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MONITORING TIMES

Losing A Friend

The Death of Radio Canada International

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The Last Days of RCI

by Wojtek Gwiazda

8

After a year of narrowly avoiding the budgetary axe, Radio Canada International has been reduced to a skeleton staff almost without warning. Only five languages are retained, and they don't include English or French. The Prime Minister is the last court of appeal.

Who will be the voice of Canada now to non-Canadians? The familiar voices are already gone, but they've not yet given up.

Japanese Maritime Safety Agency

by Ed Blair

12

Equivalent to the U.S. Coast Guard, the JMWA patrols Japanese waters against such activities as drug running, fishing violations and commercial water pollution; it oversees ship traffic, and coordinates search and rescue operations. Such diverse responsibility requires a complex communications system, but who is better equipped to meet that need than Japan?!



FEMA's Special Emergency Communications Team

16

It's known as MATTS: Mobile Air Transportable Telecommunication System. So far it's been used to connect islands isolated by a hurricane to help from the mainland, but MATTS is prepared to fly to any area in the continental U.S. within eight hours of a call for help. In another four hours this high-tech system and its operators can be up in all modes. If you think communication isn't important, read on.

Reducing Interference in Your Portable

by O.G. Villard

20

If you like Rube Goldberg solutions to everyday problems, this project may sound right up your alley. The set-up may raise a few eyebrows, but it's easy to do and better yet -- it really works!

COVER PHOTO: Radio Canada International studio in recent days.

Connie Lawn: Correspondent in Washington by Jeff Chanowitz

24

Twenty years of broadcasting isn't without its share of adventures, embarrassments, and triumphs. Surprisingly, this busy correspondent for Kol Israel took time out to talk to us. But perhaps we should have expected it from this dedicated professional; Connie even filed four stories during her wedding!

And More . . .

Scanner buffs will find a couple of useful accessories from GRE reviewed this month by Bob Grove (p.90): the 3001 preamp and 9001 super-converter for 800-960 MHz. Bob Kay, as always, gives lots of ideas of where to tune your scanner (p.34), but he adds a word of warning. Don't treat those lists that are "just" business frequencies too casually -- It's some person's livelihood, and he or she may not take too kindly to having those frequencies advertised. In fact, says Kay, business frequencies may be more "sensitive" in many instances than government frequencies.

Speaking of the federal government, Rod Pearson takes a slightly unorthodox turn in his Federal File (p. 44) as he examines ways of eavesdropping used by the feds (... and others).

Diversity is what *Monitoring Times* always brings you. It's also what Clem Small proclaims in this month's antenna column (p. 96). Find out why adversity is the mother of diversity.

Turning away from obscure DXing and local stations for a moment, Karl Zuk takes us on an enjoyable tour of the nation's superstations -- those powerhouses that are heard almost nationwide (p.48). Though it's been a long time since such a thing as "summer vacation," these station call letters evoke strong memories of warm summer nights on the road listening to distant voices.

Lastly, you won't want to miss Ken Reitz' recap of "everything you need to know about TVRO" (p.50) in 1,000 words or less. Enjoy!

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MONITORING TIMES

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LETTERS

It's Spring! Calves cavort in the fields, flowers burst into bloom, grown folks go outside just to dig in the dirt. So why is the May edition of "Letters" so heavy-handed? Change.

1991 has brought with it not only springtime growth, but more signs of change in a few months than most of us care to deal with in ten years. Unfortunately, it's obvious the world isn't going to stop and wait for us to adjust. Even with a change of *MT* editors, life goes on.

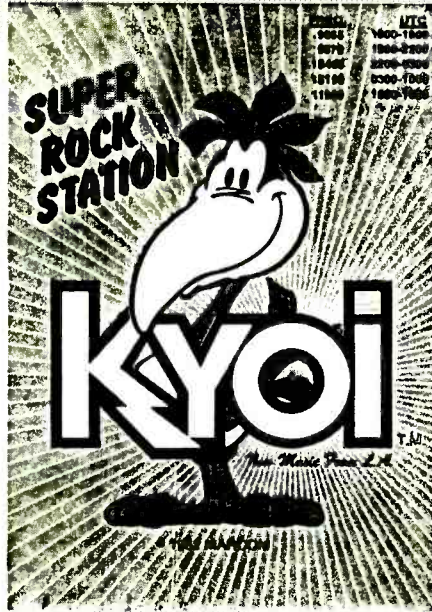
Each of us chooses how to react; go with the flow and adapt? Dig in our heels and hang on to the old as long as we can? Try with indignation to at least alter the course of events? Do we embrace the new with enthusiasm and eagerness to learn?

We expected strong response from our readers to last month's startling announcement that the FCC has opened a formal inquiry into the feasibility of excluding public safety frequencies from scanners and amateur transceivers. The first letters to arrive voice the initial reaction of us all: "What can we do?"

A reader who asked not to be named, goes on, "Please make use of your large number of readers. Who can we write to? The President, the FCC, our senators, who? As the old saying goes, 'All that is needed for evil (and stupidity) to prosper is for good men to do nothing!' Your young readers might not yet realize this, but, as time goes on, more and more rights are taken away from us all. CMT [cellular mobile telephones] monitoring has already been outlawed. What next? It can and unfortunately WILL happen unless enough people voice their opinions to the contrary now. Otherwise the USA will have the same monitoring rights as in Scandinavia! I hope everyone has a chance to read the sad but true article on page 24 [April issue]. . . Tell us what we can do that might make a difference."

Is a letter-writing campaign in order? Probably not yet, says publisher Bob Grove. Hang on to your pencils and curb your outrage for the moment, but keep your eyes open, folks. The issue is still just a Notice of Inquiry and not a proposal. See the last-minute word from the FCC on page 104.

"You asked why Mr. Carlson (KUSW) chose to broadcast rock music. You obviously don't know 'world band statistics' or you wouldn't be criticizing the station." Don Hamrick of Wilburn, Arkansas, takes exception to Larry Miller's comments on the death of KUSW in last month's "Letters" column.



Rock on Shortwave just didn't make it. QSL from Richard Lane.

"How many stations in the world have a music-oriented format?" asks Hamrick. "Only two -- WRNO New Orleans and perhaps Radio Luxembourg.

"You asked, 'Is there any place in North America where you can't hear rock on FM or, if not, AM radio? So why [did the failed KUSW] choose rock?'"

"Have you ever tried to find rock music at any given time 600 miles offshore in the Atlantic or Pacific Oceans? That is the situation for the U.S. merchant seamen on the high seas. To them, KUSW was a God-send! Now comes Trinity Broadcasting which ruins the only real source of entertainment -- as if there aren't already enough religious stations on the air already!"

"Can't someone realize that it is time for someone to do a profit-making commercial rock station on the shortwave bands just like they do on [U.S.] AM and FM?" Concludes Don, "Or perhaps I am dreaming."

Responds Miller: Look, we all love shortwave. But it is a very specialized medium with some incredibly big shortcomings. I won't go into audio quality and reliability, both of which tend to make it the medium of preference only to those who have no preference (i.e. people 600 miles offshore in the Atlantic or Pacific Ocean) or people with very specific interests. But we in North America are, as a whole, a media-saturated group of people who need go no further than local TV or radio for our needs.

Is it time for a commercial shortwave station in the United States? Ralph Carlson, who didn't build his shortwave station on a lark, thought so. And Carlson is no business novice. Nor is Joe Costello at WRNO. Or Larry Berger at KYOI in Saipan. All three of

[Please turn to page 100]

Getting Started

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Shortwave bridges the continents like no other medium and this NEW title shows you how to be a part of it. Topics include: an overview of the shortwave hobby, the nature of SW broadcasters, operating a SW radio, an explanation the SW radio bands and more. Proven, practical advice. Textbook. **\$16.95** plus \$1.70 USPS or \$3.10 UPS.

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Red Hot Fries

McDonald's workers in Shawnee, Kansas were trying to handle the noon-hour rush when suddenly they began to get something weird on their headsets. Instead of the usual orders for a Big Mac, fries and a chocolate shake," they began to hear something, well, sexy.

"Gentlemen," said the voice that invaded the Golden Arches, "You can invite the lovely models over to your table to investigate the quality of this sexy lingerie. It's perfectly OK to offer them money..."

The voice turned out to be coming from nearby Ziegfield's Restaurant and Bar, which had recently been closed after a local judge ruled its exotic dancing shows violated a city zoning ordinance which prohibits live entertainment in the area of the Kansas City suburb.

The restaurant reopened saying that it would offer a "fashion show" featuring "girls, girls, girls" in lingerie and bathing suits.

A quick call to Ziegfield's solved the problem for McDonald's. Problems were only beginning for Ziegfield's, however, which was closed by police several hours later. Thirteen citations were issued, including one for nudity.

Bleak Radio Picture

Radio was not one of the United States military's bright spots during the recent Gulf War. According to information now leaking out of Washington, soldiers involved in Operation Desert Storm were forced to use Vietnam-era radios that proved to be "unreliable, too short in range, and inadequate for modern combat."

In fact, says a report in *Army Times*, Marines based opposite Iraqi fortifications in Saudi Arabia said that the VRC-12's performed so poorly that troops often needed vehicles and visual signals to exchange information.

Officials admit that the radios normally fail on average every 200 hours but said that the heat and sand

of the desert reduced their reliability even further.



"What do you expect?" said one Defense Department official. "They're 30 year old radios."

The Marine Corps and Army relied heavily on the old RC-12 class of radios because the Army has taken 16 years to get the new Single Channel Ground and Airborne Radio System, or SINCGARS, into full-scale production.

SINCGARS have better reliability, improved performance and range over the VRC-12's, and can frustrate jamming by hopping from frequency to frequency many times a second.

Cuban Radio Official Defects

A programming director for Cuba's state radio has joined the ranks of defectors to the United States. Romel Iglesias reportedly strode into the offices of the anti-Castro Radio Marti to prepare a news bulletin for authorities back home: He isn't coming back.

"In Cuba we have no liberty," said Iglesias. Iglesias came to Miami for what was supposed to be a 20 day visit to his brother-in-law's family on Miami Beach. He and his wife are seeking asylum.

VOA Offers Show for Local Radio

The Voice of America has launched "VOA Express," a new program for a Caribbean audience. The one-hour show, which features a

fast-paced, contemporary format in English, will be made available to local stations who will run it for free.

According to VOA officials, "host Jim Bertel will treat listeners to an entertaining mix of news, features, and today's latest music..." The "entertaining features" will include stories on economics, science, medicine, agriculture, movies and book reviews.

VOA Express is delivered by satellite three days a week. Stations without satellite receiving equipment can wait for tapes to arrive in the mail.

Dutch(?) Faces

After more than a decade of "hiding" behind the microphone, Radio Netherlands staffers are coming out of the closet with a "faces Behind the Voices" QSL card.

The new QSL card, which is available to anyone who sends in a correct reception report, includes a photo of the people in the Dutch International Service's English service.

Who knows what this could lead to? Deutsche Welle staff trading cards -- ten to a pack complete with a stick of gum. Trade you three Jonathan Marks' for an Ian McFarland?

Special Event Station

The Hollywood Chapter of the Lambda Amateur Radio Club will operate a special event station using the call sign K700 from the site of the annual cultural pride festival in Long Beach, California.

K700 will be on the air on May 18th and 19th on the general portions of the 40, 20, and 15 meter bands and in the novice 10 meter band. A special QSL will be sent to those who file reception reports and a business-size SASE to LARC, P.O. Box 91299, Long Beach, California 90809.

COMMUNICATIONS

The Lambda Amateur Radio Club is designed to promote amateur radio in the gay and lesbian community.

Taking Control with Video

Education officials in St. Louis are hoping that the mesmerizing power of the TV tube will help bring control back to the district's school buses. In fact, the first video-equipped bus is already on the road, playing a documentary on the Rev. Dr. Martin Luther King. "They were all glued to the television," said Harry Acker, director of visual services for City of St. Louis Schools.

Five television screens are mounted on the ceiling of the 66 passenger bus, making it a kind of closed-circuit TV station on wheels.

Officials, aware that the kids may eventually become bored with the novelty, already have the problem figured out. Acker promises to dole out more tapes for the kids. Included in the lineup are "Alice in Wonderland," "Electric Grandmother," and "Peter and the Wolf." Acker draws the line at rap music.

Cordless Hackers

Rod Pearson forwarded a clipping from a computer newsletter about several cordless phone scams. The newsletter (title and source unknown since the donor was anonymous) stated that computer hackers who want to hack into systems and don't want the call traced to their location are using cordless phones and portable computers to foil computer security systems. Some computer systems automatically trace calls or display the number of the caller making it difficult to break in for the hacker. Hackers have found a way to get around this using cordless phones.

This is how it supposedly works. A hacker using a battery powered portable computer, acoustic modem and a cordless phone (the most popular units being used is a Sony 10 channel unit) roams around the town scanning the cordless phone channels (the Sony unit does this

automatically). The hacker does this until he comes across a conversation or dial tone.

The hacker then connects the targeted computer via the cordless phone, using the line provided by the hapless cordless phone user! If there is a trace on the line it comes back to the number of the cordless phone user, not the hacker. If enough cordless lines in a city were detected in a systematic search by a hacker he could conceivably move from place to place making calls at random and avoiding the authorities!

Another scary thing mentioned in the newsletter was the fact that hackers and phone freaks could use the cordless lines found to make lengthy long distance calls that would be charged to the cordless phone owner's number. Just another reason to unplug that cordless phone!

Industry News

First it was Ian McFarland of Radio Canada International and Larry Miller, editor of *Monitoring Times*. Now comes word that another industry standard -- well-known to the amateur radio world -- is also stepping down. ICOM America has announced that Evelyn Garrison is retiring at the end of the fiscal year.

Garrison had a distinguished 15 year career with ICOM, most notable for her support of the radio hobby.

Guar-un-teeed

Canadian Prime Minister Brian Mulroney was quoted in March as saying that despite financial troubles, Radio Canada International will not die. "I guarantee RCI will survive," he said.

See the article on page 8.

See an article on radio communications in your newspaper? Clip it out and send it to Monitoring Times, P.O. Box 98, Brasstown, NC 28902, and be an MT reporter!

Thanks and credits: Don Bice, St. Petersburg, Florida; M.C. Munson, Placerville, California; R. Rogers, Vancouver; A. Stewart, Birmingham, Alabama.

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GLOSSARY

Most abbreviations and "radio shorthand" terms will be explained in the article in which they are used, but following is a list of terms and abbreviations you will find frequently in our pages. We hope you will find it useful.

AFB Air Force Base
 AFRES Air Force Reserve
 AM Amplitude modulation (transmission mode)
 AMVER Automated Merchant Vessel Rescue System
 ANARC Association of North American Radio Clubs
 ANG Air National Guard
 ARRL American Radio Relay League
 ARRS Aerospace Rescue and Recovery Service
 ARTCC Air Route Traffic Control Center
 ATC Air Traffic Control
 AWACS Airborne Warning and Control System
 Baud (Bd) Bits of data per second
 BBC British Broadcasting Corporation
 BFO Beat frequency oscillator (for reception of CW, RTTY, etc.)
 CAP Civil Air Patrol
 Comm Communication
 COMSTA Communications station
 CQ General call to anyone monitoring, inviting reply
 CW Continuous wave (Morse code)
 DE (French) "from"... ID or callsign
 DOD Department of Defense
 Duplex Two-way communications using two different frequencies
 DX CW abbreviation for distance
 DXer One who listens to distant stations
 EAM Emergency action messages
 ECPA Electronic Communications Privacy Act of 1986
 FAX Facsimile
 FCC Federal Communications Commission
 FEMA Federal Emergency Management Administration
 FM Frequency modulation (transmission mode)
 GCCS Global Communications and Control System
 GMDSS Global Maritime Distress and Safety System
 HF High frequency; shortwave (3-30 MHz)
 Hz Hertz: unit of frequency (formerly cycles per second)
 ID Identification
 IF Intermediate frequency
 IRC International Reply Coupon (available from post office)
 IRCA International Radio Club of America
 ISB Independent sideband
 ITU International Telecommunications Union
 kHz Kilohertz (1000 Hertz)
 kW Kilowatt
 LCD Liquid crystal display
 LED Light emitting diode
 LF Low frequency (30-300 kHz)
 LORAN Long Range Aid to Navigation
 LSB Lower sideband

MARS Military Affiliate Radio System
 MF Medium frequency; includes standard AM broadcast band (300 kHz-3 MHz)
 MHz Megahertz (1,000 kHz)
 MOA Military Operations Area
 MUF Maximum usable frequency
 NASA National Aeronautics and Space Administration
 NASWA North American Shortwave Association
 NG National Guard
 NNNN End of RTTY message
 NORAD North American Aerospace Defense Command
 NRC National Radio Club
 Op(s) Operation(s)
 PFC Prepared form card
 QRM Noise or interference
 QSL Station's verification of a reception report from a listener
 RAAF Royal Australian Air Force
 RAF Royal Air Force
 RCMA Radio Communications Monitoring Association
 RTTY Radioteletype
 SAC Strategic Air Command
 SAR Search and rescue
 SASE Self-addressed, stamped envelope
 SATCOM Satellite communications
 Simplex Two-way communication using one frequency
 SINPO A signal-quality rating system (1-5) on each of the following characteristics: strength, interference, noise, propagation, overall quality
 SPEEDX Society to Preserve the Engrossing Enjoyment of DXing
 SSB Single sideband
 SW Shortwave
 SWBC Shortwave broadcast
 SWL Shortwave listener
 TAC Tactical Air Command; tactical
 TFC Traffic (communications)
 UHF Ultra-high frequency (300-3,000 MHz)
 USAF United States Air Force
 USB Upper sideband
 USIA United States Information Agency
 USCG United State Coast Guard
 USCGC United States Coast Guard Cutter
 USMC United States Marine Corps
 USN United States Navy
 UTC Coordinated Universal Time--
 The time at 0° longitude
 Ute Slang for utilities (2-way comms)
 VHF Very high frequency (30-300 MHz)
 VLF Very low frequency (3-30 kHz)
 VOA Voice of America
 VOLMET (French) "flying weather"
 WARC World Administrative Radio Conference
 wpm Words per minute (usually used w/Morse or RTTY)
 WX Weather
 YL "Young lady," female operator

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1991 MONITORING TIMES CONVENTION

Tentative Schedule

Friday, October 4

3:00 to 6:30 PM
**EXHIBITS OPEN AND
 REGISTRATION BEGINS**

6:30 to 6:45 PM
**WELCOME AND SPEAKER
 INTRODUCTION**

7:00 to 8:00 PM
EVENING SEMINARS

Military Monitoring
 with Larry Van Horn
 and Jack Sullivan

**Cellular Surveillance
 Techniques**
 with Tom Bernie

QSLing
 with Gerry Dexter

8:15 to 9:15 PM
Computers in Radio
 with Jim Frimmel

Satellite Monitoring
 Ken Reitz

**Construction of a
 Shortwave Station**
 Slide Show from WNCR

Saturday, October 5

8:00 to 9:00 AM
REGISTRATION

9:00 AM
**EXHIBITS OPEN,
 SEMINARS BEGIN**

Utilities Monitoring
 with Larry Van Horn

Used Equipment Buying
 with Fred Osterman

Beginner's Seminars
 with Skip Arey

10:15 to 11:15 AM
Scanning-Back to Basics
 with Bob Kay

**Shortwave Listening
 Staff**

Beginner's Seminars
 with Skip Arey

11:30 to 12:30 PM
Pirates
 with John Santosuosso

**Scanners--Past and
 Present**
 with Bob Grove

Beginner's Seminars
 with Skip Arey

2:00 to 3:00 PM

Aero Listening
 with Jean Baker
 and Jack Sullivan

**VHF/UHF Communication
 Systems**
 Gene Hughes

Beginner's Seminars
 with Skip Arey

3:15 to 4:15 PM
**Choosing a Shortwave
 Receiver**
 Larry Magne

Electronic Surveillance
 with Howard Perry

Beginner's Seminars
 with Skip Arey

4:30 to 5:30 PM
Experts Forum
 Group Q & A

5:30 to 7:00 PM
SWAP MEET

6:00 PM
EXHIBITS CLOSE

7:00 to 9:00 PM
BANQUET

Times to be Announced

TOURS
 911 Communications Center
 McGhee Tyson Air Base
 National Weather Service
 Channel 6 TV Station

SPECIAL ATTRACTIONS
 Life Star Helicopter
 SWAT Van

Sunday, October 6

9:30 to 10:30 AM

**Who's on the
 Radio Spectrum**
 with Bob Grove

**Digital
 Communications
 Staff**

10:45 to 11:45 AM

**AM/FM Radio
 Broadcasting
 Staff**

Listening Laws
 Frank Terrenella

**How to Catch
 a Frequency**
 with Bob Kay

12:00 to 1:00 PM
To Be Announced

Act NOW to guarantee your choice of seminars. Upon receiving your registration & fee, we'll send you a seminar reservation list. Seminars fill up on a first come, first serve basis.

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The Last Days of Radio Canada International

by Wojtek Gwiazda



Photo La Presse/P.H.Talbot

10:10 AM FRIDAY 22 MARCH 1991 - Two RCI journalists are asking where the meeting is. A production assistant asks if this is really the end of RCI. This morning two supervisors told staffers we'd probably find out at ten, but it's already ten minutes past.

Earlier as I end "North Country," my Friday broadcast to the U.S. and the Caribbean, I just get a cryptic message on air; "We have a credible rumour that we'll find out about our future within the hour." I still can't believe it.

11:03 AM - Another manager confirms CBC vice president Michael McEwan, the man responsible for RCI at Canada's domestic service, is in the building and will speak to us all at 11:15.

11:15 AM - "This will be difficult news for some," but some good news for RCI, "yesterday cabinet approved..." The axe begins to fall...

It started as a rumour in November of last year. Our domestic service, the Canadian Broadcasting Corporation (CBC), was in serious financial trouble and looking for something to cut. RCI was always a good first "surgical" choice: a compact budget of \$20 million, with most of the staff in only one Montreal location, and a very low public profile in Canada.

In 1989, there had been talk of budget cuts at RCI. Audience reaction had brought lots of mail, and we didn't get cut. When the German service was targeted to go, some incredible lobbying in and outside Canada saved the service. A lot of staffers figured we were in for the same. But insistent rumours continued.

When an opposition member of parliament brought up RCI's future in the House of Commons one Friday in November, the government's evasive answer suddenly made some of us realize we were in grave danger. RCI management called an information meeting for 2 PM. Minutes before, it was cancelled.

I tried to set up an interview with our program director Allan Familiant for my Monday broadcast. He was willing, but as we talked, he was suddenly interrupted. As I listened, he was told all RCI managers were to refuse media interviews. All queries were to be forwarded to CBC head office. It was starting to sound like we really were on the chopping block this time.

Of course a lot of the RCI staff still didn't believe the federal government would let our domestic service cut us. At worst the budget would be transferred to a government department. Our enthusiastic audience of between 9 and 16 million, our

credibility and popularity seemed to make any serious cut to our services illogical.

12:45 FRIDAY 22 MARCH 1991 - Sylvester Lunga prepares to host his last program to Africa, as he leaves his fourth floor office the television crew follows him. The TV light gives the whole scene an historic aura. I'm, we're, having a hard time realizing what's happened. Each one of us is being given a chance to say one last good bye to the listeners.

Starting with Sylvester's program and



Wojtek Gwiazda's "North Country" was the last English language broadcast produced by RCI.

through the day and weekend the last farewells are made as domestic radio programs start plugging the holes we leave. David Smith of the Asian service and I are the last ones on Monday morning.

It still doesn't seem possible. They've decided to keep only five languages: Russian, Ukrainian, Chinese Arabic and Spanish; Everything else, including RCI productions in English and French, is being replaced with domestic programming. RCI has been promised funding for five years (13 of the \$20 million we need a year), but at what cost to our programming?

At McEwan's meeting I look at the faces of the producers from the different language services that have been cut, Japanese, Polish, Czech, Slovak, Hungarian, German, Portuguese. We're all stunned. We can barely ask any questions, it's just overwhelming. How can they do this? How can they talk about their "commitment to shortwave?" We're just outside Ian McFarland's show. He's listening and preparing his last "Shortwave Listeners' Digest" and the biggest and last story he'll ever do.

Last November as more questions were brought up about RCI in the House of Commons, there were evasive government reassurances. We got some favourable media attention, but convincing people to cover our plight was difficult when they only had a vague idea of what shortwave was. And it was, after all, only a rumour. But many of us started mobilizing listener reaction and getting ahold of anyone in Canada who might be able to help RCI.

Then on December 5, CBC president Gerard Veilleux announced drastic cuts to our domestic service. Eleven local television stations were being closed or radically cut, effective immediately. No one was being given a chance to say goodbye, 1100 people were to be laid off, producers, reporters and technical staff.

We waited, shocked, watching the closed circuit address in the RCI newsroom as Veilleux came to the future of RCI:

"The Corporation has indicated to the government that it is no longer able to bear the cost of operating Radio Canada International, the international shortwave service currently operated by the CBC. The government has indicated that, because of the international ramifications of this service, it will consider alternative ways of maintaining RCI."



Gillian MacCormack, announcer and producer

So it became official. It was up to the government to save us. But suddenly, RCI disappeared from public attention as the media turned to the drastic cuts in Canada's public broadcasting system. As CBC employees tearfully packed and left their offices, then started organizing to save or buy the stations, we faded into the background and a long four month wait for our last day.

We weren't totally forgotten. Outside Canada, listeners were beginning to react. Fax numbers of Prime Minister Mulroney and other cabinet members were being exchanged and a flurry of faxes started jamming ministerial offices in Ottawa. As the Christmas holidays approached, we were told there was hope; a special committee was preparing a report on RCI for the cabinet.

RCI staffers tried to call every favour they could to get support. The feeling was, if we could keep the pressure up, the government would surely find the funds needed to save us. If we had managed to avoid being cut along with the TV stations, perhaps we could do it again now.

Every day there were line ups at the fax machine as producers sent background information to the organizations in their own ethnic community. Sometimes the lines got even longer, as copies of faxes to the Prime Minister from listeners and organizations arrived to bolster our spirits.

Not everyone was involved. Some still didn't believe it. But around that fax machine, just outside the door of Studio 33,

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there was an energy that you could feel as we tried to build support.

Within the federal cabinet we felt the external affairs minister Joe Clark understood what we were all about, and counted on his support as we waited for the cabinet to decide.

When the Gulf War broke out in January, RCI started to broadcast in Arabic. We had already been sending messages to Canadian hostages and then to the Canadian soldiers in the Gulf. We were doing more and more. But our chief supporter, Joe Clark, was busy with diplomatic missions. Everytime he was



Bob Cadman, "Innovation Canada" and "Spotlight on Science"



David Smith, announcer and producer

outside of the country, we'd assume we were safe for a few days more. When he returned, we wondered whether the next cabinet meeting would decide our fate.

12:10 PM FRIDAY 22 MARCH 1991 - Producer Gillian MacCormack and I are doing an interview with CBC vice president Michael McEwan. He's decided to let us ask some questions on tape for today's programs and for the record. We ask him whether RCI's mandate to talk to the world and explain Canada has changed: "The mandate is still the same, our ability to meet the mandate will change...given the resources available..."

LATER THAT AFTERNOON - One of the Chinese producers comes into our office looking really sad, concerned about our futures. We assure her we're happy she, at least, still has a job and her service has survived. Over the next few days, we tell the few survivors not to feel guilty, we know it's not going to be easy for those who are left with next to no resources. Even as we're being separated, or because of it, we're finding a new solidarity.

07:55:00 AM MONDAY 25 MARCH 1991 - I was working till midnight last night preparing this morning's North Country. In the studio down the hall, David Smith is about to do his last Asian program. We're all tense. We know these are the last English language programs RCI is producing after 46 years on the air. Over the weekend the last of the language services said goodbye...goodbye!?!#@

I launch into the program... "welcome to the last edition of North Country," trying to keep my voice steady as I realize I'll be signing off all RCI English programming when I close in an hour's time.

In the first half hour we treat the RCI closure as one of several news stories, including the firing of 300 employees from the External Affairs department. But as we get into the second half hour the focus is RCI. I run the interview with McEwan. We talk live to RCI's program director Allan Familiant and then to Sheldon Harvey of the Canadian International DX Club. We look back with a number of highlights from past North Country shows: everything from the armed Mohawk lands dispute to a visit to Vulcan, Alberta.

As I introduce a taped goodbye from production assistant Jacqueline Poulin I almost falter, as I think of all the mornings we've shared putting the program together. She had wanted to be with us but had to start her vacation the day before.

As I continue, I tell listeners Ian McFarland is in an airplane heading for his new job at Radio Japan. Bob Cadman is off for medical reasons. (Judith Sauve and the others in audience relations still have work till July but then they're out, too.) More people are joining us in the control room. Some still have jobs, most come for the last program even if their job has been abolished.

Just before I give the credits, go off air and then finally break down, I say:

"It's not very likely that we will be back.



Ian McFarland of "Shortwave Listener's Digest" and "Listener's Corner" took a job with Radio Japan.



Aldo Marchini, host of "Coast to Coast" and "L'attitude"

The only person that could change that is Prime Minister Brian Mulroney. Before we go let me once again repeat something I've said many times before. It is only thanks to you that we've managed to put these programs together. You gave us the strength to persevere despite our limited resources. You made our job as the voice of Canada a responsibility we proudly took on, and as we all go our separate ways we will not forget that."

Two days later many of us are demonstrating in front of the RCI building chanting "Why, Brian, pourquoi?"

In fact, Prime Minister Brian Mulroney is the only one who can now guarantee the extra few millions that would restore our service. It seems to many of us that even in a period of austerity, a service such as RCI cannot be yet another victim of budget restraint. With our limited resources, any cut to RCI is drastic, even a symbolic tightening of the belt means entire language services are lopped off.

The decision can still be reversed before this summer: All frequencies are still in place, the staff has not been reassigned or let go, yet. But after that it will really never be the same again.

The PM's postal address is: Prime Minister Brian Mulroney, House of Commons, Ottawa, Canada. His fax number is (613)957-5636.





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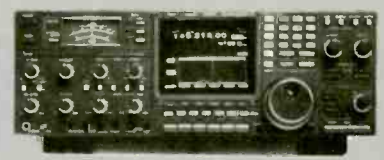
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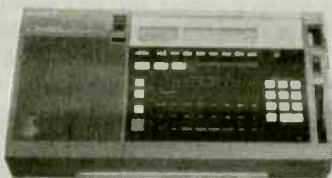
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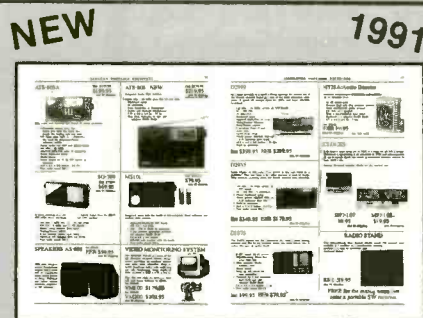


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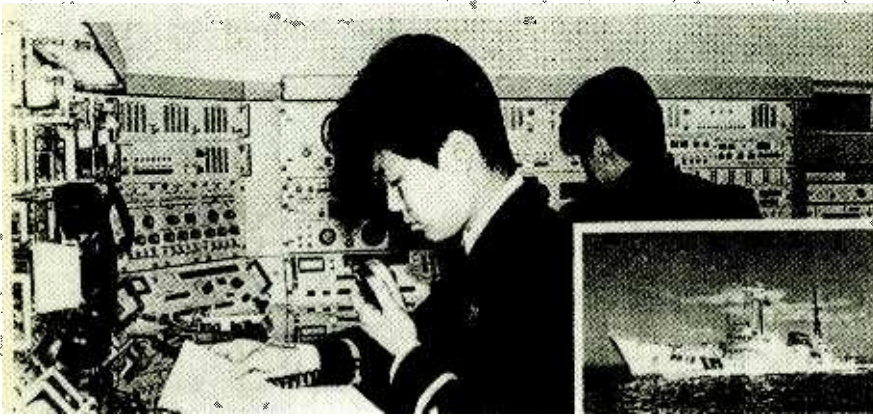
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Japanese Maritime Safety Agency

by Ed Blair



Communications room on a Japanese Maritime Safety Agency patrol vessel

If you try to run drugs into Tokyo Harbor or you're not sure about the regulations on fishing in Japanese waters or you want to hold a yacht race or you are lost or disabled at sea, you are likely to encounter the Japanese Maritime Safety Agency (JMSA, or often just "MSA"). JMSA is a huge organization with over 12 thousand people engaged in a wide variety of duties and responsibilities, greatly expanded from its beginnings.

The organization was established in 1948 to protect life and property at sea and keep "maritime security." A 1979 United Nations convention on law of the sea and later adoption of the International Convention on Maritime Search and Rescue resulted in greatly increased responsibilities for JMSA. More was put on JMSA's plate in 1982 with the institution of a wide-range patrol system, using helicopter-carrying patrol vessels and aircraft to conduct surveillance and control and search and rescue (SAR) operations.

JMSA is rather equivalent to the U.S. Coast Guard in the area and scope of its interests and responsibilities. It's organized into 11 Regional Maritime Safety Headquarters Units, nine district communications centers, 66 maritime safety offices, 51 maritime safety stations, three traffic advisory centers, 14 air stations and one special rescue station. There are four hydrographic observation sites and 119 aids to navigation offices.

Over 5,000 aids to navigation are operated by JMSA, including 5,031 visual aids (lighthouses and lighted buoys), 152 electronic aids and 40 audible aids (foghorns). The electronic aids include Decca and Omega

types, radio beacons and traffic information stations.

Here are some more numbers: 118 patrol vessels, 235 patrol craft, 69 special guard and rescue craft, 21 hydrographic survey vessels and 41 helicopters, plus three miscellaneous craft.

JMSA's mission is, to put it mildly, a multi-faceted one. It is responsible for surveillance and control of foreign shipping within Japanese territorial waters and works to prevent vessels from illegally entering Japanese waters. Continuous patrols help JMSA enforce commercial fishing regulations within 200 miles of the Japanese coast. JMSA officers have the authority to board vessels and investigate a wide range of criminal activities such as poaching, smuggling, suspicious injuries or deaths at sea and so on.

Operating frequencies:		
4177	8372.4	16728.8
4181.8	8372.2	16743.2
4182.2	8374	16744.8
4185.8	12502	16746.4
4186.2	12545.4	16748
4186.6	12546.6	22231.66
4187	12557.4	22233
6263	12558.6	22234.33
8347	12559.8	22243.66
8363.6	12561	22245
8364.4	16665.5	22246.33
8371.6	16727.2	

Prevention of what JMSA terms "strife at sea" is another concern. In the past this has included such things as public demonstrations against foreign ships making calls in Japanese ports (a U.S. nuclear sub, for example) and the 1985 demonstrations against the building of the Kansai International Airport. JMSA consults with and advises local authorities on how to handle such situations and employs its own resources in aiding local authorities.

A special watch is kept on vessels at sea in potential problem spots -- areas which may see increased traffic or are due to be hit by bad weather.

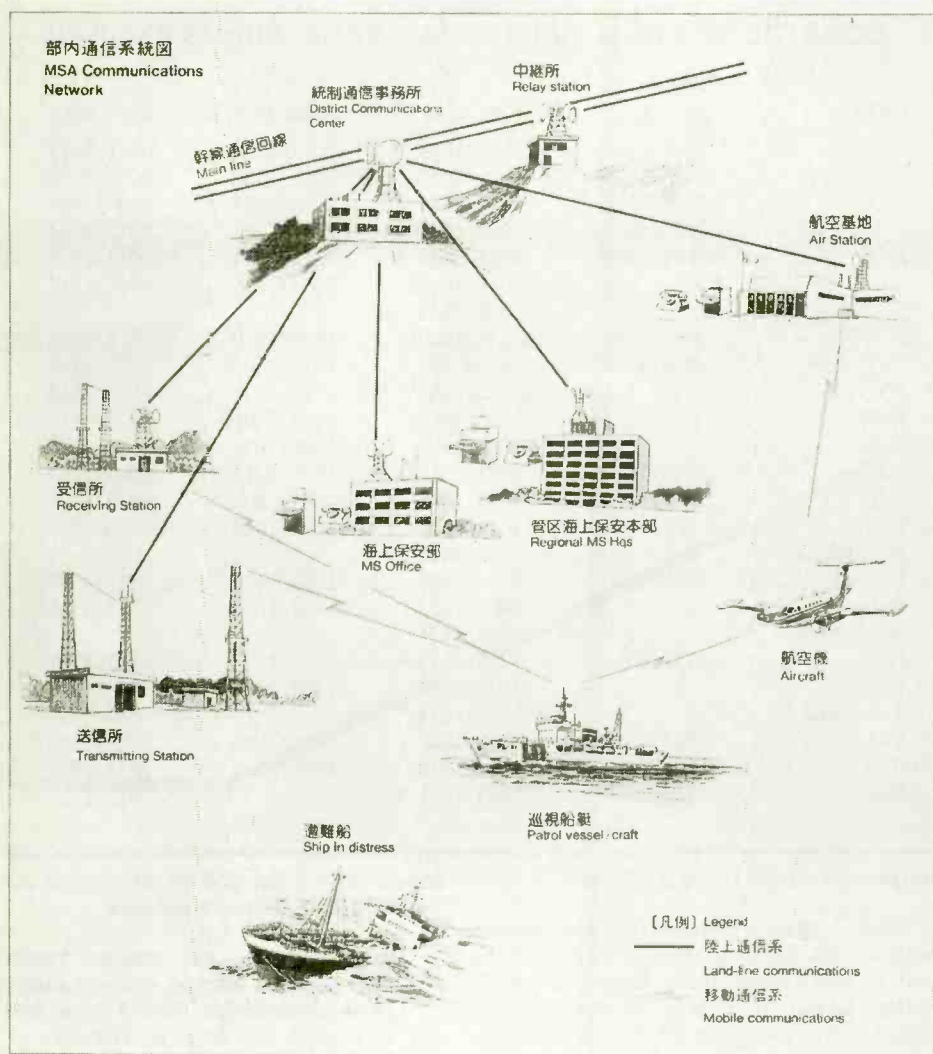
The Japanese Ship Reporting System (JASREP) and Maritime Safety Information System work together to keep track of ship movements within an area bounded by 17 degrees north and 165 degrees east. Ships feed position reports to JASREP via JMSA's main coastal radio station (JNA) which relays the information to the Maritime Safety Information System which uses computers to keep track of the locations of all ships within JMSA's geographic responsibility. This information is also shared with the U.S. Coast Guard's AMVER system.

If trouble does strike a vessel, search and rescue is made much easier by having both a recent position report and by knowing which vessels are close by and might offer faster aid. Also helping to zero in on a ship in trouble are 24 shore-based direction-finding stations. JMSA's patrol vessels also have this capability.

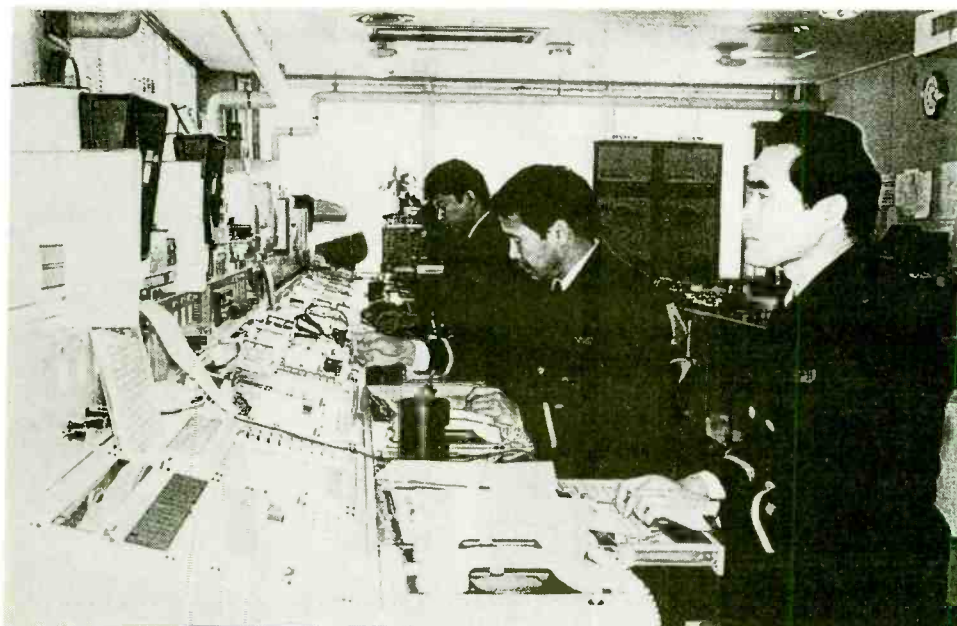
Eighty-three of Japan's most congested ports are designated for on-going special attention by JMSA, which controls the entry and departure of every ship in those ports, as well as authorizing the handling of any dangerous goods coming in or leaving those ports.

A special watch is kept on the most congested ports, such as Tokyo Bay and the Seto Inland Sea, as well as the various tanker routes, keeping an eye out for oil spills or other pollution events such as waste dumping. JMSA has chemical firefighting boats and oil recovery equipment pre-positioned at several sites throughout the country so they can be brought to the scene more quickly.

Hydrographic and nautical charts, nautical and safety directives are published by JMSA's National Safety Information Service. More



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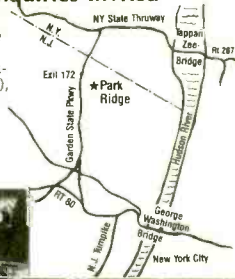


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Thirty aids to navigation sites report current weather to JMSA's Vessel Weather Reporting System which then broadcasts summaries via radio. They're also available via telephone. These broadcasts are carried out on 1670.5 and 2019 kHz nonstop from 12 through 58 minutes past each hour. Twelve coastal stations also transmit current local weather information on frequencies in the 400 kHz range.

JMSA also conducts a large number of on-going surveys. It is engaged in continual mapping of the Japanese coast and the many small and remote islands, aided by computers and satellite technology. Surveys are also made of the ocean floor. The results are published as "Basic Maps of the Sea in Coastal Waters" and "Basic Maps of the Continental Shelf Areas." Two other divisions — the Oceanographic Surveys and Oceanographic Information System, conduct hydrographic and tidal observations and geomagnetic surveys and work to predict earthquake and volcanic activity. A weekly "Ocean Current Forecast" and twice-monthly "Quick Bulletin of Ocean Conditions" are published by these divisions.

**Table 2
JAPANESE MARITIME
SAFETY AGENCY:**

LW-SW-VHF COASTAL STATIONS

CALL	NAME
JNL	Otaru sea patrol radio
JNX	Kushiro sea patrol radio
JNN	Shiogama sea patrol radio
JND	Akita sea patrol radio
JGC	Yokohama sea patrol radio *
JNT	Nagoya sea patrol radio
JGD	Kobe sea patrol radio *
JNH	Tanabe sea patrol radio
JNO	Kochi sea patrol radio
JNE	Hiroshima sea patrol radio
JNR	Moji sea patrol radio *
JNK	Sasebo sea patrol radio *
JNC	Maizuru sea patrol radio
JNP	Sakai sea patrol radio
JNV	Migata sea patrol radio
JNZ	Fushiki sea patrol radio
JNB	Naha sea patrol radio
JNG	Ishigaki sea patrol radio

Note: All stations use calling frequencies 500 kHz, 2181 kHz, 156.6 and 156.8 MHz.

* Also use 480 kHz.

**Table 3
COASTAL STATION SAFETY MESSAGE TRANSMISSIONS**

CALL	FREQUENCIES			
	500 kHz	2182 kHz	156.8 MHz	2091 kHz
JNL	0900/1500 0918/1518	1033/1633 1010/1610	1033/1633 1010/1610	0915/1515 0903/1503
JNX	0918/1518 0918/1518	1025/1625 1003/1603	1025/1625 1003/1603	0903/1503 0933/1533
JNN	0900/1500 --	1033/1633 1025/1625	1033/1633 1025/1625	0915/1515 0915/1515
Sakata R.		1020/1620		
JGC	0930/1530	1020/1620	1020/1620	0915/1515
JNT	0918/1518	1010/1610	1010/1610	0903/1503
JGD	0918/1518	1033/1633	1033/1633	0933/1533
JNH		1003/1603	1003/1603	0933/1533
JNO		1025/1625	1025/1625	0933/1533
JNE	0930/1530	1015/1615	1015/1615	0903/1503
JNR	0900/1500	1003/1603	1003/1603	0933/1533
JNK		1015/1615	1015/1615	0933/1533
Nagasaki R.		1010/1610		
JNC	0900/1500	1020/1620	1020/1620	0915/1515
JNP		1003/1603	1003/1603	0915/1515
Hamada R.		1025/1625		
JNV	0930/1530	1015/1615	1015/1615	0903/1503
JNZ		1003/1603	1003/1603	0903/1503
Kanazawa R.		1033/1633		
JNJ	0918/1518	1020/1620	1020/1620	0903/1503
JNB	0900/1500	1010/1610	1010/1610	0933/1533
JNG	0930/1530	1033/1633		0915/1515

frequencies of 2091 and 27525 kHz.

Nine coastal stations communicate notifications and instructions to large vessels and certain others under Maritime Traffic Safety Laws. 2150 kHz is the working frequency on shortwave for all these stations.

Communications regarding quarantine control, safety of traffic within Japanese ports

and so on are handled by 20 stations using longwave and VHF frequencies.

Twenty-three coastal stations transmit safety messages as soon as received and also on a fixed schedule. See Table 3. Main JMSA coastal stations are listed in Table 2.



JMSA's Maritime Pleasure Event Consultation Bureau provides advice in organizing and running maritime activities, such as yacht races.

JMSA even operates its own schools. The Maritime Safety Academy at Kure trains future JMSA officers and the Maritime Safety School at Maizuru serves to train incoming recruits. It seems that about the only maritime-related activity JMSA is not involved in is boat building.

Not surprisingly, JMSA operates a large number of radio stations for various communication and information-providing purposes.

The main JMSA station is JNA -- Tokyo Radio -- which operates on a number of shortwave frequencies. See Table 1.

JNA transmits navigational warnings, hydrographical information, details concerning missing vessels or those in distress, NAVAREA messages (warnings from the worldwide Navigational Warning Service) and other messages. In cases of emergency traffic or search and rescue situation, JNA maintains communications with similar stations in the USSR (stations UDL and UFO) and the Republic of Korea (DSK50), and uses telex to communicate with other countries.

Twenty-seven JMSA coastal stations plus all on-duty patrol vessels keep a continuous watch on the international distress frequencies of 500 and 2182 kHz and 156.8 MHz. Also monitored are the domestically used



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CIRCLE 123 ON READER SERVICE CARD

When disaster wipes out all normal modes of communication, a little-known and little-used unit nevertheless stands ready to bridge the gap.

MATTS: FEMA's emergency communications response team

The blue green Caribbean is calm now, its waters lapping placidly onto pristine sandy shores. Here, vacationers from around the world sample the heady pleasures of islands with such names as St. Croix, St. Thomas and Martinique. But compare this bucolic scene with the one taking place over a year ago. The place: Signal Hill. The event: a tropical storm with over 130 mile-per-hour winds.

WAH is a marine radio station located high above the island of St. Thomas. During more peaceful times, it relays messages from

ship to shore, places phone calls for boat owners, handles medical emergencies and monitors MAY DAY operations. But then it had more on its hands than it could handle.

Tracking a storm that Sunday, September 6, was WAH president Peter Church, three station officers and four staff members. They were following the storm which was churning up the Caribbean. As the threat increased, Church gave the word and WAH left the public power system and went to auxiliary. It was to be six days on the generators before it could go back on city power.



Ninety percent of the structures on St. Croix were damaged or destroyed. Boats were tossed onto each other or onto the shore. Following the hurricane, communications were maintained only by a handful of ham radio operators, WAH's ship-to-shore relay system, and, a few short hours after the hurricane had passed, by FEMA's Mobile Air Transportable Telecommunications System.



First on the scene: The MATT System can be deployed anywhere in the Continental United States within eight hours.

The afternoon was pleasant but breezy with winds blowing along at 60 to 70 miles per hour. By midnight the force was 100 mph and by 1:30 a.m. Monday it reached 130 -- and one of the WAH towers collapsed. After that it was a matter of constantly rearranging cables and equipment in the transmitter room.

The scream of the winds turned into a growl and then a roar. The anemometer gave out. Barbara Roderick, WAH's senior marine telephone operator, and the three other operators were handling calls one after another, faster and faster.

As the winds increased, boats in St. Thomas broke their mooring lines and crashed into other boats causing them to crash on the shore. Then, as the winds

increased up to 160 miles, WAH's other antenna crumpled and the transmitter room flooded. WAH's seven VHF and 15 side-band channels were reduced to two VHF and two sideband.

WAH could only record the calls as they flooded in. There was no help they could send. No helicopter or rescue boat could venture out in the face of the storm. The first fatality, aboard a trimaran, was reported at 3:30 a.m. that Monday. Debris from the fallen towers and uprooted trees whirled through the air around the marine station. Seeing was unbelieving as such objects as Christmas tree ornaments from a damaged attic flew by.

One boat owner reported to the station that a house had been lofted by the winds and deposited atop his boat, which was in imminent danger of sinking. What should he do? WAH operators told the man to stay on the boat as long as it was afloat, then climb atop the house if necessary. Another boat owner asked how to get himself and a child ashore in the churning seas but forgot that his wife was also aboard.



The key element to providing aid at any disaster is communications. The MATTS is capable of setting up HF, VHF, UHF and Satellite communications in about four hours.

FEMA's First Response Team

When disasters such as Hurricane Hugo strike, the Federal Emergency Management Agency (FEMA) responds with the Mobile Air Transportable Telecommunications System (MATTS) team. Carefully loaded aboard a waiting C-130 (or larger) cargo plane is a communications van, generator trailer, support truck, antenna sections, carrier van, gasoline, luggage, 4 X 4 jeep, including 14 MATTS operation/electronic technicians.

The MATTS equipment and personnel comprise a highly mobile, self-contained communication system designed to respond quickly in any situation in which they are placed. Unlike other systems that require time for deployment, MATTS can be deployed anywhere in the Continental United States within eight hours.

The MATTS has both voice and data capabilities over both landline and radio circuits. Radios, covering most of the frequency spectrum (HF, VHF, UHF and Satellite) are available, providing for both long and short range capabilities.

What assures all these systems is an RF-350 125 watt transceiver, with a 7110 adaptive controller which provides totally automatic frequency management. Also included are

two VHF DES-XL Syntor 9000X systems to provide continuous radio coverage in the 136 MHz to 179 MHz area for communication with fire/rescue/police. The VHF radios allow communications with aircraft, which MATTS does, if necessary, until the FAA can fly in with temporary equipment of their own.

Landline capabilities included a variety of telephone and modem equipment to ensure interoperability with whatever landline circuits still exist. MATTS also provides telephone switchboard capabilities for connectivity between emergency coordinators at their Emergency Operation Center (EOC) capable of providing 88 lines through a Redcom switch. A PBX can be installed using 48 trunk lines remotod to the operations center using line of sight (LOS) microwave.

Versatility, redundancy, and flexibility is the intent of MATTS, because the key element to providing aid at any disaster is communications, and the MATTS is capable of operating all these systems simultaneously in very austere conditions.

The VHF hand-held walkie-talkies constitute another heavily used system among the emergency responders.

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Housing is often severely damaged following a disaster. Enormous amounts of food supplies and plastic sheeting are ordered through the MATTS radio communication system.

Tuck Palmer, MATTS Communications manager.

Once unloaded, operations can be set up virtually anywhere. Within four hours, the MATTS team in St. Croix, for example, secured a corner of a parking lot, leveled it, set up, adjusted the equipment, and stretched a canvas awning cover between two vehicles for cover. Two four-man tents were erected for sleeping.

Accommodations for the MATTS team are important. The system operates on a 24-hour basis and members put in 14 hour shifts and must be able to handle enormous amounts of work. Thus, it's important that everyone be well-rested. Unfortunately, things don't always work at that way.

"One of the little known facts about Hugo was that a day behind the hurricane was a tropical depression," Palmer said. "We worked in the rain, we slept in the rain. There were two inches of water in our tent. We were surrounded by running water for three days."

