHz at 2020 UTC with announcer Jack Beane and the show "J Rock USA." The station announces a phone number, but written reception reports can be sent to P.O. Box 5074, Hilo, Hawaii 96720. Judging from the mail we have been receiving, WENJ must be considered an excellent verifier.



A number of "Outer Limits" readers report replies.

WJDI Inactive

We were advised by the operator of this 1620 kHz pirate that he would be inactive for a while. However, by the time you read this, there is a good chance he will have returned to the air. WJDI is another excellent verifier. New York's Jim Hayes recently received the very detailed QSL and photograph which WJDI sends to monitors. Reports can be sent to P.O. Box 142, Cottekill, NY 12419.

...And A Complaint

Pirate chaser Fraser Bonnett of Ohio laments his recent lack of pirates after considerable success a few months ago. He notes something like a buzzsaw around 0200 on 7415 kHz on weekends. Is this FAX or RTTY? Is anybody else hearing it? That frequency is normally a popular one for weekend pirates.

Numbers, You Say?

Along with his pirate logs, John Braden sent some numbers catches. He reports an interesting station on 6770 from 2010 to 2015. The woman announcer used German numbers in five-digit groups, which were repeated. John says she had an accent, but it was neither German nor American. She also used "zero" rather than "null," which is the usual German usage.

French numbers stations are not very common, but John thinks he may have heard one on 6840 from 2028 to 2031. This one had a man announcer and five-digit groups.

Finally, we swear that the story you are about to hear is true. Only the names have been omitted to protect the guilty. An "Outer Limits" reader writes, "My son, age eight, was playing with his buddies. They had walkie-talkies and were playing 'spies.'

"From under the dining room table I hear '5-2-3 6-8-7 1-1-4.' I looked under the table. My kid was sending out spy numbers! And his friend was returning the message with Spanish Numbers!!"

Now do you suppose a couple of eight-year-olds have cracked shortwave's greatest mystery? Hmmmmmm.

Radio for Peace International

Radio for Peace International is not exactly a clandestine, but the sponsorship of the station has always been somewhat ambiguous, and the programming often has the sound of 1960s rhetoric. All in all, it makes for some quite fascinating listening.

The rather low power and frequency selection have not always made this an easy station to monitor for an extensive period of time, despite the fact it was not difficult to log and identify. However, RFPI now can be heard in the clear on 25945 kHz around 2100 UTC.

Radio for Peace International is located in Costa Rica. The tolerance and democratic government of that country have made it, over the years, the home of several unusual broadcasters. Those active in the hobby a few years ago may remember the leftist Radio Noticias del Continente which survived several attacks, including a bombing, by its opponents until even the government lost patience with it and finally shut it down.

That's it for this month. Remember, your logs, copies of QSLs, and other news are always needed and appreciated.

Joe Woodlock

P.O. Box 98
Brasstown, NC 28902

What can I do when the season is through?

We are now coming into the down season for low frequency listening. You can either fold everything up and put it away, or you can try to improve techniques in order to do better when things start perking up again in the fall.

If you want to follow the latter path, one good way is to learn code (CW) so you can decipher those beacons you hear.

We're hearing a lot of comment about eliminating code as a requirement for amateur licenses. This may happen. Coastal stations may move to RTTY, exclusively. But Morse code will not likely disappear from the low frequency beacons.

Presently there are more sophisticated (and more expensive) alternatives to the direction finding methods of the low frequency beacons. But these are beyond the price limits of many private plane and pleasure boat owners.

Add in the fact that CW requires less frequency space per transmitter and that it reaches out further than voice. Yes, CW will be with us for a while.

You don't even need a radio to start learning code. It consists of just a few basic sounds in different combinations. You can simulate these sounds by saying them aloud.

There are two of them in Morse Code, sound and space. Space is the silent period between sounds. There are only two different sounds: the dot (or dit in sound) and the dash (or dah in sound).

Although the dit sound is always the same from the key, our ears perceive it differently when it is followed by a short or long space. We hear it as di when another dit or dah follows it immediately, and as dit when it comes at the end of a letter.

Actually, the space between the dits and dahs of a letter are equal to a dit. The space between letters is equal to a dah.

All you really need for identifying beacons is the letters and numbers. The other punctuation can be learned at some later date. In fact, the numbers are only really needed for private Canadian beacons which combine a letter and a number. Try saying these out loud to yourself. Then try listening to some beacons in the range 194 to 400+ kHz.

Does this system work? It worked well enough for one beacon DXer to learn enough code to get his ham license. It may sound a little odd, but you'll be amazed at what a little practice will do to teach you Morse Code.

Montauk Point Follow Up

Last month I discussed the testing of the Montauk Point beacon on a new frequency of 293 to see if it would interfere with the Breton Reef Light beacon on 295. Now comes word that the tower of the Breton Reef beacon needs substantial repair work.

Instead, the Breton Reef light will eventually be placed on a new base that will not include a tower. The beacon will be moved to another location a few miles away.

There is no schedule date for the replacement of the tower or the relocation of the beacon. Because the new location is not far away, the test for interference will likely still be quite valid.

The rapid growth and development of radio, television, higher frequencies, and satellites have obscured the fact that over 60 years has passed. An aging process has also been taking place. Suddenly we have "old" radio towers and equipment that is decaying. In a way, I think we expected them to last forever, just like the movie stars of our youth.

Mea Culpa

I stand corrected on marine CW below 435. Bob Curtis of Colchester, Vermont, points out that VFN still operates on 420 and he has heard ships working that marine station on 425. Bob also mentions that the Canadian Coastal scheduled broadcasts below 435 are listed in the Canadian Coast Guard's Radio Aids to Marine Navigation.

That's what happens when one falls victim to the parochial thinking that if "I" can no longer hear any coastals in this frequency band, they all must have moved to other frequencies. So those of you within range of VFN and other Canadian coastals, there is still some marine CW to shoot for under 435 kHz.

Chicago Thoughts

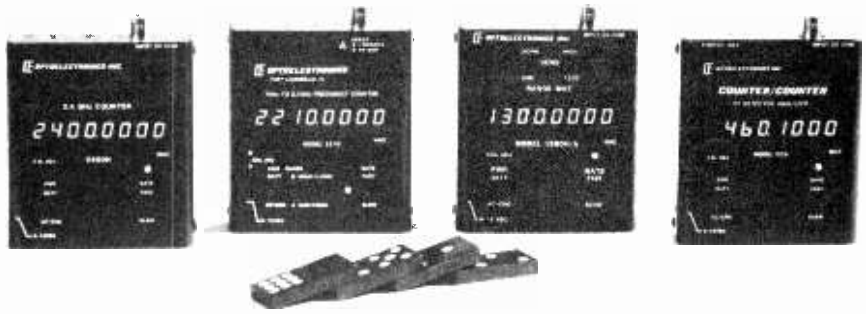
Having just returned from a weekend get together of the Chicago Area DX Club, I would like to pass along one item that came up for a lot of discussion. Where are the future members of the radio hobby family going to come from? We've all had our share of uninformed comments from friends, relatives, and acquaintances. Perhaps, if some of these people really knew a little bit about the hobby, they might be interested in pursuing the hobby themselves.

The question we could ask ourselves is "What have I done this week (or this month or whatever) to help radio stay alive and healthy by introducing it to new people who might like the hobby?" Think about it.

THE MORSE CODE

A . _	di-dah	M _ _	dah-dah	Y _ . _ _	dah-di-dah-dah
B _ . . .	dah-di-di-dit	N _ .	dah-dit	Z _ _ . .	dah-dah-di-dit
C _ . _ .	dah-di-dah-dit	O _ _ _	dah-dah-dah	1 . _ _ _ _	di-dah-dah-dah-dah
D _ . .	dah-di-dit	P . _ _ .	di-dah-dah-dit	2 . . _ _ _	di-di-dah-dah-dah
E .	dit	Q _ _ . _	dah-dah-di-dah	3 . . . _ _	di-di-di-dah-dah
F . . _ .	di-di-dah-dit	R . _ .	di-dah-dit	4 . . . . _	di-di-di-di-dah
G _ _ .	dah-dah-dit	S . . .	di-di-dit	5	di-di-di-di-dit
H	di-di-di-dit	T _	dah	6 _	dah-di-di-di-dit
I . .	di-dit	U . . _	di-di-dah	7 _ _ . . .	dah-dah-di-di-dit
J . _ _ _	di-dah-dah-dah	V . . . _	di-di-di-dah	8 _ _ _ . .	dah-dah-dah-di-dit
K _ . _	dah-di-dah	W . _ _	di-dah-dah	9 _ _ _ _ .	dah-dah-dah-dah-dit
L . _ . .	di-dah-di-dit	X _ . . _	dah-di-di-dah	0 _ _ _ _ _	dah-dah-dah-dah-dah

OPTOELECTRONICS



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450 MHz	< 3 mv	< 5 mv	< 3 mv	< 1 mv	< 5 mv
850 MHz	< 3 mv	< 20 mv	< 5 mv	NA	< 5 mv
1.3 GHz	< 7 mv	< 100 mv	< 7 mv	NA	< 10 mv
2.2 GHz	< 30 mv	NA	< 30 mv	NA	< 30 mv

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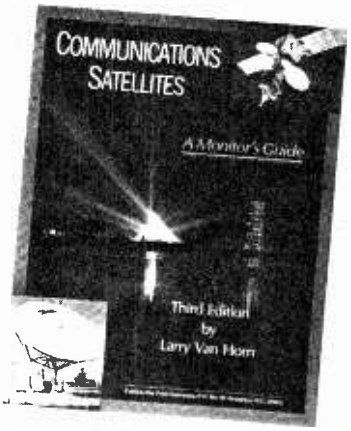

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program guide

MT Program Team

Kannon Shanmugam, Program Manager
4412 Turnberry Drive
Lawrence, KS 66046

Jim Frimmel, TX

Dale Vanderpoel, FL

Sunday

June 4, 11, 18, 25

0008 Radio Canada Int'l: SWL Digest. Ian MacFarland presents DX news and features.
0011 Radio Moscow (World Service): News and Views. Soviet views on news developments.
0030 BBC: Composer of the Month. Profiles and music of famous composers.
0030 Radio Canada Int'l: Music Spot. The latest in popular music.
0032 Radio Moscow (World Service): Music. Music selections played by Radio Moscow staff.
0037 Radio Netherlands: Newsline. News analysis from correspondents worldwide.
0038 Radio Canada Int'l: Spotlight on Science. The latest developments in science and technology.
0052 Radio Netherlands: Over To You. A listener contact program with Barry O'Dwyer.

Staff members at Radio Canada International (from left): Francoise Borel (Listeners' Corner) and Aldo Marchini of the English Service, and Mathieu Poulin and Gisele Deraspe of the French Service.

0101 BBC: Play of the Week. Hour-long drama selections.
0108 Radio Canada Int'l: Innovation Canada. A look at CanadaUs new ideas and technological developments.
0109 Deutsche Welle: Commentary. Opinion on current issues.
0111 Radio Moscow (World Service): Science and Engineering. Developments in Soviet science and technology.
0113 Deutsche Welle: Sports Report. The latest news from the world of sports.
0117 Deutsche Welle: Mailbag/ To The Top/ Checkpoint. Rotating features and music programs.
0130 Radio Canada Int'l: Music Spot. See S 0030.
0132 Radio Moscow (World Service): Music. See S 0032.
0138 Radio Canada Int'l: SWL Digest. See S 0008.
0139 Deutsche Welle: German By Radio. A German language course for English speakers.
0209 BBC: British Press Review. Survey of editorial opinion in the British press.
0209 Deutsche Welle: Commentary. See S 0109.
0211 Radio Moscow (World Service): Perestroika. Insight on where the Soviet Union is going.
0213 Deutsche Welle: Sports Report. See S 0113.
0215 BBC: Reading. A serialized story or novel, as adapted for radio.
0216 Deutsche Welle: Asia In The German Press. A look at what German papers and weeklies have to say about Asia.
0223 Deutsche Welle: Mailbag Asia. Answers to listeners' queries, musical requests, and the club corner.
0230 BBC: The Ken Bruce Show. A mix of popular music and entertainment news.
0232 Radio Moscow (World Service): Russian by Radio. Lessons in Russian for English speakers.
0300 Radio Canada Int'l: Listeners' Corner. Ian MacFarland and Francoise Borel present listener comments and music requests.
0309 Deutsche Welle: Commentary. See S 0109.
0311 Radio Moscow (World Service): Culture and the Arts. A look at the varied arts and cultures of the Soviet Union.
0313 Deutsche Welle: Sports Report. See S 0113.
0315 BBC: From Our Own Correspondent. In-depth news stories from correspondents worldwide.
0317 Deutsche Welle: Mailbag/ To The Top/ Checkpoint. See S 0117.
0330 BBC: Jazz Score. A quiz show filled with jazz questions and anecdotes.
0332 Radio Moscow (World Service): Audio Book Club. The best of Russian classics and contemporary Soviet literature.
0337 Radio Netherlands: Newsline. See S 0037.
0339 Deutsche Welle: German By Radio. See S 0139.
0352 Radio Canada Int'l: Music. Selections by Radio Canada International announcers.
0352 Radio Netherlands: Over To You. See S 0052.
0409 Deutsche Welle: Religion And Society. A roundup of news and developments concerning the world's major religions.
0411 Radio Moscow (World Service): News and Views. See S 0011.
0419 Deutsche Welle: Africa In The German Press. A look at what German papers and weeklies have to say about Africa.
0430 BBC: Globetrotter's Guide To Popular Music. A look at music from a variety of world cultures.
0430 Radio Netherlands: Sunday Spotlight. A look at events and issues affecting Africa over the past week.
0432 Radio Moscow (World Service): Music. See S 0032.
0434 Deutsche Welle: People And Places. A program for Africa with interviews, stories, and music.
0445 BBC: Worldbrief. A 15-minute roundup of the week's news headlines and other events.
0509 BBC: Twenty-Four Hours. Analysis of the main news of the day.
0509 Deutsche Welle: Commentary. See S 0109.
0511 Radio Moscow (World Service): Perestroika. See S 0211.
0513 Deutsche Welle: Sports Report. See S 0113.
0517 Deutsche Welle: Mailbag/ To The Top/ Checkpoint. See S 0117.
0530 BBC: Financial Review. A look back at the financial week.
0532 Radio Moscow (World Service): Russian by Radio. See S 0232.
0539 Deutsche Welle: German By Radio. See S 0139.
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.
0609 Deutsche Welle: Religion And Society. See S 0409.
0611 Radio Moscow (World Service): Mailbag. Answers to listener questions.
0619 Deutsche Welle: African In The German Press. See S 0419.

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 8:01 pm [EDT] 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

0630 BBC: Jazz for the Asking. A jazz music request show.
0632 Radio Moscow (World Service): Music. See S 0032.
0634 Deutsche Welle: People And Places. See S 0434.
0709 BBC: Twenty-Four Hours. See S 0509.
0711 Radio Moscow (World Service): News and Views. See S 0011
0730 BBC: From Our Own Correspondent. See S 0315.
0730 Radio Netherlands: Happy Station. Tom Meyer's family entertainment program with music and letters.
0732 Radio Moscow (World Service): Folk Box. A program for lovers of folk music.
0745 BBC: Book Choice Short reviews of current or future best-sellers.
0750 BBC: Waveguide. How to hear the BBC better.
1109 Deutsche Welle: Arts On The Air. Reports and interviews on major cultural events and developments.
1111 Radio Moscow (World Service): News and Views. See S 0011.
1115 BBC: From Our Own Correspondent. See S 0315.
1130 BBC: Composer of the Month. See S 0030.
1130 Radio Netherlands: Happy Station. See S 0730.
1132 Radio Moscow (World Service): Music. See S 0032.
1134 Deutsche Welle: German By Radio. See S 0139.
1201 BBC: Play of the Week. See S 0101.
1211 Radio Moscow (World Service): Culture and the Arts. See S 0311.
1232 Radio Moscow (World Service): Audio Book Club. See S 0332.
1304 Radio Canada Int'l: Sunday Morning. A three-hour magazine program, covering virtually everything under the sun.
1308 Radio Canada Int'l (Asia/Pacific): Innovation Canada. See S 0008.
1309 BBC: Twenty-Four Hours. See S 0509.
1311 Radio Moscow (World Service): Perestroika. See S 0211.
1330 BBC: Sports Roundup. The day's sports news.
1332 Radio Moscow (World Service): Russian by Radio. See S 0232.
1345 BBC: Worldbrief. See S 0445.
1401 BBC: Feature. Programming on various subjects.
1411 Radio Moscow (World Service): News and Views. See S 0011.
1430 BBC: Anything Goes. Sounds from the BBC archives as requested by listeners.
1430 Radio Netherlands: Happy Station. See S 0730.
1432 Radio Moscow (World Service): Music. See S 0032.
1509 Deutsche Welle: Commentary. See S 0109.
1511 Radio Moscow (World Service): Mailbag. See S 0611.
1513 Deutsche Welle: International Talking Point. A round-table discussion on major trends and events.
1515 BBC: Concert Hall. A program of classical music from the world's great concert halls.
1532 Radio Moscow (World Service): Music. See S 0032.
1534 Deutsche Welle: Pop From Germany. A look at the German pop music scene.
1609 Deutsche Welle: Arts On The Air. See S 1109.
1611 Radio Moscow (World Service): Perestroika. See S 0211.
1615 BBC: Feature. Programming on various subjects.
1630 Radio Netherlands: Happy Station. See S 0730.
1632 Radio Moscow (World Service): Audio Book Club. See S 0332.
1634 Deutsche Welle: German By Radio. See S 0139.
1645 BBC: Letter from America. See S 0545.
2308 Radio Canada Int'l: SWL Digest. See S 0108.
2309 BBC: Book Choice. See S 0745.
2311 Radio Moscow (World Service): Perestroika. See S 0211.
2315 BBC: Letter from America. See S 0545.
2330 BBC: Feature. See S 1401.
2332 Radio Moscow (World Service): Audio Book Club. See S 0332.

Monday

June 5, 12, 19, 26

0008 Radio Canada Int'l: Listeners' Corner. See S 0300.
0011 Radio Moscow (World Service): News and Views. See S 0011.
0030 BBC: In Praise of God. A half-hour program of worship.
0030 Radio Netherlands: Happy Station. See S 0730.
0032 Radio Moscow (World Service): Jazz Show. A jazz music program.
0101 BBC: Opera of the Week. An introduction to opera, with excerpts from several operas.
0108 Radio Canada Int'l: Listeners' Corner. See S 0300.
0109 Deutsche Welle: Commentary. See S 0109.
0111 Radio Moscow (World Service): Mailbag. See S 0611.
0112 Deutsche Welle: Letter from Berlin/Bonn. The tale of two cities as seen by Deutsche Welle correspondents.
0116 Deutsche Welle: Religion And Society. See S 0409.
0126 Deutsche Welle: International Talking Point. See S 1513.
0132 Radio Moscow (World Service): Music. See S 0032.

Gisele Deraspe and Wojtek Gwiazda host the French and English versions of Innovation Canada on Radio Canada International.

0145 BBC: The Baroque Concerto. A look at the development of the concerto during the early 18th century.
0209 BBC: British Press Review. See S 0209.
0209 Deutsche Welle: Morning Magazine. A magazine program with background information on major world events.
0211 Radio Moscow (World Service): Inside Report. A look at the present-day issues and events in the Soviet Union.
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.
0234 Deutsche Welle: Science And Technology. New scientific and technological developments.
0245 Radio Moscow (World Service): Your Top Tune. A quiz show featuring popular music.

NEWS GUIDE

This is your guide to news broadcasts on the air. All broadcasts are daily unless otherwise noted by brackets. These brackets enclose day codes denoting days of broadcast. The codes are as follows:

S= Sunday
M= Monday
T= Tuesday
W=Wednesday
H= Thursday
F= Friday
A= Saturday

We invite listeners and stations to send program information to the program manager.

0000 BBC: Newsdesk
0000 Kol Israel: News
0000 KVOH: UPI Radio News
0000 KYOI: News [M-F]
0000 Radio Australia: International Report
0000 Radio Beijing: News
0000 Radio Canada Int'l: News [S-M]
0000 Radio Moscow: News
0000 Spanish National Radio: News
0000 Voice of America: News
0000 WCSN: News [T-F]
0010 Radio Beijing: News About China
0030 KVOH: UPI Headline News
0030 Radio Kiev: News
0030 Radio Moscow (World Service): News in Brief
0030 Radio Netherlands: News [T-S]
0030 Voice of America (Special English): News
0030 WCSN: News [T-F]
0045 Radio Berlin Int'l: News
0051 Spanish National Radio: News Summary [S]
0100 BBC: News Summary
0100 Deutsche Welle: World News
0100 Kol Israel: News
0100 KVOH: UPI Radio News [T-A]
0100 KYOI: News [M-F]
0100 Radio Australia: World and Australian News
0100 Radio Berlin Int'l: News
0100 Radio Canada Int'l: News [S-M]
0100 Radio Japan: News [M-A]
0100 Radio Moscow: News
0100 Radio Prague: News
0100 Radiotelevisione Italiana: News
0100 Spanish National Radio: News
0100 Voice of America: News
0100 WCSN: News [T-F]
0130 KVOH: UPI Headline News [T-A]

program guide

0304 Radio Canada Int'l: L'attitude. No details available at press time.
0309 Deutsche Welle: Commentary. See S 0109.
0311 Radio Moscow (World Service): Top Priority. A discussion and analysis program.
0312 Deutsche Welle: Letter from Berlin/Bonn. See M 0112.
0315 BBC: Good Books. A recommendation of a book to read.
0316 Deutsche Welle: Religion And Society. See S 0409.
0326 Deutsche Welle: International Talking Point. See S 1513.
0330 BBC: Anything Goes. See S 1430.
0330 Radio Netherlands: Happy Station. See S 0730.
0332 Radio Moscow (World Service): Russian by Radio. See S 0232.
0404 Radio Canada Int'l: Coast to Coast. Issues and opinions affecting Canadians.
0409 Deutsche Welle: Morning Magazine. See M 0209.
0411 Radio Moscow (World Service): News and Views. See S 0011.
0430 BBC: Five Stories By Muriel Spark. Five tales by the author Muriel Spark.
0432 Radio Moscow (World Service): Music. See S 0032.
0434 Deutsche Welle: Africa Report. Reports and background to the news from correspondents.
0437 Radio Netherlands: Newsline. See S 0037.
0445 BBC: Nature Now. Information about flora, fauna, and natural resources.
0509 BBC: Twenty-Four Hours. See S 0509.
0509 Deutsche Welle: Commentary. See S 0109.
0511 Radio Moscow (World Service): Inside Report. See M 0211.
0512 Deutsche Welle: Letter from Berlin/Bonn. See M 0112.
0516 Deutsche Welle: Religion And Society. See S 0409.
0526 Deutsche Welle: International Talking Point. See S 1513.
0530 BBC: Waveguide. See S 0750.
0540 BBC: Words of Faith. See S 0540.
0545 BBC: Recording of the Week. A personal choice from the latest classical music releases.
0545 Radio Moscow (World Service): Your Top Tune. See M 0245.
0609 Deutsche Welle: Morning Magazine. See M 0209.
0611 Radio Moscow (World Service): Science and Engineering. See S 0111.
0630 BBC: Feature. See S 1401.
0632 Radio Moscow (World Service): Music. See S 0032.
0634 Deutsche Welle: Africa Report. See M 0434.
0709 BBC: Twenty-Four Hours. See S 0509.
0711 Radio Moscow (World Service): News and Views. See S 0011.
0730 BBC: Feature. See S 1615.
0732 Radio Moscow (World Service): Yours for the Asking. Music as requested by listeners.
0737 Radio Netherlands: Newsline. See S 0037.
0752 Radio Netherlands: The Research File. A science and technology review, covering the latest discoveries and developments.
1109 Deutsche Welle: Newsline Cologne. A current affairs program with worldwide reports and a German press review.
1111 Radio Moscow (World Service): News and Views. See S 0011.
1115 BBC: Tech Talk. What's new in the world of engineering.
1130 BBC: The Ken Bruce Show. See S 0230.
1132 Radio Moscow (World Service): Request Program. Programs featured include "Music at Your Request" and "Listeners' Request Club".
1134 Deutsche Welle: Hallo Africa. Musical requests and greetings to friends.
1137 Radio Netherlands: Newsline. See S 0037.
1152 Radio Netherlands: The Research File. See M 0752.
1211 Radio Moscow (World Service): Top Priority. See M 0311.
1215 BBC: Brain of Britain. THE general-knowledge quiz show of all time, a must listen.
1230 Radio Canada Int'l: North Country. Sports, weather, and the stock market report.
1232 Radio Moscow (World Service): Audio Book Club. See S 0332.
1234 Radio Canada Int'l: Innovation Canada. See S 0108.
1245 BBC: Sports Roundup. See S 1330.
1308 Radio Canada Int'l: Current Affairs. In-depth news programming.
1309 BBC: Twenty-Four Hours. See S 0509.
1311 Radio Moscow (World Service): Inside Report. See M 0211.
1330 BBC: Feature. See S 1615.
1345 Radio Moscow (World Service): Your Top Tune. See M 0245.
1405 BBC: Outlook. An excellent magazine (i.e., covering everything!) program.
1411 Radio Moscow (World Service): News and Views. See S 0011.
1432 Radio Moscow (World Service): Folk Box. See S 0732.
1437 Radio Netherlands: Newsline. See S 0037.
1445 BBC: Reading. See S 0215.
1452 Radio Netherlands: The Research File. See M 0752.
1509 Deutsche Welle: Newsline Cologne. See M 1109.
1511 Radio Moscow (World Service): Science and Engineering. See S 0111.
1515 BBC: Opera of the Week. See M 0101.
1532 Radio Moscow (World Service): Music. See S 0032.

Program presenters at Radio Finland are (from left) Ann Albrecht, Eddy Hawkins, and Joe Brady

news guide cont'd from p.57

0130 Radio Moscow (World Service): News in Brief [S-M]
0130 WCSN: News [T-F]
0149 Radio Veritas Asia: World News [M-F]
0150 HCJB: News [T-A]
0151 Spanish National Radio: News Summary [S]
0152 Radio Veritas Asia: World News [A]
0153 Radio Prague: News Wrap-Up
0155 HCJB: News [S]
0200 BBC: World News
0200 Deutsche Welle: World News
0200 HCJB: News [M]
0200 KVOH: UPI Radio News [T-A]
0200 KYOI: News [M-F]
0200 Radio Australia: International Report
0200 Radio Berlin Int'l: News
0200 Radio Canada Int'l: As It Happens [T-A]
0200 Radio Moscow: News
0200 Radio RSA: News
0200 Swiss Radio Int'l: News
0200 Voice of America: News
0200 Voice of Free China: News and Commentary
0200 WCSN: News [T-F]
0215 Radio Cairo: News
0230 KVOH: UPI Headline News [T-A]
0230 Radio Finland: Northern Report [T-A]
0230 Radio Moscow (World Service): News in Brief [S]
0230 Radio Portugal: News [T-A]
0230 WCSN: News [T-F]
0245 Radio Berlin Int'l: News
0300 BBC: World News
0300 Deutsche Welle: World News
0300 HCJB: News [T-A]
0300 KVOH: UPI Radio News [T-A]
0300 KYOI: News [M-F]
0300 Radio Australia: World and Australian News
0300 Radio Beijing: News
0300 Radio Berlin Int'l: News
0300 Radio Canada Int'l: News [M-F]
0300 Radio for Peace Int'l: News [T,A]
0300 Radio Japan: News [M-A]
0300 Radio Moscow: News
0300 Radio Prague: News
0300 Voice of America: News
0300 Voice of Free China: News and Commentary
0300 WCSN: News [T-F]
0309 BBC: News About Britain
0310 Radio Beijing: News About China
0315 Radio Cairo: News
0330 KVOH: UPI Headline News [T-A]
0330 Radio Moscow (World Service): News in Brief [S-M]
0330 Radio Netherlands: News [T-S]
0330 WCSN: News [T-F]
0350 Radiotelevisione Italiana: News
0353 Radio Prague: News Wrap-Up
0400 BBC: Newsdesk
0400 Deutsche Welle: World News

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1534 Deutsche Welle: Weekend Sport. A review of the major sporting events of the weekend.
1538 Deutsche Welle: Monday Special. An interview or report on an event or development with special relevance for Africa.
1609 Deutsche Welle: Newsline Cologne. See M 1109.
1611 Radio Moscow (World Service): Inside Report. See M 0211.
1615 BBC: Five Stories By Muriel Spark. See M 0430.
1630 BBC: Tech Talk. See M 1115.
1634 Deutsche Welle: Asia-Pacific Report. Correspondents' reports, interviews, and background news from the Asia-Pacific region.
1637 Radio Netherlands: Newsline. See S 0037.
1645 BBC: The World Today. News analysis on a selected location or event in the news.
1645 Radio Moscow (World Service): Your Top Tune. See M 0245.
1652 Radio Netherlands: The Research File. See M 0752.
2308 Radio Canada Int'l: Current Affairs. See M 1308.
2309 BBC: Commentary. Background to the news from a wide range of specialists.
2311 Radio Moscow (World Service): Inside Report. See M 0211.
2315 BBC: Feature. Programming on various subjects.
2330 BBC: Multitrack 1: Top 20. What's hot on the British pop music charts.
2345 Radio Moscow (World Service): Your Top Tune. See M 0245.

Tuesday

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0011 Radio Moscow (World Service): News and Views. See S 0011.
0030 BBC: Megamix. A compendium of music, sport, fashion, health, travel, news and views for young people.
0032 Radio Moscow (World Service): Yours for the Asking. See M 0732.
0037 Radio Netherlands: Newsline. See S 0037.
0052 Radio Netherlands: The Research File. See M 0752.
0101 BBC: Outlook. See M 1405.
0111 Radio Moscow (World Service): Focus on Asia and the Pacific. News and comments on events in the region.
0125 BBC: Financial News. News of commodity prices and significant moves in currency and stock markets.

Warren Moulton of Radio Australia's English Service

0130 BBC: Short Story. Brief tales written by BBC listeners.
0145 BBC: Europe's World. A magazine program reflecting life in Europe and its links with other parts of the world.
0145 Radio Moscow (World Service): Musical Program. A musical feature program.
0209 BBC: British Press Review. See S 0209.
0211 Radio Moscow (World Service): Inside Report. See M 0211.
0215 BBC: Network UK. A look at the issues and events that affect the lives of people throughout the UK.
0230 BBC: Sports International. Feature program on a topic or person making sports headlines.
0245 Radio Moscow (World Service): Music. See S 0032.
0308 Radio Canada Int'l: Current Affairs. See M 1308.
0311 Radio Moscow (World Service): Update. Comments on and in-depth analysis of the latest developments in the world.
0315 BBC: The World Today. See M 1645.
0330 BBC: John Peel. Tracks from newly released albums and singles from the contemporary music scene.
0337 Radio Netherlands: Newsline. See S 0037.
0352 Radio Netherlands: The Research File. See M 0752.
0404 Radio Canada Int'l: Innovation Canada. See S 0108.
0411 Radio Moscow (World Service): News and Views. See S 0011.
0430 BBC: Feature. See M 2315.
0432 Radio Moscow (World Service): Music. See S 0032.
0437 Radio Netherlands: Newsline. See S 0037.
0445 BBC: New Ideas. A radio shop window for new products and inventions.
0455 BBC: Book Choice. See S 0745.
0509 BBC: Twenty-Four Hours. See S 0509.
0511 Radio Moscow (World Service): Inside Report. See M 0211.
0530 BBC: Financial News. See T 0125.
0540 BBC: Words of Faith. See S 0540.
0545 BBC: The World Today. See M 1645.
0545 Radio Moscow (World Service): Music. See S 0032.
0611 Radio Moscow (World Service): Focus on Asia and the Pacific. See T 0111.
0630 BBC: Feature. Programming on various subjects (except June 6th: Voices, a look at the musical development of some American singers).
0645 Radio Moscow (World Service): Musical Program. See T 0145.
0709 BBC: Twenty-Four Hours. See S 0509.
0711 Radio Moscow (World Service): News and Views. See S 0011.
0730 BBC: Europe's World. See T 0145.
0732 Radio Moscow (World Service): Request Program. See M 1132.
0737 Radio Netherlands: Newsline. See S 0037.
0745 BBC: Network UK. See T 0215.
0752 Radio Netherlands: Images. A cultural magazine, highlighting film, theatre, opera, books, and serious music.
1111 Radio Moscow (World Service): News and Views. See S 0011.
1115 BBC: Waveguide. See S 0750.
1125 BBC: Book Choice. See S 0745.
1130 BBC: Megamix. See T 0030.
1132 Radio Moscow (World Service): Folk Box. See S 0732.
1137 Radio Netherlands: Newsline. See S 0037.
1152 Radio Netherlands: Images. See T 0752.
1211 Radio Moscow (World Service): Update. See T 0311.

0400 HCJB: News [M-A]
0400 Kol Israel: News
0400 KYOI: News [M-F]
0400 Radio Australia: International Report
0400 Radio Beijing: News
0400 Radio Berlin Int'l: News
0400 Radio Canada Int'l: News [M-F]
0400 Radio Havana Cuba: International News
0400 Radio Moscow: News
0400 Radio RSA: News
0400 Swiss Radio Int'l: News
0400 Voice of America: News
0400 WCSN: News [M-F]
0410 Radio Beijing: News About China
0425 Radiotelevisione Italiana: News
0430 Radio Havana Cuba: News Update
0430 Radio Moscow (World Service): News in Brief
0430 Radio Netherlands: News [M-A]
0430 WCSN: News [T-F]
0445 Radio Berlin Int'l: News
0500 BBC: World News
0500 Deutsche Welle: World News
0500 HCJB: News [S-M]; Latin American News [T-A]
0500 KYOI: News [M-F]
0500 Radio Australia: World and Australian News
0500 Radio Berlin Int'l: News
0500 Radio Japan: News [S-F]
0500 Radio Moscow: News
0500 Radio New Zealand Int'l: News
0500 Spanish National Radio: News
0500 Voice of America: News
0500 WCSN: News [M-F]
0515 Radio Canada Int'l: News [M-F]
0530 Radio Moscow (World Service): News in Brief [S]
0530 WCSN: News [T-F]
0545 Radio Canada Int'l: News [M-F]
0550 HCJB: News [T-A]
0551 Spanish National Radio: News Summary [S]
0555 HCJB: News [S]
0600 BBC: Newsdesk
0600 Deutsche Welle: World News
0600 HCJB: News [M]
0600 KYOI: News [M-F]
0600 Radio Australia: International Report
0600 Radio Korea: News
0600 Radio Moscow: News
0600 Voice of America: News
0600 WCSN: News [M-F]
0615 Radio Berlin Int'l: News
0630 Radio Finland: Northern Report [T-A]
0630 Radio Moscow (World Service): News in Brief [S-M]
0630 Swiss Radio Int'l: News
0630 WCSN: News [T-F]
0655 HCJB: News [M-A]
0700 BBC: World News
0700 BRT, Brussels: News [M-F]
0700 KYOI: News [M-F]
0700 Radio Australia: World and Australian News

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1215 BBC: Multitrack 1: Top 20. See M 2330.
1230 Radio Canada Int'l: North Country. See M 1230.
1234 Radio Canada Int'l: SWL Digest. See S 0008.
1245 BBC: Sports Roundup. See S 1330.
1308 Radio Canada Int'l: Current Affairs. See M 1308.
1309 BBC: Twenty-Four Hours. See S 0509.
1311 Radio Moscow (World Service): Inside Report. See M 0211.
1330 BBC: Network UK. See T 0215.
1345 BBC: Globetrotter's Guide To Popular Music. See S 0430.
1345 Radio Moscow (World Service): Music. See S 0032.
1405 BBC: Outlook. See M 1405.
1411 Radio Moscow (World Service): News and Views. See S 0011.
1432 Radio Moscow (World Service): Music and Musicians. Music from world-famous performers and composers.
1437 Radio Netherlands: Newsline. See S 0037.
1445 BBC: The Baroque Concerto. See M 0145.
1452 Radio Netherlands: Images. See T 0752.
1511 Radio Moscow (World Service): Focus on Asia and the Pacific. See T 0111.
1515 BBC: A Jolly Good Show. Dave Lee Travis presents your record requests and dedications in his own unique way, including the Album of the Month.
1545 Radio Moscow (World Service): Musical Program. See T 0145.
1611 Radio Moscow (World Service): Inside Report. See M 0211.
1615 BBC: Omnibus. A half-hour program on practically any topic.
1630 Radio Netherlands: Newsline. See S 0037.
1645 BBC: The World Today. See M 1645.
1645 Radio Moscow (World Service): Music. See S 0032.
1652 Radio Netherlands: Images. See T 0752.
2308 Radio Canada Int'l: Current Affairs. See M 1308.
2309 BBC: Commentary. See M 2309.
2311 Radio Moscow (World Service): Inside Report. See M 0211.
2315 BBC: Concert Hall. See S 1515.
2345 Radio Moscow (World Service): Music. See S 0032.

Wednesday

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0011 Radio Moscow (World Service): News and Views. See S 0011.
0030 BBC: Omnibus. See T 1615.
0032 Radio Moscow (World Service): Request Program. See M 1132.
0037 Radio Netherlands: Newsline. See S 0037.
0052 Radio Netherlands: Images. See T 0752.
0101 BBC: Outlook. See M 1405.
0111 Radio Moscow (World Service): Focus on Asia and the Pacific. See T 0111.
0125 BBC: Financial News. See T 0125.
0130 BBC: Help Yourself. A look at innovations in helping the disabled.
0145 BBC: Country Style. Uh oh - it's back! British country music! Hide the children!
0145 Radio Moscow (World Service): Musical Program. See T 0145.
0209 BBC: British Press Review. See S 0209.
0211 Radio Moscow (World Service): Inside Report. See M 0211.
0215 BBC: Tech Talk. See M 1115.
0230 BBC: Bring Your Own Popcorn. Adrian Love presents music from the movies.
0245 Radio Moscow (World Service): Music. See S 0032.
0308 Radio Canada Int'l: Current Affairs. See M 1308.
0311 Radio Moscow (World Service): Update. See T 0311.
0315 BBC: The World Today. See M 1645.
0330 BBC: Discovery. An in-depth look at scientific matters.
0337 Radio Netherlands: Newsline. See S 0037.
0352 Radio Netherlands: Images. See T 0752.
0404 Radio Canada Int'l: SWL Digest. See S 0008.
0411 Radio Moscow (World Service): News and Views. See S 0011.
0430 BBC: Business Matters. A weekly survey of commercial and financial news.
0432 Radio Moscow (World Service): Music. See S 0032.
0437 Radio Netherlands: Newsline. See S 0037.
0445 BBC: Country Style. See W 0145.
0509 BBC: Twenty-Four Hours. See S 0509.
0511 Radio Moscow (World Service): Inside Report. See M 0211.
0530 BBC: Financial News. See T 0125.
0540 BBC: Words of Faith. See S 0540.
0545 BBC: The World Today. See M 1645.
0545 Radio Moscow (World Service): Music. See S 0032.
0611 Radio Moscow (World Service): Focus on Asia and the Pacific. See T 0111.
0630 BBC: Meridian. The world of the arts, including music, drama, and books.
0645 Radio Moscow (World Service): Musical Program. See T 0145.
0709 BBC: Twenty-Four Hours. See S 0509.

Brian Hadden of Radio Australia's English Service

0711 Radio Moscow (World Service): News and Views. See S 0011.
0730 BBC: Development '89. Aid and development issues.
0732 Radio Moscow (World Service): Folk Box. See S 0732.
0737 Radio Netherlands: Newsline. See S 0037.
0752 Radio Netherlands: Professions. A series on livelihoods is tentatively scheduled for this broadcast.
1111 Radio Moscow (World Service): News and Views. See S 0011.
1115 BBC: Country Style. See W 0145.
1130 BBC: Meridian. See W 0630.
1132 Radio Moscow (World Service): Music and Musicians. See T 1432.
1152 Radio Netherlands: Professions. See W 0752.
1211 Radio Moscow (World Service): Update. See T 0311.
1215 BBC: They Made Our World. Great scientists, inventors, and other pioneers who shaped the modern world.
1225 BBC: The Farming World. Issues in agriculture.
1230 Radio Canada Int'l: North Country. See M 1230.
1234 Radio Canada Int'l: L'attitude. See M 0304.
1245 BBC: Sports Roundup. See S 1330.