Palmer continued, "The first day was extremely difficult. We set up our 32-foot vertical whip and no-gain double delta antennas, strung coax cable wires and all in a tropical downpour."

Communications is everything in the first weeks after a disaster. Housing is often severely damaged. Enormous quantities of plastic sheeting are often required for temporary shelter and roof repair. Portable generators provide the only electricity.

The Department of Defense delivers food provided by the U.S. Department of

Agriculture's Food and Nutrition service. The emergency airlifts that bring in the food, shelter, communications and power, are all ordered using the MATTS radio communication system.

Ham radio networks, too, are busy with message traffic during the days following a disaster. Operators pass along messages and aid requests to various agencies, using the 20 meter band and operating 24 hours a day.

Most of the traffic handled by the FEMA/MATTS team relates directly with government aid disaster requests, liaison

between congressional staffers and their Washington counterparts. Special frequencies are established between governing bodies and organizations like the U.S. Navy, which plays a role in ferrying food and fresh water to the site.

Still, it's often not "things" that count most -- it's the people. From sunup to sundown and beyond, the FEMA staff uses their expertise to repair and return to service generators, air conditioners and phone systems to expedite the recovery effort. Local commercial radio stations and police department radio may be working at only half power. All of these problems are handled the FEMA technicians. "It's 'a wire here, a transistor there,' type of work," comments one.

Even still, humor can survive in the heart of any disaster. One FEMA staffer jokingly relates the story of one suave survivor found floating along on a piece of driftwood after the storm at sea. Looking up at the skipper of the rescue vessel, he waved and smiled. "Pardon me," he asked nonchalantly, "but do you have any Grey Poupon?"



Monitoring Times wishes to thank Elvira Hart, Public Information Officer, and Peg Maloy of Public and Intergovernmental Affairs, for their help in preparing this article. All pictures courtesy FEMA.



Winds at the airport on St. Croix reached 200 mph before recording instruments broke. Antenna towers for the local radio station snapped, as did as those of the maritime station on St. Thomas.

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Got a few minutes? Here's an unusual and inexpensive solution to a perennial problem for SW monitors:

Reduce Interference in your Portable Receiver

by O.G. Villard, Jr.

INTRODUCTION

The popularity of shortwave broadcasting brings with it both good and bad. The good is that there are hundreds, if not thousands, of stations on the air at any given time. The bad is that all these stations, crammed into shortwave's 1100 channels, leads to a certain amount of interference. Most annoying can be the "bleed over" that comes from a station on an adjacent channel.

There is a way to reduce interference from stations on adjoining channels. It's by nulling out or reducing the signal strength of the unwanted station.

Just about anyone who has handled a portable mediumwave (AM) radio has noticed that if you rotate the radio, stations can be made to fade out.

This article describes an accessory for portable shortwave radios which can do the same thing -- weaken interfering signals, either distant or local, with little affect on the desired broadcast. It can often restore program clarity and understandability when reception is degraded by troublesome co- or adjacent-channel interference. The arrangement consists of a turntable, a metal plate and a replacement-type whip antenna.

The system is good for separating interfering stations in different locations and the "directivity" of the receiver can act to reduce interference when the desired and the interfering signals are coming from different directions. Construction is straightforward and can be done with readily available mechanical components. No modifications to the radio are required for installation.

There is some loss in sensitivity, but the radio's normal tuning adjustments are unaffected. The arrangement is easily portable and works both indoors and outdoors.

Method of Operation

The device makes reception poor in one or

more directions although it remains nearly normal in most others. Radio and accessories are rotated on the turntable until the interfering signal is in the poor-reception direction. If interfering and desired stations are adequately separated in bearing, rotation should cause only a small change in the strength of the desired signal.

Requirements

1. Signals of normal but not excessive strength.
2. Interference and desired signal must come from significantly different directions.
3. Radio must be compact and battery powered. Use of external connections such as headphones or tape recorder will cause performance degradation and are not recommended.
4. The assembly must not be placed on anything metallic. Suitable supports are wooden tables or cardboard boxes.
5. For best results, the assembly should be spaced by one or two meters (three to six and a half feet) from large metal objects including wires. Except when changing stations, the listener's body should be no closer than half a meter or so.

Features

1. Easy construction -- can be home-built.
2. Compact in size -- can be moved easily.
3. Dimensions not critical.
4. Little or no adjustments -- except for antenna direction -- required when changing stations or bands.
5. Functions indoors although better outdoors.

Materials Needed

1. One turntable with tray made of wood or plastic, diameter equal to or larger than that of the receiver. Metal ballrace is okay.
2. One flat piece of any kind of metal, same

size or somewhat smaller than the area of the radio itself. Exact dimensions are uncritical, but performance degrades if the plate size is greater than that of the radio.

3. A standard replacement-type telescoping whip antenna. Maximum length should be somewhat longer than the radio's.

Assembly Instructions

1. The additional whip needs to be mounted vertically at one end of the horizontal metal plate. The plate's end can be bent upward to provide a support. See Figures 1a and 1b. The whip should be mounted in a position which makes it diagonally opposite the set's own whip, wherever that may happen to be. See Figure 1c.
2. The radio is placed on the plate in the orientation shown in Figure 1. Its weight and that of the plate itself will usually stabilize the whip. If the radio has a ground terminal, it should be connected to the plate. If not, connection can usually be made to the outside of sockets into which recorder jacks are plugged. If the ground connection is omitted, performance will be only slightly degraded.
3. Plate and radio rest on the turntable and are rotated together. See Figure 2.

Operation

1. Select the desired channel in the normal way.
2. Extend the radio's own whip to roughly its maximum length. Adjust the additional whip to be about 20 percent longer.
3. Rotate the assembly, touching the plastic only, avoid the metal, until the interfering signal is weaker than the desired signal. There may be two positions where this is true. Choose whichever position is most satisfactory.
4. For the greatest interference reduction, adjust the length of the radio's whip with respect to the external whip, or vice versa.

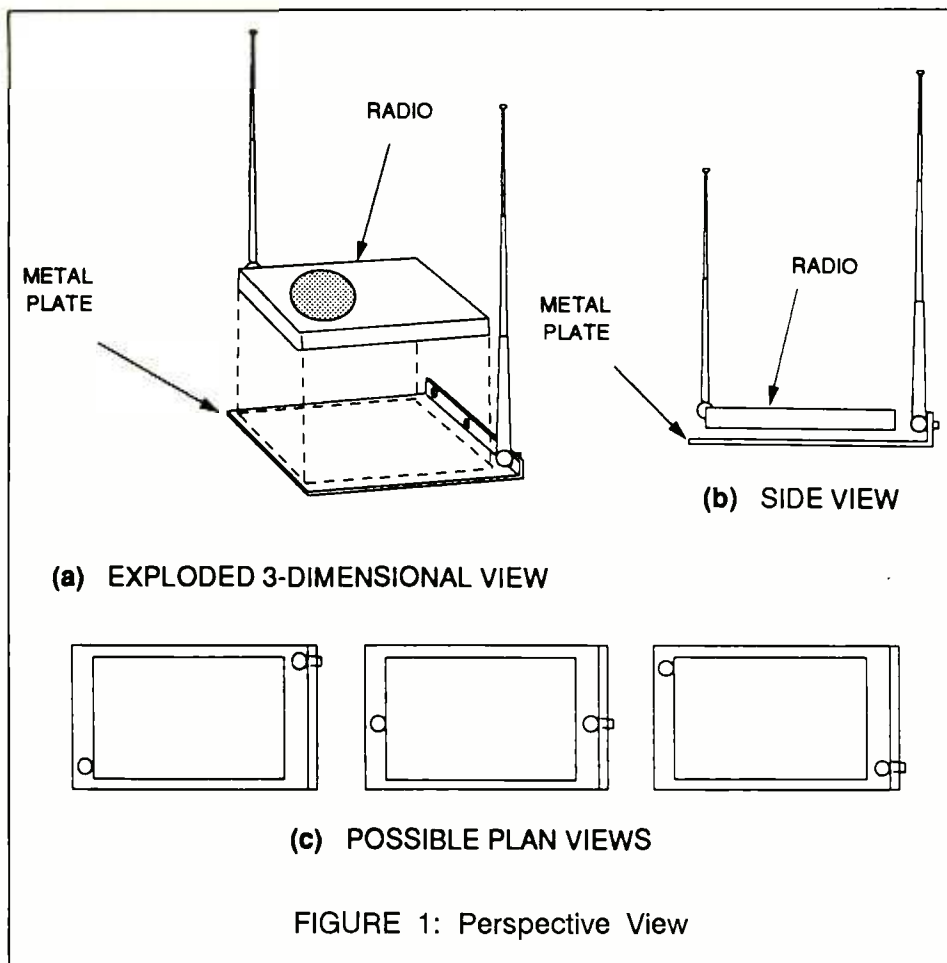


FIGURE 1: Perspective View

Best results are usually obtained when the external whip is slightly longer than the radio's whip.

5. If signals are very strong, it may help to shorten both whips proportionately in order to prevent overloading.
6. When a deep null is achieved, the position of the listener's body may affect its depth. This is particularly noticeable when the listener stands close to the antenna in the direction of the station. The effect is much less when the listener is so located that each whip is equally distant from the center of his body. When the listener is half a meter or more from the whips, the effect of body capacity can normally be ignored.
7. Shortwave signals of distant origin normally vary in strength with time at a comparatively slow rate. This effect, called fading, can make finding nulls difficult. The easiest way to find the true minimum-strength direction(s) is to swing the turntable back and forth reasonably rapidly on either side of a suspected null position. The confusing effect of fading is reduced because the natural signal-strength changes are usually slower than the rotation-caused ones.

Performance

1. Under good conditions, the arrangement should produce nulls that will reduce signals by as much as 20 dB. There may be some variability in null depth with time, especially indoors. If the null fills in, a slight change in turntable position will usually restore its depth.
2. Do not expect this simple device to indicate actual station directions accurately, especially indoors. It is designed to minimize one interfering signal at a time by directive action without consideration of signal bearing. However, it often does indicate approximate bearing, especially when an average is taken.
3. At any given time, there will be some sky-wave interfering broadcasting stations which cannot be significantly reduced in strength by antenna directivity of this sort. A higher fraction of nearby or ground-wave interfering signals can be reduced, however.

Troubleshooting

1. If observed directionality is poor, the problem may be a result of propagation and/or transmitter beam heading, and nothing much can be done about it. But if

the problem appears to be at the receiver, try moving the assembly to a new location. A wooden stool makes an excellent portable support. Unexpectedly poor results may sometimes be caused by concealed metal -- for example, wooden tables reinforced with a metal frame, metal mesh inside stucco walls, etc.

2. Sometimes when a given station has a null in a given direction, other stations in the same band also have nulls in the same direction no matter what their true bearing. The result is that interference is reduced by the same amount as the desired signal, just as if the source of the interference were in the same direction as the desired signal. This effect is usually encountered indoors and results from the presence of nearby metal conductors which happen to reradiate strongly.

It can usually be reduced by moving the assembly a few feet to a different indoor location. However, in extreme cases it may be necessary to move outdoors. The effect is worst in buildings of reinforced-concrete construction.

Two Ways to Verify Normal Operation

1. With the direction of the assembly adjusted to null a given station, touching either antenna should make the received signal sharply increase in amplitude, and by roughly the same amount.
2. Remove the external whip and the supporting metal plate, leaving the receiver on the turntable with its whip in the normal vertical position. Rotating the turntable should now have little or no effect on signal strength. If there is a marked change, the radio is very likely in a region where there are too many nearby reflecting objects, and station separation is likely to be poor. Try moving to another location.

Possible Substitutions

1. The metal plate can be aluminum foil, if there is some other means for supporting the whip. Foil and whip should definitely be connected and foil and radio should also, if possible.
2. The "whip" can be any kind of conductor, although length adjustability is a great convenience. For example, it could consist of hookup wire supported by a wooden dowel.

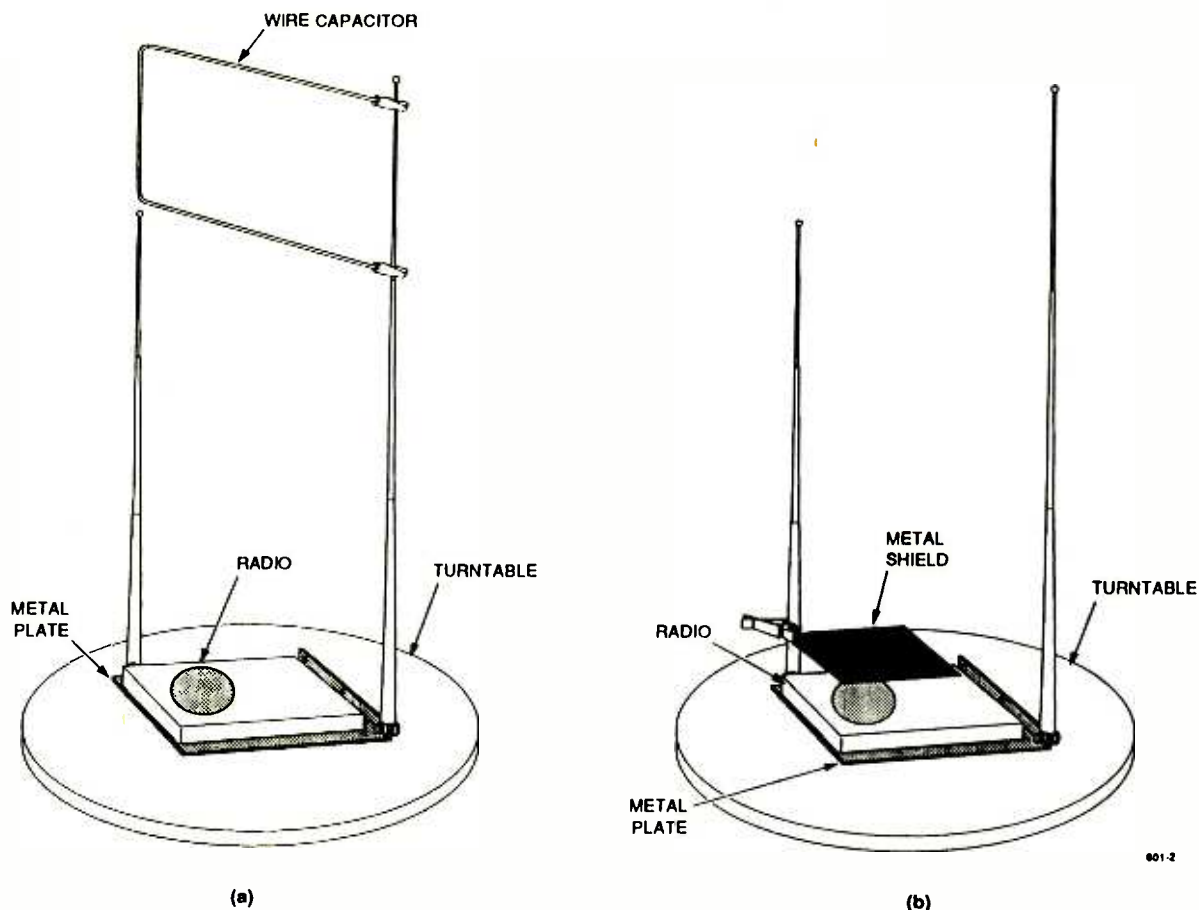


FIGURE 2: Two schemes which may possibly improve performance

3. A turntable is quite desirable because of adjustment ease. However, an acceptable substitute is a flat slippery surface which can be covered if needed with sheets of plastic or slick magazine covers. Radio and its whips could then be supported on a nonconducting tray.
4. A whip or metal strip that is too short can easily be extended by wrapping a length of soft copper wire around its upper end.

Operation Outside the SW Range

1. The above arrangement works at all frequencies which the radio receives through its whip. This is normally from 2 to 108 MHz. In the FM band, signals must be kept weak to prevent the limiter from smoothing out changes in amplitude. This can be done by detuning the receiver and/or retracting the whips until the background noise becomes audible. Changes in noise level are then an indicator of signal strength.
2. Adding an extra whip as above does not help in the mediumwave (AM) broadcast band because virtually all radios receive

via built-in ferrite loops. However, the polar pattern of these loops also contains nulls much like those of the whips discussed here. Interference can sometimes be reduced by tilting as well as rotating the radio. The problem is how to support the radio in the reduced-interference position, which is usually not horizontal. Soft pillows have been used as adjustable supports.

Modifications

The detailed behavior of the basic scheme described above depends on the location. When the initially obtained null depth is inadequate, the modifications shown in Figure 2 may help.

Figure 2a shows a piece of hookup wire bent as shown and attached to the end of the added whip by any convenient means -- for example, standard small-size alligator clips. The wire loop should be in the plane of the two whips. It behaves as an extension of the added whip and modifies the behavior of the radio's whip.

Note the distance between the top of the radio's whip and the lowest part of the added

wire. There is a best spacing between these two, which makes the null deepest and the off-null response greatest. The length of either whip can be adjusted for this purpose.

Figure 2b shows a piece of metal, adjustable in position, which effectively adds capacity. It is made of aluminum or metal foil attached to the radio's whip, and held in place an inch or so above the top of the radio by a small clip. The clip permits it to be swung out of the way when adjusting the radio.

In many, but not all, situations, these additions have been found to improve null depth when used singly or both at a time. Of the two, the wire is the more helpful. Because of the variation in radio shapes, and the characteristics of typical locations, the improvement cannot be guaranteed, but it may be well worthwhile.

Commercial Availability

A related device called the Channel Cleaner, also developed by SRI, is being marketed by Palomar Engineers, P.O. Box 455, Escondido, California 92029.

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RCA WA504A audio generator, with probe; \$35
B&K Precision E200D RF signal generator; cost \$405, sell \$95
B&K Precision 1248 digital color generator, with manual; cost \$175, sell \$65
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Sencore YF33 yoke/flyback tester, probe, manual; \$45
B&K Precision HV-44 direct-reading high voltage probe; cost \$95, sell \$35
B&K Precision HV-40 direct-reading high voltage probe; \$25
B&K Precision HV-32 direct-reading high voltage probe; \$25
B&K Precision HV-30 direct-reading high voltage probe; \$25
Heathkit M-18 VTVM (several in stock), fully checked out; \$29
EICO 232 VTVM; \$25
EICO 232 VTVM, no cover; \$10
Hickok 5700 bench multimeter (several in stock); cost \$185, sell \$65
B&K Precision 801 capacitor analyzer; cost \$170, sell \$65
B&K Precision 530 semiconductor tester, with manual; cost \$625, sell \$250
B&K Precision 520B transistor tester, with manual; cost \$348, sell \$95
Tektronix 130 L-C meter; \$125
Tektronix 130 L-C meter, needs 0A2 tube, meter edge broken; \$65
Industrial Test Equipment 300A vector voltmeter; \$75
Mahr Gage (Feinpruf) tolerance/depth gauge, with sensor; \$100
Kintel/Cohu 204A galvanometer; \$195
Northeast Electronics TTS15A line test set; \$100
General Radio 1553A vibration meter, with probe; \$250

CRT ANALYZERS/REJUVENATORS

B&K Precision 466, with manual; cost \$161, sell \$50
Heathkit IT-5230, with instructions; \$35
Beltron 2972E, with manual; \$95
Sencore CR70, with manual; cost \$1295, sell \$495

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#860208-53P (white), 7"W, 1-3/4"D, 1/4" spindle; 10 rolls \$10

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Tape Recorders, 1970-73, 4-131, missing 7 volumes; cost \$750, sell \$75
TAB TV Service Manuals, 1969-1973, 16 books; \$20

BOOKS AND MAGAZINES

SHORTWAVE DIRECTORY by Bob Grove, sixth edition (1990); cost \$19, sell \$7.50
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Connie Lawn --

*Kol Israel's
correspondent in
Washington, D.C.*

by Jeff Chanowitz

With a microphone in one hand and a tape recorder in another, for the past 20 years, Connie Lawn has traveled around the world reporting on the events and people who have made international news for radio listeners around the world.

From her home outside Washington, D. C., Lawn works as a freelance radio journalist covering the State Department and the White House for radio stations in New Zealand, South Africa, Canada, and the United States. In addition, shortwave listeners will recognize Connie's voice from her reports on Kol Israel, ABC (Australia), and Radio New Zealand.

"I went all around the world with a sleeping bag and a tape recorder," is how Connie described her early years as a reporter. After being lucky enough to hook up with an "old-boy" network of long-time



freelancers, Connie worked hard to establish herself among the international journalistic community.

In 1972, she went to Israel in hopes of working for Kol Israel. Because of Hebrew language requirements, she did not get the job. However, Lawn was offered a job to help David Apple, who was then Kol Israel's

correspondent in Washington, D.C.

In 1973, after only a few months on the job, the Yom Kippur war caused the call-up of the entire Radio Israel staff, forcing Connie into the position of producing the entire English language broadcast from the United States. Since then, Lawn has become the senior Kol Israel correspondent and regards her staff colleagues as "close friends" and her work as a "labor of love."

Connie remarked about the deep dedication and professionalism of the Kol Israel staff and told the story of Sara Manobla, who currently heads the feature service. A couple of months ago, Manobla's son was killed in Russia while on a joint Israeli-Soviet mountain climbing expedition. Despite deep personal grief, Sara went on the air and reported her son's death.

"A mistake could start a war," Lawn stated as the main difference between her reports for Kol Israel and for other networks. She recalled how a small anonymous quote in a six-minute radio newscast caused a political uproar. The story contained an alleged quote by a high-ranking Carter administration official stating that the approval of AWACS planes to Saudi Arabia had broken the back of the Israel lobby.

Following the airing of the story, Jody Powell, who was President Carter's press secretary, called Lawn into his office and demanded that she reveal her source for the comment. Later, Lawn learned that her source was not truthful and that the small quote could have had political ramifications domestically and internationally.



Martin de Rugter

Connie Lawn surrounded by radio students in New Zealand.

Is high quality broadcasting on its way out?

"You start each morning," is what Sam Lewis, a former U.S. ambassador to Israel, remarked to Connie at a luncheon. Lewis along with other American diplomatic staff and most English-speaking reporters listened to Kol Israel on a regular basis.

Lawn went on to state, "During the Iranian revolution, many of the people I knew listened to Radio Israel before the BBC because they, like many of our listeners, were aware that we knew the region the best and gave the highest quality newscasts back then, and we still do today."

Yet, Lawn also laments the budget cuts that have reduced Kol Israel's frequencies and power. Once a regional power broadcasting to all parts of the Middle East, today Kol Israel is barely heard in nearby Jordan.

Because of the financial problems exacerbated by the influx of hundreds of thousands of Soviet and Ethiopian immigrants, Kol Israel's budget remains very uncertain. Yet, Connie questions the wisdom of cutting English language broadcasts commenting, "Within any span of time Israel is both vilified and praised."

Such was the case when Israel was condemned for bombing Iraqi nuclear installations and then praised when the world learned that the action helped delay Iraq's nuclear capability. She went on to remark candidly, "It's anglophiles like Israeli President Chaim Hertzog and former Foreign Minister Abba Eban who have realized that it's in Israel's best interest to have these broadcasts and who have fought against cutting Radio Israel's budget."

To solve the current budget problems of the external service, Connie stated that the answer to the station's problems lay in privatization. While finding an investor to buy out the station would not be very difficult, she did admit that government approval for selling the station would not be very likely.

As a journalist, Lawn has few qualms about working for a government-owned station. "I don't write a story with a bias depending on the service I am sending the story to." However, she did admit that government services do present a slant explaining, "Many radio services have a propaganda aspect to them and they are the first ones to admit it."

"It really brings the world together," Connie stated, while explaining her feelings about shortwave broadcasting. Reflecting upon the importance of shortwave, Connie commented that over the last 20 years shortwave has been instrumental, along with satellite communication, in connecting radio, TV, and print journalism worldwide. Today,

CNN, BBC, Kol Israel, and other international media quote each other as sources on a regular basis.

The story regarding Dr. Elisabeth Morgan, which Lawn broke in the U.S., exemplifies the trend toward the internationalization of the media. When it was learned that Dr. Morgan had hidden her daughter in New Zealand from her ex-husband, who allegedly abused the child, the local Washington D.C., National, and New Zealand media teamed up to present the story.

The facts of life as a journalist

As a radio journalist reporting for shortwave, her broadcasts are not produced that much differently from non-shortwave stations. Yet, Connie did remark that she only used interviews with the highest sound quality for the actuality portions of her stories. She also mentioned that female voices tend to carry better on shortwave because of their tendency toward higher pitches. Also, Lawn remarked that on shortwave she makes sure her enunciation is exact as possible.

As for the administration officials with the best voices for shortwave, President George Bush and Chief of Staff John Sununu tend to carry better because their voices are pitched higher. Defense Secretary Dick Cheney's voice has a low pitch and tends to sound very tired, which makes his voice less ideal for shortwave broadcasts.

Lawn also refuted the popular myth that international correspondents' lives are filled with nothing but travel and adventure. The reality of a job is long hours and hard work. On an average day, Lawn will file 45 stories. When it's slow, a typical day for Lawn consists of reading the newspaper, monitoring the talkshows, and watching CNN for selected quotes that she can air as soundbites. She will also go down to the White House, state department, and embassies for briefings. Later, she will record the story and feed it through the telephone to radio stations all over the world.

However, most days are not slow and Lawn recalled busy times resulting in her filing four stories during her wedding. In addition, she gave birth to her son after a briefing and wrote stories on her sister's deathbed.

Nevertheless, interviewing world leaders is



Jeff Chanowitz

President Bush is one politician whose voice carries well over shortwave; it's just one more consideration for a radio journalist.

one of the perks of her job. Connie recalled an interview with a former Indian prime minister who had such bad breath that she "nearly fainted." She also recalled squeezing into an uncomfortably small telephone booth to interview former New Zealand Prime Minister Robert Muldune.

On a sadder note, Lawn mentioned a story of her meeting with Robert Kennedy during the 1968 presidential campaign. Kennedy had liked her and allowed her to be part of the press corps covering his candidacy. With sorrow in her voice, Connie commented that she had given the last interview before his assassination at the hands of Sirhan Sirhan.

On the eve of the Persian Gulf war, Connie reflected on how the media would cover the war. Lawn stated that there would be nonstop newscasts with regular programming being canceled. She also added, "The Gulf War will be the first war broadcast live."

Her prediction became eerily true as Kol Israel presented live broadcasts of Scud attacks against Israeli cities, and CNN televised frightening images of reporters broadcasting while wearing gas masks.

In addition to Lawn's reports on Kol Israel, which can be heard on the 12 a.m. (EST) and sometimes on the 3, 7 and 8 p.m. broadcasts, she can be heard on the newscasts of Radio New Zealand, the CBC, ABC (Australia) and USA Radio Networks (shortwave affiliates). Connie is also in the process of writing a book about her experiences and will continue to work hard informing shortwave listeners of the latest international developments.

To receive a schedule from Kol Israel, write to P.O.B. 1082-Jerusalem 91010-Israel.



Shortwave Broadcasting

Glenn Hauser
Box 1684-MT
Enid, OK 73702

ANGOLA (non?) The VORGAN service at 2100-2230 UTC on 17890 is scheduled Sunday, Wednesday and Friday only, per announcements. QSL received from Jaime de Azevedo Vila Santa, Director of Information, Free Angola Information Service, P.O. Box 65463, Washington, DC 20045-5463 (*Eter-Aktuell* via *Onda Corta*)

AUSTRIA Thanks to letters from listeners, *Austrian SW Panorama* is back, Sundays at 1030, 1130 and 1430; best in North America on 21490.

BELGIUM Radio 4 Internationale, the external service in French, has been closed down; it began in the Congo in WW II. The Dutch counterpart, BRT, continues, but renamed BRTN (Radio Netherlands *Media Network*) News has expanded to weekend broadcasts, mailbag moved from Saturday to Sunday. Attempting to make schedule horizontal, same time daily, but Flemish colleagues still force the 1300 UTC broadcast to shift to 1130 on Sundays, 21810 to North America; at 2330 on 13675 to South America, 13720 to North America (*Radio World*) Oblivious of WRNO's summer usage of 13720 at 2100-2400; was this conflict avoided?

BHUTAN The 50-kW transmitter provided by India seems finally in use, as much stronger now on 5025 ex-5023, 1100-1500, peaking at 1230, English at 1415-1500 (Victor Goonetilleke, Sri Lanka, RNMN) Also thundering in to Australia (Peter Bunn, *ibid.*) But not on Sunday?

CAMBODIA A schedule with a QSL sent last November from Radio the Voice of the People of Kampuchea shows English as usual at 0000-0015 and 1200-1215 on 11940, but 9695 had been marked out (Gordon Darling, Papua New Guinea)

CAMEROON James Achanyi-Fontem says reception reports for RTV Cameroon stations should go to him at a new address: CRTV Feedback, P.O. Box 986, Douala (Ben Krepp, MA, *World of Radio*)

CANADA After three months of limbo, RCI staffers got the bad news March 22: several languages would be cut immediately and filled by CBC English and French domestic programs, as would be times when RCI formerly broadcast its own programs in those languages. Almost half the staff would be fired; they had two or three days to produce their final programs and say goodbye to listeners. The federal government could fund RCI only at \$12 or \$13 million, down from the \$20 million level under CBC, and almost half the remainder is required to operate the Sackville transmitters; no reduction in their output was foreseen, in order not to lose frequencies to other stations. Ironically, by refusing to pay for RCI, CBC now has much greater exposure via RCI. At least at the outset, RCI chopped off some CBC-fill programs before they ended, since they did not fit into existing slots. Subject to change, here's how some of them lined up: Tuesday-Friday 1200-1300 on 17820, 11855, 9635, repeat of previous night's *As It Happens*; and again later during the daytime. UTC Sunday 0007 (perhaps shifted to Saturday 2237) *Inside Track* (sports) on 9755, 5960, and again at 0107 on 11940, 11845, 9535, 13720; *Media File* took over the *SWL Digest* slot at 2332 and repeated at 0132; *Quirks & Quarks* (science) at 0007-0100 UTC Sunday on 9755, 5960. The Sunday 2100-2200 broadcast on 11945 repeated the third hour of *Sunday Morning*; *Open House* (religion), was before DST began on UTC Monday 0007-0056, a broadcast which in past summers has split into two non-adjacent parts; *Royal Canadian Air Farce* followed after the 0100 news (now 0000?), and at 0132/0032 *Double Exposure*; South American service, which does not change time, on UTC Monday had *Inside Track* after 0100, *RCAF* at 0132. *Open House* again on the Monday 1200-1300 broadcast. A few days before the ax fell, Bob Cadman, one of

RCI's familiar friendly voices, collapsed after a newscast, perhaps a stroke, but was hospitalized and seemed to be recovering well. On the very day RCI's last original programs were aired, Ian McFarland left for Tokyo to work for Radio Japan. Organizing a group to lobby for revival of RCI programming is Keith Perron, 4273 Tenth St., Laval-Quest, Quebec H7R 2V6.

COLOMBIA La Voz del Guaviare, 6035 is inactive because of a guerrilla attack (Rafael Rodriguez, Bogota, RCI *SWL Digest*)

COSTA RICA Radio for Peace International added a new AM frequency, 15030, and planned to resume 21565 or elsewhere on that band, in SSB (Thomas Nyberg, IA) 21545? (Steve Cole, RNI) At the outset, 15030 had a ripple and propagated much the same as parallel 13630; Canadian Forces on 15031 must not have been pleased. While 13630 and 7375-USB continued all night as late as 1400 UTC, 15030 would close around 0500. From May, if not sooner, RFPI expands its weekday schedule from 4-1/2 to 5-1/2 hours, by adding *Women's Perspective* daily at 0030-0130, so earlier programs starting at 2000 repeat another hour later, and two hours later on the second repeat; no change from the 6-1/2-hour weekend schedule, plus repeats. So look for *World of Radio*: Tuesday 2330, Wednesday 0500, 1030; Friday 2100, Saturday 0230, 0800, 1330; 1930, Sunday 0200, 0830; 2230, Monday 0500, 1130. *Mailbag* follows the Tuesday/Wednesday and Saturday/Sunday airings. *Radio Newyork International*, Saturdays 2230-2430, repeats not only Sundays at 0500-0700, but also 1130-1330.

AWR planned to test soon on 13750 (Harald Kuhl, CR, RNMN)

CUBA Due to higher MUFs, Radio Havana to Europe and eastern North America at 1900-2100 ascended from 15435 to 17705, using a 10-wavelength rhombic. For its 30th anniversary May 1, RHC may run a 100-watt SSB unit between 7.3 and 7.5 MHz; special surprises for reports on this (Arnie Coro, *DXers Unlimited*)

DOMINICAN REPUBLIC 4799.8 kHz has been reactivated as "La N-103", Santiago, heard at 0346, and with news program *El Gobierno de la Manyana* weekdays at 1000-1300; address Apartado 320 (Dino Bloisse, NJ, *World of Radio*) Heard until 0600 with merengues, simulcasting FM station on 103.5; seems 1 kilowatt (Bloisse, *Radio-Enlace*) Clear after Guatemala closes at 0330; and sign-on 1030, the news show coming from another station, Z-101, Sto. Domingo (Tim Hendel, FL) 4800 used to be Radio Norte, but both old and new owners of that station say the SW outlet does not belong to them. And Radio Olimpica Internacional, La Vega, may activate a slightly higher-powered SW soon, on 4860, 6205 (Jeff White, RNMN)

ECUADOR Congratulations to *DX Partyline*, celebrating its 30th anniversary May 4 with an interval-signal contest (Kevin Gooch, MO) A joint call-in with *Han Radio Today* is planned for May 25 (presumably 0230 UTC May 26)

EL SALVADOR Per unofficial sources, the government will soon start a 50-kW SW station to the US and other places with directional antennas, in Spanish and English (BBCM via *DXPL*) For Salvadoreans in the USA to counteract "disinformation" circulated by opposition groups (BBCM via *Australian DX News*)

ETHIOPIA (non) The Voice of Ethiopia on the Path to Democracy, controlled by the Ethiopian People's Revolutionary Party, is heard on 7010 daily at 1530-1615, Sundays 0400-0415 (BBCM)

FINLAND YLE, Radio Finland is retimed to 1130, 1230 and 1330 weekdays, 1300-1345 weekends, on 15400 and 21550 (1-800-221-9539)

GERMANY DW is introducing a DX program once a month during the *Mailbag* in English, in response to listeners who miss the RBI DX program -- and it will be produced by a former RBI colleague

(Dieter Brauer, DW *Tune-In*, via Bruce MacGibbon and Gordon Darling) But which week? *Mailbag* is to Africa Saturdays in the 0900, 1100 broadcasts; 2100 and UTC Sunday 0200 to Asia; 0100, 0300, 0500 UTC Sunday to America. (RCI *SWL Digest*)

GUAM KSDA replaced the 1000-1100 broadcast in English on 13720 with Russian, so it's harder now to hear *DX Asiawaves*. Try Sat. 1630 on 11980, 2330 on 15610, Sun. 0230 on 13720 (*SWL Digest*)

GUATEMALA The Quaker Theological Seminary in Chiquimula, which has had a weekly radio program for 25 years, plans to set up its own shortwave station called Radio Truth. Already has studios, needs transmitter, selling \$100 sets of Revelation tapes (Ken MacHarg, HCJB *DXPL*) How do you say Quaker in Spanish -- *Amigos?*

GUYANA GBC plans to return to SW in near future; used to be on 5950 at 0730-0300 (Russ Lay, NASWA, via HCJB *DXPL*)

HONDURAS Radio Miami Internacional has a joint venture with Radio Estereo Amistad to put a 1000-watt commercial SW station on the air in Tegucigalpa, possibly increasing power later, Radio Copan Internacional, named for the famous Mayan ruins. Application is pending at Hondutel, but looks certain to be approved very soon. Callsign HRTW already assigned, and schedule filed with ITU for season starting in May: daily 1200-2300 on 15055, 2300-0400 on 9950 to the US, Central America, Caribbean, NW South America (Jeff White, RMI, *World of Radio*) The same frequencies Jeff used briefly from the Dominican Republic on Radio Discovery, Radio Clarin -- but ITU doesn't deal with out-of-band ...

HUNGARY (see last month) Letters commenting on the forthcoming reduction in Radio Budapest services may be sent to: Mr. Csaba Gombar, President, Magyar Radio, Brody Sandor U. 5-7, Budapest VIII, H-1800 Hungary (Mike Murray, WDXC *Contact*)

IRAQ Another frequency used by the domestic service was 6540 (BBC Monitoring via RNMN) Soon moved to 15600 again, jammed (Sarath Weerakoon, Sri Lanka, RNMN)

(non) Voice of Free Iraq, as a result, shifted to 15606, still on 17960 and 9570 too at 1300-0100 (*ibid.*) It was 15605 until sign-off at 2320 (Bruce MacGibbon, OR, via Larry Nebron) Voice of Revolutionary Iraq, Basra heard on 7097, also called Voice of Rebellious Iraq, thrice a day at 0430, 1230, 1730 for about 2-1/2 hours, provoking European ham interference (Richard Measham, BBCM, RNMN)

JAPAN Ian McFarland went to work for Radio Japan just in time to escape RCI. Surely one of the world's most popular shortwave personalities would produce a DX program, as Rika Kobayashi was conveniently giving up *DX Corner* at the same time. But instead it went to another new comer, Sumiko Togasaki, an American, and it continued sounding much the same as before, while McFarland was expected to do nothing but news, and polishing English scripts. If Ian is still not heard on *DX Corner*, perhaps some polite letters to Radio Japan urging his participation would be in order. Check Sundays at 1530 on 11865, UTC Mondays at 0130 on 5960 -- via Canada!

KAZAKHSTAN Alma Ata's English broadcast at 0130-0200 is Monday/Wednesday/Friday, and also at 1630-1700, on 5035, 5915, 6135 (Dave Kernick, BDXC *Communication*)

KOREA SOUTH The 0600-0700 broadcast to North America moved both frequencies, to 11810 and 15170; Sackville relay for the summer is again 1030-1100 on 11715 (*SW Feedback*)

Voice of the People, clandestine from south to north, expanded to sesquihour broadcasts at 1400, 1530, 2000 on 3912; 2300, 0300, 0600, 0830, on 6600 (Toru Yamashita, R Japan)

KURDISTAN (non) Voice of the Struggle of Iranian Kurdistan, 0930-1035 and 1430-1530 on 7435; Voice of the People of Kurdistan (anti-Saddam), 3965 variable at 1600-2015 in Kurdish and Arabic (BBCM via BDXC) And at 1720 on 3935 (BBCM) On new 3960 and 7030 most of the day in both languages (Richard Measham, BBCM, RNMN)

KUWAIT (non?) Gulf Voice Radio added shortwave, 8962 USB heard at 1800-1900 (BBCM via RNMN)

LITHUANIA The private commercial station Radio Centras plans a special English broadcast for DXers May 25 on 9710 at 0730 to 0800 or 0630 to 0700 (Zigitas -, *Sweden Calling DXers*)

MEXICO SW stations active recently: 5980, XEUJ Internacional, music at 2300 from Linares; 5985, Radio Mexico, Latin music at 1500; 6020, XEU, La U de Veracruz, news and music at 0330; 6185, Radio Educacion, rock music at 2200; 9545, XETF, La Jarocho, music and ads at 1300; 9600, Radio Universidad, music and cultural program at 2320 (Miguel Angel Reyes, Morelia, Michoacan)

NETHERLANDS RN is testing through June from Bonaire, "compatible" reduced-carrier upper-sideband on 15560 at 0030-0125; mention whether audio is distorted and use this address only for special QSL: Bonaire SSB Evaluation, Frequency Bureau, Radio Netherlands, Box 222, 1200-JG Hilversum (RNMN) Jonathan Marks has been promoted to head of the English section (George Wood, *Sweden Calling DXers*) Can a manager have time to continue producing a show like *Media Network?* (Ian McFarland)

NEW ZEALAND RNZI's revised schedule: 1800-2200 except UTC Sat. on 15120; 2200-0730 daily on 17770, 0730-1210+ daily on 9700. *Mailbox* is now scheduled Mondays at 0430, Thursdays 0835, Fridays 1930 fortnightly such as April 29-May 3, alternating with *Travel Pacific* (RNZI) 15120 changes to 13785 from 1800 UTC May 12 (Tony King, *Mailbox*) Quite a lot of interference on 15120 might make them do it earlier.

NORWAY Radio Norway International, summer schedule in English to North America, Saturdays and Sundays: 1500 on 15305, 17790; 1800 on 17755; 2000 on 15165; 0100 on 15360, 11925; 0200 on 15360; 0400 on 11865 (via Gordon Darling, PNG)

PERU After several years in Switzerland, Juan Carlos Codina is back! Radio La Merced, 6754.5 closing around 0200, is definitely in Tongod; Radio Bambamarca on new 6670, runs dedications as late as 0400 on weekends; Radio Tradicion, 6583.8 varying to 6598.4 is in Huanta, Ayacucho, not Anta as previously reported (via Dario Monferini)

Antonio Lirio Loli says La Voz de Pomabamba drifted during one hour from 5339 to 5346, around 1200 UTC (Henrik Klemetz, RCI *SWL Digest*)

PHILIPPINES Radio Veritas Asia heard with world newscast in English at 1525 on 15140, from its Philippines service (Bill Flynn, OR, RCI *SWLD*) Following Tagalog at 1500, it's the only English on the schedule (BBCM) Better than none at all for the past few years

PORTUGAL Radio Portugal finally moved off 9680 -- VOFC via WYFR -- to 9555 for English UTC Tuesday-Saturday 0230 to eastern North America, still 9705 for the west, 9600 and 11840 for Brazil (Bill Dvorak, WI, *World of Radio*) Also uses 9555 from 2200 in Portuguese (Bob Padula, Victoria) English features after the News: Tue, *Welcome to Portugal*; Wed, *Music Time*; Thu, *Challenge of '92*; Fri, *Portugal Past & Present*; Sat, *Mailbag-Lusiad Friendship Club*, alternating with *DX Program, Collectors' Corner* (via Gordon Darling, *Review of International Broadcasting*) Each appears every three weeks

RUSSIA A new independent commercial station in Khabarovsk

DX Helper

Macintosh Software W7HR

MUF Map • MUF Plot

Gray Line • Great Circle

Prefix, Zone, Oblast

WWW Alert • CW Drill

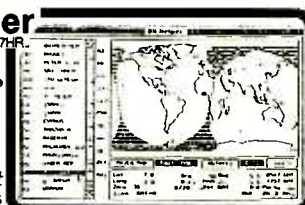
\$39.95 Info

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Antennas West

Box 50052M, Provo, UT 84605

(801) 373-8425



See band openings on the map before they happen!

Shortwave Broadcasting

is Radio Station DVR (Dalniy Vostok - Rossiya), 5965 and 9560 at 0900-1200 Tue.-Sat. in Russian; before 0900, 5965 carried Khabarovsk Kray's 2nd program parallel 4610 and new 6005 (BBCM via *Australian DX News*)

SICILY RAI's tentative summer schedule shows 6060 kHz is from Caltanissetta at 0400-2130; from Rome the rest of the night, moving up from 3995 at 1500-2120; Sicily also on 7175 and 9515 at 0400-2130 (via Gordon Darling, PNG)

SIERRA LEONE (?) A.D. Walsh, who escaped from Liberia to here, says "I'm able to monitor the morning broadcast of ELBC from Sierra Leone at 0800-1000 on 7275 daily, a mobile broadcasting unit donated by ECOWAS under the control of ECOMOG, the peace-keeping forces -- Liberian propaganda, news in English at 0900, 'The Voices of Peace, Harmony and Reconciliation,' closing with national anthem." A DSWCI editor assumed this meant the station broadcasts from Sierra Leone; however, the wording is ambiguous, also meaning S.L. is where he hears it!

SOLOMON ISLANDS SIBC, 5020 has a fun program Saturdays at 0950, *SIBC Overseas Listeners Around the World* -- reception reports including program details from as far back as 1989 translated into Pidgin (John Bryant, WA, *R.I.B.*) Must be to impress the locals

SOMALIA Since the revolution, former clandestine Radio SNM IDs as "Radio Hargeisa," heard at 1600-1700 on 6320 (varying 6200-6521). This is not a reactivation of the ex-govt. station of the same name that closed down in 1988 (BBCM via *ADXN*)

SWEDEN Radio Sweden presents *Swedish Mailbag*, first and third Sundays; best at 1530 on 21500 (Kevin Gooch, MO)

SWITZERLAND While SRI's 0200-0230 broadcast is on six frequencies -- 6125, 6135, 9650, 9885, 12035 and via Brasilia 17730 -- the 0400-0430 is on only three to North America, 6135, 9885 and 12035, with the 500 kW on 9650 reversed to the opposite direction toward the Near East and East Africa. The latter also applies to Red Cross Broadcasting Service at 0310-0327 UTC Tuesdays and Fridays following the last Sunday of each month (PTT)

TAWAN WYFR has been relaying a BCC domestic service, in addition to VOFC, the former at 2200-0100 (Bruce MacGibbon, OR) Now scheduled in Mandarin on 5960, 11740, 11855, 15440 (*World of Radio*)

At presstime, no frisbee received yet from VOFC, but I did get a big magazine, *Sonorama*, 70% in Chinese (Kevin Gooch, MO)

Voice of Asia, 1100-1200 on 7445, has English programs and a beautiful QSL from P.O. Box 880, Kaohsiung (*DXPL*)

THAILAND With RN dragging their clogs, BBC have apparently approached Radio Australia as a potential partner in a new relay base here, four transmitters of 250 or 500 kW. RA would have to come up with about A\$14 million for initial capital costs (Peter Bunn, Oz *DX*)

TOGO Lome on 5047 has a pretty new xylophone interval signal, opening at 0528 (Rich McVicar, *DXPL*)

TURKEY Voice of Turkey's April-May-June feature programs after the news: Mon., *Another Spot in Turkey, Administrative Structure of Turkey*; Tue., *Ataturk in Documents and Memoirs, Turkish Album*; Wed., *Letter Box, From the World of Turkish Legends*; Thu., *What Turkish Carpets Relate, Award-Winning Turkish Stories*; Fri., *Mineral Waters and Thermal Baths in Turkey, The Firsts in Turkey*; Sat., *Outlook, DX Corner/Economic Panorama*; Sun., *Details, The Women of Turkey*. Listen at 2200 and 0300 on 9445 (*R.I.B.*)

USA Shifting times for *World of Radio* on WWCR: Friday 2115 on 15690, Saturday 2330 on 15690. WWCR went 24 hours in order to carry Dr. Gene Scott starting at 0600, as late as 1400, initially dual to KVOH on 9785, now authorized 0300-0800; and Scott was also heard as early as 0100 on KVOH 17775. But Scott has even bigger

plans:

KCBI, Dallas, inactive for several years, is being sold to Christine Shaw, a stand-in for Scott and No. 2 in his ministry frequently seen on his TV show -- if the FCC approves the transfer, since Scott has had previous problems with them (George Thurman, *World of Radio*) KCBI registered for Z-91: 0230-1400 on 9815, 1400-0230 on 15375, both 42 degrees toward Canada (George Jacobs & Associates)



Radio Miami International

Radio Miami International (see also HONDURAS) is still waiting on FCC for a construction permit; meanwhile, besides those already on WHRI, several Cuban exile clients have been placed on WWCR; Monday-Friday 2305-2400, Municipalities of Cuba in Exile; Sunday 2230-2300, Cuban Patriotic Council; Sunday 2300-2400, Cuban Alliance; UTC Monday 0000-0100, Authentic Cuban Revolutionary Party -- on 15690 until 2400, then 7520.

Radio Newyork International is on WWCR, UTC Monday 0100-0500 on 7520; and on WRNO, UTC Tue.-Sat. 0100-0200 on 7355 with live programs, preceded by a disclaimer (see also COSTA RICA). Nominal summer times for *World of Radio* on WRNO: UTC Thu. 0027, 1530, 2300; Fri. 0027; Sat. 0300, 2330; Sun. 2030. WRNO uses 15420 1500-2100, 13720 2100-2400 (see BELGIUM), 7355 0000-0300, 6185 0300-0500 -- when on the air.

A reception report to WRNO at Box 100 was returned, "box closed" (Kent Hedlundh) A special QSL address connected with tourism campaign is announced just before RNI at 0100. WRNO is up for sale, now trying to broker time to stay on the air a while longer. Joe Costello is asking a very high price and is not willing to sell to another religious broadcaster (Steve Cole, RNI, both via Kirk Baxter via George Thurman)

WYFR has cut back 25% due to drop in listener contributions, not spectrum fee (Sheilah Kerr, Family Radio, Oakland, RNMN)

ITU lists a proposed new station at Vado, 106-35 W, 32-08 N, 50 kW: 1500-2200 on 9665, 2100-0000 on 11755, 0000-0200 on 11730 (*ADXN*) That would be KJES, in New Mexico near El Paso, which tested briefly a few years ago with children chanting fundamentalist dogma.

Willie Nelson's Outlaw Music Channel, on satellite overnight and a few cable systems, is looking into buying shortwave time, and perhaps starting its own station (Larry Monroe, TX)

The administration finally resolved the nasty feud between Bruce Gelb, USIA Director, and Richard Carlson, VOA Director, by making them ambassadors, to Belgium and Seychelles respectively. Taking over at VOA is Henry Cato, ex-ambassador to Britain (*W.O.R.*)

VOA's new Tibetan service started March 26, 0230-0245 on 15430, 17705, 21570 (AFP via Larry Nebron, Ken Mason)

USSR Soviet SW services did not shift an hour earlier this summer as a 60-year-old Stalinist mistake is being rectified -- in 1930 they neglected to "fall back" and the USSR has been on fast time ever since, doublefast in the summer. At the end of this September, time will shift one hour back so Moscow will be UTC +2 (AP via Bruce MacGibbon, Larry Nebron, Bill Dymond)

VENEZUELA Radio Nacional has 5 minutes of English Mon.-Sat. at :40 past 1100, 1400, 1800, 2100, 2400, 2700 on 9540, but actually heard at 0335, then French (Bill Matthews, Radio Korea *SW Feedback*)

Monitor Glenn Hauser's broadcasts -- see AUSTRIA, COSTA RICA, USA -- WWCR and WRNO, and read much more about shortwave in his magazines REVIEW OF INTERNATIONAL BROADCASTING, and DX LISTENING DIGEST -- samples \$2 each in North America, 10-issue subscriptions \$21 or both for \$40 from Glenn Hauser, Box 1684-MT, Enid, OK 73702.

Broadcast Loggings

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

0000 UTC on 9630

SPAIN: Spanish Foreign Radio. Two newspaper editorials on the United Nations and fear of the Arabs in Spain. (Fraser, MA) Additional monitoring at 0102 UTC on 9630 kHz. (Biley, AR) (Ponak, NC)

0010 UTC on 15450

PHILIPPINES: FEBC. World news until 0015 UTC, followed by religious music. IDs and continued news at 0030 UTC. (Witham, HI)

0012 UTC on 17630

AUSTRALIA: Radio Australia. Report on the rebuilding of Kuwait, and the role of the Red Cross. Music tune from George Michael, followed by frequency schedule and station ID. Interview with Australian World War II veteran. (Davis, TX) "One World" environmental program noted on 11880 kHz at 0745 UTC. (Witham, HI)

0040 UTC on 11335

NORTH KOREA: Radio Pyongyang. Commentary on the foreign policy of the United States. Program schedule at 0045 UTC. (Ponak, NC)

0055 UTC on 11735

YUGOSLAVIA: Radio Yugoslavia. Station Interval signal to sign-on routine and ID. National news and comments on the Baltic crisis. (Ponak, NC) International news at 1300 UTC on 21715 kHz. (Carson, OK) (Wright, MS) (Lee, TX)

0118 UTC on 11710

ARGENTINA: RAE. National newscast followed by "Economic Report." Music selections of Argentine tangos. (Johnson, IL) Additional monitoring on 11710 kHz at 0259 UTC. (Carson, OK)

0135 UTC on 11820

CUBA: Radio Havana. "DX" program with Arnie Coro. Additional Havana monitoring on 11820 kHz observed at 0240, 0330, and 0450 UTC. (Carson, OK) (Westbrook, OH) (Wright, MS) (Pearson, FL)

0205 UTC on 9885

SWITZERLAND: Swiss Radio International. National news and "Swiss Merry-Go-Round" show. Audible also on parallel 12035 kHz. Additional monitoring on 13685 kHz at 0800 with Italian service. (Carson, OK)

0215 UTC on 3380

GUATEMALA: Radio Chortis. Spanish. Comments and musical intros. Bouncy Latin vocals to evening time check. Local interest type news amid fair signal quality. (Van Horn, LA)

0230 UTC on 4835

GUATEMALA: Radio Tezulutlan. Spanish. Local interest news, messages, background music. Great marimba tunes to time check and ID. (Pearson, FL)

0231 UTC on 11825

ALBANIA: Radio Tirana. National news, Albanian folk tunes, and editorial on the Baltic Republics. (Johnson, IL) Political commentary, international news, and "Press Review." (Carson, OK)

0245 UTC on 4865

COLOMBIA: La Voz del Cinaruco. Spanish. Rapid-fire sports commentary with occasional musical jingles. Noted on parallel Caracol stations of Caracol Bogota on 6075 kHz, and Ondas del Ortegúea on 4976.2 kHz. (Van Horn, LA)

0300 UTC on 3300

GUATEMALA: Radio Cultural. Station ID and "Back To the Bible" program. (Carson, OK)

0303 UTC on 4970

VENEZUELA: Radio Rumbos. Spanish. Lady presents Spanish pop tunes and canned "Radio Rumbos." Local time check, musical instrumentals, and station jingles. (Pearson, FL)

0304 UTC on 15325

FRENCH GUIANA: Radio Japan Relay. Comments on Soviet/American relations, to news on North Korean/South Korean talks. Relay frequency schedules and program comments. (Bailey, AR)

0307 UTC on 4911

COLOMBIA: Em Gran Colombia. Spanish. Soothing Ecuadorian guitar ballads and instrumentals. Music comments and time check at 0310 UTC. Male announcer chat, local commercial and numerous IDs within thirty minutes. Music was exceptional. (Van Horn, LA)

0320 UTC on 7520

USA: WWCR. Taped program of Tom Valentine's talk show. IDed as "Radio Free America from the Sun network." Plenty of anti-government political talk and several mentions of "Monitoring Times." (Wanted Bob Grove to advertise, too) Commercials for health products with 800 numbers. WWCR ID and travel promotional for Nashville. World news at 0400 UTC, and monitored to 0430 UTC. (Van Horn, LA)

0322 UTC on 5930

CZECHOSLOVAKIA: Radio Prague. Tips on traveling, and talks from visiting a Monrovia village. Additional monitoring on 7345 kHz at 0400 UTC with news, sports, and interview about the "new" Czechoslovakia. News and "Stamp Corner" show on 7345 kHz at 2203 UTC. (Carson, OK) (Westbrook, OH) (Wright, MS)

0350 UTC on 3249.7

HONDURAS: Radio Luz y Vida. Spanish. Chit-chat by male announcer, and brief musical interlude until IDs. Station sign-off and anthem at 0400 UTC. (Witham, HI)

0405 UTC on 4461.8

PERU: Radio Norandian (tentative). Spanish. DJ format programming with

male announcer presenting South American music tunes. Very weak signal with radio-teletype interference. (Witham, HI)

0410 UTC on 7890

ETHIOPIA: Clandestine -- Voice of the Ethiopian People For Peace. Amharic. Discourse by male announcer, then regional music until 0430 UTC. Continued talks and African music. Weak signal quality and fading. (Witham, HI)

0420 UTC on 9435

ROMANIA: Radio Romania International. Discussion on the nation's doctors and their daily struggles in the health services. (Carson, OK) (Lee, TX) (Wright, MS) (Henderson, NJ)

0420 UTC on 4875

USSR: Georgian Radio. Russian. Traditional Russian music, with comments offered by lady announcer. Radio Moscow interval signal and news at 0430 UTC. (Witham, HI)

0430 UTC on 12010

USSR: Radio Moscow. English/French. World news and US/Soviet Summit discussed. English/French programming noted on 15550 kHz at 1452 UTC. (Carson, OK) (Lee, TX) (Norman, NY) (Addison, CA)

0435 UTC on 11940

GREECE: Voice of Greece. English/Spanish. Greek music program to sign-off at 0450 UTC. Additional monitoring on 11645 kHz at 2230 UTC. (Carson, OK) World news on the Middle East and Belgium. Spanish service at 0138 UTC and Greek music to 0144 UTC. English feature on Greek philosophy. (Lee, TX) (Westbrook, OH)

0500 UTC on 9745

ECUADOR: HCJB. Latin American news roundup from Ecuador, Nicaragua, El Salvador and Venezuela. "Studio 9" program with report on Central American events in 1990. (Bailey, AR)

0505 UTC on 7415 LSB

USA: Pirate -- Wisconsin Radio. Heavy metal rock music with chatter and IDs between selections. Power said to be 100 watts. Announcer requested listeners monitor 25970 and 21870 kHz for future transmissions. Station sign-off at 0539 UTC. (Witham, HI)

0625 UTC on 4815

BURKINA FASO: RTV-Burkina. French. International news, and station promotional. Coffee and tea product commercials. African highlife music and station identification. (Carson, OK)

1308 UTC on 4753.2

INDONESIA: Radio Republik Indonesia Ujung Pandang (Sulawesi). Indonesian. International news report and station identification. (Johnson, IL)

1450 UTC on 11800

AUSTRALIA: Radio Australia. "Innovations" show into world news at 1500 UTC. Additional monitoring on 13605 and 15160 kHz at 2200 UTC with discussion on changes in Soviet politics. (Carson, OK)

1645 UTC on 17620

FRANCE: Radio France International. Report and interview on medical training programs for aid in the Middle East and Africa. (Fraser, MA) (Lee, TX) (Westbrook, OH) (Cavenaugh, LA)

1703 UTC on 17760

NORWAY: Radio Norway International. "Norway This Week" show with an item about a pet parrot being tried in court -- for disturbing the peace. Incidentally, he was found not guilty. (Fraser, MA)

2000 UTC on 11605

ISRAEL: Kol Israel. National news and program "Calling All Listeners." Excessive utility interference, and parallel frequency 9435 kHz had poor signal quality. (Fraser, MA) Audible from 000-0200 UTC on 9435 kHz. (Kruger, NY) (Ponak, NC) (Bailey, CA) (Carson, OK)

2020 UTC on 9475

NORTHERN MARIANAS: Saipan-KFBS. Repeated test transmission with music and IDs. Requests for listeners' reception reports, and noted target zone as East African. (Witham, HI)

2051 UTC on 9560

JORDAN: Radio Jordan. Comments on the United Nations and Israeli occupation of the West Bank. Rock music from Steve Windwood, and news headlines at 2100 UTC. (Price, PA)

2126 UTC on 5935

USSR: Radio Riga. English/German. Music to "This is Radio Riga" ID. News headlines followed by news in-depth. German ID and multilingual programming to 2200 UTC. Interference from Radio Prague on 5930 kHz. (Price, PA)

2219 UTC on 21565

COSTA RICA: Radio For Peace International. "Inside the CIA" feature followed by United Nations programming. (Carson, OK)

2240 UTC on 15600

IRAQ: Clandestine -- Voice of Free Iraq (tentative). Arabic. Two selections of Arabic vocals. Male announcer at 2250 UTC with talks on Kuwait and Iraq. Continued music to 2259 UTC. News type script read and music, monitored to 2315 UTC. (Lee, TX)

2327 UTC on 4850

CAMEROON: CRTV-Yaounde. French/English. Blues tune "Nobody Knows the Trouble I've Seen," and station ID. (Johnson, IL) Audible on 4850 kHz at 2030 UTC, with national economic report and multilingual IDs. Monitored to 2100 UTC. (Van Horn, LA) *Negro spirituals were around long before there was blues music. "Sometimes I'm up, sometimes I'm down, Oh, yes, Lord, Sometimes I'm almost to the ground, Oh, yes, Lord" --ed.*

2340 UTC on 9115 USB

ARGENTINA: Radio Continental. Spanish. Male DJ with Latin tunes, commercials for cola and station promotional. Musical jingles and time check. Coffee commercial and Argentine national news. Time-tips with station ID and frequency quote at 0000 UTC. (Pearson, FL)

Utility World

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

8 MHz on the Air

Several months ago, I featured the 8 MHz marine bandplan and the response was very positive. I would like to thank all those who wrote notes of encouragement.

I don't want the aeronautical folks to feel neglected. They have a very interesting band in the 8 MHz area as well. This month we will look at that band in depth.

The primary activity you will hear in the aeronautical bands is air traffic control (ATC) communications. Aircraft that are flying over the great ocean areas of the world as well as some continental areas communicate with ground stations via the HF bands.

The primary information they pass is position reports, course/altitude changes and clearance information (ground stations directing aircraft movements on routes). The purpose of these communications is to keep commercial aircraft on conflict-free, fuel efficient routes during their flights.

A lot of the position reports will consist of waypoints. These waypoints are set up on established routes or airways. Waypoints may be designated by name or geographic coordinates -- latitude and longitude.

As an aircraft flies on the airway, it will report its current position using these waypoints, and it will usually pass to the ground stations upcoming waypoints and the time it estimates reaching future waypoints.

The communications can get real interesting at times. I have heard hijackings and in-flight emergencies listening to these HF frequencies. There is a wide variety of interesting communications to listen to on the ATC frequencies.

One widely heard band of aero communications belongs to the VOLMET stations. VOLMET is a French contraction which means "flying weather." These transmit-only stations are located throughout the world passing aeronautical weather for major airports in the regions they serve. It is a great way to get some quick weather data on major world centers, in voice transmissions, at that.

Another communication you will hear is from the LDOC (Long Distance Operational Control) stations. Frequencies allocated for LDOC operations serve international air carriers and are used for company operations.

Many of the frequencies are shared by more than one company and some of the LDOC stations work airlines other than their own. For example, Speedbird London (British Airways) in addition to their Speedbird flights, provides communications to Air Canada, Qantas, West Indian, Saudi Air, Singapore and Malaysian airlines flights.

The majority of the traffic is in English, although expect to hear the national language of the airline as well. Some of the comms you will hear include: arrival and departure times/gates, flight progress reports, aircraft maintenance problems, crew scheduling and yes, even passenger problems.

A lot of the airlines cannot afford the cost of their own networks so they use private companies to service their aircraft. The biggest stations one normally hears in the aero bands include:

Houston Radio, Texas (Universal Aviation)
ARINC (New York, San Francisco, Honolulu)

Table 1
Ute World's Hot 8 MHz Aero Frequencies

8819	Rainbow Radio (LDOC)/Russian VOLMET channel/Middle East VOLMET channel
8822	Rockwell Flight Test/Jeddah-Saudi Airlines LDOC
8825	North Atlantic Net A ATC comms
8828	Pacific VOLMET channel
8842	Aeroflot (Russian Airlines) LDOC channel
8843	Central East Pacific Net 5 ATC comms
8846	Caribbean Net A/South Pacific Net 9 ATC comms
8847	Kuwait City, Kuwait VOLMET channel
8851	Salvador ATC comm (El Salvador or Brazil?)
8855	South America CE/NE ATC comms
8861	Africa Net 1 and South Atlantic Net 1 ATC comms/Russian VOLMET channel
8864	North Atlantic Net B ATC/Antarctica aero comms
8867	South Pacific 6/7 Net ATC comms
8870	Africa 3 Net ATC comms
8873	Africa 4 Net ATC comms
8876	KJY-74/Miami Monitor Hurricane Hunters/Cuban ATC comms
8879	North Atlantic C Net ATC/Indian Ocean 1 Net comms
8885	Eastern Airlines LDOC -- Lima (currently inactive)
8888	Africa 4 Net ATC comms/Cubana airlines LDOC/Russian VOLMET channel
8891	North Atlantic D Net ATC comms
8894	Africa 2 Net ATC/Colombia ATC comms
8896	South American LDOC -- Lima
8900	Wardair LDOC -- Toronto
8903	Africa 4 Net ATC/Central West Pacific 1/2 Net ATC
8906	New York Aeroradio
8912	US Customs comm channel
8918	Caribbean A Net ATC/Teheran, Iran ATC comms
8921	European LDOC channel: British Airways and LTU/Asian LDOC -- Hong Kong
8924	European LDOC channel: KLM and Sabena airlines/South American LDOC: VIASA -- Maiquetia, Venezuela Caribbean LDOC: West Indian Airlines -- Piarco
8927	North American LDOC: Cubana Airlines -- Boyeros African LDOC: Saudi Airlines -- Jeddah
8930	European LDOC: SAS Airlines -- Stockholm
8933	African LDOC: South African Airlines -- Springbok Radio/Air Mauritius -- Mauritius
8936	European LDOC: Swiss Air -- Berne/Iberia Air -- Madrid/Caribbean LDOC: Cayman Air
8938	Comodoro Rivadavia VOLMET, Argentina
8939	Russian VOLMET channel/South American LDOC: Varig Airlines -- Rio de Janeiro
8942	South East Asia 2 Net ATC comms
8951	North Pacific Net ATC comms
8952	Cordoba, Spain VOLMET
8957	European VOLMET -- Shannon/Indonesian ATC comms
8959	Middle East LDOC: Saudi Air -- Jeddah/New York ARINC
8960	European LDOC: Portishead Radio
8963	Africa LDOC: Lagos, Nigeria

Portishead Radio, United Kingdom
Rainbow Radio, St. John's Newfoundland, Canada

Now if you would like to hear some interesting comms, why not check out the Hot 8 MHz Aero Frequencies in Table 1? These frequencies are used night and day. You won't be disappointed.

Some interesting stuff:

Ary Boender dropped a note recently to pass on some interesting frequencies he has noted. He lists his own intercepts of single letter HF beacons he has monitored in the last year. They are as follows:

P	Kaliningrad	3290/3806 (caught an RTTY 75 baud message here)
U	Murmansk	4447.5
V		3658
L	Leningrad	26170
C	Moscow	13610
A		6572
X	Prague	3180/5922/6735

Ary's Israeli Mossad frequencies include:

ART 5438, CIO 13510, DRE 5439, EZI 9130, MIW 12747, PCD 4270, SYN 8485, ULX 4880, VLB 7606, YHF 4560

Finally, Ary has made available a list containing VLF and LF utility stations, excluding beacons and FAX stations. There are at least 740 stations/frequencies listed. The list can be obtained from Ary for \$5 USD at the following address: Ary Boender, Lobeliastraat 33-B, 3202 HR Spykenisse, The Netherlands. Be sure to tell Ary that Ute World sent ya. Thanks, Ary.

Mailbag Time

✓ I recently received a nice letter from Leo Poitdexter Evans down in the Caribbean paradise of St. Lucia. Boy, I bet winters down there are great. Anyway, Leo really likes the column (thanks, Leo) and his subscription to *Monitoring Times*.

Leo is 21; hobbies include radio and surfing. He would like to have a pen pal here in the States who is interested in Utes, preferably female. If you are interested, write: Leo Poitdexter Evans, Lother King Street, Vieux Fort, St. Lucia.

✓ Bill Kiely has checked in again and has confirmed some USAF MARS channels he heard passed over MacDill AFB to Beak 64.

7633.5	ACJ designator
13927.0	ACB designator, also Delta
14606.0	ACF designator, also Hotel and Foxtrot
20992.5	ACZ designator

I have noticed that these channels are being used by USAF flights to make phone patches to the states. Probably a service that is helping reduce congestion on the GCCS frequencies because of the airlift home of troops.

Bill also passes on the following information on SAR services/frequencies as follows:

Japan:

Japan Maritime Safety Agency keeps 24-hour watch on 500/2182 and Japanese domestic distress frequency of 2091

Russian:

4220 kHz is HF supplementary to 500 kHz. 4205-4235 is forbidden for any other use in the USSR other than transmission of signals of distress. In the North Sea the following frequencies are reserved for distress: 6211/4138/500 kHz.

Yugoslavia:

Brodospas Spilt organization keeps watch on 500/2182 between 0600-2000 (Monday through Saturday), 0600-1200 (Sunday/Public holidays). They transmit in CW on 410/512/4235/6410/8650/12720/13463/15570/17150/22450 kHz with the call sign YTQS (the Brodospas vessels also have the same call sign). They transmit in the USB mode on 1675/1945/2541/2820/3259/3551/3630/3790 kHz with the call "Spilt Brodospas."

Malaysia:

The marine department of the Malaysian Ministry of Transport Liama Klang keeps watch 24 hours a day on 8124 kHz and uses 2181 and 5680 kHz for SAR. The address: Marine Headquarters, P.O. Box 12, 42007 Port Klang, Selangor Darul Ehsan, Malaysia.

Thanks for the information, Bill. Please keep checking in often.

✓ We got a FAX from Commander J.D. Van Sickle at the Navy Office of Public Information-Southeast in Atlanta. The commander wanted to update my Gulf War feature in the March issue. I mistakenly (I even knew this) IDed "AOR." AOR stands for Area of Responsibility, in this case, US Central Command. Thanks, Commander, for the update and nice comments on the article.

✓ Walter Oliff over in Rota, Spain, thinks he might have solved a piece of Pat Cox' mystery AFRTS outlet in the December 1990 issue. Walter says that undoubtedly what Pat heard on his receiver was the Navy Broadcasting Service (AFRTS) onboard the Spanish/American Naval Base at Rota, Spain. The reference to Seaview Pines and the educational Navy Champus Office telephone number 2574 proves Rota.

Thanks, Walter. I still think it might be a ship picking up Rota for relay.

✓ Mr. S. Butler over UK way says that he believes the NAT (North Atlantic) B family of aeronautical en route frequencies has not been decommissioned in favor of NAT E. He is still hearing traffic on the B family of frequencies. I agree with Mr. Butler as I still hear traffic on those channels. One theory he has is that the NAT E family was created to reduce congestion on the existing four NAT family groups. I agree with Mr. Butler and as soon as possible, I hope to have some additional information on this.

On a couple of personal notes, if anybody knows where I might get a recent, used copy of *Lloyd's Ship List* and a copy of *Jane's Merchant Ship*, please drop me a note with pricing information. Now, let's check what you have been hearing this month in the Utility World.

Utility Loggings

Abbreviations used in this column

AFB	Air Force Base	MARS	Military Affiliate Radio System
AM	Amplitude modulation	NATO	North Atlantic Treaty Organization
ARQ	SITOR	NCS	Net Control Station
ATC	Air Traffic Control	RAF	Royal Air Force
CGC	Coast Guard Cutter	RTTY	Radioteletype
COMSTA	Communications Station	SAM	Special Air Mission
CW	Morse code	SITOR	Commercial version of "Telex Over Radio"
DE	From	TDM	Time Division Multiplex
FAX	Facsimile	UNID	Unidentified
FEC	Forward error correction	USAF	United States Air Force
FEMA	Federal Emergency Management Agency	USB	Upper sideband
GCCS	Global Command and Control System	USCG	United States Coast Guard
ID	identification	USN	United States Navy
ISB	Independent sideband	USS	United States Ship
Joy	Success	NDB	Nondirectional beacon
LSB	Lower sideband		

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

- 208.0 SSN-Seneca Army Depot, New York NDB (MHW). (Petty, PA)
- 230.0 SAL-San Salvador, El Salvador NDB. (Petty, PA)
- 248.0 Unid station PQF NDB with CW ID. (Al Coffey, Grand Prairie, TX) *That is the beacon at Mesquite, Texas, Al. Welcome aboard.-Larry.*
- 272.0 YQA-Muskoka, Ontario, Canada NDB (BTM). (Petty, PA)
- 275.0 UNID station LV NDB with CW ID. (Coffey-TX) *That is the NDB at Dallas Love Field.-Larry*
- 287.0 Unid station RBD NDB with CW ID. (Coffey, TX) *Al, it is Redbird Field, Texas.-Larry*
- 344.0 AVN-Rochester, New York NDB (MHW). (Petty, PA)
- TTT-Tallahatchee, Louisiana NDB (MHW). (Petty, PA)
- 348.0 NID-NWS China Lake, California NDB (H). (Petty, PA)
- 352.0 YUP-Ottawa, Ontario, Canada NDB (PL). (Petty, PA)
- 358.0 NL-Newlands, New Zealand NDB (Tuvalu Islands) with CW ID at 0700. (Trigg, NZ)
- 363.0 RNB-Millville, New Jersey NDB (HW). (Petty, PA)
- 379.0 Peterborough, Ontario, Canada NDB (L). (Petty, PA)
- 396.0 ZBB-Bimini, Bahamas NDB (HHW). (Petty, PA)
- 408.0 HBD-Hubbard, Ohio NDB (MHW). (Petty, PA)
- 434.0 WLO-Mobile Radio, Alabama, with traffic list in CW at 0611. (Metcalfe, KY)
- 445.0 FUE-Brest, France, with RTTY broadcast on weather, navigation, and updates of ship routing indicators. (Jim, UK)
- 516.0 YWA-Petawawa, Ontario, Canada NDB (M). (Petty, PA)
- 579.0 FUG-La Reigne, France, in CW at 2344 calling collective call sign FAAT. (Jim-UK) *Unusual freq, Jim.-Larry*
- 1631.0 TM-unid NDB beacon heard at 0952 with CW ID. (Trigg, NZ)
- 1685.0 MER-Mercaderes, Colombia NDB at 0515. (Metcalfe, KY)
- 2675.0 Fishermen with no station IDs discussing areas and equipment with profanity at 0504 in USB. (Sewell, NJ)
- 3253.0 CG Group Woods Hole working C4P in USB, "go secure" at 0206. (Sewell, NJ)
- 3307.0 India called Juliet at 0530 and switched to green TAC 3. When in the clear, said DF would be utilizing the frequency, call sign Carrot in USB. (Harwood, CA)
- 3712.3 SXA33-Navy Piraeus, Greece, with DE CW marker at 2350. (Jim, UK)
- 3717.0 FSB-Interpol Paris, France, with SITOR-A five-letter cipher and CW idents at 2055. (Jim, UK)
- 4007.0 NNN0JIR NCS for Navy MARS net, working various stations at 0015. NNN0QUE NCS working various stations at 0210, all in USB. (Sewell, NJ)
- 4020.0 AFA2HN-US Air Force MARS working AFA2CE with MARSGRAMS at 2316 in USB. (Sewell, NJ)
- 4025.0 AAR1SB-NCS for U.S. Army MARS net working various stations in USB at 0113. (Sewell, NJ)
- 4028.0 Spanish female five-digit number station at 1005. (HS, CA)
- 4041.0 NNN0VIP NCS for Navy MARS net (1 Quebec 3 Bravo) at 2250 in USB. (Sewell, NJ)
- 4055.0 AFA4QZ working AFA4C, US Air Force MARS at 0915 in USB. (Starr, SC)
- 4125.0 WHX calling WYR several times, no joy in USB at 0030. (Perdue, AL) *Don't have either one on Gayle's call sign list, Neal. Anybody help on this one.-Larry*
- 4379.1 ZLW-Wellington Radio, New Zealand, working Otago Buccaneer with phone patch traffic in USB at 0606. (Trigg, NZ)
- 4515.0 NNN0WVPV (NCS) calling NNN0FLP, Navy MARS at 0245 in USB. (Starr, SC) *Interesting, this is a CAP freq.-Larry*
- 4577.0 AFF2GA NCS for USAF MARS net (2 Sierra 1) at 0000 in USB. (Sewell, NJ)
- 4585.0 Crescent 2 calling Crescent 21 (SC CAP), Sparrow 28 working Sparrow 1 in USB at 0202. (Starr, SC)
- 4593.5 AFA1FT NCS for USAF MARS net (1 Sierra 1) at 2340 in USB. (Sewell, NJ)
- 4627.0 Magnolia 30 (LA CAP) Alt NCS taking check in at 0100 in USB. (Starr, SC)
- 5272.0 CG San Juan working W8C talking about "green and red" at 0046 in USB. (Sewell, NJ)
- 5696.0 6YX-Jamaica Coast Guard Radio working NMA-Miami, Florida, at 0012 in USB. (Perdue, AL)
- 5851.0 Spanish female five-digit number station at 0510. (Harwood, CA)
- 6753.0 St. John's Military with weather in USB at 0544. (Dettmann-IL)
- 6790.0 V single-letter HF beacon in CW at 0235. (Penson, MN)
- 6791.0 H single-letter HF CW beacon heard at 1116. Appears to have replaced the I beacon. (Trigg, NZ) *Fascinating.-Larry*
- 6792.0 EBUN A4BE DA66 in CW and off by 0040. On another day heard ABB6 VAUU VDUE and off by 0040. Seems to be a daily event. CW sent at five words per minute. Telemetry maybe? (Penson, MN) *Not sure but these transmissions are heard all over the band according to one source.-Larry*
- 6795.0 D6VN BNAE 6AEB ETNE in CW repeated over and over, ended at 0040. (Penson, MN)
- 6787.0 GGR TD in CW repeated over and over then five-letter groups, off at 0322. (Penson, MN)
- 6797.0 Spanish female five-digit number station at 0643. (Tyler, MI)
- 6801.0 S single-letter HF beacon in CW at 2226. (Penson, MN)
- 6802.0 Spanish female four-digit number station at 0020. (Penson, MN)
- 6803.0 Clubhouse and Southern DOT in USB comms at 1356. (Metcalfe, KY)
- Spanish female four-digit number station at 0209. (Penson, MN)
- 6805.0 Spanish female four-digit number station at 0240. (Penson, MN)
- 6840.0 Spanish female four-digit number station at 0303. (Penson, MN)
- 6934.0 Spanish female four-digit number station at 0303. (Penson, MN)
- 6964.0 English female three/two digit number station at 0240. (Penson, MN)
- 7324.0 AIR-Andrews AFB, Maryland NCS for USAF MARS net working various stations at 1806 in USB. (Sewell, NJ)
- 7360.0 AAR5??? unid station in U.S. Army net at 1702 in USB, weak. (Sewell, NJ)
- 7404.0 German female three/two digit number station at 0648. (Tyler, MI)
- 7423.0 Spanish female four-digit number station at 0310. (Harwood, CA) At 0305. (Tyler, MI)
- 7552.1 WNCP450-CreveCoeur, Missouri, and Farmington, Missouri, Southwestern Bell Telephone Stations in USB at 1548. Farmington operator was sitting on the tailgate of a truck on the outskirts of town. (Metcalfe, KY)
- 7651.8 LTB is net control on this frequency with LTB, LTC, LTD. Sent CW messages in five-letter coded groups and NATO-type header at 0025. (Ole Cornporn, NC)
- 7790.0 English female five-digit number station at 0325. (Tyler, MI)
- 7832.0 MARS Operation from Persian Gulf sending RTTY MARS bulletins at 0250. (Robinson, TN)
- 7903.5 Fisherman complaining about bad weather, New England accents at 2326 in USB. (Tyler, MI)
- 8227.0 Crunch and Lucky talking about weather on the beach and wind speed. Were wondering where Snorkel, Rabbit and Shark had gone in USB at 0040. (Harwood, CA)
- 8441.0 VCS-Canadian CG station Halifax, Nova Scotia, with miscellaneous traffic and CQ marker at 2230 in CW. (Ricardo Molinar, NJ)

- 8535.0 RKBK/ESF/UTA-Tallin Radio, USSR, with CW marker at 0101. (Dix, NY)
- 8584.0 DHS-Ruegen Radio, Germany, with V CW marker at 0158. (Dix, NY)
- 8707.5 VIP33-Perth Radio, Australia, with CW ID and SITOR-A idler at 1532. (Trigg, NZ)
- 8709.5 VIP39-Perth Radio, Australia, with CW ID and SITOR-A idler at 1536. (Trigg, NZ)
- 8710.5 VIS84-Sydney Radio, Australia, with CW ID and SITOR-A idler at 1537. (Trigg, NZ)
- 8714.5 VRT-Bermuda Radio with CW ID and SITOR-A idler at 1726. (Trigg, NZ)
- 8716.0 A9M-Bahrain Radio with CW ID and SITOR-A idler at 1729. (Trigg, NZ)
- 8765.4 CGC Woodrush (based at Sitka, Alaska) calling COMSTA Kodiak and Honolulu for radio check at 0247 in USB. (Gray, AL)
- 8771.0 Raspberry Pensacola calls for radio checks at 2300. Loud and clear answer from Spartan (USS Lexington CVT-16). (Gray, AL)
- 8824.0 Santa Maria ATC working flight NM 1783, they went to 6628 for a radio check. They returned to 8824. (Rickabaugh, CT)
- 8989.0 Old Salt Center (USS Nimitz) working with phone patch to Beaver via McClellan Airways. At 0438 in USB. (Tyler, MI)
- 8993.0 Canadian 106 working MacDill AFB GCCS in USB at 0605. (Dettmann, IL)
- 9017.0 Abdula working Kojack and talking about Echo-Foxtrot in USB at 2129. (Nichols, IN)
- 9049.0 English female three/two digit number station at 2215. (Tyler, MI)
- 9081.6 BCI and GREG3 in contact at 1728 using packet. (Metcalfe, KY)
- 9121.0 DLA293 working DLA295 in USB at 1508. One station operator told the other that the assigned calls were wrong, and that they should actually be allocated to West Germany. (Metcalfe, KY)
- 9130.0 English female five-digit number station. (Sewell, NJ)
- 9153.0 Spanish female five-digit number station at 0810. (HS-CA)
- 9224.0 AGA4LA working Saudi stations AFQ372/575/379, U.S. Air Force MARS at 0001 in USB. (Tyler, MI)
- 9251.0 Short musical tune (Lincolnshire Poacher) a few times, then female with British accent repeating "80709" 10 or 15 times in English, music again then "80709" at 0610. Three tones, then five-digit groups, freq being jammed. (Tyler, MI)
- 9402.0 YHF-Israeli Mossad number station with five-letter number broadcast at 0530. (Tyler, MI)
- 10155.0 R1Q with five-letter groups in CW at 1633. (Metcalfe, KY)
- 10194.0 WGY905 working WGY905 portables 1, 2, 3 in USB at 1639. All Battle Creek, Michigan FEMA stations participating in a Saturday exercise. Also using 7348, 10494, 10588. (Metcalfe, KY)
- 10280.0 Acrobat calling illustrious in LSB at 1318. Is Acrobat actually Andrews AFB, Maryland? (Metcalfe, KY) *As far as I know, J.L.-Larry*
- 10283.0 RFLI-French Naval Radio, Fort de France, Martinique with DE RFLI in 72 baud TDM mode at 0600. (Metcalfe, KY)
- 10892.1 WWJ63-FHWA, Nashville, Tennessee, with 850 shift FEC transmission at 1859. (Metcalfe, KY)
- 11004.0 7TK working O5W (USN) vectoring aircraft toward target at 0127 in USB. (Tyler, MI)
- 11176.0 Numerous MAC aircraft working Ascension Island GCCS at 2300-2329 in USB. (Storz, TX)
- 1179.0 Lady 25 calling Scott AFB, Illinois, for radio check. Scott airways shut down well over a year ago. At 1515 in USB. Reminds me of a certain "Twilight Zone" episode. (Tyler, MI) *Hope Scott didn't answer, hi, hi.-Larry*
- 11191.0 W7L, FT and R2F talking about prelude, whoever or whatever that is in USB at 2319. (Nichols, IN)
Military net. Possibly setting up a radar station. Call signs included R2/W7/FT/2JT/O7E with many references to no ping pong and commands to "Revert." Flash from OKX "Switch 501 to Blue Star, will have priority contact." RF2 to Yellowblood, "Do not answer, do not answer." Tibet-Charlie-Mike. (Tony, TX)
- 11200.0 SAM 56974 with secretary of state aboard working Thule AFB, Greenland, at 2234. Andrews heard at 2238. (Bellissime, NY)
- 11222.0 Unusual fishermen conversations, talking to wife at 0253 in LSB. (Tyler, MI)
- 11240.0 Pathology calling Cultivate-no response. Pathology called for any station this net, Headache answered as well as Hardluck and Meredith at 1339 in USB. (Pettengill, OK)
- 11250.0 2UH calling Y1F with radio check at 1922 in USB. (Pettengill, OK)
- 11267.0 HBY working J4D at 0551 in USB. Who was this? (Dettmann, IL) *A couple of Navy ships on Navy HICOM using TAC IDs.-Larry*
- 11380.0 Spanish female four-digit number station at 1914//12100. (Pettengill, OK)
- 12100.0 Spanish female four-digit number station at 1914//11380. (Pettengill, OK)
- 12168.5 AAJ (NCS) authenticating AAC46 and working AAD32/AAE80/AAW10 in USB at 1502. (Tyler, MI)
- 12430.5 AAEL calling AAC2 for radio check. No other traffic at 2215 in USB. (Tyler, MI)
- 12704.6 XDA-Mexico City Radio, Mexico, with CQ CW marker at 0205. (Dix, NY)
- 12909.0 DHS-Ruegen Radio, Germany, with CW DE marker/idler at 1351. (Dix, NY)
- 12942.0 RKLM-Arkhangelsk Radio, USSR, with CW DE marker at 1354. (Dix, NY)
- 13083.0 A7D-Doha Radio, Qatar, with CW ID and SITOR-A idler at 0057. (Trigg-NZ)
- 13181.0 WHB6C repeated three times followed by "TE3US4WHTUBF40" then by "ZrD out" in USB at 0440. Number station? (J3-MO) *Probably not, more than likely RAF strike command.-Larry*
- 13244.0 SPAR 84 working MacDill AFB GCCS with phone patch to CJCS office. Then patch to Langley Consolidated CP. Aircraft IDed as Red Apple Express at 2223 in USB. (Tyler, MI)
- 13333.3 Pirate fisherman passing a few coded groups and BSing in LSB at 0045. (Tyler, MI)
- 13385.0 Possible German male five-digit number station at 1358. (Tyler, MI)
- 13445.0 Parkhill secure voice traffic/broadcast at 1509. Seemed to be one way, long broadcast (nonstop secure voice for several minutes at a time). Very weak. Clear voice traffic in Spanish at 1540. (Tyler, MI)
- 13920.0 NNN0CYT-USS Yorktown (CG-48) with phone patch to NNN0YBU-Orlando, Florida. Frank at 1555 in USB. (Pettengill, OK)
- 14465.5 NNN0CKK-USS Missouri (BB-63) working NNN0PKH. Said MCI was paying for the calls, limit them to five minutes at 1852 in USB. (Pettengill, OK)
- 14818.5 NNN0CAA-USS Newport News (LST-1179) working NNN0NIK-NS Mayport, Florida, with phone patch traffic at 1903 in USB. (Pettengill, OK)
- 14945.0 German female five-digit number station at 1437. (Tyler, MI)
- 16173.0 NNN0CXD-USS John Rodgers (DD-983) with phone patch traffic to NNN0NAV-Cheltenham, Maryland. (Tyler, MI)
- 16861.5 5OW-Lagos Radio, Nigeria, with CQ CW marker at 1308. (Dix, NY)
- 17183.0 DHS-Ruegen Radio, Germany, with V CW marker at 1435. (Dix, NY)
- 17200.0 An unid station with SITOR-A idler at 0049. (Trigg, NZ) *New to me.-Larry*
- 17210.0 NMO-USCG COMSTA Honolulu, Hawaii, with SITOR-A idler at 0040. (Trigg, NZ)
- 17216.0 YUS-Split Radio, Yugoslavia, with SITOR-A idler at 0037. (Trigg, NZ)
- 17520.1 Some sort of government net in LSB at 1415. IDs included 21, 23, 32, ACI, KDG and TDG. Honduras and Guatemala often mentioned. (Metcalfe, KY) *I don't have anything in the database for this one, J.L.-Larry*
- 17521.0 P7X with five-letter groups in CW at 1339. (Metcalfe, KY)
- 18005.0 Ruthless calling Fatherland on Tango at 1840 in USB. (Pettengill, OK)
- 18057.0 SAM 947 working Andrews AFB with secretary of state onboard in USB at 1730. (Robinson, TN)
- 18414.8 8BY-unid station with V CW marker at 1742. (Dix, NY) *Probably an Indonesian embassy station.-Larry*
- 18880.0 English female number station at 1700. (Tyler, MI)
- 19820.0 Spanish male five-digit number station at 1610. (HS, CA)
- 20870.0 Spanish female four-digit number station at 0030. (Harwood, CA)
- 20936.0 NNNORWO working various ships in the Persian Gulf at 1633 in USB. (Sewell, NJ)
- 21770.0 English female three-two digit number station ending 1631. Seems an odd freq to me. (Wiemken, IL) *Yes Indeedy, Don.-Larry*
- 22525.0 UA13-Nakhodka Radio, USSR, with V CW marker at 0101. (Dix, NY)
- 22568.0 VIS71-Sydney Radio, Australia, with SITOR-A idler at 0023. (Trigg, NZ)

The Scanning Report

Bob Kay

c/o MT, P.O. Box 98
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"Sensitive" Business Frequencies

In the world of scanning, frequencies are the life blood of the hobby. We buy, trade, and collect them as if they were baseball cards. When federal frequencies are discovered, many scanner buffs are hesitant to openly trade them. When I receive federal lists in the mail, they are often submitted anonymously or under the disguise of a code name. Some of my regular contributors are "Zorro," "Frequency Freak," and "Cellularman."

Although certain frequencies can be regarded as sensitive, no government agency expects to keep their operating frequencies a secret. The federal government realizes that there are millions of radio enthusiasts in every part of the world. That's why the FBI, DEA and other agencies use voice scrambling techniques.

Of course, there will always be skeptics. Some folks will never put their names on a federal frequency list, and that's okay. I enjoy receiving mail that contains nothing more than a frequency list, and a postmark on the envelope. I do want to emphasize that many of you are not exercising the proper precautions when you submit business frequencies.

Few people realize that many large and small corporations frown upon third party monitoring. Here's a classic example: I recently received a list of security frequencies for a large toy manufacturer. The individual who supplied the list had nearly 30 years with the company.

Several weeks later, that same individual asked me to refrain from publishing the frequencies. Why? When the toy manufacturer discovered that their security frequencies were about to be published, they threatened the individual with disciplinary action.

Toy manufacturers are not the only members of the business community that dislike third party monitoring. Taxi cabs, tow trucks, and delivery services are just a few of the companies that are very protective of their operating frequencies.

Sure, I know what you're thinking: Anyone can obtain a particular frequency from FCC microfilm files. You and I know that, but it's not common knowledge. If a tow truck operator discovers that you passed his operating frequency to a competitor, you might get punched in the nose!

If I had a choice, I'd rather circulate a federal frequency list with my name across the top of the page. The feds must operate within the limits of the law -- they can't threaten you with bodily harm. The next time that you trade business frequencies, you might want to remember that.

At this point, some of you are probably skeptical. It's hard to believe that we could be placing ourselves in danger by circulating business frequencies. Truth is, it's already happened. Here are a few examples.

In New York City, patrons waiting for a cab reported numerous brawls between rival cab drivers. The police discovered that the drivers were monitoring one another on a scanner radio. As a result, cab service in New York became a "free for all." The first cab on the scene got the fare. If two cabs arrived simultaneously, they punched it out, and the winner got the customer.

A similar incident occurred in Philadelphia. Tow truck operators were monitoring the dispatch frequencies of their



Thinking about circulating a list of business frequencies from your home town? Watch out, you may get punched in the nose!

competitors. Once again, motorists reported eye witness accounts of curb side fist fights between tow truck drivers.

Of course, no one really cares if cab drivers and tow truck operators fight in the street. Most people don't get upset until they are personally threatened -- and that's exactly what happened to an Illinois resident.

A resident (I'll call him Jim) gave the radio frequencies of construction company "A" to construction company "B". Both firms were bidding on an identical, multi-million dollar contract.

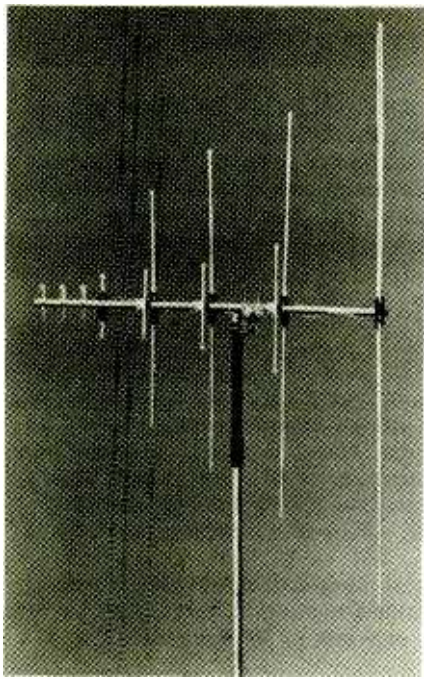
Company "A" claims that company "B" was awarded the contract as direct result of information that was obtained by monitoring company "A's" frequencies.

Jim also claims that company "A" has vandalized his vehicle and home. At this writing, the entire matter has been scheduled for a court hearing.

Business frequencies are fun to monitor, and it's perfectly legal to do so. However, there are individuals and companies that feel threatened by our ability to listen in. When you trade or circulate business frequencies, keep in mind that radio communications provide a vital link between a business and its customers. If your actions seem to threaten that link, you may experience an unfriendly reaction.

Treasure Hunt

How would you like to put a Grove "Scanner Beam" on your roof? If so, don't miss the May/June Treasure Hunt. In addition to the antenna, you'll also get up to 100' of matching coax with connectors.



For unexcelled coverage, compete for the Grove Scanner Beam in the new Treasure Hunt.

The Scanner Beam provides unexcelled coverage between 30 and 960 megahertz. It is also a lightweight antenna that can be rotated with an inexpensive TV rotor. However, the antenna performs quite well in a fixed position. Although signals arriving from the sides and back will be slightly attenuated, you won't miss any of the action! Here are the clues (All answers can be found in the February '91 issue):

1. Take a peek at the Grove product line and provide the name of the "FTR5."
2. What page contains an advertisement titled, "Bob's Bargain Bin?"
3. What organization found seven dolphins in 60 miles of driftnet?
4. It's now possible to become a ham without taking a code test. True or False?
5. You're flying in an F-15 and approaching "Holloman AFB." What is the approach frequency?

If your listening post needs a new or additional antenna system, the Grove Scanner Beam will provide you with excellent results. And remember, everyone has an equal chance to win. Good luck!

Frequency Exchange

During the month of May, a lot of folks begin to plan their summer vacations. And as you probably guessed, I begin to see a large number of frequency requests for Disney World and Disneyland. In addition to these vacation resorts, I also receive frequency requests for Colonial Williamsburg, Virginia Beach, the Baltimore Aquarium, and Washington, D.C.

Let's begin this month's adventure in **Disneyland, California:**

42.980	Monorail
151.745	Disney Hotel
154.570	Submarines
154.600	Steam Train
154.625	Pager
464.0375	Ride Control
464.325	Security

464.4125	Maintenance/Custodial
464.4625	Security
464.4875	Parking & Operations
464.5125	Special Events/Fireworks
464.5375	Maintenance
464.575	Disneyland, Hotel Security
464.6375	Emergency
464.6425	Security
464.7625	Monorail

As we depart Disneyland, you can thank Paul Hansen, of Montgomery, Alabama, for the above frequencies. Our next stop is another popular Disney resort -- **Walt Disney World, Florida!**

151.625	Construction
151.895	20,000 Leagues
154.625	Hilton Hotel Paging
453.475	Reedy Creek Improvement
453.825	Fire
453.875	Fire
453.925	Fire
461.600	Fort Wilderness Camp Ground
461.900	Hilton Hotel
462.475	Utility/Maintenance
462.550	Operations (paging)
462.575	Operations
462.675	Maintenance
463.975	Entertainment ("Show 1")

If you're not completely worn out from our last two stops, grab your beach hat, and suntan oil; our next stop is the **Virginia Beach area:**

Virginia State Police		Colonial Williamsburg	
159.165	Base	151.775	Maintenance/Paging
155.445	Mobile	463.625	Security
154.665	Car to car	463.900	Maintenance

Bush Gardens		Area Hotels	
463.425	Security/Maintenance	151.805	Hilton Inn
463.775	Security/Maintenance	151.865	Sheraton Inn
		151.925	Fort Magruder Inn

Colonial National Historic Park

168.425 Rangers

Ready for our next stop? If your feet are tired, it's the perfect spot to sit, and relax. Welcome to the **Baltimore Aquarium:**

National Aquarium, Baltimore, Maryland

155.025	Tickets
155.100	Security
156.800	Police Boats
156.450	?
156.425	Dock Master/Fire Boats
156.70	Harbor Safety
464.9125	Harbor Police

As you enjoy the Baltimore Area, I've got the perfect souvenir that will help you to remember our trip. I'll send you my complete listing of Disneyland, Disney World, Baltimore, and Washington D.C. area frequencies for free! But there's a catch. You must include a business envelope (#10), with two

"F" stamps. And you'll have to act quickly, this offer is only good for one month. Your request must be postmarked prior to May 31.

Send your request to the "Frequency Exchange", P.O. Box 98, Brasstown, NC 28902. Hurry, before I change my mind!

Scanning Test

Many hobbyists have expressed a desire to skip the Novice and Specialist exams, and to proceed directly to the "Expert" test. Others have been surprised to learn that the cost of each test is \$10.00 dollars. In order to clear the confusion, let's take a "behind the scene" look into the testing program.

My profit margin on each certificate is \$5.00 dollars. However, we run this program seriously and as a result, there is a considerable amount of administrative work. I couldn't handle it all myself and half of the profits, (\$2.50) are shared with a co-worker.

To mail a certificate, the cost varies between .52 and .75 cents. The weight of each envelope borders on the dividing line that separates the above figures. Sometimes I get lucky, and the postal scale tips in my favor. More often, it tips in favor of the post office.

To keep things simple, let's average out the mailing fees to .60 cents. Subtract that from my \$2.50 profit, and you can see that I'm making approximately \$1.90 cents per certificate.

From the beginning, my intentions were not focused on becoming rich. I simply wanted to form an exclusive "Scanning Communications Expert Club" -- a club that can't be joined by merely sending in a check. Members of this club must "earn" the privilege of membership by passing a test.

Why have three separate tests? It helps to build your confidence, and it also helps you to become familiar with the type of questions that will appear on the expert exam.

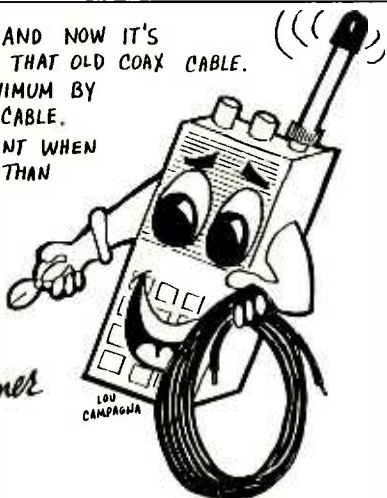
If you think that you can by-pass the first two levels, and pass the Expert exam, I won't stand in your way. Beginning this month, you can proceed directly to the Expert Exam. However, in fairness to the club members who have already taken all three tests, the cost of the expert exam will be \$30.00 dollars.

Readers who have already gained their Novice Certificate, can skip the Specialist level, and take the Expert exam for \$20.00 dollars. To receive your Expert Exam, send your check or money order to "Scanning Test," P.O. Box 695, Honey Brook, PA 19344.

THE WEATHER IS IMPROVING AND NOW IT'S TIME TO FINALLY TO REPLACE THAT OLD COAX CABLE. KEEP SIGNAL LOSS TO A MINIMUM BY INVESTING IN QUALITY COAX CABLE. THIS IS ESPECIALLY IMPORTANT WHEN LENGTHS WILL BE GREATER THAN 50 FEET.

NORTHEAST SCANNING NEWS:

Sammy the Scanner



212 W. Broad St., Paulsboro, NJ 08066

In the meantime, give some thought to the following questions: Should I eliminate the first two skill levels, and have one main test? Or would you prefer to have all three tests in one package? Send your ideas and comments for improving the club to the "Scanning Report," P.O. Box 98, Brasstown, NC 28902.

Japanese Attempt to Stop Cordless Monitoring

Japanese manufacturers of cordless telephones are trying to add scrambling devices to prevent eavesdropping by a third party. In December 1990, the "Victor Company" introduced a model that changes radio frequencies every 30 seconds. Another company is working on a cordless phone that automatically reduces the transmit power, whenever the handset is within 60 feet of the base unit.

For the past several years, after-market scrambling devices have been available for cordless phones. However, their use was limited because you could only talk to someone who also owned an identical unit.

This is the first time, that a manufacturer has tried to implement an internal scrambling device. For the idea to work, every cordless phone manufacturer in the nation will have to agree on the type of scrambling device that will be used. Otherwise, certain models will not be compatible.

Bad News for Big Mack Monitors

Beginning this year, all new McDonald outlets will no longer utilize two way radios. The newly constructed fast food stores will have three windows. The first window will be for taking orders, the second window for taking money, and the third window for picking up your order. Again, radio communications will not be used -- it will all be computerized.

But don't worry about it too much. Heck, there are plenty of "old" McDonald stores around, right? Hey, did I mention that McDonald's plans to remodel, and install the three window system in some of it's old stores? (Letter from, "JB", Chagrin Falls, Ohio)

Back to the USSR

When Gorbachev was awarded the Nobel peace prize, my attitude toward the Ruskiies began to soften. Heck, I even thought about writing ol' Gorby an apology note. But, that was before I found a famous speech by Dmitrii Z. Manuil'skii. In 1931, Mr. Manuil'skii was addressing the Lenin School of Political Warfare. Here's what he had to say:

"War to the hilt between communism and capitalism is inevitable. Today, of course, we are not strong enough to attack. Our time will come in thirty or forty years. To win, we shall need the element of surprise. The Western world will have to be put to sleep. So we shall begin by launching the most spectacular peace movement on record. There shall be electrifying overtures and unheard of concessions. The capitalist countries, stupid and decadent, will rejoice to cooperate to their own destruction. They will leap at another chance to be friends. As soon as their guard is down, we shall smash them with our clenched fist."

I think I'll hold that letter of apology. See you guys next month.



"The Largest Dealer of Scanners in the World"

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SCANNER WORLD EXCLUSIVE UNIDEN BEARCAT BC205XLT \$259.99 (\$7.00 shipping)

Digital programmable 200 channel hand held scanner with raised button keyboard for easy programming of the following frequency ranges: 29-54 MHz, 118-174 MHz, 406-512 MHz, 806-956 MHz.* Features include: Scan delay, memory backup, key pad lock, sidelit liquid crystal display, channel lockout, 10 twenty channel banks, direct channel access, automatic search, full one year factory warranty, 10 priority channels, Ni-Cad battery pack, AC adapter/charger, flexible rubber antenna carry case are all included. Size is 2-11/16" Wx1-3/8" Dx7-1/2" high. (Optional extended 2 yr. warranty \$29.99, 3yr. extended warranty \$39.99.) (*Excludes Cellular)

CC-008 Heavy Duty Leather Carry Case \$27.99

REGENCY TS-1 35 CHANNELS — MOBILE/BASE Special \$138.99 (\$7.00 shipping)

Features include simple programming of the following frequency ranges: 29-54 MHz, 118-175 MHz, 406-512 MHz. Turboscan, digital display, priority, search, lockout, delay, dim control, top mounted speaker, one year factory warranty. Includes AC & DC cords, mobile mounting bracket, telescope antenna. All for only \$138.99 plus \$7.00 shipping. (Optional extended warranty, 3 years \$39.99; 2 years \$29.99.)

SPECIAL!! LOWEST PRICE EVER FOR A PROGRAMMABLE SCANNER

Cobra SR-901

AVAILABLE ONLY FROM SCANNER WORLD

ONLY! \$74.99 Each (Plus \$6.00 Shipping Each)

\$69.99 (2 or more)

Features include: 10 programmable channels, one touch memory programming, external speaker jack, 29-54 MHz, 136-174 MHz, 400-512 MHz, squelch, lockout, full frequency digital readout, AC or DC operation, retains memory up to 3 days without power, scan button. Includes AC adapter, telescopic antenna, and complete operating instructions. Size: 7 1/4" W x 2" H x 7 1/4" D One year factory warranty. (Optional mobile cigarette lighter cord #901MPC \$4.99).

REGENCY R-4010 \$106.99 (\$7.00 shipping each)

10 channel hand-held scanner. (Same Scanner as Bearcat 55XLT). 29-54 MHz, 136-174 MHz, 406-512 MHz, digital programmable, keyboard lock switch, lockout, includes rubber flex antenna. (Optional accessory 5W-41, only \$19.99 includes rechargeable Ni-Cad batteries, AC adapter/charger and cigarette lighter cord.)