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0700 Radio Japan: News [S-F]
0700 Radio Moscow (World Service): News
0700 Voice of Free China: News and Commentary
0700 WCSN: News [M-F]
0730 Radio Moscow (World Service): News in Brief
0730 Radio Netherlands: News [M-A]
0730 WCSN: News [T-F]
0745 Radio Berlin Int'l: News
0800 BBC: World News
0800 KYOI: News [M-F]
0800 Radio Australia: International Report
0800 Radio Berlin Int'l: News
0800 Radio Finland: Northern Report [T-S]
0800 Radio Korea: News
0800 Radio Moscow (World Service): News
0830 Radio Finland: Northern Report [T-S]
0830 Radio Moscow (World Service): News in Brief [S-M]
0830 Radio Netherlands: News [M-A]
0830 Swiss Radio Int'l: News
0900 BBC: World News
0900 BRT, Brussels: News [M-F]
0900 Deutsche Welle: World News
0900 KYOI: News [M-F]
0900 Radio Australia: World and Australian News
0900 Radio Japan: News [S-F]
0900 Radio Moscow (World Service): News
0930 Radio Canada Int'l: News [M-F]
0930 Radio Moscow (World Service): News in Brief [S]
1000 BBC: News Summary
1000 Kol Israel: News
1000 KYOI: News [M-F]
1000 Radio Australia: International Report
1000 Radio Berlin Int'l: News
1000 Radio Moscow (World Service): News
1000 Radio New Zealand Int'l: News [M-F]
1000 Swiss Radio Int'l: News
1000 Voice of America: News
1030 KYOI: News [T-F]
1030 Radio Moscow (World Service): News in Brief [S-M]
1030 Radio Netherlands: News [M-A]
1030 Voice of America (Special English): News [S]
1100 BBC: World News
1100 Deutsche Welle: World News
1100 KYOI: News [M-F]
1100 Radio Australia: World and Australian News
1100 Radio Beijing: News
1100 Radio Berlin Int'l: News
1100 Radio Finland: Northern Report [T-F]
1100 Radio Japan: News [S-F]
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 Voice of America: News
1109 BBC: News About Britain

1308 Radio Canada Int'l: Current Affairs. See M 1308.
1309 BBC: Twenty-Four Hours. See S 0509.
1311 Radio Moscow (World Service): Inside Report. See M 0211.
1330 BBC: Development '89. See W 0730.
1345 Radio Moscow (World Service): Music. See S 0032.
1405 BBC: Outlook. See M 1405.
1411 Radio Moscow (World Service): News and Views. See S 0011.
1432 Radio Moscow (World Service): Jazz Show. See M 0032.
1437 Radio Netherlands: Newsline. See S 0037.
1445 BBC: Business Matters. See W 0430.
1452 Radio Netherlands: Professions. See W 0752.
1511 Radio Moscow (World Service): Focus on Asia and the Pacific. See T 0111.
1515 BBC: Feature. See M 2315.
1530 BBC: Flying The Flag. Intrigue and comedy in a fictional communist nation (except May 31st: Two Cheers for May, a satirical look back at the month just past).
1545 Radio Moscow (World Service): Musical Program. See T 0145.
1611 Radio Moscow (World Service): Inside Report. See M 0211.
1615 BBC: Feature (except June 7th: Voices). See T 0630.
1637 Radio Netherlands: Newsline. See S 0037.
1645 BBC: The World Today. See M 1645.
1645 Radio Moscow (World Service): Music. See S 0032.
1652 Radio Netherlands: Professions. See W 0752.
2308 Radio Canada Int'l: Current Affairs. See M 1308.
2309 BBC: Commentary. See M 2309.
2311 Radio Moscow (World Service): Inside Report. See M 0211.
2315 BBC: Good Books. See M 0315.
2330 BBC: Multitrack 2. Mitchell Johnson presents pop music and news.
2345 Radio Moscow (World Service): Music. See S 0032.

Thursday

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0011 Radio Moscow (World Service): News and Views. See S 0011.
0030 BBC: Flying The Flag (except June 1st: Two Cheers for May). See W 1530.
0032 Radio Moscow (World Service): Folk Box. See S 0732.
0037 Radio Netherlands: Newsline. See S 0037.
0052 Radio Netherlands: Professions. See W 0752.
0101 BBC: Outlook. See M 1405.
0111 Radio Moscow (World Service): Focus on Asia and the Pacific. See T 0111.
0125 BBC: Financial News. See T 0125.
0130 BBC: Waveguide. See S 0750.
0140 BBC: Book Choice. See S 0745.
0145 BBC: Society Today. A weekly look at the changes in Britain.
0145 Radio Moscow (World Service): Musical Program. See T 0145.
0209 BBC: British Press Review. See S 0209.
0211 Radio Moscow (World Service): Inside Report. See M 0211.
0215 BBC: Network UK. See T 0215.
0230 BBC: Assignment. A weekly examination of a topical issue.
0245 Radio Moscow (World Service): Music. See S 0032.
0308 Radio Canada Int'l: Current Affairs. See M 1308.
0311 Radio Moscow (World Service): Update. See T 0311.
0315 BBC: The World Today. See M 1645.
0330 BBC: Brain Of Britain. See M 1215.
0337 Radio Netherlands: Newsline. See S 0037.
0352 Radio Netherlands: Professions. See W 0752.
0404 Radio Canada Int'l: L'attitude. See M 0304.
0411 Radio Moscow (World Service): News and Views. See S 0011.
0430 BBC: Society Today. See H 0145.
0432 Radio Moscow (World Service): Music. See S 0032.
0437 Radio Netherlands: Newsline. See S 0037.
0445 BBC: Andy Kershaw's World of Music. See M 0215.
0509 BBC: Twenty-Four Hours. See S 0509.
0511 Radio Moscow (World Service): Inside Report. See M 0211.
0530 BBC: Financial News. See T 0125.
0540 BBC: Words of Faith. See S 0540.
0545 BBC: The World Today. See M 1645.
0545 Radio Moscow (World Service): Music. See S 0032.
0611 Radio Moscow (World Service): Focus on Asia and the Pacific. See T 0111.
0630 BBC: They Made Our World. See W 1215.
0640 BBC: The Farming World. See W 1225.
0645 Radio Moscow (World Service): Musical Program. See T 0145.
0709 BBC: Twenty-Four Hours. See S 0509.
0711 Radio Moscow (World Service): News and Views. See S 0011.
0730 BBC: Mediawatch. A look at the new technology behind and significance of communications.
0732 Radio Moscow (World Service): Music and Musicians. See T 1432.
0737 Radio Netherlands: Newsline. See S 0037.
0745 BBC: Network UK. See T 0215.
0752 Radio Netherlands: Media Network. A weekly survey of communications developments around the globe.
1111 Radio Moscow (World Service): News and Views. See S 0011.
1115 BBC: New Ideas. See T 0445.
1125 BBC: Book Choice. See S 0745.
1130 BBC: Drama. A dramatization of a play or book excerpt.
1132 Radio Moscow (World Service): Jazz Show. See M 0032.
1137 Radio Netherlands: Newsline. See S 0037.
1152 Radio Netherlands: Media Network. See H 0752.
1211 Radio Moscow (World Service): Update. See T 0311.
1215 BBC: Multitrack 2. See W 1830.
1230 Radio Canada Int'l: North Country. See M 1230.
1234 Radio Canada Int'l: Spotlight On Science. The latest developments in science and technology.

Radio Sweden English Service presenters (from left): Alan Pryke, Bill Schiller, and Azariah Kipos

1110 Radio Beijing: News About China
1130 KYOI: News [T-F]
1130 Radio Moscow (World Service): News in Brief
1130 Radio Netherlands: News [M-A]
1130 Voice of America (Special English): News [M-F]
1152 Radio RSA: News in Brief
1200 BBC: News Summary [S]; Newsreel [M-A]
1200 KYOI: News [M-F]
1200 Radio Australia: International Report
1200 Radio Beijing: News
1200 Radio Canada Int'l: World Report [M-F]
1200 Radio Finland: Northern Report [T-F]
1200 Radio Moscow (World Service): News
1200 Swiss Radio Int'l: News
1200 Voice of America: News
1210 Radio Beijing: News About China
1215 Radio Berlin Int'l: News
1230 BRT, Brussels: News [M-S]
1230 KYOI: News [T-F]
1230 Radio Berlin Int'l: News
1230 Radio Moscow (World Service): News in Brief [S-M]
1300 BBC: World News
1300 KYOI: News [M-F]
1300 Radio Australia: World and Australian News
1300 Radio Berlin Int'l: News
1300 Radio Canada Int'l (Asia/Pacific): News [S-F]
1300 Radio Canada Int'l: News [S]
1300 Radio Finland: Northern Report [T-A]
1300 Radio Moscow (World Service): News
1300 Radio RSA: News
1300 Voice of America: News
1325 HCJB: News [M-F]
1330 KYOI: News [T-F]
1330 Radio Moscow (World Service): News in Brief [S]
1330 Swiss Radio Int'l: News
1330 Voice of America (Special English): News
1345 Radio Berlin Int'l: News
1352 Radio RSA: News in Brief
1400 BBC: News Summary [A-S]; World News [M-F]
1400 KYOI: News [M-F]
1400 Radio Australia: International Report
1400 Radio Beijing: News
1400 Radio Berlin Int'l: News
1400 Radio Japan: News [S-F]
1400 Radio Korea: News
1400 Radio Moscow (World Service): News
1400 Radio RSA: News
1400 Voice of America: News
1405 Radio Finland: Northern Report [T-A]
1410 Radio Beijing: News About China
1425 HCJB: News [M-F]
1430 Radio Moscow (World Service): News in Brief
1430 Radio Netherlands: News [M-A]
1445 Radio Canada Int'l: News
1500 BBC: Newsreel
1500 Deutsche Welle: World News

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1245 BBC: Sports Roundup. See S 1330.
1308 Radio Canada Int'l: Current Affairs. See M 1308.
1309 BBC: Twenty-Four Hours. See S 0509.
1311 Radio Moscow (World Service): Inside Report. See M 0211.
1330 BBC: Network UK. See T 0215.
1345 BBC: Folk in Britain (June 1st, 15th, 29th) or Jazz Scene UK (June 8th, 22nd). A look at folk or jazz music on the British Isles.
1345 Radio Moscow (World Service): Music. See S 0032.
1405 BBC: Outlook. See M 1405.
1411 Radio Moscow (World Service): News and Views. See S 0011.
1432 Radio Moscow (World Service): Yours for the Asking. See M 0732.
1437 Radio Netherlands: Newsline. See S 0037.
1445 BBC: Mediawatch. See H 0730.
1452 Radio Netherlands: Media Network. See H 0752.
1511 Radio Moscow (World Service): Focus on Asia and the Pacific. See T 0111.
1515 BBC: The Pleasure's Yours. Gordon Clyde presents classical music requests.
1530 WRNO: World of Radio. Glenn Hauser's comprehensive communications magazine.
1545 Radio Moscow (World Service): Musical Program. See T 0145.

Judy Massa, the music director at the Voice of America, talks to country music star Charlie Daniels.

1611 Radio Moscow (World Service): Inside Report. See M 0211.
1615 BBC: Assignment. See H 0230.
1637 Radio Netherlands: Newsline. See S 0037.
1645 BBC: The World Today. See M 1645.
1645 Radio Moscow (World Service): Music. See S 0032.
1652 Radio Netherlands: Media Network. See H 0752.
2300 WRNO: World of Radio. See H 1530.
2308 Radio Canada Int'l: Current Affairs. See M 1308.
2309 BBC: Commentary. See M 2309.
2311 Radio Moscow (World Service): Inside Report. See M 0211.
2315 BBC: Music Review. Classical music events and developments from around the world.
2345 Radio Moscow (World Service): Music. See S 0032.

Friday

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0011 Radio Moscow (World Service): News and Views. See S 0011.
0030 BBC: Talking About Music. A series of exploratory talks of a wide range of music and musical types.
0032 Radio Moscow (World Service): Music and Musicians. See T 1432.
0037 Radio Netherlands: Newsline. See S 0037.
0052 Radio Netherlands: Media Network. See H 0752.
0101 BBC: Outlook. See M 1405.
0111 Radio Moscow (World Service): Focus on Asia and the Pacific. See T 0111.
0125 BBC: Financial News. See T 0125.
0130 BBC: Folk in Britain (June 2nd, 16th, 30th) or Jazz Scene UK (June 9th, 23rd). See H 1345.
0145 BBC: Talking From... Profiles from Northern Ireland, Scotland, and Wales.
0145 Radio Moscow (World Service): Musical Program. See T 0145.
0209 BBC: British Press Review. See S 0209.
0211 Radio Moscow (World Service): Inside Report. See M 0211.
0215 BBC: Seven Seas. A weekly program about ships and the sea.
0230 BBC: Drama. See H 1130.
0245 Radio Moscow (World Service): Music. See S 0032.
0311 Radio Moscow (World Service): Update. See T 0311.
0315 BBC: The World Today. See M 1645.
0330 BBC: Focus on Faith. Comment and discussion on the major issues in the worlds of faith.
0337 Radio Netherlands: Newsline. See S 0037.
0352 Radio Netherlands: Media Network. See H 0752.
0411 Radio Moscow (World Service): News and Views. See S 0011.
0430 BBC: Short Story. See T 0130.
0432 Radio Moscow (World Service): Music. See S 0032.
0437 Radio Netherlands: Newsline. See S 0037.
0445 BBC: Folk in Britain (June 2nd, 16th, 30th) or Jazz Scene UK (June 9th, 23rd). See H 1345.
0509 BBC: Twenty-Four Hours. See S 0509.
0511 Radio Moscow (World Service): Inside Report. See M 0211.
0530 BBC: Financial News. See T 0125.
0540 BBC: Words of Faith. See S 0540.
0545 BBC: The World Today. See M 1645.
0545 Radio Moscow (World Service): Music. See S 0032.
0611 Radio Moscow (World Service): Focus on Asia and the Pacific. See T 0111.
0630 BBC: Meridian. See W 0630.
0645 Radio Moscow (World Service): Musical Program. See T 0145.
0709 BBC: Twenty-Four Hours. See S 0509.
0711 Radio Moscow (World Service): News and Views. See S 0011.
0730 BBC: Feature. Programming on various subjects.
0732 Radio Moscow (World Service): Jazz Show
0737 Radio Netherlands: Newsline. See S 0037.
0752 Radio Netherlands: Rembrandt Express. A magazine program with a "fresh dimension".
1111 Radio Moscow (World Service): News and Views. See S 0011.
1115 BBC: Talking From... See F 0145.
1130 BBC: Meridian. See W 0630.
1132 Radio Moscow (World Service): Yours for the Asking. See M 0732.
1137 Radio Netherlands: Asiascan. A live magazine show with interviews with newsmakers, press reviews, monthly quizzes and listener opinion.
1200 Radio Canada Int'l: North Country. See M 1204.
1211 Radio Moscow (World Service): Update. See T 0311.
1215 BBC: Feature. See F 0730.
1245 BBC: Sports Roundup. See S 1330.
1309 BBC: Twenty-Four Hours. See S 0509.
1311 Radio Moscow (World Service): Inside Report. See M 0211.
1330 BBC: John Peel. See T 0330.

news guide cont'd from p.61

1500 KYOI: News [M-F]
1500 Radio Australia: World and Australian News
1500 Radio Beijing: News
1500 Radio Japan: News [S-F]
1500 Radio Moscow (World Service): News
1500 Radio RSA: News
1500 Voice of America: News
1510 Radio Beijing: News About China
1525 HCJB: News [M-F]
1527 Radio Veritas Asia: World News [M-A]
1530 BRT, Brussels: News [M-S]
1530 Deutsche Welle: African News [M-F]
1530 Radio Moscow (World Service): News in Brief [S-M]
1530 Swiss Radio Int'l: News
1545 Radio Berlin Int'l: News
1552 Radio RSA: News in Brief
1600 BBC: World News
1600 Deutsche Welle: World News
1600 Radio Australia: International Report
1600 Radio Berlin Int'l: News
1600 Radio Korea: News
1600 Radio Moscow (World Service): News
1600 Voice of America: News
1600 WCSN: News [M-F]
1609 BBC: News About Britain
1615 Radio Canada Int'l: News
1625 HCJB: News [M-F]
1630 Radio Moscow (World Service): News in Brief [S]
1630 Radio Netherlands: News [M-A]
1630 Voice of America (Special English): News
1630 WCSN: News [M-F]
1700 BBC: World News
1700 Kol Israel: News
1700 Radio Australia: World and Australian News
1700 Radio Japan: News [S-F]
1700 Radio Moscow (World Service): News
1700 Voice of America: News
1700 WCSN: News [M-F]
1715 Radio Berlin Int'l: News
1730 BRT, Brussels: News
1730 Radio Berlin Int'l: News
1730 Radio Moscow (World Service): News in Brief
1730 Radio New Zealand Int'l: News [S-F]
1730 Swiss Radio Int'l: News
1730 WCSN: News [M-F]
1800 BBC: Newsdesk
1800 KYOI: News [M-F]
1800 Radio Australia: International Report
1800 Radio Canada Int'l: News
1800 Radio Korea: News
1800 Radio Moscow (World Service): News
1800 Radio New Zealand Int'l: News
1800 Radio RSA: News
1800 Voice of America: News
1800 WCSN: News [M-F]
1803 Radio Jamahiriya, Libya: Headlines
1830 Radio Canada Int'l: News [M-F]
1830 Radio Finland: Northern Report [M-F]

1330 Radio Canada Int'l: North Country. See M 1204.
1345 Radio Moscow (World Service): Music. See S 0032.
1405 BBC: Outlook. See M 1405.
1411 Radio Moscow (World Service): News and Views. See S 0011.
1432 Radio Moscow (World Service): Request Program. See M 1132.
1437 Radio Netherlands: Asiascan. See F 1137.
1445 BBC: Nature Now. See M 0445.
1511 Radio Moscow (World Service): Focus on Asia and the Pacific. See T 0111.
1515 BBC: Music Review. See H 2315.
1545 Radio Moscow (World Service): Musical Program. See T 0145.
1611 Radio Moscow (World Service): Inside Report. See M 0211.
1615 BBC: Science In Action. See M 0230.
1637 Radio Netherlands: Newsline. See S 0037.
1645 BBC: The World Today. See M 1645.
1645 Radio Moscow (World Service): Music. See S 0032.
1652 Radio Netherlands: Airtime Africa. Music, discussion with studio guests, and analysis of the issues that concern both Europe and Africa.
1808 Radio Canada Int'l: Spectrum. See S 2208.
1908 Radio Canada Int'l: Spectrum. See S 2208.
1938 Radio Canada Int'l: Spectrum. See S 2208.
2138 Radio Canada Int'l: Spectrum. See S 2208.
2208 Radio Canada Int'l (Asia): Spotlight on Science. See S 0138.
2309 BBC: Commentary. See M 2309.
2311 Radio Moscow (World Service): Inside Report. See M 0211.
2315 BBC: From The Weeklies. A review of the British weekly press.
2330 BBC: Multitrack 3. Sarah Ward presents innovative and alternative rock music.
2345 Radio Moscow (World Service): Music. See S 0032.

Saturday

June 6, 13, 20, 27

0011 Radio Moscow (World Service): News and Views. See S 0011.
0030 BBC: Personal View. Opinion on topical issues in British life.
0032 Radio Moscow (World Service): Music. See S 0032.
0037 Radio Netherlands: Newsline. See S 0037.
0045 BBC: Recording of the Week. See M 0545.
0052 Radio Netherlands: Rembrandt Express. See F 0752.
0101 BBC: Outlook. See M 1405.
0111 Radio Moscow (World Service): Focus on Asia and the Pacific. See T 0111.
0125 BBC: Financial News. See T 0125.
0130 BBC: Poetry of the Century. A look at verse written during the 20th century.
0145 BBC: Book Choice. See S 0745.
0145 Radio Moscow (World Service): Musical Program. See T 0145.
0150 BBC: New Ideas. See T 0445.
0209 BBC: British Press Review. See S 0209.
0211 Radio Moscow (World Service): Inside Report. See M 0211.
0215 BBC: Network UK. See T 0215.
0230 BBC: People and Politics. Background to the British political scene.
0245 Radio Moscow (World Service): Your Top Tune. See M 0245.
0300 WRNO: World of Radio. See H 1530.
0308 Radio Canada Int'l: Innovation Canada. See S 0108.
0311 Radio Moscow (World Service): Update. See T 0311.
0315 BBC: The World Today. See M 1645.
0330 BBC: The Vintage Chart Show. Past top ten hits with Jimmy Savile.
0330 Radio Canada Int'l: SWL Digest. See S 0008.
0337 Radio Netherlands: Newsline. See S 0037.
0352 Radio Canada Int'l: Music Spot. See S 0030.
0352 Radio Netherlands: Rembrandt Express. See F 0752.
0404 Radio Canada Int'l: Spotlight On Science. See H 1234.
0411 Radio Moscow (World Service): News and Views. See S 0011.
0430 BBC: Here's Humph! All that jazz with Humphrey Lyttelton.

The "News Focus" team at the World Service of the Christian Science Monitor (WCSN, KYOI, and WSHB)

0432 Radio Moscow (World Service): Yours for the Asking. See M 0732.
0437 Radio Netherlands: Newsline. See S 0037.
0445 BBC: Personal View. See A 0030.
0509 BBC: Twenty-Four Hours. See S 0509.
0511 Radio Moscow (World Service): Inside Report. See M 0211.
0530 BBC: Financial News. See T 0125.
0540 BBC: Words of Faith. See S 0540.
0545 BBC: The World Today. See M 1645.
0545 Radio Moscow (World Service): Your Top Tune. See M 0245.
0611 Radio Moscow (World Service): Focus on Asia and the Pacific. See T 0111.
0630 BBC: Meridian. See W 0630.
0645 Radio Moscow (World Service): Musical Program. See T 0145.
0709 BBC: Twenty-Four Hours. See S 0509.
0711 Radio Moscow (World Service): News and Views. See S 0011.

1830 Radio Kuwait: News
1830 Radio Moscow (World Service): News in Brief [A-S]
1830 Radio Netherlands: News [M-A]
1830 Radio New Zealand Int'l: News [M-F]
1830 Swiss Radio Int'l: News
1830 Voice of America (Special English): News
1830 WCSN: News [M-F]
1847 Radio Jamahiriya, Libya: News
1852 Radio RSA: News in Brief
1900 BBC: News Summary
1900 Deutsche Welle: World News
1900 HCJB: Latin American News [M-F]
1900 Kol Israel: News
1900 KYOI: News [M-F]
1900 Radio Australia: World and Australian News
1900 Radio Canada Int'l: News [M-F]
1900 Radio Havana Cuba: International News
1900 Radio Japan: News
1900 Radio Moscow (World Service): News
1900 Radio New Zealand Int'l: News
1900 Radio RSA: News
1900 Spanish National Radio: News
1900 Voice of America: News
1900 WCSN: News [M-F]
1915 Radio Berlin Int'l: News
1930 Radio Havana Cuba: News Update
1930 Radio Moscow (World Service): News in Brief [S]
1930 WCSN: News [M-F]
1935 Radiotelevisione Italiana: News
1945 Radio Berlin Int'l: News
1950 HCJB: News [M-F]
2000 BBC: World News
2000 KYOI: News [S-F]
2000 Radio Australia: International Report
2000 Radio Berlin Int'l: News
2000 Radio Jordan: News
2000 Radio Moscow (World Service): News
2000 Radio New Zealand Int'l: News
2000 Radio RSA: News
2000 Voice of America: News
2000 WCSN: News [M-F]
2025 Radiotelevisione Italiana: News
2030 KYOI: News [M-H]
2030 Radio Korea: News
2030 Radio Moscow (World Service): News in Brief
2030 Radio Netherlands: News [M-A]
2030 WCSN: News [M-F]
2052 Radio RSA: News in Brief
2100 BBC: News Summary
2100 BRT, Brussels: News
2100 Deutsche Welle: World News
2100 KVOH: UPI Radio News
2100 KYOI: News [S-F]
2100 Radio Australia: World and Australian News
2100 Radio Berlin Int'l: News
2100 Radio Canada Int'l: News [A-S]; The World At Six [M-F]
2100 Radio Finland: Northern Report [M-F]
2100 Radio Japan: News

program guide

0730 BBC: From The Weeklies. See F 2315.
0732 Radio Moscow (World Service): Music. See S 0032.
0737 Radio Netherlands: Newsline. See S 0037.
0745 BBC: Network UK. See T 0215.
0752 Radio Netherlands: Over To You. See S 0052.
1111 Radio Moscow (World Service): News and Views. See S 0011.
1115 BBC: Poetry of the Century. See A 0130.
1130 BBC: Meridian. See W 0630.
1132 Radio Moscow (World Service): Request Program. See M 1132.
1137 Radio Netherlands: Newsline. See S 0037.
1152 Radio Netherlands: Over To You. See S 0052.
1211 Radio Moscow (World Service): Update. See T 0311.
1215 BBC: Multitrack 3. See F 2330.
1245 BBC: Sports Roundup. See S 1330.
1300 Radio Canada Int'l: Canadian Journal. A magazine program on Canadian life.
1309 BBC: Twenty-Four Hours. See S 0509.
1311 Radio Moscow (World Service): Inside Report. See M 0211.
1330 BBC: Network UK. See T 0215.
1345 BBC: Sportsworld. Paddy Feeny presents almost three hours of live sports.
1345 Radio Moscow (World Service): Your Top Tune. See M 0245.
1401 BBC: Sportsworld (continued). See A 1345.
1411 Radio Moscow (World Service): News and Views. See S 0011.
1432 Radio Moscow (World Service): Music. See S 0032.
1437 Radio Netherlands: Newsline. See S 0037.
1452 Radio Netherlands: Over To You. See S 0052.
1511 Radio Moscow (World Service): Focus on Asia and the Pacific. See T 0111.
1515 BBC: Sportsworld (continued). See A 1345.
1545 Radio Moscow (World Service): Musical Program. See T 0145.
1611 Radio Moscow (World Service): Inside Report. See M 0211.
1615 BBC: Sportsworld (continued). See A 1345.
1637 Radio Netherlands: Newsline. See S 0037.
1645 Radio Moscow (World Service): Your Top Tune. See M 0245.
1652 Radio Netherlands: Over To You. See S 0052.
2308 Radio Canada Int'l: Innovation Canada. See S 0108.
2309 BBC: Book Choice. See S 0745.
2311 Radio Moscow (World Service): Inside Report. See M 0211.
2315 BBC: A Jolly Good Show. See T 1515.
2330 WRNO: World of Radio. See H 1530.
2338 Radio Canada Int'l: Coast To Coast. See M 0404.
2345 Radio Moscow (World Service): Music. See S 0032.

The staff at Radio RSA. Despite the government's oppressive apartheid system, the station produces many excellent programs.

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2100 Radio Moscow (World Service): News
2100 Spanish National Radio: News
2100 Swiss Radio Int'l: News
2100 Voice of America: News
2100 WCSN: News [M-F]
2130 Kol Israel: News
2130 KVOH: UPI Headline News
2130 KYOI: News [M-H]
2130 Radio Canada Int'l (Africa): News
2130 RCI: As It Happens [M-F]
2130 Radio Moscow (World Service): News in Brief [A-S]
2130 Swiss Radio Int'l: News
2130 WCSN: News [M-F]
2200 BBC: Newshour
2200 KVOH: UPI Radio News
2200 KYOI: News [S-H]
2200 Radio Australia: International Report
2200 Radio Berlin Int'l: News
2200 Radio Canada Int'l (Asia/Pacific): News
2200 Radio Canada Int'l: News [A-S]; The World At Six [M-F]
2200 Radio Moscow: News
2200 Radiotelevisione Italiana: News
2200 Voice of America: News
2200 Voice of Free China: News and Commentary
2200 WCSN: News [M-F]
2230 KVOH: UPI Headline News
2230 KYOI: News [M-H]
2230 Radio Moscow (World Service): News in Brief [A-S]
2230 Radio Polonia: News
2230 Voice of America (Special Eng): News
2230 WCSN: News [M-F]
2245 Radio Berlin Int'l: News
2300 BBC: World News
2300 Kol Israel: News
2300 KVOH: UPI Radio News
2300 KYOI: News [S-H]
2300 Radio Australia: World and Australian News
2300 Radio Berlin Int'l: News
2300 Radio Canada Int'l: News
2300 Radio for Peace Int'l: News [F]
2300 Radio Japan: News [S-F]
2300 Radio Moscow: News
2300 Radio New Zealand Int'l: News
2300 Voice of America: News
2300 Voice of Turkey: News
2300 WCSN: News [M-F]
2330 BRT, Brussels: News
2330 KVOH: UPI Headline News
2330 KYOI: News [M-H]
2330 Radio Canada Int'l: As It Happens [M-F]; News [A]
2330 Radio for Peace Int'l: News [M]
2330 Radio Korea: News
2330 Radio Moscow (World Service): News in Brief [M]
2330 Radio New Zealand Int'l: News [S-H]
2330 WCSN: News [M-F]
2335 Voice of Greece: News [S]

frequency section

MT Monitoring Team

Greg Jordan, Frequency Manager

1855-I Franciscan Terrace
Winston-Salem, NC 27127

Joe Hanlon, PA
Bill Brinkley, CA
Pete Wahlquist, CA
Richard A. Keen, CO

0000 UTC [8:00 PM EDT/5:00 PM PDT]

0000-0015		Voice of Kampuchea, Phnom-Penh	9693 11938
0000-0030		BBC, London, England	5975 6005 6175 7325 9590 9915 11955 12095 15260 15360 17875
0000-0030		Kol Israel, Jerusalem	11605 15615 15640
0000-0030		Radio Berlin Int'l, East Germany	6080 11890
0000-0030		Radio Canada Int'l, Montreal	5960 9755
0000-0030		Radio Korea (South), Seoul	15575
0000-0030	M	Radio Norway Int'l, Oslo	9620 11845
0000-0045		Radio Yugoslavia, Belgrade	5980 9620 11735
0000-0045		WINB, Red Lion, Pennsylvania	15145
0000-0050		Radio Pyongyang, North Korea	15115 15160
0000-0055		Radio Beijing, PR China	9770 11715 15540
0000-0100		All India Radio, New Delhi	6055 7215 9535 9910 11715 11745 15110
0000-0100		CBC Northern Quebec Service	6195 9625
0000-0100		CBN, St. John's, Newfoundland	6160
0000-0100		CBU, Vancouver, British Colombia	6160
0000-0100		CFCF, Montreal, Quebec	6005
0000-0100		CFCN, Calgary, Alberta	6030
0000-0100		CHNS, Halifax, Nova Scotia	6130
0000-0100		Christian Science World Service	9850 11980 13760
0000-0100		CKWX, Vancouver, British Colombia	6080
0000-0100		CFRB, Toronto, Ontario	6070
0000-0100		FEBC, Manila, Philippines	15445
0000-0100		(US) Far East Network, Tokyo	3910
0000-0100		KSDA, Guam	15125
0000-0100		KVOH, Rancho Simi, California	17775
0000-0100		KYOI, Saipan	15405
0000-0100		Radio Australia, Melbourne	15140 15160 15240 15320 17750 17795 21740
0000-0100		Radio Baghdad, Iraq	9515 11775
0000-0100		Radio Luxembourg	6090
0000-0100		Radio Moscow	17825 17850 17890 21790
0000-0100		Radio Moscow N. America Service	7215 7310 9605 9685 9720 11735 11750 12050 15405 15425 17605 17720 17700
0000-0100		Radio New Zealand, Wellington	15150 17705
0000-0100		Radio for Peace, Costa Rica	21495 21555
0000-0100		Radio Thailand, Bangkok	9655 11905
0000-0100		SBC Radio One, Singapore	5010 5052 11940
0000-0100		Spanish Foreign Radio, Madrid	9630 15110
0000-0100	T-S	Superpower KUSW, Utah	15580
0000-0100		Voice of America, Washington	5995 6130 9455 9775 9815 11580 11695 11740 15205 17820
0000-0100		WHRI, Noblesville, Indiana	7365 9495
0000-0100		WRNO, New Orleans, Louisiana	7355
0000-0100		WYFR, Oakland, California	5950 15170
0030-0045		BBC, London, England*	6195 7235 9570 11945 15360 17875
0030-0100		BBC, London, England	5975 6005 6175 7325 9515 9580 9915 9590 11955 12095 15260
0030-0100		HCJB, Quito, Ecuador	9745 11775 15155 15230
0030-0100		Radio Budapest, Hungary	6110 9520 9585 9835 11910 15160
0030-0100	T-A	Radio Canada Int'l, Montreal	5960 9755
0030-0100		Radio Netherlands, Hilversum	6020 6165 15315
0030-0100		SLBC, Colombo, Sri Lanka	6005 9720
0035-0040		All India Radio, New Delhi	3925 4860
0045-0100		Radio Korea (South), Seoul	15575
0045-0100	A	Radio New Zealand, Wellington	15150 17705
0048-0100		WINB, Red Lion, Pennsylvania	15145
0050-0100		Vatican Radio, Vatican City	6150 9605 11780

0100 UTC [9:00 PM EDT/6:00 PM PDT]

0100-0110		Vatican Radio, Vatican City	6150 9605 11780
0100-0115		All India Radio, New Delhi	6055 7215 9535 9910 11715 11745 15110
0100-0120		RAI, Rome, Italy	9575 11800
0100-0130		Kol Israel, Jerusalem	11605 12077 15615

LEGEND

* The first four digits of an entry are the broadcast start time in UTC. The second four digits represent the end time.
* In the space between the end time and the station name is the broadcast schedule.

S = Sunday M = Monday T = Tuesday W = Wednesday
H = Thursday F = Friday A = Saturday

If there is no entry, the broadcasts are heard daily. If, for example, there is an entry of "M," the broadcast would be heard only on Mondays. An entry of "M,W,F" would mean Mondays, Wednesdays and Fridays only. "M-F" would mean Mondays through Fridays. "TEN" indicates a tentative schedule and "TES" a test transmission.

* [ML] after a frequency indicates a multi-lingual transmission containing English-language programs.
* The last entry on a line is the frequency. Codes here include "SSB" which indicates a Single Sideband transmission, and "V" for a frequency that varies. [ML] after a frequency indicates a multi-lingual transmission containing English-language programs.
* v after a frequency indicates that it varies
* Notations of USB and LSB (upper and lower sideband transmissions) usually refer only to the individual frequency after which they appear.
* Listings followed by an asterisk (*) are for English lessons and do not contain regularly scheduled programming.

We suggest that you begin with the lower frequencies that a station is broadcasting on and work your way up the dial. Remember that there is no guarantee that a station will be audible on any given day. Reception conditions can change rapidly, though, and if it is not audible one night, it may well be on another.

HOW TO USE THE PROPAGATION CHARTS

Propagation charts can be an invaluable aid to the DXer in determining which frequencies are likely to be open at a given time. To use the propagation charts, choose those for your location (the are divided into east coast, midwest and west coast of North America). Then look for the one most closely describing the geographic location of the station you want to hear.

Once you've located the correct charts, look along the horizontal axis of the graph for the time that you are listening. The top line of the graph shows the Maximum Useable Frequency [MUF] and the lower line the Lowest Useable Frequency [LUF] as indicated on the vertical axis of the graph.

While there are exceptions to every rule (especially those regarding shortwave listening), you should find the charts helpful in determining the best times to listen for particular regions of the world. Good luck!

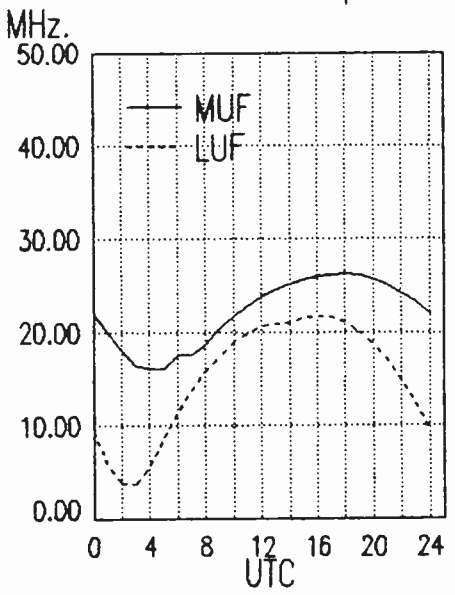
frequency section

0100-0130	W,A	Radio Budapest, Hungary	6110	9520	9585	9835
			11910	15160		
0100-0130		Radio Canada Int'l, Montreal	9535	9755	11845	
			11940			
0100-0130		Radio Japan, Tokyo	17880			
0100-0130		Radio Netherlands, Hilversum	6020	6165	15315	
0100-0130		Laotian National Radio	7113v			
0100-0130	S,M	WINB, Red Lion, Pennsylvania	15145			
0100-0145		Radio Berlin Int'l, East Germany	11890			
0100-0150		Deutsche Welle, West Germany	6040	6085	6145	9565
			9735	11865	15105	
0100-0150		Radio Baghdad, Iraq	6185	7250		
0100-0200		BBC, London, England	5975	6005	6175	7325
			9410	9590	9915	11955
			12095	15260	17815	
0100-0200		CBC Northern Quebec Service	6195	9625		
0100-0200		CBN, St. John's, Newfoundland	6160			
0100-0200		CBU, Vancouver, British Colombia	6160			
0100-0200		CFCF, Montreal, Quebec	6005			
0100-0200		CFCN, Calgary, Alberta	6030			
0100-0200		CHNS, Halifax, Nova Scotia	6130			
0100-0200		Christian Science World Service	9850	11980	13760	
0100-0200		CKWX, Vancouver, British Colombia	6080			
0100-0200		CFRB, Toronto, Ontario	6070			
0100-0200		(US) Far East Network, Tokyo	3910			
0100-0200		FEBC, Manila, Philippines	15445			
0100-0200		HCJB, Quito, Ecuador	9745	11755	15155	15230
0100-0200	T-A	KVOH, Rancho Simi, California	13695			
0100-0200		KYOI, Saipan	15405			
0100-0200		Radio Australia, Melbourne	15160	15180	15240	15320
			15395	17715	17795	
			17750	21740		
0100-0200		Radio Havana Cuba	11820			
0100-0200		Radio Japan, Tokyo	5960	17810	17835	17845
0100-0200		Radio Luxembourg	6090			
0100-0200		Radio Moscow	17825	17890		
0100-0200		Radio Moscow, N. American Service	7215	7310	9605	9685
			9700	9720	11735	11750
			15405	15425	17605	
0100-0200		Radio New Zealand, Wellington	15150	17705		
0100-0200		Radio for Peace, Costa Rica	21495	21555		
0100-0200		Radio Prague, Czechoslovakia	5930	6055	7345	9540
			9625	11990		
0100-0200		Radio Thailand, Bangkok	9655	11905		
0100-0200		RAE, Buenos Aires, Argentina	9690			
0100-0200		SBC Radio One, Singapore	5010	5052	11940	
0100-0200		SLBC, Colombo, Sri Lanka	6005	9720	15425	
0100-0200		Spanish Foreign Radio, Madrid	9630	15110		
0100-0200	T-S	Superpower KUSW, Utah	11695			
0100-0200		Voice of America, Washington	5995	6130	9455	9740
			9775	9815	11580	11740
			15205	17735	18157	USB
0100-0200		Voice of Indonesia, Jakarta	9680	11790		
0100-0200		WHRI, Noblesville, Indiana	7365	9495		
0100-0200		WRNO New Orleans, Louisiana	7355			
0100-0200		WYFR, Oakland, California	5950	9555	11720	
			17612.5			
0130-0140	T-S	Voice of Greece, Athens	7430	9420	11645	
0130-0145	WHAM	Radio Budapest, Hungary	6110	9520	9585	9835
			11910	15160		
0130-0200	S,M	Radio Canada Int'l, Montreal	9535	9755	11845	11940
0130-0200		Radio Veritas Asia, Philippines	15330	15365		
0130-0200		WINB, Red Lion, Pennsylvania	15145			
0145-0200		Radio Berlin Int'l, East Germany	6080	9620	11785	11890

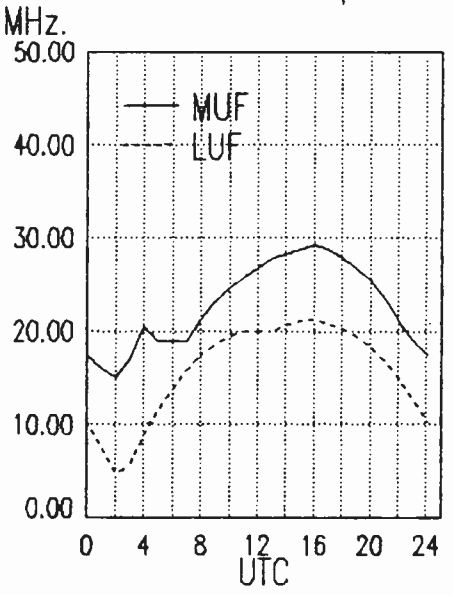
0200 UTC [10:00 PM EDT/7:00 PM PDT]

0200-0215		Vatican Radio, Vatican City	6145	7125	9650	
0200-0230		BBC, London, England	5975	6005	6175	7325
			9410	9515	9590	9915
			12095	15260	15420	15310
			17815			
0200-0230		Burma Bcasting Service, Rangoon	7185			
0200-0230		Radio Berlin Int'l, East Germany	6080	9620	11785	11890
0200-0230		Radio Kiev, Ukrainian SSR	7400	9860	15240	15455
			17665			
0200-0230		Swiss Radio Int'l, Berne	6095	6135	9725	9885
			12035	17730		
0200-0250		Deutsche Welle, West Germany	6035	7285	9690	11945
			15205			
0200-0250		Radio Baghdad, Iraq	6185	7250		
0200-0250		Radio Bras, Brasilia, Brazil	11745v			
0200-0255		Radio Bucharest, Romania	5990	6155	9510	9570
			11830	11940		
0200-0300		CBC Northern Quebec Service	6195	9625		
0200-0300		CBN, St. John's, Newfoundland	6160			
0200-0300		CBU, Vancouver, British Colombia	6160			
0200-0300		CFCF, Montreal, Quebec	6005			

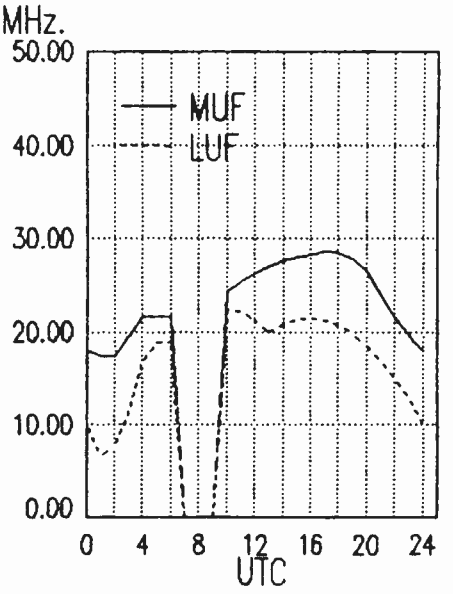
East Coast To
Western Europe



East Coast To
Eastern Europe



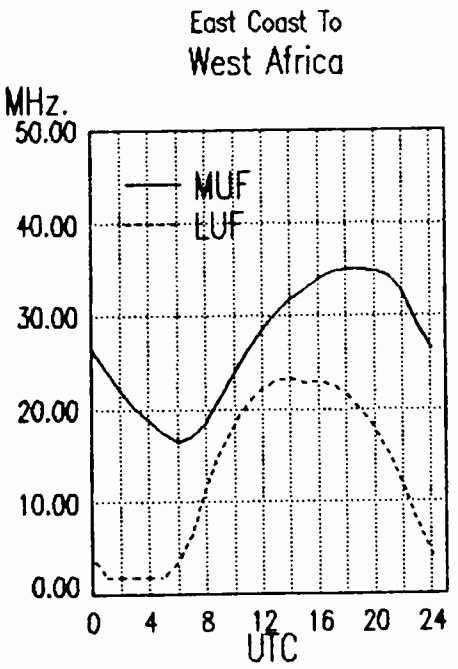
East Coast To
Middle East

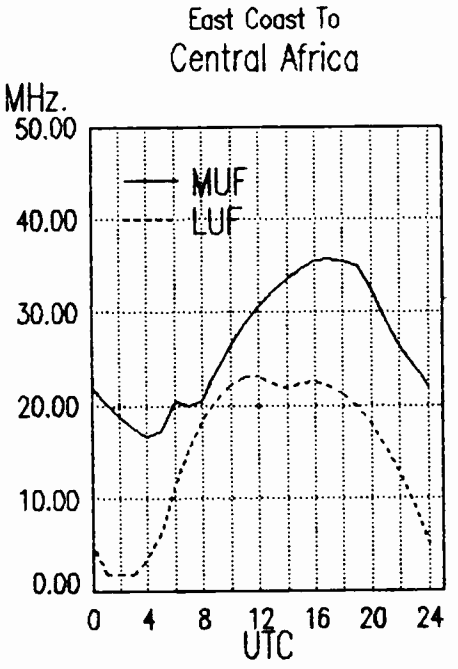


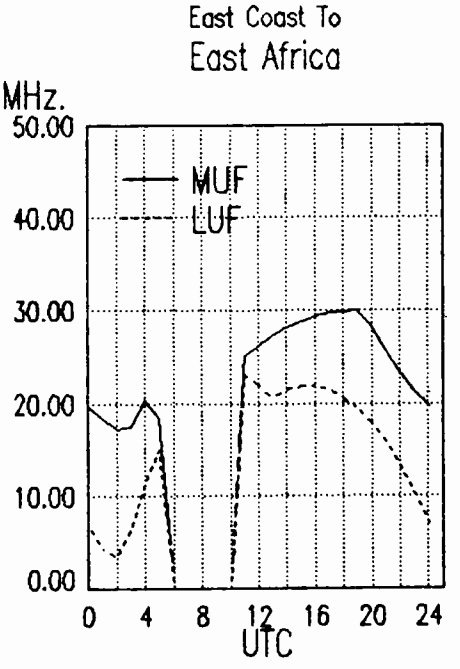
0200-0300		CFCN, Calgary, Alberta	6030			
0200-0300		CFRB, Toronto, Ontario	6070			
0200-0300		CHNS, Halifax, Nova Scotia	6130			
0200-0300		Christian Science World Service	9455	9850	13760	
0200-0300		CKWX, Vancouver, British Colombia	6080			
0200-0300		(US) Far East Network, Tokyo	3910			
0200-0300		HCJB, Quito, Ecuador	9745	11775	15155	
0200-0300	A,S	KSDA, Guam	17865			
0200-0300	T-A	KVOH, Rancho Simi, California	13695			
0200-0300		KYOI, Saipan	17780			
0200-0300		Radio Australia, Melbourne	15160	15180	15240	15320
			15395	17715	17750	17795
			21740			
0200-0300		Radio Cairo, Egypt	9475	9675		
0200-0300	T-A	Radio Canada Int'l, Montreal	9535	9755	11845	
0200-0300		Radio Havana Cuba	9655	11820		
0200-0300		Radio Luxembourg	6090			
0200-0300		Radio Moscow, USSR	7215	7310	9605	9685
			9700	9720	11735	15405
			15425	17560	17570	17590
			17620	17675	17700	17720
			17825	17890	21530	21790
0200-0300		Radio Orion, South Africa	3955			
0200-0300		Radio for Peace, Costa Rica	13663			
0200-0300	A	Radio New Zealand, Wellington	15150	17705		
0200-0300		Radio RSA, South Africa	6010	9580	9615	
0200-0300		Radio Thailand, Bangkok	9655	11905		
0200-0300		SBC Radio One, Singapore	5010	5052	11940	
0200-0300		SLBC, Colombo, Sri Lanka	6005	9720	15425	
0200-0300	T-S	Superpower KUSW, Utah	11695			
0200-0300		Voice of America, Washington	5995	6035	7205	9740
			18157	USB		
0200-0300		Voice of Asia, Taiwan	7285			
0200-0300		Voice of Free China, Taiwan	5985	7445	9680	9765
			11740	11860	15345	
0200-0300		Voice of Kenya, Nairobi	6045			
0200-0300		WINB, Red Lion, Pennsylvania	15145			
0200-0300		WHRI, Noblesville, Indiana	7405	9495		
0200-0300		WRNO, New Orleans, Louisiana	7355			
0200-0300	T-S	WYFR Satellite Net, California	5950	9555	11720	
0215-0220		Radio Nepal, Kathmandu	5005	7165		
0230-0240		Port Moresby, Papua New Guinea	3925	4890	5960	5985
			6020	6040	6080	6140
			9520			
0230-0245		Radio Pakistan, Islamabad	7010	11570	15115	15580
			17660			
0230-0300		BBC, London, England	5975	6005	6175	7325
			9410	9515	9915	12095
			15260	15280	15310	
0230-0300		Radio Berlin Int'l, East Germany	6125	6165	11750	
0230-0300		Radio Finland, Helsinki	9635	11945		
0230-0300	T-A	Radio Portugal, Lisbon	9600	9680	9705	11840
0240-0250		All India Radio, New Delhi	3905	4860	4880	4895
			5960	5990	6110	6120
			7195	7295	9550	9610
			11830	11870	15305	
0245-0300		Radio Korea, Seoul, South Korea	9640	15575		
0255-0300		Radio Yerevan, Armenian SSR	15240	15455	17665	

0300 UTC [11:00 PM EDT/8:00 PM PDT]

0300-0330		WINB, Red Lion, Pennsylvania	15145			
0300-0307		Radio Pakistan, Islamabad	5090	5930	7095	
0300-0310		CBC Northern Quebec Service	6195	9625		
0300-0330		BBC, London, England	3955	5975	6005	6175
			6195	7185	7325	9410
			9660	9915	11750	11845
			12095	15260	15280	15420
			17815			
0300-0330		Radio Cairo, Egypt	9475	9675		
0300-0330		Radio Japan, Tokyo	9645	15325	17825	21610
0300-0330		Radio Sweden Int'l, Stockholm	9695	11705		
0300-0345		Radio Berlin Int'l, East Germany	9620	11785		
0300-0345	A	Radio New Zealand, Wellington	15150	17705		
0300-0350		Deutsche Welle, West Germany	6085	6185	9605	9700
0300-0355		Radio Beijing, China	9690	9770	11715	15510
0300-0400		CBN, St. John's, Newfoundland	6160			
0300-0400		CBU, Vancouver, British Colombia	6160			
0300-0400		CFCF, Montreal, Quebec	6005			
0300-0400		CFCN, Calgary, Alberta	6030			
0300-0400		CHNS, Halifax, Nova Scotia	6130			
0300-0400		Christian Science World Service	9455	9850	13760	
0300-0400		CKWX, Vancouver, British Colombia	6080			
0300-0400		CFRB, Toronto, Ontario	6070			
0300-0400		(US) Far East Network, Tokyo	3910			
0300-0400		HCJB, Quito, Ecuador	9745	11775	15155	
0300-0400	T-A	KVOH, Rancho Simi, California	13695			







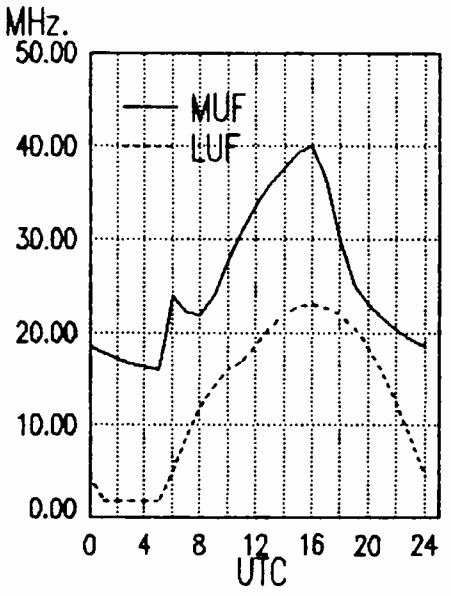
frequency section

0300-0400		KYOI, Saipan	17780			
0300-0400		La Voz Evangelica, Honduras	4820			
0300-0400		Radio Australia, Melbourne	11945	15160	15240	15320
			15395	17715	17750	17795
			21740			
0300-0400		Radio for Peace, Costa Rica	21565			
0300-0400		Radio Havana Cuba	9655	11820		
0300-0400		Radio Moscow, USSR	7215	7310	9605	9720
			9750	15240	15405	17775
			17890	21540		
0300-0400		Radio Moscow World Service, USSR	17570	17655	17675	17825
			17890	21690	21790	
0300-0400		Radio Prague, Czechoslovakia	5930	6055	7345	9540
			9625	11990		
0300-0400		Radio Sofia, Bulgaria	11735			
0300-0400		Radio Thailand, Bangkok	9655	11905		
0300-0400		SBC Radio One, Singapore	5010	5052	11940	
0300-0400		SLBC, Colombo, Sri Lanka	6005	9720	15425	
0300-0400	T-S	Superpower KUSW, Utah	11695			
0300-0400		Trans World Radio, Bonaire	9535	11930		
0300-0400		Voice of America, Washington	5995	6035	9575	11835
0300-0400		Voice of Free China, Taiwan	5985	7445	9680	9765
			11745	15345		
0300-0400		Voice of Kenya, Nairobi	6045			
0300-0400		Voice of Turkey, Ankara	9445			
0300-0400		WHRI, Noblesville, Indiana	7405	9495		
0300-0400		WRNO, New Orleans, Louisiana	6185			
0300-0400		WSHB, Cyprus Creek, N. Carolina	9455			
0300-0400		WYFR Satellite Net, California	5950	9555	15440	
0310-0330		Vatican Radio, Vatican City	6150			
0313-0400		Radio France Int'l, Paris	3965	7135	9550	9790
			11670	11995		
0330-0340	S-F	Port Moresby, Papua New Guinea	3925	4890	5960	5985
			6020	6040	6080	6140
			9520			
0330-0400		BBC, London, England	3955	5975	6005	6175
			6195	9410	9600	9915
			11845	12095	15420	17815
0330-0400		Radio Netherland, Hilversum	6165	9590		
0330-0400	S,M	WINB, Red Lion, Pennsylvania	15145			
0335-0400		Radio New Zealand, Wellington	15150	17705		
0330-0400		Radio Tanzania, Dar es Salaam	9684			
0330-0400		Radio Tirana, Albania	9500			
0330-0400		Radio Sweden, Stockholm	11705			
0330-0400		United Arab Emirates Radio	9640	11940	15435	17775
0335-0340		All India Radio, New Delhi	3905	4860	9610	11830
			11870	11890	15305	
0340-0350	M-A	Voice of Greece, Athens	7430	9395	9420	
0345-0400		Radio Berlin Int'l, East Germany	9620	11785		
0350-0400		RAI, Rome, Italy	9710	11905	15330	

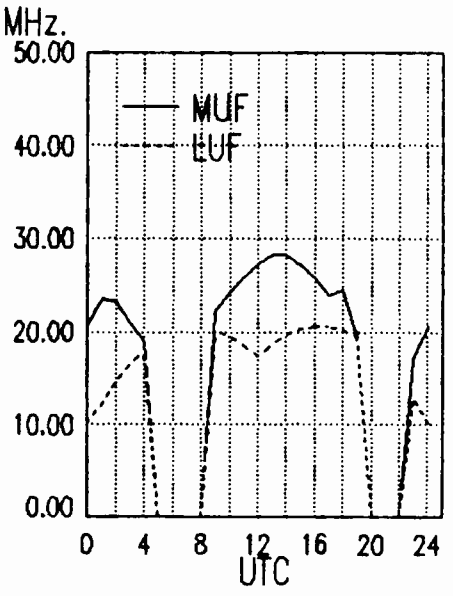
0400 UTC [12:00 AM EDT/9:00 PM PDT]

0400-0405		Radio Uganda, Kampala	4976	5026		
0400-0410		Radio Thailand, Bangkok	9655	11905		
0400-0410		RAI, Rome, Italy	6155	11905	15330	
0400-0415		Kol Israel, Jerusalem	9435	11588	12077	15640
0400-0420		Radio Botswana, Gabarone	4820			
0400-0420	T-S	Radio Zambia, Lusaka	3345	6165		
0400-0425		Radio Bucharest, Romania	6155	9510	9570	11830
			11940			
0400-0425		Radio Netherland, Hilversum	6165	9590		
0400-0430		BBC, London, England	3955	5975	6005	6175
			6195	7105	9410	9580
			9600	9915	12095	15070
			15420			
0400-0430		La Voz Evangelica, Honduras	4820			
0400-0430	S,M	Radio Austria Int'l, Vienna	6015	6155		
0400-0430		Radio Berlin Int'l, East Germany	9620	11785		
0400-0430	M	Radio Norway Int'l, Oslo	9650	11750		
0400-0430		SLBC, Colombo, Sri Lanka	6005	9720	15425	
0400-0430		Radio Tanzania, Dar es Salaam	9684			
0400-0430		Swiss Radio Int'l, Berne	6135	9725	9885	12035
0400-0430		Trans World Radio, Bonaire	9535	11930		
0400-0430	S,M	WINB, Red Lion, Pennsylvania	15145			
0400-0450		Deutsche Welle, West Germany	7150	7225	9565	9765
			11765			
0400-0450		Radio Pyongyang, North Korea	15160	15180		
0400-0455		Radio Beijing, China	11685	11840	15195	
0400-0500		CBC Northern Quebec Service	6195	9625		
0400-0500		CBN, St. John's, Newfoundland	6160			
0400-0500		CBU, Vancouver, British Colombia	6160			
0400-0500		CFCF, Montreal, Quebec	6005			
0400-0500		CFCN, Calgary, Alberta	6030			
0400-0500		CHNS, Halifax, Nova Scotia	6130			
0400-0500		Christian Science World Service	9455	9870		
0400-0500		CKWX, Vancouver, British Colombia	6080			
0400-0500		CFRB, Toronto, Ontario	6070			

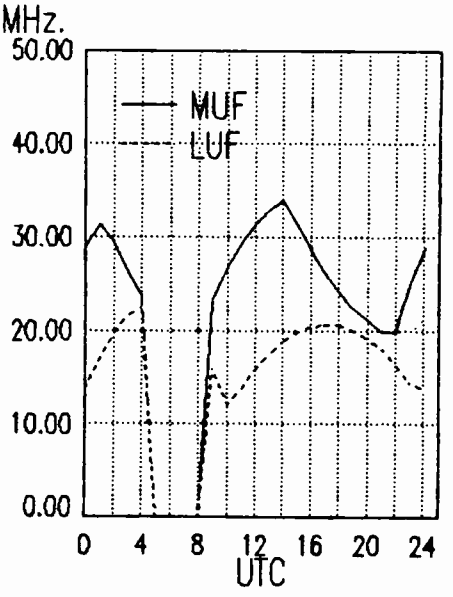
East Coast To
South Africa



East Coast To
Central Asia



East Coast To
Indonesia

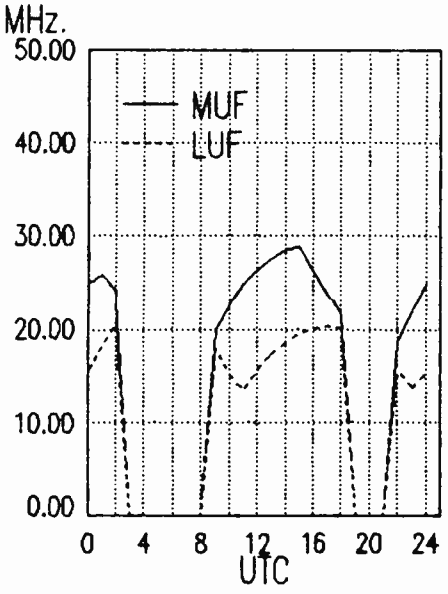


0400-0500	(US) Far East Network, Tokyo	3910
0400-0500	FEBC, Manila, Philippines	11850
0400-0500	HCJB, Quito, Ecuador	9745 11775 15155
0400-0500	KYOI, Saipan	17780
0400-0500	Radio Australia, Melbourne	11910 15160 15240 15320 17715 17795 21740
0400-0500	Radio Havana Cuba	5965 9655 11760 11820
0400-0500	Radio Moscow, USSR	7215 7310 9605 9750 13665 15425 15455 15465 15560 17570 17600 17655 17890 21690
0400-0500	Radio Moscow North America Svc	15405 15425 15455
0400-0500	Radio New Zealand, Wellington	15150 17705
0400-0500	Radio for Peace, Costa Rica	13660
0400-0500	SBC Radio One, Singapore	5010 5052 11940
0400-0500 T-S	Superpower KUSW, Utah	11695
0400-0500	Voice of America, Washington	3980 5995 6035 7170 7200 7280 9525 9540 9575 11835 15205
0400-0500	Voice of Kenya, Nairobi	6045
0400-0500V	Voice of Nicaragua, Managua	6100
0400-0500	WHRI, Noblesville, Indiana	7405 9495
0400-0500	WRNO, New Orleans, Louisiana	6185
0400-0500	WSHB, Cyprus Creek, S. Carolina	9455
0400-0500	WYFR Satellite Net, California	5950 9555
0425-0440	RAI, Rome, Italy	5990 7275
0430-0455	Radio Netherlands, Hilversum	9895 13700
0430-0500	BBC, London, England	3955 5975 6005 7185 9410 9510 9580 9915 11945 12095 15070 15280 15420 17815
0430-0500	BBC, London, England*	7210 9750 11945
0430-0500	Radio Tirana, Albania	9480 11835
0430-0500 S,M	Trans World Radio, Bonaire	9535 11930
0430-0500	Trans World Radio, Swaziland	3205 7205
0432-0500 A,M	FEBA, Seychelles	15325 17820 (irr)

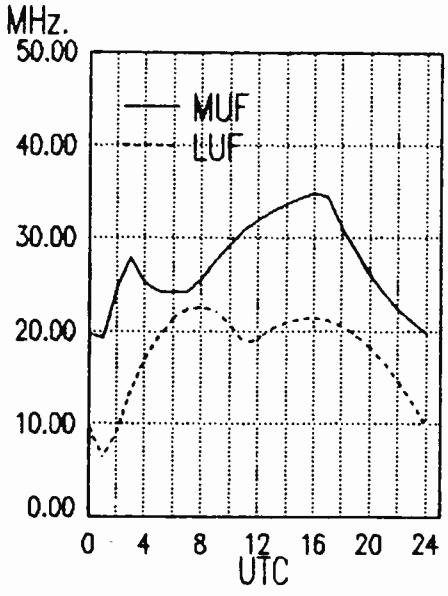
0500 UTC [1:00 AM EDT/10:00 PM PDT]

0500-0510	Radio Lesotho, Maseru	4800
0500-0510 M-A	Radio Zambia, Lusaka	3345 6165
0500-0515	GBC, Accra, Ghana	4915
0500-0515	Vatican Radio, Vatican City	6185 11715 11740
0500-0530 M	Radio Norway Int'l, Oslo	11745 15175
0500-0530 S,M	Trans World Radio, Bonaire	9535 11930
0500-0530	Trans World Radio, Swaziland	3205 5055 7210
0500-0545	Radio Berlin Int'l, East Germany	5965 6115 9645 11810 13610
0500-0550	Deutsche Welle, West Germany	5960 6130 9670 11705
0500-0600	BBC, London, England	5975 6005 6195 9410 9510 9580 9600 9915 12095 15070 15420 17815 17885
0500-0600	CBC Northern Quebec Service	6195 9625
0500-0600	CBU, Vancouver, British Colombia	6160
0500-0600	CFCF, Montreal, Quebec	6005
0500-0600	CFCN, Calgary, Alberta	6030
0500-0600	CHNS, Halifax, Nova Scotia	6130
0500-0600	Christian Science World Service	9455 9870 13760
0500-0600	CKWX, Vancouver, British Colombia	6080
0500-0600	CFRB, Toronto, Ontario	6070
0500-0600	(US) Far East Network, Tokyo	3910
0500-0600	FEBC, Manila, Philippines	11850
0500-0600	HCJB, Quito, Ecuador	6230 9745 11775
0500-0600	KYOI, Saipan	13760
0500-0600	Radio 5, South Africa	11880
0500-0600	Radio Australia, Melbourne	15160 15240 15320 17750 17795 21740
0500-0600	Radio for Peace, Cost Rica	13660
0500-0600	Radio Havana Cuba	5965 11760 11820
0500-0600	Radio Japan, Tokyo	15195 15270 17765 17810 17825
0500-0600	Radio Kuwait	15345
0500-0600	Radio Moscow, USSR	7310 12050 13665 15230 15280 15350 15425 15560 17570 17600 17655 17890
0500-0600	Radio New Zealand, Wellington	15150 17705
0500-0600	Radio Thailand, Bangkok	9655 11905
0500-0600 S,M	Radio Zambia, Lusaka	11880
0500-0600	SBC Radio One, Singapore	5010 5052 11940
0500-0600	Spanish Foreign Radio, Madrid	9630 15110
0500-0600 A,S	Superpower KUSW, Utah	6175
0500-0600 S	Swaziland Commercial Radio	6155 9705
0500-0600	Voice of America, Washington	5995 6035 6040 7170 7200 7280 9540 9575 15205
0500-0600	Voice of Kenya, Nairobi	6045
0500-0600 IRR	Voice of Nicaragua, Managua	6100

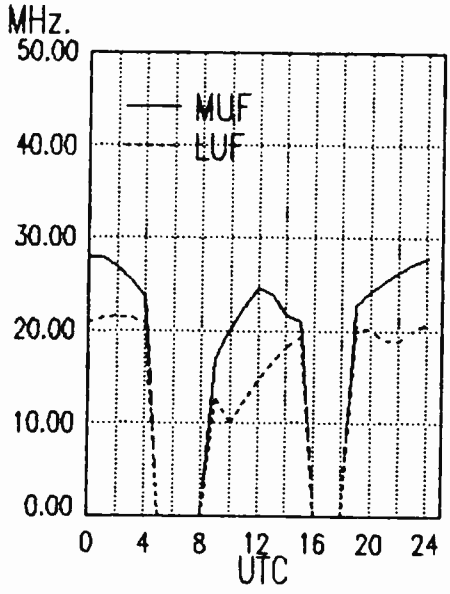
East Coast To
South East Asia



East Coast To
Indian Ocean



East Coast To
Far East



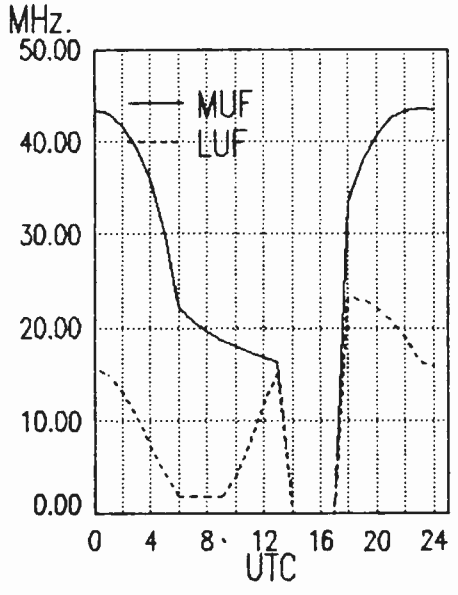
frequency section

0500-0600		Voice of Nigeria, Lagos	7255	15120	15185	
0500-0600		WINB, Red Lion, Pennsylvania	15145			
0500-0600		WHRI, Noblesville, Indiana	7405	9495		
0500-0600	M-A	WMLK, Bethel, Pennsylvania	9455			
0500-0600		WRNO, New Orleans, Louisiana	6185			
0500-0600		WYFR Satellite Net, California	5950	11580	13695	15566
			17640	17775		
0510-0520		Radio Botswana, Gaborone	3356	4820	7255	
0515-0530	M-F	Radio Canada Int'l, Montreal	6055	6140	7155	9740
			9760	11840	15225	
0515-0600		Radio Berlin Int'l, East Germany	15240	17775		
0527-0600	F	FEBA, Seychelles	17820			
0530-0545		BBC, London, England*	3990	6050	6140	7210
			9750			
0530-0555		Radio Austria Int'l, Vienna	6015			
0530-0555		Radio Bucharest, Romania	9640	11840	11940	15340
			15380	17720		
0530-0600		Radio Tirana, Albania	7300			
0530-0600		Trans World Radio, Swaziland	5055	7210		
0530-0600		UAE Radio, United Arab Emirates	15435	17775	21700	
0545-0600		Radio Berlin Int'l, East Germany	15240	17800	21540	21645
0545-0600	M-F	Radio Canada Int'l, Montreal	6055	6140	7155	9740
			9760	11840	15225	
0555-0600		Ghana Broadcasting Corp., Accra	4915			
0555-0600		Voice of Malaysia, Kuala Lumpur	6175	9750	15295	

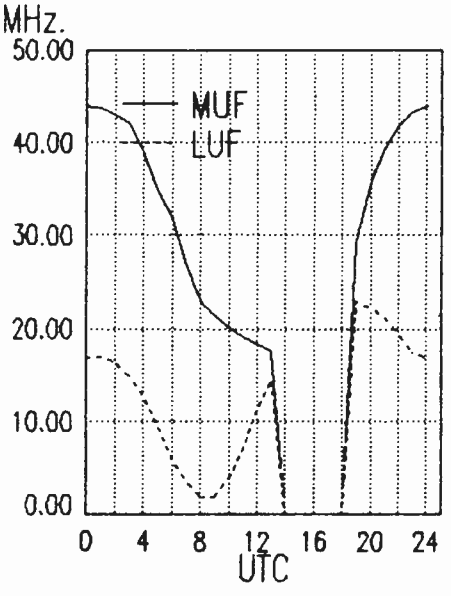
0600 UTC [2:00 AM EDT/11:00 PM PDT]

0600-0615		Radio Ghana, Accra	3366	4915		
0600-0615	M-A	Radio Zambia, Lusaka	6165	7235		
0600-0620		Vatican Radio, Vatican City	6185	9645		
0600-0630	F	FEBA, Mahe, Seychelles	17820			
0600-0630		Laotian National Radio	7113			
0600-0630		Radio Australia, Melbourne	11910	15160	15240	15395
			17715	17750	21740	
0600-0630		Radio Berlin Int'l, East Germany	15240	17880	21540	21645
0600-0630		Trans World Radio, Swaziland	6070			
0600-0630		Voice of Kenya, Nairobi	6045			
0600-0645		Radio Berlin Int'l, East Germany	5965	11810		
0600-0645	S	Radio Cameroon, Yaounde	4850			
0600-0650		Deutsche Welle, West Germany	11765	13790	15185	17875
0600-0650		Radio Pyongyang, North Korea	13650	15160	15180	
0600-0700		BBC, London, England	5975	6005	6195	7150
			9410	9580	9600	9610
			9640	9760	11925	
			12095			
			15070	15280	21470	
0600-0700		CBC Northern Quebec Service	6195	9625		
0600-0700		CBU, Vancouver, British Colombia	6160			
0600-0700		CFCF, Montreal, Quebec	6005			
0600-0700		CFCN, Calgary, Alberta	6030			
0600-0700		CHNS, Halifax, Nova Scotia	6130			
0600-0700		Christian Science World Service	9455	9840	11980	
0600-0700		CKWX, Vancouver, British Colombia	6080			
0600-0700		CFRB, Toronto, Ontario	6070			
0600-0700		HCJB, Quito, Ecuador	6230	9745	11775	
0600-0700		(US) Far East Network, Tokyo	3910			
0600-0700		King of Hope, South Lebanon	6215			
0600-0700		KYOI, Saipan	17780			
0600-0700		Radio Havana Cuba	11835			
0600-0700		Radio Jordan, Amman	9560			
0600-0700		Radio Korea, Seoul, South Korea	6060	7275	9570	
0600-0700		Radio Kuwait	15345			
0600-0700		Radio Moscow, USSR	7310	11710	11860	12010
			12050	13665	15135	15280
			15350	15425	15560	17570
			17600	17655	17890	21690
0600-0700		Radio New Zealand, Wellington	15150	17705		
0600-0700	A,S	Radio Thailand, Bangkok	9655	11905		
0600-0700	IRR	Radio Zambia, Lusaka	11880			
0600-0700		Radio 5, South Africa	11880			
0600-0700		SBC Radio One, Singapore	5010	5052	11940	
0600-0700	S	Superpower KUSW, Utah	6175			
0600-0700		Voice of America, Washington	5995	6035	6040	6080
			6125	7170	7200	7280
			7325	9530	9540	9550
			11805	11915		
0600-0700		Voice of Asia, Taiwan	7285			
0600-0700		Voice of Malaysia, Kuala Lumpur	6175	9750	15295	
0600-0700		Voice of Nicaragua, Managua	6100			
0600-0700		Voice of the Mediterranean	9765			
0600-0700		Voice of Nigaria, Lagos	15185			
0600-0700		WHRI, Noblesville, Indiana	6100	9495		
0600-0700	M-A	WMLK, Bethel, Pennsylvania	9455			
0600-0700		WYFR, Oakland, California	13760	15566		
0600-0700		WYFR Satellite Net, California	5950	6065	7355	11925
			17640			
0615-0630	M-A	Vatican Radio, Vatican City	15190	17730		
0625-0700		Trans World Radio Monte Carlo	7105			

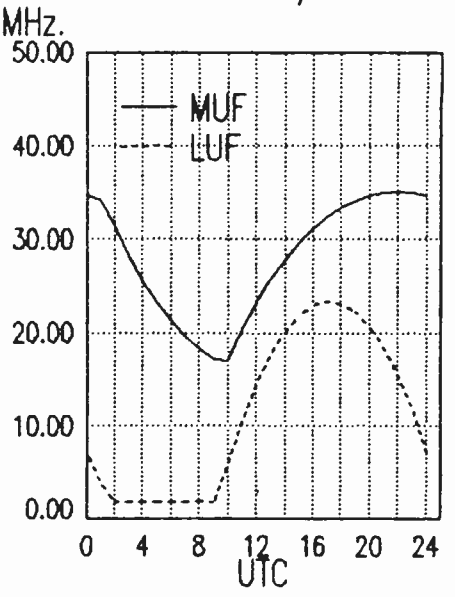
East Coast To Pacific



East Coast To Australia



East Coast To Central America/Caribbean



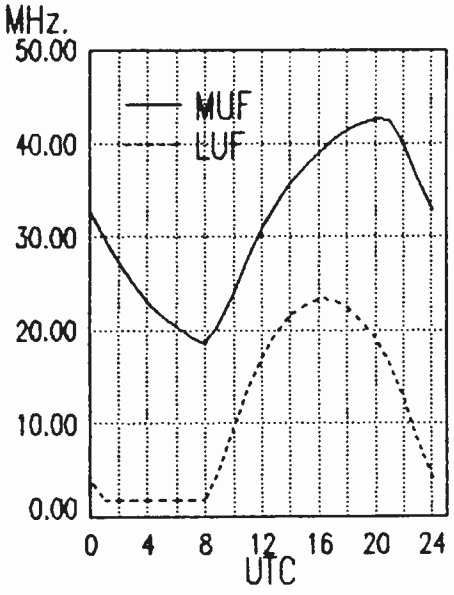
frequency section

0630-0700		AWR, Forli, Italy	7125			
0630-0700		Radio Australia, Melbourne	11910	15160	15240	15320
			15395	15425	17715	17750
			17795			
0630-0700		Radio Bucharest, Romania	21600			
0630-0700		Radio Finland, Helsinki	6120	9560	11755	15270
0630-0700		Radio Polonia, Warsaw, Poland	6135	7270	15120	
0630-0700		Swiss Radio Int'l, Berne	3985	6165	9535	12030
			15430	17570		
0630-0700		Trans World Radio, Swaziland	5055	6070	7210	9725
0630-0700	A,S	Voice of Kenya, Nairobi	7270			
0645-0700		BBC, London, England*	6150	7260	11945	
0645-0700		Radio Ghana, Accra	6130			
			11705	11800		
0645-0700		Radio Bucharest, Romania	11940	15250	15335	17790
			17805	21665		

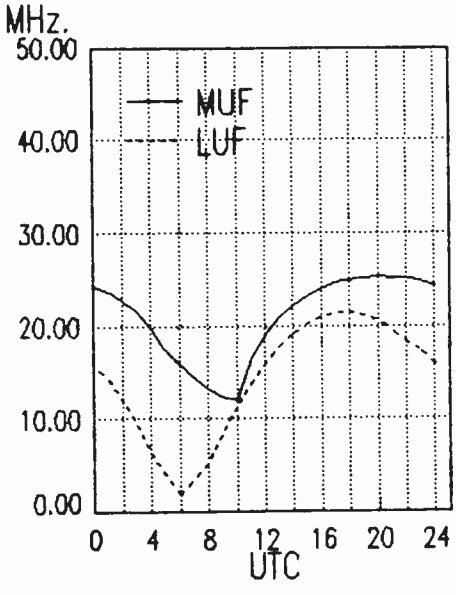
0700 UTC [3:00 AM EDT/12:00 PM PDT]

0700-0710		Radio Bucharest, Romania	11825	11940	15250	15335
			17790	17805	21665	
0700-0710		Radio Sierra Leone, Freetown	5980			
0700-0715		Radio Ghana (HS), Accra	3366	4915		
0700-0730		BBC, London, England	3955	5975	6195	7120
			7150	7325	9410	9600
			9640	9760	11860	12095
			15070	15280	15400	17815
0700-0730		Burma Bcasting Service, Rangoon	9730			
0700-0730		WHRI, Noblesville, Indiana	9495			
0700-0730		Radio Australia, Melbourne	9655	11720	11910	15160
			15240	15395	15425	17715
			17750			
0700-0730		Radio Bucharest, Romania	21600			
0700-0730		Radio New Zealand, Wellington	15150	17705		
0700-0730	S	Radio Zambia, Lusaka	11880			
0700-0750		Radio Pyongyang, North Korea	15340	17795		
0700-0800		ABC, Perth, Australia	15425			
0700-0800		CBU, Vancouver, British Colombia	6160			
0700-0800		CFCF, Montreal, Quebec	6005			
0700-0800		CFCN, Calgary, Alberta	6030			
0700-0800		CHNS, Halifax, Nova Scotia	6130			
0700-0800		Christian Science World Service	9455	9840	11980	
0700-0800		CKWX, Vancouver, British Columbia	6080			
0700-0800		CFRB, Toronto, Ontario	6070			
0700-0800		ELWA, Monrovia, Liberia	11830			
0700-0800		(US) Far East Network, Tokyo	3910			
0700-0800		HCJB, Quito, Ecuador	6130	9610	9745	11835
			11925			
0700-0800		King of Hope, South Lebanon	6215			
0700-0800		KYOI, Saipan	11980			
0700-0800		Radio Ghana, Accra	6130			
0700-0800		Radio Havana Cuba	11835			
0700-0800		Radio Japan, Tokyo	5990	15195	15270	15325
			17765	17810	21695	
0700-0800		Radio Jordan, Amman	11955			
0700-0800		Radio Korea, Seoul, South Korea	6060	7275	9570	
0700-0800		Radio Kuwait	15345			
0700-0800		Radio Moscow, USSR	7310	9580	9765	12050
			11350	15475	17810	
0700-0800	A,S	Radio Thailand, Bangkok	9655	11905		
0700-0800		SBC-1, Singapore	11940			
0700-0800		Soloman Islands Broadcasting Corp	9545			
0700-0800	S	Superpower KUSW, Utah	6135			
0700-0800		Trans World Radio, Monte Carlo	9485			
0700-0800		Trans World Radio, Swaziland	6070	9725		
0700-0800		Voice of America, Washington	6020			
0700-0800		Voice of Free China, Taiwan	5985			
0700-0800	A,S	Voice of Kenya, Nairobi	7270			
0700-0800		Voice of Malaysia, Kuala Lumpur	6175	9750	15295	
0700-0800		Voice of Nigeria, Lagos	15120	15185		
0700-0800	M-A	WMLK, Bethel, Pennsyvlania	9455			
0700-0800		WYFR, Oakland, California	6065	7355	15566	
0700-0800		WYFR Satellite Network	13760			
0715-0730		Radio Korea, Seoul, South Korea	13670	15575		
0715-0730	M-A	Vatican Radio, Vatican City	11725	15190		
0715-0735	S	FEBA, Mahe, Seychelles	15115	17785		
0715-0800	A,S	Radio Berlin Int'l, East Germany	6040	7185	9730	21465
			21540			
0720-0730	M-A	Vatican Radio, Vatican City	6248	9645	11740	
0730-0735		All India Radio, New Delhi	5990	6010	6020	7110
			7205	9610	9675	11850
			11935	15235	15250	17705
0730-0800		ABC, Alice Springs, Australia	2310	[ML]		
0730-0800		ABC, Katherine, Australia	2485			
0730-0800		ABC, Tennant Creek, Australia	2325	[ML]		
0730-0800		Radio Australia, Melbourne	5955	9655	11720	15160
			15395	17715		
0730-0745		BBC, London, England*	3975	6010	7230	9915
0730-0755		Radio Austria Int'l, Vienna	6155	13730	15410	21490

East Coast To
South America



East Coast To
Alaska



DID WE MISS SOMETHING?