★ SCANNER WORLD HAS BEEN SELLING SCANNERS FOR OVER 21 YEARS

★ ALL MERCHANDISE NEW, IN FACTORY SEALED CARTONS

★ COMPLETE CATALOG PUBLISHED 4 TIMES PER YEAR. FREE UPON REQUEST.

RADIO SCANNERS AND ACCESSORIES

Bearcat BC145XL	\$99.99	(7.00)
Bearcat BC140	94.99	(7.00)
Bearcat BC172XL	139.99	(7.00)
Bearcat BC55XLT	119.99	(7.00)
Bearcat BC800XLT	249.99	(7.00)
Bearcat BC100XLT	189.99	(7.00)
Bearcat BP205/200	34.99	(*)
Bearcat BC210XLT	189.99	(7.00)
Bearcat BC-ONE	129.99	(7.00)
Bearcat AD-100U	14.99	(*)
Bearcat PS-001	12.99	(*)
Bearcat VC-001	12.99	(*)
Bearcat AD-140U	14.99	(*)
Bearcat AT-054	12.99	(*)
President HR2600	219.99	(8.00)
Regency R3020	96.99	(7.00)
Bearcat BC-310A	85.99	(7.00)
Bearcat BC-330A	109.99	(7.00)
Regency MA-917	24.99	(*)
Regency MA-501	14.99	(*)
LifeGard 4	109.99	(4.00)
GRE9001	89.99	(5.00)
GRE8002	79.99	(4.00)
Midland CB Radios	In Stock	
Cobra CB Radios	In Stock	
Uniden CB Radios	In Stock	
Silver Eagle Microphone	69.99	(*)
Antennas	In Stock	
Rechargeable Batteries	In Stock	

UNIDEN BEARCAT BC-400XLT \$99.99 (\$7.00 shipping)

Our best selling mobile scanner, 16 channel, AC/DC, programmable, digital, AC/DC cords, telescopic antenna, mobile mounting bracket, weather search, priority, 29.54 MHz, 136-174 MHz, 406-512 MHz, external speaker and antenna jack.

REGENCY R-4020 100 Channel Digital Programmable Hand-Held Scanner \$174.99 (\$7.00 shipping)

Our best price ever on a full featured complete package hand-held scanner. Manufactured by Uniden, this is the exact duplicate of the Bearcat 100XLT for a much lower price. Features include 11 bands of weather, aircraft, public service, trains, marine, plus more (29-54 MHz, 118-174 MHz, 406-512 MHz), 10 channel banks, 10 priority channels, lighted LCD display, earphone jack, channel lockout, AC/DC operation, scans 15 channels per second, track tuning. Special package deal includes following accessories: AC adapter/charger, rechargeable Ni-Cad battery pack, flexible rubber antenna, carry case

Regency R3020 \$96.99 (\$7.00 Shipping)

20 channel digital programmable scanner, frequency coverage 29-54 MHz, 108-136 MHz aircraft, 136-174 MHz, 406-512 MHz. Features: weather key, search, lockout, priority, squelch, AC only, delay button. Size 9 1/2" x 2 1/2" x 7"

BEARCAT 70XLT 20 CHANNEL DIGITAL HAND-HELD SCANNER \$129.99 (\$7.00 Shipping)

SPECIAL PACKAGE DEAL ONLY

Small size 6" Hx1"Dx2 1/4"W. Full digital readout, priority, search, channel lockout, scan delay, key lock. Covers following frequencies: 29-54 MHz, 136-174 MHz, 406-512 MHz. Package includes rubber antenna, rechargeable Ni-Cad battery pack, AC adapter/charger and vinyl carry-case.

Optional Cigarette Lighter Cord #UA502 \$12.99
Heavy-Duty Leather Carry Case #CC002 \$22.99

BOOKS

Covert Intelligence	8.95	(*)
Air Scan Directory	14.99	(*)
Betty Bearcat (Special)	4.00	(*)
Top Secret (7th)	15.99	(*)
Covert Techniques	9.95	(*)
Tomcat's Big CB	13.95	(*)
World Radio	18.99	(*)
Monitor America	5.99	(*)
Survival Directory	6.95	(*)
Rail Scan	7.95	(*)
Police Call	7.49	(*)
Scanner Modification Handbook	17.99	(*)

SANGEAN ATS-803A SHORT WAVE RECEIVER \$168.99 (\$7.00 shipping)

AM/FM/LW and 12 shortwave bands plus FM stereo, BFO for SSB reception, clock radio. Includes AC adapter, telescopic antenna, stereo headphones, and shoulder strap.

—SHORT WAVE WORLD BAND RECEIVERS AVAILABLE—

Grundig SateHit 500	\$548.99	(10.00)
Grundig Yacht Boy 220	106.99	(5.00)
Grundig Cosmopolit	198.99	(7.00)
Grundig Yacht Boy 230	149.99	(5.00)
Grundig SateHit 650	899.99	(20.00)
World Radio & TV Handbook (1991)	18.99	(*)

UNIDEN BEARCAT BC-600XLT \$199.99 (\$7.00 shipping)

Digitable Programmable 100 Channel Scanner

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

BEARCAT BC-147XLT 16 CHANNEL BASE SCANNER \$99.99 (\$7.00 Shipping)

Programmable, digital, AC/DC operation. Frequency coverage 29-54 MHz, 136-174 MHz, 406-512 MHz. Weather button, priority, lockout button, squelch includes AC adapter, telescopic antenna.

REGENCY R-2066 \$99.99 (\$7.00 shipping)

Digital programmable, 60 channels, AC base scanner, 30-50 MHz. 144-174 MHz, 406-512 MHz. Size 7 1/2" x 3" x 9". Turbo-Scan scans 40 channels per second, 4 channel banks, weather alert, search, priority, lockout, AC cord, telescopic antenna, plus much more.

TWO-WAY RADIOS REGENCY-RELM

UC102	109.99	(6.00)
UC102	(2 or more) 99.99	(6.00)
RH-256NB	339.99	(9.00)
RH-606B	469.99	(9.00)
WHS-1	399.99	(9.00)
UC-202	134.99	(6.00)

BEARCAT BC-950XLT \$249.99 (\$7.00 shipping)

Same features as BC-600XLT but also receives 800-954 MHz. (Excludes cellular)

EXTENDED WARRANTY SERVICE

This extended service contract is for all scanners, CB radios, radar detectors, and cordless telephones that have been purchased anywhere in the USA in the past 30 days. This extended warranty service begins when your original manufacturer's warranty expires

1 year extended warranty only \$18.99
2 year extended warranty only \$29.99
3 year extended warranty only \$39.99

ORDERING INFORMATION: Call (518) 436-9606 to place orders or mail orders to Scanner World, USA®, 10 New Scotland Ave., Albany, N.Y. 12208. Orders will be shipped within 24 hours by United Parcel Service if order is accompanied by MasterCard, Visa, cashier's check, money order, COD (COD shipped by United Parcel Service will be cash or money order only). (If a COD package is refused, customer will be billed for shipping and COD charges.) Mail orders with personal or business checks enclosed will be held 4 weeks for bank clearance. Prices, specifications, and terms subject to change without prior notice. If items are out of stock we will backorder and notify you of delivery date. All shipments are F.O.B. Scanner World® warehouse in Albany, N.Y. We are not responsible for typographical errors. All merchandise carries full manufacturer's warranty. Bid proposals and purchase orders accepted from government agencies only. Free full line catalog mailed 4 times per year. Merchandise delivered in New York State add 7% sales tax. No returns accepted after 7 days of merchandise receipt. *Add (\$5) per item, and \$3.00* for all accessories ordered at same time. COD orders will be charged an additional \$4.00 per package. Full insurance is included in shipping charges. All orders are shipped by United Parcel Service to street address only. (No P.O. Box) Shipping charges are for continental USA only. All others ask for quote on shipping charge.

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what's new?

Know Your Rights



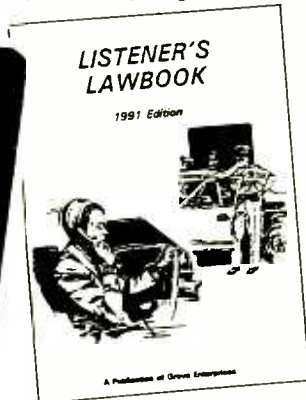
The world is changing fast. Things that we once took for granted, such as listening to police, fire and emergency medical communications, are coming under increasing attack. (See last month's *Monitoring Times*.) Today, it is imperative that you use your power as a citizen to make your views known to the politicians in Washington.

An excellent guide on how to do that effectively is the *U.S. Congress Handbook II*. A concise little 3-1/2 x 7- 1/2" book, it contains a list of Senators, Representatives listed alphabetically and by state with phones, FAX numbers, addresses, party designations, age, job, home and committees.

In addition, there is information on how bills move, key phone numbers, Congressional Leaders, tips on writing Members and even a map of Capitol Hill.

Get a copy of the *U.S. Congress Handbook II*, available direct from the publisher for a mere \$4.99 -- a small

price to pay for continuing your right to monitor the airwaves. The address is, The *U.S. Congress Handbook*, Box 566, McLean, Virginia 22101.



What listening laws are in place already in the state you are in? You can't afford not to know. Scanner monitors are particularly vulnerable; several states forbid mobile monitoring of public safety channels. Some restrictions apply to shortwave frequencies as well.

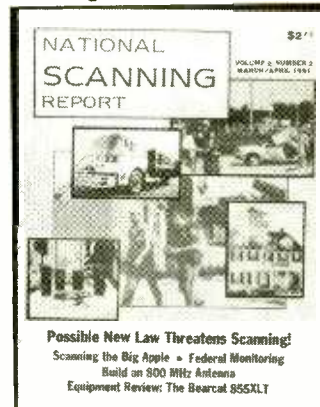
Attorney Frank Terranella, whose specialty is radio law, has collected all of the monitoring laws across America, state by state (as applicable) in *The Listener's Lawbook*. Also included is a thorough discussion of the 1934 Communications Act, the 1986 Electronic Communications Privacy Act, and even the latest FCC proposal to remove all police, fire and medical channels from radios!

The Listener's Lawbook is available from Grove Enterprises (P.O. Box 98, Brasstown, NC 28902) for \$9.95 plus \$2 shipping.

National Scanning Report

National Scanning Report is a new, Kettering, Ohio-based magazine

devoted exclusively to scanning. There is no shortwave, no longwave and no ham radio. Instead, *National Scanning Report* focuses exclusively on all aspects of scanning.



Included in the first magazine-size issue were regular columns including Fire, Police, Federal monitoring, aeronautical and projects. Featured was the FCC's proposed anti-scanning law, an article by Bob Kay, Scanning New York City, a review of the BC855XLT, plans for building a low-profile 800 MHz antenna and six pages of Sue Kennedy's popular frequency and information exchange, "Dispatch."

A one year subscription (six issues) to *National Scanning Report* is \$17.50 and includes a free frequency printout for your county.

Full membership in the club (\$29.90) gets you a subscription to *National Scanning Report*, a Betty Bearcat Regional Frequency Directory (specify your state), the county print out, and a complete membership kit.

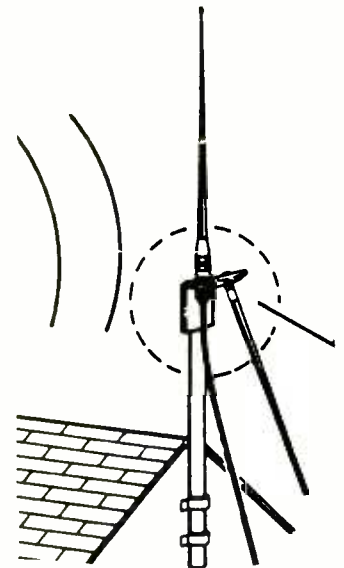
Sample copies are \$1.00 (cash) from P.O. Box 360, Wagontown, PA 19376.

To subscribe, send your check or money order to the Bearcat Radio Club, P.O. Box 291918, Kettering, Ohio 45429 or use your Visa or Mastercard and call toll-free 1-800-423-1331.

Hopping Up Your Cordless

A firm called LJ Electronic Industry Transel Technologies is selling a

"cordless phone range extender." An antenna, called the "Tele-Ranger" (model VCP4946), is 94 inches in total length, and mounts outside your house so that, presumably, you could take your cordless phone with you as you work around the yard.



The Tele-Ranger mounts like any other antenna but attaches to your cordless phone by use of a simple alligator clip to the base of the extended telescopic antenna on the cordless phone's base station.

The Tele-Ranger is designed for phones operating in the 49 to 46 MHz range. And although the literature accompanying the antenna does not specify price, one *Monitoring Times* reader reportedly was quoted \$29.95. For more information call 513-897-3442.

Shortwave Listening Guidebook

To the beginner, short-wave radio can be a confusing, almost terrifying whirlpool of terms. More than one person has given up the hobby in despair over UTC alone. Then there's megahertz, propagation, dynamic range and on and on.

Harry Helms' *Shortwave Listening Guidebook* provides the answers to all of these

questions and more. Unfortunately, the description of the book on the back cover is by far the most exciting part. Venture inside and you'll find that Helms has turned out good workable copy but breaks little new ground. In fact, *The Shortwave Listening Guidebook* bears a striking similarity to Helms' Prentice Hall book of some years ago titled, *Shortwave Listening Handbook* -- a book so technically excellent yet at the same time so dull that it was reportedly used as a textbook for some college courses.



The Shortwave Listening Guidebook contains a wealth of information. Topics covered include Amateur "Ham" Radio, AM Broadcast Band DXing, Modes of Emission, Noise Limiters and Blankers, Antenna Theory, The Nature of the Ionosphere, Utility Stations such as longwave beacons and time and frequency stations, and, of course, Helms' forte, "Unusual, Illegal and Mysterious Radio Stations" (i.e. numbers stations and strange-sounding utilities).

In the end, *The Shortwave Listening Guidebook* is like a good textbook. You'll get a lot out of it. But you'll probably have to force yourself to read it. Nonetheless, it belongs on every shortwave listener's shelf.

(Note: True novices might want to consider Gerry Dexter's popular *So You Bought a Shortwave Radio*, available from many radio book suppliers, before plunging into Helm's world of shortwave.)

Shortwave Listening Guidebook is available from

Grove Enterprises and DX Radio Supply for \$16.95 plus shipping.

QSL Survey from Suriname

For QSL collectors, every little scrap of information they can gather on their target is valuable, increasing their chances of bagging a "verie." In an effort to provide the kind of data that will actually help -- proven data -- members of the Suriname DX Club International have published a QSL Survey.

Divided into three parts, the publication takes its job very seriously.

The first part focuses on what was sent to a station in order to receive a QSL. Such topics as return postage, special enclosures (Some people send photos of themselves, postcards of their city, etc.), and follow-ups.

Section two provides statistical analysis of the data in part one. Results are given in simple table formats with explanations. This part boils it down to "what to do and what not to do," say the authors.

Part three is a list of verification (QSL) signers for shortwave stations around the world. The list is in country/station order. There are a total of 1,133 entries in this section alone.

How much would you pay for a goldmine of information like this? Fifty dollars? One Hundred dollars? Two hundred dollars? Relax. The QSL survey is just US\$7.00 in cash (While the publisher of the survey is very, very reliable, be very careful about sending cash to Suriname...) or 14 IRCs to Ravin Sewdien, Bechaniestraat 58, Paramaribo, Suriname.

Satellite TV Sourcebook

I have almost bought a satellite TV system on a number of occasions. No

SCORPIO

ID[Sta]:GKY6 (PORTISHEAD RADIO) Location: England
Date:02-27-91 Begin Prg:03:17:35 End Prg: Freq:17.220.00
Mode:FSK Signal: App/Svc:Coastal (sea) QSL:
Remarks: SITOR traffic -<arg>-
Date:23> / > / 17.220.00 FSK / Signal() #2082
[Radio] [PSE] [CLS] Terminal Mode [CHG] [CLD] [Sr/F] [Qu/eX]
-LogScan-----Log of John Doe-----[TJ]

CMD:AL
MODE NOW ALIST
.. THIS IS AN AUTO TELEX MESSAGE SYSTEM
TRAFFIC FOR THE FOLLOWING VESSELS:
USS FREDRICKS
HMS UINC...
GA*?

<arg FILE LOADED>

1Manual 2 Func1 3 Func2 4 Func3 5 Upload 6 TimeON 7 TimeOFF 8 Clear 9 Log 10 Optns

Integrated Multi-Function Communications Software for IBM PCs

Simultaneous

- Radio Control / Scanning
- Log Database Management
- TU Digital Control/Disp

> LogScan, AutoLog and AutoTU functions > Interfaces with All Mode Terminal Units
> Mouse/Function Key control of Kenwood & Icom Rcvs & RS232 Digital Terminal Units
> Search Log by any field including Remarks > Scan Receiver based on Log Search criteria
> Copy RTTY & other DIGITAL signals > AutoTU sets TU mode as needed during scan
> LogScan has real timeUTC and FRQ limit options > AutoLog builds database from "hits"
> Run other programs (DOS) within Scorpio > Includes "Top 100" HF database & Manual

Optional Log Databases available for only \$19.95 each include:

English Language SW Broadcast - MidEast - Utility - Others

\$89.95 (+S&H)

PO Box 830 - Dandridge, TN 37725 - (615-397-0742)
Fax: (615) 397-0466 Compuserve # 72557, 3560

Sophisticated Monitoring

If you are monitoring only *voice* shortwave stations, you are missing half the action! Thousands of shortwave stations transmit in non-voice modes such as Morse code, various forms of radioteletype and FAX. The Universal M-7000 will permit you to easily intercept and decode these transmissions. This is the most sophisticated surveillance decoder available. No computer is required. See the world of shortwave excitement you have been missing.

UNIVERSAL M-900
For those desiring to copy the basic modes (Morse code, Baudot, Sitor A/B and FAX), we suggest the affordable M-900. From \$499.95

Huge Communications Catalog

The new Universal 92 page communications catalog covers everything that is new for the amateur, shortwave listener and scanner enthusiast. Equipment, antennas, books and accessories are all shown with prices. Available for \$1 postpaid.

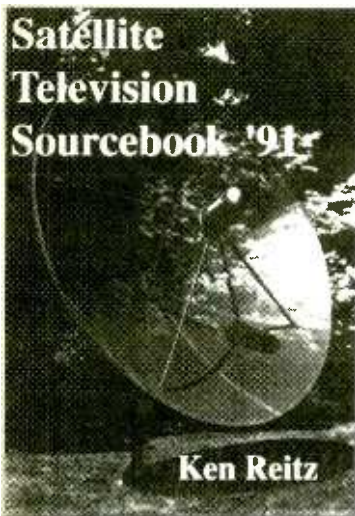
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Universal has been serving radio enthusiasts since 1942. Visit our large showroom east of Columbus, Ohio.

matter that we own only a small black-and-white portable and watch nothing but the McNeil Lehrer News Hour. These near-collisions with satellite TV are always Ken Reitz' fault. You see, Reitz is an irrepressible, infectiously enthusiastic satellite TV evangelist. Let him get you on the phone and within ten minutes, you'll have a check book out, begging him for the address of your nearest satellite TV distributor.

Fortunately, a cold shower can provide at least temporary relief from Reitz' infection.

Reitz, never one to give up, has now added a book to his arsenal of temptation that leaves little doubt that the "the birds" will be the next wave for monitoring enthusiasts.



Satellite TV Sourcebook '91 provides an excellent introduction, suitable for people with absolutely no previous knowledge of the subject. Once you're made comfortable, Reitz hits you with all of the goodies that can be found on satellite, ranging from CNN to steamy Brazilian TV, to NASA Space Shuttle Reports to more bizarre fare like the Domino's Pizza Satellite Network and MegaBingo, put on by the Creek Indian Nation.

Not all of the services are video, either. There are hundreds of audio channels to explore as well.

If any of this tickles your fancy at all, get the book. It's called the *Satellite Television Sourcebook* and it's available direct from the publisher or from DX Radio Supply for \$20.00 plus 1.35 book rate or 2.60 UPS.

NRD-525 Computer Controller

The Bandview 525i is a professional monitoring and receiver control program for the Japan Radio Corporation NRD-525 receiver. Designed by Tom Kashuba, Bandview provides frequency logging, a station database and a world clock/gazeteer in a system that naturally enhances the operation and enjoyment of this classic receiver. No modifications or non-standard equipment options are needed.

Since a complete listing of the features of this program is beyond the scope of this product preview, we suggest that you contact the publisher, Tom Kashuba, P.O. Box 20, Station H, Montreal, Quebec H3G-2K5, Canada. The price for the program is \$120.00 which includes shipping but not duty. Payment must be made by certified check or money order negotiable in Canada.

Bandview 525i v1.00 Copyright (C) 1991 by Tom Kashuba

EST	Tue	UTC	Med	dMod	AR	NIDE	Band	G	(of A-F)	199	T	999	T
91/02/26	91/02/27	AGC	FRST				Chan	None		148	-	366	-
22:59:07	03:59:07	ATT	Off	4.0	kr		Mode	A-F	5.00	0	1	0	1

After Sunset Band

11500.00Kc-25.00 12075.00 ±5.00 23.7m-12150.00Kc

Log File: SM Shortwave Broadcaster Log S25 Items

Men	Frequency	MNCA	(UTC 24h)	Days	Sta-ID	Transmission	Remarks	S25	Items
361	12035.00	A-F	0400	0420	SM1TFS	SRI	Swiss R Intl	slmp	0
362	12040.00	A-F	2200	0430	SM1TFS	RNOS	R. Moscow		3
363	12060.00	A-F	1930	2130	SM1TFS	RNOS	R. Moscow		3
364	12080.00	A-F	2230	2300	SM1TFS	KOL	KOL Israel		0
365	12085.00	A-F	2205	2205	SM1TFS	RDM	R. Damascus, Syria EUNR		0
366	12095.00	A-F	1300	1130	SM1TFS	BBC	BBC		2
367	13605.00	A-F	1100	1200	SM1TFS	RBUS	018203 China/HK/Tai		0
368	13605.00	A-F	2200	2330	SM1TFS	URER	OAE W.		0
369	13610.00	A-F	0000	0030	SM1TFS	RBI	R. Berlin Intl		2
370	13610.00	A-F	0100	0130	SM1TFS	RBI	R. Berlin Intl		2

Station-Database-Extract Last-Logging

British Broadcasting Corp: England: London: General 018206 2200 3322

Name-Country-Site-Type: gund4-hhm-SINPO

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



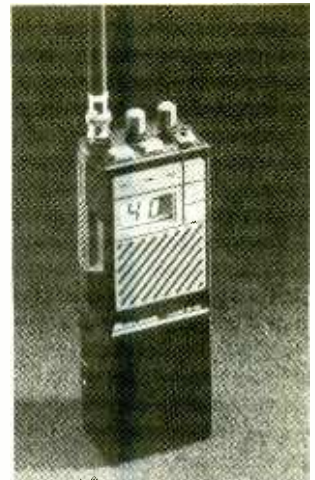
Opto Bandpass Filter

Optoelectronics has released a new receiver bandpass filter designed to separate closely spaced radio signals. In short, the unit passes along the desired frequency and eliminates the interfering frequencies.

The APS-204 is especially useful in dense urban areas or other situations where many radio transmitters operate in close proximity, overloading and interfering with nearby receivers.

The 4 x 1-1/2 x 7 inch unit operates on 12 volt DC for mobile convenience and consumes just 6 watts. It is housed in rugged aluminum, has an on/off switch and a ten-turn pot for selecting center frequency of the 4 MHz filter. Noise figure is specified at 10 dB maximum.

The Optoelectronics APS-204 is available for \$995.00 from 5821 NE 14th Avenue, Ft. Lauderdale, FL 33334. For more information, call 1-800-327-5912.



New 7-Watt CB from Midland

Midland International has introduced a new 40 channel CB which they call model 75-781. It offers up to 7 watts of input power (still only 4 watts output) and a liquid crystal (LCD) channel readout system with nearly half-inch high numerals. Channel selection is made by a push-button up/down channel selection.

The 75-781 features an ETR frequency system that provides pinpoint channel tuning and a scan circuit that can give all 40 channels the once-over in search of "BUSY IN USE" channels. Power is supplied by a rechargeable NiCad battery. You can also run the 75-781 in your car, RV, truck, boat or whatever using any 12-volt power supply. An AC wall charger is also supplied.

The 75-781 comes complete with flexible rubber antenna, carrying case and 12-volt power cable. How much does this radio cost? As usual, Midland doesn't say. Instead, they want you to contact them at Midland International, Consumer Communications Division, 1690 N. Topping, Kansas City, Missouri 64120.

Review:

MFJ HF SWR Analyzer

Shortwave listeners and hams alike constantly fret over antenna design. Is the impedance correct for the radio? For the transmission line (coax)? Until now, measurements had to be made with two pieces of equipment: an RF generator and a standing-wave bridge. Now MFJ has provided both instruments in one compact and affordable box -- the MFJ-207 HF SWR analyzer (\$99.95 at MFJ dealers).



With only one dial, operation couldn't be simpler. Connect the 207 to the feedpoint of the antenna under measurement (not to the radio end of the coax unless it is an electrical half-wave long at the frequency to be measured) and adjust the dial to any frequency between 1.7 and 34 MHz; the VSWR (up to 3:1) will be displayed clearly on the panel meter!

As you shorten or lengthen elements, or add tuning inductance or capacitance, the meter will show improvement or worsening of the match. Nifty. And it works with beams, whips, dipoles -- any antenna that takes coax. For balanced (twin-lead) systems, a 1:1 balun transformer would have to be added.

Another model, the MFJ-208 (\$89.95), is intended for 2-meter hams and high-band commercial radio operators; it covers 142-156 MHz.

We Check It Out

After removing the 8 chassis screws (since there is an oscillator inside that cabinet must be well-shielded and secure) from our sample 207, we inserted a nine-volt battery (it also works from an optional MFJ-1312 AC wall adaptor), reassembled the cabinet and

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RTTY (bit inversion)		★	★
ASCII (110 & 300 BAUD)	★	★	★
ASCII (bit inversion)		★	★
AMTOR/SITOR Mode A-ARQ		★	★
AMTOR/SITOR Mode B-FEC		★	★
WEFAX (with VIP50)		★	★
Smart display/Intensity control	★	★	★
On/Off with volume	★	★	★
Serial Interface	★	★	★
Code Oscillator	★	★	★

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attached our antenna.
 Switching the unit on, we slowly tuned the frequency dial from 1.7-34 MHz, noting the frequencies at which our antenna was well matched to the nominal 50 ohm match of the 207. If accurate frequency information is required, a frequency counter may be

connected directly to an RCA phono plug on the unit.
 For more information, contact an amateur radio supply store such as those who advertise in *MT*, or write MFJ Enterprises, PO Box 494, Mississippi State, MS 39762 or call 601-323-5869.

Light Summer Reading

Is it something in our mammalian past that draws us to the sea during the summertime? I mean, when you look at our evolutionary ancestry coupled with the fact that we are made up of about 90 percent saline, you just have to wonder about such things. I must admit, I am still a little unclear on where all the suntan lotion fits into the great cosmic plan but I am working on it.

Been standing a little too close to the microwave again, Uncle Skip?

No, really, Boss, this is important stuff. Summer is about to hit and that means I have to hit on something radio folks can do between all the static crashes of summer thunderstorms. In the world of shortwave DXing, listening takes a bit of a back seat to other activities for all but the most devoted and demented. How can I keep the radio spark alive during low listening summer doldrums?

Get to the point, Uncle Skip.

For many of us, summer is a great time to catch up on our reading. Hey, if you don't have tons of muscle mass (which is 90 percent saline, anyway) to flex at the beach, you can always curl up with a book on particle physics and hope to attract a beach bunny with an IQ substantially higher than that of a grapefruit. True beauty lies within the mind and soul, Grasshopper. Be that as it may . . .

Any newcomer to radio monitoring has probably discovered that some aspects of this hobby require a bit of reading to get ahead of the learning curve. While you are satisfying that prehistoric compulsion to return to the sea, why not take a few tomes of radio wisdom along to prepare yourself for an even better winter season of SWL? As I pack my bags for the Outer Banks of North Carolina, I bring you -

UNCLE SKIP'S SUMMER READING LIST

One of my previous radio writing gigs involved reviewing books on our hobby. It was kind of neat because all the publishing houses fell over each other to send me lots of stuff to read. My office shelves sagged under the weight of tons of radio wisdom, most of it quite good, I might add.

This period in my life led me to discover that radio books come and go, but a short list surfaced of books that seem to stay around, when others have long since hit the bargain book bin. Also, since I no longer get all these

books for free, I had to consider which books I would actually want to buy so that I could remain the sage of radio that I am, while still not squandering my checks from Brasstown, cheapskate that I am.

Any and all of these books could provide hours of consideration on some sultry beach somewhere. Some of them are even heavy enough to help you out with that little muscle mass problem. Remember, all of these books are short on plot and long on information so bring along a "highlite" pen to mark the important parts.

PASSPORT TO WORLD BAND RADIO

Lawrence Magne, editor-in-chief
\$16.95

The *New York Times* called it the "TV Guide for world band radios." They were right about this up to a point. In addition to giving you a great guide for listening while on your vacation (assuming you read my April 1990 column about portable radios), this book also has an extensive review of currently available receivers. Why not do a little investigation into that next receiver purchase now and save a lot of window shopping later? This book also has 100 pages of articles on the radio art that would make great brief reading between volleyball games.

If you read last month's column, I talked about using 3 x 5 file cards to make up "hit lists" for hunting down all those stations that have eluded you over the years. A couple of hours with "Passport's" blue pages will get you a great list to start off the upcoming DX season. As a beginner, if you can only cut loose enough money for one radio book, this is probably your best choice.

WORLD RADIO HANDBOOK

Andrew G. Sennit, editor
\$19.95

Another enormous indepth list of frequencies and broadcast station information. This book can also be used for developing hit lists, but a more practical summertime use might be to use its extensive list of station addresses to get out all those confirmation letters and follow up requests for QSL cards.

SHORTWAVE DIRECTORY

by Bob Grove
\$21.95

If your interests run more in the direction of utility station monitoring, this is the book you will need to develop all those winter listening plans. The events of the early part of this year have proven that the world can be a pretty shaky place. Following maritime and

military broadcasting can be a great way to try to make sense out of tense world situations.

If you want to add the Antarctic continent to your list of places heard, this book has all the up-to-date frequencies in use in that part of the world. Besides, as the sun gets high and hot, you can turn your thoughts to the frozen Antarctic to keep your cool.

EASY-UP ANTENNAS For Radio Listeners and Hams

by Edward M. Noll
\$16.95

Antennas remain an area of constant tinkering to any dedicated radio person. Summertime remains the best time for doing this tinkering. If you have a spool of wire in the basement that you are just dying to string all over your property, you're going to want to take this book along in your beachbag. Who knows, you might even do your rough sketches in the sand before committing them to paper.

Ed Noll knows more creative ways to hang antenna wire than most people. He also has a strong sense that you don't have to spend a small fortune to improve your listening abilities. This book takes you through all the steps of antenna construction and design in terms that any beginner can understand. If you are an apartment dweller or live in some other antenna resistant location, there is an entire chapter on limited space and indoor antenna design that should make your winter return to the dials a true pleasure.

Scanner listeners will also find this book useful as it covers a full range of easy to construct VHF and UHF antennas that will allow you to fill your log with many new contacts. Regretfully, this book is now out of print. DX Radio Supply might still have some copies available. Call their order line.

POLICE CALL RADIO GUIDE

Gene Hughes, editor
\$7.95 per volume

Okay, I know I have leaned a little heavy on the beach and on shortwave. This does not mean that scanner lovers and folks who go to the mountains or the desert can't have a lot of radio fun and radio reading to boot. The *Police Call Guide* covers the country in nine regional volumes of up-to-date frequencies sure to make any scanner monitor weak in the knees.

If you are taking your scanner along on your vacation, you just need to get the volume that covers the part of the country you choose to rest and recreate in. Just like the shortwave folks, you can use this book as a course of study to plan listening when you get back



And what do you take along on your vacation?

home by developing frequency lists for your areas of interest.

Don't let the word "Police" in the title fool you. These books also cover fire, rescue, public service and local government frequencies. Just like the commercials say, "Don't leave home without it."

SHORTWAVE RECEIVERS PAST AND PRESENT

by Fred Osterman
\$6.95

For some reason I continue to be drawn to this book like bugs are drawn to the front porch light. This book is a comprehensive look at the prices and performance figures of most of the popular new and used equipment in the shortwave receiver market. Just the information you should have under your belt before you wander through the tables at some flea market, swap meet or hamfest.

I have always maintained you can double the value of your dollars by carefully plying the used receiver market. But even though I own every receiver I ever set my sights on owning, I still enjoy paging through Fred's book and looking up receivers I have known and loved. If it's memory lane or a trip through shortwave history you are looking for, this book will get you there for less than the cost of a bottle of fancy suntan lotion.

LATEST INTELLIGENCE

by James E. Tunnel
Helen L. Sanders, editor
\$16.95

I first picked up this book as a curiosity at the *Monitoring Times* convention. I quickly became a fan. It's best described as a dictionary of radio spy stuff. Not frequencies, but rather terminology, codes, military designators, etc. I have been chasing clandestine radio operations for years and this book made me aware of how little I really knew -- secret clearance and all. In turn, it taught me a lot.

If your summer hammock reading tends towards trashy spy novels, give this book a look. Likewise, if you are even remotely interested in clandestine radio, this book will clear up a lot of confusion.

THE ARRL HANDBOOK for the Radio Amateur

Bruce S. Hale, editor
\$25

This book has become a bit intense since it switched over to hardcover only. But it is over 1,200 pages full of everything you could possibly want to know about the technical aspects of radio communications without enrolling in an engineering program at your local university. The 1991 publishing represents the 68th edition of this work that has taken radio enthusiasts from spark gaps to space communications.

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I will tell you up front, if you are a beginner with little understanding of radio or electronics, you will not even recognize half of the words in this book, let alone their meaning. If you can afford it, buy it now and enjoy it anyway. With each passing day in the radio hobby, you will acquire more knowledge and more and more of this book will become useful to you.

Don't let the fact that it is oriented toward amateur radio throw you. I was using *The Handbook* for years before I ever broke down and got a ham ticket. Also, this is a **BIG BOOK**. Carry this around for awhile and you may be able to enter the annual Beach Hunk competition.

And now for something almost completely different

Before you go wandering off to wherever the summer winds blow you, dig through your closet or file cabinet and pack all your receivers' and accessories' manuals. Yep. Old Uncle Skip caught you. You never did really read those things, did you now?

Well instead of working on your tan while pondering the latest appearance of Elvis in some scandal sheet, take a good look through those manuals. You will probably discover some things you never knew about your equipment that will really enhance your listening if only you had taken the time to **READ THE MANUAL**.

This is also time for Old Uncle Skip's annual admonishment to not ruin the vacation for the rest of your family by spending all of your time steeped in radio stuff. Build some sand castles with the kids. Play Frisbee. Take a long walk with your significant other. Most of all, remember -- take nothing but pictures and leave nothing but footprints.



Bugged?

A friend who works at the local FM station told me he had an interesting visit from the feds recently. It seems his spinning of platter after platter of classic rock music brought forth a special request from the FBI.

No, it wasn't a request to play more Led Zeppelin, but a special request to stop transmitting for a few hours. It seems that the station's signal was interfering with an FBI bug placed on someone who was the subject of federal surveillance. Whoever was being bugged lived in the vicinity of the transmitter and its strong signal was overloading the receiving equipment belonging to the federal surveillance team. It appears that the bug was transmitting on or near the FM broadcast band.

The station did shut down for a couple of hours, the surveillance was completed and the rock station was back on the air later that evening. All in all it provided an interesting look into the surveillance techniques of the FBI. It also proves that bugging isn't just confined to the realm of spy novels or TV. In fact maybe you are being bugged as you read this.

Just how would one go about finding out if the federal government was bugging you? The first place to start would be the FM broadcast band. Wireless microphones, (which can be used as listening devices) and some bugs can be tuned to transmit on or near the frequencies used by FM broadcast stations. An FM band tunable bug would be set to transmit in a dead area between stations or on the fringes of the band away from any likely interference.

Check out the dead spots on the local FM band when searching for these devices. Tunable FM microphones are low powered and will only transmit for distances under a quarter of a mile, so if you detect one, it is close by.

Your scanner is a good tool to use in your bug hunt. Some bugs transmit in the VHF and UHF bands. If your scanner has a frequency search mode try searching through these frequency ranges: 149 MHz to 150 MHz, 165 MHz to 174 MHz, 177 MHz to 185 MHz, 190 MHz to 199 MHz and 450 MHz to 470 MHz. Most will be in FM mode but some bugs have been reported using wide band FM.

The FBI has been reported using the following frequencies for their bugs: 48.670 MHz, 49.800 MHz, 149.350, 166.3375 MHz, 167.4875 MHz (most commonly reported,) 195.600 MHz and 467.780 MHz. (See table for comprehensive list).

Even with searching the bands with your scanner, the bug might be transmitting on an exotic out of band frequency making it hard to find. If this is the case, then your best bet at finding the bug is to use a frequency counter. New portable hand-held units with very wide frequency range and excellent sensitivity can not only alert you to the presence of a bug but display its transmitting frequency.

This can be extremely helpful if you decide to leave the bug in place and not reveal its discovery. In some cases this may be the best thing to do, such as in industrial or governmental espionage. Feeding false information via an illegally planted bug can help catch the spies in the act.



Oddly enough, some people have inadvertently bugged themselves. It is old news to most scanner hobbyists how incredibly easy it is to monitor cordless phones, baby monitors, wireless intercoms and security monitors, which use the frequencies between 46 and 50 MHz.

Because they are legal to monitor, many people and agencies have taken advantage of this. There have been instances where police or civic crime watch groups have given drug dealers or suspected felons cordless phones as gifts in fake contests, hoping that the criminal will use it and implicate himself in a criminal act. Several drug dealers have been convicted on the basis of tape recordings made of their transactions over cordless phones. It is a great way for police to get around eavesdropping and wire tap laws.

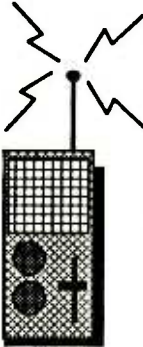
As you can see, ensuring security in one's own life is becoming more and more complicated. If you are involved in a business or a situation that demands privacy, keep these things in mind. Periodically check your business and home for listening devices. Be aware of what you say and who might be listening in. If you don't want it heard, don't say it on a cordless phone. Turn off that baby monitor when it is not being used and if you have to use these devices be smart. You never know who'll be listening in.

Mail Bag


I received an interesting newspaper clipping from Milan Seifert of Dale City, Virginia. According to the Prince William/Potomac Journal it seems that the Army's top secret Vint Hill Station (known by intrepid *Monitoring Times* readers as a major source of spy number transmissions) wants a radio free quiet zone, free of all electronic emissions declared around the facility. The Army wants businesses and manufacturers within a 15-mile radius of the facility to put special electromagnetic

Bug Frequencies


Reported frequencies	
149.000 mhz	
149.350 mhz	
165.915 mhz	
167.335 mhz	
167.345 mhz	
167.4875 mhz	
168.115 mhz	
169.255 mhz	
169.445 mhz	
169.505 mhz	
170.245 mhz	
170.305 mhz	
171.450 mhz	
171.850 mhz	
171.900 mhz	
172.000 mhz	
172.200 mhz	
173.375 mhz	
174.600 mhz	
177.600 mhz	
181.600 mhz	
183.600 mhz	
186.600 mhz	
190.600 mhz	
192.600 mhz	
195.600 mhz	
196.600 mhz	
199.600 mhz	
457.565 mhz	
467.785 mhz	



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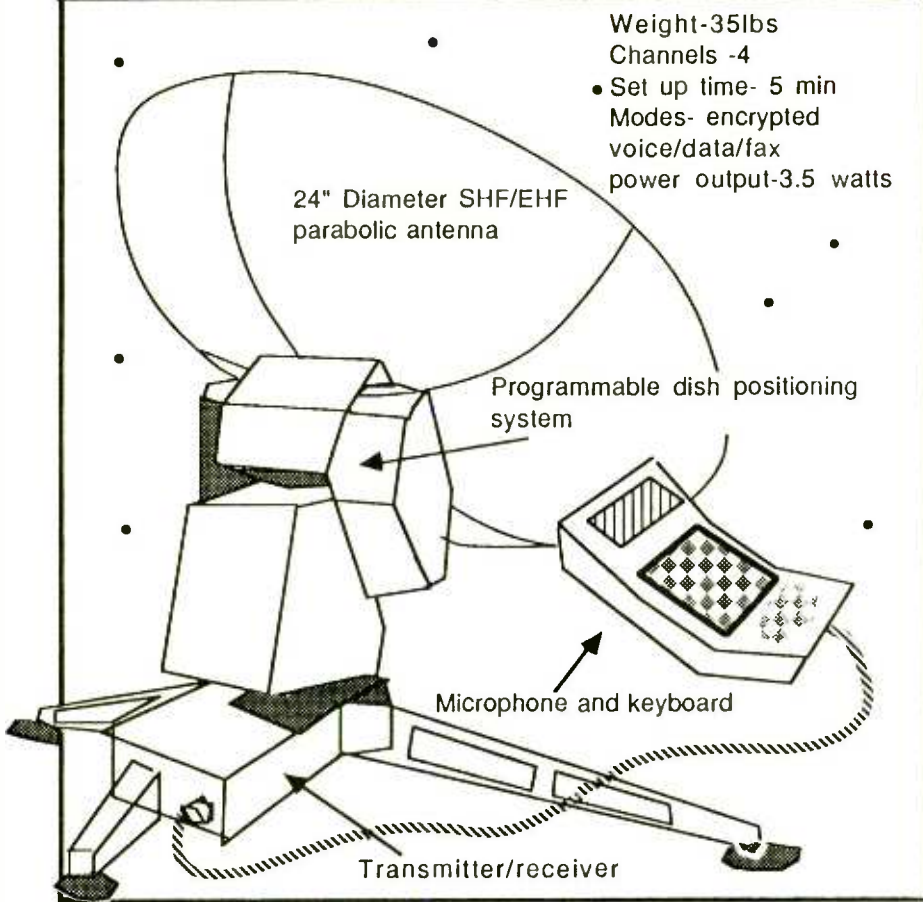
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Monitoring Times Graphic

absorbing materials on all electrical equipment.

Claiming that machinery and electronic equipment interferes with sensitive "research and development projects" at Vint Hill (in actuality a top secret listening post), the proposal would end up costing firms and land owners in the area thousands of dollars to comply with. Installing the shielding for a typical business on equipment would cost approximately \$10,000 to \$12,000. This has many local businesses up in arms.

Spokesman for the Vint Hill facility, Christopher Kernan, of CECOM (Communications Electronics Command) claims that its electronic mission is severely threatened by the electronic noise in the area. Those in the quiet Virginia community may have no say in the matter.

If the county fails to go along with the Army's request, the Pentagon could ask Congress for the authority to curb electronic pollution around Vint Hill. And if that isn't enough to motivate the community to comply, the Army has threatened to move the facility and set it up somewhere else, taking with it some \$1 billion dollars that is pumped into the

community annually.

If they don't comply and have to move the secret facility, the author of this column would gladly welcome it next door to him!

When you wish upon a MILSTAR

Those of us who like to eavesdrop on the military had a front row seat during Operation Desert Storm. Even with the Gulf War basically over, the military bands are still hopping with activity. It will be some time before the region is stable and all the troops are home, so don't turn off your receivers yet. The HF and UHF bands are still busy with the sounds of units stationed in Kuwait and occupying parts of Iraq.

News reports from the Gulf show the troops trying to deal with the mess left behind in Kuwait and the uneasy peace. One thing I noticed in news reports from the region were Special Forces troops using portable satellite transceivers. Suitcase-size, high tech terminals communicating vital combat information direct to the Pentagon.

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Research into these "magic suitcases" reveals that they transmit and receive communications via "MILSTAR" satellites using voice, encrypted voice and data transmissions. The frequencies in use are in the EHF (Extremely High Frequency) and SHF (Super High Frequency) bands.

Uplink frequencies are reported as being 44.5 GHz with the downlink frequency being 20.7 GHz.

In light of this, I have a request of the receiver manufacturers and electronic whizzes out there. Please consider manufacturing an inexpensive multi-mode super scanning receiver that will receive these bands! I guarantee if someone out there made an affordable receiver that covered those ultra exotic bands, every military and utility monitor out there would flood the market place with orders. It would top my Christmas wish list.

Of course since I suggested it, I should deserve the first one off the shelf, but until that day, I guess I will have to be happy monitoring the HF and UHF bands. That's a good idea. Why don't we all do that now? See ya next month!

mt

The Frequencies, They're a'Changin'

Some effects of WARC-MOB-87

Back in January, Ev Slosman wrote an excellent article outlining the changes which will take place on July 1 as a result of the Maritime Mobile World Administrative Radio Conference, which was held back in 1987. The information which Ev presented is an excellent source of information to convert current frequencies to the new WARC Mobile 87 frequencies.

The changes which are taking place are not simply limited to converting old frequencies to new. Many stations are evaluating their needs and dropping or adding frequencies where they see the need. The conversion process is an expensive one and therefore stations will be trying to save money where they can, and they will also add frequencies where they are needed while they are doing the necessary overhaul on their transmitters and receivers.

Of the SSB distress and calling frequencies, 2182 and 4125 kHz are not changing; however, the others will change as follows:

Present	After July 1
6215.5	6215.0
8257.0	8291.0
12392.0	12290.0
16522.0	16420.0

While the above table is repeating that printed in January, it is useful to note that the less important of these frequencies are the ones which are changing. In the 6 MHz and higher bands, the distress frequency is less important due to the fact that ships are usually monitoring a coast station. This means that if something happens, the radio is already tuned to a station which can hear them. This makes it more efficient to obtain assistance when it is needed, and it is more likely that the station which responds to a distress call on HF radiotelephone will be one which can best give assistance.

Bear in mind that these changes take effect at 0001 hours July 1, 1991, according to Universal Coordinated Time. Therefore, those living in eastern time zone of North America will see them taking place at 1900 hours on June 30, 1991.

Scheveningen Radio

Scheveningen Radio in the Netherlands is one station which will simply be converting their frequencies to their WARC-MOB-87 equivalents. There are no changes to their CW frequencies, nor are there changes below 4 MHz to any of their frequencies, however the list below shows what will happen on July 1.

Radio telex

Old	New	Call sign
4351.5	4212	PCH 25
4355	4217	PCH 26
6496.5	6316.5	PCH 35
6504	6323.5	PCH 36
8713	8424.5	PCH 45
8717	8428.5	PCH 46
13077	12585	PCH 55
13088.5	12696.5	PCH 56
17217.5	16826.5	PCH 65
17230	16839	PCH 66
22565	22380	PCH 75
22568	22383	PCH 76

Single sideband

8796.4	8794.4	PCG 41
13138	13113	PCG 51

17341.4	17347	PCG 61
22608.4	22708	PCG 71

Halifax Coast Guard Radio

Halifax Coast Guard Radio, in Nova Scotia, is another station which is only converting their existing frequencies. There are no changes to their single sideband frequencies below 4 MHz and the only CW frequency which will change is that for 22 MHz; however, at the time of writing this column, the new frequency has not been assigned. Here are the changes scheduled for Halifax CGRS.

Radiotelex

4353	4213.5	VCS
6497.5	6317.5	VCS
8708	8419.5	VCS
13090.5	12598.5	VCS
17212.5	16821.5	VCS
22590	22405	VCS

Single sideband

4410.1	4408	418	VCS
6518.8	6513	605	VCS
8787.1	8785	823	VCS
13138	13113	1213	VCS
17242.2	17251	1604	VCS

Australian Coast Stations

Australia is making adjustments to their frequencies as well as converting existing ones to their WARC-MOB-87 equivalents. As far as the CW and SSB frequencies are concerned, there are no changes below 4 MHz.

CW

4245	4245	VIS Sydney Radio
4272.5	4272.5	VID Darwin Radio
4318	4318	VIT Townsville Radio
4323	4323	VIP Perth Radio
6464	6464	VIS Sydney Radio
8452	8452	VIT Townsville Radio
8487	8487	VID Darwin Radio
8521	8521	VIS Sydney Radio
8597	8597	VIP Perth Radio
*	12952.5	VIS Sydney Radio
12994	12994	VIP Perth Radio

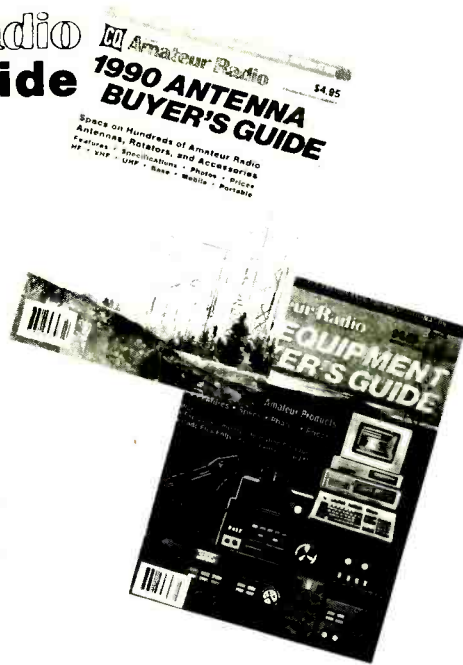
Radiotelex

*	4215	VIS 70 Sydney Radio
*	4215.5	VIP 41 Perth Radio
4352.5	4213	VIP 31 Perth Radio
4356.5	4216.5	VIS 61 Sydney Radio
*	6319.5	VIP 42 Perth Radio
*	6320.5	VIS 63 Sydney Radio
6497	6317	VIP 32 Perth Radio
6499	6319	VIS 72 Sydney Radio
6501	6320.5	VIS 63 Sydney Radio
*	8421	VIS 74 Sydney Radio
*	8422	VIP 43 Perth Radio
8707.5	8419	VIP 33 Perth Radio
8709.5	8421	VIS 74 Sydney Radio
8711.5	8423	VIS 65 Sydney Radio

CQ Amateur Radio Buyer's Guide

You can buy with confidence when you have all the facts. The 1991 Equipment Buyer's Guide gives you in-depth coverage of HF/VHF/UHF rigs and accessories. All the information is here in one handy, concise directory with descriptions, technical specifications, model numbers, retail prices and photographs. How do you get a ham license? What's the latest on the code-free license? What equipment do you really need to work the satellites? Should you buy a computer for your shack? How do you add computer control to your rig? You can buy with confidence when you have all the facts. Order the 1991 Equipment Buyer's Guide today!

You'll need the Antenna Buyer's Guide to squeeze every last dB out of your antenna dollars. Make sure you get the best possible antenna system for the best price! HF and VHF/UHF, directional and omnidirectional, vertical and horizontal, mobile and portable—they are all covered in depth. Tuners, cables, wattmeters and more! You'll find detailed charts, specifications, photos and retail prices. Advice on getting the proper tower and antenna permits from a leading authority on PRB-1. Step-by-step guide to putting up your first beam! The bands are hotter than ever right now. You can't afford to wait.



ORDER YOUR BUYER'S GUIDE TODAY!

Don't miss the single most valuable buying guide in the Amateur Radio field. Send only **\$4.95** today. Foreign: \$6. U.S. funds. Foreign orders are payable in U.S. funds only by check drawn on a U.S. bank, or by U.S. Postal Service Money Order.

YES, please send my copy of 1990 EQUIPMENT BUYER'S GUIDE for only \$4.95 (Foreign \$6.00) postage paid.