Let us know your corrections and additions by sending them to frequency manager Greg Jordan at 1855-I Franciscan Terrace, Winston-Salem, NC 27127.

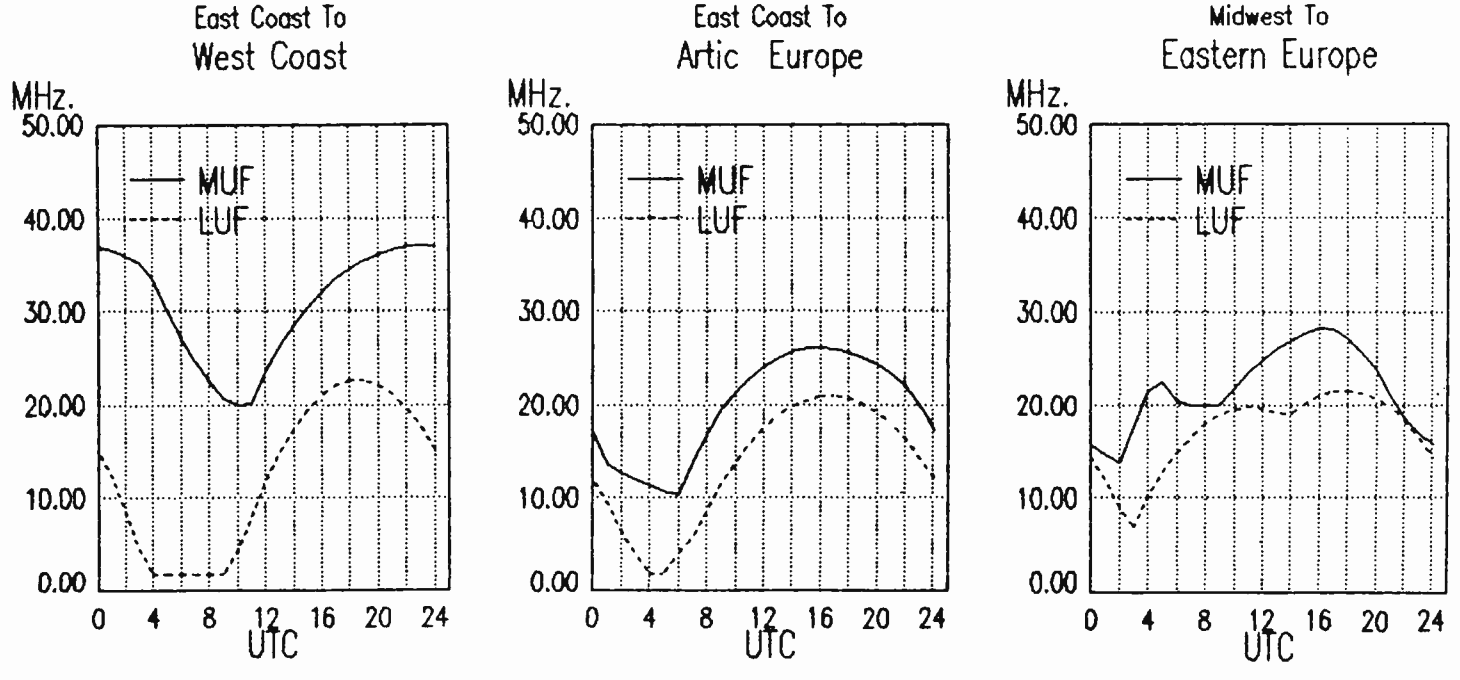
Send your special QSLs or good photocopies to share with other monitors as we have space. We'll copy and return them to you within the month. Send to QSL, P.O. Box 98, Brasstown, NC 28902.

frequency section

0730-0755		Radio Finland, Helsinki	6120	9560	11755	
0730-0800		AWR, Forli, Italy	7125			
0730-0800		BBC, London, England	3955	5975	7150	7325
			9410	9600	9640	9760
			11860	12095	15070	15280
			15400			
0730-0800		Radio Netherland, Hilversum	9630	9715		
0730-0800		Radio Prague, Czechoslovakia	11685	17840	21705	
0730-0800		Swiss Radio Int'l, Berne	3985	6165	9535	
0730-0800		WHRI, Noblesville, Indiana	9495	9620		
0740-0750	W	Radio Free Europe, Munich*	5985	7115	9695	9725
			11895	15355		

0800 UTC [4:00 AM EDT/1:00 AM PDT]

0800-0805	M-F	Port Moresby, Papua New Guinea	3925	4890	5960	5985
			6020	6040	6080	6140
			9520			
0800-0805		Soloman Islands Broadcasting Corp	9545			
0800-0815	M-A	Radio Zambia, Lusaka	6165	7235		
0800-0825	M-A	Radio Finland, Helsinki	17795	21550		
0800-0825		Radio Netherland, Hilversum	9630	9715		
0800-0825		Voice of Malaysia, Kuala Lumpur	6175	9750	15295	
0800-0830		HCJB, Quito, Ecuador	6130	9610	9745	11835
			11925			
0800-0830	S	Radio Austria Int'l, Vienna	6155	13730	15410	15450
0800-0830		Radio Bangladesh, Dhaka	12030	15525		
0800-0830		Radio Tirana, Albania	9500	11835		
0800-0830		Voice of Nigeria, Lagos	7255	15185		
0800-0830		Voice of Islam, Pakistan	15525	17870		
0800-0835	S	FEBA, Mahe, Seychelles	15325,	17785		
0800-0835		Trans World Radio, Swaziland	6070	9725		
0800-0840		Trans World Radio, Monte Carlo	9485			
0800-0850		Deutsche Welle, West Germany	9770			
0800-0850		Radio Pyongyang, North Korea	9530	11830	15115	15180
0800-0900		ABC, Alice Springs, Australia	2310	[ML]		
0800-0900		ABC, Katherine, Australia	2485			
0800-0900		ABC, Perth, Australia	15425			
0800-0900		ABC, Tennant Creek, Australia	2325	[ML]		
0800-0900		AFAN, Antarctica	6010.5			
0800-0900		BBC, London, England	7150	9410	9600	9640
			9760	11860	12095	15280
			15360	15070	15400	17815
			15240			
0800-0900		CBN, St. John's, Newfoundland	6160			
0800-0900		CBU, Vancouver, British Colombia	6160			
0800-0900		CFCF, Montreal, Quebec	6005			
0800-0900		CFCN, Calgary, Alberta	6030			
0800-0900		CHNS, Halifax, Nova Scotia	6130			
0800-0900		Christian Science World Service	9455	17855		
0800-0900		CKWX, Vancouver, British Colombia	6080			
0800-0900		CFRB, Toronto, Ontario	6070			
0800-0900		(US) Far East Network, Tokyo	3910			
0800-0900		King of Hope, South Lebanon	6215			
0800-0900		KNLS, Anhor Point, Alaska	6065			
0800-0900		KTWR, Guam	11805			
0800-0900		KYOI, Saipan	11900			
0800-0900		Radio Australia, Melbourne	9580	9655	11770	15395
			17715			
0800-0900		Radio Jordan, Amman	11955			
0800-0900		Radio Moscow, USSR	7310	9760	11705	11745
			11900	12010	15135	15155
			15475	15230	15460	15520
			15540	21690		
0800-0900		Radio for Peace, Costa Rica	12030			
0800-0900		SBC Radio One, Singapore	5010	5052	11940	
0800-0900	S	Superpower KUSW, Utah	6135			
0800-0900		Voice of Indonesia, Jakarta	11790	15105		
0800-0900	A,S	Voice of Kenya, Nairobi	7270			
0800-0900		WYFR, Oakland, California	9680	11580		
0800-0900		WYFR Satellite Network	6065			
0805-0900		KTWR, Guam	11805			
0815-0845	M-F	Voice of America, Washington DC	7175	9575	9750	11710
			11915	15600	17715	21500
			[ML]			
0830-0840		All India Radio, New Delhi	5960	5990	6010	6020
			6050	6065	6100	6140
			7110	7140	7160	7250
			7280	7295	9610	11850
			15235	15250	17705	
0830-0855		Radio Austria Int'l, Vienna	6155	13730	15410	15450
0830-0900	S	Bhutan Bcasting Service, Thimpu	6035			
0830-0900		FEBC, Manila, Philippines	11850	15350		
0830-0900		HCJB, Quito, Ecuador	6130	9745		
0830-0900		Radio Beijing, China	9700	11755	15440	
0830-0855		Radio Finland, Helsinki	11855	15245		
0830-0900		Radio Netherlands, Hilversum	17575	21485		

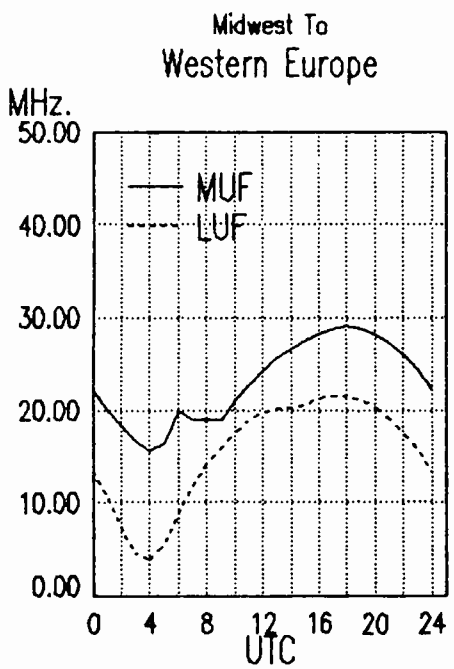


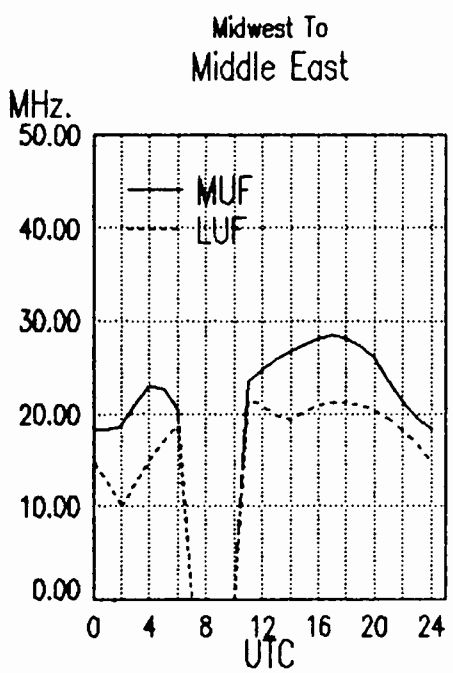
frequency section

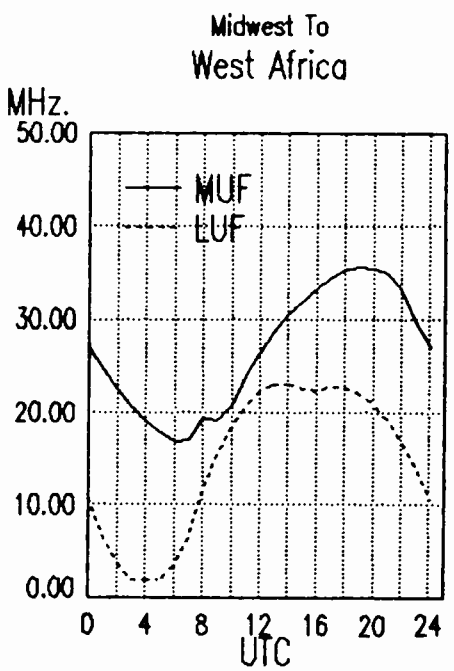
0830-0900		Radio Prague, Czechoslovakia	11685	17840	21705	
0830-0900		Swiss Radio Int'l, Berne	9560	9885	13685	17830
			21695			
0830-0900		Voice of Nigeria, Lagos	7255	15120		
0840-0850	M-A	Voice of Greece, Athens	9855	15630		
0840-0900	S-F	Trans World Radio, Monte Carlo	7105			
0845-0900		Radio Prague, Czechoslovakia	6055	7345	9505	
0850-0900		All India Radio, New Delhi	5960	5990	6010	6020
			6050	6065	6100	6140
			7110	7140	7150	7160
			7250	7280	7295	9610
			11850	15235	15250	17705

0900 UTC [5:00 AM EDT/2:00 AM PDT]

0900-0910		All India Radio, New Delhi	5960	5990	6010	6020
			6050	6065	6100	6140
			7110	7140	7150	7160
			7250	7280	7295	9610
			11850	15235	15250	17705
0900-0910	S	Trans World Radio, Monte Carlo	7105			
0900-0910		Voice of Lebanon, Beirut	6548			
0900-0925		BRT, Brussels, Belgium	5915	17595	21810	26050
0900-0925		Radio Netherlands, Hilversum	17575	21485		
0900-0930		FEBC, Manila, Philippines	11850	15350		
0900-0930		Nippon Broadcasting Corp.	3925			
0900-0930		Radio Beijing, China	9700	11755		
0900-0930	A,S	Radio Prague, Czechoslovakia	11685	17840	21705	
0900-0945	A,S	Radio Berlin Int'l, East Germany	21465	21540		
0900-0950		Deutsche Welle, West Germany	6160	9650	11785	11945
			17780	17875	21650	
0900-1000		ABC, Alice Springs, Australia	2310	[ML]		
0900-1000		ABC, Katherine, Australia	2485			
0900-1000		ABC, Tennant Creek, Australia	2325	[ML]		
0900-1000	S	Adventist World Radio, Portugal	9670			
0900-1000		BBC, London, England	5975	9410	9740	9750
			9760	11750	11845	11860
			11955	12095	15070	15175
			15280	15360	15400	17815
0900-1000		CFCF, Montreal, Quebec	6005			
0900-1000		CFCN, Calgary, Alberta	6030			
0900-1000		CHNS, Halifax, Nova Scotia	6130			
0900-1000		Christian Science World Service	9455	17855		
0900-1000		CKWX, Vancouver, British Colombia	6080			
0900-1000		CFRB, Toronto, Ontario	6070			
0900-1000		(US) Far East Network, Tokyo	3910			
0900-1000		HCJB, Quito, Ecuador	6130	9745	11925	
0900-1000		King of Hope, South Lebanon	6215			
0900-1000		KNLS, Anchor Point, Alaska	6065			
0900-1000		KTWR, Agana, Guam	11805			
0900-1000		KYOI, Saipan	11900			
0900-1000		Radio Afghanistan, Kabul	4450	6085	15435	17720
0900-1000		Radio Australia, Melbourne	5995	6080	9580	9655
			9760	11720	11770	15415
0900-1000		Radio Japan, Tokyo	11840	11885	15270	17810
			17890			
0900-1000		Radio Korea, Seoul, South Korea	7550	13670		
0900-1000		Radio Moscow, USSR	9735	11705	11900	12010
			15475	21635	21690	
0900-1000		Radio for Peace, Costa Rica	13660			
0900-1000	S	Radio Prague, Czechoslovakia	6055	7345	9505	[ML]
0900-1000		Radio RSA, South Africa	11805			
0900-1000		Radio Tanzania, Dar es Salaam	7165			
0900-1000		SBC Radio One, Singapore	5010	5052	11940	
0900-1000	S	Superpower KUSW, Utah	6135			
0900-1000		Voice of America, Washington	5985	6030	6130	11720
0900-1000		Voice of Kenya, Nairobi	7270			
0900-1000		Voice of Nigeria, Lagos	7255	15120	15185	
0900-1000		WHRI, Noblesville, Indiana	7355	9495		
0900-1000		WYFR, Oakland, California	5950	11580		
0915-0930		Radio Korea, Seoul, South Korea	9570			
0915-0950	M-A	Radio Ulan Bator, Mongolia	9615	12015		
0930-0935		All India Radio, New Delhi	5960	5990	6010	6020
			6050	6065	6100	6140
			7110	7140	7160	7250
			7280	7295	9610	11850
			15235	15250	17705	
0930-0945		BBC, London, England*	9725	11955		
0930-1000		CBN, St. John's, Newfoundland	6160			
0930-1000		Radio Beijing, China	9700	11755	15440	
0930-1000		Radio Sweden Int'l, Stockholm	15390			
0945-1000		BBC, London, England*	5995	7180	9725	11955
0945-1000	M-A	Radio Prague, Czechoslovakia	6055	7345	9505	







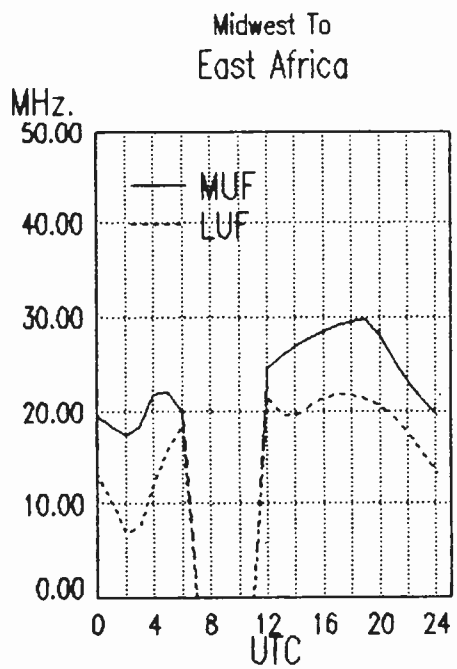
frequency section

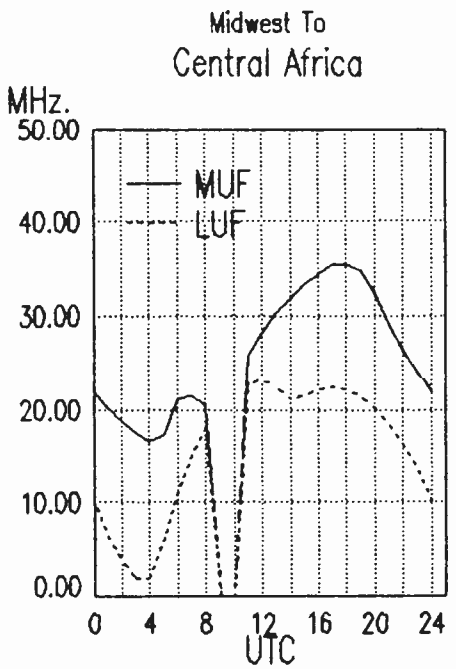
1000 UTC [6:00 AM EDT/3:00 AM PDT]

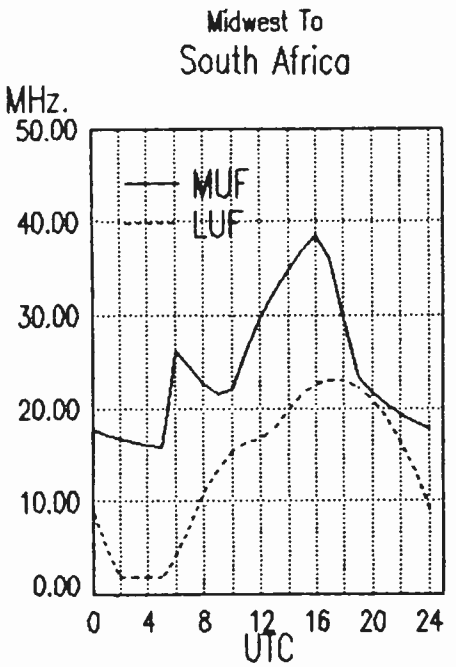
1000-1030		HCJB, Quito, Ecuador	6130	9745	11925		
1000-1030		Radio Afghanistan, Kabul	4450	6085	15435	17720	
1000-1030		Radio Beijing, China	9700	11755	15440		
1000-1030	S	Radio Norway Int'l, Oslo	15235	21705	25730		
1000-1030		Radio Tanzania, Dar es Salaam	7165				
1000-1030		Swiss Radio Int'l, Berne	9560	13685	17670	21695	
1000-1030		Voice of Ethiopia, Addis Ababa	9560				
1000-1030		Voice of Vietnam, Hanoi	12010	15010			
1000-1055	A	Trans World Radio, Monte Carlo	7105				
1000-1100		ABC, Alice Springs, Australia	2310	[ML]			
1000-1100		ABC, Katherine, Australia	2485				
1000-1100		ABC, Perth, Australia	9610				
1000-1100		ABC, Tennant Creek, Australia	2325	[ML]			
1000-1100		All India Radio, New Delhi	11860	11915	15130	15335	
			17387	11785			
1000-1100		BBC, London, England	9410	9740	11750	12095	
			15070	15175	15360	17705	
			17790	17830	21710	21470	
			25750				
1000-1100		CBN, St. John's, Newfoundland	6160				
1000-1100		CFCF, Montreal, Quebec	6005				
1000-1100		CFCN, Calgary, Alberta	6030				
1000-1100		CHNS, Halifax, Nova Scotia	6130				
1000-1100		Christian Science World Service	9455	9495			
1000-1100		CKWX, Vancouver, British Colombia	6080				
1000-1100		CFRB, Toronto, Ontario	6070				
1000-1100		(US) Far East Network, Tokyo	3910				
1000-1100		FEBC, Manila, Philippines	11850				
1000-1100		KSDA, Guam	13720				
1000-1100		KTWR, Agana, Guam	11805				
1000-1100		KYOI, Saipan	9530				
1000-1100		Radio Afghanistan, Kabul	15435	17720			
1000-1100		Radio Australia, Melbourne	5955	7205	9580	9600	
			9655	9770	15415		
1000-1100		Radio Moscow, USSR	9600	9705	9780	9875	
			11705	11900	15140	15405	
			15420	15475	15595		
1000-1100		Radio New Zealand, Wellington	9850	11780			
1000-1100	S	Radio Prague, Czechoslovakia	6055	7345	9505	[ML]	
1000-1100		Radio RSA, South Africa	11805				
1000-1100		SBC Radio One, Singapore	5010	5052	11940		
1000-1100	S	Superpower KUSW, Utah	6135				
1000-1100		Voice of America, Washington	6030	5985	6165	9530	
			9590	11720	15425		
1000-1100		Voice of Kenya, Nairobi	7270				
1000-1100		Voice of Nigeria, Lagos	7255	15120			
1000-1100		WHRI, Noblesville, Indiana	7355				
1000-1100		WYFR, Oakland, California	5950	17530			
1005-1010		Radio Pakistan, Islamabad	15606	17660			
1030-1040		Voice of Asia, Taiwan	5980				
1030-1045	A	Radio Budapest, Hungary	7220	9585	9835	11910	
			15160	15220			
1030-1055		Radio Austria Int'l, Vienna	15450	21490			
1030-1100		BBC, London, England*	7180	9660	9725		
1030-1100		HCJB, Quito, Ecuador	6130	11925			
1030-1100		Radio Netherlands, Hilversum	6020	9675			
1030-1100	A,S	Radio Tanzania, Dar es Salaam	7165				
1030-1100		SLBC, Colombo, Sri Lanka	11835	15120	17850	[ML]	
1030-1100		UAE Radio, United Arab Emirates	15435	17865	21605		
1030-1100		Voice of America, Washington*	11965				
1040-1050	H	Radio Free Europe, Munich*	7115	9695	9725		
			11895	15355			
1040-1050	M-A	Voice of Greece, Athens	11645	15630			
1045-1100	S	Radio Budapest, Hungary	7220	9585	9835	11910	
			15160	15220			
1045-1100	M-A	Radio Prague, Czechoslovakia	6055	7345	9505		
1055-1100	S	Trans World Radio, Monte Carlo	7105				

1100 UTC [7:00 AM EDT/4:00 AM PDT]

1100-1105		Radio Pakistan, Islamabad	6090	7290		
1100-1115		Radio New Zealand, Wellington	9850	11780		
1100-1120		Radio Pakistan, Islamabad	15606	17760		
1100-1125		Radio Netherland, Hilversum	6020	9675		
1100-1130		BBC, London, England*	7120			
1100-1130		HCJB, Quito, Ecuador	6130	11925		
1100-1130		Kol Israel, Jerusalem	11585	15650	17575	21760
1100-1130		KTWR, Guam*	9820	11665		
1100-1130	S	Radio Austria Int'l, Vienna	13730	15450		
1100-1130		Radio Finland, Helsinki	15400	21550		
1100-1130		Radio Mozambique, Maputo	9525	11818	11835	
1100-1130		SLBC, Colombo, Sri Lanka	11835	15120	17850	[ML]
1100-1130		Swiss Radio Int'l, Berne	13635	15570	17830	21550
1100-1130		Voice of Vietnam, Hanoi	12010	15010		
1100-1150		Deutsche Welle, West Germany	15410	17765	17800	21600
1100-1150		Radio Pyongyang, North Korea	9600	9977	11735	



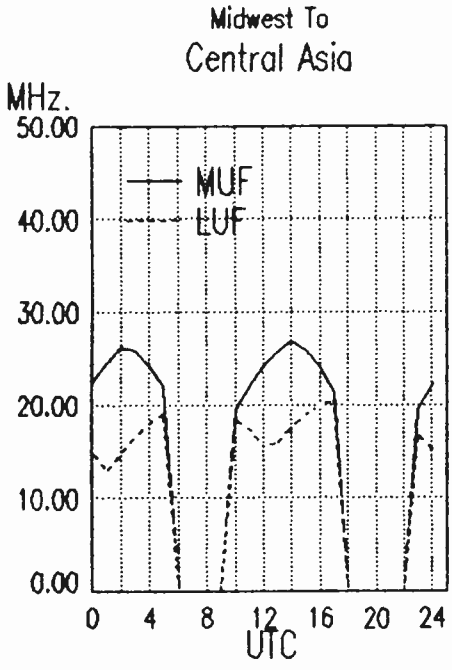


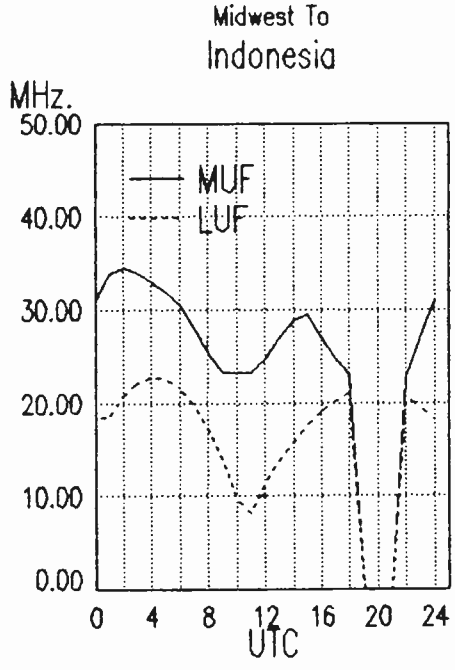


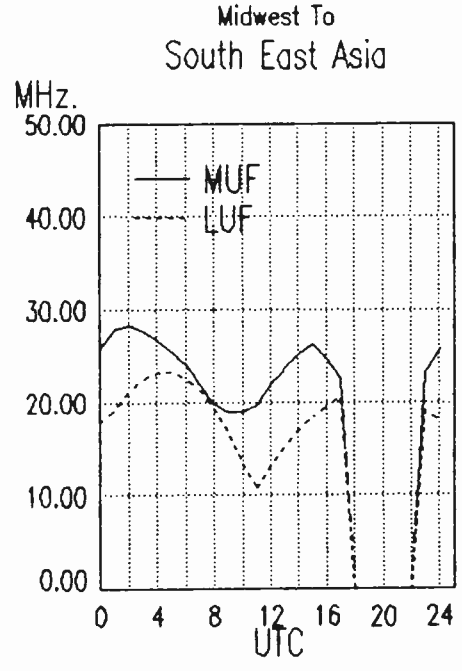
1100-1155		Radio Beijing, China	9660	15540		
1100-1200		ABC, Alice Springs, Australia	2310	[ML]		
1100-1200		ABC, Katherine, Australia	2485			
1100-1200		ABC, Perth, Australia	9610			
1100-1200		ABC, Tennant Creek, Australia	2325	[ML]		
1100-1200		BBC, London, England	5965	6195	7180	9410
			9515	9740	9750	9760
			11750	11775	12095	15070
			15360	17640	17790	21710
			21470	25750		
1100-1200		CBC Northern Quebec Service	6065	9625		
1100-1200		CBN, St. John's, Newfoundland	6160			
1100-1200		CFCF, Montreal, Quebec	6005			
1100-1200		CFCN, Calgary, Alberta	6030			
1100-1200		CHNS, Halifax, Nova Scotia	6130			
1100-1200		Christian Science World Service	9455	9495		
1100-1200		CKWX, Vancouver, British Colombia	6080			
1100-1200		CFRB, Toronto, Ontario	6070			
1100-1200		(US) Far East Network, Tokyo	3910			
1100-1200		KYOI, Saipan	9530			
1100-1200		Radio Australia, Melbourne	5995	6060	6080	7205
			7215	9580	9645	9710
			9770			
1100-1200		Radio Japan, Tokyo	6120	11815		
1100-1200		Radio Moscow, USSR	9600	15135	15225	15460
			15475			
			17590	17810	21800	
1100-1200		Radio RSA, South Africa	11805	11900	21590	
1100-1200	A,S	Radio Tanzania, Dar es Salaam	7165			
1100-1200	S	Radio Zambia, Lusaka	11880	[IRR]		
1100-1200		SBC-1, Singapore	5010	5052	11940	
1100-1200	S	Superpower KUSW, Utah	9850			
1100-1200		Voice of America, Washington	5985	6030	6110	6165
			9590	9760	11720	11745
			15425			
1100-1200		Voice of Asia, Taiwan	5980	7445		
1100-1200		Voice of Kenya, Nairobi	7270			
1100-1200		Voice of Nigeria, Lagos	7255	15120		
1100-1200		WHRI, Noblesville, Indiana	9465	11790		
1100-1200		WYFR, Oakland, California	5950	11580	17530	17640
1110-1120	M-F	Radio Botswana, Gaborone	4820	5955	7255	
1115-1130		Radio Korea, Seoul, South Korea	11740			
1115-1130		Vatican Radio, Vatican City	17840	21485		
1115-1145		Radio Nepal, Kathmandu	5005			
1115-1200		Trans World Radio, Bonaire	11815	15345		
1130-1145	A	Radio Budapest, Hungary	7220	9585	9835	11910
			15160	15220		
1130-1155		Radio Austria Int'l, Vienna	6155	13730	15450	17870
1130-1200		HCJB, Quito, Ecuador	11740			
1130-1200		Radio Berlin Int'l, East Germany	17880	21465	21540	
1130-1200		Radio Netherland, Hilversum	5955	9715	17575	21480
			21615			
1130-1200		Radio Thailand, Bangkok	9655	11905		
1130-1200		Radio Tirana, Albania	9480	11855		
1130-1200		Voice of Islamic Republic Iran	7230	9520	9685	11790
1135-1140		All India Radio, New Delhi	6065	7110	9610	9675
			11850	15320		
1140-1145	M-A	Vatican Radio, Vatican City	6248	9645	11740	
1145-1200		BBC, London, England*	7180	15280		
1145-1200		Radio Bangladesh, Dakha	15255	17740		
1145-1200		Radio Prague, Czechoslovakia	6055	7345	9505	

1200 UTC [8:00 AM EDT/5:00 AM PDT]

1200-1215		BBC, London, England*	3915	6065	7275	
1200-1215		Radio Berlin Int'l, East Germany	15440	17880	21465	21540
1200-1215		Vatican Radio, Vatican City	15190	17865		
1200-1215		Voice of Kampuchea, Phnom-Penh	9693	11938		
1200-1220		Radio Bucharest, Romania	17720	21665		
1200-1225	M-F	Radio Finland, Helsinki	15400	21550		
1200-1225		Radio Polonia, Warsaw, Poland	6095	7285		
1200-1230		Radio Netherland, Hilversum	5955	9715	17575	21480
			21615			
1200-1230		Radio Somalia, Mogadishu	6095			
1200-1230		Radio Tashkent, Uzbek, USSR	9540	9600	11785	15460
1200-1230		Radio Thailand, Bangkok	9655	11905		
1200-1230		Radio Yugoslavia, Belgrade	11735	15325	15380	
1200-1230	S	Radio Zambia, Lusaka	11880	[IRR]		
1200-1230		Swiss Radio Int'l, Berne	6165	9535	12030	
1200-1235	M-A	Radio Ulan Bator, Mongolia	9615	12015		
1200-1255		Radio Beijing, China	9665	11600	11660	15540
1200-1300		ABC, Alice Springs, Australia	2310	[ML]		
1200-1300		ABC, Katherine, Australia	2485			
1200-1300		ABC, Tennant Creek, Australia	2325	[ML]		
1200-1300	S	Adventist World Radio, Africa	17890			
1200-1300		AFAN, Antarctica	6012			
1200-1300		BBC, London, England	6195	9510	9515	9740
			11750	11775	12095	15070
			17640	17705	17790	21470





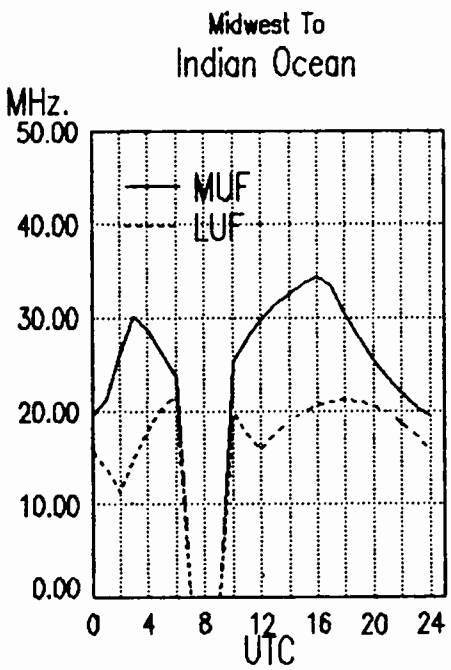


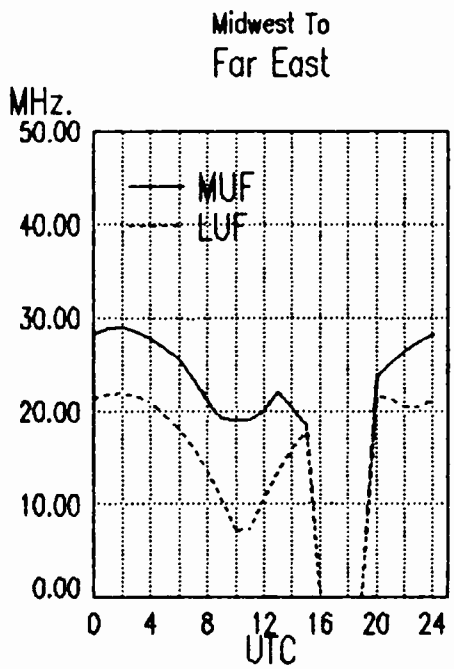
frequency section

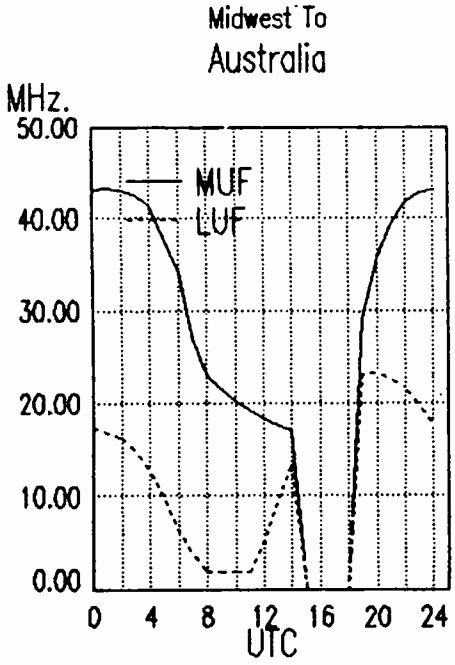
			21710	25750		
1200-1300		CBC Northern Quebec Service	6065	9625		
1200-1300		CBN, St. John's, Newfoundland	6160			
1200-1300		CFCF, Montreal, Quebec	6005			
1200-1300		CFCN, Calgary, Alberta	6030			
1200-1300		CHNS, Halifax, Nova Scotia	6130			
1200-1300		Christian Science World Service	9495	11930		
1200-1300		CKWX, Vancouver, British Colombia	6080			
1200-1300		CFRB, Toronto, Ontario	6070			
1200-1300		(US) Far East Network, Tokyo	3910			
1200-1300		HCJB, Quito, Ecuador	11740	15115	17890	
1200-1300		KYOI, Saipan	11930			
1200-1300		Radio Australia, Melbourne	5995	6060	6080	7215
			9580	9710	9770	11800
1200-1300		Radio Canada Int'l, Montreal	11955	17820		
1200-1300		Radio Moscow, USSR	9600	9875	154420	15490
			15550	15595	17570	17645
			17655	17810		
1200-1300		Radio RSA, South Africa	9585	11805	21590	
1200-1300	A,S	Radio Tanzania, Dar es Salaam	7165			
1200-1300		SBC Radio One, Singapore	5010	5052	11940	
1200-1300	A,S	Superpower KUSW, Utah	9850			
1200-1300		Trans World Radio, Bonaire	11815	15345		
1200-1300		Trans World Radio, Sri Lanka	11920			
1200-1300		Voice of America, Washington	6110	9760	15160	15425
1200-1300		Voice of Kenya, Nairobi	7270			
1200-1300		Voice of Nigeria, Lagos	7255	15120		
1200-1300		WHRI, Noblesville, Indiana	7520	11790		
1200-1300		WYFR, Oakland, California	5950	6015	11580	13695
			15255			
1215-1245		Radio Korea, Seoul, South Korea	7275	11740		
1215-1300		Radio Berlin Int'l, East Germany	15240			
1215-1300		Radio Cairo, Egypt	17595			
1230-1235		All India Radio, New Delhi	3905	4800	4920	7280
			9565	9615	11735	15120
1230-1255	M-A	BRT, Brussels, Belgium	17555	21815		
1230-1300		BBC, London, England*	6125	7255	6195	9635
			9660	11780	12040	15270
			15390	15435	17695	
1230-1300		Radio Bangladesh, Dhaka	15195	17710		
1230-1300		Radio Sweden, Stockholm	9565	17815	21570	
1240-1250	M	Radio Free Europe, Munich*	5985	7115	9695	9725
			11895	15355		
1245-1300		Radio Berlin Int'l, East Germany	15440	17880	21465	21540
1245-1300		Radio France Int'l, Paris	9805	11670	15365	15155
			17720	21645		
1235-1245		Voice of Greece, Athens	11645	15630	17565	

1300 UTC [9:00 AM EDT/6:00 AM PDT]

1300-1310		Radio France Int'l, Paris	11670	15155	15365	17720
			21645			
1300-1325		Radio Bucharest, Romania	9690	11940	15405	17720
1300-1330		BBC, London, England	5995	6195	7180	9515
			9740	11750	11775	12095
			15070	15310	15420	17790
			17885	18080	21470	21710
			25750			
1300-1330		Radio Berlin Int'l, East Germany	15440	17880	21465	21540
1300-1330		Radio Cairo, Egypt	17595			
1300-1330		Radio Finland, Helsinki	15400	21550		
1300-1330		Radio Ghana, Accra	4915	7295		
1300-1330	S	Radio Norway Int'l, Oslo	6035	9590	15310	21705
1300-1330		Trans World Radio, Sri Lanka	11920			
1300-1330		Voice of Kenya, Nairobi	7270			
1300-1332	A,S	Trans World Radio, Bonaire	11815	15345		
1300-1350		Radio Pyongyang, North Korea	9325	9345	9555	9600
			11335	11735		
1300-1355		Radio Beijing, China	11600	11660	11755	15280
			15455			
1300-1400		ABC, Alice Springs, Australia	2310	[ML]		
1300-1400		ABC, Katherine, Australia	2485			
1300-1400		ABC, Tennant Creek, Australia	2325	[ML]		
1300-1400		CBC Northern Quebec Service	9625	11720		
1300-1400		CBN, St. John's, Newfoundland	6160			
1300-1400		CBU, Vancouver, British Colombia	6160			
1300-1400		CFCF, Montreal, Quebec	6005			
1300-1400		CFCN, Calgary, Alberta	6030			
1300-1400		CHNS, Halifax, Nova Scotia	6130			
1300-1400		Christian Science World Service	9495	11930		
1300-1400		CKWX, Vancouver, British Colombia	6080			
1300-1400		CFRB, Toronto, Ontario	6070			
1300-1400	S	ELWA, Monrovia, Liberia	11830			
1300-1400		(US) Far East Network, Tokyo	3910			
1300-1400		FEBC, Manila, Philippines	11850			
1300-1400		HCJB, Quito, Ecuador	11740	15115	17890	
1300-1400		KNLS, Anchor Point, Alaska	7355			
1300-1400		KYOI, Saipan	11900			





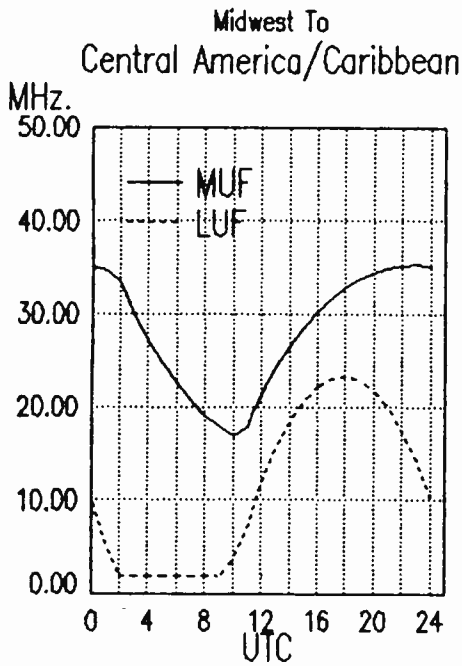


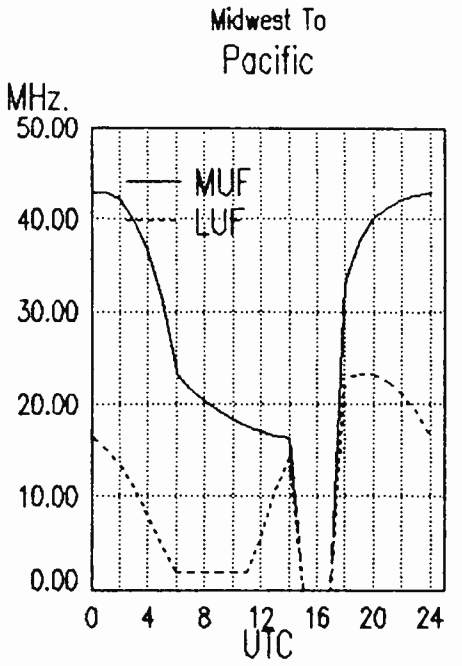
frequency section

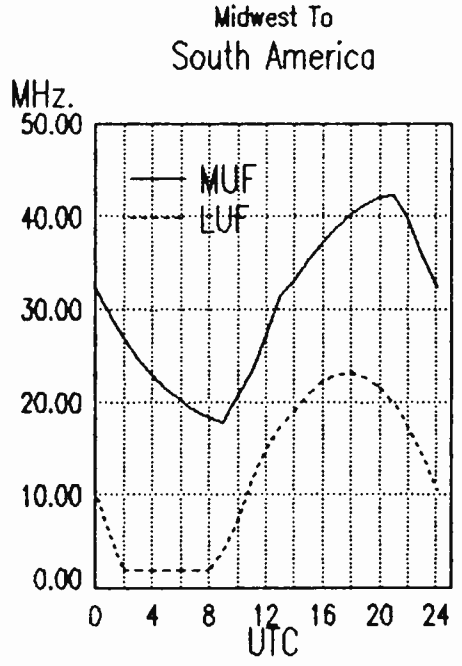
1300-1400		Radio Australia, Melbourne	5995	6060	6080	7205
			9580			
1300-1400	S-F	Radio Canada Int'l, Montreal	9625	11720	11955	17820
1300-1400		Radio Jordan, Amman	9560			
1300-1400		Radio Korea (South), Seoul	9750	15575		
1300-1400		Radio Moscow, USSR	5905	5920	6067	LSB
			7345			
			7370	9540	9755	9885
			9895	12010	15540	15595
			17570	17645	17660	17810
1300-1400		Radio RSA, South Africa	11805	17730	21590	
1300-1400	A,S	Radio Tanzania, Dar es Salaam	7165			
1300-1400		SBC Radio One, Singapore	5010	5052	11940	
1300-1400	A,S	Superpower KUSW, Utah	9850			
1300-1400		Voice of America, Washington	6110	9760	11715	15160
			15425			
1300-1400		Voice of Malaysia	7295			
1300-1400		Voice of Nigeria, Lagos	7255	15120		
1300-1400		WHRI, Noblesville, Indiana	9455	11790		
1300-1400		WYFR, Oakland, California	5950	6010	9680	13695
			15055	15365		
1330-1345		Radio Korea, Seoul, South Korea	7275	11740		
1330-1400		BBC, London, England	5995	6195	7180	9410
			9740	11750	15140	15310
			17790	17885	18080	21470
			21710	25750		
1330-1400		All India Radio, New Delhi	9545	10330	11810	15335
1330-1400		Laotian National Radio	7113			
1330-1400	S	Radio Finland, Helsinki	11945	15400		
1330-1400		Radio Tashkent, Uzbek, USSR	5945	9540	9600	11785
			15455			
1330-1400		Swiss Radio Int'l, Berne	9620	11695	13635	15135
			15570	17830	21695	
1330-1400		UAE Radio, United Arab Emirates	15435	17865	21605	
1330-1400		Voice of Islamic Republic Iran	9525	9685	9770	
1330-1400		Voice of Kenya, Nairobi	6100			
1330-1400		Voice of Turkey, Ankara	17785			
1330-1400		Voice of Vietnam, Hanoi	12010	15010		
1332-1400	A	Trans World Radio, Bonaire	11815	15345		

1400 UTC [10:00 AM EDT/7:00 AM PDT]

1400-1427		Voice of Nigeria, Lagos	15120			
1400-1430		ABC, Alice Springs, Australia	2310	[ML]		
1400-1430		ABC, Tennant Creek, Australia	2325	[ML]		
1400-1430		Radio Finland, Helsinki	9560	11715	11925	15185
1400-1430	S	Radio Norway Int'l, Oslo	15190	21705	25730	
1400-1430		Radio Polonia, Warsaw, Poland	6095	7285		
1400-1430		R.Station Peace & Progress USSR	9550			
1400-1430		Radio Sweden Int'l, Stockholm	21610			
1400-1430		Radio Tirana, Albania	9500	11985		
1400-1430		Voice of Ethiopia, Addis Ababa	9550	11710		
1400-1450	T	Radio Free Europe, Munich*	5985	7115	7695	9725
			11895	15355		
1400-1450		Radio Pyongyang, North Korea	6576	11735		
1400-1455		Radio Beijing, China	7405	11600	15165	
1400-1500		ABC, Katherine, Australia	2485			
1400-1500		ABC, Perth, Australia	9610			
1400-1500		Adventist World Radio, Italy	7275			
1400-1500		All India Radio, New Delhi	9545	11810	15335	
1400-1500		BBC, London, England	5995	6195	7180	9740
			9750	11750	12095	15070
			15140	15310	17705	17640
			17790	21710	21470	25750
1400-1500		CBN, St. John's, Newfoundland	6160			
1400-1500		CBC Northern Quebec Service	9625	11720		
1400-1500	M-A	CBU, Vancouver, British Colombia	6160			
1400-1500		CFCF, Montreal, Quebec	6005			
1400-1500		CFCN, Calgary, Alberta	6030			
1400-1500		CHNS, Halifax, Nova Scotia	6130			
1400-1500		Christian Science World Service	13760	15580		
1400-1500		CKWX, Vancouver, British Colombia	6080			
1400-1500		CFRB, Toronto, Ontario	6070			
1400-1500	S	ELWA, Monrovia, Liberia	11830			
1400-1500		(US) Far East Network, Tokyo	3910			
1400-1500		FEBC, Manila, Philippines	9670	11850		
1400-1500		HCJB, Quito, Ecuador	11740	15115	17890	
1400-1500		KYOI, Saipan	11900			
1400-1500		Radio Australia, Melbourne	5995	6035	6060	6080
			7205	9580	15140	
1400-1500	S	Radio Canada Int'l, Montreal	9625	11720	11955	17820
1400-1500		Radio Japan, Tokyo	9505	9695	11815	15410
1400-1500		Radio Korea, Seoul	9570	9750	15575	
1400-1500		Radio Moscow, USSR	5920	6067	LSB	7345
			7370			
			9540	9755	9895	11840
			12050	17570	17660	17810
			17820			
1400-1500		Radio RSA, South Africa	11925	17745	21590	25790





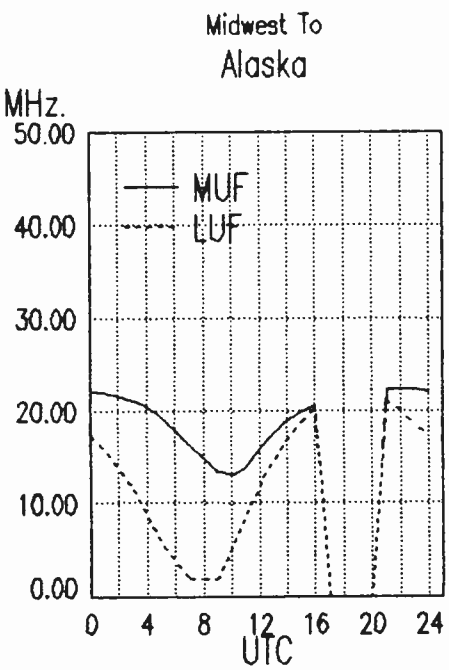


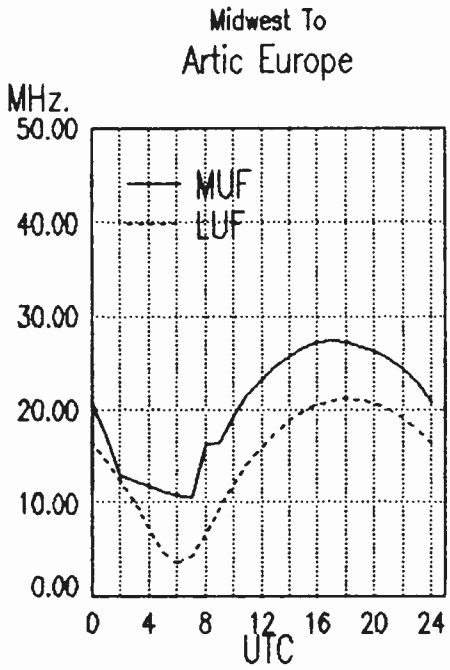
frequency section

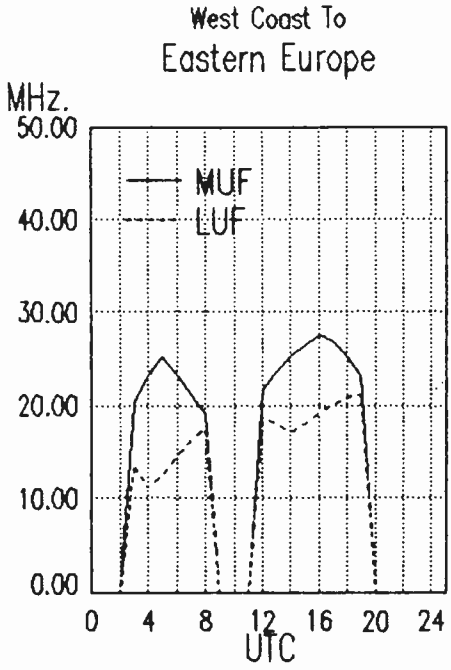
1400-1500	A,S	Radio Tanzania, Dar es Salaam	7165				
1400-1500		SBC Radio One, Singapore	5010	5052	11940		
1400-1500	A,S	Superpower KUSW, Utah	9850				
1400-1500		Voice of America, Washington	6110	9645	9700	9760	
			11920	15160	15205		
1400-1500		Voice of Kenya, Nairobi	6100				
1400-1500		Voice of Malaysia, Kuala Lumpur	4950				
1400-1500		Voice of Mediterranean, Malta	11925				
1400-1500		Voice of Nigeria, Lagos	7255				
1400-1500		WHRI, Noblesville, Indiana	9465	11790			
1400-1500		WYFR, Oakland, California	5950	11580	15255		
1400-1500		WYFR Satellite Net, California	13695				
1415-1420		Radio Nepal, Kathmandu	3230	5005			
1430-1500	F	ABC, Alice Springs, Australia	2310	[ML]			
1430-1500	F	ABC, Tennant Creek, Australia	2325	[ML]			
1430-1500		Burma Broadcasting Service	5985				
1430-1500		King of Hope, Southern Lebanon	6280				
1430-1500		KTWR, Agana, Guam	9780				
1430-1500		Radio Australia, Melbourne	6060	9580			
1430-1500		Radio Netherland, Hilversum	5955	13770	15150	17575	
			17605				
1430-1500		Radio Prague, Czechoslovakia	9605	11685	13715	15110	
			17705	21505			
1430-1500		Radio Sofia, Bulgaria	7245	9740	11735		
1445-1500		Radio Berlin Int'l, East Germany	15240	17880			
1445-1500		Radio Canada Int'l, Montreal	11935	15160	15305	15325	
			17795	17820	21545		
1445-1500	M-A	Radio Ulan Bator, Mongolia	9575	15305			

1500 UTC [11:00 AM EDT/8:00 AM PDT]

1500-1505		Africa No. 1, Gabon	7200	15200			
1500-1510		Vatican Radio, Vatican City	11960	15090	17870		
1500-1515		BBC, London, England	5995	6195	7180	9410	
			9740	11750	11775	12095	
			15070	15140	15260	15310	
			15400	17640	17705	17885	
			21470	21660	21710		
1500-1515		FEBA, Mahe, Seychelles	15325				
1500-1520		Radio Ulan Bator, Mongolia	9575	15305			
1500-1525		Radio Bucharest, Romania	9510	9690	11775	11940	
			15250	15335			
1500-1525		Radio Netherland, Hilversum	5955	13770	15150	17575	
			17605				
1500-1530		Radio Berlin Int'l, East Germany	15240	17880			
1500-1530		Radio Sofia, Bulgaria	9560	11735	15310		
1500-1530	A,S	Radio Tanzania, Dar es Salaam	7165				
1500-1530		Radio Veritas Asia, Philippines	9770	15220			
1500-1550		Deutsche Welle, West Germany	9735	11965	17810	21600	
1500-1550		Radio Pyongyang, North Korea	6576	9325	9345	9640	
			9977	11740			
1500-1555		Radio Beijing, China	11600	11795	15165		
1500-1600	F	ABC, Alice Springs, Australia	2310	[ML]			
1500-1600		ABC, Perth, Australia	9610				
1500-1600	F	ABC, Tennant Creek, Australia	2325	[ML]			
1500-1600		AWR, Alajuela, Costa Rica	15460				
1500-1600		Burma Broadcasting Service	5985				
1500-1600		CBC Northern Quebec Service	9625	11720			
1500-1600		CBN, St. John's, Newfoundland	6160				
1500-1600		CBU, Vancouver, British Colombia	6160				
1500-1600		CFCF, Montreal, Quebec	6005				
1500-1600		CFCN, Calgary, Alberta	6030				
1500-1600		CHNS, Halifax, Nova Scotia	6130				
1500-1600		Christian Science World Service	13760	15580	17550		
1500-1600		CKWX, Vancouver, British Colombia	6080				
1500-1600		CFRB, Toronto, Ontario	6070				
1500-1600	S	ELWA, Monrovia, Liberia	11830				
1500-1600		(US) Far East Network, Tokyo	3910				
1500-1600		FEBC, Manila, Philippines	11850				
1500-1600		HCJB, Quito, Ecuador	11740	15115	17890		
1500-1600		King of Hope, Southern Lebanon	6280				
1500-1600		KNLS, Anchor Point, Alaska	11650				
1500-1600		KTWR, Agana, Guam	11650				
1500-1600		KYOI, Saipan	11900				
1500-1600		Radio Australia, Melbourne	5995	6035	6060	6080	
			7205	7215	9580	15140	
1500-1600	S	Radio Canada Int'l, Montreal	9625	11720	11955	17820	
1500-1600		Radio Japan, Tokyo	9505	11815	15140	21700	
1500-1600		Radio Jordan, Amman	9560				
1500-1600		Radio Korea (South), Seoul	9870				
1500-1600		Radio Moscow, USSR	6067	LSB	7345	7370	
			9540				
			9755	9895	11840	11990	
			12010	15135			
1500-1600		Radio RSA, South Africa	11925	17745	21590	25790	
1500-1600		SBC Radio One, Singapore	5010	5052	11940		
1500-1600		SLBC, Sri Lanka	9720				
1500-1600		Superpower KUSW, Utah	9850				





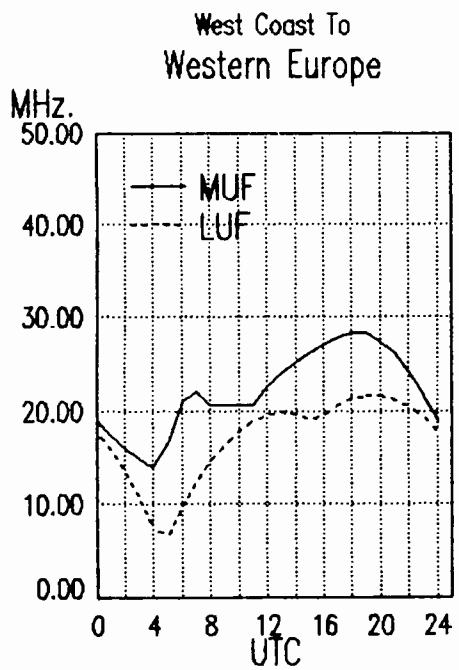


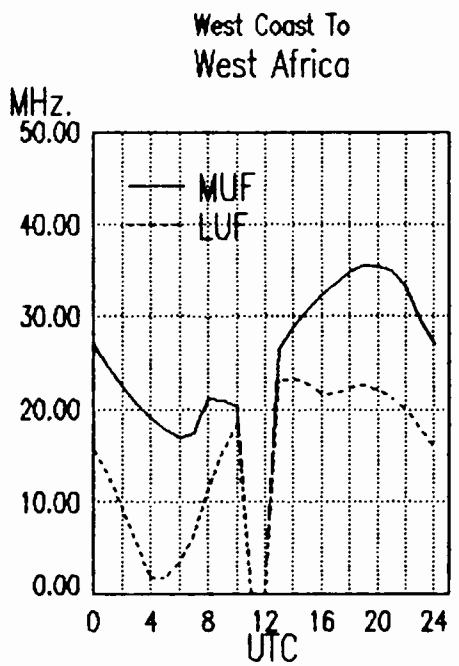
frequency section

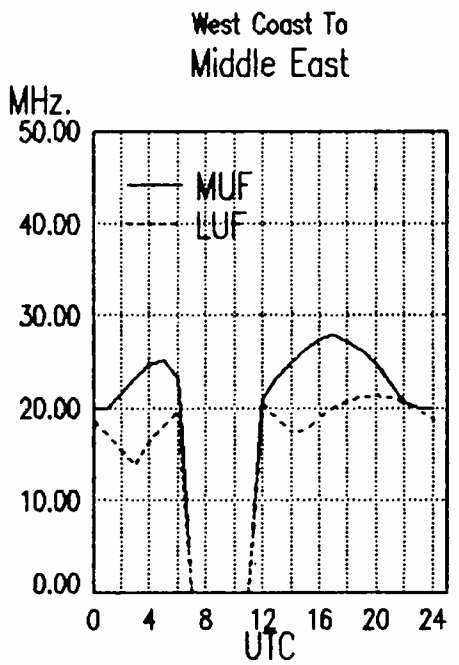
1500-1600		Voice of America, Washington	6110	9575	9645	9700
			9760	15205		
1500-1600		Voice of Ethiopia, Addis Ababa	7165	9560		
1500-1600		Voice of Indonesia, Jakarta	11790	15150		
1500-1600		Voice of Kenya, Nairobi	6100			
1500-1600		Voice of Malaysia, Kuala Lumpur	4950			
1500-1600		Voice of Mediterranean, Malta	11925			
1500-1600		Voice of Nigeria, Lagos	7255	11770		
1500-1600		WHRI, Noblesville, Indiana	15105	21840		
1500-1600		WRNO, New Orleans, Louisiana	11965			
1500-1600		WYFR, Oakland, California	11580			
1500-1600		WYFR Satellite Net	11830	13695	15345	
1515-1530	M-H	Radio Budapest, Hungary	7220	9585	9835	11910
			15160	15220		
1515-1600		BBC, London, England	5995	7180	9410	9740
			11750	11775	12095	15070
			15260	15310	15400	17640
			17705	17885	18080	21470
			21660	21710		
1515-1600		FEBA, Mahe, Seychelles	11865	15325		
1515-1600		Radio Berlin Int'l, East Germany	6115	7295	9730	15255
1530-1545		All India Radio, New Delhi	3905	3925	4860	6160
			7160	7412	9545	9950
1530-1555		BRT, Brussels, Belgium	17585	21810		
1530-1600		Radio Prague, Czechoslovakia	6055	7395	9605	11685
			11990	13715	15110	15155
			17705	21505		
1530-1600		Radio Sweden, Stockholm	15240	15330	17810	
1530-1600		Radio Tanzania, Dar es Salaam	9684			
1530-1600		Radio Tirana, Albania	9480	11835		
1530-1600		Radio-Television Morocco, Rabat	17595			
1530-1600		Swiss Radio Int'l, Berne	13685	15430	17830	21630
1530-1600		Voice of Asia, Taiwan	5980	7445		
1530-1600		Voice of Nigeria, Lagos	15120			
1540-1550	M-A	Voice of Greece, Athens	11645	15630		
1545-1600		Radio Berlin Int'l, East Germany	15355			
1545-1600		Vatican Radio, Vatican City	11810	15120	17730	
1545-1600		Voice of Vietnam, Hanoi	10011	11750		
1550-1600	H-S	KTWR, Agana, Guam	9780			

1600 UTC [12:00 PM EDT/9:00 AM PDT]

1600-1610		FEBA, Mahe, Seychelles	11865	15325		
1600-1610		Radio Lesotho, Maseru	4800			
1600-1610		SBC Radio One, Singapore	5010	5052	11940	
1600-1625		Radio Budapest, Hungary	6110	9585	9835	11910
			15160			
1600-1625		Radio Prague, Czechoslovakia	6055	9605	11665	11685
			11990	13715	15110	15155
			17705	21505		
1600-1630		ELWA, Monrovia, Liberia	11830			
1600-1630		HCJB, Quito, Ecuador	15115	17890		
1600-1630		Radio Berlin Int'l, East Germany	15355			
1600-1630	S	Radio Norway Int'l, Oslo	15265	21705	25730	
1600-1630		Radio Pakistan, Islamabad	7365	9465	9785	11615
			11625	15125		
1600-1630		Radio Polonia, Warsaw, Poland	6135	9540		
1600-1630	M-F	Radio Portugal, Lisbon	15120			
1600-1630		SLBC, Colombo, Sri Lanka	6075	9720		
1600-1630		Trans World Radio, Swaziland	5055	9525		
1600-1630		Voice of Asia, Taiwan	5980	7445		
1600-1630		Voice of Vietnam, Hanoi	12020	15010		
1600-1645		Radio Nacional Angola, Luanda	7245	9535	11955	
1600-1645		UAE Radio, United Arab Emirates	11730	15435	17865	
1600-1650		Deutche Welle, West Germany	6170	7200	9745	15105
			15595	17825	21680	
1600-1655		Radio Beijing, China	9570	11600	11715	
1600-1700	F	ABC, Alice Springs, Australia	2310	[ML]		
1600-1700		ABC, Perth, Australia	9610			
1600-1700	F	ABC, Tennant Creek, Australia	2325	[ML]		
1600-1700		AWR, Alajuela, Costa Rica	15460			
1600-1700		BBC, London, England	5975	5995	6195	7180
			9740	9410	9515	11750
			12095	15070	15260	15310
			17705	17885	18080	21470
1600-1700		CBC Northern Quebec Service	9625	11720		
1600-1700		CBN, St. John's, Newfoundland	6160			
1600-1700		CBU, Vancouver, British Colombia	6160			
1600-1700		CFCF, Montreal, Quebec	6005			
1600-1700		CFCN, Calgary, Alberta	6030			
1600-1700		CHNS, Halifax, Nova Scotia	6130			
1600-1700		Christian Science World Service	21640			
1600-1700		CKWX, Vancouver, British Colombia	6080			
1600-1700		CFRB, Toronto, Ontario	6070			
1600-1700		(US) Far East Network, Tokyo	3910			
1600-1700		KNLS, anchor Point, Alaska	7355			
1600-1700		KSDA, Guam	11980			
1600-1700		Radio Australia, Melbourne	5995	6035	6060	6080
			7205	7215	9580	





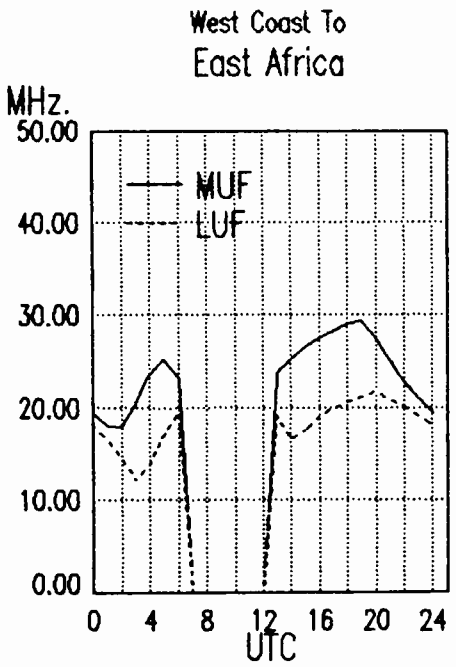


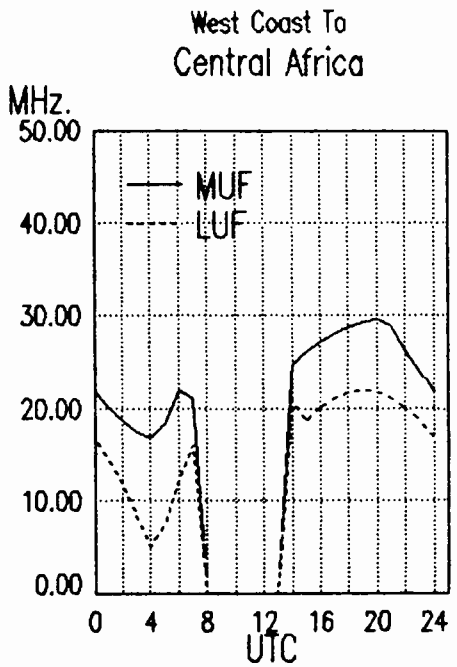
frequency section

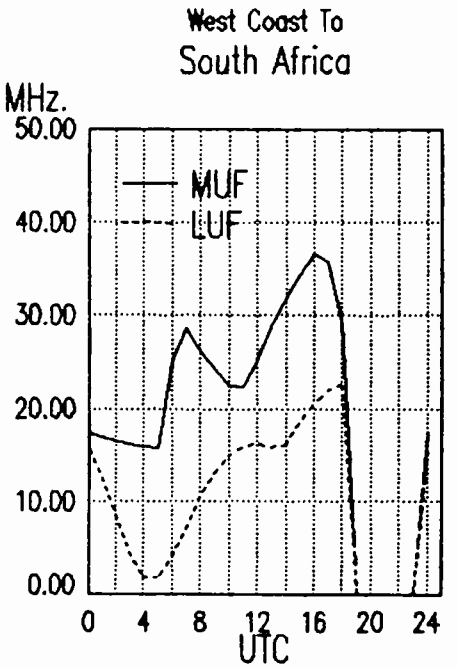
1600-1700	A	Radio Austria Int'l, Vienna	21490
1600-1700		Radio Beijing, China	15130
1600-1700		Radio France Int'l, Paris	11705 15360 17620 17795
1600-1700		Radio Jordan, Amman	9560
1600-1700		Radio Korea, Seoul, South Korea	5985 9870
1600-1700		Radio Malawi, Blantyre	3380 5995
1600-1700		Radio Moscow, USSR	9755 9895 11840 11990 15135 17685 17810
1600-1700		Radio Riyadh, Saudi Arabia	9705 9720
1600-1700		Radio Tanzania, Dar es Salaam	9684
1600-1700		Superpower KUSW, Utah	15650
1600-1700		Voice of America, Washington, DC	9575 9645 9760 15205 15410 15445 15580 15600 17785 17800 17870
1600-1700		WHRI, Noblesville, Indiana	15105 21840
1600-1700		WRNO, New Orleans, Louisiana	11965
1600-1700		WYFR, Oakland, California	15215 15440 21525
1600-1700		WYFR Satellite Network	11830 13695 15345
1600-1700		Radio Zambia, Lusaka	9580
1615-1630		Voice of Vietnam, Hanoi	10011 11750
1630-1700	S	Radio Austria Int'l, Vienna	21490
1630-1700		Radio Netherlands, Hilversum	6020 15570
1630-1700		Radio for Peace, Costa Rica	25945
1630-1700		RTM Morocco	17595 17815
1645-1700		Radio Korea (South), Seoul	5975 7275 9870

1700 UTC [1:00 PM EDT/10:00 AM PDT]

1700-1705		Radio Uganda, Kampala	4976 5026
1700-1715		Kol Israel, Jerusalem	9385 11585 13750
1700-1715	M-A	Voice of Namibia (Angola)	11955
1700-1725		Radio Netherland, Hilversum	6020 15570
1700-1730		Radio Australia, Melbourne	5995 6060 6080 7205 9580 15140
1700-1730		Radio Japan, Tokyo	9695 9535 11815
1700-1730	S	Radio Norway Int'l, Oslo	15220 21705
1700-1730		SLBC, Colmbo, Sri Lanka	11800
1700-1745		BBC, London, England	9410 9515 9740 11750 11775 12095 15070 15260 15310 15400 17640 17695 17880 21470
1700-1750		Radio Pyongyang, North Korea	7290 9345 9640 9977 11740
1700-1755		Radio Beijing, China	9570 9750 11600
1700-1800	F	ABC, Alice Springs, Australia	2310 [ML]
1700-1800		ABC, Tennant Creek, Australia	2325 [ML]
1700-1800		AWR Africa, Gabon	9625
1700-1800		CBC Northern Quebec Service	9625 11720
1700-1800		CBN, St. John's, Newfoundland	6160
1700-1800		CBU, Vancouver, British Colombia	6160
1700-1800		CFCF, Montreal, Quebec	6005
1700-1800		CFCN, Calgary, Alberta	6030
1700-1800		CHNS, Halifax, Nova Scotia	6130
1700-1800		Christian Science World Service	21640
1700-1800		CKWX, Vancouver, British Colombia	6080
1700-1800		CFRB, Toronto, Ontario	6070
1700-1800		(US) Far East Network, Tokyo	3910
1700-1800		Radio Havana Cuba	11920
1700-1800		Radio Jordan, Amman	9560
1700-1800		Radio Korea, Seoul, South Korea	5975 9870 15575
1700-1800	M-F	Radio Malabo, Equatorial Guinea	9553 [ML]
1700-1800		Radio Moscow, USSR	9540 9755 9795 9825 9895 11730 11840 11990 12050 15135 17570
1700-1800		Radio for Peace, Costa Rica	25945
1700-1800		Radio Riyadh, Saudi Arabia	9705 9720
1700-1800		Radio Tanzania, Dar es Salaam	9684
1700-1800		Radio Zambia, Lusaka	9580
1700-1800		RTM Morocco	17815
1700-1800		SBC Radio One, Singapore	5052 11940
1700-1800		Superpower KUSW, Utah	15650
1700-1800	A,S	Swaziland Commercial Radio	6155
1700-1800		Voice of Africa, Egypt	15255
1700-1800		Voice of America, Washington	6110 9575 9645 9760 11760 11920 15205 15410 15445 15580 15600 17785 17800 17870
1700-1800		Voice of Kenya, Nairobi	6100
1700-1800		Voice of Nigeria, Lagos	11770
1700-1800		WHRI, Noblesville, Indiana	13760 15105
1700-1800		WINB, Red Lion, Pennsylvania	15295
1700-1800	S-F	WMLK, Bethel, Pennsylvania	9465
1700-1800		WRNO, Louisiana	15420
1700-1800		WYFR Satellite Net	11830 13695 15215
1700-1800		WYFR, Okeechobee, Florida	11380 15345
1715-1730	M-F	Radio Canada Int'l, Montreal	5995 7235 15325 17820
1715-1745		BBC, London, England*	3975 6185 7165
1718-1800		Radio Pakistan, Islamabad	6210



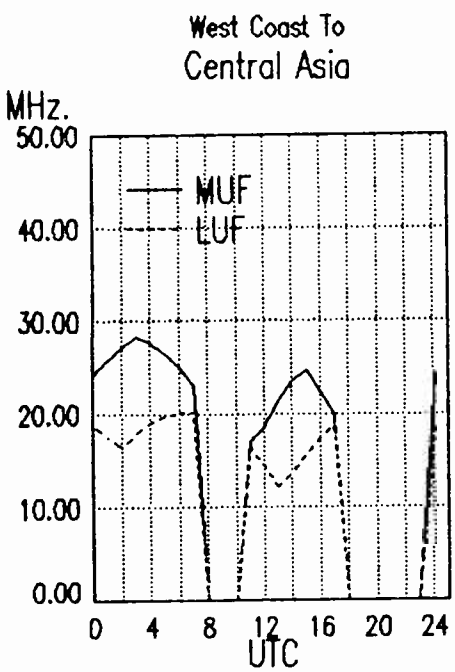


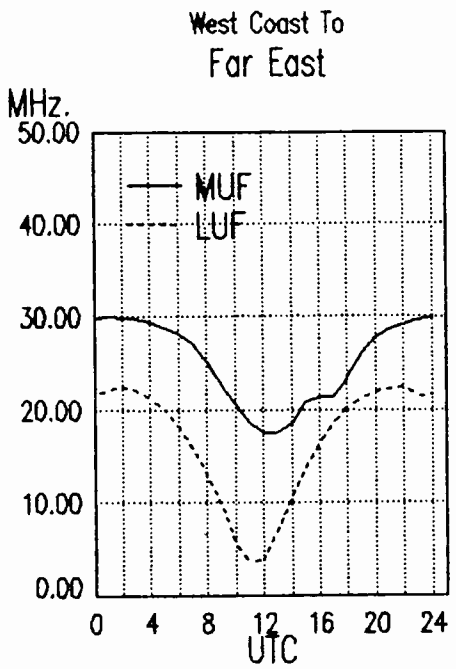


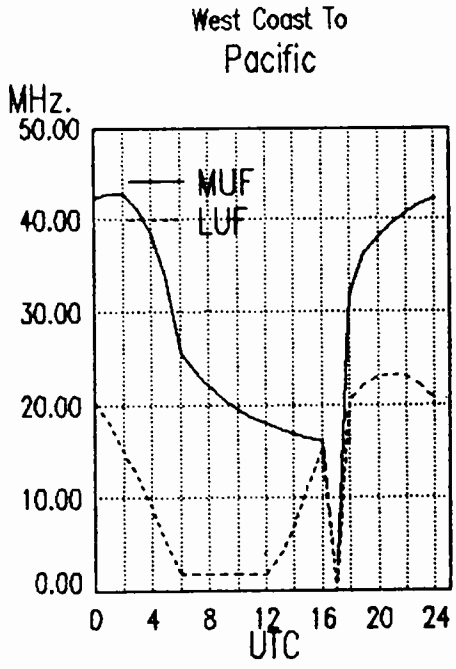
1725-1740	Radio Suriname Int'l, Paramibo	17835v
1725-1800	Radio New Zealand, Wellington	11780 15150
1730-1735	All India Radio, New Delhi	4840 4860 4920 6160 7412 9950
1730-1755	BRT, Brussels, Belgium	5915 11695
1730-1755	Radio Austria Int'l, Vienna	5945 6155 12010 13730
1730-1755	Radio Bucharest, Romania	7105 9530 9685 11790 11940 15270 15340 17745
1730-1800	Radio Australia, Melbourne	5995 6035 6060 6080 7205 9580
1730-1800	Radio Berlin Int'l, East Germany	9665 13610 15145 15255
1730-1800	Radio Polonia, Warsaw, Poland	6135 9540
1730-1800	Radio Prague, Czechoslovakia	9605 11685 11990 13715 15110 21505
1730-1800	RAE, Buenos Aires, Argentina	15345
1730-1800	Swiss Radio Int'l, Berne	3985 6165 9535
1734-1800	FEBA, Mahe, Seychelles	11810
1745-1800	BBC, London, England	9410 9740 11750 12095 15070 15400 17640 17880 17885 21470