Date _____ Number of Copies _____ Call _____

Name _____

Address _____

City _____ State _____ Zip _____

Card No. _____ Check MasterCard VISA Expires _____

Signature _____

(Signature required on all charge orders)

Mail to: CQ Communications, Inc.
76 North Broadway, Hicksville, NY 11801

*	12585	VIP 44 Perth Radio					Esperance, VIH Hobart, VII Thursday Island, VIM Melbourne, VIO Broome, VIP Perth, VIR Rockhampton, VIS Sydney, VIT Townsville
13074	12582	VIP 34 Perth Radio					VIB Brisbane, VID Darwin, VIP Perth, VIS Sydney, VIT Townsville
13076	12584	VIS 76 Sydney Radio					VIA Adelaide, VIB Brisbane, VID Darwin, VIM Melbourne, VIP Perth, VIR Rockhampton, VIS Sydney, VIT Townsville
13078	12586	VIS 67 Sydney Radio					VIA Adelaide, VIB Brisbane, VID Darwin, VIM Melbourne, VIP Perth, VIR Rockhampton, VIS Sydney, VIT Townsville
*	16812.5	VIP 45 Perth Radio	6221.6	6227			VIB Brisbane, VID Darwin, VIP Perth, VIS Sydney, VIT Townsville
17200	16809.5	VIP 35 Perth Radio					VIA Adelaide, VIB Brisbane, VID Darwin, VIM Melbourne, VIP Perth, VIR Rockhampton, VIS Sydney, VIT Townsville
17202	16811.5	VIS 78 Sydney Radio	6512.6	6507	603		VIA Adelaide, VIB Brisbane, VID Darwin, VIM Melbourne, VIP Perth, VIR Rockhampton, VIS Sydney, VIT Townsville
17204	16813.5	VIS 69 Sydney Radio					VIA Adelaide, VIB Brisbane, VID Darwin, VIM Melbourne, VIP Perth, VIR Rockhampton, VIS Sydney, VIT Townsville
*	22381	VIS 80 Sydney Radio					VIB Brisbane, VID Darwin, VIP Perth, VIS Sydney, VIT Townsville
*	22382	VIP 46 Perth Radio					VIB Brisbane, VID Darwin, VIP Perth, VIS Sydney, VIT Townsville
22564	22379	VIP 36 Perth Radio	8291.1	8294			VIP Perth Radio
22568	22383	VIS 71 Sydney Radio					VIB Brisbane, VID Darwin, VIM Melbourne, VIP Perth
			8722	8722			VID Darwin, VIP Perth
Single sideband			8734.4	8734			VIA Adelaide Radio
4143.6	4146	VIB Brisbane, VID Darwin, VIP Perth, VIS Sydney, VIT Townsville	8749.9	8749			VIT Townsville Radio
4366.7	4336	VIB Brisbane, VIH Hobart, VIM Melbourne, VIP Perth, VIT Townsville	8762.3	8764			VIA Adelaide, VIS Sydney
4369.8	4369	VIS Sydney, VIA Adelaide, VIB Brisbane	*	8767			VIS Sydney, VIT Townsville
4391.5	4390	VIT Townsville Radio	8768.5	8767			VIM Melbourne, VIP Perth
4400.8	4399	VIB Brisbane, VID Darwin, VIP Perth	8784	8782			VIA Adelaide, VID Darwin
4407	4405	VIM Melbourne, VIR Rockhampton, VIS Sydney	8805.7	8803			VIB Brisbane, VID Darwin, VIP Perth
4413.2	4411	VIA Adelaide, VID Darwin, VIT Townsville	13107	13083			VIS Sydney, VIT Townsville
4428.7	4426	VIA Adelaide, VIB Brisbane, VIC Carnarvon, VID Darwin, VIE Esperance, VIH Hobart, VII Thursday Island, VIM Melbourne, VIO Broome, VIP Perth, VIR Rockhampton, VIS Sydney, VIT Townsville	13178.3	13152			VIA Adelaide, VID Darwin
6215.5	6215	VIA Adelaide, VIB Brisbane, VIC Carnarvon, VID Darwin, VIE	13181.4	13155			VIS Sydney, VIT Townsville
			13187.6	13161			VIP Perth Radio
			13193.8	13167			VIS Sydney, VIT Townsville
			17236	17245			VIS Sydney Radio
			17242.2	17251	1604		VIP Perth Radio
			17260.8	17269	1610		VIS Sydney Radio
			17298	17309	1622		VIS Sydney Radio
			22602.2	22702	2203		VIS Sydney Radio
			22630.1	22729	2212		VIP Perth Radio
			22664.2	22762	2223		VIS Sydney Radio

Big Stations Serve the Nation

There are thousands of radio stations in America, but only 27 qualify for broadcasting's major league all-star team. Using 50,000 watts, with omnidirectional antennas, these super-stations are heard nationwide when darkness falls. You don't have to be an experienced DXer to enjoy this action.

Listen to our nation talk, or listen to your favorite sports team play almost anywhere. If you're driving across the country, AM clear channels will give you a companion for the duration of your ride. We can't list all 27, but here's a quick look at the listening adventure which awaits you:

When you think of country music, you think of Nashville, Tennessee, and there's only one station that sounds like 650 WSM. Their "Grand Old Opry" show on Saturday nights is a weekly event for country and western fans.

If sports are your game, The Fan is the place for you. New York's Sports Radio 66, WFAN, is America's first all-sports talk radio station and caters to listeners all over the country. The call-ins on Howie Rose' weeknight show will make you feel like you've been transported to a bar stool near your favorite stadium. Steve Somers continues the gabfest from midnight until dawn with his zany humor and encyclopedic sports knowledge. You'll hear the Mets, Knicks, and Rangers play and the very latest scores continually on The Fan.

KMOX RADIO 1120

"The Sports Voice Of America" is also an excellent description of KMOX St. Louis. Cardinal baseball, Blues hockey, Missouri University Tiger football and basketball, St. Louis University Billiken basketball, NFL football and the Major League Baseball Game Of the Week and more, all squeeze into the KMOX program schedule. Ron Jacober and Mike Kelly host "Sports Open Line" with nationwide phone calls from 6 to 8 p.m. weeknights. KMOX also provides CBS News, business news, traffic, weather, sports, and farm reports, earning the title "The Total Information AM."

Several stations provide all-news service, 24 hours a day. "All News 67," WMAQ in Chicago, is a Group W station which broadcasts White Sox and Bulls games along with news from CNN and NBC correspondents. Chicago also enjoys "Newsradio 78," WBBM, a CBS station that covers Black Hawks hockey play by play. Two other powerhouses cover opposite coasts of America for CBS News. "Newsradio 88," WCBS in New York City can be heard as far



MORE THAN JUST THE HEADLINES.

away as Maine and North Carolina in the daytime. Both are heard regularly in Europe at night. The West Coast tunes to 1070, KNX, the CBS all-news station in Los Angeles. It's hard not to hear a CBS news station somewhere.

If you call the road your home, two stations cater to your needs, WBAP, 820 kHz, in Fort Worth, Texas, presents "The U.S. 1 Truckin' Show," hosted by Bill Mack, every weeknight from midnight until 6 a.m. For 20 years it has been the source of soothing country music and trucker news. For a walk on the wild side, check out WLW's Truckin' Bozo, Dale Sommers, during the same time slot on 700 kHz.

Many clear channel broadcasters consider themselves "full service" stations, providing adult contemporary music and light talk during the day, and talk and sports at night: KNBR 680 San Francisco, WGN 720 Chicago, WSB 750 Atlanta, WCCO 830 Minneapolis, WHAS 840 Louisville, WWWE 1100 Cleveland, WOAI 1200 Texas.

George Weber could be the most



interesting, bizarre, explosive and entertaining man you'll find on the radio, and you'll find him on the "Flip-

side" of Denver's "85 KOA Newsradio" from 8 p.m. until midnight. Then Rick Barber, the polar opposite of Weber, eases you through the worst night with his calm and collected friendly talk show. KOA's coverage of the Denver Nugget season can be heard throughout the West.



It's easy to see why WJR "Stands for Detroit." A ratings leader for decades, it is the center of information, sports, and entertainment for Motown. WJR airs Tigers baseball, Red Wings hockey, and covers locker room talk on "Sportswrap" with Frank Beckman, weeknights from 7 to 8 p.m. Kevin Joyce transports Detroit night life to your home on "Nighttime Detroit" where the famous use WJR's microphones. "Night Talk 76" with Bob Hynes chats all night with Detroit listeners until dawn.

KDKA RADIO 1020

One Gateway Center Pittsburgh Pennsylvania 15222 (412) 392-2525

"America's First Radio Station" went on the air on November 2, 1920, and continues to be a superstation on 1020 kHz, where you can hear Pirates baseball, Penn State football and Penguin hockey. KDKA offers talk shows every night with hosts Fred Honsberger, Mike Pintek, and Bob Logue, live from their studios in Pittsburgh, Pa.

If you are within 500 miles of Salt Lake City, you can hear "The News Authority" KSL infotalk shows 24 hours a day. At night, KSL has almost a worldwide signal carrying "The Larry King Show" and a variety of live sports events.



The flagship station of ABC's Talkradio Network is "Talkradio 77" WABC, New York. Sonny Bloch's financial advice show airs weeknights from 8 to 10 p.m., followed by Tom Snyder, from the studios of KABC, Los Angeles, with the hottest guest from the Hollywood entertainment scene. Listen to Rush Limbaugh and Bob Grant's assertive and outrageous talk shows. In the Midwest you'll hear ABC Talkradio on WLS 890 Chicago.

From the unlikely location of Schenectady, New York, comes one of America's oldest radio stations, "The Spirit Of the Northeast," 810 WGY. Call 800-TALK WGY to join in "Contact 81" weeknights or Art Murphy's late night talk show that follows.



Alaska has a superstation, too. KFQD was the first station established in the 49th state, and continues to be its strongest. Millions of people depend on the station, especially during poor weather or disasters. KFQD installed a 250,000 watt generator as a power backup for their studios and transmitter. You'll never hear them go off the air for more than 10 seconds. Adult contemporary music is their format, with Larry King on late nights on 750 kHz.

It doesn't matter where you are, or what kind of radio you have, you can hear these stations. Listen to all of America on the AM clear channel powerhouses. For a complete listing of America's 50 kilowatt stations, and stations

that cover sporting events, send an SASE to "American Bandscan" today.

Bits 'n' Pieces

Throw out your radios. In two years, they will be obsolete. Digital radio will be here soon and will change broadcasting forever. One transmitter will provide all the stations in a given area using only 100 watts output power. The sound will be free of static and multipath making reception rock solid, even in your car, with full CD quality.

You'll have to get used to a whole new set of characteristics with this new medium, too. Digital radio does not fade. When a signal becomes weaker, a noise that sounds like popcorn appears and total silence follows. Advanced receiver designs remove the popcorn effect, so you either have the sound, or you don't. DXing will be very limited because this service is slated to be broadcast in the "L-Band" of microwaves around 1.5 gigahertz. Experts have predicted that all AM and FM radio stations will probably cease operation in less than 20 years.

Digital radio is already being broadcast in Europe via the Astra 1A and 1B satellites, and is available on a variety of cable television systems throughout the United States. The National Association of Broadcasters has endorsed Europe's Eureka 147 system as their standard, and many American companies have already begun development of radios, transmitters and broadcasting schemes to grasp the profit potential of this revolutionary medium in its early stages.

Mailbag

Many reference books list broadcast stations by frequency, call letters and city, but where do you go if you need to know more? The answer is easy. The new 1991 edition of *The IRCA AM-FM Almanac* has complete listings of affiliates for news and talk show networks, syndicated music and religious programs, AM-FM simulcasters, station slogans, Canadian and other foreign broadcast groups, sports networks, stations in AM stereo, and many articles on AM broadcasting.

The 240 page volume, produced by The International Radio Club of America, is available in a comb bound or loose leaf format for \$15 postpaid. Send your check to Ralph Sanserino, 11300 Magnolia #43, Riverside, California 92505.

If you love to experiment with longwave and mediumwave reception and transmission, Ken Cornell has a wonderful book for you. His *Low and Medium Frequency Radio Scrapbook* has just been updated and released in a new seventh edition. Ken will guide you into making your receiver and antenna system an amazing DX machine. Small, low powered, license-free transmitter projects are also described in detail, including sources for parts. It is a welcome addition to any ham or DXer's library.

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.

Just send \$17.50 to Ken Cornell, 225 Baltimore Avenue, Point Pleasant Beach, New Jersey 08742. DXers outside of the U.S. should send \$21, and \$23

for customers in Australia and New Zealand. Please send U.S. funds.

New station grants

Where are the latest stations in the nation? Right here: Tucson, AZ 104.1; Bayside, CA 91.5; Selbyville, DE 97.9; Lecanto, FL 88.3; Kahalu'u, HI 106.1; Norton, KS 106.7; Spring Valley, MN 104.3; Atlantic City, NJ 107.3; Monroe, NY 89.3; Wilburton, OK 103.7; Mansfield, PA 92.3; Scranton, SC 102.9; Barlett, TN 92.9; Ellensburg, WA 90.7; Montgomery, WV 93.3; and Vinton, VA 101.5 Courtesy of the *M Street Journal*.

For sale

If all your leaves are brown and your skies are grey, you might like this California dream station. It's an AM and FM combination with a great signal in a noncompetitive market available now for \$1.8 million. Financing is available for any qualified buyer. Contact LaFrance Media for details: 415-937-9088.

WRPX 740 AM could be yours for \$325,000. Located in Hudson, Wisconsin, their hefty signal covers the Minneapolis/St. Paul market with ease. This area has fast business growth providing the station with huge potential for future advertising sales. Bill Starr, at 612-455-8250 can tell you all about it.

Does the Lone Star State appeal to you? The leading station in Amarillo, Texas, KQIZ-FM, is available for \$1.9 million. A cash flow of \$208,000 in 1990 makes it a very attractive property for the price. Terms and financing are possible for the right prospective buyer. Write to: Wiskes/Abaris Communications, 650 Executive Drive, Willowbrook, IL 60521.

International bandscan

■ Calling all British DXers. This could be the catch of the year, especially if you listen to the mediumwave broadcast band. South Shropshire Communications is operating a one watt experimental station on 1512 kHz, using a 60 foot antenna mast and eight 100 foot ground radials, at their Villa Farm testing ground near the town of Ludlow. Listen for tones and station identification announcements, because that is all they are allowed to transmit. No regular entertainment programming is permitted. Smaller antennas and ground systems will be tested in the future. Eventually, SSC will market an entire line of easy-to-use equipment for special events stations in the United Kingdom. The DTI, Britain's answer to the FCC, occasionally grants temporary licenses for low-power transmitters at events like county fairs, air shows, and other public events to announce parking and other information.

PIRATE RADIO ON VIDEO

INSIDE PIRATE RADIO is a first hand look into the underground world of the growing free radio movement.

In this video, you'll talk to author and Piate Radio monitoring expert, Andrew Yoder, about when and where to listen, logging, QSL's, drop boxes and more.

Also, sit in the studio and talk with experienced Pirates about why they do it, programming, equipment and more. Then go into the field with them to broadcast!

Plus, a special bonus section: **How To Avoid the FCC if You Broadcast!**



INSIDE PIRATE RADIO retails for \$19.95 (VHS) including S/H. We offer a money back guarantee and accept Visa, MC, checks and UPS C.O.D. **\$19.95**

THE FRANKLIN VIDEO GROUP
875 NORTH YOUNG STREET
FRANKLIN, INDIANA 46131

1-800-255-5659



Running Time
Approx. 60 min.



SSC hopes to produce low-power AM stations that can be moved almost anywhere and set up with little time or effort. *MT* reader Andy Cadier received the 1512 kHz broadcasts at this home in Folkestone, Kent, over 250 miles away.

■ Czechoslovakia is enjoying a new regional station: Radio Regina, serving Prague and its vicinity on 792 kHz, and 70.8 and 96.8 MHz VHF. The BBC World Service is being relayed on 101.1 MHz in Prague, 89.3 MHz in Bratislava, and 92.6 MHz in Brno.

■ Southern Africa is also enjoying the BBC World Service. A new 100 kilowatt relay transmitter has just gone on the air in the nation of Lesotho on 1197 kHz and is on the air from 0300 to 2115 UTC daily. Radio Tanzania has relaunched its separate national and commercial services. The national service is heard on 837 kHz from 0200 to 2100 and the commercial service uses 657 kHz starting at 0900 UTC until 2100 UTC.

■ A popular station of cruise enthusiasts, Radio Antilles on Monserrat in the Caribbean, is back on the air on 930 kHz with a 20 kilowatt transmitter. Later this year, their power will be upgraded to 100 kilowatts and should be heard in the continental United States with ease.

Credits: Many thanks to America's clear channel broadcasters for voluminous information about their operations. Also, thanks to the British DX Club, *Broadcasting Magazine*, *The M Street Journal*, *The Atlanta Constitution*, Jim Boehm, Phil Bytheway, Ken Cornell, Andy Cadier, Bruce P. Johnson, Bruce Portzer, and Ron Carruthers.

TVRO in a Nutshell

My thanks to John Clemens of Malibu, California, who wrote recently with a number of basic questions concerning the whole subject of satellite television. His questions make me realize that every now and then it's a good idea to get everyone up to speed on many of the things that are mentioned in this column.

It's easy to assume that all *Monitoring Times* subscribers have been with the magazine since the beginning and somehow understand all the little abbreviations and buzz words that one tends to sling around in these sorts of technically oriented articles. So, here it is: everything you need to know about satellite television in 1,000 words or less.

In the beginning:

In the natural evolution of the species it was discovered that we would need to communicate on a global, instantaneous basis. While the rest of us were without a clue as to how to do this, there was a young radar technician who, in the late 1940s, imagined that, if we could place three satellites an equal distance apart at a height of 23,000 miles, roughly the circumference of the earth, these devices would appear to be in a stationary orbit. Signals from any part of the world could be bounced to any other part of the world by reflecting off these satellites.

The rest of us decided to call this belt along the equator in which these satellites reside "the Clarke Belt" in honor of the technician who was Arthur C. Clarke.

Plodding progress

Meanwhile, there were a couple of wars to go through, which, along with a space race, did a thorough job of distracting science from the important task of inventing satellite TV. First there were Sputniks and Telstars and all kinds of other primitive space junk which would bring us around, finally, to the sophisticated level that we now enjoy.

Another Soviet first

Would it surprise you to know that the Soviet Union had a system of satellite-delivered television before the United States did? Would it further surprise you to know that, in fact, we came in a distant third in this space race?

Well, it's true. In 1963 the Soviets were beaming regular programming to earth stations for retransmission across their vast country. Ten years later the Canadians were doing likewise. It wasn't until 1974 that Time, Inc. launched its pay-TV service, Home Box Office, via Westar 1.

Satellite television today

A short 17 years later, there are roughly 144 channels of programming broadcast, split roughly 50/50 scrambled and unscrambled, with well over 100 separate audio subcarriers and at least that many narrow-band Single Channel Per Carrier (SCPC) audio services as well.

Satellite receiving systems have plummeted in price since the late 1970s when the first systems were available, from \$35,000 to around \$1,000. Higher power satellites which are to replace the existing fleet will make systems even smaller and cheaper. Within a few years satellite receivers will be built into television sets, and satellite dishes of three feet in diameter will give excellent reception. The outlook couldn't be better.

How it works

Once these satellites have been launched and secured in their "orbital slot," their position is maintained by a ground station which constantly monitors the craft and makes the necessary adjustments to keep it in geosynchronous orbit. Once set, the bird is open for business. On C-band satellites, the bird is divided into 24 channels: 5.9 GHz to 6.4 GHz on the trip up (uplink) and 3.7 GHz to 4.1 GHz for the trip back to earth (downlink). Ku band is 14.0 GHz to 14.4 GHz up and 11.7 GHz to 12.1 GHz down.

These signals are beamed back to earth over a wide area known as the footprint. Any earth station within the footprint may receive the signal. Power is usually higher at the

center of the footprint and weaker near the edges. This has to do with the curvature of the surface of our planet. Power on the oldest satellites was around four watts with current standards about twice that. The next generation of satellites, the first of which is scheduled to go up late this year, will have an output of about 16 watts.

Satellite signals as described above are in the microwave range and travel in a line of sight. They do not go through things like trees or buildings. By the time the signal reaches your back yard, it is extremely weak. An antenna cut to the 3.7 to 4.1 GHz range would do very poorly. For that reason it is prudent to erect a massive reflector to gather these microwaves and concentrate them on the antenna. It has been discovered that a parabolically-shaped reflector does this best. That's why we have satellite "dishes."

Signal processing

The feedhorn is a circular device which surrounds the microwave antenna and helps direct the microwaves to the antenna. From there the signal is sent along a short channel which is called a wave guide. It is at the wave guide that the signals are converted into electrical energy and sent into the Low Noise Amplifier (LNA).

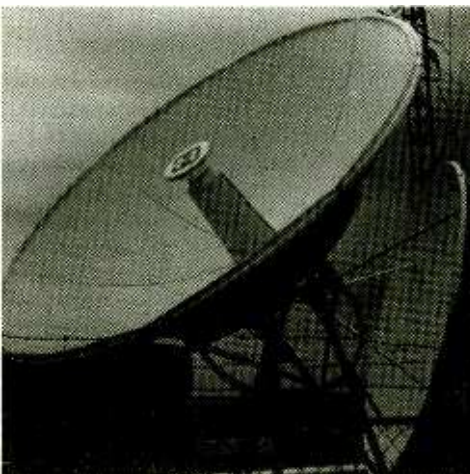
It is the job of the LNA to amplify this weak signal without introducing any more noise into the signal as possible. For that reason "low noise temperature" LNAs are used. The temperature is measured in degrees Kelvin (K) and an LNA is thus rated as, for example, a 45 degree LNA. Except that these days the LNA is built into the same unit as the downconverter and so the device is called an LNB (Low Noise Block downconverter).

It is the job of the downconverter to convert downwards the signal from the LNA. Frequencies in the GHz range don't travel very well in the standard RG-58 cable so the signals are converted from the block of GHz frequencies to a block of MHz frequencies. An industry standard of block downconversion has evolved to be from 950 to 1450 MHz. It is this block of frequencies which finally makes it into your home and into the back of the satellite receiver.

Bells and whistles

A very simple receiver is all that is really needed to tune the channels. In fact, early satellite systems involved downconverting the signal from the 3-4 GHz range to the VHF TV range. This allowed your TV set to be your satellite receiver.

Since the beginning, however, all manner of extras have been added to the receivers'



By the time a signal reaches your back yard it is extremely weak; without a massive reflector, an antenna cut to 4.1 GHz would pick up very little!

functions. Some channels are scrambled using the VideoCipher II system (VC II). A descrambler is now built into most new receivers. Other things may be added to the receiver such as a Single Channel Per Carrier receiver or a data receiver to enhance the enjoyment of your satellite TV system.

Future of satellite technology

Each year brings more interesting changes to satellite television technology. With the video you can watch, the audio you can listen to and the data you can receive, it is clear that dollar for dollar, satellite television provides the most entertainment, information and expanding technology which is available in the world. The old cliché, "The sky's the limit," has never been more true.

How you can get started

If you've got the money, your first step is to call your local satellite dealer and arrange for a demonstration. Look in your local yellow pages under Satellite Television. If you're pinching pennies, go there anyway, and don't be afraid to drool. Ask if they have any used systems. A good dealer will try hard to satisfy your needs.

If you think you can handle the job, and it isn't that hard, try doing it yourself. You may be surprised how much you can save and how much you can learn by doing it yourself. Call the following for their catalogs of TVRO gear:

DBS Satellite Television	800-DBS-0046
NBO Distributors Inc.	800-346-6466
Sky Store	800-328-7733
Skyvision, Inc.	800-543-3025
West, Inc.	800-222-9064

If you want to read more about the subject, there are lots of very interesting books on the subject. Many of the above mail order companies have a thorough list of books of interest to the new TVRO hobbyist.

TRANSPONDER NOTES

Willie Nelson has started a country music channel he calls Outlaw Music Channel (Westar 4 transponder 17 7.80 MHz). The service is being offered to cable companies and, of course, TVRO users free of charge.

CNN has been feeding its International Channel on Galaxy 2 transponder 1. This appears to be replacing their Washington bureau feed.

The International Channel has moved to F4.12 to make room for the Monitor Channel which debuts this month.

CTV: The Comedy Network is the new name for the combination of The Comedy Channel and HA. There was apparently not enough ad revenue or channel space on local cable companies to support two comedy

channels. This is another instance of the inadequacy of cable technology. Dish owners have been enjoying both services.

The proposed DBS service PrimeStar which is slated to start sometime this year will carry TV-Japan, a 10-hour-per-day broadcast of live news and sports from Japan. Included in the programming will be educational and documentary shows. It will be advertiser supported.

Multi-Channels news reports that C-SPAN, the Cable Satellite Public Affairs Network, gained well over 100 new cable systems with its coverage of the Gulf War. The service was the unsung media hero of the war with its live coverage of all briefings and no commentary. The BBC World Service is carried on audio subcarrier 5.40 MHz 24 hours per day on C-SPAN (Galaxy 3, 24).

General Instrument (GI), makers of the VideoCipher II, have teamed up with the Massachusetts Institute of Technology (MIT) to work on development of High Definition TV (HDTV) technology. The group will be known as American Television Alliance.

MAILBAG

Gary Harden of Augusta, Georgia, wants to know more about "BlackCipher" which was mentioned here a few months back.

Gary, at present the future of the Canadian company which has been marketing the device is uncertain. This is because General Instrument has them tied up in a legal battle involving copyright and patent infringements. Reports in the trade journals are all that I can go by, but prospects for the company seem dim.

Ralph C. Kidd of Jefferson City, Missouri, wants more information on audio transmissions from satellites.

Essentially, there are two types of audio transmissions which would be of interest to TVRO users: FM audio subcarriers and FM/SCPC (Single Channel Per Carrier). For the first one, you'll need nothing other than your satellite receiver. These subcarriers have nothing to do with the video programming but require the presence of a video carrier to be on the satellite. There are well over 100 such transmissions.

FM/SCPC signals are much narrower in bandwidth and require using an SCPC receiver or scanner or cheap little TV band radio to receive the programming. These signals are not related to a video carrier which is why they are on channels which have no video.

A complete list of FM audio subcarriers and SCPC programmers is found in Westsat Communications' Satellite Channel Chart. Published six times per year, a subscription is \$36. Write Westsat Communications, P.O.

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When requesting a reply from MT authors, always enclose an SASE as appreciation for the time they are taking to share their expertise.

Box 434, Pleasanton, CA 94566.

Patrick Paventa of Hawthorne, New Jersey, writes that his "... town of 18,000 people received its very first request for a residential dish. The zoning board rejected the rooftop location that was desired, saying it must be on the ground."

Patrick, I guess there's just no pleasing everyone. Seriously, these zoning regulations are a nuisance but are easily overturned. The FCC has written very strong rules concerning the right of Americans to have satellite receiving dishes on their property.

Unfortunately, these rules are not widely available. The American Home Satellite Association, which is now defunct, had a legal package dealing with just those problems. There is a chance that you may still get the package by writing AHSA 16 Broadway, Suite 400, Valhalla, New York 10595. As of late last year, they were charging \$40 for the package.



Passing the Test

The first No Code Technicians should now be on the air enjoying their new license. Presently the privileges of the new license include all amateur frequencies above 30 MHz with the same modes and power levels the present Technician holds. There has been some discussion of limiting access to the two meter band but hopefully good sense will prevail and our new No Code friends will be allowed full use of this band!

To encourage what may be the most positive move in amateur radio in the past 30 years, I will try to devote part of each column to activities in the VHF/UHF portion of our bands. We want these newcomers to get the most out of their new license!

To get that new license all one need do is pass the Novice and Technician written tests. To add Novice and Tech HF freqs, the No Code licensee will need to pass a five word per minute written test (which can be taken at any time).

There is also a wealth of books, tapes and computer programs available to help you learn the information required to pass the new tests. Books by AMECO, ARRL, and Radio Shack all provide good material for the newcomer.

Boning up by Computer

Recently I had the opportunity to review the amateur radio license computer programs that are being marketed by MFJ. There are programs available for Novice, Technician, General, Advanced and Extra. Each program contains all of the questions in the question pool for that grade of license. When initiating a session the user will be taken through each of the questions in that particular pool.

The MFJ Tutor program provides discussion of each individual question, diagrams and schematics, where required, and will test you on a particular subject, or take you through a general session where each subject in a particular test is covered. It can readily tell you where your weak points are with an auto weighted session and then guide you to proper studying for your exam. And when you wish, the program will prepare a written test for you to test your preparedness. There is even a calculator key provided so you can do your figuring right on the screen.

However, in my opinion, the program's best selling point is the fact that it is straightforward, uses plain English and minimizes the use of buzz words and technical terms.

The MFJ Tutor is available from MFJ Enterprises, PO Box 494, Mississippi State, MS 39762 at a price of \$29.95 plus shipping per program. It is available for IBM type computers only.

Make Logging Easy

One of the most tedious tasks in ham radio is

keeping a log. Several years ago, I began to use a logging program on my computer. It was an excellent program, but rather complicated and requires at least two disk drives to use. Since I like to operate portable for contests, and sometimes go on the road to provide new counties to county hunters, I thought a simpler program for the Tandy 1100 lap top would be nice to have.

On the suggestion of Robin Gist at Renaissance Software I ordered a program called LOG-EQF. After receiving it several days later, here's how it performed:

LOG-EQF can be run on a single drive machine with only 256K of RAM. It can be configured to log contests, or for normal operation. In the contest mode, it asks the name of the contest, the number of QSO's per page (printed), the points for each CW or FSK QSO, points for phone QSO's and, if each band worked requires a dupe sheet, it will also automatically assign a serial number to each QSO if you so request. You can also enter a default sent exchange (i.e., 599pa) and a default receive exchange and it will automatically list your multipliers.

In the normal mode you can view detailed log entries, take a quick view through the present log, print the book, print QSL labels, log new entries either automatically or manually, edit an entry, or do a sort by any field. The given fields are callsign, name, city, state or country, frequency, date, mode, time on/off report received, power level, QSL status, and remarks.

In addition, if you hear a DX call you do not know, simply enter it, hit F5 and the program will give you the country, CQ zone, ITU zone and continent.

When you use this program it is an easy matter to type in a call, and retrieve all the info on the last QSO you had with a particular station. Imagine how nice it is to simply pick up on a QSO that you had a year ago with someone. Your ham buddies will think you have a super memory when you use EQF-LOG.

Log EQF is available from Renaissance Software, 1-800-525-7235. Price is \$3.50 for a 5-1/4 inch or \$4.50 for the 3-1/2 inch disk plus shipping of \$4.00. If you are looking for an easy to use, comprehensive log program, this is it!

Old Sol

Yes, the cycle is over. No, the cycle is not over. ...?? So it goes; There are two points of view about the present sunspot cycle, and either could be right.

The solar flux still climbs into the 200's frequently, indicating there is more to come, but it is not as high as it was last year at this time. There is still plenty of life left in this cycle no matter what, and we should be able to enjoy decent propagation for at least three more years.

Updates

4W and 70 (old) north and south Yemen have been deleted from the DXCC (DX Country Code) list and the new 70 (New Yemen) is now accepted for DXCC.

Belgium will use the prefix "TO" until July 21, 1991 in celebration of the 60th anniversary of the King of Belgium.

U2MIR continues to be active from the MIR space station on 145.55 MHz. Musa is usually on at about 1200 to 1300 UTC. MIR will be active on packet either late summer of 91 or early fall. QSL cards for MIR should go to Valery Agabekov, UA6HZ, Box 1, 375600 Yessentuki, USSR.

SAREX's robot packet operations were extremely successful with at least 627 different QSO's during the December mission. During the time the Robot was on the air, it issued more than 20 numbers per hour. Future missions will include more robot and conventional packet operation. Stay tuned for details.

Packet Pals

Ever have a pen pal? Pen pals have been popular for many years. A young lady here in Pennsylvania (I could not locate her name and call) has come up with a great idea: Packet Pals. She put out a note on her local PBBS (packet bulletin board system) for packet pals and has



Bob Comeau, VE1ARN, is a strong promoter of the amateur hobby through schools and Scout clubs. If you have an idea for the promotion of amateur radio, send it in!

Bob Seradi's Ham DX Tips

Operating from county fairs, museums, historic sites and exhibits, or in honor of special days, special stations offer color QSL's or certificates to those who can hear or contact them. Most are active Saturdays and Sundays between 1400 to 2200 UTC in the following frequency blocks: 14235 to 14290 kHz, 21350 to 21395 kHz, 28350 to 28450 kHz. Such stations may be heard from surrounding states on 40 meters between 7235 and 7270 kHz. The biggest number of these operations are in the U.S., but there are special events stations (with special and often unusual call signs) from Canada that can be heard as well. Of course there is plenty of non-U.S./Canadian ham activity as well and here's some I hope that interests you:

ANDORRA - While this country no longer has an SWBC station, it can still be added to many an SWL's collection if he or she is able to hear one of the many amateur operations that take place from here each year. Look for several members of the Swiss Ham club USKA as they operate C30EUA (the prefix EUA = Europe, Andorra!) 10 to 20 May on the following frequencies: SSB--3795 7045 14195 21295 kHz. Code--3505 7005 14025 21025 and 28025 kHz. All reports go to USKA Section Vaudois, Box 3705, CH-1002, Lausanne, Switzerland ...

ANTARCTICA - It is the start of the long antarctic winter, which means those amateurs located here often operate more often to pass the long nights. Look for Y88POL who operates from the German scientific bases here on 10101 to 10105 kHz operating code starting at 2330 UTC most days. QSL to Y32WN, Siegfried Gedel, Oststr 55, Mitweida, Germany (and be patient as it may be a few months before the logs can be sent from Antarctica to Germany so that QSL'ing can be done) ...

ARMENIA - UG6JJ has been frequenting 28555 kHz at 1330 UTC most days. QSL to: 9 A 33-2 Norki Massiv, 375062, Yerevan, Armenian SSR, USSR ...

ASIATIC USSR - Operating from "the border of Europe and Asia" will be members of the "Union DX Group" who will put special stations RZ9W/RA9SB and U9W/UZ9SWO on all bands 106 to 10 meters all modes (code, SSB, and RTTY). Send reports to: Yuri Suraev, P.O. Box 7, Orsk 462401, USSR ...

BHUTAN - Noted Ham DX'er Jim Smith, VK9NS, and his wife Kirsti, VK9NL, will be operating on

DX-pedition from here as A51JS till 15 May. When on a DX-pedition Jim likes to use 14142 kHz, 21295, and 28495 kHz. Send reports to: Jim Smith, P.O. Box 90, Norfolk Island, 2899, Australia ...

KAZAKHSTAN - Look for UL7JC from this portion of the USSR daily on 14185 to 14190 kHz starting at 0250 UTC. QSL to his QSL manager: K8BTH, Wayne Witlse, 14460 Basseti Ave., Livonia, MI 48154 ...

KENYA - Those having trouble logging this African country may try for 5Z4BI on 28485 kHz daily at 1945 UTC. His QSL manager will confirm your QSL requests to: John Parrott, P.O. Box 5127, Suffolk, VA 23435 ...

KUWAIT - Look for 9K2SH (whose QSL'ing chores are taken care of by: Dr. Selim El-Rifai, P.O. Box 31, A-8011 Graz, Austria) on 14240 kHz most days starting at 2130 UTC ... or 9K2DZ who operates RTTY around 21075 to 21085 kHz at 1100 UTC most days. 9K2DZ has yet to determine his QSL route now that he may operate from here again ...

QATAR - also operating from the Gulf region is A71DC on 21345 kHz most days at 1800 UTC. QSL to: Ahmed Alsayed, P.O. Box 80074, Alwakra, Qatar ...

SURINAM - For those who can monitor amateur RTTY PZ2AC has been on 28080 to 28097 kHz daily at 1330 UTC. Send your reports to his QSL manager: WA4JTK, Alan E. Strauss, 17401 NW 47th Ave., Carol City, FL 33055. On SSB try for PZ1DY who can be found on 28460 kHz to 28470 kHz at 1330 and 0130 UTC. Send reports to: Imro, Box 9131, Paramaribo, Surinam ...

ZAMBIA - For RTTY fans 9J2BO operates 28080 to 28095 kHz at 1100 UTC most days. He can also be found by SSB fans on 21335 at 1830 UTC. (Reports go to W60RD, Norm Friedman, P.O. Box 19055, Encino, CA 91416 ... who handles his QSL's). Code fans check 30 meters 10101 to 10105 kHz for 9J2HN around 0100 UTC. Reports for this operation go to QSL manager JK1UWY, Hisao Noda, 1-28-36-1212 Bunka, Sumida-Ku, Tokyo 133, Japan ...

While not DX, the "Good Sam RV Net" offers assistance to travelers across the US and Canada, with emphasis on those operating from Motorhomes. This net can be heard passing along travel info, tips, and help to those who need it on 7292 kHz Monday through Friday at 0200 UTC and 14240 kHz Sundays at 1900 UTC ... 73 and Gud DX de Rob

been getting great response.

This would be a great idea to introduce into schools, to get youngsters interested in ham radio. If the school has a ham club, there is no problem; however, if your local school does not have a ham club, perhaps you should offer to put on a demonstration of ham radio, and even form a ham club.

Show the kids how ham radio works, and hit packet big, tell them about how messages can be left in mail boxes and then ask if anyone would like a packet pal, then drop the packet mail off at the school as frequently as required. Bet it won't be long before packet pals will want

to talk to each other in person, or better on the air.

I would like to hear from those of you who are working toward increasing the ham population with any ideas you may have.

Remember to Write

This is your column, so write to the column with your ideas, comments, and news of what has been going on at your station. Include a photo and you may get to see your mug in the pages of *MT*. 73 all, de Ike, N3IK



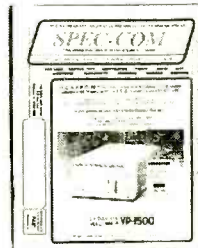
FCC NO-CODE AMATEUR RADIO LICENSE

The FCC recently passed Docket 90-55 which for the first time allows a new codeless entry ham radio license of technician grade. Privileges 30 MHz and above — All modes! (See R.E. article in April 1991 issue).

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Something for Everyone

Something for everyone -- that's the way it looks these days. Judging from the mail, it appears as if nearly everybody is hearing a pirate or two. So, let's have a look at some of the loggings.

Yes, you can find pirates on the mediumwaves. Pennsylvania's John Demmitt found an unusual one on 1610 kHz, and it was living dangerously by broadcasting for over several hours. John first tuned in at 0540. The station IDed as the University Network in California, played a variety of music including jazz, and had an announcer complaining of foot problems. At one point the station left the air with transformer troubles.

In Florida Mark Seiden checks in with some nice logs. Radio Free North America showed up on 7415 at 0301 with the Bullwinkle Bulletin Board Service. KUSA Radio Wisconsin was on the same frequency in USB at 0437. KUSA claimed three kilowatts of power and a European Service on 25970. However, Mark reports this was not audible.

Joe Thompson, writing from Georgia, also heard KUSA. This time it was having an 0730 UTC QSO with Radio Music on 7415. Radio Music announced an address of Box 116, Still River, Massachusetts 01467.

A special "Outer Limits" hello to Joyce Harvey, who lives in Wisconsin. Joyce was interested in all these logs of KUSA Dairyland, as KUSA Wisconsin is also known.

Looks as if the folks in the Dairy State are taking to the airwaves, Joyce.

Meanwhile the West Coast is represented by California's Eric Forslund. He found Radio Anarchy on 9252 kHz at 0026. This station has a philosophy in keeping with its name. Eric reports Radio Anarchy calls itself "the enemy of the state."

Also in California is Skip Harwood, who is one of our regular "Outer Limits" contributors. In addition to KUSA, Skip had another station declaring Wisconsin as its home. This was WKAR at 0500 UTC with heavy metal on 7415 USB.

Hope Radio International gets out all over the place these days. Skip has it on 7412 at 0300. At one point Skip says somebody read numbers in USB. Does Hope Radio sell air time to the CIA these days?

In addition to his log book, Skip's QSL collection is growing with one from Radio Anarchy recently received to announce the change to 9252 kHz. According to Skip, Radio Anarchy welcomes your phone number with your QSL report to Box 109, Blue Ridge Summit, Pennsylvania 17214. That way the operator can give you a call sometime.

Finally we might note that Skip also bagged Jolly Roger International. The Jolly Roger was flying on 7417 at 0538 with rock music.

The Californians really kept the old "Outer Limits" mailbox full this time around.

Norman Alexander wrote us to say that he also heard Hope Radio International on 7412 kHz and has successfully verified it. Norman says the signal was strong, yet originally most of Hope's logs were from back east. Could someone be relaying it?

As far as we know, Norm, you are hearing the real thing. Hope puts in a solid signal



Thank you for your report on the reception of
ACTION RADIO

This confirms your report of our

DATE: DECEMBER 25, 1990.....

TIME 2320 - 2334..... UTC

FREQ. 7415 kHz.....

POWER 100 watts.....

ANTENNA 1/2 wave dipole.....

MODE AM.....

BROADCAST

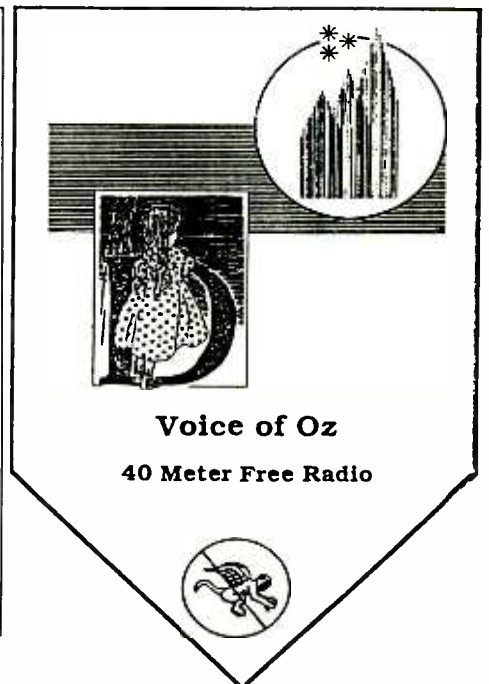
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down here in Florida. Norm has also heard Radio USA on 7415.

Well, if Hope Radio makes it to California and Florida, it also goes north of the border as well. That is what we hear from Matthew Milligan. Matthew is in Ontario and heard them on 7413 at 0115 and repeating the program at 0315. Matt is still another monitor of KUSA. He had a QSO on 7413 which involved a station identifying as Radio Angus.

What is a month without at least one Pat Murphy log? This time it was the Voice of Oz on 7415 LSB at 0023. Meanwhile ye editor was happy to come across a Voice of Oz QSL in his mailbox.

One of Pat's more unusual recent logs from his Virginia QTH has got to be a station identifying as Airhead Airways. Pat came across that one on 7415 USB at 0356. The station played Led Zeppelin and had rather negative things to say about Iraq.

Minnesota's Alan Masyga has been doing well in the QSL department over the past several months. WORK, East Coast Beer Drinker, and Action Radio have all verified Alan's reports.

When Alan is not sending reception reports, he is getting additional logs. The Voice of Salvation showed up on 7415 in LSB at 2330. Radio Free North America was monitored on 7415.

Clandestine Corner

In New Hampshire Bill Battles got himself a genuine Middle East War relic on 17940 between 1600 and 2200. Bill heard references to Baghdad and jihad (holy war). It appears that what you had, Bill, was Mother of Battles Radio from Iraq but relayed via captured transmitters in Kuwait. Those transmitters became one of the war's many casualties, although they did survive longer than might have been expected.



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Bob Thomas reports the clandestine Voice of Free Iraq is on 9570, 9995, 15600 and 17960 between 1300 and 0100. In Florida the best reception has been on 17960.

Tired of the Middle East? Then try for North Korea's clandestine Voice of National Salvation which broadcasts to South Korea from Haeju. It has been heard here breaking through fairly effective jamming on 4453 around 1045 all the way to 1145 and later.

Something of a surprise was the Angolan clandestine, A Voz de Resistencia do Galo Negro, on 15500 at 2100 with a solid signal. This one is easy to identify with its rooster crow interval signal at sign on. The station broadcasts from inside Angola and opposed the Marxist government of that country.

Meanwhile back in the Middle East, look for the Voice of Iranian Kurds in the vicinity of 4065 around 0400 or later. It was the Kurds who were gassed by Saddam Hussein. They have not always fared too well at the hands of Iranians or Turks either. What the Kurds of Iraq and these other countries really want is their own nation.

Look for an unusual numbers station on 9251 and 7880 around 0400 or slightly later. It signs on with the tune "Lincolnshire Poacher" ("Pop Goes the Weasel") played on a calliope. The "Poacher" is believed to be coming from Britain and transmits five-digit English numbers groups.

Broadcasting on Low Band

Wolfman Jack would be jealous. Half a million watts with almost worldwide coverage. It's on the air from Ireland and it's called Atlantic 252. Longwave reception from overseas has been exceptional lately. Now is the time to give them a try.

From a large Victorian house in the town of Trim in County Meath, rock 'n' roll has been pounding out to the shores of the United Kingdom and the European mainland for over a year and a half.

Trim is an ancient market town of 5,000 people, situated at a ford on the River Boyne, about 25 miles northwest of Dublin. Their huge three-sided tower stands about six miles away in Clarkestown. Over 750 feet tall, you'll see it from miles around. Many listeners in North America have added their attractive QSL to their collection and enjoy the sounds nightly. All you have to do is tune in 252 kHz on any longwave radio.

A joint effort of Radio Luxembourg and the Irish Republic's Radio Telefis Eireann, Atlantic 252 is looking for a mass audience, especially those who can not hear rock music from local stations. Station Manager Travis Baxter calls the format "More Music Radio," and it really is.

"We play contemporary hits with a strong percentage of music from the last four years. Other material includes a selection of the greatest hits of the 80s, with some special tracks from the 60s and 70s."

Look for Atlantic 252 right before local sunset until around 0000 UTC, and again at 0600 UTC for an hour or so. Their attractive QSL card is available for an accurate reception report, and return postage. Write to: Atlantic 252, P.O. Box 252, London, W1E 2RA, England.

A familiar sound to any shortwave listener can also be pulled in on a frequency down under the standard broadcast band. The BBC World Service is on the air daily from 0045 to 0545 UTC on 198 kHz.

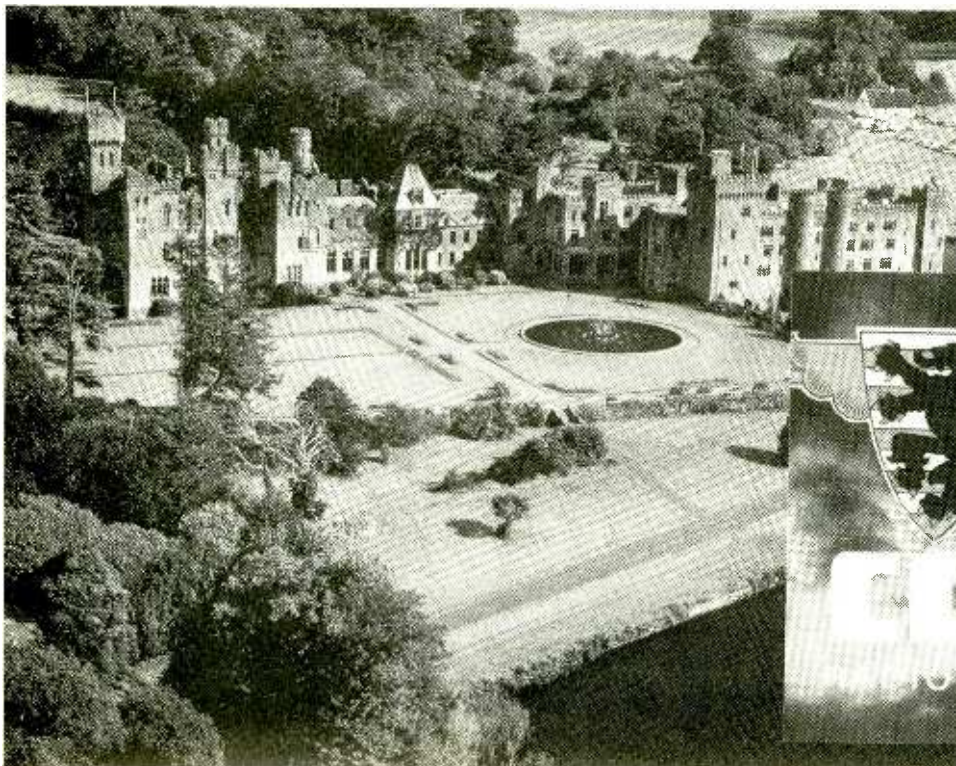
You might think that their British engineers had designed this schedule especially for North American DXers. It coincides perfectly with the path of darkness between Britain and the states. An easy way to verify reception of the BBC on 198 kHz is to compare what you are hearing to a BBC World Service shortwave frequency. The programming should be identical.

Parlez-vous Francais? Longwave signals from across the pond are being received all over the east coast with record signal strengths. With two megawatts, the Radio France transmitter in Allouis is being heard nightly. Look for their France-Inter Home Service from local sunset to 1 a.m. Eastern local time. Although they occasionally play music, you'll most often hear a man and woman with alternating talk, or a phone call or two. Their QSL address is: Radio France, 116 Avenue du President Kennedy, F-75786, Paris, Cedex 16, France.

Radio Monte Carlo could be another easy catch. With 1400 kilowatts, this signal covers most of Europe in the evening, and often makes it to the states. A majority of their broadcast day is leased to Trans World Radio, the famous medium and shortwave religious broadcaster. Tune to 218 kHz when France is strong on 162 kHz.

Longwave broadcasting is alive and well in the world -- and at power levels that make local AM stations cringe in shame. Still, longwave's not the easiest to pick up. With patience, though, you'll capture a truly rare beast.

-- Karl Zuk



Got a yen to hear Ireland? You can hear Atlantic 252, a joint effort of Radio Luxembourg and Ireland's Radio Telefis Eireann. But be prepared to hear rock music.

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Radio-Electronics 7MT02

Computers, YES or NO?

I received several letters from readers who are confused about having a computer to copy RTTY. In last October's issue on page 20, "Tips On Hearing More and Improving Your Shack," Bob Grove stated that he wouldn't have a computer in his shack. The same page pictured Bob sitting in his shack and behind him was a Kenwood TS440, an ICOM R7000 and a Radio Shack Pro 2006.

The fact is, Bob actually has three computers in his shack. Each rig has a microprocessor that controls the functions, stores frequencies in the memory, monitors the buttons and sends data to the fluorescent or liquid crystal display. It performs functions that are similar to a PC computer.

Bob, if you don't want 'em, I'll take 'em. My QTH is a sanctuary for three computers. The main one, a Tandy 1000TL, is in the shack and I use it for RTTY, receiver control, HF and VHF packet radio, a phone modem and writing this column. The second, a first generation IBM PC, is used for DSP (digital signal processing) development and documentation, and it's in one of the upstairs rooms near a leg of my 40 meter dipole. The third, a Compaq Diskpro, is used for word processing.

I can operate all three with very little interference to my ham gear. I have some problems with the DSP board because it's not shielded and it's located, because it's a prototype, outside the computer case. The 40 MHz DSP crystal interferes with my police scanner.

I believe the explanation for my lack of interference is because all three computers are brand names. They all comply with FCC part 15 and they aren't super fast. You don't need a 25 MHz turbo charged 486 PC with a gigabyte of memory in the shack. I also feel that a good antenna system helps.

I received a letter from a retired gentleman, Ken Hydeman of Dayton, Ohio. He wanted to know if RTTY is still around on the ham bands. Well, Ken, RTTY is better than ever. Computers have caused an increase of RTTY activity because nowadays it's easier than ever to get equipment. The old clanking model 15s have been replaced by computers which don't even get grease on your shirt.

Finding the Frequency

Other letters were from readers requesting frequency lists for various utilities, news services and copyable military RTTY stations. I'm sorry, but I just don't have room in my one page column; however, I would like to recommend the *Guide To Utility Stations* by Joerg Klengenfuss. It's available from DX Radio Supply, P.O. Box 360, Wagontown, PA

19376 for \$33.00 plus 1.70 book rate or 3.10 UPS.

The Great RTTY Contest

I only received a few entries to the Great RTTY design contest and the winner is obvious. He submitted a circuit using a PLL tone decoder and it's very easy to build. My test shows that it works much better than the simple circuit that appeared in *QST* in the mid-sixties. I'll announce the results in next month's issue.

Post Gulf RTTY Activity

Now that the hostilities in the Gulf region are over and Kuwait and Iraq are rebuilding, it will be interesting to see if some of the old RTTY frequencies will become active again. During the war it was impossible to catch any activity from that region that was in the clear. Hopefully this will change. I compiled a list of RTTY stations from the region that were active in the past. Check it out. Maybe you'll snag a few.