1800 UTC [2:00 PM EDT/11:00 AM PDT]

1800-1805	A	SBC Radio One, Singapore	11940
1800-1815		Radio Cameroon, Yaounde	3970 4750 4795 4850 5010
1800-1815		SLBC, Colombo, Sri Lanka	11800
1800-1825	A,S	FEBA, Mahe, Seychelles	11760
1800-1825		Radio Prague, Czechoslovakia	5930 7345 9605 11685 11990 13715 15110 21505
1800-1825		RAE, Buenos Aires, Argentina	15345
1800-1830		BBC, London, England	7325 9410 9740 12095 15070 15400 15420 17640 17695 17880 17885
1800-1830	S	Radio Bamako, Mali	4835 5995
1800-1830	M-F	Radio Canada Int'l, Montreal	15260 17820
1800-1830		Radio Mozambique, Maputo	3265 4855 9618
1800-1830		Radio Sweden, Stockholm	6065 11845
1800-1830		Voice of Africa, Egypt	15255
1800-1830		Voice of Vietnam, Hanoi	12020 21590
1800-1845		Radio Abidjan, Ivory Coast	11920
1800-1845		Trans World Radio, Swaziland	9525
1800-1850		Radio Bras, Brasilia, Brazil	15265
1800-1856		Radio RSA, South Africa	15365 17795 21535
1800-1900	F	ABC, Alice Springs, Australia	2310 [ML]
1800-1900	F	ABC, Tennant Creek, Australia	2325 [ML]
1800-1900		All India Radio, New Delhi	11935 15360
1800-1900		CBC Northern Quebec Service	9625 11720
1800-1900		CBN, St. John's, Newfoundland	6160
1800-1900		CBU, Vancouver, British Colombia	6160
1800-1900		CFCF, Montreal, Quebec	6005
1800-1900		CFCN, Calgary, Alberta	6030
1800-1900		CHNS, Halifax, Nova Scotia	6130
1800-1900		Christian Science World Service	21640
1800-1900		CKWX, Vancouver, British Colombia	6080
1800-1900		CFRB, Toronto, Ontario	6070
1800-1900		(US) Far East Network, Tokyo	3910
1800-1900		KNLS, Anchor Point, Alaska	7355
1800-1900		KYOI, Saipan	9455
1800-1900		Radio Australia, Melbourne	5995 6035 6060 6080 7205 7215 9580
1800-1900	A,S	Radio Canada Int'l. Montreal	15260 17820
1800-1900		Radio Jamahiriya, Libya	15450
1800-1900		Radio Jordan, Amman	9560
1800-1900		Radio Kuwait, Kuwait	11665
1800-1900		Radio Malabo, Equatorial Guinea	9553v [ML]
1800-1900		Radio Moscow, USSR	9755 9825 9895 11730 11840 11990 12050 15405 15425 15475 17570
1800-1900		Radio New Zealand, Wellington	11780 15150
1800-1900		Radio Riyadh, Saudi Arabia	9705 9720
1800-1900		Radio Tanzania, Dar es Salaam	9684
1800-1900		Radio Zambia, Lusaka	9580
1800-1900		Superpower KUSW, Utah	15650
1800-1900	A,S	Swaziland Commercial Radio	6155
1800-1900		Voice of America, Washington	9575 9760 11760 11800 15205 15410 15445 15580 15600 17785 17800 17870 21485
1800-1900		Voice of Ethiopia	9662
1800-1900		Voice of Kenya, Nairobi	6100
1800-1900		Voice of Nigeria, Lagos	11770 15120
1800-1900		WHRI, Noblesville, Indiana	13760 17830
1800-1900		WINB, Red Lion, Pennsylvania	15295
1800-1900	S-F	WMLK, Bethel, Pennsylvania	9465
1800-1900		WRNO, New Orleans, Louisiana	15420
1800-1900		WYFR, Oakland, California	11580 15215 15345
1800-1900		WYFR Satellite Net, California	11830 13695
1815-1900		Radio Bangladesh, Dhaka	6240 7505 11510 15510





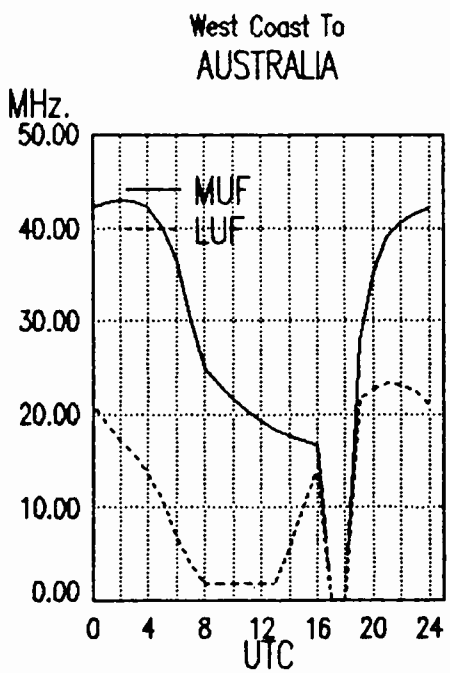


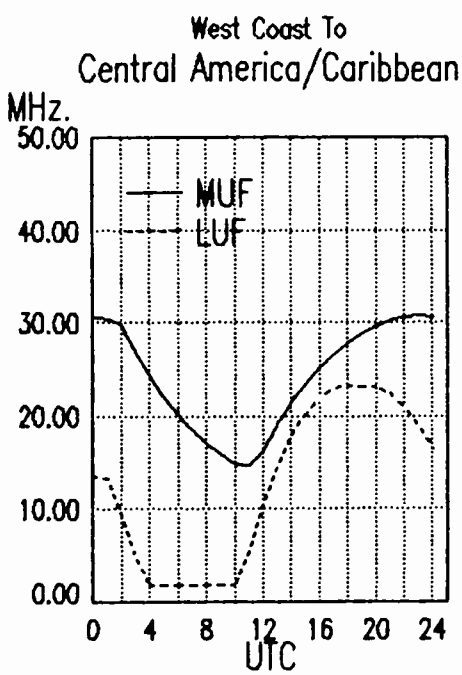
frequency section

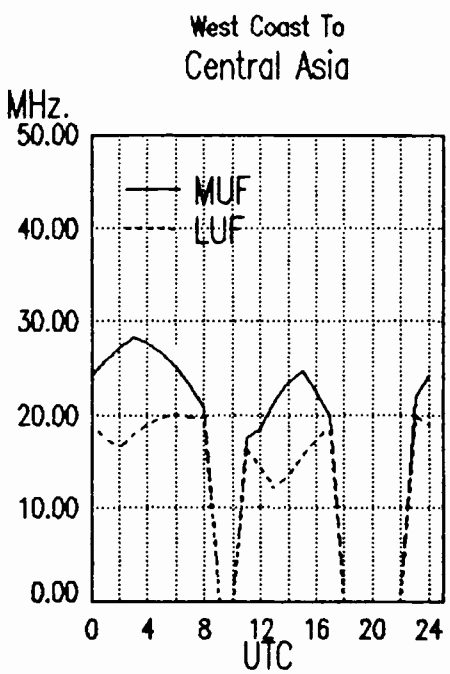
1830-1855		Radio Austria Int'l, Vienna	5945	6155	12010	13730
1800-1855		Radio Polonia, Warsaw, Poland	5995	6135	7125	7285
			9525	11840		
1830-1855		BRT Brussels, Belgium	5915	11695		
1830-1900		BBC, London, England	7325	9410	9740	11750
			12095	15070	15400	17885
1830-1900		Radio Berlin Int'l, E. Germany	9665	13610	15145	15255
1830-1900	M-F	Radio Canada Int'l, Montreal	9555	15325	17875	21675
1830-1900		Radio Korea, Seoul, South Korea	9870	15575		
1830-1900	MWF	Radio Mozambique, Maputo	3265	4855	9618	
1830-1900		Radio Netherland, Hilversum	6020	15560	17605	21685
1830-1900		Radio Sofia, Bulgaria	7245	9560	11735	15310
1830-1900		Swiss Radio International, Berne	9885	11955		
1840-1850	M-A	Voice of Greece, Athens	11645	12045	15630	
1840-1900		Radio Senegal, Dakar	4950			
1845-1855		Radio Nacional, Conaky, Guinea	4833	4900	7125	
1845-1900		All India Radio, New Delhi	7412	11620		

1900 UTC [3:00 PM EDT/12:00 PM PDT]

1900-1903		Africa No. 1, Gabon	15475			
1900-1905	M-A	Vatican Radio, Vatican City	6190	6248	7250	9645
1900-1915		Radio Bangladesh, Dhaka	6240	7505	11510	
1900-1915		Radio Tanzania, Dar es Salaam	9684			
1900-1925		Radio Netherland, Hilversum	6020	15560	17605	21685
1900-1925		Voice of Islamic Republic Iran	9695			
1900-1930	F	ABC, Alice Springs, Australia	2310	[ML]		
1900-1930	F	ABC, Tennant Creek, Australia	2325	[ML]		
1900-1930		Kol Israel, Jerusalem	12077	15095	15640	
1900-1930		Radio Afghanistan, Kabul	7160	7310	9640	
1900-1930		Radio Berlin Int'l, East Germany	9665	11920	15255	
1900-1930		Radio Japan, Tokyo	9505	11705		
1900-1930	S	Radio Norway Int'l, Oslo	9590	15220	21705	
1900-1930	M-F	Radio Portugal, Lisbon	11740	11870	15250	
1900-1930		Radio Sofia, Bulgaria	7245	9560	11735	15310
1900-1930		Voice of Vietnam, Hanoi	9840	12020	15010	
1900-1950		Deutsche Welle, Koln, W. Germany	9745	11810	13790	15390
1900-1955		Radio Beijing, China	6860	9470		
1900-2000		All India Radio, New Delhi	7412	11620	11935	15360
1900-2000		BBC, London, England	9410	9740	12095	15070
			15400	17695	17880	
1900-2000		CBC Northern Quebec Service	9625	11720		
1900-2000		CBN, St. John's, Newfoundland	6160			
1900-2000		CBU, Vancouver, British Colombia	6160			
1900-2000		CFCF, Montreal, Quebec	6005			
1900-2000		CFCN, Calgary, Alberta	6030			
1900-2000		CHNS, Halifax, Nova Scotia	6130			
1900-2000		Christian Science World Service	21640			
1900-2000		CKWX, Vancouver, British Colombia	6080			
1900-2000		CFRB, Toronto, Ontario	6070			
1900-2000		(US) Far East Network, Tokyo	3910			
1900-2000		HCJB, Quito, Ecuador	15270	17790	21470	
1900-2000		KYOI, Saipan	9455			
1900-2000		Radio Algiers, Algeria	9509	9685	15215	17745
1900-2000		Radio Australia, Melbourne	6035	6060	6080	7205
			7215	9580	15140	
1900-2000		Radio Ghana, Accra	6130			
1900-2000		Radio Havana Cuba	11950			
1900-2000		Radio Jordan, Amman	9560			
1900-2000		Radio Korea, Seoul, South Korea	9870	15575		
1900-2000		Radio Kuwait, Kuwait	11665			
1900-2000	M-A	Radio Malabo, Equatorial Guinea	9553	[ML]		
1900-2000		Radio Moscow, USSR	11840	11990	12010	12050
			15295	15405	15425	17570
1900-2000		Radio Moscow British Service	7240	7350	9450	9695
1900-2000		Radio New Zealand, Wellington	11780	15150		
1900-2000		Radio Prague, Czechoslovakia	5930	7345		
1900-2000		Radio Riyadh, Saudi Arabia	9705	9720		
1900-2000		Radio RSA, South Africa	7270	11900	15365	
1900-2000		Radio Zambia, Lusaka	9580			
1900-2000		Spanish Foreign Radio, Madrid	11790	15375	15395	
1900-2000		Superpower KUSW, Utah	15650			
1900-2000	A,S	Swaziland Commercial Radio	6155			
1900-2000		Trans World Radio Swaziland	3205			
1900-2000		Voice of America, Washington	9700	9760	11760	15205
			15410	15445	15580	15600
			17740	17785	17800	17870
1900-2000		Voice of Ethiopia, Addis Ababa	9595			
1900-2000		Voice of Kenya, Nairobi	6100			
1900-2000		Voice of Nigeria, Lagos	7255	11770		
1900-2000		WHRI, Noblesville, Indiana	13760	17830		
1900-2000		WINB, Red Lion, Pennsylvania	15295			
1900-2000	S-F	WMLK, Bethel, Pennsylvania	9465			
1900-2000		WRNO, New Orleans, Louisiana	15420			
1900-2000		WYFR, Oakland, California	15215	15345	15566	
1900-2000		WYFR Satellite Net, California	11830	13695		
1910-1920		Radio Botswana, Gaborone	3356	4820		
1915-2000		Radio Berlin Int'l, East Germany	9665	13610	15255	
1920-1930	M-A	Voice of Greece, Athens	7430	9395	9425	



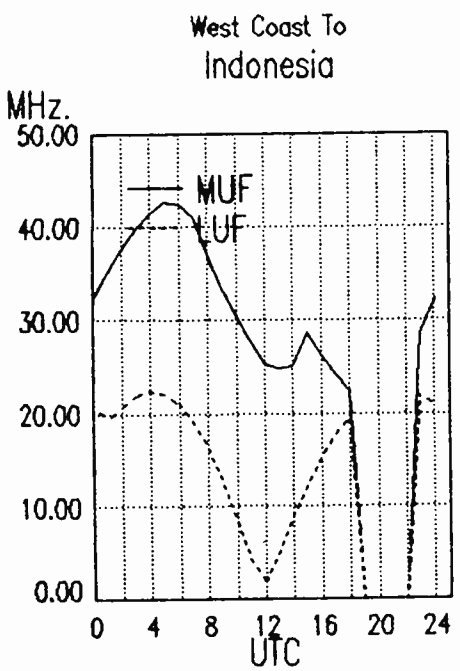


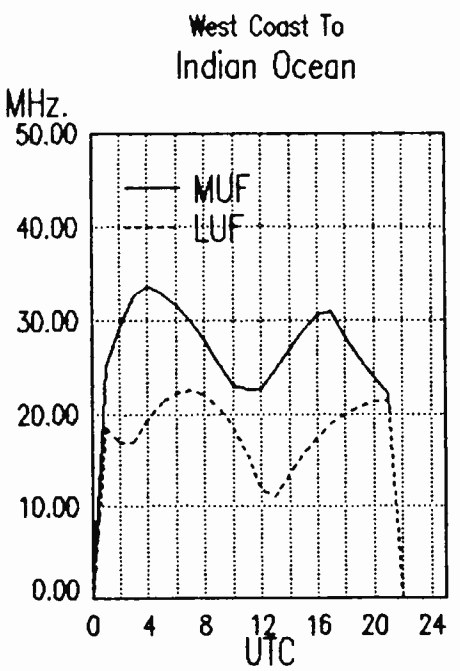


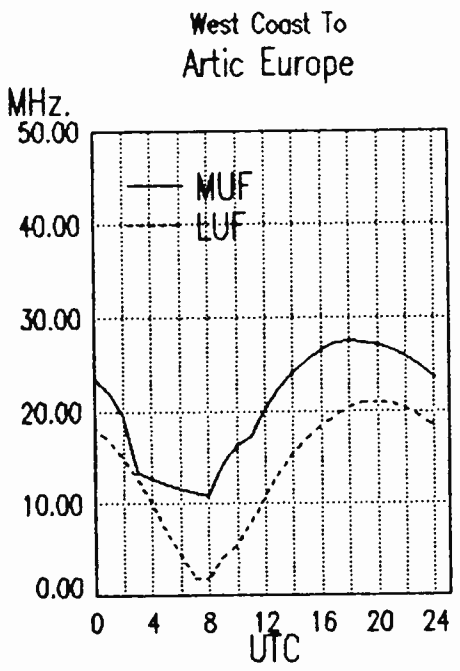
1930-1940		Radio Togo, Lome	5047			
1930-2000		ABC, Katherine, Australia	2485			
1930-2000		Radio Beijing, China	6955	7480	9440	
1930-2000		Radio Bucharest, Romania	7145	9690	9750	11940
1930-2000		Voice of Republic of Iran	6080	9022		
1930-2000		WINB, Red Lion, Pennsylvania	15185			
1935-1955		RAI, Rome, Italy	7275	7290	9575	
1940-2000	M-A	Radio Ulan Bator, Mongolia	9575	11870		
1945-2000		All India Radio, New Delhi	9755	11860		
1950-2000		Vatican Radio, Vatican City	6190	7250	9645	

2000 UTC [4:00 PM EDT/1:00 PM PDT]

2000-2005		Radio Zambia, Lusaka	3345	6165		
2000-2010	A	Radio Zambia, Lusaka	3345	6165		
2000-2010		Voice of Kenya, Nairobi	6100			
2000-2015		Radio Togo, Lome	3220	5047		
2000-2015	M-A	Radio Ulan Bator, Mongolia	9575	11870		
2000-2015		Trans World Radio, Swaziland	3205			
2000-2025		Radio Beijing, China	6955	7480	9440	9745
			11715			
2000-2025		Radio Bucharest, Romania	5990	6105	7145	7195
			9570	9690	11940	
2000-2030		Radio Australia, Melbourne	6035	7205	7215	9580
			9620			
2000-2030		Radio Budapest, Hungary	6110	7220	9585	9835
			11910	15160		
2000-2030		Radio Ghana, Nairobi	3366	4915		
2000-2030		Radio Norway International, Oslo	15310	17780		
2000-2030		Radio Polonia, Warsaw, Poland	7125	7145	9525	
2000-2030		Swaziland Commercial Radio	6155			
2000-2030		Voice of Nigeria, Lagos	7255			
2000-2030		Voice of Republic of Iran	6080	9022		
2000-2045		All India Radio, New Delhi	7412	9755	9910	11620
			11860			
2000-2050		Radio Pyongyang, North Korea	6576	9345	9640	9977
2000-2050		Voice of Turkey, Ankara	9825			
2000-2100	M-A	ABC, Alice Springs, Australia	2310	[ML]		
2000-2100		ABC, Katherine, Australia	2485			
2000-2100	M-A	ABC, Tennant Creek, Australia	2325	[ML]		
2000-2030		BBC, London, England	11820	12095	15070	15260
			15400	17690	17760	17755
			17880			
2000-2100		CBC Northern Quebec Service	9625	11720		
2000-2100		CBN, St. John's, Newfoundland	6160			
2000-2100		CBU, Vancouver, British Colombia	6160			
2000-2100		CFCF, Montreal, Quebec	6005			
2000-2100		CFCN, Calgary, Alberta	6030			
2000-2100		CHNS, Halifax, Nova Scotia	6130			
2000-2100		Christian Science World Service	15390	17555	21640	
2000-2100		CKWX, Vancouver, British Colombia	6080			
2000-2100		CFRB, Toronto, Ontario	6070			
2000-2100		(US) Far East Network, Tokyo	3910			
2000-2100		King of Hope, Southern Lebanon	6280			
2000-2100		KVOH, Rancho Simi, California	17775			
2000-2100		KYOI, Saipan	9465			
2000-2100		Radio Baghdad, Iraq	7280			
2000-2100		Radio Havana Cuba	11950			
2000-2100		Radio Jordan, Amman	9560			
2000-2100		Radio Kuwait, Kuwait	11665			
2000-2100		Radio Malabo, Equatorial Guinea	9553v			
2000-2100		Radio Moscow, USSR	9765	9755	9825	9875
			11840	11990	12050	15405
			15425			
2000-2100		Radio New Zealand, Wellington	12050	15150		
2000-2100		Radio for Peace, Costa Rica	21565	25945		
2000-2100		Radio Riyadh, Saudi Arabia	9705	9720		
2000-2100		Radio Zambia, Lusaka	9580			
2000-2100		Superpower KUSW, Utah	15650			
2000-2100		Voice of America, Washington	9700	9760	11760	15205
			15410	15445	15580	15600
			17785	17800	17870	
2000-2100		Voice of Nigeria, Lagos	11770			
2000-2100		WHRI, Noblesville, Indiana	13760	17830		
2000-2100		WINB, Red Lion, Pennsylvania	15185			
2000-2100	S-F	WMLK, Bethel, Pennsylvania	9465			
2000-2100		WRNO, New Orleans, Louisiana	15420			
2000-2100		WYFR, Oakland, California	11580	15345	15566	
2000-2100	M-A	WYFR Satellite Net, California	11830	13695	15375	
2005-2100		Radio Damascus, Syria	15095	17710		
2010-2100	A,S	Voice of Kenya, Nairobi	6100			
2015-2100		ELWA, Monrovia, Liberia	11830			
2025-2045		RAI, Rome, Italy	6165	9575		
2030-2055		Radio Polonia, Warsaw, Poland	6095	7285		
2030-2100		BBC, London, England	5975	7325	9410	11750
			11920	12095	15070	15260
			15400	17695	17755	17760
			17880			
2030-2100		Radio Australia, Melbourne	9580	9620		





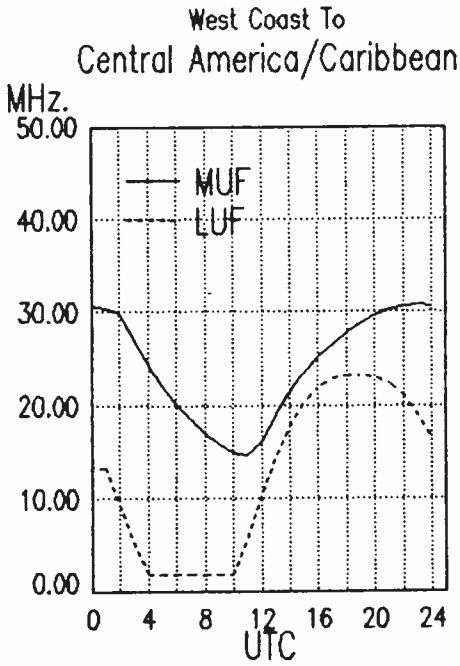


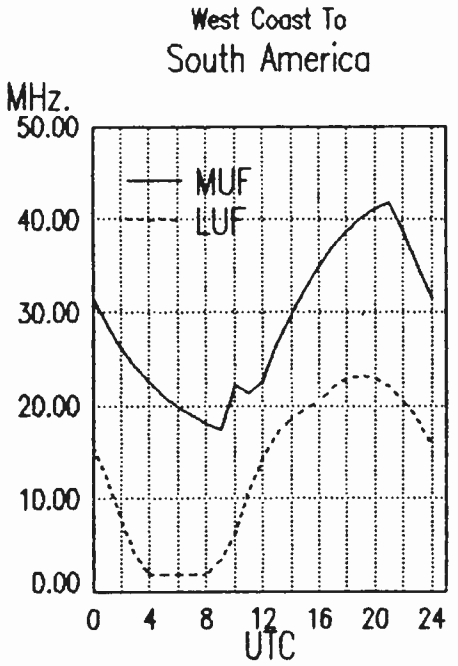
frequency section

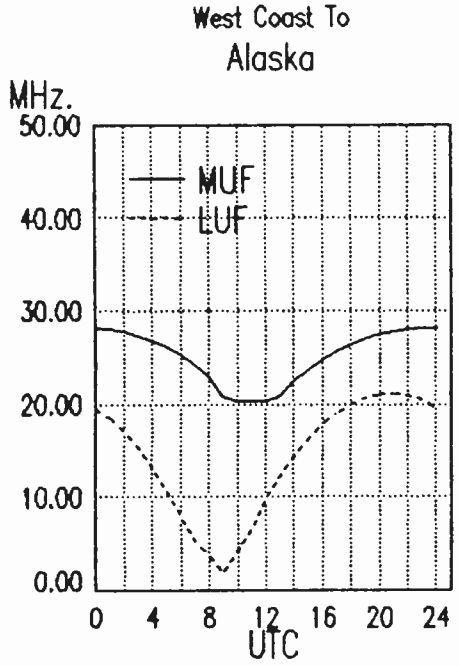
2030-2100		Radio Beijing, China	6955	7480	9440	9745
			11790			
2030-2100		Radio Korea, Seoul, South Korea	6480	7550	15575	
2030-2100		Radio Netherland, Hilversum	9860	13700	15560	
2030-2100		Radio Sofia, Bulgaria	7115	7155	9700	11720
2030-2100		Radio Tirana, Albania	9480	11835		
2030-2100		Voice of Africa, Cairo, Egypt	15375			
2030-2100		Voice of Vietnam, Hanoi	9840	12020	15010	
2045-2100		All India Radio, New Delhi	7412	9550	9910	11620
			11715			
2045-2100		IBRA Radio, Malta	7110			
2045-2100		Vatican Radio, Vatican City	9625	11700	11695	15120

2100 UTC [5:00 PM EDT/2:00 PM PDT]

2100-2105		Radio Damascus, Syria	15095	17710		
2100-2105		Radio Zambia, Lusaka	3345	6165		
2100-2110		Vatican Radio, Vatican City	6190	7250	9645	
2100-2110	A,S	Voice of Kenya, Nairobi	6100			
2100-2115		IBRA Radio, Malta	7110			
2100-2125		BRT, Brussels, Belgium	5915	9925		
2100-2125		Radio Beijing, China	6955	7480	9440	9745
			11790			
2100-2125		Radio Bucharest, Romania	5990	6105	7145	7195
			9690	11940		
2100-2125		Radio Finland, Helsinki	6120	9670	11755	
2100-2125		Radio Netherland, Hilversum	9860	13700	15560	
2100-2130	S	Radio Austria Int'l, Vienna	5945	6155	9585	9870
2100-2130		Radio Japan, Tokyo	11845	11945	15230	17810
			17890			
2100-2130		Radio Korea, Seoul, South Korea	6480	7550	15575	
2100-2130		Radio Sweden, Stockholm	6065	9655		
2100-2130		Swiss Radio Int'l, Berne	9885	13635	15570	
2100-2135		ELWA, Monrovia, Liberia	11830			
2100-2145		Radio Berlin Int'l, East Germany	9730			
2100-2145		Radio Yugoslavia, Belgrade	5980	7130	9620	9660
2100-2145		WYFR, Oakland, California	15566	17612	21525	
2100-2150		Radio Baghdad, Iraq	7280			
2100-2200		WYFR Satellite Net	11580	11830	13695	15345
			15430			
2100-2150		Deutsche Welle, West Germany	7130	9765	13780	
2100-2155		Radio Beijing, China	6860	9470	9860	
2100-2200	M-A	ABC, Alice Springs, Australia	2310	[ML]		
2100-2200		ABC, Katherine, Australia	2485			
2100-2200	M-A	ABC, Tennant Creek, Australia	2325	[ML]		
2100-2200		All India Radio, New Delhi	7412	9910	11620	11715
2100-2200		BBC, London, England	3995	5975	6005	6175
			6180	7325	9410	12095
			15070	15260	15400	17755
			17760	17880		
2100-2200		CBC Northern Quebec Service	9625	11720		
2100-2200		CBN, St. John's, Newfoundland	6160			
2100-2200		CBU, Vancouver, British Colombia	6160			
2100-2200		CFCF, Montreal, Quebec	6005			
2100-2200		CFCN, Calgary, Alberta	6030			
2100-2200		CHNS, Halifax, Nova Scotia	6130			
2100-2200		Christian Science World Service	15390	17555	21640	
2100-2200		CKWX, Vancouver, British Colombia	6080			
2100-2200		CFRB, Toronto, Ontario	6070			
2100-2200		(US) Far East Network, Tokyo	3910			
2100-2200		King of Hope, Southern Lebanon	6280			
2100-2200		KSDA, Agat, Guam	7365	15125		
2100-2200		KVOH, Rancho Simi, California	17775			
2100-2200		KYOI, Saipan	9465			
2100-2200		Radio Australia, Melborurne	15160	15240	15395	17795
2100-2200	A,S	Radio Canada Int'l, Montreal	15325	17875		
2100-2200		Radio Jordan, Amman	9560			
2100-2200		Radio Moscow, USSR	5905	6055	7150	7170
			7290	9505	9515	9590
			9620	9685	9730	9765
			9780	9790	9800	9825
			9840	9875	11840	12030
			12050	15405	15425	17655
2100-2200	A,S	Radio Malabo, Equatorial Guinea	9552.5			
2100-2200		Radio for Peace, Costa Rica	21565	25945		
2100-2200	A,S	Radio Zambia, Lusaka	9580			
2100-2200		Spanish Foreign Radio, Madrid	11790	15280		
2100-2200	M-A	Superpower KUSW, Utah	15650			
2100-2200		Voice of Africa, Cairo, Egypt	15280			
2100-2200		Voice of America, Washington	9700	9760	11760	15205
			15410	15445	15580	15600
			17785	17800	17870	
2100-2200		Voice of Nigeria, Lagos	15120			
2100-2200		WHRI, Noblesville, Indiana	13760	17830		
2100-2200		WRNO, New Orleans, Louisiana	13720			
2103-2200		WINB, Red Lion, Pennsylvania	15185			
2110-2200		Radio Damascus, Syria	15095	17710		
2115-2200		Radio Cairo, Egypt	9900			







2125-2155	S	Radio Austria Int'l, Vienna	9870			
2130-2145		BBC, London, England*	5965	7160		
2130-2200		BBC, London, England*	6030	7230	9635	
2130-2200		HCJB, Quito, Ecuador	15270	17790	21470	
2130-2200		Kol Israel, Jerusalem	9010	9435	11605	
2130-2200	A,S	Radio Canada In'l, Montreal	11880	15150	17820	
2130-2200		Radio Sofia, Bulgaria	9700	11720		
2130-2200		Radio Vilnius, Lithuanian SSR	6100			
2135-2150	S-F	ELWA, Monrovia, Liberia	11830			
2145-2200		Radio Berlin Int'l, East Germany	9730			
2150-2200	M-F	ELWA, Monrovia, Liberia	11830			

2200 UTC [6:00 PM EDT/3:00 PM PDT]

2200-2205	M-F	ELWA, Monrovia, Liberia	3993	11830		
2200-2205		Radio Damascus, Syria	9950	12085		
2200-2210		Radio Sierra Leone, Freetown	5980			
2200-2215	M-A	ABC, Alice Springs, Australia	2310	[ML]		
2200-2215	M-A	ABC, Tennant Creek, Australia	2325	[ML]		
2200-2215		BBC, London, England*	5965	7160		
2200-2215	M-F	Voice of America, Washington	9640	11740	15120	
2200-2225		RAI, Rome, Italy	5990	9710		
2200-2225		Vatican Radio, Vatican City	6015	9615	11830	
2200-2230		ABC, Katherine, Australia	2485			
2200-2230		All India Radio, New Delhi	7412	9550	9910	11620
			11715			
2200-2230		CBC Northern Quebec Service	6195	9625	11720	
2200-2230	S	KGEI, San Francisco, California	15280			
2200-2230	S	Radio Austria Int'l, Vienna	9870	11780		
2200-2230		Radio Beijing, China	3985	6165		
2200-2230		Radio Berlin Int'l, East Germany	9730			
2200-2230		Radio Canada Int'l, Montreal	5960	9755	11905	
2200-2230		Radio Jordan, Amman	9560			
2200-2230	S	Radio Norway Int'l, Oslo	9605	11850		
2200-2230		Radio Prague, Czechoslovakia	6055			
2200-2230		Radio Vilnius, Lithuanian SSR	6100	7400	15240	15455
			17665			
2200-2245		BBC, London, England	3955	5975	6005	6175
			6195	7325	9410	9590
			9915	11920	12095	15070
			15260	15400	17755	
2200-2245		Radio Cairo, Egypt	9900			
2200-2250		Voice of Turkey, Ankara	7160	9445	9680	
2200-2255		RAE, Buenos Aires, Argnetina	11710	15345		
2200-2300		CBN, St. John's, Newfoundland	6160			
2200-2300		CBU, Vancouver, British Colombia	6160			
2200-2300		CFCF, Montreal, Quebec	6005			
2200-2300		CFCN, Calgary, Alberta	6030			
2200-2300		CHNS, Halifax, Nova Scotia	6130			
2200-2300		Christian Science World Service	15205	15300	17555	
2200-2300		CKWX, Vancouver, British Colombia	6080			
2200-2300		CFRB, Toronto, Ontario	6070			
2200-2300		(US) Far East Network, Tokyo	3910			
2200-2300		King of Hope, Southern Lebanon	6280			
2200-2300		KVOH, Rancho Simi, California	17775			
2200-2300		KYOI, Saipan	15405			
2200-2300		Radio Australia, Melbourne	15160	15240	15320	15395
			17795	21740		
2200-2300		Radio for Peace, Costa Rica	13665			
2200-2300		Radio Havana Cuba	7140			
2200-2300		Radio Moscow, USSR	9685	9780	11690	11735
			11750	17570	17605	17700
2200-2300		Radio Moscow North American Svc	7215	7310	9720	11735
			17720	17700		
2200-2300		Radio Sofia, Bulgaria	9700	11720		
2200-2300		SBC Radio One, Singapore	5010	5052	11940	
2200-2300	M-A	Superpower KUSW, Utah	15580			
2200-2300		Voice of America, Washington	11760	15185	15290	15305
			15320	17735	17740	17820
			18157	USB		
2200-2300		Voice of Free China, Taiwan	9955	15370	15440	17845
2200-2300		Voice of the UAE, Abu Dhabi	9595	11965	13605	
2200-2300		WHRI, Noblesville, Indiana	13760	17830		
2200-2300		WINB, Red Lion, Pennsylvania	15185			
2200-2300		WRNO, New Orleans, Louisiana	13720			
2200-2300		WYFR, Oakland, California	11830	13695	15345	21525
2215-2230		BBC, London, England*	11820	15390		
2230-2300	A,S	CBC Northern Quebec Service	9625	11720		
2230-2300		Radio Austria Int'l, Vienna	9870	11780		
2230-2300		Radio Mediterran, Malta	6110			
2230-2300		Radio Polonia, Warsaw, Poland	5995	6135	7125	7270
2230-2300		Radio Sweden, Stockholm	11925	SSB		
2230-2300		Radio Tirana, Albania	7215	9480		
2230-2300		Swiss Radio Int'l, Berne	6190			
2245-2300		All India Radio, New Delhi	6055	7215	9535	9910
			11715	11745		
2245-2300		BBC, London, England	3955	5975	6005	6175
			7325	9410	9570	9590
			9915	11785	11945	12095
			15260	15400	17875	

2300 UTC [7:00 PM EDT/4:00 PM PDT]

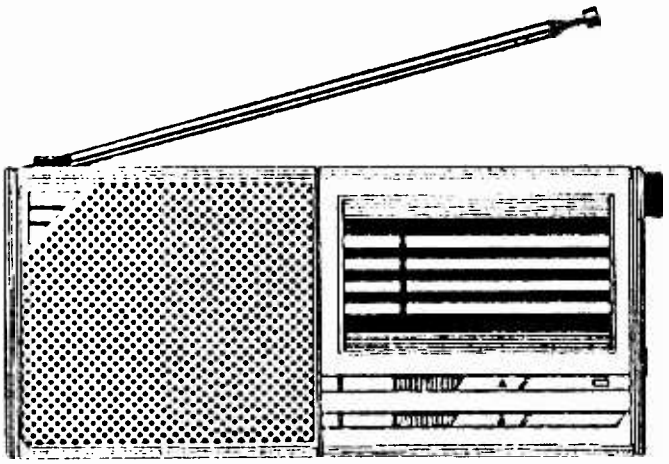
2300-2315		BBC, London, England	3955	5975	6005	6175
			7325	9410	9590	9915
			11945	12095	15070	15260
2300-2330		Kol Israel, Jerusalem	11605	15615	15640	
2300-2330		Radio Canada Int'l, Montreal	9755	11730		
2300-2350		Radio Pyongyang, North Korea	13650			
2300-0000		Radio Luxembourg	6090			
2300-2330		Radio Mediterran, Malta	6110			
2300-2330		Radio Sofia, Bulgaria	9700	11720		
2300-2345		WINB, Red Lion, Pennsylvania	15185			
2300-2345		WYFR, Oakland, California	5950	11580	15170	
2300-0000		All India Radio, New Delhi	6055	7215	9535	9910
			11715	11745		
2300-0000		CBC Northern Quebec Service	6195	9625		
2300-0000		CBN, St. John's, Newfoundland	6160			
2300-0000		CBU, Vancouver, British Colombia	6160			
2300-0000		CFCF, Montreal, Quebec	6005			
2300-0000		CFCN, Calgary, Alberta	6030			
2300-0000		CHNS, Halifax, Nova Scotia	6130			
2300-0000		Christian Science World Service	15205	15300	17555	
2300-0000		CKWX, Vancouver, British Colombia	6080			
2300-0000		CFRB, Toronto, Ontario	6070			
2300-0000		(US) Far East Network, Tokyo	3910			
2300-0000		KVOH, Rancho Simi, California	17775			
2300-0000		KYOI, Saipan	15405			
2300-0000		Radio Australia, Melbourne	15160	15240	15320	15395
			17795	21740		
2300-0000		Radio for Peace, Costa Rica	21555			
2300-0000		Radio Japan, Tokyo	11800	15195	17810	
2300-0000		Radio Moscow	7295	7440	9625	9790
			9840	11690	15420	17570
			17655	21690	21790	
2300-0000		Radio Moscow, (N. American Srvc)	7215	7310	9410	9605
			9685	9720	11735	11750
			12050	17700	17720	
2300-0000		Radio Polonia, Warsaw	5995	6135	7125	7270
2300-0000		Radio Thailand, Bangkok	9655	11905		
2300-0000		Superpower KUSW, Utah	15580			
2300-0000		Voice of America, Washington, DC	15290	17735	17820	18157
			USB			
2300-0000		Voice of the UAE	6170	9595	11965	13605
2300-0000		WHRI, Noblesville, Indiana	13760	17830		
2300-0000		WRNO, New Orleans, Louisiana	137202			
2315-2330		BBC, London, England*	11820	15390		
2315-0000		BBC, London, England	5975	6005	6175	6195
			7325	9515	9590	9915
			11945	12095	15260	15435
			17875			
2330-0000	M-A	Radio Budapest, Hungary	6110	9520	9585	9835
			11910	15160		
2330-0000		Radio Canada Int'l, Montreal	9955	15370	15440	17845
2330-0000		Radio Kiev, Ukrainian SSR	7400	9685	15240	15455
			17665			
2330-0000		Radio Korea, Seoul, South Korea	15575			
2330-0000		Radio Tirana, Albania	9760v			
2330-0000		Voice of Vietnam, Hanoi	9840	12020	15010	
2330-2355	M-A	BRT, Brussels, Belgium	9925			
2335-2345	M-A	Voice of Greece, Athens	7430	9905		
2345-0000		BBC, London, England*	3915	6080	7180	9580
2345-0000		Radio Berlin Int'l, East Germany	6080	11890		
2348-0000		WINB, Red Lion, Pennsylvania	15145			

magne tests...

Lawrence Magne

Editor-in-Chief
Passport to World Band Radio

China's Cougar H-88 Portable



In last month's *Monitoring Times*, the BBC's Graham Mytton zeroed in on a truth easily overlooked by those of us in advanced nations: In most countries, digital world band radios are a rarity. Instead, what you find in abundance are cheap multi-band sets -- transistorized portables with analog circuit design concepts and performance straight out of the early 1960's.

Some day -- in twenty years, perhaps -- digital world band receivers are likely to be the norm. But, for now, this is still the way it is.

China: Number One Nation of SWLs

The Peoples Republic of China is the planet's largest shortwave listening market, teeming with over a billion radio listeners. There, portables and tabletops that include shortwave coverage are the norm. Yet, ironically, Chinese world band radios -- so common within that country -- are rarely found in Western stores.

But Chinese exporters aren't completely asleep. One model -- the Cougar H-88 compact portable -- does show up now and again in retail stores and mail order catalogs.

Band Coverage About Average

Priced in the US at around $50, the little Cougar covers AM to around 1610 kHz, plus FM and the longwave band sometimes used for domestic broadcasting outside the Western Hemisphere. Shortwave coverage is confined to the 6, 7, 9, 11, 15 and 17 MHz (49, 41, 31, 25, 19 and 16 meter) world band segments.

Not covered is the 1600-1700 kHz AM band expansion scheduled to be implemented in the Americas. Also not covered are the 2, 3 and 5 MHz (120, 90 and 60 meters) tropical segments and the 4, 13, 21 and 25 MHz (75, 22, 13 and 11 meters) world band segments.

Presumably, this radio is intended specifically for the export market as many of the primary Chinese domestic and quasi-domestic shortwave stations are beyond the tuning range of the Cougar.

No Frills, No Fads, No Fancy Stuff

For a $50 radio, this sort of coverage is pretty typical. And so, for that matter, is the Cougar's performance and paucity of features.

Sensitivity and selectivity are both mediocre -- but about what you should expect in this price range. Audio quality, while only so-so, nonetheless is better than average for such a small, inexpensive set. There are no frills whatsoever, except for a marginally useful LED "glow light" tuning indicator and a small cloth carrying strap.

One niggling criticism is that the tuning knob is stiff, presumably to minimize backlash with the set's string-and-pulley tuning mechanism. Another is that the power switch could easily be activated inadvertently, such as while the set is packed away in a suitcase.

Overall, this is a decent little radio for the price. But the bottom line is that it doesn't equal the performance or world band coverage of Magnavox's similarly priced D1835 and D1875, sold outside the US as the Philips D1835 and D1875.

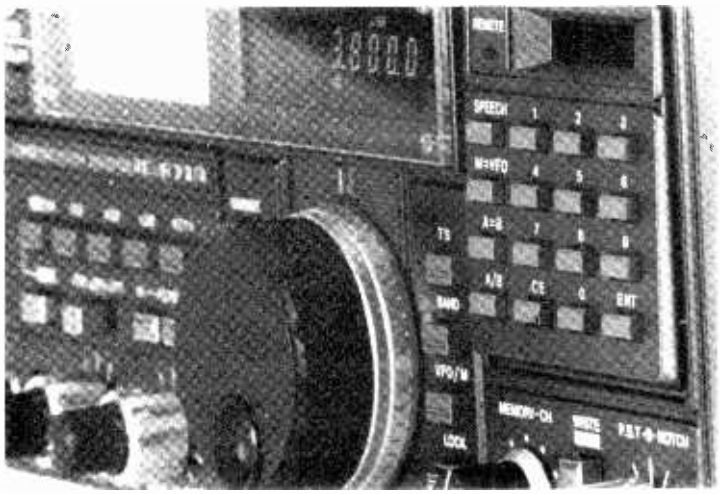
Chinese Radios: What's Their Future?

Most importantly, what the Cougar suggests is that China intends to be some sort of player in the lucrative world band receiver market. It will be interesting to see what they come up with down the road for an encore, and whether they intend to challenge Japan and the "Little Tigers" for a major role in this market.

Major Feature Vanishes from ICOM IC-R71

Folks who purchased an ICOM IC-R71 in recent weeks have been handed an unwelcome surprise: The passband tuning control and circuit that always used to come with that set is gone -- concentric knob and all. Also dropped has been the 15-pole ceramic filter associated with that circuit. According to Universal Shortwave's Fred Osterman, these revised 'R71's began appearing before this year's Dayton Hamvention.

Alas, there has been no change in the model number to warn the hapless consumer that what he is getting is not that which years of product reviews and word-of-mouth have suggested the 'R71 is. It's the opposite of when ICOM earlier this year deleted the passband tuning circuit from the IC-761 transceiver. In that instance, they changed the model number to IC-765 -- and made



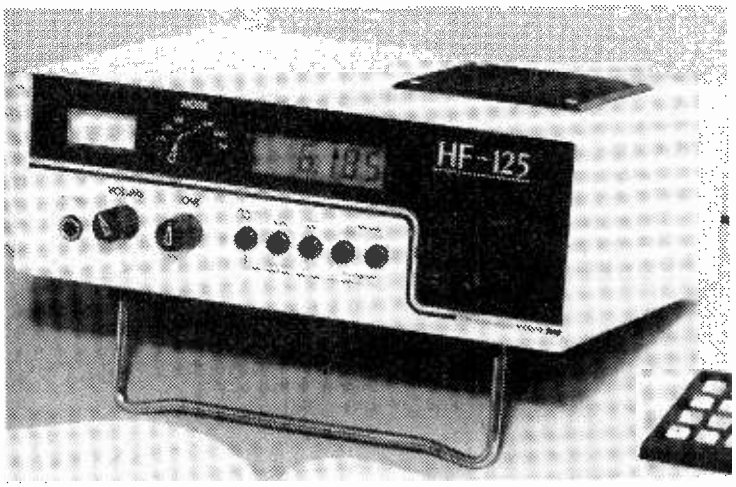
Wonder which model you have? The label on the lower-right knob is one clue.

other feature changes, as well.

In the case of the 'R71, the only clue -- short of looking at whether the lower-right knob says P.B.T-NOTCH or merely NOTCH -- is the set's shipping carton. The earlier version has large photos of the receiver on the sides, whereas the newer carton has no photos whatsoever.

Like a candy bar that shrinks while the price stays the same, the 'R71's feature regression amounts to a hidden price rise... even if the reason, according to industry scuttlebutt, has more to do with proprietary rights to certain PBT circuit designs.

How much of a *de facto* price rise is suggested by the following. Electronic Equipment Bank, which is reportedly one of North America's largest ICOM dealers, tells us that they have come up with a fix that is to restore fully the passband tuning function, filter and all. The charge for this, including parts and labor, is to be $125 if the set is or was purchased from EEB, $150 for everybody else.



"Better than the HF-125" is the current outlook on the new HF-225

New British Receiver Coming Up

The Lowe HF-225 tabletop communications receiver, produced in Matlock, England, is scheduled to appear shortly. We're in the process of evaluating it now, and overall it is quite similar to the earlier HF-125 but with several improvements in performance.

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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 US from Universal Shortwave and EEB; in Canada from PIF, C.P. 232, L.d.R., Laval PQ H7N 4Z9; and in Europe from Interbooks, 8 Abbot Street, Perth PH2 0EB, Scotland.

A catalogue of these reports may be obtained by sending a self-addressed stamped envelope to International Broadcasting Services, Ltd., Box 300M, Penn's Park PA 18943 USA.

P.O. Box 98
Brasstown, NC 28902

OPTOELECTRONICS:

A Handy Handful

For many years, Optoelectronics (5821 NE 14th Ave., Ft. Lauderdale, FL 33334) has been manufacturing high quality test equipment at very reasonable cost. Evolving from tiny benchtop frequency counters through handheld versions, the products have found wide use among laboratories and experimenters alike.

In our February issue, we mentioned the general utility use of their model 1300 handheld counter. With Optoelectronics' reputation for innovation, it was not surprising to learn that their most recent products include a battery-operated 2.4 GHz counter and a sensitive RF detector. Naturally, we had to test them both.

2210 Frequency Counter

For many years, frequency counters were heavy, large, cantankerous units that sat on the rigid test benches of well-funded laboratories. Rows of neon bulbs would laboriously climb like the floor indicators in an elevator, gradually settling down to display, in decade columns, the frequency of the incoming source.

Ah, the good old days.

Fortunately, things have changed for the better. The Optoelectronics 2210 is a complete frequency counter that measures only 3-1/2"W x 3-3/4"H x 1"D and weighs in at less than 9 ounces. It offers an eight digit LED readout and measures frequencies as low as 10 Hz and as high as 2.2 GHz (2200 MHz) -- and it does it quickly! A decimal point separates MHz from kHz.

There are no troublesome controls to fiddle with; signal levels are automatically adjusted and when the display provides a steady reading, that's the frequency!

Accurately calibrated at the factory, oscillator adjustments are accessible from two front panel holes should recalibration ever be necessary.

Housed in a rugged metal cabinet and utilizing MMIC preamplifier chips, surface-mount components and an LSI counter chip, the 2210 will operate for up to two hours on one battery charge, offering +/-2ppm frequency stability from its two quartz-crystal time bases.

The frequency counter comes complete with rechargeable batteries and an AC charger/adaptor for $199 plus $10 shipping. A BNC-equipped telescoping whip (TA-100-S) is $12 and a zipper case with protective window (CC-12) is $10. There is even an RF probe available for direct coupling to circuitry (P-100) for $20.

The 2210 will accept input levels of several volts, yet responds to signals as low as 5 millivolts through much of its range. Just how sensitive is that? Let's take a look.

We test the 2210

Since one of the main applications of a hand-held frequency counter to scanner listeners is to sample radio frequencies from a distance, we decided to see just how well the 2210 would perform tracking a 2.5-watt handheld transceiver (my Yaesu FT23R).

Setting the counter's whip at about 18" for quarter-wave resonance at high band, and placing it in the hand of my son, I was able to walk out to approximately 200 feet before the display became erratic when I keyed the radio! Even with a transmitter output of a fraction of a watt the counter gave a solid indication at 100 feet!

Back in the radio room I adjusted my all-band Kenwood TS440S transceiver to transmit at various frequencies from 1.8 to 29 MHz in the AM mode for stability. Sitting alongside the rig, the counter faithfully displayed exactly the frequencies shown on the VFO dial.

Uses for the radio hobbyist

There are many uses for a hand-held counter like the Optoelectronics 2210. You can accurately check the output frequencies of ham and CB equipment, cordless and mobile telephones, radio controlled models and garage door openers, public safety and government transmitter sites and many other devices and instruments which utilize oscillators.

Next time you drive by that mysterious radio tower, take along an Optoelectronics 2210 -- you may be surprised by what it tells you!

OptoElectronics CCB RF Detector

Field strength meters, RF detectors, sniffers, bug detectors -- all variations on a common theme: You suspect (or know) that there is a transmitting device nearby and you want to find it or measure its output.

While a spectrum analyzer provides a more sophisticated approach, there are some instances where an isolated signal can be tracked simply by a sensitive detector. The Optoelectronics CCB is one of these.

Available for only $99.95 (plus $5 shipping) factory wired, the CCB can also be built from an easy kit ($79.95) for those with some circuit board wiring experience. All it needs are a nine-volt alkaline battery for power and a BNC-base whip.

The same accessories for the 2210 frequency counter reviewed earlier work with the CCB, including the whip and case. Additionally, a pager-style belt clip may be installed ($19.95) at the time you order the detector.

Simply stated, the CCB RF detector comprises a broadband, high-sensitivity preamplifier attached to a detector which feeds its sensed voltage to a ten-segment LED bargraph. Since the display is logarithmic, it will respond initially to a very weak signal, but takes a much stronger one to drive all segments to the top.

Sensitivity throughout the 1-700 MHz range is 1-10 millivolts -- hot! Even up

through 2 GHz and higher, the unit responds to signals of only 20 millivolts or so. Input impedance is nominally 50 ohms at the BNC connector.

Naturally, the more segments lit, the shorter the battery life -- typically two hours or more. This can be extended by selecting the "dot" mode, whereby only one segment will light at a time; the stronger the signal, the higher the segment selected.

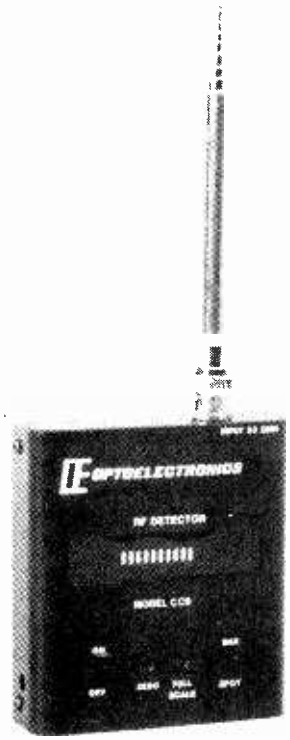
Measuring only 3-1/4"W x 3-3/4"W x 1"D and weighing only six ounces, the Optoelectronics CCB offers high sensitivity to random electromagnetic energy. For example, placed next to a switching-type power supply, RF radiation was clearly indicated as an upward display of LED segments.

Waving the magical device near our computers, I discovered why the FCC is so sticky about RF radiation levels. One computer was particularly "noisy," causing a substantial upward excursion of the tell-tale LED segments. I'll bet that's the culprit that wipes out my scanner listening here at work!

After wandering about the office, finally convincing myself that there were no surreptitious listening devices waiting to do me in, I decided it was time for some serious playing. The Yaesu FT23R handie-talkie was again called up for the test.

Like the 2210 frequency counter described earlier, the CCB detected the 2.5 watt signal at distances approaching 200 feet and nearly 100 feet at a fraction of a watt. Pretty good!

Calibration may be custom-adjusted by two front-pane-hole trimmers for sensitivity and full-deflection level.



Field strength metering

Would it be possible to use the CCB for tuning up a transmitter? Randomly mismatching the antenna tuner (transmatch), I pressed the mike button in the AM mode. One or two LED segments lit. Adjusting the transmatch blindly, watching the CCB, more and more segments lit, indicating increasing output power. When no further improvement was noted, I glanced at my VSWR/power meter: full output, 1:1 impedance match -- it worked!

Naturally, a broadband field strength indicator has some limitations. For example, don't expect it to detect a tiny, low-powered, well-shielded oscillator like that in a wristwatch; don't expect it to indicate a small transmitter in the presence of a high-powered signal; and don't expect it to find a flea-powered transmitter ten blocks away!

Recognizing its few limitations as well as appreciating its potential, the Optoelectronics CCB RF detector should prove to be a handy handful in anyone's bag of tricks!

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consumer electronics

New Age TV

In the year 1939, David Sarnoff, president of the Radio Corporation of America (RCA), stood before television cameras at the opening of the New York World's Fair and proclaimed "the birth of an industry."

Back then, there were two principal TV sets that consumers could choose from: a five-inch set for about $200 and a "giant screen" 12-incher for $500.

Today, fifty years later, TV sets have come a long way as well as gotten a lot more popular. In the month of February alone -- the last month for which figures are available -- nearly a half million *stereo* color TVs were sold to dealers. And stereo color TVs account for only a little over 25% of *all* TVs sold.

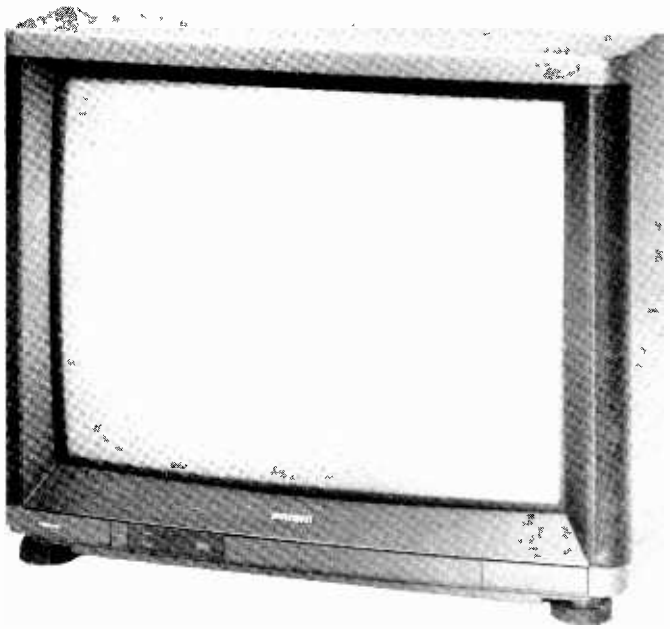
If you'd like one of Panasonic's new Prism CTL-3191S TVs -- complete with "ultra advanced cabinet design" and "slim, front-firing speakers that deliver outstanding stereo sound" -- you'll have to add a "0" to the price of that first RCA five inch set. It's also worth mentioning that the screen size has grown with the price, to 31 inches.

The $2,099 '3191S is equipped with features undreamed of by the handful of spectators at the New York World's Fair. There's "deluxe" remote control, seven band graphic equalizer, Dolby Surround Sound processor and on-screen function menu.

"Many stereo televisions offer superb sound quality at the expense of styling and design," says Panasonic national product manager Jerry Surprise.

"The speakers are placed awkwardly on the side or protruding from the front of the TV cabinet. Our new front-fired speakers produce exceptional audio. But because the speakers are located deeper within the set [behind the picture tube], the cabinets are more compact."

That would have surprised Sarnoff too. The picture tube on his 12-inch TV was so long that it had to be mounted vertically so the cabinet would fit through a standard doorway. You had to watch the image off a mirror. The Panasonic Prism CTL-3191S, which does not use a mirror, will be available this fall.



Talking to Your VCR

For the extraordinarily dedicated -- and well-to-do -- TV viewer, the perfect companion to the CTL-3191S is Panasonic's new PV-S4986 VCR.

The '4986 features a new four video head system that allows the machine to read twice as much information as other four head systems. In the case of the new system, every field of video information is read, as opposed to every other field, so the "step action" effect is eliminated from slow motion.

But what makes this unit special is that you can program it by telephone. Using a standard touch-tone phone, you punch in a two-digit access code. The VCR, using a synthesized voice, then *talks* you through programming process. Once you're done, the VCR confirms, again by voice, all of the instructions you programmed into it.

The 'S4986 also incorporates an odd scheme whereby you can program the VCR using "a programming sheet of dedicated bar codes.... [You] pass the scanner over each appropriate bar code [and] recording information is loaded into the scanner."

You then point the scanner at the VCR, depress the transmit button, and the deck is "automatically" programmed. It all sounds a little complicated. And a lot unnecessary.

The Panasonic PV-S4986 will retail for $1,149 and be available in August.

Beware of Lightning!

You're outside, blue skies, cool breeze, Storm Alert switched on. Miles away a powerful electrical storm is approaching. Your Storm Alert is counting the ground strikes as they occur. Suddenly, Storm Alert sounds off.

Each time the buzzer

sounds off for longer and longer periods. The storm is moving toward you. Fortunately, with Storm Alert, you'll have time to reach safety.

Ground strikes emit a very specific frequency which is detectable for miles. And since thunderstorms travel at up to 75 miles an hour and the audible distance of thunder is only five to eight miles, advance warning can be critical. Powered by a standard 9 volt battery, Storm Alert is easy to use.

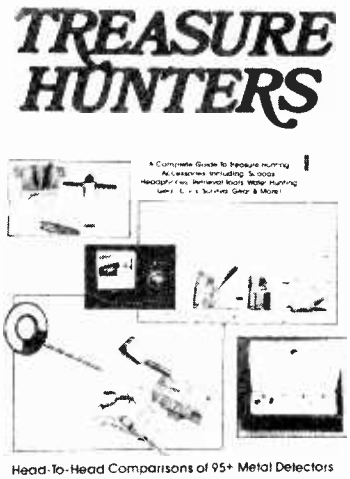
To order a Storm Alert, send $79.95 to American Weather Enterprises, P.O. Box 1383, Media, PA 19063 or use your mastercard or visa and call 215-565-1232.

Searching for Treasure

Few of us can resist the allure of treasure hunting -- instant riches beyond our wildest dreams; pirate treasure chests lying on an exotic, sunny shore; a western gunman's ill-gotten stash in an abandoned building; lost jewelry and coins on a lonely beach.

The simplistic answer is, of course, "All I need is a good metal detector." That and countless hours of careful research -- coupled with considerable luck!

But how can one choose a "good" metal detector?



Head-To-Head Comparisons of 95+ Metal Detectors

Manufacturers are notorious for exaggerating their claims; no detector can locate a dime at more than a few inches despite what the brochure says!

The answer is contained in *The Treasure Hunters Buyers Guide*, edited by Rosemary Anderson. The *Buyers Guide* is a handy reference for comparing approximately 100 commercially-available metal detecting devices, from hokum dowsing rods to high-tech metal discriminators, at prices from twenty to several thousand dollars.

Excellent introductory chapters provide fair warning to prospective buyers as to what to look for, including interpreting manufacturers' claims. The book evolves into a mini-catalog, including photographs, of commercial products with concise descriptions.

If you are considering the purchase of a metal detector, or if you just want to learn more about the field, this low-cost reference guide is without peer. It is available for $7.95 plus $1.50 shipping from People's Publishing Book Division, PO Box 1095, Arcata, CA 95521. Tell 'em you saw it in *MT*!

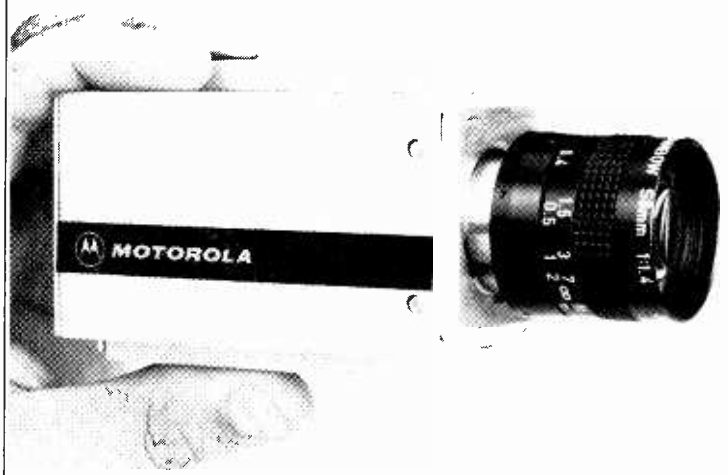
Surefire Surveillance

Need to monitor an entrance or exit or special exhibit without advertising it to the world? Then this tiny, Discreet CCD (Charge Coupled Device) Camera should serve your purpose.

Operating on less than 14 watts of power and weighing only 14 ounces, the camera can be installed to permit unattended operation in limited-space environments.

The solid-state design helps prevent "ghost" images and burn-in or blind spots from the sun or bright reflection. It uses a low voltage regulated power supply to simplify installation.

Small and good-looking, the CCD camera is ideal for places where security is necessary in a decorative environment.



For more information about the Discreet CCD camera, contact Motorola's Communications Sector, 1301 E. Algonquin Rd, Schaumberg, Illinois 60196.

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

Doug DeMaw
P.O. Box 98
Brasstown, NC 28902

For tunable oscillators, it's the 'Pitts

I recently discussed in *MT* a group of circuits for crystal controlled oscillators. Some of the readers have asked me to prepare a similar text about tunable oscillators or VFOs. Let us now consider an overview of the most common of the tunable oscillators -- the Colpitts circuit.

Although there is a host of possible oscillator circuits we may adopt, the Colpitts appears to be the most popular one. Furthermore, it is an easy circuit to build and get operational with minimum fuss.

Four Common Configurations

Please refer to Fig 1. You can see recommended hookups for bipolar, JFET (junction field-effect transistor) and dual-gate MOSFET (metal oxide field-effect transistor) transistor VFOs (variable frequency oscillator).

The circuits are essentially the same except that different active devices (those that require an operating voltage) are used. Also, we find parallel-tuned VFOs (A, B and D) and a series-tuned version (C). We'll discuss those differences now.

L1 in each example is shown as a slug-tuned coil. The tuning slug allows us to vary the VFO operating frequency for dial-calibration purposes. The main tuning control is a variable capacitor, C1.

You may use air-wound, toroidal or other nonadjustable coils also. However, a fixed value coil requires the addition of a stable trimmer capacitor in parallel with C1 for calibrating the VFO readout dial and trimming the operating frequency for the required range.

Perhaps the most frequency-stable coil you can use is one that is air wound with rigid wire, such as B & W Miniductor coil stock. This assumes that the coil is mounted securely to minimize the effects of vibration. A coil that is wound on a ceramic form then glued is also good. Coils that are wound on toroid cores are the least frequency-stable, owing to changes in core permeability during temperature variations.

In each of the Fig 1 circuits we need to use temperature-stable capacitors at C2 through C7. This practice helps minimize VFO drift that is caused by RF heating (current) within the capacitors. Stable capacitors also reduce frequency drift that is brought about by changes in ambient (environmental) temperature.

Generally speaking, NPO ceramic capacitors are the best to use. They look like any other disc-ceramic capacitor, but are manufactured to maintain their capacitance value when the temperature rises above or falls below a specified value. Most NPO capacitors have a black spot painted on them to indicate they are NPO types.

Polystyrene capacitors are suitable also, at least as a second choice over NPOs. These units are very stable and they are less costly than NPO capacitors, even though they are physically larger.

Since RF current flows through the capacitors in a VFO circuit, internal heating does occur. The drift from this phenomenon can be reduced if you use two or more capacitors in parallel to obtain the desired value.

This practice distributes the heat over a larger internal area, which in turns retards drift caused by heating. An example of this measure is seen in Fig 1 where C2 and C3 are in parallel. This can be done also at C4, C5, C6 and C7.

C5 and C6 are the oscillator feedback capacitors. They operate as a capacitive divider to allow some of the Q1 output energy to be fed back to the input of the oscillator (positive feedback). It is this feedback that causes the VFO to oscillate.

Normally, C5 and C6 are the same value, although some circuits have a C5 value that is less than that of C6. The smaller the C5 value the lower the feedback amount. We should never use more feedback than is necessary to permit reliable oscillation. Too much feedback can worsen oscillator stability.

C7 in each Fig 1 example should have as small a value as practicable, consistent with supplying enough RF output energy to excite the following stage or stages in the VFO chain. The lighter the C7 coupling the better the VFO stability when load or operating changes occur after the VFO.

A diode, D1, is shown at B, C and D of Fig 1. This is a small-signal diode of the 1N914 silicon variety. It stabilizes the Q1 bias and minimizes changes in the Q1 junction capacitance. This diode greatly improves the VFO stability without impairing the performance.

The operating voltage for the VFOs in Fig 1 should be regulated. Normally, a 6.8- or 9.1-V, 400-mW Zener diode is used (see fig 2) when a +12-V or greater supply is available. Changes in VFO dc voltage also disturb the frequency stability.

Fig 1C illustrates a series-tuned Colpitts VFO. This scheme is helpful when the L1 inductance value (at higher frequencies) is very small. Substantially more inductance is required for series-tuned circuits, compared to parallel-tuned ones.

If we use a very small coil inductance we can experience instability caused by PC board flexing from heat changes and vibration. This is because the circuit-board foils become a working part of L1 (unwanted).

This also lowers the coil Q (quality factor), when our objective should always be to have a high-Q coil and capacitors in an oscillator circuit. High Q ensures good oscillator per-

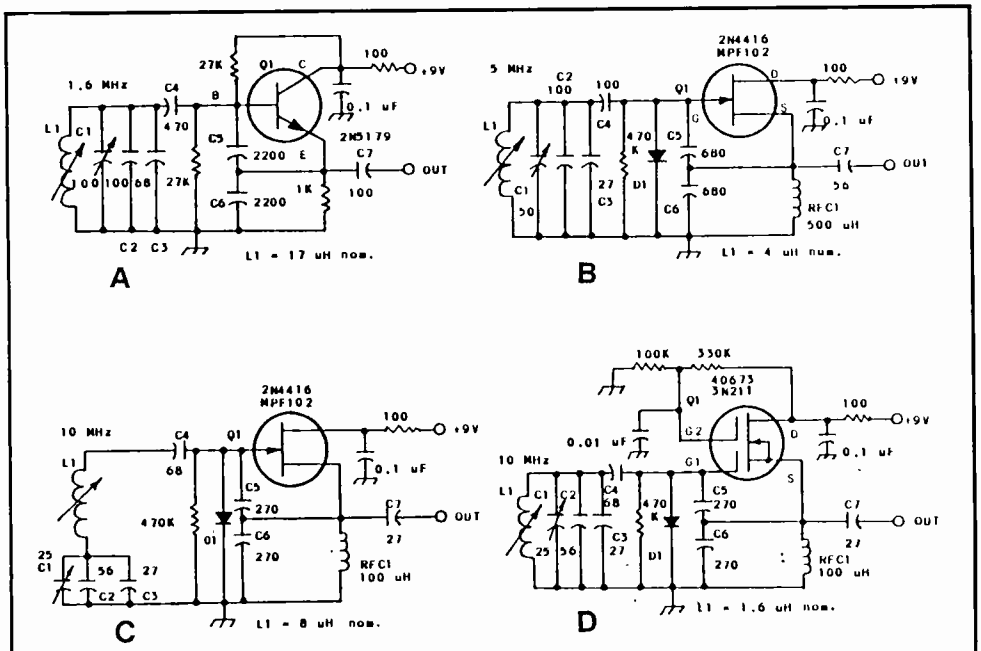


Fig 1 - Schematic diagrams of four versions of the Colpitts oscillator. Circuits A, B and D are parallel tuned. Circuit C is series tuned. Compare C to D to learn how the L1 inductance changes when using a series-tuned circuit. All other component values remain the same, as does the operating frequency (see text).

The above examples show how to use a bipolar, JFET or dual-gate MOSFET transistor in a VFO. The assigned values are suitable for developing your own circuit. Note how the critical parts values change with the operating frequency.

formance and minimum noise in the VFO output. Series tuning can, however, be used successfully at any operating frequency, irrespective of the coil inductance.

Other Stability Considerations

It is always wise to enclose a VFO in a shield compartment or box. This keeps stray RF energy from entering the VFO and affecting its performance. It also helps to prevent RF energy from other parts of the equipment from entering the VFO circuitry.

The VFO tuning capacitor (C1 of Fig 1) needs to be mechanically solid for best stability. Ideally, it should have a bearing at each end of the rotor, and it should turn easily (not lumpy). Units with plated brass plates are generally more stable than are capacitors with aluminum plates. The brass plates are less prone to expansion than the aluminum ones.

There are two kinds of VFO drift. One is known as "short-term"drift and the other is called "long-term drift." Short-term drift takes place as the transistor junction, VFO capacitors and the coil reach initial operating temperature. This usually occurs during the first five minutes or less of operation.

Long-term drift is caused by gradual increases in component heating and temperature changes within the VFO box. Long-term drift should cease within 30 minutes for a well-designed VFO. Some VFOs never stop drifting, especially if the VFO capacitors are of poor quality. Silver-mica capacitors are prone to long term drift problems as are ordinary disc ceramic capacitors.

Short-term drift can be minimized by using the lowest VFO operating voltage practicable. The RF energy level can be built up after the VFO, so there is no need to make your VFO a mini powerhouse! The lower voltage causes less internal heating.

It is wise also to keep the value of C4 of Fig 1 as small as possible, consistent with reliable oscillation. The smaller the C4 value the less the effect of Q1 junction-capacitance changes on the VFO tuned circuit, and the higher the tuned-circuit Q.

VFO Buffering and Amplification

It is almost mandatory that we isolate the VFO from the circuit it operates with. This calls for one or two post-VFO buffers or amplifiers. Fig 2B shows a practical circuit that may be used. Q2 and Q3 not only "buffer" or isolate the VFO, but they amplify the VFO signal. RFC2 and T1 enable the two buffer/amplifiers to operate in a broadband manner (no tuning needed). Hi-Z (high impedance) and Lo-Z (low impedance) output terminals are indicated. These terminals give you the option of using your VFO with a Hi-Z or Lo-Z circuit after Q3.

Fig 2A shows how to connect a Zener diode to the VFOs in Fig 1. You may use either a 400-mW or 1-W Zener diode for D2. R1 is a dropping resistor for D2. Without it D2 would burn out and there would be no regulation. R2 is chosen to permit D2 to draw between 15 and 18 mA.

Closing Comments

I have not offered a project in this article because no two experimenters have the same needs when building a VFO. The operating frequencies depend upon the application. I have assigned values and operating frequencies to the Fig 1 circuits so that you will have ball-park values to use as a starting point for your experiments. Changes in the C1 and L1 values will be necessary for obtaining the precise tuning range you require.

Don't be afraid to experiment! You may use a general-coverage receiver for monitoring the VFO output signal as you prune the component values for the desired tuning range. Connect a frequency counter to the Lo-Z output port (Fig 2B) for checking VFO drift. Practical VFO circuits are presented in *The ARRL Handbook* and in *The W1FB QRP Notebook* (available from The ARRL, Inc.).

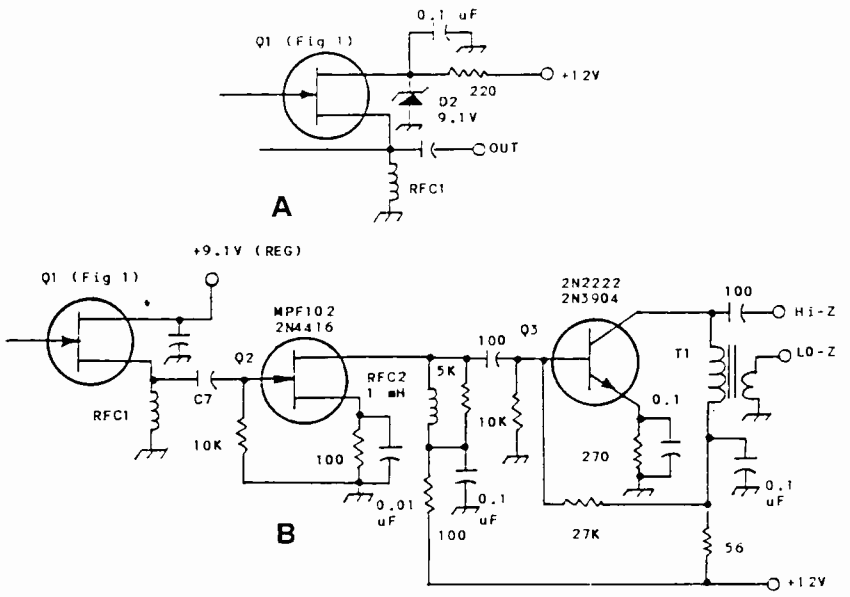


Fig 2 - The addition of a Zener diode regulator is shown at A. This may be applied to any of the circuits in Fig 1.

Circuit B shows how to add a buffer/amplifier section to isolate the VFO from its load, and to increase the RF output voltage of the VFO. High- and low-impedance output ports are provided (see text).

Fun with Surplus

by Bob Grove

An Inexpensive VLF Receiver

Recently, Norm Litsche, KA2TYT, who runs a surplus electronics outlet (PO Box 191, Canandaigua, NY 14424-0191; phone 716-394-0148/9099), sent me a delightful item for review: an ME-71A/FCC audio level meter manufactured a few years ago for the United States Army by Tram Electronics.

This package is particularly gratifying to open and test because it is brand new, hermetically sealed in a fabric bag and protected by three bags of dessicant. It includes a spare case of replacement tubes, a full tech manual and, best of all, Norm sells it for only $50 plus shipping!

Originally contracted in 1957, supplementary sheets contained in the manual are dated as late as 1967. The stout instrument measures 17"W x 10"H x 12"D and weighs 20-odd pounds. It is powered directly from a 120 VAC, 50/60 Hz wall plug. The 12-tube circuit consumes 80 watts of power.

So what does it do? Its original purpose was to measure the radio frequency energy present on carrier-type telephone lines. This accounts for its choice of 135 ohm (balanced) or 600 ohm (unbalanced) input impedances.

Its tunable frequency range is 20-500 kHz with an accuracy of 1 kHz on its analog dial, and within 1 or 2 dB level measurements over its entire range. A variable attenuator permits measurements on its giant analog meter from -70 to +42 dBm.

Basically a double-conversion superheterodyne receiver, the meter uses a tunable oscillator (1110-1610 kHz) to produce a second IF of 82 kHz to provide 6/60 dB selectivity of +/- 0.8/4 kHz (5:1 shape factor).

While not outstanding for a communications receiver, it is certainly adequate for its intended purpose. But what about using the instrument as a VLF receiver? Since it has no RF amplifier, sensitivity is very low. A good, long antenna or, better yet, a broadband preamplifier with a 500 kHz low pass, broadcast band filter would be recommended.

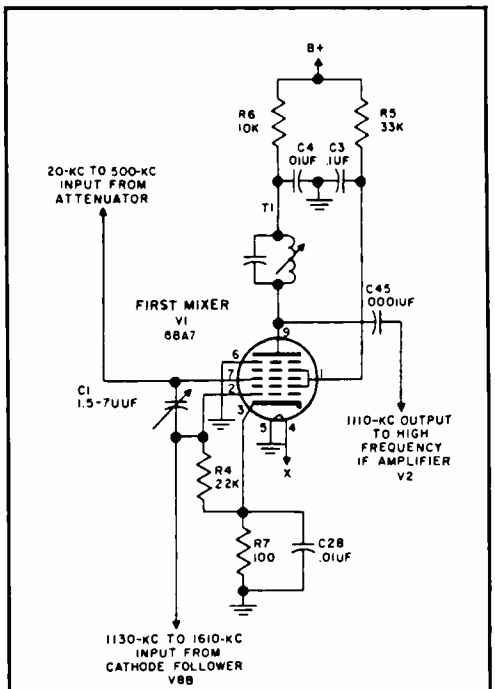
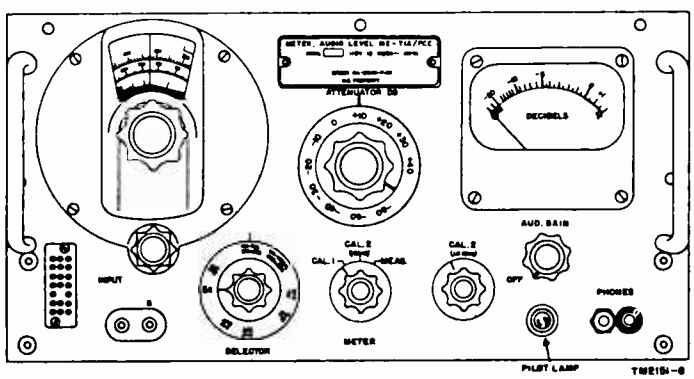


***Fig. 2** - ME-71B/FCC first mixer (simplified). Note that the signal input goes directly into the mixer without RF amplification, thus contributing to low sensitivity. Any simple 10-500 kHz amplifier, including the new wideband MMIC chips from Motorola,, Avantek, MCL and others, will bring weak AM signals up to reasonable levels for reception.*



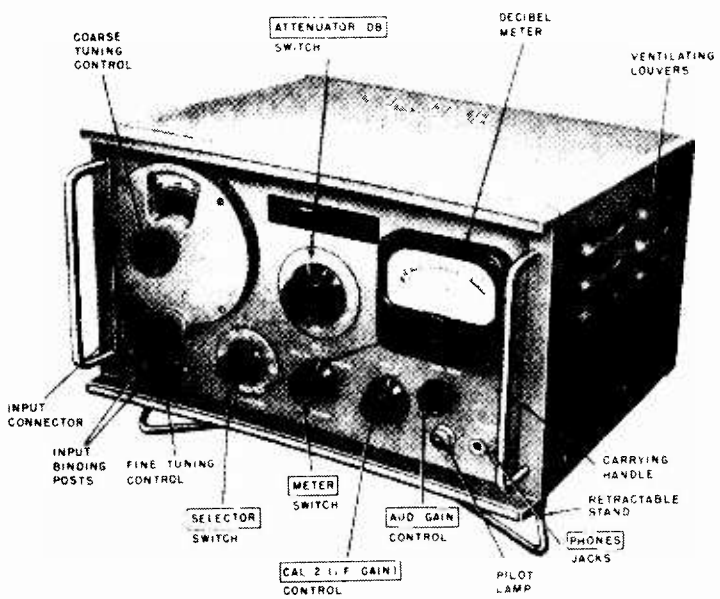


Fig. 1 - Audio Level Meter ME-71A/FCC

No internal speaker is provided, but a front-panel headphone jack is convenient for direct monitoring of amplitude modulated signals such as non-directional beacons (NDBs) which still populate this portion of the spectrum.

Line Noise Filter

Another useful low-cost item is Norm's parts bin is a line noise filter manufactured by General Electric (part #89G635). Intended to suppress hash generated by fluorescent lamps, the metal-enclosed filter looks like a small (1-1/4" x 2" x 4") ballast transformer.

This inductance/capacitance (L/C) filter has two input and output leads rated at 3.5 amps. It should be useful for any application where line noise can be cured at the source. For $2.50 only plus shipping, you can hardly lose!

Projects for Experimenter's Workshop, while reviewed by our Technical Editor, are submitted by readers and remain experimental.