NNNN

RTTY stations which were active before the Gulf war.

Country	City	Call	Frequencies			
EGYPT	CAIRO	SUA99	3356 KHZ	MIDDLE EAST NEWS AGENCY		
		SUA94	5220 KHZ	MIDDLE EAST NEWS AGENCY		
		SUA79	5849 KHZ	MIDDLE EAST NEWS AGENCY		
		SUA50	13653 KHZ	MIDDLE EAST NEWS AGENCY		
		SUA34	7756 KHZ	MIDDLE EAST NEWS AGENCY		
		SUA246	10150 KHZ	MIDDLE EAST NEWS AGENCY		
		SUA30	10610 KHZ	MIDDLE EAST NEWS AGENCY		
		SUA289	15845 KHZ	MIDDLE EAST NEWS AGENCY		
		SUA291	15935 KHZ	MIDDLE EAST NEWS AGENCY		
		SUA313	19340 KHZ	MIDDLE EAST NEWS AGENCY		
		SUC	3220.6, 4690, 5612, 6860, 10635, 14500, 14631, 14776			
		SUU	3956, 5559, 7317.2, 11016, 12250, 14708, 14738, 17636, 18102.3, 18253.7			
		IRAN	TEHRAN	EDP	5107, 12065 7960 KHZ	IRAN NEWS AGENCY
					8050, 19200 KHZ	IRAN NEWS AGENCY
EPJ	18560 KHZ			IRAN NEWS AGENCY		
EPJ2	19980 KHZ			IRAN NEWS AGENCY		
EPX8	7400 KHZ			IRAN NEWS AGENCY		
EPX9	7800 KHZ			IRAN NEWS AGENCY		
Y7G82	14417.5			GERMAN EMBASSY		
9DM9	5343.5 KHZ					
9DM17	10686 KHZ					
9DM27	17553 KHZ					
IRAQ	BAGHDAD	YIL68	5867 KHZ	IRAQ NEWS AGENCY		
		YIZ74	9867 KHZ	IRAQ NEWS AGENCY		
		YIL70	101.62.5 KHZ	IRAQ NEWS AGENCY		
		YIL71	14373 KHZ	IRAQ NEWS AGENCY		
		YIO71	13523.5 KHZ	IRAQ NEWS AGENCY		
		YIX70	14699 KHZ	IRAQ NEWS AGENCY		
JORDAN	AMMAN	JYF2	14560 KHZ	JORDAN NEWS AGENCY		
		JYF4	9463 KHZ	JORDAN NEWS AGENCY		
		JYN39	3762.5 KHZ			
		JYN41	10965 KHZ			
KUWAIT	SAFAT	9KC7	17362 KHZ	KUWAIT NAVY		
		9KT24	5023, 5027 KHZ	NEWS		
		9KT27	9227, 9231 KHZ	NEWS		
		9KT29	11574, 11578 KHZ	NEWS		
		9KT33	14831, 13835 KHZ	NEWS		
		9KT262	7599, 7603 KHZ	NEWS		
		9KT272	9338, 9342 KHZ	NEWS		
		9KT281	10153, 10157 KHZ	NEWS		
		9KT282	11493, 11497 KHZ	NEWS		
		9KT291	12178, 12178 KHZ	NEWS		
		9KT292	12075, 12079 KHZ	NEWS		
		9KT321	14418, 14422 KHZ	NEWS		
		9KT331	14643, 15647 KHZ	NEWS		
		9KT346	18260, 18264 KHZ	NEWS		
		9KT349	18307, 18311 KHZ	NEWS		
		9KT351	18278, 18282 KHZ	NEWS		
9KT352	18293, 18297 KHZ	NEWS				
9KT356	18640, 18644 KHZ	NEWS				
SAUDI ARABIA	JEDDAH	HZJ	3999, 5373, 5773, 13752, 14370 KHZ			
		HZN46	5740, 12245, 17541 KHZ			
		HZN47	7624 KHZ			
		HZN48	10215 KHZ			
		HZN49	17590 KHZ			
		HZN696	22128 KHZ	SAUDI ARABIA NEWS		
SYRIA	DAMASCUS	YKQ20	10498, 10818 KHZ			
		YKW1	3560 KHZ	NEWS		
		YKW113	15727 KHZ			
TURKEY	ANKARA	TAW5	4815 KHZ	NEWS		
		TCY4	18040 KHZ	NEWS		
		YMA7	3550 KHZ			
		BANDIRMA	YMH5	4562 KHZ		

AIRCRAFT TRAFFIC

Heavylift Cargo Airlines Limited #97, 8960 kHz USB. Full data prepared card, verified by Captain K. Keegan, flight operations manager. Also received three postcards of Heavylift aircraft, a personal note and details of the flight and Heavylift's aircraft fleet. Received in 14 days for an English utility report and one U.S. dollar which was returned. Station address: Heavylift Flight 971, Aircraft Commander/Aircraft Communications Officer, c/o Heavylift Cargo Airlines Limited, London-Stansted Airport, Essex CM24 SQP, United Kingdom. (Lewallyn, GA) *Nice QSL-ed.*

AUSTRALIA

Sydney Volmet, 11387 kHz USB. Full data logo card, verified by W.E. Harry. Received in 258 days for an English utility report and two IRCs. Station address: Supervisor-Flight Service, P.O. Box 211, Mascot, NSW Australia 2020. (White, MS)

CANADA

CBOF-1250 AM. Full data QSL letter and card, verified by Marcel Carriere, CBC Audience Relations. Received in 16 days for an English AM report and one Canadian mint stamp. Station address: P.O. Box 3220, Station "C," Ottawa, Ontario, K1Y 1E4 Canada. (Holbrook, MD)

CKEC-1320 AM. Full data fine glossy QSL card, verified by D. Freeman, with personal note attached. Received in 47 days for an English report and one Canadian mint stamp. Station address: Box 519, 84 Provost St. New Glasgow, Nova Scotia B2H 5E7 Canada. (Holbrook, MD)

Churchill Aeradio, 8891 kHz. Full data letter, verified by R. Bartemleau, FSS Manager. Received in 47 days for an English utility report and one U.S. dollar. Station address: Transport Canada, FSS Manager, P.O. Box 278, Churchill, Manitoba, ROB OEO Canada. (Battles, NH)

ECUADOR

HCBJ, 25950 USB/15155 kHz. Full data scenery QSL card, verified by Glen Volkhardt. Received in 69 days for an English report and two IRCs. Station address: Casilla 691, Quito, Ecuador. (Carson, OK)

IRAN

VOIRI, 9022 kHz. Full data photo card depicting Friday Congregational Prayer, Tehran, without verification signer. Received in 80 days for an English report and one IRC. Also received a program schedule and an anti-American magazine "Echos of Islam." Station address: P.O. Box 3333, Tehran, Iran. (Johnson, IL)

MALTA

Voice of the Mediterranean, 9765 kHz. Partial data QSL card, without verification signer. Received in 136 days for an English report and one IRC. Station address: P.O. Box 143, Valletta, Malta. (Merkel, MO) (Carson, OK)

PAPUA NEW GUINEA

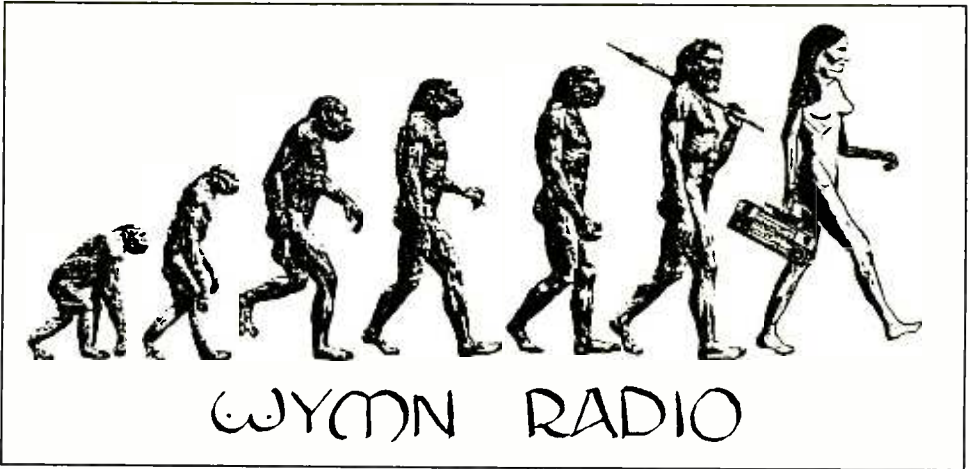
NBC, Port Moresby, 4890 kHz. Partial data Papua Guinea map card, without verification signer. Received in 272 days for an English follow-up report and two IRCs. Station address: (Johnson, IL)

PIRATE

WYMN, 7410 kHz. Full data QSL letter, without verification signer. Received in 53 days for an English report and three U.S. mint stamps. QSL address: P.O. Box 452, Wellsville, N.Y. (Johnson, IL)

SHIP TRAFFIC

ARTHUR M. ANDERSON-WE4805 (bulk carrier) 4075 kHz. Full data prepared card, with ship's stamp and personal note from the captain. Received in 19 days for an English utility report and a self-addressed-stamped envelope. Ship address: c/o Marine Post Office, Detroit, Michigan 48222. (Hill, MI)



Pirate station WYMN makes their point on this QSL received by Tim Johnson of Illinois.

PRESQUE ISLE-WZE4928 (bulk carrier) 4075 kHz. Full data prepared card with ship's stamp and illegible signature. Received in seven days for an English utility report and a self-addressed-stamped envelope. Ship address: c/o Marine Post Office, Detroit, Michigan 48222. (Hill, MI)

RESERVE-WE7207 (bulk carrier) 4075 kHz. Full data prepared card, verified by first mate. Received in 12 days for an English utility report and a self-addressed-stamped envelope. Ship address: c/o Marine Post Office, Detroit, Michigan 48222. (Hill, MI)

EDWIN H. GOTT-WXQ4511 (bulk carrier) 4075 kHz. Full data prepared card, verified by Captain Albert D. Nelson. Received in 13 days for an English utility report and a self-addressed-stamped envelope. Ship address: c/o Marine Post Office, Detroit, Michigan 48222. (Hill, MI)

FFS WALTHER HERWIG-DBFP (German Fisheries Research) 16506 kHz USB. Full data prepared form card stamped with two different ship stamps. Received in 38 days for a German utility report, a souvenir post card, and one U.S. dollar. Ship address: c/o Bundesamt fuer Ernaehrung und Forstwirtschaft, Suederstrasse 149-153, W-2000 Hamburg 26, Federal Republic of Germany. (Albright, CA)

TOURCOING-LGRA3 (RO/RO) 15665 MHz. Full data letter and photo of vessel. Received in 60 days for an English utility report and one U.S. dollar (which was returned with letter). Ship address: P.O. box 1359 Vika, N-0113 Oslo 1, Norway (Holbrook, MD)

N/S CARIA-DPCC (German freighter) 16587 kHz USB. Full data prepared form card with company stamp and a very friendly letter. Received in 156 days for a German utility report, a souvenir postcard and one U.S. dollar. Ship address: Christian F. Ahrenkiel, An der Alster 45, W-2000 Hamburg 1, Federal Republic of Germany. (Albright, CA)

ST. HELENA

Radio St. Helena, 11092.5 kHz. Full data multicolored map card, verified by Joy Lawrence-studio/program organizer. Also received a two-page form letter from Tony Leo, station manager. Received in 141 days for an English report, three IRCs and a souvenir postcard. Station address: The Castle, Jamestown, St. Helena, South Atlantic Ocean. (Van Horn, LA)-*This QSL was received from the reception of the special shortwave transmission that occurred during the 1990 Monitoring Times convention -- ed.*

SYRIAN ARAB REPUBLIC

Radio Damascus, 12085 kHz. Full data QSL card with illegible signature. Received in 282 days via registered mail, for an English report. Station

address: Ommayad Square, Damascus, Syrian Arab Republic (White, MS)

UNITED ARAB EMIRATES

UAE Radio-Dubai, 15400 kHz. Full data Great Circle Map card, verified by initials K.F. Received in 30 days for an English report and three IRCs. Station address: P.O. box 1695, Dubai, United Arab Emirates. (Carson, OK) (Fields, CA) (Law, LA) (Wright, MS)

UNITED KINGDOM

U.S. Air Force GCCS Croughton, U.K. 5703 kHz. Full data prepared QSL card, verified by Dequater L. Lewis T-Sgt. Received in 23 days for an English utility report and mint stamps. Station address: c/o Commanding Officer/Croughton GCCS, 2130th Comms. Group/DOJA, APO New York, N.Y. 09378-6345. (Battles, NH)

UNITED STATES

WKMI-1360 AM Kalamazoo, Michigan. Full data letter, verified by Dave Hicks, general manager. Received in 33 days for an English AM report and a self-addressed-stamped envelope. Station address: P.O. Box 911, Kalamazoo, Michigan 49005. (Frodge, MI)

WMLM-1520 AM St. Louis, Michigan. Partial data letterhead, verified by Greg Siefker. Received in nine days for an English AM report and a self-addressed-stamped envelope. Station address: 4170 N. State Road, Alma, Michigan 48801. (Frodge, MI)

WCGO-1600 AM Chicago Heights, Illinois. Partial data letterhead, verified by Anthony Santucci, general manager. Received in nine days for an English AM report and a self-addressed-stamped envelope. Station address: P.O. box 607, Beecher, Illinois 60401. (Frodge, MI)

FAA NAV Beacon 194 Station TUK. Full data prepared QSL card, verified by W.R. Killion, FAA electronics technician. Received in six days for an English utility report and one U.S. mint stamp. Station address: FAA AFSFU-2222, Tower Building, Room 204, Nantucket Memorial Airport, Nantucket, Massachusetts 02550. (Battles, NH)

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how to use the shortwave guide

The new shortwave guide of *Monitoring Times* is a professional-level tool designed to help you hear more stations. You'll find three main elements: frequencies, propagation charts, and programming. The frequencies will tell you where to tune; the propagation charts will help you to use your listening time more effectively by predicting the likelihood of hearing a stations from a particular part of the world; and the programming section will give you some idea of what to expect when you tune the station in.

The frequency section now includes virtually every English language transmission in the world including those directed to other parts of the world as well as North America. Do not be disappointed if you do not hear some of these on your first time out. Their level of difficulty ranges from "middling" to, literally, "once-in-a-lifetime." If such challenges frustrate you, stick to the frequencies directed solely to your target area.

The first four digits of a listing are the start time in UTC or "Universal Time Coordinated." Because this so-called "world time" can be confusing, we have provided corresponding local time for the Eastern ("EST") and Pacific ("PST") time zones.

The second four digits of the listing represent the closing time of the transmission. All stations are listed in order of their start time, end time and alphabetical standing.

The space between the transmission end and the name of the station is the broadcast schedule. If there is no entry here (as is most often the case), the transmission is made every day. In other cases, the following letters represent the days of the week the transmission can be heard:

S (Sunday)	H (Thursday)
M (Monday)	F (Friday)
T (Tuesday)	A (Saturday)
W (Wednesday)	

Other schedule codes are "ten" which means that the schedule is tentative, "tes" which means that it is a test transmission and "war" which means that the station's schedule has been disrupted by armed conflict.

The next listing is the station's name and location. Occasionally, you will find one of the following codes after the station name:

- 1 the transmission is multi-lingual, containing both English and another language(s)
- 2 the broadcast contains nothing but music
- 3 the English broadcast is transmitted irregularly
- 4 the transmission is an English language lesson

Frequencies are listed in ascending order, from lowest to highest. We suggest that you begin with the lowest frequency and work your way up to the highest frequency. Of course, keep in mind that the lower frequencies generally work better at night; the higher ones during the day. Not all frequencies will be audible at any given time.

Shortwave, or "world band" transmissions are often targeted to specific areas of the world. Following each frequency is a code indicating the area of the globe to which the frequency is "officially" directed. While such a scheme often gives listeners a fair idea of the likelihood of receiving a particular broadcast, remember that in shortwave, there are no hard and fast rules. Voice of America shows sent to Africa in our late evening, for example, are easily heard in

North America. Do not hesitate to try and hear any transmission listed in this section.

For easy-going, look for frequencies directed to:

- na (North America)
- ca (Central America or Caribbean)
- am (Americas)

Other codes include:

- af (Africa)
- as (Asia)
- au (Australia)
- eu (Europe)
- me (Middle East)
- pa (Pacific)
- sa (South America)

If a transmission is directed to North America and some other area, we list it as North America-bound. If it is directed to a number of different (non-American) targets, we list it as "va" (various). Transmissions marked "do" are for domestic or local consumption. Again, it is possible that you can hear these. Finally, you will occasionally see a transmission listed as "om" (omnidirectional -- sent out in all directions simultaneously), or "??" (we don't know where it is supposed to be going).

Remember, this is a list of all English language transmissions to the world. It includes not only the powerhouse, easy-to-hear stations from the United States, Canada, Germany and the Soviet Union, but tiny local broadcasters like the 40 watt Tristan Radio, located on a tiny island located in the middle of the South Atlantic. Your chances of hearing such a station are, quite frankly, near nil.

Desiring, however, to provide you with every possible tool so that you can effectively search out such rare fare, we also include propagation charts with this section. These are found at the conclusion of the frequency/program list and are designed to give you an idea of the best time to try for a particular station or region. Instructions for using the propagation charts are found at the beginning of that section.

A list of suggested programs can be found under the frequencies for most hours. They are listed in order of their start time in UTC. This list of programs changes every month in order to give you a wide familiarity with what shortwave's over 1,100 frequencies can bring you.

Please note that some program listings may be followed by "See X 0000. The letter stands for a day of the week (see day code legend for the frequency section). 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.

Remember that, unlike many other publications, *Monitoring Times* makes changes to this list up to two weeks before press time and is thus able to keep this list among the most accurate in the world. Errors will naturally occur and we ask your assistance in correcting them.

You may address your corrections, additions and suggestions to Frequency Manager (or Program Manager if program details), P.O. Box 98, Brasstown, NC 28902. You may also fax changes to us at 1-704-837-2216 24 hours a day.

MT Monitoring Team

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newslines

"Newslines" is your guide to news broadcasts on the air. ■ All broadcasts are world news reports unless followed by an asterisk, which means the broadcast is primarily national news. ■ All broadcasts are daily unless otherwise noted by brackets enclosing the day codes.

0000 UTC
(8:00 PM EDT, 5:00 PM PDT)

BBC
CBC, Northern Quebec
Christian Science Monitor
Kol Israel
Radio Australia
Radio Beijing
Radio Canada Int'l [S-M]
Radio Havana Cuba [T-S]
Radio Korea
Radio Luxembourg
Radio Moscow
Radio New Zealand Int'l [M-F]
Radio Prague Int'l
Radio Thailand
Radio Yugoslavia
Spanish Foreign Radio
Voice of America
WWCR (USA Radio News) [T-S]

0005
Radio Pyongyang
0010
Radio Beijing*
0030
Christian Science Monitor (Asia) [M]
Christian Science Monitor [T-F]
HCJB*

Radio Budapest
Radio Havana Cuba [T-S]
Radio Netherlands [T-S]
Voice of America (Americas, East Asia) (Special English) [T-S]
Voice of America (East Asia) (Special English) [M]
0045
Radio Korea (News Service)
0055
WRNO (ABC News) [W, A]

0100 UTC
(9:00 PM EDT, 6:00 PM PDT)

All India Radio
BBC
CBC, Northern Quebec [S-M]
Christian Science Monitor
Deutsche Welle
Kol Israel
Radio Australia

Radio Belize
Radio Canada Int'l [S-M]
Radio Havana Cuba [T-S]
Radio Japan
Radio Luxembourg
Radio Moscow
Radio New Zealand Int'l [M-F]
Radio Thailand
Radiotelevisione Italiana
Spanish Foreign Radio
Voice of America
Voice of Indonesia
WWCR (USA Radio News) [T-A]

0115
Radio Havana Cuba* [T-S]
0120
Radio for Peace Int'l [T-A]
0125
HCJB
0130

Christian Science Monitor (Asia) [M]
Christian Science Monitor [T-F]
Radio Austria Int'l
Radio Havana Cuba [T-S]
Radio Portugal [T-A]
Voice of Greece [M-A]
0155
Voice of Indonesia

0200 UTC
(10:00 PM EDT, 7:00 PM PDT)

BBC
CBC, Northern Quebec [T-S]
Christian Science Monitor
Deutsche Welle
Radio Australia
Radio Canada Int'l [T-A]
Radio Havana Cuba [T-S]
Radio Moscow
Radio New Zealand Int'l [M-F]
Radio Prague Int'l
Radio Romania Int'l
Radio Thailand
RAE, Buenos Aires [T-A]
Swiss Radio Int'l
Voice of America
Voice of Free China
Voice of Myanmar
WWCR (USA Radio News) [T-S]

0215
Radio Cairo
0230
Christian Science Monitor (Africa, Europe) [M]
Christian Science Monitor [T-F]
HCJB*
Radio Havana Cuba [T-S]
Radio Pakistan (Special English)
Radio Tirana, Albania
0245
Radio Korea (News Service)
0250
Radio for Peace Int'l [T-A]
Radio Yerevan

0300 UTC
(11:00 PM EDT, 8:00 PM PDT)

BBC
CBC, Northern Quebec
Christian Science Monitor
Deutsche Welle
Radio Australia
Radio Beijing
Radio Canada Int'l
Radio Belize
Radio Havana Cuba [T-S]
Radio Japan
Radio Moscow
Radio New Zealand Int'l [M-F]
Radio Prague Int'l
Radio Sofia
Radio Thailand
Voice of America
Voice of Free China
Voice of Turkey
WRNO (ABC News) [F]
WWCR (USA Radio News) [M-A]
0305
Radio New Zealand Int'l* [M-F]
0309
BBC*
0310
Radio Beijing*
0315
Radio Cairo
Radio Havana Cuba* [T-S]
0325
HCJB
0330
BBC (Africa)*
Christian Science Monitor

(Africa, Europe) [M]
Christian Science Monitor [T-F]
Radio Havana Cuba [T-S]
Radio Moscow (World Service)
Radio Netherlands [T-S]
Radio Tirana, Albania
UAE Radio, Dubai
0340
Voice of Greece [M-A]
0350
Radiotelevisione Italiana
0355
Radio Japan [M-F]
WYFR (Network) [T-A]

0400 UTC
(12:00 AM EDT, 9:00 PM PDT)

BBC
CBC, Northern Quebec [T-S]
Christian Science Monitor
Deutsche Welle
Kol Israel
Radio Australia
Radio Beijing
Radio Canada Int'l
Radio Havana Cuba [T-S]
Radio Moscow
Radio New Zealand Int'l [M-A]
Radio Romania Int'l
Radio RSA
Radio Tanzania
Radio Thailand
Swiss Radio Int'l
Voice of America
WWCR (USA Radio News) [T-A]
0405
Radio Pyongyang
0410
Radio Beijing*
0425
Radiotelevisione Italiana
0430
Christian Science Monitor (Africa, Europe, NE Asia) [M]
Christian Science Monitor [T-F]
Radio Botswana
Radio Canada Int'l [M-F]
Radio Havana Cuba [T-S]
Radio Moscow (World Service)
Radio Tirana, Albania
0450
Radio RSA

0500 UTC
(1:00 AM EDT, 10:00 PM PDT)

BBC
CBC, Northern Quebec
Christian Science Monitor
Deutsche Welle
HCJB*
Radio Australia
Radio Beijing
Radio Havana Cuba [T-S]
Radio Japan
Radio Lesotho
Radio Moscow
Radio New Zealand Int'l [M-F]
Radio Thailand
Spanish Foreign Radio
Voice of America

0505
Radio New Zealand Int'l* [M-F]
0510
Radio Beijing*
Radio Botswana
0515
Radio Canada Int'l [M-F]
Radio Havana Cuba* [T-S]
0530
BBC (Africa)*
Christian Science Monitor (Africa, Europe, NE Asia) [M]
Christian Science Monitor [T-F]
Radio Austria Int'l
Radio Havana Cuba [T-S]
Radio Moscow (World Service)
Radio Romania Int'l
Radio Thailand
UAE Radio, Dubai
Voice of Nigeria
0540
Radio Prague Int'l
0545
Voice of Nigeria*
0550
Radio for Peace Int'l [T-A]
0555
HCJB

0600 UTC
(2:00 AM EDT, 11:00 PM PDT)

BBC
Christian Science Monitor
Deutsche Welle
Radio Australia

newslines

Radio Havana Cuba [T-S]
 Radio Moscow
 Radio New Zealand Int'l [M-F]
 Voice of America
0605
 Radio Pyongyang
0610
 Voice of Malaysia
0630
 BBC (Africa)*
 BRT, Brussels [M-F]
 Christian Science Monitor [M-F]
 Radio Finland [T-A]
 Radio Havana Cuba [T-S]
 Radio Moscow (World Service)
 Radio Polonia
 Radio Prague Int'l
 Radio Sofia
 Radio Tirana, Albania
 RTV Congolaise [M-F]
 Swiss Radio Int'l
0645
 Radio Romania Int'l

0700 UTC
(3:00 AM EDT, 12:00 AM PDT)

BBC
 Christian Science Monitor
 Radio Australia
 Radio Havana Cuba [T-S]
 Radio Japan
 Radio Moscow (World Service)
 Radio Tirana, Albania
 Voice of Free China
 Voice of Myanmar
0715
 Radio Havana Cuba* [T-S]
0720
 Radio for Peace Int'l [T-A]
0730
 BBC (Africa)* [M-A]
 Christian Science Monitor [M-F]
 HCJB*
 Radio Austria Int'l
 Radio Havana Cuba [T-S]
 Radio Moscow (World Service)
 Radio Netherlands [M-A]
0755
 Radio Japan [M-F]

0800 UTC
(4:00 AM EDT, 1:00 AM PDT)

BBC
 Christian Science Monitor
 Radio Australia
 Radio Finland [T-A]
 Radio Korea
 Radio Moscow (World Service)
 Voice of Indonesia
0805
 Radio Pyongyang
0810
 Voice of Malaysia
0825
 HCJB
0830
 Christian Science Monitor [M-F]
 Radio Beijing
 Radio Finland [T-A]
 Radio Moscow (World Service)
 Radio Netherlands [M-A]
 Swiss Radio Int'l

0840
 Radio Beijing*
 Voice of Greece [M-A]
0855
 Voice of Indonesia

0900 UTC
(5:00 AM EDT, 2:00 AM PDT)

BBC
 BRT, Brussels [M-F]
 Christian Science Monitor
 Deutsche Welle
 Radio Australia
 Radio Japan
 Radio Moscow (World Service)
0915
 Radio Korea (News Service)
0930
 Christian Science Monitor [M-F]
 Deutsche Welle (Africa)* [M-F]
 Radio Beijing
 Radio Moscow (World Service)
0940
 Radio Beijing*
0955
 Radio Japan [M-F]

1000 UTC
(6:00 AM EDT, 3:00 AM PDT)

All India Radio
 BBC
 Christian Science Monitor
 HCJB*
 Kol Israel
 Radio Australia
 Radio Moscow (World Service)
 Radio Tanzania
 Swiss Radio Int'l
 Voice of America
1030
 Christian Science Monitor [M-F]
 Radio Austria Int'l [M-F]
 Radio Moscow (World Service)
 Radio Netherlands [M-A]
 UAE Radio, Dubai
1040
 Voice of Greece [M-A]
1050
 Radio Finland [T-F]
1055
 All India Radio
 HCJB

1100 UTC
(7:00 AM EDT, 4:00 AM PDT)

BBC
 CBC, Northern Quebec [A-S]
 Christian Science Monitor
 Deutsche Welle
 Radio Australia
 Radio Beijing
 Radio Jordan
 Radio Korea
 Radio Moscow (World Service)
 Radio RSA
 Swiss Radio Int'l
 Trans World Radio, Bonaire [M-F]
 Voice of America
1105
 Radio Pakistan (Special

English)
 Radio Pyongyang
1109
 BBC*
1110
 Radio Beijing*
 Radio Belize [T-A]
 Radio Botswana [M-F]
1115
 Radio Korea (News Service)
1125
 Radio Belize [M]
 Radio Botswana [A-S]
1130
 Christian Science Monitor [M-F]
 Deutsche Welle* [M-F]
 Radio Austria Int'l [M-F]
 Radio Korea [M-S]
 Radio Lesotho
 Radio Moscow (World Service)
 Radio Netherlands [M-A]
1135
 Radio Thailand
1150
 Radio RSA
1155
 Radio Japan [M-F]

1200 UTC
(8:00 AM EDT, 5:00 AM PDT)

BBC
 CBC, Northern Quebec [A-S]
 Christian Science Monitor
 Radio Australia
 Radio Beijing
 Radio Bras, Brasilia [M-A]
 Radio Canada Int'l [M-F]
 Radio Finland [T-F]
 Radio Moscow (World Service)
 Radio Polonia
 Radio Romania Int'l
 Radio Tashkent
 Radio Thailand
 Radio Yugoslavia
 Swiss Radio Int'l
 Voice of America
 WWCR (USA Radio News) [S-F]
1210
 Radio Beijing*
1215
 Radio Korea
1230
 Christian Science Monitor [M-F]
 Radio Cairo
 Radio France Int'l
 Radio Moscow (World Service)
 Trans World Radio, Bonaire [M-A]
 Voice of Turkey
1235
 Voice of Greece
1255
 WYFR (Network) [M-F]

1300 UTC
(9:00 AM EDT, 6:00 AM PDT)

BBC ("Newshour")
 BRT, Brussels [M-F]
 CBC, Northern Quebec
 Christian Science Monitor
 Radio Australia
 Radio Beijing

Radio Belize
 Radio Canada Int'l
 Radio Finland [T-A]
 Radio Jordan
 Radio Moscow (World Service)
 Radio Peace and Progress
 Radio Romania Int'l
 Radio Tanzania [A-S]
 Radio Tirana, Albania
 Trans World Radio, Bonaire [S]
 Voice of America
 WWCR (USA Radio News) [M-F]
1305
 Radio Pyongyang
1310
 Radio Beijing*
1325
 HCJB [M-F]
1328
 Radio Cairo
1330
 All India Radio
 Christian Science Monitor [M-F]
 Radio Austria Int'l
 Radio Korea (News Service)
 Radio Moscow (World Service)
 Radio Tashkent
 Swiss Radio Int'l
 UAE Radio, Dubai
 Voice of America (Special English)
1346
 All India Radio (UN News) [A]

1400 UTC
(10:00 AM EDT, 7:00 AM PDT)

BBC
 CBC, Northern Quebec [A-S]
 Christian Science Monitor
 Radio Australia
 Radio Beijing
 Radio Belize [M-F]
 Radio Canada Int'l [S]
 Radio Finland [T-A]
 Radio France Int'l
 Radio Japan
 Radio Korea
 Radio Moscow (World Service)
 Voice of America
 WWCR (USA Radio News)
1405
 Radio Pyongyang
1410
 Radio Beijing*
1415
 Radio Canada Int'l (Europe)
1425
 HCJB [M-F]
 Radio Finland
1430
 Christian Science Monitor [M-F]
 Radio Austria Int'l [M-F]
 Radio Moscow (World Service)
 Radio Netherlands [M-A]
 Radio Polonia
1445
 BBC (East Asia) (Special English) [M-F]
 Voice of Myanmar
1455
 All India Radio

1500 UTC
(11:00 AM EDT, 8:00 AM PDT)

BBC
 CBC, Northern Quebec [A-S]
 Christian Science Monitor
 Deutsche Welle
 Radio Australia
 Radio Beijing
 Radio Belize [M-A]
 Radio Canada Int'l [S]
 Radio Japan
 Radio Jordan
 Radio Moscow (World Service)
 Radio Portugal [M-F]
 Radio Romania Int'l
 Radio RSA
 Voice of America
 WWCR (USA Radio News) [M-F]
1505
 Radio Pyongyang
1510
 Radio Beijing*
1530
 Christian Science Monitor [M-F]
 Deutsche Welle* [M-F]
 FEBA, Seychelles
 Radio Moscow (World Service)
 Radio Tirana, Albania
 Swiss Radio Int'l
 Voice of Greece [M-A]
1545
 Radio Korea (News Service)

1600 UTC
(12:00 PM EDT, 9:00 AM PDT)

BBC
 CBC, Northern Quebec [A]
 Christian Science Monitor
 Deutsche Welle
 Radio Australia
 Radio Beijing
 Radio France Int'l
 Radio Jordan
 Radio Korea
 Radio Lesotho
 Radio Moscow (World Service)
 Radio New Zealand Int'l [M-F]
 Radio Polonia
 Radio RSA
 Radio Tanzania
 Voice of America
1605
 Radio New Zealand Int'l* [M-F]
1609
 BBC*
1610
 Radio Beijing*
 Radio Botswana [M-F]
1615
 Radio Canada Int'l
1630
 Christian Science Monitor [M-F]
 Radio Austria Int'l
 Radio Moscow (World Service)
 Radio Netherlands [M-A]
 Radio Peace and Progress
 Radio Polonia
 UAE Radio, Dubai
 Voice of America (except Africa) (Special English)
 WYFR (Network) [A]

newslines

1635
WYFR (Network) [M-F]

1700 UTC
(1:00 PM EDT, 10:00 AM PDT)

BBC
CBC, Northern Quebec [A]
Christian Science Monitor
Kol Israel
Radio Australia
Radio Beijing
Radio Belize [M-F]
Radio Japan
Radio Moscow (World Service)
Radio New Zealand Int'l [S-F]
Radio Prague Int'l
Radio RSA
Voice of America
WWCR (USA Radio News) [A]

1705
Radio Pyongyang

1709
BBC (Africa)* [A-S]

1710
Radio Beijing*

1715
Radio Korea (News Service)

1725
WYFR (Network) [A]

1730
BRT, Brussels [M-F]
Christian Science Monitor [M-F]

Radio Moscow (World Service)
Radio Romania Int'l

Swiss Radio Int'l

1740
BBC (Africa)* [M-F]

1750
Radio RSA

1800 UTC
(2:00 PM EDT, 11:00 AM PDT)

All India Radio
BBC
CBC, Northern Quebec [M-F]
Christian Science Monitor
KVOH (UPI News)
Radio Australia
Radio Belize [M-F]
Radio Bras, Brasilia [M-A]
Radio Canada Int'l
Radio Korea
Radio Moscow (World Service)
Radio New Zealand Int'l [S-F]
Radio Tanzania
Voice of America
WWCR (USA Radio News) [M-F]

1803
Radio Jamahiriya, Libya

1830
Christian Science Monitor [M-F]

Radio Belize
Radio Budapest
Radio Canada Int'l [M-F]
Radio Finland [M-F]
Radio Moscow (World Service)
Radio Netherlands [M-A]
Radio Polonia
Radio Prague Int'l
Radio Sofia
Radio Tirana, Albania
Radio Yugoslavia
Swiss Radio Int'l
Voice of America (Special English)

1840
SLBC, Sri Lanka
Voice of Greece

1847
Radio Jamahiriya, Libya

1855
BBC (Africa)* [M-F]
Radio Finland
WYFR (Network) [M-A]

1900 UTC
(3:00 PM EDT, 12:00 PM PDT)

All India Radio
BBC
Christian Science Monitor [M-A]
Deutsche Welle
HCJB*
Kol Israel
KVOH (UPI News)
Radio Australia
Radio Beijing
Radio Canada Int'l [M-F]
Radio Havana Cuba [M-A]
Radio Japan
Radio Moscow (World Service)
Radio New Zealand Int'l [S-F]
Radio Tanzania
RAE, Buenos Aires [M-F]
Spanish Foreign Radio
Swiss Radio Int'l
Voice of America

1905
Radio New Zealand Int'l* [S-H]

1910
Radio Beijing*

Radio Botswana

1920
Voice of Greece

1930
Christian Science Monitor [M-F]

Deutsche Welle* [M-F]
Radio Austria Int'l

Radio Havana Cuba [M-A]
Radio Moscow (World Service)

Radio Romania Int'l

1935
Radiotelevisione Italiana

1945
Radio Korea (News Service)

1955
HCJB

2000 UTC
(4:00 PM EDT, 1:00 PM PDT)

BBC
CBC, Northern Quebec [S-F]
Christian Science Monitor
KVOH (UPI News)
Radio Australia
Radio Beijing
Radio Belize [M-F]
Radio Havana Cuba [M-A]
Radio Kiev
Radio Moscow (World Service)
Radio New Zealand Int'l [S-F]
Radio Polonia
Radio Portugal [M-F]
Radio Prague Int'l
Voice of America
Voice of Indonesia
Voice of Turkey

2005
Radio Pyongyang

2010
Radio Beijing*

2025
Radio Havana Cuba* [M-A]
Radiotelevisione Italiana
WYFR (Network) [M-F]

2030
Christian Science Monitor [M-F]
Radio Budapest
Radio Havana Cuba [M-A]
Radio Korea
Radio Moscow (World Service)
Radio Netherlands [M-A]
Radio Sofia
WYFR (Network) [A]

2045
Radio Korea (News Service)

2050
Radio for Peace Int'l [M-F]

2055
Voice of Indonesia

2100 UTC
(5:00 PM EDT, 2:00 PM PDT)

All India Radio
BBC ("Newshour")
BRT, Brussels [M-F]
CBC, Northern Quebec [S-F]
Christian Science Monitor [M-A]
Deutsche Welle
KVOH (UPI News)
Radio Australia
Radio Beijing
Radio Belize [M-F]
Radio Canada Int'l
Radio Finland [M-F]
Radio Japan
Radio Moscow (World Service)
Radio New Zealand Int'l [S-F]
Radio Peace and Progress
Radio Portugal [M-F]
Radio Prague Int'l
Radio Romania Int'l
Radio Yugoslavia
Spanish Foreign Radio
Swiss Radio Int'l
Voice of America

2110
Radio Beijing*

2130
Christian Science Monitor [M-F]

Kol Israel
Radio Cairo

Radio Canada Int'l (Africa)
Radio Moscow (World Service)

Radio Sofia
Radio Vilnius

Swiss Radio Int'l
WYFR (Network) [M-F]

2155
WYFR (Network) [M-A]

2200 UTC
(6:00 PM EDT, 3:00 PM PDT)

All India Radio
BBC
CBC, Northern Quebec [M-F]
Christian Science Monitor
Radio Australia
Radio Beijing
Radio Canada Int'l
Radio Havana Cuba [M-A]
Radio Moscow
Radio New Zealand Int'l [S-F]
Radio Vilnius
Radiotelevisione Italiana
Voice of America

Notes from the Program Manager

Here are BBC highlights for May in a nutshell. Remember that all days, as well as times, are in UTC; times between 0000 and 0700 UTC are actually one day earlier here in North America.

"Good Books" concentrates this month on neglected books (Mondays at 0315 UTC, repeated on Wednesdays at 2315 UTC). "Moving The Masses" looks at automotive travel today the world over (Sunday 19th and 26th at 0230 UTC, repeated at 1615 UTC). "The Thin Blue Line" looks at a subject that has been in the news much lately in the USA -- police brutality. Except that it examines police brutality in the UK! (Monday 27th at 0101 UTC).

Dick Francis' novel "Rat Race" gets dramatized in four parts this month (Thursday 2nd through 23rd at 1130 UTC, Friday 3rd through 24th at 0230 UTC). "The Overseas Chinese" looks at perhaps the world's greatest migrant communities, those of the Chinese abroad (Friday 24th and 31st at 1215 UTC).

"Pop Into The Movies" examines the increasingly close relationship between movies and popular music smashes (Sundays at 0430 UTC). Finally, Michael Diamond selects from the vast literature of a game most Americans have never played in "It's Not Just Cricket" (Monday 20th and 27th at 2315 UTC, repeated on Wednesday 22nd and 29th at 1515 UTC). Whew!

We've slightly changed the format for our BBC listings in an attempt to make them more timely. Take a look and let us know what you think.

Voice of Free China
Voice of Turkey

2208
Voice of America (Caribbean)*

[M-F]
2210
Radio Beijing*

2220
Radio for Peace Int'l [M-F]

2225
Radio Havana Cuba* [M-A]

2230
Christian Science Monitor [M-F]

Radio Havana Cuba [M-A]
Radio New Zealand Int'l [S-H]

Radio Polonia
Radio Tirana, Albania

Voice of America (Special English)

2233
Radio Jamahiriya, Libya

2245
Voice of Greece

2300 UTC
(7:00 PM EDT, 4:00 PM PDT)

BBC
CBC, Northern Quebec [A]
Christian Science Monitor [M-A]
Kol Israel
Radio Australia
Radio Belize [M-F]

Radio Canada Int'l (Caribbean)

Radio Finland [M-F]
Radio Japan

Radio Kiev
Radio Luxembourg

Radio Moscow
Radio New Zealand Int'l [S-F]

Radio Prague Int'l
Radio Sofia

Voice of America
WWCR (USA Radio News) [M-F]

2305
Radio Polonia

Radio Pyongyang
2315

All India Radio
2320

Radio Thailand
BRT, Brussels [M-F]

Christian Science Monitor [M-F]
Radio Budapest [M-A]

Radio Canada Int'l (USA) [A-S]
Radio Jamahiriya, Libya

Radio Tirana, Albania
2355

Radio Japan [M-F]
WRNO (ABC News) [W, F]

0000 UTC

[8:00 PM EDT/5:00 PM PDT]

FREQUENCIES

0000-0015	Voice of the People of Cambodia, Phnom-Penh	9695 _{as}	11938 _{as}
0000-0030	Kol Israel, Jerusalem	9435 _{na}	11605 _{na} 15640 _{na}
0000-0030	Radio Australia, Melbourne	11880 _{va}	13605 _{va} 15240 _{va}
		15465 _{va}	17630 _{va} 17750 _{va}
		17795 _{va}	17855 _{va}
0000-0030 stwhfa	Radio Prague, Czechoslovakia	7345 _{na}	9540 _{na} 11990 _{na}
0000-0030	BBC London, England	5965 _{va}	5975 _{va} 6005 _{va}
		6175 _{va}	6195 _{va} 7145 _{va}
		7325 _{va}	9580 _{va} 9590 _{va}
		9670 _{va}	9915 _{va} 11750 _{va}
		11945 _{va}	11955 _{va} 12095 _{va}
		15070 _{va}	15260 _{va} 15360 _{va}
		17830 _{va}	
0000-0100	All India Radio, Delhi	9535 _{as}	9910 _{as} 11715 _{as}
		11745 _{as}	15110 _{as}
0000-0100	ABC Brisbane, Australia	4920 _{do}	9660 _{do}
0000-0100	ABC Perth, Australia	9610 _{do}	
0000-0100	CFRB, Montreal	6070 _{do}	
0000-0100	CBN, Canada	6160 _{do}	
0000-0100	FEBC Radio Int'l, Philippines	15490 _{as}	
0000-0100	Radio Beijing, China	9770 _{am}	11655 _{am} 11715 _{am}
		17705 _{am}	
0000-0100	Christian Science World Service	7395 _{na}	9850 _{na} 13760 _{na}
		17555 _{na}	17865 _{va}
0000-0100	Radio Havana Cuba	11820 _{am}	
0000-0100	Radio Moscow World Service	7370 _{va}	17655 _{va} 17890 _{va}
0000-0100	Radio Moscow N. American Svc.	9530 _{na}	9685 _{na} 9720 _{na}
		11735 _{na}	11850 _{na} 11860 _{na}
		11950 _{na}	12050 _{na} 15425 _{na}
		17605 _{na}	17665 _{na} 17700 _{na}
		21480 _{na}	
0000-0100	Radio Korea, Seoul, S. Korea	15575 _{na}	
0000-0100	Radio Luxembourg	6090 _{om}	15350 _{om}

0000-0100 smtwhf	Radio New Zealand Int'l	17770 _{pa}	
0000-0100	Radio Pyongyang, North Korea	11335 _{na}	13775 _{na} 15115 _{na}
0000-0100	RTV Malaysia, Radio 4	7295 _{do}	
0000-0100	SBC Radio 1, Singapore	5010 _{do}	5052 _{do} 11940 _{do}
0000-0100	SLBS, Freetown, Sierra Leone	3316 _{do}	
0000-0100	Radio Thailand, Bangkok	4830 _{as}	9655 _{as} 11905 _{as}
0000-0100	Spanish Foreign Radio, Madrid	9630 _{na}	11880 _{na}
0000-0100	Voice of America, Washington	6125 _{as}	7120 _{as} 9770 _{as}
		11760 _{as}	11805 _{as} 15185 _{as}
		15225 _{as}	15290 _{as} 15405 _{as}
		17735 _{as}	17820 _{as}
0000-0100	KTBN Salt Lake City, Utah	15590 _{am}	
0000-0100	Radio for Peace Int'l, Costa Rica	7375	13630 21566
0000-0100	WRNO New Orleans, Louisiana	7355 _{am}	
0000-0100	WHRI Noblesville, Indiana	7315 _{am}	9495 _{am}
0000-0100	WINB Red Lion, Pennsylvania	15145 _{eu}	
0000-0100	WYFR, Okeechobee, Florida	5985 _{am}	15440 _{am}
0000-0100	WWCR Nashville, Tennessee	15690 _{am}	
0000-0100	Voice of America, Washington	5995 _{ca}	6130 _{ca} 9455 _{ca}
		9775 _{ca}	9815 _{ca} 11580 _{ca}
		11695 _{ca}	
0015-0030 m	Radio Prague, Czechoslovakia	7345 _{na}	9540 _{na} 11990 _{na}
0030-0100	BBC London, England	5975 _{va}	6005 _{va} 6175 _{va}
		7325 _{va}	9580 _{va} 9670 _{va}
		9915 _{va}	11750 _{va} 11945 _{va}
		11955 _{va}	12095 _{va} 15070 _{va}
		15260 _{va}	15360 _{va}
0030-0100	HCJB Quito, Ecuador	9745 _{am}	15155 _{am} 21455 _{am}
		25950 _{am}	
0030-0100	Radio Australia, Melbourne	11880 _{va}	13605 _{va} 15240 _{va}
		15465 _{va}	17630 _{va} 17750 _{va}
		17795 _{va}	17855 _{va} 21740 _{va}
0030-0100	Hunan PBS, Changs ha, China ⁴	4990 _{do}	
0030-0100	Radio Netherlands, Hilversum	6020 _{am}	6165 _{am} 15560 _{am}
0030-0100	Sri Lanka B'casting Corp.	6005 _{as}	9720 _{as} 15425 _{as}
0050-0100	Vatican Radio, Vatican City	6150 _{na}	9605 _{na}

PROGRAMS

Sundays

- 0006 Radio Prague Int'l: Czechoslovakia This Week. A look back at events in Czechoslovakia over the last week.
- 0010 Radio Prague Int'l: Science and Technology or Stamp Corner. Developments in Czechoslovakian science, or stamp news and new issues.
- 0014 Radio Prague Int'l: Readings from Czech and Slovak Literature. Dramatizations from famous Czechoslovakian books.
- 0030 BBC: The Ken Bruce Show. Ken Bruce plays pop music, past and present.
- 0030 Radio for Peace Int'l: Consider the Alternatives. High-level experts on current events topics.

Mondays

- 0000 Radio for Peace Int'l: Common Ground. International relations and related political and social issues.
- 0006 Radio Prague Int'l: Encore!!! A program of classical and chamber music.
- 0030 BBC: In Praise Of God. Christian religious services and meditations.
- 0030 Radio for Peace Int'l: Second Opinion. A weekly conversation with Erwin Knoll, editor of The Progressive.

Tuesdays

- 0000 Radio for Peace Int'l: Steppin' Out of Babylon. See S 2330.
- 0006 Radio Prague Int'l: Czechoslovakia Today. Reports, interviews, and comments about events in Czechoslovakia.
- 0010 Radio Prague Int'l: Sports Roundup. News from the world of sports.
- 0014 Radio Prague Int'l: Comment. Opinion on current events and politics.
- 0016 Radio Prague Int'l: Lifestyle. Czechoslovakians speak on life in their country.
- 0020 Radio Prague Int'l: Talking Point. Topical features



John Tusa, managing director of the BBC World Service

- on Czechoslovakia.
- 0030 BBC: Panel Game. Roy Pickard challenges the panel with star-crossed stars in "Double Bill" (6th/13th/20th).
- 0030 Radio for Peace Int'l: A Call To Wisdom. Tara Singh speaks out on life with his wise words. Oh boy...

Wednesdays

- 0006 Radio Prague Int'l: Czechoslovakia Today. See T 0006.
- 0010 Radio Prague Int'l: Comment. See T 0014.
- 0014 Radio Prague Int'l: Radio Prague On The Line. Music and talk on various topics.
- 0030 BBC: Omnibus. Topical features on almost any topic, from Dracula to drugs.

Thursdays

- 0000 Radio for Peace Int'l: New Dimensions Radio. See M 0130.

- 0006 Radio Prague Int'l: Czechoslovakia Today. See T 0006.
- 0008 Radio Prague Int'l: Comment. See T 0014.
- 0010 Radio Prague Int'l: Cultural Scene. Art exhibits, concerts, and plays in Czechoslovakia.
- 0014 Radio Prague Int'l: Talking Point. See T 0020.
- 0020 Radio Prague Int'l: Mailbag. Answers to listener letters and questions.
- 0030 BBC: Comedy Show (except 30th: "Two Cheers For May"). See W 1530.

Fridays

- 0000 Radio for Peace Int'l: Food for the Thoughtful. See M 0430.
- 0006 Radio Prague Int'l: Czechoslovakia Today. See T 0006.
- 0008 Radio Prague Int'l: Comment. See T 0014.
- 0012 Radio Prague Int'l: Ecology. Reports on conservation efforts in Czechoslovakia.
- 0016 Radio Prague Int'l: DX Special. News for shortwave radio listeners.
- 0030 BBC: Music Feature. This month, hear "Prokofiev" (3rd/10th); "Music And The Movies" (through June 28th).
- 0030 Radio for Peace Int'l: Amnesly International Reports or The Other Americas Radio. See S 0300.

Saturdays

- 0000 Radio for Peace Int'l: UNESCO. See S 0230.
- 0006 Radio Prague Int'l: Czechoslovakia Today. See T 0006.
- 0010 Radio Prague Int'l: Comment. See T 0014.
- 0012 Radio Prague Int'l: Economy. Features on business subjects.
- 0016 Radio Prague Int'l: Roundabout. A mix of news items and Czechoslovakian music.
- 0030 BBC: From The Weeklies. A review of the British weekly press.
- 0030 Radio for Peace Int'l: World of Radio. See S 0100.
- 0045 BBC: Recording Of The Week. See S 0315.

0100 UTC

[9:00 PM EDT/6:00 PM PDT]

FREQUENCIES

0100-0105	Vatican Radio, Vatican City	6150 _{na}	9605 _{na}	
0100-0115	All India Radio, Delhi	9535 _{as}	9910 _{as}	11715 _{as}
		11745 _{as}	15110 _{as}	
0100-0120	RAI, Rome, Italy	9575 _{am}	11800 _{am}	
0100-0125	Kol Israel, Jerusalem	9435 _{na}	11605 _{am}	15640 _{na}
0100-0125	Radio Netherlands, Hllversum	6020 _{am}	6165 _{am}	15560 _{am}
0100-0130 SM	Radio Norway, Oslo	11925 _{na}	15360 _{na}	
0100-0130	Nat'l Radio of Laos, Vientiane	7112 _{as}		
0100-0130	Radio Australia, Melbourne	11880 _{va}	15240 _{va}	15530 _{va}
		17630 _{va}	17750 _{va}	17795 _{va}
		17855 _{va}	21525 _{va}	21740 _{va}
		21775 _{va}		
0100-0130	Radio Canada Int'l, Montreal	5960 _{na}	9755 _{na}	
0100-0130	Radio Prague, Czechoslovakia	5930 _{na}	7345 _{na}	9540 _{na}
0100-0130	Radio Sweden, Stockholm	9765 _{as}		
0100-0145	Radio Yugoslavia, Belgrade	9620 _{na}	11735 _{na}	
0100-0150	Deutsche Welle, Koln, Germany	6040 _{na}	6145 _{na}	6155 _{na}
		9565 _{na}	11865 _{na}	
		11890 _{na}	13610 _{na}	13770 _{na}
		15205 _{na}	15425 _{na}	
0100-0200 sm	Radio Canada Int'l, Montreal	9535 _{ca}	11845 _{ca}	11940 _{ca}
0100-0200 twfha	RAE, Buenos Aires, Argentina	11710 _{na}		
0100-0200	ABC Brisbane, Australia	4920 _{do}	9660 _{do}	
0100-0200	ABC Perth, Australia	9610 _{do}		
0100-0200	CFRB, Montreal	6070 _{do}		
0100-0200	CBN, Canada	6160 _{do}		
0100-0200	FEBC Radio Int'l, Philippines	15450 _{as}		
0100-0200	Radio Moscow World Service	7370 _{va}	17655 _{va}	17890 _{va}
		21690 _{va}	21790 _{as}	
0100-0200	Radio Moscow N. American Svc	9530 _{na}	9685 _{na}	9720 _{na}
		11735 _{na}	11850 _{na}	11860 _{na}
		11950 _{na}	12050 _{na}	15425 _{na}
		17605 _{na}	17665 _{na}	17700 _{na}
		21480 _{na}		
0100-0200	Radio for Peace Int'l, Costa Rica	7375	13630	21566
0100-0200	Radio Havana Cuba	11820 _{am}		
0100-0200	Radio Luxembourg	6090 _{om}	15350 _{om}	
0100-0200	Radio New Zealand Int'l	17770 _{pa}		
0100-0200	Radio Thailand, Bangkok	4830 _{as}	9655 _{as}	11905 _{as}
0100-0200 smtwh	RTV Malaysia, Radio 4	7295 _{do}		
0100-0200	SBC Radio 1, Singapore	5052 _{do}	11940 _{do}	
0100-0200	WRNO New Orleans, Louisiana	7355 _{na}		

0100-0200	KVOH Los Angeles, California	17775 _{na}		
0100-0200	KTBN Salt Lake City, Utah	15590 _{na}		
0100-0200	Christian Science World Service	7395 _{na}	9850 _{na}	13760 _{na}
		17555 _{na}	17865 _{va}	
0100-0200	WYFR Okeechobee, Florida	6065 _{na}	9505 _{na}	9680 _{na}
		15440 _{na}		
0100-0200	WINB Red Lion, Pennsylvania	15145 _{na}		
0100-0200	WWCR Nashville, Tennessee	7520 _{na}		
0100-0200	BBC London, England	5965 _{va}	5975 _{va}	6175 _{va}
		7325 _{va}	9580 _{va}	9590 _{va}
		9915 _{va}	11750 _{va}	11955 _{va}
		15260 _{va}	15280 _{va}	15360 _{va}
		21715 _{va}		
0100-0200	Radio Canada Int'l, Montreal	9535 _{ca}	11845 _{sa}	11940 _{sa}
		13720 _{ca}		
0100-0200	Spanish Foreign Radio, Madrid	9630 _{na}	11880 _{na}	
0100-0200	HCJB Quito, Ecuador	9745 _{am}	15155 _{am}	21455 _{am}
		25950 _{am}		
0100-0200	SLBS, Freetown, Sierra Leone	3316 _{do}		
0100-0200	Sri Lanka B'casting Corp.	6005 _{as}	9720 _{as}	15425 _{as}
0100-0200	Voice of America, Washington	6095 _{va}	6125 _{va}	7115 _{as}
		7205 _{as}	9740 _{va}	11705 _{as}
		11805 _{va}	15225 _{va}	15250 _{as}
		15405 _{va}	17740 _{as}	21550 _{as}
0100-0200	Radio Luxembourg	15350 _{om}		
0100-0200	Voice of America, Washington	5995 _{ca}	6130 _{ca}	9455 _{ca}
		9775 _{ca}	9815 _{ca}	11580 _{ca}
		15205 _{ca}		
0100-0200	Voice of Indonesia, Jakarta	11752 _{as}	11785 _{as}	
0130-0140 mtwhfa	Voice of Greece, Athens	9395 _{am}	9420 _{am}	11645 _{am}
0130-0200	Peace & Progress, Moscow, USSR	7400 _{na}	9750 _{na}	15180 _{na}
		17690 _{na}	17720 _{na}	
0130-0200	Radio Australia, Melbourne	11880 _{va}	15160 _{va}	15240 _{va}
		15530 _{va}	17630 _{va}	17750 _{va}
		17795 _{va}	17855 _{va}	17890 _{va}
		21525 _{va}	21740 _{va}	21775 _{va}
		9870 _{sa}	9875 _{na}	13730 _{na}
0130-0200 sm	Radio Canada Int'l, Montreal	5960 _{na}	9755 _{na}	
0130-0200	United Arab Emirates R., Dubai	11795 _{na}	13695 _{eu}	15320 _{eu}
		15435 _{eu}		
0130-0200 mwf	Alma Alta Radio, USSR	5035 _{do}	5915 _{do}	6135 _{do}
0130-0200	Radio Budapest, Hungary	6110 _{am}	9520 _{am}	9585 _{am}
		9835 _{am}	11910 _{am}	15160 _{am}
		7125 _{as}	9650 _{as}	11750 _{as}

PROGRAMS

Sundays

0100 Radio for Peace Int'l: World of Radio. Glenn Hauser's communications program for shortwave radio listeners.

0101 BBC: Play Of The Week. This month, hear "Billy Liar" (5th); "The Heart Of A Dog" (12th); "Footballers' Wives" (19th); "Dealing With Clair" (26th).

0106 Radio Prague Int'l: Czechoslovakia This Week. See S 0006.

0110 Radio Prague Int'l: Science and Technology or Stamp Corner. See S 0010.

0114 Radio Prague Int'l: Readings from Czech and Slovak Literature. See S 0014.

0130 Radio for Peace Int'l: RFPI's Mailbag. James and Debra Latham present listener letters, comments, questions, and advice.

Mondays

0100 Radio for Peace Int'l: Earthcare. See S 0200.

0101 BBC: Feature/Drama. This month, hear "Talking Heads" (6th/13th/20th); "The Thin Blue Line" (27th).

0106 Radio Prague Int'l: Encore!!! See M 0006.

0130 Radio for Peace Int'l: New Dimensions Radio. Innovative thinkers and ideas on the leading edge of change.

0145 BBC: Classical Music. Excerpts continue from "The Havana International Guitar Festival" (through 27th).

Tuesdays

0100 Radio for Peace Int'l: Headlines You May Have Missed or Radio Netherlands. The politics of Central America, or current-events programming produced by Radio Netherlands.

0105 BBC: Outlook. See M 1405.

0106 Radio Prague Int'l: Czechoslovakia Today. See T 0006.

0110 Radio for Peace Int'l: Undercurrents. See S 0350.

0110 Radio Prague Int'l: Sports Roundup. See T 0010.

0114 Radio Prague Int'l: Comment. See T 0014.

0116 Radio Prague Int'l: Lifestyle. See T 0016.

0120 Radio Prague Int'l: Talking Point. See T 0020.

0130 BBC: Music. The always-alternating "Folk In Britain" (7th/21st); "Jazz Now And Then" (14th/28th).

0130 Radio for Peace Int'l: New Dimensions Radio. See M 0130.

0145 BBC: Health Matters. See M 1115.

Wednesdays

0105 BBC: Outlook. See M 1405.

0106 Radio Prague Int'l: Czechoslovakia Today. See T 0006.

0110 Radio Prague Int'l: Comment. See T 0014.

0114 Radio Prague Int'l: Radio Prague On The Line. See W 0014.

0130 BBC: Talks. News from the world of communications can be heard in "Mediawatch" (through June 26th).

0145 BBC: Country Style. David Allan profiles the country music scene on both sides of the pond.

Thursdays

0100 Radio for Peace Int'l: Neumaier Report or WCA Global Educational Project. John Neumaier's talks, or the World Citizen's Assembly's efforts to create an attitude of world citizenship.

0105 BBC: Outlook. See M 1405.

0106 Radio Prague Int'l: Czechoslovakia Today. See T 0006.

0108 Radio Prague Int'l: Comment. See T 0014.

0110 Radio for Peace Int'l: Undercurrents. See S 0350.

0110 Radio Prague Int'l: Cultural Scene. See H 0010.

0114 Radio Prague Int'l: Talking Point. See T 0020.

0120 Radio Prague Int'l: Mailbag. See H 0020.

0130 BBC: Waveguide. See M 0530.

0130 Radio for Peace Int'l: WINGS. Issues and news affecting women.

0140 BBC: Book Choice. See T 1125.

0145 BBC: The Farming World. Agricultural news and technological innovations for farmers.

Fridays

0100 Radio for Peace Int'l: United Nations. See S 0330.

0105 BBC: Outlook. See M 1405.

0106 Radio Prague Int'l: Czechoslovakia Today. See T 0006.

0108 Radio Prague Int'l: Comment. See T 0014.

0110 Radio for Peace Int'l: Undercurrents. See S 0350.

0112 Radio Prague Int'l: Ecology. See F 0012.

0116 Radio Prague Int'l: DX Special. See F 0016.

0130 BBC: Seven Seas. Malcolm Billings presents news about ships and the sea.

0130 Radio for Peace Int'l: Alternative Radio. Current political issues facing Latin America.

0145 BBC: Global Concerns. An update on environmental issues.

Saturdays

0100 Radio for Peace Int'l: RFPI's News Update. News and commentaries about Central America by RFPI staff.

0105 BBC: Outlook. See M 1405.

0106 Radio Prague Int'l: Czechoslovakia Today. See T 0006.

0110 Radio Prague Int'l: Comment. See T 0014.

0112 Radio Prague Int'l: Economy. See A 0012.

0116 Radio Prague Int'l: Roundabout. See A 0016.

0130 BBC: Short Story (except 4th: "Seeing Stars"). See S 1115.

0130 Radio for Peace Int'l: New Dimensions Radio. See M 0130.

0145 BBC: Here's Humph! All that jazz with Humphrey Lyttelton.

0200 UTC**[10:00 PM EDT/7:00 PM PDT]****FREQUENCIES**

0200-0230	FEBC Radio Int'l, Philippines	15450 _{as}		
0200-0230 sm	Radio Norway, Oslo	15360 _{na}		
0200-0230	Radio Sweden, Stockholm	9695 _{na}	11705 _{na}	
0200-0230 s	Radio Budapest, Hungary	6110 _{am}	9520 _{am}	9585 _{am}
		9835 _{am}	11910 _{am}	15160 _{am}
0200-0230	Sri Lanka B'casting Corp.	6005 _{as}	9720 _{as}	15425 _{as}
0200-0230	Swiss Radio Int'l, Bern	6125 _{am}	6135 _{am}	9650 _{am}
		9885 _{am}	12035 _{am}	17730 _{am}
0200-0230 mtwhf	Voice of America, Washington	5995 _{ca}	9775 _{ca}	9815 _{ca}
		11580 _{ca}	15205 _{ca}	
0200-0230 mtwhfa	Voice of Kenya, Nairobi	6075 _{do}		
0200-0250	Deutsche Welle, Koln, Germany	7285 _{as}	9615 _{as}	15235 _{as}
		9690 _{as}	11945 _{as}	11965 _{as}
0200-0300 twhfa	Radio Canada Int'l, Montreal	9535 _{ca}	11845 _{ca}	11940 _{ca}
0200-0300	Radio Cairo, Egypt	9475 _{na}	9675 _{na}	
0200-0300	Radio Havana Cuba	9505 _{am}	11820 _{am}	
0200-0300	ABC Brisbane, Australia	4920 _{do}	9660 _{do}	
0200-0300	ABC Perth, Australia	9610 _{do}		
0200-0300	CFRB, Montreal	6070 _{do}		
0200-0300	CBN, Canada	6160 _{do}		
0200-0300	Radio Australia, Melbourne	11880 _{pa}	15160 _{pa}	15240 _{as}
		15530 _{as}	17630 _{va}	17750 _{as}
		17795 _{pa}	17855 _{va}	21525 _{va}
		21740 _{na}	21775 _{na}	
0200-0300	Radio for Peace Int'l, Costa Rica	7375	13630	21566
0200-0300	HCJB Quito, Ecuador	9745 _{na}	15155 _{na}	17875 _{sa}
0200-0300	WRNO New Orleans, Louisiana	7355 _{am}		
0200-0300	KTBN Salt Lake City, Utah	7510 _{am}		
0200-0300	WHRI Noblesville, Indiana	7315 _{na}	9495 _{sa}	
0200-0300	WINB Red Lion, Pennsylvania	15145 _{eu}		
0200-0300	WWCR Nashville, Tennessee	7520 _{na}		
0200-0300	WYFR Okeechobee, Florida	6065 _{na}	9505 _{na}	
0200-0300	Radio Luxembourg	6090 _{om}	15350 _{om}	
0200-0300 m	Radio New York Int'l, (via WWCR)	7435 _{va}		
0200-0300	Radio New Zealand Int'l	17770 _{pa}		
0200-0300	BBC London, England	5975 _{va}	6005 _{va}	6175 _{va}

		7325 _{va}	9410 _{va}	9515 _{va}
		9590 _{va}	9915 _{va}	11750 _{va}
		12095 _{va}	15260 _{va}	15390 _{va}
		21715 _{va}		
0200-0300	Radio Romania Int'l, Bucharest	5990 _{am}	9510 _{am}	9570 _{am}
		11830 _{am}	11940 _{am}	15380 _{am}
0200-0300	Radio Thailand, Bangkok	4830 _{as}	9655 _{as}	11905 _{as}
0200-0300 smtwh	RTV Malaysia, Radio 4	7295 _{do}		
0200-0300	SBC Radio 1, Singapore	5052 _{do}	11940 _{do}	
0200-0300	SLBS, Freetown, Sierra Leone	3316 _{do}		
0200-0300	Radio Moscow N. American Svc	9530 _{na}	9685 _{na}	9720 _{na}
		11735 _{na}	11850 _{na}	11860 _{na}
		11950 _{na}	12050 _{na}	15425 _{na}
		17605 _{na}	17665 _{na}	17700 _{na}
		21480 _{na}		
0200-0300	Radio Cultura, Guatemala	3300 _{do}		
0200-0300	Radio Moscow World Service	7370 _{va}		
0200-0300	Christian Science World Service	9455 _{eu}	9850 _{eu}	13760 _{eu}
		17555 _{eu}	17865 _{va}	
0200-0300	Voice of America, Washington	5965 _{va}	6125 _{va}	7115 _{as}
		7205 _{as}	9740 _{va}	11705 _{as}
		11805 _{va}	15225 _{va}	15250 _{as}
		17740 _{as}	17895 _{va}	21550 _{as}
0200-0300	Voice of Free China, Taiwan	5950 _{na}	9680 _{na}	9765 _{pa}
		11740 _{ca}	11860 _{as}	15345 _{as}
		9720 _{as}	15425 _{as}	
0230-0300	Sri Lanka B'casting Corp.	6110 _{am}	9520 _{am}	9585 _{am}
0230-0245 whas	Radio Budapest, Hungary	9835 _{am}	11910 _{am}	15160 _{am}
		9545 _{as}	15115 _{as}	17640 _{as}
0230-0245	Radio Pakistan, Islamabad	17725 _{as}	21730 _{as}	
		9600 _{sa}	9680 _{na}	9705 _{na}
0230-0300 twhfa	Radio Portugal, Lisbon	11740 _{sa}		
		11860 _{na}		
0230-0300	Radio Baghdad, Iraq	9760 _{na}	11825 _{na}	
0230-0300	Radio Tirana, Albania	6075 _{do}		
0230-0300 s	Voice of Kenya, Nairobi	6165 _{do}	7235 _{do}	
0240-0300	Radio 2, Lusaka, Zambia	15575 _{va}		
0245-0300	Radio Korea, Seoul			

PROGRAMS**Sundays**

- 0200 Radio for Peace Int'l: Earthcare. An examination of environmental issues and concerns.
- 0230 BBC: Feature. This month, hear "The New Wind Of Change In Africa" (5th/12th); "Moving The Masses" (19th/26th).
- 0230 Radio for Peace Int'l: UNESCO. A selection of programs presenting the cultural heritage of many nations.

Mondays

- 0230 BBC: Composer Of The Month. Profiles of famous composers. This month: George Gershwin.
- 0230 Radio for Peace Int'l: SCAN. Christian stories and contemporary music.

Tuesdays

- 0230 BBC: Sports International. Topical features and reports on sports the world over.
- 0230 Radio for Peace Int'l: United Nations. See S 0330.
- 0240 Radio for Peace Int'l: Undercurrents. See S 0350.

Wednesdays

- 0230 BBC: Development '91. Aid and development issues for developing nations.

Thursdays

- 0200 Radio for Peace Int'l: Feature. Programming



Three members of the BBC's "On the Hour" staff: Robin Lustig, Kathryn Davies and Max Easterman.

- produced by various sources.
- 0230 BBC: Assignment. An in-depth examination of a topical issue from the news.
- 0230 Radio for Peace Int'l: United Nations. See S 0330.
- 0240 Radio for Peace Int'l: Undercurrents. See S 0350.

Fridays

- 0230 BBC: Drama. See H 1130.
- 0230 Radio for Peace Int'l: Feature. Programming produced by various sources.

- 0240 Radio for Peace Int'l: Undercurrents. See S 0350.

Saturdays

- 0230 BBC: People And Politics. The background to the British political scene.
- 0230 Radio for Peace Int'l: United Nations. See S 0330.
- 0240 Radio for Peace Int'l: Undercurrents. See S 0350.

0300 UTC**[11:00 PM EDT/8:00 PM PDT]****FREQUENCIES**

0300-0330	Radio Cairo, Egypt	9475 _{na}	9675 _{na}		0300-0400	Radio Cultura, Guatemala	3300 _{do}	
0300-0330	Radio Japan, Tokyo	5960 _{na}	15325 _{na}	17825 _{na}	0300-0400	WWCR Nashville, Tennessee	7520 _{na}	
		21610 _{na}			0300-0400	WYFR Okeechobee, Florida	6065 _{na}	9505 _{na}
0300-0330	Radio Australia, Melbourne	11880 _{pa}	15160 _{pa}	15240 _{pa}	0300-0400	Radio Moscow N. American Svc	9530 _{na}	9685 _{na} 9720 _{na}
		15530 _{as}	17630 _{as}	17750 _{pa}			11735 _{na}	11850 _{na} 11860 _{na}
		17795 _{as}	17855 _{va}	21525 _{va}			11950 _{na}	12050 _{na} 15425 _{na}
		21740 _{na}	21775 _{na}				17605 _{na}	17665 _{na} 17700 _{na}
0300-0330	Radio Prague, Czechoslovakia	5930 _{na}	7345 _{na}	9540 _{na}	0300-0400	Radio Moscow World Service	15140 _{as}	15280 _{as} 15420 _{as}
0300-0330	Voice of America, Washington	5965 _{va}	11905 _{va}	15160 _{va}			17570 _{as}	17610 _{as} 17675 _{as}
		17810 _{va}	17895 _{va}				17890 _{as}	21635 _{as} 21690 _{as}
0300-0350	Deutsche Welle, Koln, Germany	6085 _{na}	6145 _{na}	9545 _{na}	0300-0400	Radio Luxembourg	15350 _{eu}	
		11810 _{na}	11890 _{na}	13610 _{na}	0300-0400	Trans World Radio Boniare	9535 _{am}	11930 _{am}
		13770 _{na}	15205 _{na}	15425 _{na}	0300-0400	RTV Malaysia, Radio 4	7295 _{do}	
0300-0400	Radio 2, Lusaka, Zambia	6165 _{do}	7235 _{do}		0300-0400	SBC Radio 1, Singapore	5052 _{do}	11940 _{do}
0300-0400	Radio Baghdad, Iraq	11860 _{na}			0300-0400	SLBS, Freetown, Sierra Leone	3316 _{do}	
0300-0400	Radio Beijing, China	9690 _{am}	9770 _{am}	11715 _{am}	0300-0400	Sri Lanka B'casting Corp.	9720 _{as}	15425 _{as}
0300-0400	Radio Havana Cuba	9505 _{am}	11820 _{am}		0300-0400	Voice of America, Washington	6035 _{af}	9575 _{af} 9585 _{af}
0300-0400	BBC London, England	5975 _{va}	6175 _{va}	7325 _{va}			9655 _{af}	11835 _{af} 15350 _{af}
		9410 _{va}	9600 _{va}	9915 _{va}	0300-0400	Voice of Free China, Taiwan	17715 _{af}	21600 _{af}
		11750 _{va}	12095 _{va}	15260 _{va}			5950 _{na}	9680 _{na} 9765 _{as}
		21715 _{va}					11745 _{as}	15345 _{as}
0300-0400	Radio Luxembourg	15350 _{om}			0300-0400	Voice of Kenya, Nairobi	6075 _{do}	
0300-0400	ABC Brisbane, Australia	4920 _{do}	9660 _{do}		0310-0325	Vatican Radio, Vatican City	9635 _{na}	
0300-0400	ABC Perth, Australia	9610 _{do}			0325-0400	mtwhfa Zimbabwe BC Corp., Harare	3396 _{do}	
0300-0400	CFRB, Montreal	6070 _{do}			0330-0400	Radio Netherlands, Hilversum	9590 _{am}	11720 _{am}
0300-0400	CBN, Canada	6160 _{do}			0330-0400	Radio Sweden, Stockholm	9695 _{na}	11705 _{na}
0300-0400 m	Radio New York Intl.(via WWCR)	7435 _{va}			0330-0400	Radio Tirana, Albania	9760 _{na}	11825 _{na}
0300-0400	Radio New Zealand Int'l.	17770 _{pa}			0330-0400	Radio Australia, Melbourne	11880 _{pa}	11930 _{pa} 15160 _{pa}
0300-0400	Radio for Peace Int'l, Costa Rica	7375	13630	21566			15240 _{pa}	15320 _{pa} 17630 _{as}
0300-0400	Radio Tanzania, Dar es Salaam	5985 _{af}	9685 _{af}	11765 _{af}			17715 _{pa}	17750 _{as} 17795 _{pa}
0300-0400	Radio Thailand, Bangkok	4830 _{as}	9655 _{as}	11905 _{as}			21525 _{as}	21740 _{pa} 21775 _{as}
0300-0400	HCJB Quito, Ecuador	9745 _{na}	15155 _{na}	21545 _{sa}	0330-0400	UAE Radio, Dubai	11945 _{na}	13675 _{na} 15400 _{na}
		25950 _{am}					15435 _{na}	
0300-0400	WRNO New Orleans, Louisiana	7355 _{am}			0340-0345	mtwhfa Voice of Greece, Athens	9395 _{am}	9420 _{am} 11645 _{am}
0300-0400	KTBN Salt Lake City, Utah	7510 _{am}			0350-0400	varies Radio Yerevan, Armenia	7400 _{am}	9750 _{am}
0300-0400	WHRI Noblesville, Indiana	7315 _{na}	9495 _{sa}		0350-0400	RAI, Rome, Italy	11905 _{as}	15330 _{as} 17795 _{as}
0300-0400	Christian Science World Service	9455 _{na}	9850 _{na}	13760 _{na}	0355-0400	Voice of Turkey, Ankara	9445 _{na}	17760 _{pa}
		17555 _{na}	17865 _{va}					

PROGRAMS**Sundays**

- 0300 Radio for Peace Int'l: Amnesty International Reports or The Other Americas Radio. Human rights reports, or issues affecting Central and South America.
- 0306 Radio Prague Int'l: Czechoslovakia This Week. See S 0006.
- 0310 Radio Prague Int'l: Science and Technology or Stamp Corner. See S 0010.
- 0314 Radio Prague Int'l: Readings from Czech and Slovak Literature. See S 0014.
- 0315 BBC: Recording Of The Week. A personal choice from the new classical music releases.
- 0330 BBC: From Our Own Correspondent. Reporters comment on the background to the news.
- 0330 Radio for Peace Int'l: United Nations. Current events programming produced by UN Radio.
- 0350 BBC: Write On... Listener letters, opinions, and questions.
- 0350 Radio for Peace Int'l: Undercurrents. An investigative look at US policy at home and abroad.

Mondays

- 0300 Radio for Peace Int'l: United Nations. See S 0330.
- 0306 Radio Prague Int'l: Encore!!! See M 0006.
- 0315 BBC: Good Books. Recommendations of books to read.
- 0320 Radio for Peace Int'l: Undercurrents. See S 0350.
- 0330 BBC: Anything Goes. See S 1430.
- 0330 Radio for Peace Int'l: Music From Everywhere. Jim Bean presents new age, world, and electronic music.

Tuesdays

- 0300 Radio for Peace Int'l: Common Ground. See M 0000.
- 0306 Radio Prague Int'l: Czechoslovakia Today. See T 0006.
- 0310 Radio Prague Int'l: Sports Roundup. See T 0010.
- 0314 Radio Prague Int'l: Comment. See T 0014.
- 0315 BBC: The World Today. See M 1645.
- 0316 Radio Prague Int'l: Lifestyle. See T 0016.
- 0320 Radio Prague Int'l: Talking Point. See T 0020.
- 0330 BBC: John Peel. Newly released albums and singles from the contemporary music scene.
- 0330 Radio for Peace Int'l: Peace Talks. See M 2300.

Wednesdays

- 0306 Radio Prague Int'l: Czechoslovakia Today. See T 0006.
- 0310 Radio Prague Int'l: Comment. See T 0014.
- 0314 Radio Prague Int'l: Radio Prague On The Line. See W 0014.
- 0315 BBC: The World Today. See M 1645.
- 0330 BBC: Discovery. An in-depth look at scientific research.

Thursdays

- 0300 Radio for Peace Int'l: Social Thought. The original personalities who are rethinking our society.
- 0306 Radio Prague Int'l: Czechoslovakia Today. See T 0006.
- 0308 Radio Prague Int'l: Comment. See T 0014.
- 0310 Radio Prague Int'l: Cultural Scene. See H 0010.
- 0314 Radio Prague Int'l: Talking Point. See T 0020.
- 0315 BBC: The World Today. See M 1645.
- 0320 Radio Prague Int'l: Mailbag. See H 0020.
- 0330 BBC: Quiz. See M 1215.
- 0330 Radio for Peace Int'l: Music From Everywhere. See M 0330.

Fridays

- 0300 Radio for Peace Int'l: Earthcare. See S 0200.
- 0306 Radio Prague Int'l: Czechoslovakia Today. See T 0006.
- 0308 Radio Prague Int'l: Comment. See T 0014.
- 0312 Radio Prague Int'l: Ecology. See F 0012.
- 0315 BBC: The World Today. See M 1645.
- 0316 Radio Prague Int'l: DX Special. See F 0016.
- 0330 BBC: Focus On Faith. Comment and discussion on major issues in various religions.
- 0330 Radio for Peace Int'l: UNESCO. See S 0230.

Saturdays

- 0300 Radio for Peace Int'l: Second Opinion. See M 0030.
- 0306 Radio Prague Int'l: Czechoslovakia Today. See T 0006.
- 0310 Radio Prague Int'l: Comment. See T 0014.
- 0312 Radio Prague Int'l: Economy. See A 0012.
- 0315 BBC: The World Today. See M 1645.
- 0316 Radio Prague Int'l: Roundabout. See A 0016.
- 0330 BBC: The Vintage Chart Show. Paul Burnett with past Top 20 pop music hits.
- 0330 Radio for Peace Int'l: Voices of Our World. See F 2300.



Actors read script for "A Many-Slendered Thing" on Vatican Radio.

0400 UTC

[12:00 AM EDT/9:00 PM PDT]

FREQUENCIES

0400-0410	RAI, Rome, Italy	11905 ^{as}	15330 ^{as}	17795 ^{as}
0400-0415	Kol Israel, Jerusalem	9435 ^{na}	11605 ^{na}	11655 ^{na}
		15640 ^{na}	17575 ^{as}	
0400-0415	Radio Prague, Czechoslovakia	5930 ^{na}	7345 ^{na}	9540 ^{na}
0400-0425	Radio Cultura, Guatemala	3300 ^{do}		
0400-0425	Radio Netherlands, Hilversum	9590 ^{am}	11720 ^{am}	
0400-0430 sm	Radio Norway, Oslo	11865 ^{na}		
0400-0430	Radio Baghdad, Iraq	11860 ^{na}		
0400-0430	Radio Romania Int'l, Bucharest	5990 ^{am}	9510 ^{am}	9570 ^{am}
		11830 ^{am}	11940 ^{am}	15380 ^{am}
0400-0430	Trans World Radio, Bonaire	9535 ^{am}	11930 ^{am}	
0400-0430	Radio Tanzania, Dar es Salaam	5985 ^{af}	9685 ^{af}	11765 ^{af}
0400-0430	Radio Thailand, Bangkok	4830 ^{as}	9655 ^{as}	11905 ^{as}
0400-0430	Sri Lanka B'casting Corp.	9720 ^{as}	15425 ^{as}	
0400-0430	Swiss Radio Int'l, Bern	6135 ^{as}	9650 ^{am}	9885 ^{am}
		12035 ^{am}		
0400-0430	Voice of America, Washington	6035 ^{af}	9575 ^{af}	11835 ^{af}
		15350 ^{af}	17715 ^{af}	21600 ^{af}
0400-0450	Deutsche Welle, Koln, Germany	6145 ^{af}	7150 ^{af}	7225 ^{af}
		9565 ^{af}	9765 ^{af}	11765 ^{af}
		11890 ^{af}	13610 ^{af}	13770 ^{af}
		15425 ^{af}		
0400-0450	Radio Havana Cuba	9505 ^{am}	9750 ^{am}	11760 ^{am}
		11820 ^{am}		
0400-0500	Radio Canada Int'l, Montreal	11925 ^{me}		
0400-0500	Radio for Peace Int'l, Costa Rica	7375	13630	21566
0400-0500	BBC London, England	5975 ^{va}	6175 ^{va}	6195 ^{va}
		7120 ^{va}	9410 ^{va}	9600 ^{va}
		9610 ^{va}	9915 ^{va}	12095 ^{va}
		15070 ^{va}	15280 ^{va}	15400 ^{va}
		15420 ^{va}		
0400-0500	Radio Cultura, Guatemala	3300 ^{do}		
0400-0500	ABC Brisbane, Australia	4920 ^{do}	9660 ^{do}	
0400-0500	ABC Perth, Australia	9610 ^{do}		
0400-0500	CFRB, Montreal	6070 ^{do}		
0400-0500	CBN, Canada	6160 ^{do}		
0400-0500	Radio 2, Lusaka, Zambia	6165 ^{do}	7235 ^{do}	
0400-0500	Radio Beijing, China	11695 ^{am}		
0400-0500	HCJB Quito, Ecuador	9745 ^{na}	15155 ^{na}	
0400-0500	WRNO New Orleans, Louisiana	6185 ^{am}		
0400-0500	KVOH Los Angeles, California	9785 ^{am}		
0400-0500	KTBN Salt Lake City, Utah	7510 ^{am}		
0400-0500	WHRI Noblesville, Indiana	7315 ^{na}	9495 ^{sa}	
0400-0500	Radio Australia, Melbourne	11880 ^{va}	15160 ^{va}	15240 ^{va}
		15320 ^{va}	15530 ^{va}	17750 ^{va}

The 11925 transmission by Radio Canada International may be subject to change, given the uncertain future of the broadcasting service.

				17795 ^{va}	17855 ^{va}	21525 ^{va}
				21775 ^{va}		
0400-0500	Christian Science World Service	9455 ^{eu}	9840 ^{eu}	13760 ^{eu}		
		17555 ^{eu}	17780 ^{va}			
0400-0500	WWCR Nashville, Tennessee	7520 ^{na}				
0400-0500	WYFR Okeechobee, Florida	6065 ^{na}	9505 ^{na}			
0400-0500	Radio Luxembourg	15350 ^{om}				
0400-0500	Radio Moscow N. American Svc	9580 ^{na}	12050 ^{na}	15180 ^{na}		
		15240 ^{na}	17605 ^{na}	17665 ^{na}		
		17690 ^{na}	17700 ^{na}	17720 ^{na}		
0400-0500	Radio Moscow World Service	7150 ^{va}	7310 ^{va}	7420 ^{va}		
		9685 ^{va}	9750 ^{va}	9765 ^{va}		
		9895 ^{va}	15420 ^{va}	17570 ^{va}		
		17590 ^{va}	17610 ^{va}	17655 ^{va}		
		17775 ^{va}	17825 ^{va}	17890 ^{va}		
		21790 ^{va}				
0400-0500 m	Radio New York Intl.(via WWCR)	7435 ^{va}				
0400-0500 smtwhf	Radio New Zealand Int'l	17770 ^{pa}				
0400-0500	Radio Pyongyang, North Korea	15180 ^{as}	15230 ^{as}	17765 ^{as}		
0400-0500	Radio Sofia, Bulgaria	7115 ^{am}	9700 ^{am}			
0400-0500	Radio Sofia, Bulgaria	11735 ^{af}	11765 ^{af}	15160 ^{af}		
0400-0500	Radio RSA, South Africa	7270 ^{af}	11900 ^{af}	11920 ^{af}		
0400-0500 smtwh	RTV Malaysia, Radio 4	7295 ^{do}				
0400-0500	SBC Radio 1, Singapore	5052 ^{do}	11940 ^{do}			
0400-0500	SLBS, Freetown, Sierra Leone	3316 ^{do}				
0400-0500	Voice of America, Washington	5995 ^{va}	6140 ^{va}	7170 ^{va}		
		7200 ^{va}	9715 ^{va}			
0400-0500	Voice of Kenya, Nairobi	6075 ^{do}				
0400-0500	Voice of Turkey, Ankara	9445 ^{na}	17760 ^{pa}			
0400-0430	Trans World Radio, Bonaire	9535 ^{am}	1930 ^{am}			
0400-0500	Radio Canada Int'l, Montreal	11925 ^{as}				
0400-0500 smtwhf	WMLK Bethel, PA	9465 ^{eu}				
0400-0500 mtwhfa	Zimbabwe BC Corp., Harare	3396 ^{do}				
0400-0425	RAI, Rome, Italy	5990 ^{me}	7275 ^{me}			
0430-0500	Radio Nigeria, Lagos	3326 ^{do}	4990 ^{do}			
0430-0500 mtwhf	Radio Southwest Africa, Namibia	3270 ^{af}	3290 ^{af}			
0430-0500	Radio Tirana, Albania	9480 ^{af}	11835 ^{af}			
0430-0500 s	Radio Zambia Int'l, Lusaka ¹	9505 ^{af}	11880 ^{af}	17895 ^{af}		
0430-0500	TWR Swaziland	9655	11750			
0430-0500	Voice of America, Washington	6035 ^{af}	9575 ^{af}	15350 ^{af}		
		17715 ^{af}	17755 ^{af}	21600 ^{af}		
0450-0500	Radio Havana Cuba	9750 ^{am}	11760 ^{am}	11820 ^{am}		

PROGRAMS

Sundays

- 0400 Radio for Peace Int'l: Radio New York International. A weekly two-hour show produced by the well-known pirate radio station.
- 0406 Radio Prague Int'l: Czechoslovakia This Week. See S 0006.
- 0410 Radio Prague Int'l: Science and Technology or Stamp Corner. See S 0010.
- 0410 Radio RSA: Good Morning Africa. News, Information, and music from South Africa.
- 0414 Radio Prague Int'l: Readings from Czech and Slovak Literature. See S 0014.
- 0430 BBC: Pop Music. The current series is "Pop Into The Movies" (through June 23rd).
- 0430 Radio Finland: Compass North. A review of the week's news.
- 0445 BBC: Talks. Education worldwide is the focus of "The Learning World" (through July 21st)

Mondays

- 0400 Radio for Peace Int'l: World of Radio. See S 0100.
- 0406 Radio Prague Int'l: Encore!!! See M 0006.
- 0410 Radio RSA: Good Morning Africa. See S 0410.
- 0430 BBC: Off The Shelf. This month, hear "Wigtime" (2nd-3rd); "Midnight Tales" (6th-10th); "Dracula" (13th-29th); "A Willing Slave" (30th); "Father's Help" (31st).
- 0430 Radio Finland: Business Monday. See S 2300.
- 0430 Radio for Peace Int'l: Food for the Thoughtful. Current dietary trends and how they affect our health.
- 0440 Radio RSA: Clinic of the Air. Advice from doctors and medical experts on health questions.
- 0445 BBC: Andy Kershaw's World Of Music. Exotic music from the world over.

Tuesdays

- 0400 Radio for Peace Int'l: UNESCO. See S 0230.
- 0406 Radio Prague Int'l: Czechoslovakia Today. See T 0006.
- 0410 Radio Prague Int'l: Sports Roundup. See T 0010.
- 0410 Radio RSA: Good Morning Africa. See S 0410.
- 0414 Radio Prague Int'l: Comment. See T 0014.
- 0415 Radio for Peace Int'l: WCA Global Educational Project. See M 2345.
- 0416 Radio Prague Int'l: Lifestyle. See T 0016.
- 0420 Radio Prague Int'l: Talking Point. See T 0020.
- 0430 BBC: Off The Shelf. See M 0430.
- 0430 Radio for Peace Int'l: Steppin' Out of Babylon. See S 2330.
- 0435 Radio RSA: Women in Africa. See M 1510.
- 0445 BBC: Europe's World. Life in Europe and its links with the rest of the world.

Wednesdays

- 0406 Radio Prague Int'l: Czechoslovakia Today. See T 0006.
- 0410 Radio Prague Int'l: Comment. See T 0014.
- 0410 Radio RSA: Good Morning Africa. See S 0410.
- 0414 Radio Prague Int'l: Radio Prague On The Line. See W 0014.
- 0430 BBC: Off The Shelf. See M 0430.
- 0435 Radio RSA: Let's Speak English. See S 1120.
- 0445 BBC: Country Style. See W 0145.

Thursdays

- 0400 Radio for Peace Int'l: United Nations. See S 0330.
- 0406 Radio Prague Int'l: Czechoslovakia Today. See T 0006.
- 0408 Radio Prague Int'l: Comment. See T 0014.
- 0410 Radio Prague Int'l: Cultural Scene. See H 0010.
- 0410 Radio RSA: Good Morning Africa. See S 0410.

- 0414 Radio Prague Int'l: Talking Point. See T 0020.
- 0415 Radio for Peace Int'l: Radio Netherlands or University for Peace News. See W 2345.
- 0420 Radio Prague Int'l: Mailbag. See H 0020.
- 0430 BBC: Off The Shelf. See M 0430.
- 0430 Radio for Peace Int'l: New Dimensions Radio. See M 0130.
- 0435 Radio RSA: African Tapestry. See W 1610.
- 0445 BBC: From Our Own Correspondent. See S 0330.

Fridays

- 0406 Radio Prague Int'l: Czechoslovakia Today. See T 0006.
- 0408 Radio Prague Int'l: Comment. See T 0014.
- 0410 Radio RSA: Good Morning Africa. See S 0410.
- 0412 Radio Prague Int'l: Ecology. See F 0012.
- 0416 Radio Prague Int'l: DX Special. See F 0016.
- 0430 BBC: Off The Shelf. See M 0430.
- 0430 Radio for Peace Int'l: Food for the Thoughtful. See M 0430.
- 0435 Radio RSA: Earth Rise Africa. See T 1610.
- 0445 BBC: Music. See T 0130.

Saturdays

- 0400 Radio for Peace Int'l: The World At Work. See F 2330.
- 0406 Radio Prague Int'l: Czechoslovakia Today. See T 0006.
- 0410 Radio Prague Int'l: Comment. See T 0014.
- 0410 Radio RSA: Good Morning Africa. See S 0410.
- 0412 Radio Prague Int'l: Economy. See A 0012.
- 0415 Radio for Peace Int'l: WCA Global Educational Project. See M 2345.
- 0416 Radio Prague Int'l: Roundabout. See A 0016.
- 0430 BBC: Here's Humph! See A 0145.
- 0430 Radio for Peace Int'l: UNESCO. See S 0230.
- 0445 BBC: Worldbrief. See F 2315.

0500 UTC

[1:00 AM EST/10:00 PM PDT]

FREQUENCIES

0500-0510	Radio Lesotho, Maseru	4800 _{do}			
0500-0510 w	Malawi B'casting Corp., Blantyre	3381 _{do}			
0500-0530	CRTV Buea, Cameroon	3970 _{do}			
0500-0530	TWR Swaziland	9655 _{do}	11750 _{do}		
0500-0530	Vatican Radio, Vatican City	17710 _{af}	17730 _{af}	21650 _{af}	
0500-0530 mtwhfa	Zimbabwe BC Corp., Harare	3396 _{do}			
0500-0550	Deutsche Welle, Koln, Germany	5960 _{na}	6120 _{na}	9760 _{na}	
		9700 _{na}	11890 _{na}	13610 _{na}	
		11705 _{na}	13790 _{na}		
0500-0600	Christian Science World Service	9455 _{eu}	9840 _{eu}	13760 _{eu}	
		17555 _{eu}	17780 _{va}		
0500-0600	Radio 2, Lusaka, Zambia	6165 _{do}	7235 _{do}		
0500-0600	Radio New Zealand Int'l	17770 _{pa}			
0500-0600	Spanish Foreign Radio, Madrid	9630 _{na}			
0500-0600	Radio Beijing, China	11840 _{am}			
0500-0600 sa	Radio E.Africa, Equatorial Guinea	9585 _{af}			
0500-0600	Radio Havana Cuba	9750 _{am}	11760 _{am}	11820 _{am}	
0500-0600	Radio Luxembourg	15350 _{om}			
0500-0600 m	Radio New York Intl,(via WOCR)	7435 _{va}			
0500-0600	Radio Nigeria, Lagos	3326 _{do}	4990 _{do}		
0500-0600 mtwhf	Radio Southwest Africa, Namibia	3270 _{af}	3290 _{af}		
0500-0600	Radio Japan, Tokyo	17810 _{na}	17825 _{na}	17890 _{na}	
0500-0600	HCJB Quito, Ecuador	9745 _{na}	15155 _{na}		
0500-0600	WRNO New Orleans, Louisiana	6185 _{am}			
0500-0600	KTBN Salt Lake City, Utah	7510 _{am}			
0500-0600	ABC Brisbane, Australia	4920 _{do}	9660 _{do}		
0500-0600	ABC Perth, Australia	9610 _{do}			
0500-0600	Radio for Peace Int'l, Costa Rica	7375	13630	21566	
0500-0600	CFRB, Montreal	6070 _{do}			
0500-0600	CBN, Canada	6160 _{do}			
0500-0600	KVOH Los Angeles, California	9785 _{am}			
0500-0600	WHRI Noblesville, Indiana	7315 _{na}	9495 _{sa}		
0500-0600	WINB Red Lion, Pennsylvania	15145 _{eu}			
0500-0600	WWCR Nashville, Tennessee	7520 _{na}			
0500-0600	Radio Moscow N. American Svc	9580 _{na}	12050 _{na}	13665 _{na}	
		15180 _{na}	15240 _{na}	15405 _{na}	
		17665 _{na}	17690 _{na}	17720 _{na}	
0500-0600	Radio Australia, Melbourne	11880 _{va}	15160 _{va}	15240 _{va}	
		15320 _{va}	15530 _{va}	17630 _{va}	
		17750 _{va}	17795 _{va}	17855 _{va}	
0500-0600	Radio Moscow World Service	21525 _{va}	21775 _{va}		
0500-0600	WYFR Okeechobee, Florida	7130 _{va}	7150 _{va}		
0500-0600	Radio Thailand, Bangkok	9505 _{na}	11915 _{am}		
0500-0600 s	Radio Zambia Int'l, Lusaka ¹	4830 _{as}	9655 _{as}	11905 _{as}	
0500-0600	RTV Malaysia, Radio 4	9505 _{af}	11880 _{af}	17895 _{af}	
0500-0600	SBC Radio 1, Singapore	7295 _{do}			
0500-0600	SLBS, Freetown, Sierra Leone	5052 _{do}	11940 _{do}		
0500-0600	Voice of America, Washington	3316 _{do}			
		6035 _{af}	9575 _{af}	15350 _{af}	
		17715 _{af}			
0500-0600	Voice of America, Washington	5995 _{va}	6060 _{va}	6140 _{va}	
		7170 _{va}	7200 _{va}	9670 _{va}	
		9700 _{va}	9715 _{va}	11825 _{va}	
		15205 _{va}			
0500-0600	BBC London, England	3955 _{va}	5975 _{va}	6005 _{va}	
		6180 _{va}	6190 _{va}	6195 _{va}	
		7120 _{va}	7230 _{va}	9410 _{va}	
		9600 _{af}	9640 _{af}	9915 _{na}	
		11760 _{eu}	11940 _{af}	11955 _{pa}	
		15070 _{eu}	15280 _{pa}	15310 _{me}	
		15400 _{af}	15420 _{af}	15590 _{me}	
		21715 _{af}			
0500-0600	Voice of Kenya, Nairobi	6075 _{do}			
0500-0600	Voice of Nigeria, Lagos	7255 _{af}			
0510-0515 w	Radio Botswana, Gaborone	5955 _{af}	7255 _{af}		
0518-0600 mtwhf	Radio Canada Int'l, Montreal	6050 _{eu}	6150 _{eu}	7155 _{eu}	
		9740 _{eu}	9760 _{eu}	11840 _{eu}	
		17840 _{af}			
0524-0600 f	Radio 2, Accra, Ghana	3366 _{do}			
0526-0600	Radio 1, Accra, Ghana ¹	4915 _{do}			
0530-0545	BBC English by Radio, London	6050 _{eu}	7210 _{eu}	9750 _{eu}	
0530-0600	Cameroon Radio-TV, Yaounde	4850 _{do}			
0530-0600	Radio Austria Int'l, Vienna	6015 _{na}	6155 _{eu}	13730 _{eu}	
		15410 _{me}	21490 _{me}		
0530-0600	Guizhou PBS, Guiyang, China ⁴	3260 _{do}	7275 _{do}		
0530-0600	Radio Romania Int'l, Bucharest	15340 _{af}	15380 _{af}	17720 _{af}	
		17745 _{af}	17790 _{af}	21665 _{af}	
0530-0600	UAE Radio, Dubai, United Arab Emirates	15435 _{as}	17830 _{as}	21700 _{as}	
0530-0600 mtwhfa	Zimbabwe BC Corp, Harare	3396 _{do}	7283 _{do}		
0545-0600	Radio Buea, Cameroon ¹	3970 _{do}			
0555-0600	Voice of Malaysia, Kuala Lumpur	6175 _{as}	9750 _{as}	15295 _{as}	

PROGRAMS

Sundays

0509 BBC: Twenty-Four Hours. Analysis of the main news of the day.
 0530 BBC: World Business Review. The previous week's news and upcoming events.
 0540 BBC: Words Of Faith. Speakers from various faiths discuss scripture and their beliefs.
 0545 BBC: Letter From America. Alstair Cooke presents his unique reflections on the USA.

Mondays

0500 Radio for Peace Int'l: UNESCO. See S 0230.
 0509 BBC: Twenty-Four Hours. See S 0509.
 0515 Radio for Peace Int'l: World Goodwill Forum. Goodwill organizations and their effects on the world.
 0530 BBC: Waveguide. Tips on how to hear the BBC better.
 0540 BBC: Words Of Faith. See S 0540.
 0545 BBC: Recording Of The Week. See S 0315.

Tuesdays

0500 Radio for Peace Int'l: A Call To Wisdom. See T 0030.
 0509 BBC: Twenty-Four Hours. See S 0509.
 0530 BBC: World Business Report. See M 2305.
 0530 Radio for Peace Int'l: Headlines You May Have Missed or Radio Netherlands. See T 0100.
 0540 BBC: Words Of Faith. See S 0540.
 0540 Radio for Peace Int'l: Undercurrents. See S 0350.
 0545 BBC: The World Today. See M 1645.

Wednesdays

0509 BBC: Twenty-Four Hours. See S 0509.
 0530 BBC: World Business Report. See M 2305.
 0540 BBC: Words Of Faith. See S 0540.
 0545 BBC: The World Today. See M 1645.

Thursdays

0509 BBC: Twenty-Four Hours. See S 0509.
 0530 BBC: World Business Report. See M 2305.
 0530 Radio for Peace Int'l: Neumaier Report or World Citizens' Assembly. See H 0100.
 0540 BBC: Words Of Faith. See S 0540.
 0540 Radio for Peace Int'l: Undercurrents. See S 0350.
 0545 BBC: The World Today. See M 1645.

Fridays

0500 Radio for Peace Int'l: Amnesty International Reports or The Other Americas Radio. See S 0300.
 0509 BBC: Twenty-Four Hours. See S 0509.
 0530 BBC: World Business Report. See M 2305.
 0530 Radio for Peace Int'l: United Nations. See S 0330.
 0540 BBC: Words Of Faith. See S 0540.
 0540 Radio for Peace Int'l: Undercurrents. See S 0350.
 0545 BBC: The World Today. See M 1645.

Saturdays

0500 Radio for Peace Int'l: World of Radio. See S 0100.
 0509 BBC: Twenty-Four Hours. See S 0509.
 0530 BBC: World Business Report. See M 2305.
 0530 Radio for Peace Int'l: RFPI's News Update. See A 0100.
 0540 BBC: Words Of Faith. See S 0540.
 0545 BBC: The World Today. See M 1645.



Radio for Peace International's studio was a shambles after an earthquake shook Costa Rica last year.

0600 UTC

[2:00 AM EDT/11:00 PM PDT]

FREQUENCIES

0600-0610 s	Malawi B'casting Corp., Blantyre	3381do		
0600-0620	Vatican Radio Vatican City	6185eu	6248eu	
0600-0625	Cameroon Radio-TV, Yaounde	4850do		
0600-0625	Voice of Kenya, Nairobi	6075do		
0600-0630	Nat'l Radio of Laos, Vientiane	7112as		
0600-0630	Radio Australia, Melbourne	11880pa	15240pa	15320as
		17630pa	17795as	17855af
		21525na	21775na	
0600-0630 s	Radio Zambia Int'l, Lusaka ¹	9505af	11880af	17895af
0600-0630	Voice of America, Washington	5995va	6060va	6095va
		6140va	7170va	7200va
		9670va	9700va	9715va
		11825va	15205va	
0600-0645 s	Radio Douala, Cameroon	4795do		
0600-0650	Deutsche Welle, Koin, Germany	11765af	13610af	13790af
		15185af	15205af	17875af
0600-0700	King of Hope, Lebanon	6280me		
0600-0700	Radio 1, Accra, Ghana ¹	4915do		
0600-0700 f	Radio 2, Accra, Ghana	3366do		
0600-0700	Radio 2, Lusaka, Zambia	6165do	7235do	
0600-0700 sa	Radio E.Africa, Equatorial Guinea	9585af		
0600-0700	Radio New Zealand Int'l	17770pa		
0600-0700	Radio Havana Cuba	11835am		
0600-0700	Radio Luxembourg	15350om		
0600-0700	Radio Nigeria, Lagos	3326do	4990do	
0600-0700	Radio Pyongyang, North Korea	15180as	15230as	
0600-0700 sa	Radio Thailand, Bangkok	4830as	9655as	11905as
0600-0700 smtwha	RTV Malaysia, Radio 4	7295do		
0600-0700	SBC Radio 1, Singapore	5052do	11940do	
0600-0700	SLBS, Freetown, Sierra Leone	3316do		
0600-0700	BBC London, England	3955eu	6180na	6190as
		6195as	7120pa	7230af
		9410af	9600af	11760eu
		11940eu	12095af	15070af
		15310as	15400af	15420af
		15590me	17885me	21470af

0600-0700	Radio Moscow N. American Svc	17720na		
0600-0700	Radio Moscow World Service	7310na	12055va	13705va
		15280va	15295va	15455va
		15560va	17570va	17590va
		17600va	17610va	17675va
		7275om	9705na	11830na
0600-0700	Radio Korea, Seoul	9765eu		
0600-0700	V. of the Mediterranean, Malta	7315eu		
0600-0700	Christian Science World Service	9455eu	9840eu	13760na
		17555eu	17780va	
0600-0700	WYFR Okeechobee, Florida	5985na	7355eu	9680na
		13695eu		
0600-0700	WHRI Noblesville, Indiana	7315eu	949sa	
0600-0700	WWCR Nashville, Tennessee	7520na		
0600-0700 smtwhf	WMLK Bethel, Pennsylvania	9465eu		
0600-0700	KTBN Salt Lake City, Utah	7510na		
0600-0700	R. For Peace Int'l, Costa Rica	7375na	13630na	
0600-0700	Voice of America, Washington	6035af	6125af	9530af
		15350af	17715af	
0600-0700	Voice of Malaysia, Kuala Lumpur	6175as	9750as	15295as
0600-0700	Zimbabwe BC Corp, Harare	3396do	7283do	
0615-0630 s	Radio Bertoua, Cameroon	4750do		
0625-0700	Voice of Kenya, Nairobi	7140do		
0630-0635 mtwhf	RTV Congolaise, Brazzaville	7105do	9610do	
0630-0700	Radio Polonia, Warsaw	6135eu	7270eu	9675eu
		15120eu		
0630-0700	Radio Tirana, Albania	7205eu	9500eu	
0630-0700	Swiss Radio Int'l, Bern	15430af	17570af	21770af
0630-0700	Vatican Radio, Vatican City	11710af	17730af	21650af
0630-0700	Radio Australia, Melbourne	11880va	13705va	15240va
		15320va	17630va	17795va
		17855va	21525va	21775va
0630-0700	Voice of America, Washington	3980va	5995va	6060va
		6095va	6140va	7170va
		7325va	11805va	11825va
		15205va		
0635-0700	Trans World Radio, Monte Carlo	9480eu		
0645-0700	Ghana B'casting Corp., Accra	6130af		

PROGRAMS

Sundays

- 0630 BBC: Jazz For The Asking. Digby Fairweather plays listener requests.
- 0630 BRT, Brussels: Fourth Community. Blackie Blackwell examines the English-speaking community in Belgium.
- 0630 Radio Finland: Perspectives. Program details not available at press time.
- 0645 BRT, Brussels: Music from Flanders. Belgian music filler.