Monitoring Times invites you to submit your favorite projects for publication. For more information, contact Rich Arland, 25 Amherst, Wilkes-Barre, PA 18702

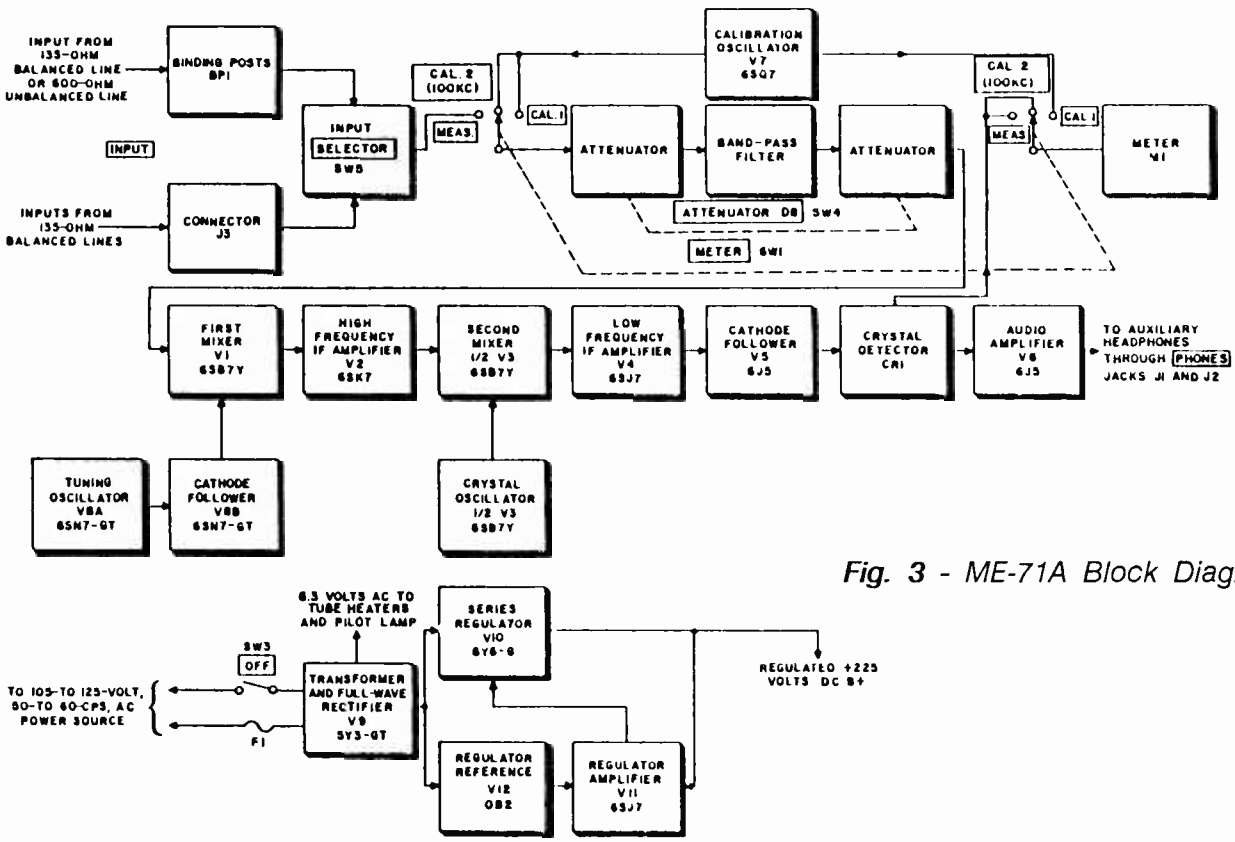


Fig. 3 - ME-71A Block Diagram

W. Clem Small, KR6A, CET
Rt. 1 Box 64A
Weybridge, VT 05753

O-V-E-R-L-O-A-D-!

You've probably heard the oft repeated old-timer's antenna siting rule: "The higher and longer, the better." It's generally a good rule. The fact is, I've given it right here in "Antenna Topics," so you know it must be true, right?

Well, it is *generally* true, in terms of getting more and stronger signals. The idea behind this rule is that, generally speaking, the higher and longer the antenna, the greater the strength of the received signals, and the more signals we will hear.

By the same token, many of us harbor the dream of someday having a monster beam of some kind, to increase the strength of those elusive signals we want to receive. The stronger the signal, the better the reception, correct? Well, the answer to that one goes something like, "Sometimes yes and sometimes no."

More Is Not Always Better

To explain why a stronger signal level from your antenna is not always desirable, just consider the fact that the components which comprise your receiver have limits as to how much signal they can handle. Your receiver's innards, such as transistors or integrated circuits, are capable of working properly with signals only if the signal is not of a higher level than they are designed to handle.

When a signal comes into the receiver from the antenna at a level higher than it can handle properly, undesirable things sometimes occur. For instance, a strong signal which actually should appear at only one place on your dial may show up at a number of places on your dial! Obviously, only one place on the dial is the correct one; the others are what we call "spurious signals."

Fake Signals

Now, my dictionary says that "spurious" means "false, counterfeit, not genuine." And that's just what spurious signals are; false signals which sound like real signals, but clutter up the dial and interfere with our reception of other signals to which we may want to listen. The cause of these spurious signals is often referred to as "intermodulation distortion," or "IMD."

Does My Receiver Have IMD?

The answer is simply "Yes." Any receiver can be driven by overload to produce spurious signals. Some receivers are much better at preventing this problem than other receivers, but it happens to the best of them at times.

To give one example, if your receiver receives the BBC at several frequencies which are not consistent with published frequencies used by BBC, your receiver is probably experiencing IMD.

Again, if your dial seems cluttered with a repetition of most of the stronger stations appearing at multiple places on the dial, then you may well have a bad case of IMD. And some of the spurious IMD signals are likely blocking somebody else's signal.

What's The Solution, Watson?

So, what can we do when we suspect that we have a problem with IMD? We could buy a new receiver with better IMD specs, but there's a limit to the usefulness of that approach as any receiver can experience IMD at times.

The cure that is more often used, even on the most expensive rigs, is to reduce the level of signal input to your receiver's circuits. This way the innards are no longer driven into an overloaded condition. Yep, that means giving up some of that precious signal level which we worked so hard to get by making the antenna higher and longer, or by buying that expensive beam antenna!

What we do by reducing the signal level coming in from the antenna is to prevent the receiver from generating those spurious signals and thus clear up the interference on our dial. And that allows us to hear those weaker signals that were being buried under spurious IMD signals.

It's true that when we reduce the signal-level input from the antenna to stop the IMD that we also reduce the strength of all signals coming in from the antenna. That is, as we reduce antenna input, we reduce the strength of the stations which were causing the IMD interference.

But the weaker stations will probably now be received better at their new weaker level than they were when a little stronger

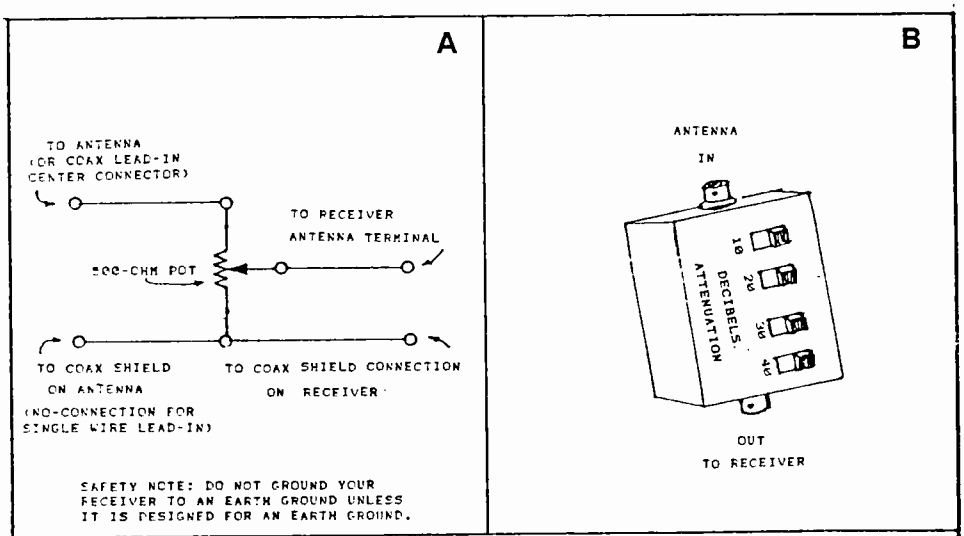


FIG. 1. TWO TYPES OF RF ATTENUATORS.

yet subject to the IMD interference. And so, as with many things in this life, at times we gain more by giving up some things than by hanging on to all we can grab.

Figure 1 shows two ways to reduce the input from your antenna at times when trying to rid yourself of spurious IMD interference. The "quick and dirty" potentiometer method probably works as well for most installations as the more expensive attenuation switchbox. Many of today's better shortwave receivers have an attenuation switchbox set up somewhat like Figure 1B built right into the front panel of the receiver.

A Different Approach

Another approach to reducing a signal strength from the antenna is to use a different antenna. If you have several antennas, try them all and see which one seems to produce less IMD interference for the signals you want to monitor. The difference in the directional characteristics of the different antennas may help here.

At times, a short antenna (perhaps 15 to 30 feet, or sometimes even on down to the size of rabbit-ears) is a good solution to the problem of overload by strong stations.

But keep in mind, IMD isn't a problem in every receiving situation, and you will only profit from using an attenuator or shorter antenna where IMD is a problem. So, you should have the attenuator or antenna switch where you can easily change the attenuator setting or switch back to the original antenna when listening to signals which have no problem from IMD interference.

RADIO RIDDLES

Last Month: Last month we discussed the meaning and interpretation of "decibels" and then I asked you where we got the name for the decibel, who was it named for?

Well, you may have noticed that "decibel" is composed of "deci" meaning "1/10," and "bel." "Bel" is an abbreviation for "Bell," the surname of the inventor of the telephone, Alexander Graham Bell.

A bel is a measure used in comparing two different power levels, and as discussed last month, is a handy way of indicating what the difference in power levels means in terms of how we will likely hear the change from one power level to the other. Both "bel" and "decibel" then honor the inventor of the telephone.

This Month: Alexander Graham Bell, in addition to inventing the telephone, actually invented a form of "wireless" telephony. But his wireless system was not the kind of wireless that led to the development of radio. What was his system and how did it work? Hint -- it didn't depend on electrical conduction or induction.

Find the answer to this month's riddle, and much more, next month in your copy of *Monitoring Times*. Til then, Peace, DX, and 73.

ask bob

Bob Grove, WA4PYQ

P.O. Box 98
Brasstown, NC 28902

Q. When trying to use my GRE 8001 800 MHz converter with my BC100XLT scanner, I keep hearing our local channel 18 UHF-TV station. What can I do? (Dennis Mazur, Worcester, MA)

A. The problem is known as "IF throughput." Because the converter simply shifts the 800 MHz band down 400 MHz, you are hearing the UHF-TV station, which transmits in the 494-500 MHz band, when your scanner is looking through that range for a converted signal.

Do you hear that signal with the scanner alone, even with the antenna disconnected? The UHF station may be so strong that it penetrates the Bearcat's plastic cabinet and is received by the circuitry even without an antenna. In this case, only another scanner -- with a metal cabinet -- will improve the situation. You could experiment by temporarily wrapping the BC100XLT in metal foil, a corner of which is held against the BNC connector.

You may also wish to try an 800 MHz-only directional antenna, such as a Yagi (beam) array, pointed away from the TV station. Interference will be weakest when received off the sides of the beam.

Finally, you may wish to consider having someone design a wavetrap for 464-500 MHz; it should be placed between the antenna and converter for best performance.

Q. Where can I get information on expanding the memory channels on the ICOM R7000 receiver? (Brad Swain, Carleton, MI)

A. The procedure, which involves lifting pin 19 of IC8 from ground and attaching it instead through a 47k resistor to +5 volts, is covered in detail in ICOM service bulletin #24587-002.

A separate switch (some owners adapt the little-used VSC switch) is connected between pin 19 and ground again. With the switch shorting pin 19 to ground, the original 100 memory channels are called up; with the switch open, an additional 100 memory channels are made available.

Q. I understand that when my AR900 scanner searches the cellular frequencies it does so in appropriate 30 kHz increments, yet I can't seem to find that increment when I change steps. How come?

A. You can only search in 30 kHz increments if you program your lower and upper limits as exactly 870.030 and 889.980 MHz. Then you can press the step button to read 30 kHz.

Q. How do I shorten the elements of my CB ground plane antenna so that it will work on the 49 MHz cordless telephone band? (John Johnson, Barboursville, WV)

A. Most antennas may be scaled proportionate to frequency; the higher the frequency, the smaller the antenna. For your application, assuming that the CB antenna elements are aluminum tubing or rods and not "loaded" by coils or windings, it is a simple matter to convert to a higher frequency.

In this case, simply use the fraction 27 MHz (CB frequency) divided by 49.6 MHz (cordless telephone frequency) = 0.54; multiply the present length in inches of your antenna elements by 0.54 and shorten them to that new length.

Q. Is the Radio Shack discone a good scanner antenna? Would a ground help reception? (Mike Del Signore, Pittsburgh, PA)

A. Yes. No. Originally released as the Diamond D-130, that discone has been variously repackaged or copied as the ICOM AH7000, Heathkit HA2513 and Realistic 20-013.

Reception is equivalent to cut-to-frequency ground plane vertical antennas on any frequency in their passband, but only those models with top-mounted, vertical elements work decently on low band (30-50 MHz). Even there they operate best only over a narrow bandwidth determined by the loading coil on that element.

A ground at VHF/UHF will virtually never have any effect on signal reception. The primary purpose of a ground on scanner antennas is to provide protection against accidental shock in case something goes wrong in the electrical wiring, and to prevent induced voltages cause by nearby lightning strokes from reaching the scanner. Nothing survives a direct strike (See next item).

Q. *Is there a cassette recording available featuring the musical identifiers heard preceding shortwave broadcasting stations coming on the air with programming? (Bob Covington, Baltimore, MD)*

Bob's Tip of the Month

BEARCAT TRICKS (Cobra and Regency, too!)

Erasing Memory Channels

While nothing is more infuriating than having all 200 memory channels which you painstakingly installed disappear due to a battery glitch, there are times when you may wish to delete a major portion -- or all -- of the 200 channels on your BC200XLT.

Disconnecting the battery and allowing the internal microprocessor backup battery to discharge is one way, but it is cumbersome and disables the scanner for many hours awaiting the death of the memory. There is a much quicker way which Bob Parnass published recently in the RCMA newsletter.

The following procedure should work on the BC100XLT, BC200XLT, BC580XLT, BC600XLT, BC760XLT, BC950XLT, Cobra SR12 and SR15, and Regency 4020 and 4030 -- and earlier versions as well -- all of which are Uniden variations using the same microprocessor chip.

With the scanner switched off, press simultaneously the "2", "9" and "MANUAL" keys and turn the scanner on. In a second or two the memories will revert to all zeroes.

Installing Factory Preset Frequencies

To enter the factory presets, a group of 25 frequencies throughout the spectrum, turn the scanner off, simultaneously press "2", "9" and "SCAN", and turn the scanner back on. In a few seconds the scanner will come alive with the new frequencies automatically programmed.

A few frequencies which are displayed cannot actually be received; those in the 60-70 MHz range are for European versions, and 800 MHz frequencies are received only in those scanners with appropriate RF circuitry to support the microprocessor in this range.

In some models the results are reversed when pressing "SCAN" or "MAN" with "2" and "9."

A. These musical identifiers, called "interval signals," have been recorded from time to time and offered by hobbyists on a minor basis. I am unaware of any commercial tape now available.

Q. My Apple computer raises a racket when I attempt to use it with my RTTY/AMTOR terminal. Are there any quiet computers on the market? (Barney Fontenot, San Antonio, TX)

A. Probably not -- at least completely quiet. RFI (radio frequency interference) seems to be a hallmark of home and office computers alike. Several years ago the FCC mandated RFI suppression techniques to reduce such incidental radiation, but few importers listen. They merely take the nominal fines in stride as part of their overhead.

Since high radiation levels are in direct violation of law, the offending device should be returned to the dealer for a refund. If he is unwilling to take the unit back, he should be reported to the nearest FCC field office for selling equipment which possibly is in violation of FCC part 15 standards. Only this kind of pressure from the marketplace will reform importers' apathy.

Even equipment which meets the standards may still radiate objectionably from interconnect cables (printer, keyboard, monitor, modem, power and other peripherals). Use shielded cable wherever possible. Interference-suppressing chokes may be added to the cables where they exit from the equipment. Additional internal grounded shielding (metal screening or foil) may be necessary to reduce radiation through plastic cabinets.

Ground all equipment chassis in common and connect to an earth ground if possible. RFI must be cured at the source; nothing can be added to a receiver to reduce the incoming levels of RFI.

Q. Where can I find plans for a home-brew frequency converter to allow 26-30 MHz reception on a shortwave receiver that cuts off at 26 MHz? (Dennis Mazur, Worcester, MA)

A. Several excellent home-brew project books are available from book dealers who carry such publishers as Hayden and TAB. In addition, the *ARRL Handbook* is a cornucopia of such articles, projects and diagrams. Many of these are available from *MT* advertisers. The *ARRL Handbook* may also be ordered direct from the American Radio Relay League, 225 Main St., Newington, CT 06111 for $21 and is an unusual value.

Q. What is the best way to provide an RF ground for shortwave? (Hank Johnson, McLean, VA)

A. Lightning-protection grounding and radio frequency grounding are two entirely separate considerations for radio installations. An excellent general-purpose ground consists of two eight-foot metal rods, separated by at least five feet, driven into moist soil. More recently, the military has discovered that approximately 100 feet of large-gauge wire, lying on top of the ground, and staked down every four feet or so, is even better at dissipating energey from a lightning strike.

But few of us have the luxury of a ground so close by that there is virtually no length between the chassis of the radio and ground, so we must improvise another way to provide an electrical counterpoise for received signals.

Experiments show that roughly 10-15 square feet of metal screen or foil under a rug or floor of the radio room works quite well for this purpose. Another trick is to run two ground wires, one twice the physical length of the other, to the ground rods; at any frequency where one is resonant, preventing a good ground, the other won't be.

Finally, several insulated wires, each a quarter-wavelength at the frequency of interest, are connected to the chassis and run conveniently over molding, under rugs, out of the way. As with antennas, third-harmonic-related counterpoise wires are satisfactory, too; for example, a 33-foot wire for 40 meters (7 MHz) will also serve for 15 meters (21 MHz).

While any of these counterpoise tricks may work for better impedance matching for transmitters, none will protect against a lighting strike. Use them in combination with actual ground protection. Always use heavy-gauge wire, several parallel lengths, if necessary, for grounding.

Q. How can I modify my scanner to eliminate the tone burst which accompanies transmissions from my local police department? (Syd Carter, Toronto, ONT)

A. Good question! I occasionally get stuck with a question I can't answer, and this is one of them. Any ideas from our readers?

In response to the question from Mr. Arnold Stroud in the April 1989 issue of MT, I have found that the Channel Master 5094A Monitenna is sold through the AES (Amateur Electronic Supply) catalog, complete with coax and mounting hardware, for $42.50. (Mark Henning, Hamburg, New York)

Questions or suggestions sent to Bob Grove are printed in this column as space permits. If you prefer a reply by return mail, you must include a self-addressed, stamped envelope.

LETTERS

continued from page 3

Spanish and try the putting the radio in different locations."

"I hope, he concludes, "that this will encourage some new DXers to keep hunting for more stations."

"I just got the official Blue Angel and Thunderbird schedules from the Navy and Air Force," says John Henault of Abington, Massachusetts. "I'm sure that there are lots of *Monitoring Times* readers who would like to have this information in hand for the summer."

Great idea, John. Here it is.

Blue Angels = BA, Thunderbirds = TB

June		
03	TB	Flint, MI
03-04	BA	Racine, WI
04	TB	K.I. Sawyers AFB, MI
07	TB	Myrtle Beach AFB, SC
10	TB	Peterson AFB, CO
10-11	BA	Otis ANGB, MA
11	TB	Travis AFB, CA
17-18	BA	Oklohoma City, OK
17-18	TB	Rickenbacker ANGB, OH
21	TB	Battle Creek, MI
24	TB	Yakima, WA
24-25	BA	Davenport, IA
25	TB	Casper, WY

July		
01	TB	Hanscom AFB, MA
01-03	BA	NAS Moffett Field, CA
02	TB	Plattsburgh AFB, NY
04	TB	Milwaukee, WI
08	TB	Bozeman, MT
08-09	BA	Klamath Falls, OR
09	TB	Huron, SD
15	BA	Pensacola Beach, FL
15	TB	Grand Junction, CO
16	TB	Grand Island, NE
22-23	BA	Dayton, OH
22-23	TB	Chicago, IL
26	TB	F.E. Warren AFB, WY
29		Fairchild AFB, WA
29-30	BA	Detroit (Willow Run), MI
30	TB	Kalispell, MT

August		
05-06	BA	Seattle, WA
09	BA	NAS Whidbey Island, WA
11-13	TB	Abbotsford, Canada
12-13	BA	NAS Miramar, CA
16	TB	Stillwater, MN
19-20	BA	Reading, PA
20	TB	Fargo, ND
26	TB	Schenectady, NY
26-27	BA	Duluth, MN
27	TB	Langley AFB, VA
30	TB	Wurtsmith AFB, MI

Try some of these frequencies, too:

For the Bue Angels, 34.35, 118.1, 118.2, 121.9, 123.4, 141.560, 142.0, 142.025, 142.625, 143.0, 143.6, 241.4, 250.8, 251.6, 275.35, 360.4, 384.4, 391.9 and 395.9.

For the Thunderbirds, try 114.95, 116.2, 118.1, 120.45, 121.7, 123.45, 124.925, 126.2, 134.1, 138.875, 140.4, 141.0, 148.550, 241.4, 250.85, 273.5, 283.5, 294.7, 322.3, 322.6, 382.9, 394.0, 413.025, 413.1.

Planning on hanging your next antenna on a tree? Not a good idea, says David Humelsine of Clearfield, Utah, if you're in a national park.

"While at a district office of the Forest Service in Ogden a couple of days ago, I ran into something that might save readers some trouble.

"It seems that some 'radical environmentalists' here in the Pacific North West have been 'spiking' trees or driving nails into them in order to destroy their value to lumber companies. So, according to a forest ranger, it is now against the law to drive nails into trees in a National Forest. Penalties include a substantial fine or a year in jail.

"So if you, like me, enjoy shortwave or scanner listening in the woods, don't use nails to hang your sky wires. And be prepared to explain what that contraption up in the trees is."

In a recent column, Bob Kay said that "I've never seen a bunch of people racing to an emergency scene with their hand-held or mobile scanner radios. In fact, most scanner hobbyists would prefer to monitor the action from the comfort of their home. Don't you agree?"

Bob LaPree of Contoocook, New Hampshire, does not agree. "As a news photographer for the *Union Leader* in Manchester, New Hampshire, I have found that invariably -- not occasionally but usually -- people with handheld scanners *do* show up at the scene of fires, accidents and police actions. The people that show up are male, young and old." This phenomenon, he adds, occurs mostly in cities. "The country folk don't seem compelled to go to the scene."

As a news photographer, Bob finds a handheld scanner to be "indispensable."

"I hook the unit to a magnetic base roof antenna for use in the car and pick up signals from up to 35 miles away. When heading to an out-of-town incident, this permits me to keep track of developments until I arrive. When on the scene, I keep the radio in a jacket pocket.

"One time when I was photographing the rear of a burning building, I heard a report that a victim would be brought out the front. I was able to get around the building in time to make the photo.

"Often when I'm working with a reporter, we will get information for the story from the transmissions. This saves us time because official spokesmen are often not available until after an incident is over and our deadline passed!"

Wayne Summers of DeWitt, Michigan, has some good suggestions for future issues of *Monitoring Times*. "It would be a great help if you were able to highlight the frequencies in your frequency section that are directed toward North America. Secondly, I am probably not alone when I say that the prdata spewed forth by Glenn Hauser...leaves me baffled. How about an article which explains what it all means and how to interpret the information?"

Both are good observations. And we tried the first one. The problem is that a frequency highlighted as audible on the east coast of North America is not necessarily audible on the west coast, and vice versa. Plus, shortwave is so fickle that a frequency audible when we monitor tonight might not be so in two weeks when you get your copy of the magazine. So that didn't work.

As for Mr. Hauser, the key to understanding Glenn is to try to think like Glenn. For example, there among countries like Albania, Brazil and the United States is something called UKOGBANI. A new country? A special radio term? No, it's a Hauserism. UKOGBANI stands for United Kingdom of Great Britain and Northern Ireland. Got it?

That's it for this month. As usual, we welcome your thoughtful comments on radio, communications and other neat stuff.

Letters should be addressed to ***Letters to the Editor,*** *Monitoring Times, P.O. Box 98, Brasstown, NC 28902 and should include the sender's address and telephone number. Not all letters can be used. Those that are will often be edited and excerpted. Because of the volume of mail received, personal replies are not always possible.*

The listening post of E.J. Benyman of Lincoln, Nebraska, a new contributor to the QSL column.

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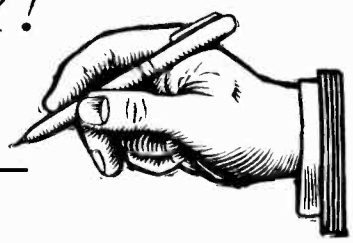

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A couple of comments from *MT* readers:

Thank you for a wonderful year of Monitoring Times. In just one year of SWLing, I have grown to love the hobby. And in just one year, I can plainly see how the Times has grown and improved with each issue. Bravo!

I "inhale" every inch of every issue, and have never encountered a "bad" article. Enclosed is my two-year renewal. Continue your fine publication. I don't know how it could get better, but I suspect it will! - Stephen Wandel, Washington, D.C.

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STOCK EXCHANGE

Ads for Stock Exchange must be received 45 days prior to the publication date.

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COMMERCIAL RATES: $1.00 per word payable with ad

1-3/4" SQUARE DISPLAY AD: $35 per issue, payable in advance.

Monitoring Times assumes no responsibility for misrepresented merchandise.

Wanted: PANASONIC RF-2900. Must be mint. Also need 100kc calibrator for HALLICRAFTER's SX-122A. [817] 268-1985 James Geer, 604 King Drive, Bedford, TX 76022

For Sale: PANASONIC RFB-600, mint, only LSB not working, manuals. $325.00 negotiable. Anthony [718] 256-5571 after 6 p.m. EST.

For Sale: DX-160 like new condition 150 kHz-30 MHz AM, SSB, CW; matching speaker and phones 12 V neg or house current; standby switch. Like new. All original materials. Jeff [718] 996-0078, 2840 Ocean Parkway, Brooklyn, NY 11235.

For Sale: KENWOOD VC-20 VHF converter, enables R-5000 receiver to get 108-174 MHz. Mike after 5:00 [517] 753-1248.

Wanted: TEN CODES/SIGNALS & frequencies for the Little Rock, North Little Rock, Jacksonville and Little Rock Air Base as well as surrounding areas. Glad to pay copy cost. Lester Jernigan, P.O. Box 2406, Orange Park, FL 32067-2406.

VIRGIN PRO-2004 Unmodified/Untouched brand new Full Factory Warranty: $360 [803] 723-5061

FCC MICROFICHE Frequency listings entire United States, latest available. Complete set. 84 fiche, covering 500 kHz through microwave. $50 postpaid. [803] 723-5061

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7 Scanners, used, $40-$200. AM and mobile, handheld antennas $5-$35. Motorola Siren 230 watts exc. cond. $100, plus used two ways. Send SASE, Box 1239, Charleston, SC 29402.

RADIO VIDEO - Colorful 30 minute VHS video tape. Instructions and Applications for Mobile Scanning. Send SASE, Box 1239, Charleston, SC 29402.

For Sale: BEARCAT BC-580XLT Excellent condition $140. And RADIO SHACK PRO-23 Aircraft/VLF handheld scanner Like New $25. I'll pay shipping. Bob Perkins, 24 West Compress, Artesia, NM 88210 [505] 746-6514.

QUALITY CRYSTAL RADIO KITS $15 PPD. SASE for details. REGENERATION RADIO, 20335 Casa Loma Road, Grass Valley, CA 95945.

For Sale: KENWOOD VC-20 VHF Converter. New $160 shipped. Another used $120 shipped. WANT: Audio Oscillator and scope. John Repa, 54 Bolger Hill, Jericho Ctr, VT 05465 [802] 899-4593.

For Sale: Complete POPULAR COMMUNICATIONS magazine set. 1st issue Sept 1982 through Dec 1988 with 18 duplicates. Almost complete set of MONITORING TIMES sept/Oct 1983 to Dec 1988 three issues missing but two duplicates. Both sets in immaculate shape. 60 dollars and shipping. Louis L. Mauroner, 3520 Magazine, New Orleans, LA 70115 [504] 897-1405.

SONY SW1S SW Receiver, new, never used, still in box, $240 Money Order -- BEARCAT BC100 XLT, mint condition, used 1 week, $160 Money Order -- VERN [716] 689-8737

UFOs REAL? Researcher seeks reports of UFO activity, coverup. Please give time, location, frequency and content. Vince, 1493 Beach Park Blvd, #167, Foster City, CA 94404.

Wanted: SCHEMATICS for JOHNSON MESSENGER 223 and LAFAYETTE HB 400 CB Radios. Mike Pugh, 201 W. 4th St., Emporium, PA 15834.

Going Back to School. PRO 2004, all modifications and only 6 months old, $380. BESCOR 12V VCR Ni-cad batteries (3 months olds) $70. SONY ICF-2010 (3 weeks old) $270. HUSTLER DCL Antenna $20. CASIO Data Bank PF-7000 $25. Solar Cells .5v-3.0v. Evan Anderson, 2312 Lincolnwood, Evanston, Illinois 60201 [312] 866-9792.

WANTED: January 1988 issue of *MT*. Also earlier issues. Kannon Shanmugam, 4412 Turnberry Drive, Lawrence, KS 66046. (913) 841-3264.

INDEX OF ADVERTISERS

When readers are in the market, they look here to find your ad ... Will it be here?

CONVENTION CALENDAR

Date	Location	Club/Contact Person
Jun 2-4	Dallas/Ft.Worth,TX	ARRL National/ John Fleet WA5OHG 4348 Potomac, Dallas, TX 75205
Jun 2-4	Seaside, OR	NE RS & OR Valley ARC/ Randy Stimsom KZ7Y 9890 SW Inglewood, Portland, OR 97225
Jun 4	New York, NY	Hall of Science ARC/Stphn.Greenbaum WB2KDG 85-10-34 Ave, Jackson Hts, NY 11372 Talk in 144.300 simplex/223.600, 445.225 rptr
Jun 4	Pittsburgh, PA	The Breeze Shooters/ William Kristoff Jr N3BPB 3617 California Ave, Pittsburgh, PA 15212
Jun4	Evansville, IN	Tri-State ARS/ Martin Hensley KA9PCT 1506 S. Parker Dr, Evansville, IN
Jun 4	Princeton, IL	Starved Rock RC/ Kenneth Stasiak WB9ZFO 218 Chestnut, Wenona, IL 61377
Jun 4	Chelsea, MI	Chelsea ARC/ Robt Schantz KA8JVK 416 Wilkinson St, Chelsea, MI 48118
Jun 4	Salina, KS	Central Kansas ARC/ Harvey Tewes WA0OZP 2317 Aurura, Salina, KS 67401
Jun 4	Manassas, VA	Ole Virginia Hams ARC/ Joseph Turino KB4VHK P.O. Box 2027, Manassas, VA 22110
Jun 10	Winston-Salem,NC	Forsyth ARC/ Bob Gates KJ4IC Box 60 Cedar Grove Pk, Kernersville, NC 27284
Jun 10	Pittsburg, KS	Pittsburg Repeater/ Jerry Adams KA5BMX RR 5 Box 204, Pittsburg, KS 66762
Jun 10	Coeurd'Alene,ID	Kootenai ARS/ Marjorie Hogewelde WB7WUB N 11655 Sundler Lane, Rathdrum, ID 83858
Jun 11	Willow Spgs,IL	Six Meter Club/ Jim Novak WA9FIH 2337 South 6th Ave, N. Riverside, IL 60546-1239
Jun 11	Erlanger, KY	N Kentucky ARC/ John Thernes WM4T 60 Locust Ave, Covington, KY 41017
Jun 16-17	Albany, GA	GA State Convention/ John Crosby K4XA PO Box 1205, Albany, GA 31702
Jun 17	Cortland, NY	Skyline ARC/ William Ackroyd WA2UFO 5 Hilton, Rd, Dryden, NY 13053
Jun 18	Santa Maria,CA	Satellite ARC/ John Flaherty N6PKK 409 Oakhill Terrace, Lompoc, CA 93436
Jul 2	Wilkes-Barre,PA	Murgas ARC/ Robert Nygren WA3YON RD 1 Box 134-6, Sweet Valley, PA 18656
Jul 8	Oak Creek, WI	S. Milwaukee ARC/ Robert Kastelic WB9TIK PO Box 102, S. Milwaukee, WI 53172-0102 Talk-In 146.58 WA9TXE/9
Jul 8	Des Moines, IA	Des Moines RAA/ Jim Zellmer KA0VSL 6390 NW 54 Ct., Johnston, IA 50131
Jul 8-9	Atlanta, GA	Atlanta RC/ Cooper Morris WA4PZD 2272 Armand Rd, Atlanta, GA 30324-4249
Jul 8-9	Indpls, IN	Central Div Conv/ Cornelius Head WB9ZQE 9046 Mercury Dr, Indianapolisk IN 46229
Jul 9	Pittsburgh, PA	North Hills ARC/ Robert Ferrey Jr N3DOK 9821 Presidential Dr, Allison Park, PA 15101
Jul 9	Alexander, NY	Genesee RAI/ Don Partis 8786 Broadlawn Ave, Baravia, NY 14020
Jul 9	Downers Grove,IL	Dupage ARC/ Edwin Weinstein WD9AYR 7511 Walnut, Woodbridge, IL 60517
Jul 14-15	Essex, MT	Glacier-Waterton Int'l/ Bob Delp W7ETP 1105 24 Avenue West, Havre, MT 59501
Jul 15	Union, ME	MidCoast RC/ John Peterson N1CBA P.O. Box 601, Augusta, ME 04330
Jul 16	Washington, MO	Zero-Beaters ARC/ Al Lanwermeyer WB0BS 909 Nora St, Washington, MO 63090
Jul 16	Charles, IL	Fox River ARC/ John Hanses WB90 334 Sharon Lane, N. Aurora, IL 60542
Jul 16	Van Wert, OH	Van Wert ARC/ Jack Snyder WD8MLV Rt 2 Box 153C, Ohio City, OH 45874
Jul 23	Garden Prairie,IL	Big Thunder ARC/ Jim Grimsby W9HRE 210 Oak Lawn Lane, Poplar Grove, IL 61065
Jul 28-30	Oklahoma Cty,OK	West Gulf Div Conv/ John Thomason WB5SYT 2 East 11th Suite 19, Edmond, OK 73034
Jul 29	Texas City, TX	Tidelands ARS/ Bill Steele WA5WVP PO Box 892, Texas City, TX 77592
Jul 30	Peotone, IL	Hamfester RCI/ Robert Truhler W9LNQ 1701 W 101st St., Chicago, IL 60643 Talk-in CFMC Rptr WA9ORC 146.16-146.76

Monitoring Times is happy to run announcements of radio events open to our readers. Send your announcement at least 60 days before the event to: Monitoring Times Convention Calendar, P.O. Box 98, Brasstown, NC 28902.

Closing Comments

Radio Frequency Interference: A growing threat

One of the most frustrating obstacles confronting the listener is RFI -- radio frequency interference. Much of it comes from incidental radiation from electronic devices, mostly computerized, which utilize some sort of signal-generating oscillator as part of their functional circuitry.

While there are regulations in place to control the proliferation of offensive devices, the demand for low-cost high tech is so great that, like drugs, hundreds -- thousands -- of tons of uncertified microprocessor-controlled equipment pour into this country from offshore manufacturers every day.

Home computers, VCRs, facsimile machines, office equipment, medical devices, analytical instruments, security systems, remote control devices -- the list seems endless. Manufacturers will produce a product with the highest possible profit margin and this usually translates into poor shielding and, consequently, radiation of radio interference.

The Federal Communications Commission issues citations -- thousands of citations -- in an effort to curb the invasion of uncontrolled radiating devices.

Over the last two years the Commission levied approximately 1500 separate citations against such well-known merchandisers as J. C. Penney, Curtis Mathis, Okidata, Hewlett-Packard, Eastman Kodak, Casio, Tandy Corporation, Yaesu, Mitsubishi, Hyundai, Commodore, Southwestern Bell, Toshiba, Radio Shack, Televideo, Samsung, Spencers Gifts, Hitachi, Heath/Zenith, ITT, Peachtree Technology, Midland, Sony, and such well known magazines as *Video Review, Satellite TV Week, Popular Mechanics, TV Guide, Popular Science, On Sat, Satellite Orbit* and many more.

Just what are the major infractions? For the most part advertising or selling an uncertified device (part 2.803). This doesn't necessarily mean that the device is a filthy radiator of disruptive energy, just uncertified as being in compliance. When an infraction seems to be quite deliberate, not a mere oversight, a fine is levied, usually in the amount of $2000.

It is one thing to cite companies for ignoring the rules which protect consumers' rights; it is quite another to enforce these regulations. Clearly, judging from the abundance of garbage on the airwaves, enforcement is a problem.

What can be done to rid the frequencies of unwanted -- and unlawful -- interference? Who reimburses the consumer who, in good faith, purchased a microprocessor-controlled piece of equipment and now faces forfeiture?

How can we stop manufacturers from producing, and marketeers from importing, high-profit hardware, simply absorbing fines and forfeitures as part of their overhead?

While interference is annoying to us as recreational monitors of the spectrum, it is far more serious in other realms. Fatal air crashes have been blamed on stray radio frequency energy interfering with navigational and guidance systems. Law enforcement officers have died because their cries for help were unheard due to radio interference.

The FCC is suffering from insufficient funding, funding which would allow them to meet the growing need for marketing investigation. Higher priorities have forced the Commission to put their manpower into other bureaus. Only pressure on Congress and the Commission will step up enforcement.

But who will provide that pressure? Certainly not the electronics industry whose members benefit from the lack of enforcement. Would a substantial grass roots movement from consumer advocates be heard?

Until the Commission proves to be a real threat to unlawful importation of defficient equipment, we will have to live with the growing aggravation of RFI, and more lives will be lost because of unconscionable profiteering.

-- Bob Grove
Publisher

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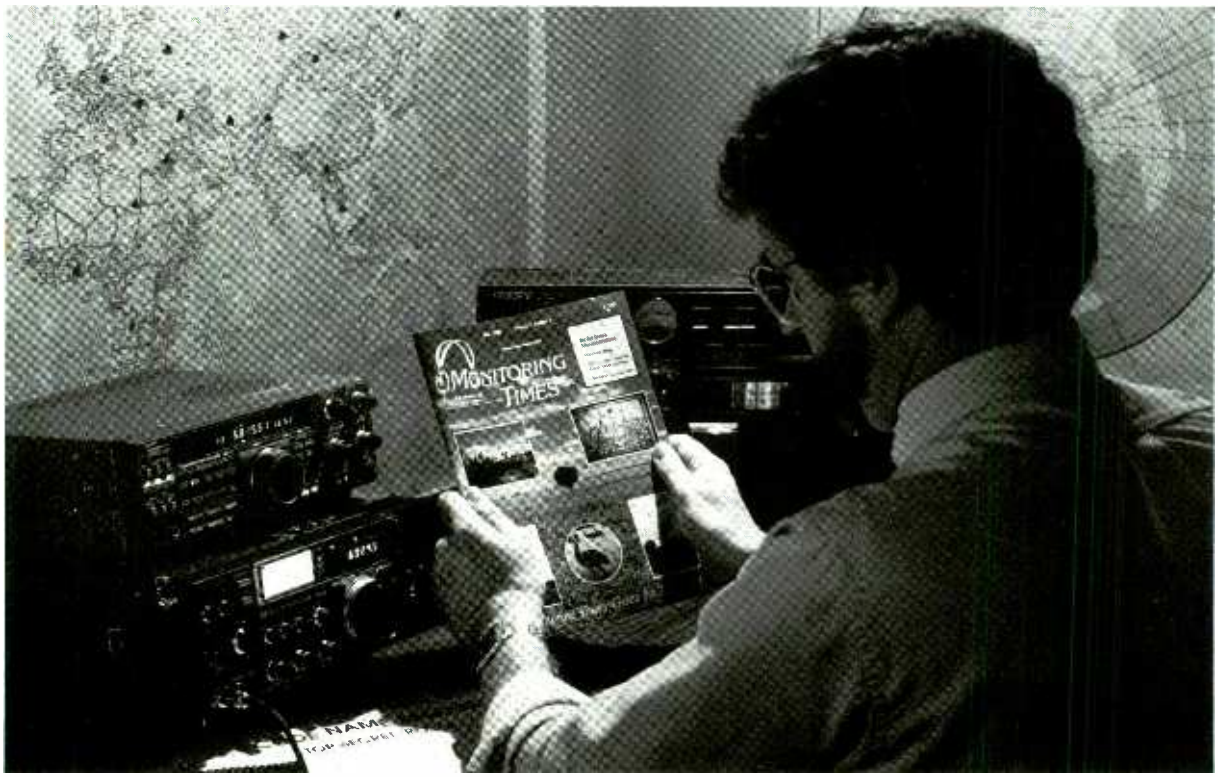

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