Mondays

- 0630 BBC: Feature. See S 1401.
- 0630 Radio Finland: Business Monday. See S 2300.
- 0634 BRT, Brussels: Press Review. A review of stories in the Belgian press.

- 0637 BRT, Brussels: Radio World. Frans Vossen presents news for shortwave enthusiasts.
- 0645 Radio Finland: Press Review. A roundup of current stories in the Finnish press.
- 0647 BRT, Brussels: Tourism In Flanders. Things to see and do in Belgium.

Tuesdays

- 0600 Radio for Peace Int'l: New Dimensions Radio. See M 0130.
- 0630 BBC: Rock/Pop Music. Paul Jones delves into R&B, jazz, soul, and rock on "Counterpoint" (through June 25th).
- 0634 BRT, Brussels: Press Review. See M 0634.
- 0637 BRT, Brussels: Belgium Today. See M 2337.
- 0640 Radio Finland: Press Review. See M 0645.
- 0642 BRT, Brussels: Focus on Europe. See M 2342.

- 0647 BRT, Brussels: Sports. See M 2347.

Wednesdays

- 0630 BBC: Meridian. Events in the world of the arts.
- 0634 BRT, Brussels: Press Review. See M 0634.
- 0637 BRT, Brussels: Belgium Today. See M 2337.
- 0640 Radio Finland: Press Review. See M 0645.
- 0642 BRT, Brussels: Around the Arts. See M 2342.
- 0647 BRT, Brussels: P.O. Box 26. See M 2347.

Thursdays

- 0600 Radio for Peace Int'l: WINGS. See H 0130.
- 0630 BBC: Omnibus. See W 0030.
- 0630 Radio for Peace Int'l: Feature. See H 0200.
- 0634 BRT, Brussels: Press Review. See M 0634.
- 0637 BRT, Brussels: Living In Belgium. See W 2337.
- 0640 Radio Finland: Press Review. See M 0645.
- 0649 BRT, Brussels: Musical Roundabout. See W 2349.

Fridays

- 0600 Radio for Peace Int'l: Alternative Radio. See F 0130.
- 0630 BBC: Meridian. See W 0630.
- 0634 BRT, Brussels: Press Review. See M 0634.
- 0637 BRT, Brussels: Belgium Today. See M 2337.
- 0640 Radio Finland: Press Review. See M 0645.
- 0642 BRT, Brussels: Economics. See H 2342.
- 0650 BRT, Brussels: North-South. See H 2350.

Saturdays

- 0600 Radio for Peace Int'l: New Dimensions Radio. See M 0130.
- 0630 BBC: Meridian. See W 0630.
- 0630 BRT, Brussels: Radio World. See M 0637.
- 0640 BRT, Brussels: Tourism in Flanders. See M 0647.
- 0640 Radio Finland: Press Review. See M 0645.
- 0647 BRT, Brussels: Record of the Week. Musical excerpts from a selected record of Belgian music.
- 0650 BRT, Brussels: P.O. Box 26. See M 2347.



This photoplay depicting Ghent was sent to verify reception John Carson's reception of BRT, Belgium.

0900 UTC**[5:00 AM EDT/2:00 AM PDT]****FREQUENCIES**

0900-0905	Radio 1, Accra, Ghana ¹	4915 _{do}		
0900-0905 f	Radio 2, Accra, Ghana	3366 _{do}		
0900-0910	Malawi B'casting Corp., Blantyre	5995 _{do}		
0900-0915	Radio Voice of Lebanon, Beirut	6549.5 _{me}		
0900-0925	Radio Netherlands, Hilversum	17575 _{as}	21485 _{as}	
0900-0930	Radio Australia, Melbourne	9580 _{na}	13705 _{va}	15160 _{va}
		15240 _{va}	17630 _{va}	17715 _{va}
		17750 _{va}	21775 _{va}	25750 _{me}
0900-0935 s	Trans World Radio, Monte Carlo	9480 _{eu}		
0900-0950	Deutsche Welle, Koln, Germany	9565 _{af}	15410 _{af}	21600 _{af}
0900-0950	Deutsche Welle, Koln, Germany	6160 _{as}	11915 _{as}	17780 _{as}
		17820 _{as}	21465 _{as}	
		21650 _{as}	21680 _{as}	
0900-1000	Christian Science World Svc	9455 _{va}	11705 _{va}	13760 _{va}
		17555 _{va}	17780 _{va}	
0900-1000 s	BBS, Thimphu, Bhutan	5023 _{do}		
0900-1000	Radio New Zealand, Wellington	9700 _{pa}		
0900-1000	WWCR Nashville, Tennessee	7520 _{am}		
0900-1000	TWR Monte Carlo	9480		
0900-1000	BBC London, England	5975 _{na}	6180 _{na}	6190 _{va}
		6195 _{va}	7150 _{va}	7325 _{na}
		9410 _{eu}	9640 _{af}	9660 _{af}
		11760 _{me}	11940 _{af}	11955 _{pa}
		12095 _{eu}	15070 _{va}	15280 _{pa}
		15310 _{me}	15360 _{me}	15420 _{af}
		15590 _{me}	17640 _{va}	17705 _{va}
		17790 _{af}	17830 _{af}	17885 _{af}
		21470 _{af}	21660 _{af}	21715 _{af}
0900-1000	FEBE Radio Int'l, Philippines	9800 _{as}	11665 _{as}	
0900-1000	King of Hope, Lebanon	6280 _{me}		
0900-1000	Radio 2, Lusaka, Zambia	6165 _{do}	7235 _{do}	
0900-1000	Radio Beijing, China	11755 _{au}	15440 _{au}	17710 _{au}
0900-1000 sa	Radio E.Africa, Equatorial Guinea	9585 _{af}		
0900-1000	Radio Japan, Tokyo	15270 _{pa}	17890 _{pa}	
0900-1000	Radio Luxembourg	15350 _{om}		
0900-1000	Radio Nigeria, Lagos	3326 _{do}	4990 _{do}	
0900-1000	Radio Tanzania, Dar es Salaam	5985 _{af}	9685 _{af}	11765 _{af}
0900-1000	RTV Malaysia, Radio 4	7295 _{do}		
0900-1000	SBC Radio 1, Singapore	5052 _{do}	11940 _{do}	
0900-1000	SLBS, Freetown, Sierra Leone	3316 _{do}		
0900-1000	VOA Europe, Washington	11735 _{eu}	15160 _{eu}	15195 _{eu}
0900-1000	Voice of Kenya, Nairobi	7140 _{do}		
0900-1000	Voice of Nigeria, Lagos	7255 _{af}		
0900-1000	Zimbabwe BC Corp., Harare	3396 _{do}	7283 _{do}	
0905-1000	Cameroon Radio-TV, Yaounde	4850 _{do}		
0905-1000 sa	Radio 1, Accra, Ghana ¹	4915 _{do}		
0905-1000 sa	Radio 2, Accra, Ghana	3366 _{do}		
0905-1000 mtwhf	Radio 2 (Schools Program), Ghana	7295 _{do}		
0910-0940 smwha	Ulaanbaatar Radio, Mongolia	11850 _{pa}	12015 _{pa}	
0920-1000	BFBS (British Forces), London	15245 _{me}	17830 _{me}	21745 _{me}
0930-0940	RTV Togo, Lome	7265 _{do}		
0930-1000	Radio Australia, Melbourne	9580 _{na}	15240 _{va}	17630 _{va}
		17715 _{va}	17750 _{va}	21775 _{va}
		21825 _{va}	25750 _{me}	
0930-1000	Radio Afghanistan, Kabul	4940 _{as}	9635 _{as}	17655 _{as}
		21600 _{as}		
0940-1000	Radio Prague Inter-Program	6055 _{eu}	7345 _{eu}	9505 _{eu}

1000 UTC**[6:00 AM EDT/3:00 AM PDT]****FREQUENCIES**

1000-1015 mtwhf	Radio Budapest, Hungary	6110 _{as}	9585 _{as}	9835 _{as}
		11925 _{as}	15160 _{as}	15220 _{as}
1000-1025 mtwhf	BRT, Brussels, Belgium	6035 _{eu}	13675 _{eu}	21810 _{af}
1000-1030	Kol Israel, Jerusalem	11588 _{na}	15650 _{na}	17575 _{na}
		17590 _{eu}	21710 _{na}	21790 _{na}
1000-1030	Radio Tanzania, Dar es Salaam	5985 _{af}	9685 _{af}	11765 _{af}
1000-1030	Radio Australia, Melbourne	6080 _{va}	9580 _{na}	9760 _{va}
		15240 _{va}	17715 _{va}	21775 _{va}
1000-1030	Radio Afghanistan, Kabul	4940 _{as}	9635 _{as}	17655 _{as}
		21600 _{as}		
1000-1030	Voice of Vietnam, Hanoi	9755 _{as}	12020 _{as}	
1000-1100	All India Radio, Delhi	15050 _{as}	15335 _{as}	17387 _{as}
		17865 _{as}	21735 _{as}	
1000-1100	Cameroon Radio-TV, Yaounde	4850 _{do}		
1000-1100 sa	Radio 1, Accra, Ghana ¹	4915 _{do}		
1000-1100 sa	Radio 2, Accra, Ghana	3366 _{do}		
1000-1100 mtwhf	Radio 2 (Schools Program), Ghana	7295 _{do}		
1000-1100	Radio 2, Lusaka, Zambia	6165 _{do}	7235 _{do}	
1000-1100	Radio Beijing, China	11755 _{au}	15440 _{au}	17710 _{au}
1000-1100 sa	Radio E.Africa, Equatorial Guinea	9585 _{af}		
1000-1100	Radio Luxembourg	15350 _{om}		
1000-1100	FEBE Mainila, Philippines	9800 _{as}	11665 _{as}	
1000-1100	WWCR Nashville, Tennessee	7520 _{pa}		
1000-1100	HCJB Quito, Ecuador	9745 _{pa}	11925 _{pa}	
1000-1100	Radio New Zealand, Wellington	9700 _{pa}		
1000-1100	BBC London, England	5975 _{na}	6180 _{na}	6190 _{va}
		6195 _{va}	7150 _{va}	7325 _{na}
		9410 _{eu}	9640 _{af}	9660 _{af}
		11760 _{me}	11940 _{af}	11955 _{pa}
		12095 _{eu}	15070 _{va}	15280 _{pa}
		15310 _{me}	15360 _{me}	15420 _{af}
		15590 _{me}	17640 _{va}	17705 _{va}
		17790 _{af}	17830 _{af}	17885 _{af}
1000-1100	Christian Science World Svc	21470 _{af}	21660 _{af}	21715 _{af}
		9455 _{eu}	9495 _{eu}	13625 _{pa}
		15610 _{va}	17555 _{va}	
1000-1100	WYFR Okeechobee, Florida	11900 _{am}		
1000-1100	KTBN Salt Lake City Utah	7510 _{am}		
1000-1100	TWR Costa Rica	9725 _{ca}		
1000-1100	Radio Nigeria, Lagos	4990 _{do}	7285 _{do}	
1000-1100 mtwhf	RTV Malaysia, Radio 4	7295 _{do}		
1000-1100	SBC Radio 1, Singapore	5010 _{do}	5052 _{do}	11940 _{do}
1000-1100	SLBS, Freetown, Sierra Leone	3316 _{do}		
1000-1100 s	Tristan Radio, Tirstan da Cunha	3290 _{do}		
1000-1100	Voice of America, Washington	5985 _{as}	11720 _{as}	11735 _{va}
		15160 _{va}	15225 _{va}	15425 _{as}
		21570 _{va}	21705 _{va}	
1000-1100	Voice of America, Washington	6075 _{ca}	9590 _{ca}	11915 _{ca}
1000-1100	Voice of Kenya, Nairobi	7140 _{do}		
1000-1100	Voice of Nigeria, Lagos	7255 _{af}		
1000-1100	Zimbabwe BC Corp., Harare	3396 _{do}	7283 _{do}	
1000-1015 mtwhf	Radio Budapest, Hungary	6110 _{as}	9585 _{as}	9835 _{as}
		11925 _{as}	15160 _{as}	15220 _{as}
1030-1040 mtwhf	Malawi B'casting Corp., Blantyre	5995 _{do}		
1030-1045 mtwhf	Radio Budapest, Hungary	6110 _{as}	9585 _{as}	9835 _{as}
		11925 _{as}	15160 _{as}	15220 _{as}
1030-1100	Radio Australia, Melbourne	6080 _{va}	9580 _{na}	9760 _{va}
		11715 _{va}	21775 _{va}	
1030-1100	Radio Netherlands, Hilversum	6020 _{am}	11890 _{am}	
1030-1100 sa	Radio Tanzania, Dar es Salaam	5985 _{af}	9685 _{af}	11765 _{af}
1030-1100	Sri Lanka B'casting Corp.	11835 _{as}	15120 _{as}	17850 _{as}
1030-1100	Radio Zambia Int'l, Lusaka ¹	9505 _{af}	11880 _{af}	17895 _{af}
1030-1100	UAE Radio, Dubai, United Arab Emirates	15435 _{eu}	21605 _{eu}	
1040-1050 mtwhf	Voice of Greece, Athens	15650 _{as}	17535 _{as}	
1040-1100	Radio Prague Inter-Program	6055 _{eu}	7345 _{eu}	9505 _{eu}
1045-1100 s	Radio Budapest, Hungary	7220 _{eu}	9585 _{eu}	9835 _{eu}
		11910 _{eu}	15160 _{eu}	15220 _{eu}

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Getting in on all this fun is simple. Just study the material in ARRL's **Tune in the World with Ham Radio**, **The ARRL Technician Class License Manual**, and **The FCC Rule Book**. You'll be ready to pass the 55 question exam in no time—and there are exam sessions given by volunteer examiners every weekend all over the country.

Tune in the World (book only) covers the basics of the electronics and FCC regulations covered in the first part of the exam. **The Technician Class License Manual** emphasizes the more advanced material found on the second part of the exam. **The FCC Rule Book** has all of the amateur radio regulations and important interpretations of the rules.

If you want to expand your operations to the 80, 40, 15 or 10-meter bands, you can still take the 5 wpm code test. For study, use the code learning cassettes in the **Tune in the World (kit)**. This package can be used to study for the Novice Class exam which requires code, but has only the basic 25 question written exam.



ORDER FORM

I would like to order the following:

- Tune in the World (book only) \$14.00
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MT



The American Radio Relay League

225 Main Street
 Newington, CT 06111 USA

1100 UTC

[7:00 AM EDT/4:00 AM PDT]

1100-1110 sa	Malawi B'casting Corp., Blantyre	5995 ^{do}			
1100-1110 mtwhf	Radio 2 (Schools Program), Ghana	7295 ^{do}			
1100-1120	Radio Pakistan, Islamabad	17565 ^{eu}	21520 ^{eu}		
1100-1125	Radio Netherlands, Hilversum	6020 ^{am}	11890 ^{am}		
1100-1130	Radio Mozambique, Maputo	9525 ^{af}	11818 ^{af}	11835 ^{af}	
1100-1130	Sri Lanka B'casting Corp.	11835 ^{as}	15120 ^{as}	17850 ^{as}	
1100-1130	Swiss Radio Int'l, Bern	13635 ^{as}	15570 ^{as}	17830 ^{as}	
		21770 ^{as}			
1100-1130	Voice of Vietnam, Hanoi	7416 ^{as}	9732 ^{as}		
1100-1150	Deutsche Welle, Köln, Germany	11890 ^{af}	15410 ^{af}	17765 ^{af}	
		17800 ^{af}	17860 ^{af}	21600 ^{af}	
1100-1200	Radio Australia, Melbourne	6080 ^{va}	7240 ^{va}	9580 ^{na}	
		9710 ^{va}	9760 ^{va}	11930 ^{va}	
		15160 ^{va}	17715 ^{va}	21775 ^{va}	
		21825 ^{va}			
1100-1200	Radio 1, Accra, Ghana ¹	4915 ^{do}			
1100-1200 sa	Radio 2, Accra, Ghana	3366 ^{do}			
1100-1200	TWR Bonaire	11815 ^{am}	15345 ^{am}		
1100-1200	Radio Japan, Tokyo	6120 ^{na}	11815 ^{sa}	11840 ^{na}	
		12070 ^{pa}			
1100-1200	WYFR Okeechobee, Florida	5950 ^{na}	7355 ^{na}	11900 ^{ca}	
1100-1200	KTBN Salt Lake City, Utah	7510 ^{na}			
1100-1200	Radio Belling, China	15135 ^{eu}			
1100-1200	Christian Science World Svc	9455 ^{eu}	9495 ^{eu}	13625 ^{pa}	
		17555 ^{pa}	15610 ^{pa}		
1100-1200	HCJB Quito, Ecuador	11740 ^{am}			
1100-1200	BBC London, England	5975 ^{na}	6180 ^{na}	6190 ^{va}	
		6195 ^{va}	7150 ^{va}	7325 ^{na}	
		9410 ^{eu}	9640 ^{af}	9660 ^{af}	
		11760 ^{me}	11940 ^{af}	11955 ^{pa}	
		12095 ^{eu}	15070 ^{va}	15280 ^{pa}	
		15310 ^{me}	15360 ^{me}	15420 ^{af}	
		15590 ^{me}	17640 ^{va}	17705 ^{va}	
		17790 ^{af}	17830 ^{af}	17885 ^{af}	
		21470 ^{af}	21660 ^{af}	21715 ^{af}	
1100-1200	Radio 2, Lusaka, Zambia	6165 ^{do}	7235 ^{do}		
1100-1200 mtwhf	Radio Douala, Cameroon	4795 ^{do}			
1100-1200	Radio Japan, Tokyo	6120 ^{na}	11815 ^{na}	11840 ^{na}	
1100-1200	WYFR Okeechobee, Florida	5950 ^{na}	7355 ^{na}		
1100-1200	Radio Moscow World Service	6000 ^{va}	9705 ^{va}	9780 ^{va}	
		9875 ^{va}	11920 ^{va}	15175 ^{va}	
		15280 ^{va}	15345 ^{va}	15435 ^{va}	
		15465 ^{va}	15520 ^{va}	17565 ^{va}	
		17605 ^{va}	17780 ^{va}	17790 ^{va}	
		17810 ^{va}	17840 ^{va}	17870 ^{va}	
		17880 ^{va}	21785 ^{va}		
1100-1200	Trans World Radio, Bonaire	11815 ^{na}	15345 ^{na}		
1100-1200	Radio Korea, Seoul	9650 ^{na}	15575 ^{na}		
1100-1200	Radio New Zealand, Wellington	9700 ^{pa}			
1100-1200	HCJB Quito, Ecuador	11740 ^{na}			
1100-1200	Christian Science World Svc	9455 ^{eu}	9495 ^{eu}	9530 ^{pa}	
1100-1200 sa	Radio E.Africa, Equatorial Guinea	9585 ^{af}			
1100-1200	Radio Korea, Seoul, South Korea	15575 ^{af}			
1100-1200	Radio Luxembourg	15350 ^{om}			
1100-1200	Radio Nigeria, Lagos	4990 ^{do}	7285 ^{do}		
1100-1200	Radio Pyongyang, North Korea	6576 ^{na}	9977 ^{na}	11335 ^{na}	
1100-1200	Radio RSA, South Africa	9555 ^{af}	11805 ^{af}	11900 ^{af}	
		17835 ^{af}			
1100-1200 sa	Radio Tanzania, Dar es Salaam	5985 ^{af}	9685 ^{af}	11765 ^{af}	
1100-1200	Radio Zambia Int'l, Lusaka ¹	9505 ^{af}	11880 ^{af}	17895 ^{af}	
1100-1200	RTV Malaysia, Radio 4	7295 ^{do}			
1100-1200	SBC Radio 1, Singapore	5010 ^{do}	5052 ^{do}	11940 ^{do}	
1100-1200	SLBS, Freetown, Sierra Leone	3316 ^{do}			
1100-1200 s	Tristan Radio, Tirstan da Cunha	3290 ^{do}			
1100-1200	Voice of America, Washington	5985 ^{as}	6110 ^{as}	9760 ^{as}	
		11720 ^{as}	15155 ^{as}	15425 ^{as}	
		6075 ^{ca}	9590 ^{ca}	11915 ^{ca}	
1100-1200	Voice of America, Washington	6075 ^{ca}			
1100-1200	Voice of Asia, Kaohsiung, Taiwan	7445 ^{ca}			
1100-1200	Voice of Kenya, Nairobi	7140 ^{do}			
1100-1200	Voice of Nigeria, Lagos	7255 ^{af}			
1100-1200 war	Voice of Peace, Baghdad, Iraq	11860 ^{me}	21675 ^{me}		
1100-1200	Zimbabwe B'casting Corp., Harare	3396 ^{do}	7283 ^{do}		
1110-1115 mtwhf	Radio Botswana, Gaborone	5955 ^{af}	7255 ^{af}		
1115-1145	Voice of Radio Nepal, Kathmandu	5005 ^{as}	7165 ^{as}		
1120-1140	Hunan PBS, Changs ha, China ⁴	4990 ^{do}			
1125-1130 sa	Radio Botswana, Gaborone	5955 ^{af}	7255 ^{af}		
1130-1140	Radio Lesoiho, Maseru	4800 ^{do}			
1130-1145 mtwhf	Vatican Radio, Vatican City ^{ml}	6248 ^{eu}	9645 ^{eu}	11740 ^{eu}	
		15210 ^{eu}			
1130-1145 a	Radio Budapest, Hungary	7220 ^{eu}	9585 ^{eu}	9835 ^{eu}	
		11910 ^{eu}	15160 ^{eu}	15220 ^{eu}	
1130-1145	RTV Malaysia-Sarawak, Red Network	5950 ^{do}	7160 ^{do}		
1130-1200	Radio Sweden, Stockholm	11960 ^{as}	17740 ^{as}	21570 ^{pa}	
1130-1200	Radio Austria Int'l, Vienna	6155 ^{eu}	13730 ^{eu}	15430 ^{as}	
		15450 ^{eu}	21490 ^{na}		
1130-1200	Radio Netherlands, Hilversum	5955 ^{eu}	9715 ^{eu}	17575 ^{eu}	
		21480 ^{eu}	21520 ^{eu}		
1130-1200	Radio Thailand, Bangkok	4830 ^{as}	9655 ^{as}	11905 ^{as}	
1130-1200	Radio Tirana, Albania	9480 ^{as}	11835 ^{as}		
1130-1200	Voice of America, Washington	11735 ^{me}	15160 ^{me}	15225 ^{me}	
		21555 ^{me}	21705 ^{me}		
1130-1200	Voice of the Islamic Republic of Iran, Tehran	9525 ^{va}	9685 ^{va}	9705 ^{va}	
1140-1200	Radio Prague Inter-Program	11745 ^{va}	11790 ^{va}		
1145-1200	Radiodiffusion Nationale de la Republique du Burundi, Bujumbura	6055 ^{eu}	7345 ^{eu}	9505 ^{eu}	

PROGRAMS

Sundays

- 1110 Radio RSA: Touring RSA. The reserves, resources, roads and rails of the RSA.
- 1115 BBC: Short Story (except 5th: "Seeing Stars"). This month, hear "Ganga" (12th); "The Vegetable Garden" (19th); "One Of My Own" (26th).
- 1120 Radio RSA: Let's Speak English. English language lessons for non Radio RSA: native speakers.
- 1130 BBC: The Ken Bruce Show. See S 0030.
- 1130 BRT, Brussels: Fourth Community. See S 0630.
- 1135 Radio RSA: Science and Technology. Scientific and technological research in South Africa.
- 1145 BRT, Brussels: Music from Flanders. See S 0645.

Mondays

- 1105 Radio Finland: Press Review. See M 0645.



Lori Gilles presents a program at Costa Rica's Radio for Peace International.

1110

Radio RSA: Africa South. A look at major events and developments in South Africa, and topics of general interest.

- 1115 BBC: Health Matters. Developments in the world of medical science and advice on keeping fit.
- 1130 BBC: Composer Of The Month. See M 0230.
- 1135 Radio RSA: Sport RSA. News on South Africa's athletes and their increasing involvement in international events.

1145 Radio RSA: Comment. Opinion on current events.

Tuesdays

- 1100 Radio Finland: Press Review. See M 0645.
- 1105 Radio Finland: Alrmall. See S 1325.
- 1110 Radio RSA: Africa South. See M 1110.
- 1115 BBC: Waveguide. See M 0530.
- 1125 BBC: Book Choice. A short review of a newly released book.
- 1130 BBC: Megamix. Music, sports, fashion, health, travel, news, and opinion for young people.
- 1135 Radio RSA: Special Report. Reports on news and developments in Southern Africa.
- 1145 Radio RSA: Comment. See M 1145.

Wednesdays

- 1100 Radio Finland: Press Review. See M 0645.
- 1105 Radio Finland: Sports Fare. See T 2315.
- 1110 Radio Finland: Finnish Americans. See S 1335.
- 1110 Radio RSA: Africa South. See M 1110.
- 1115 BBC: Country Style. See W 0145.
- 1130 BBC: Meridian. See W 0630.
- 1135 Radio RSA: Business Opportunities. A weekly look at news from the world of business.

1145 Radio RSA: Comment. See M 1145.

Thursdays

- 1100 Radio Finland: Press Review. See M 0645.
- 1105 Radio Finland: Learning Finnish. See W 2315.
- 1110 Radio RSA: Africa South. See M 1110.
- 1115 BBC: From Our Own Correspondent. See S 0330.
- 1130 BBC: Drama. This month, hear "Rat Race" (2nd/9th/16th/23rd); "And The Band Played On" (through June 27th).
- 1135 Radio RSA: This is South Africa. News features on the RSA.
- 1145 Radio RSA: Comment. See M 1145.

Fridays

- 1100 Radio Finland: Press Review. See M 0645.
- 1105 Radio Finland: Names in the News. See H 2315.
- 1110 Radio Finland: Faiths in Finland. See W 2320.
- 1110 Radio RSA: Africa South. See M 1110.
- 1115 BBC: Global Concerns. See F 0145.
- 1130 BBC: Meridian. See W 0630.
- 1135 Radio RSA: Talking Point. Discussion on events in the news.
- 1145 Radio RSA: Comment. See M 1145.

Saturdays

- 1110 Radio RSA: P.O. Box 91313. Listener letters, questions, and greetings.
- 1115 BBC: Worldbrief. See F 2315.
- 1125 Radio RSA: Around and About. Details not available at press time.
- 1130 BBC: Meridian. See W 0630.
- 1135 Radio RSA: Conversation Corner. See F 1510.

1200 UTC

[8:00 AM EDT/5:00 AM PDT]

FREQUENCIES

1200-1210	Radio New Zealand, Wellington	9700pa		
1200-1210 w	Malawi B'casting Corp., Blantyre	3381 _{do}	5995 _{do}	
1200-1215	Voice of the People of Cambodia, Phnom-Penh	9695 _{as}	11938 _{as}	
1200-1225 sa	Radio 2, Accra, Ghana	3366 _{do}		
1200-1225	Radio Netherlands, Hilversum	5955 _{eu}	9715 _{eu}	17575 _{eu}
		21480 _{eu}	21520 _{eu}	
1200-1225	Voice of the Islamic Republic of Iran, Tehran	9525 _{va}	9685 _{va}	9705 _{va}
		11745 _{va}	11790 _{va}	
1200-1230	Radio Tashkent, Uzbekistan	9540 _{as}	9600 _{as}	15420 _{as}
1200-1230	Radio Mogadishu, Somalia	6095 _{af}		
1200-1230	Radio Romania Int'l, Bucharest	15365 _{as}	15380 _{as}	17720 _{as}
1200-1230	Radio Thailand, Bangkok	4830 _{as}	9655 _{as}	11905 _{as}
1200-1230 s	Radio Zambia Int'l, Lusaka ¹	9505 _{af}	11880 _{af}	17895 _{af}
1200-1230 smwhf	Ulaanbaatar Radio, Mongolia	11850 _{as}	12015 _{as}	
1200-1230 mtwhf	Vatican Radio, Vatican City	17865 _{as}	21515 _{as}	
1200-1230	Voice of America, Washington	6110 _{as}	9760 _{as}	11715 _{as}
		15155 _{as}	15425 _{as}	
		4915 _{do}		
1200-1300	Radio 1, Accra, Ghana ¹			
1200-1300	Radio Beijing, China	15110 _{am}	17715 _{am}	
1200-1300	Radio Beijing, China	8425 _{as}	11660 _{as}	
1200-1300 mtwhf	Radio Douala, Cameroon	4795 _{do}		
1200-1300 sa	Radio E. Africa, Equatorial Guinea	9585 _{af}		
1200-1300	Radio Jordan, Amman	13655 _{??}		
1200-1300	Radio Luxembourg	15350 _{om}		
1200-1300	Radio Nigeria, Lagos	4990 _{do}	7285 _{do}	
1200-1300 sa	Radio Tanzania, Dar es Salaam	5985 _{af}	9684 _{af}	11765 _{af}
1200-1300	WWCR Nashville, Tennessee	15690 _{na}		
1200-1300	Radio Canada Int'l, Montreal	9635 _{am}	11855 _{am}	17820 _{am}
1200-1300	ABC Perth	9610		
1200-1300	BBC London, England	3955 _{eu}	5955 _{na}	5975 _{af}
		6190 _{af}	6195 _{as}	7120 _{eu}
		7150 _{af}	7230 _{eu}	7325 _{me}
		9410 _{as}	9600 _{as}	9740 _{as}
		11760 _{eu}	11940 _{af}	11955 _{as}
		12095 _{me}	15070 _{me}	15280 _{pa}
		15310 _{me}	15360 _{af}	15400 _{af}
		15420 _{af}	15590 _{me}	17640 _{af}
		17790 _{me}	17830 _{af}	17885 _{af}

For special events, Radio New Zealand may continue beyond 1210.

1200-1300	TWR Bonaire	21470 _{af}	21660 _{af}	21715 _{af}
1200-1300	WYFR Okeechobee, Florida	11815 _{am}	15345 _{am}	
1200-1300	KTBN Salt Lake City, Utah	7355 _{am}	11830 _{am}	
1200-1300	Christian Science World Service	7510 _{am}		
		9475 _{am}	9495 _{am}	13625 _{am}
		13760 _{am}	15610 _{pa}	
1200-1300	Radio Korea, Seoul, S. Korea	9750 _{na}		
1200-1300	HCJB Quito, Ecuador	11740 _{am}	15115 _{am}	17890 _{am}
1200-1300	Radio Moscow World Service	6000	7305	9705
		9875	11920	13705
		15280	15345	15465
		15520	15550	17565
		17665	17780	17790
		17810	17870	17880
		21680	21725	21785
1200-1300	RTV Malaysia, Radio 4	7295 _{do}		
1200-1300	SBC Radio 1, Singapore	5010 _{do}	5052 _{do}	11940 _{do}
1200-1300	SLBS, Freetown, Sierra Leone	3316 _{do}	5980 _{do}	
1200-1300	Voice of Kenya, Nairobi	7140 _{do}		
1200-1300	Voice of Nigeria, Lagos	7255 _{af}		
1200-1300 war	Voice of Peace, Baghdad, Iraq	11860 _{me}	21675 _{me}	
1215-1230	Radio Bayrak, Cyprus	6150 _{va}		
1215-1300	Radio Cairo, Egypt	17595 _{as}		
1226-1300	Radio 2, Accra, Ghana	7295 _{do}		
1230-1255 S	BRT, Brussels, Belgium	21810 _{na}		
1230-1300	Radio Bangladesh, Dhaka	15647 _{as}	17750 _{as}	
1230-1300	Radio Sweden, Stockholm	11715 _{as}	17740 _{as}	21570 _{as}
1230-1300	Sri Lanka B'casting Corp.	6075 _{as}	9720 _{as}	
1230-1300	Radio France Int'l, Paris	21635 _{va}	21645 _{va}	
1230-1300 mtwhf	Tristan Radio, Tristan da Cunha	3290 _{do}		
1230-1300	Voice of America, Washington	6110 _{as}	9760 _{as}	11715 _{as}
		11735 _{va}	15155 _{as}	15225 _{va}
		15400 _{as}	15425 _{as}	21550 _{va}
		21700 _{va}		
1230-1300	Voice of Vietnam, Hanoi	9840 _{as}	12020 _{as}	15010 _{as}
1235-1245	Voice of Greece, Athens	15625 _{am}	15650 _{am}	17535 _{am}
1240-1300	Radio Prague Inter-Program	6055 _{eu}	7345 _{eu}	9505 _{eu}

PROGRAMS

Sundays

1201 BBC: Play Of The Week. See S 0101.

Mondays

1200 Radio Finland: Business Monday. See S 2300.

1215 BBC: Quiz. Robert Robinson returns with the general-knowledge game show "Brain Of Britain" (through August 12th).

1215 Radio Finland: Press Review. See M 0645.

1245 BBC: Sports Roundup. News from the world of sports.

Tuesdays

1210 Radio Finland: Press Review. See M 0645.

1215 BBC: Multitrack 1: Top 20. See M 2330.

1215 Radio Finland: Airmail. See S 1325.

1245 BBC: Sports Roundup. See M 1245.

Wednesdays

1210 Radio Finland: Press Review. See M 0645.

1215 BBC: New Ideas. See M 1615.

1215 Radio Finland: Sports Fare. See T 2315.

1220 Radio Finland: Finnish Americans. See S 1335.

1235 BBC: Talks. See M 1635.

1245 BBC: Sports Roundup. See M 1245.

Thursdays

1210 Radio Finland: Press Review. See M 0645.



Kimmo Wilska is one of the few Radio Finland staff members that both writes and reads the news.

1215 BBC: Multitrack 2. See W 2330.

1215 Radio Finland: Learning Finnish. See W 2315.

1245 BBC: Sports Roundup. See M 1245.

Fridays

1210 Radio Finland: Press Review. See M 0645.

1215 BBC: Feature. This month, hear "Eastern Europe: What Happened To The Revolution?" (3rd/10th/17th); "The Overseas Chinese"

(24th/31st).

1215 Radio Finland: Names In the News. See H 2315.

1220 Radio Finland: Faiths In Finland. See W 2320.

1245 BBC: Sports Roundup. See M 1245.

Saturdays

1215 BBC: Multitrack 3. See F 2330.

1245 BBC: Sports Roundup. See M 1245.

1300 UTC

[9:00 AM EDT/6:00 AM PDT]

FREQUENCIES

1300-1315	Radio Korea, Seoul, S. Korea	9750 _{na}			
1300-1325	Voice of Kenya, Nairobi	7140 _{do}			
1300-1330	Radio Canada Int'l, Montreal	11955 _{as}	15210 _{as}		
1300-1330	TWR Boniare	11815 _{am}	15345 _{am}		
1300-1330	Radio Sweden, Stockholm	11960 _{as}	17740 _{as}	21570 _{as}	
1300-1330	Radio Yugoslavia, Belgrade	21715 _{am}			
1300-1330	Radio Cairo, Egypt	17595 _{as}			
1300-1330	Radio Beijing, China	11600 _{as}	11660 _{as}		
1300-1330	mtwhf Radio Douala, Cameroon	4795 _{do}			
1300-1330	Voice of America, Washington	6110 _{as}	9760 _{as}	11715 _{as}	
		15155 _{as}	15245 _{as}		
1300-1400	FEBC Radio Int'l, Philippines	11850 _{as}			
1300-1400	Radio 1, Accra, Ghana	4915 _{do}			
1300-1400	Radio 2, Accra, Ghana	7295 _{do}			
1300-1400	sa Radio E. Africa, Equatorial Guinea	9585 _{af}			
1300-1400	Radio Jordan, Amman	13655 _{??}			
1300-1400	BBC London, England	3955 _{eu}	5955 _{na}	5975 _{af}	
		6190 _{af}	6195 _{as}	7120 _{eu}	
		7150 _{af}	7230 _{eu}	7325 _{me}	
		9410 _{as}	9600 _{as}	9740 _{as}	
		11760 _{eu}	11940 _{af}	11955 _{as}	
		12095 _{me}	15070 _{me}	15280 _{pa}	
		15310 _{me}	15360 _{af}	15400 _{af}	
		15420 _{af}	15590 _{me}	17640 _{af}	
		17790 _{me}	17830 _{af}	17885 _{af}	
		21470 _{af}	21660 _{af}	21715 _{af}	
1300-1400	Radio Moscow World Service	6000 _{va}	9705 _{va}	9780 _{va}	
		9875 _{va}	11920 _{va}	15175 _{va}	
		15280 _{va}	15345 _{va}	15435 _{va}	
		15465 _{va}	15520 _{va}	17565 _{va}	
		17605 _{va}	17780 _{va}	17790 _{va}	
		17810 _{va}	17840 _{va}	17870 _{va}	
		17880 _{va}	21785 _{va}		
1300-1400	Radio Luxembourg	15350 _{om}			
1300-1400	Radio Nigeria, Lagos	4990 _{do}	7285 _{do}		
1300-1400	s Radio Canada Int'l, Montreal	11955 _{am}	17820 _{am}		
1300-1400	FEBC Manila	11685 _{pa}			
1300-1400	Radio Pyongyang, North Korea	9325 _{eu}	9345 _{eu}	9640 _{as}	
		13650 _{as}	15230 _{as}		
1300-1400	Radio Romania Int'l, Bucharest	11940 _{eu}	15365 _{eu}	17720 _{eu}	
		21665 _{eu}			
1300-1400	sa Radio Tanzania, Dar es Salaam	5985 _{af}	9684 _{af}	11765 _{af}	
1300-1400	ABC Perth	9610			
1300-1400	Christian Science World Svc	9475 _{pa}	9495 _{pa}	13625 _{pa}	
		13760 _{pa}	15610 _{pa}		
1300-1400	HCJB Quito, Ecuador	11740	15115	17890	
1300-1400	Radio Luxembourg	15350			
1300-1400	WHRI Noblesville, Indiana	9465	11790		
1300-1400	WWCR Nashville, TN	15690			
1300-1400	WYFR Okeechobee, Florida	5950	9705	11830	
		17640			
1300-1400	war British Forces Broadcasting Svc	17695	21735		
1300-1400	RTV Malaysia, Radio 4	7295 _{do}			
1300-1400	SBC Radio 1, Singapore	5010 _{do}	5052 _{do}	11940 _{do}	
1300-1400	SLBS, Freetown, Sierra Leone	3316 _{do}	5980 _{do}		
1300-1400	Sri Lanka B'casting Corp.	6075 _{as}	9720 _{as}		
1300-1400	Voice of Nigeria, Lagos	7255 _{af}			
1300-1400	KTBN Salt Lake City, Utah	7510			
1300-1400	war Voice of Peace, Baghdad, Iraq	11860 _{me}	21675 _{me}		
1300-1330	Swiss Radio Int'l, Bern	6165 _{eu}	9535 _{eu}	12030 _{eu}	
1305-1315	s Radio Riga, Latvia	15330			
1315-1330	Radio Voice of Lebanon, Beirut	6549.5 _{me}			
1325-1400	mtwhf Voice of Kenya, Nairobi	4934 _{do}			
1330-1400	All India Radio, Delhi	9565 _{as}	11760 _{as}	15335 _{as}	
1330-1400	BFBS (British Forces), London	15390 _{me}	17695 _{me}	21735 _{me}	
1330-1400	Nal'l Radio of Laos, Vientiane	7112 _{as}			
1330-1400	Radio Austria Int'l, Vienna	6155 _{eu}	13730 _{eu}	15430 _{as}	
		21490 _{va}			
1330-1400	Radio Douala, Cameroon	4795 _{do}			
1330-1400	a Radio Republik Indonesia Jayapura	385 _{do}	6070 _{do}		
1330-1400	Swiss Radio Int'l, Bern	7480 _{as}	11695 _{as}	13635 _{as}	
		15570 _{as}	17830 _{as}	21695 _{as}	
1330-1400	Radio Tashkent, Uzbekistan	9540	9600	15470	
1330-1400	UAE Radio, Dubai	15320 _{eu}	15435 _{eu}	21605	
		21675			
1330-1400	Voice of America, Washington	6110 _{as}	9760 _{as}	11905 _{va}	
		15155 _{as}	15225 _{va}	15400 _{va}	
		15425 _{as}	21550 _{va}	21700 _{va}	
1330-1400	Voice of Turkey, Ankara	17785 _{as}			
1330-1400	Voice of Vietnam, Hanoi	9840 _{as}	12020 _{as}	15010 _{as}	

PROGRAMS

Sundays

- 1300 Radio Finland: Compass North. See S 0430.
 1315 Radio Finland: Perspectives. See S 0630.
 1325 Radio Finland: Airmail. An audience response feature, with listener comments and questions.
 1335 Radio Finland: Finnish Americans. Conversations with Finns living in the States.

Mondays

- 1300 Radio Finland: Business Monday. See S 2300.
 1304 BRT, Brussels: Press Review. See M 0634.
 1307 BRT, Brussels: Radio World. See M 0637.
 1315 Radio Finland: Press Review. See M 0645.
 1317 BRT, Brussels: Tourism in Flanders. See M 0647.
 1320 Radio Finland: Highlights. See S 2310.

Tuesdays

- 1304 BRT, Brussels: Press Review. See M 0634.
 1307 BRT, Brussels: Belgium Today. See M 2337.
 1310 Radio Finland: Press Review. See M 0645.
 1312 BRT, Brussels: Focus on Europe. See M 2342.
 1315 Radio Finland: Airmail. See S 1325.
 1317 BRT, Brussels: Sports. See M 2347.

Wednesdays

- 1304 BRT, Brussels: Press Review. See M 0634.
 1307 BRT, Brussels: Belgium Today. See M 2337.
 1310 Radio Finland: Press Review. See M 0645.
 1312 BRT, Brussels: Around the Arts. See M 2342.
 1315 Radio Finland: Sports Fare. See T 2315.



Fleur Marais broadcasts the shortwave world's only Afrikaans language lessons, over Radio South Africa.

- 1317 BRT, Brussels: P.O. Box 26. See M 2347.
 1320 Radio Finland: Finnish Americans. See S 1335.

Thursdays

- 1304 BRT, Brussels: Press Review. See M 0634.
 1307 BRT, Brussels: Living in Belgium. See W 2337.
 1310 Radio Finland: Press Review. See M 0645.
 1315 Radio Finland: Learning Finnish. See W 2315.
 1319 BRT, Brussels: Musical Roundabout. See W 2349.

Fridays

- 1304 BRT, Brussels: Press Review. See M 0634.
 1307 BRT, Brussels: Belgium Today. See M 2337.
 1310 Radio Finland: Press Review. See M 0645.
 1312 BRT, Brussels: Economics. See H 2342.
 1315 Radio Finland: Names in the News. See H 2315.
 1320 BRT, Brussels: North-South. See H 2350.
 1320 Radio Finland: Faiths in Finland. See W 2320.

Saturdays

- 1300 BRT, Brussels: Radio World. See M 0637.
 1310 BRT, Brussels: Tourism in Flanders. See M 0647.
 1310 Radio Finland: Finnish History. See F 2315.
 1315 Radio Finland: Science Report. See H 2320.
 1317 BRT, Brussels: Record of the Week. See A 0647.
 1320 BRT, Brussels: P.O. Box 26. See M 2347.
 1320 Radio Finland: Names in the News. See H 2315.
 1325 Radio Finland: Faiths in Finland. See W 2320.
 1330 Radio Finland: Learning Finnish. See W 2315.

1500 UTC

[11:00 AM EDT/8:00 AM PDT]

FREQUENCIES

1500-1515	smwha Ulaanbaatar Radio, Mongolia	9575 ^{as}	13780 ^{as}	
1500-1525	Radio Netherlands, Hilversum	5955 ^{eu}	9715 ^{eu}	17575 ^{eu}
		21480 ^{eu}	21520 ^{eu}	
1500-1530	Radio Romania Int'l, Bucharest	11775 ^{as}	11940 ^{as}	15250 ^{as}
		15335 ^{as}	17720 ^{as}	17745 ^{as}
1500-1530 as	Radio Norway, Oslo	15305 ^{na}	17790 ^{na}	
1500-1530 sa	Radio Tanzania, Dar es Salaam	5985 ^{af}	9684 ^{af}	11765 ^{af}
1500-1530	Voice of America, Washington	6110 ^{as}	7125 ^{as}	9645 ^{as}
		9700 ^{va}	15205 ^{va}	15395 ^{as}
1500-1550	Deutsche Welle, Köln, Germany	9735 ^{af}	11965 ^{af}	13610 ^{af}
		17735 ^{af}	17765 ^{af}	21600 ^{af}
1500-1555	FEBA Seychelles	11865 ^{af}		
1500-1600 s	Radio Canada Int'l, Montreal	11955	17820	
1500-1600	WWCR Nashville, Tennessee	15690 ^{am}		
1500-1600 whfa	FEBA Seychelles	9590 ^{as}	15330 ^{af}	
1500-1600	BBC London, England	3955 ^{eu}	5955 ^{na}	5975 ^{af}
		6190 ^{af}	6195 ^{as}	7120 ^{eu}
		7150 ^{af}	7230 ^{eu}	7325 ^{me}
		9410 ^{as}	9515 ^{as}	9640 ^{as}
		11755 ^{eu}	11940 ^{af}	11955 ^{as}
		12095 ^{me}	15070 ^{me}	15260 ^{pa}
		15310 ^{me}	15360 ^{af}	15400 ^{af}
		15420 ^{af}	15590 ^{me}	17640 ^{af}
		17790 ^{me}	17830 ^{af}	17885 ^{af}
		21470 ^{af}	21660 ^{af}	21715 ^{af}
1500-1600	KNLS Anchor Point, Alaska	9615 ^{as}		
1500-1600	Voice of Myanmar, Burma	5990 ^{do}		
1500-1600	Radio Moscow World Service	6000 ^{va}	9705 ^{va}	9780 ^{va}
		9875 ^{va}	11840 ^{va}	15175 ^{va}
		15280 ^{va}	15345 ^{va}	15435 ^{va}
		15465 ^{va}	15520 ^{va}	17565 ^{va}
		17605 ^{va}	17780 ^{va}	17790 ^{va}
		17810 ^{va}	17840 ^{va}	17870 ^{va}
		17880 ^{va}	21785 ^{va}	
1500-1600	Cameroon Radio-TV, Yaounde	4850 ^{do}		
1500-1600	FEBC Radio Int'l, Philippines	11685 ^{as}		
1500-1600	FEBA, Mahe, Seychelles	9590 ^{do}	11865 ^{as}	15330 ^{as}
1500-1600	Radio 1, Accra, Ghana ¹	4915 ^{do}		

1500-1600	Radio 2, Accra, Ghana	7295 ^{do}		
1500-1600	Radio Beijing, China	7405 ^{am}		
1500-1600	Radio Beijing, China	4200 ^{as}	11815 ^{as}	15165 ^{as}
1500-1600	Radio Jordan, Amman	9560 ^{??}		
1500-1600	Radio Luxembourg	15350 ^{om}		
1500-1600	Radio Nigeria, Lagos	4990 ^{do}	7285 ^{do}	
1500-1600	Radio Pyongyang, North Korea	9325 ^{va}	9640 ^{va}	9977 ^{va}
		11760 ^{va}		
1500-1600	Christian Science World Svc	9530 ^{pa}	13625 ^{pa}	13760 ^{pa}
		15610 ^{pa}	21670 ^{pa}	
1500-1600	Radio Bangladesh	4880		
1500-1600	KTBN Salt Lake City, Utah	7510		
1500-1600	WYFR Okeechobee, Florida	9505	11830	15215
		17640		
1500-1600	WHRl Noblesville, Indiana	15105	21840	
1500-1600	Radio Australia, Melbourne	11720		
1500-1600	Radio RSA, South Africa	7230 ^{af}	15210 ^{af}	15270 ^{af}
1500-1600	RTV Malaysia, Radio 4	7295 ^{do}		
1500-1600	SBC Radio 1, Singapore	5010 ^{do}	5052 ^{do}	11940 ^{do}
1500-1600	SLBS, Freetown, Sierra Leone	3316 ^{do}	5980 ^{do}	
1500-1600	Sri Lanka B'casting Corp.	6075 ^{as}	9720 ^{as}	
1500-1600	Voice of Ethiopia, Addis Ababa	9560 ^{af}		
1500-1600 mtwhf	Voice of Kenya, Nairobi	4934 ^{do}		
1500-1600	Voice of Nigeria, Lagos	7255 ^{af}		
1530-1540 mtwhfa	Voice of Greece, Athens	11645 ^{am}	15650 ^{am}	17535 ^{am}
1530-1600	Radio Zambia Int'l, Lusaka ¹	9505 ^{af}	11880 ^{af}	17895 ^{af}
1530-1600	Radio Sofia, Bulgaria	11735 ^{af}	11840 ^{af}	15370 ^{af}
1530-1600	Radio Sweden, Stockholm	17875 ^{na}	21500 ^{na}	
1530-1600	Radio Tanzania, Dar es Salaam	5985 ^{af}	9684 ^{af}	11765 ^{af}
1530-1600	Radio Tirana, Albania	9500 ^{af}	11835 ^{af}	
1530-1600	Swiss Radio Int'l, Bern	13685 ^{af}	15430 ^{af}	17830 ^{af}
		21630 ^{af}		
1530-1600	Sudan Nat'l B'casting Corp.	9540 ^{do}	9550 ^{do}	11635 ^{do}
1530-1600 mtwha	Vatican Radio, Vatican City	6185 ^{eu}		
1530-1600	Voice of America, Washington	9700 ^{va}	15205 ^{va}	
1545-1600 mtwhf	Radiodifusion Nationale de la Republique du Burundi, Bujumbura	6140 ^{af}		
1545-1600	Vatican Radio, Vatican City	11715 ^{as}	15090 ^{as}	17870 ^{as}
1555-1600 a	FEBA Seychelles	11865 ^{af}		



Cheers! Radio RSA staff ham it up at a celebration. From left: Bernhard Leemann, Peter Finn, Kate Sasserod, Fanus Venter, and Erik Sonrichsen.

PROGRAMS

Sundays

- 1510 Radio RSA: Sunday Magazine. Details not available at press time.
 1515 BBC: Concert Hall. Recordings from the world's concert halls.
 1540 Radio RSA: The Message. Details not available at press time.

Mondays

- 1510 Radio RSA: Women in Africa. The needs and

interests of women and their roles in the African family.

- 1515 BBC: Feature/Drama. See M 0101.
 1525 Radio RSA: Black Choirs. Musical selections from South Africa's many black choirs.
 1555 Radio RSA: Comment. See M 1145.

Tuesdays

- 1510 Radio RSA: Women in Africa. See M 1510.
 1515 BBC: A Jolly Good Show. Dave Lee Travis presents listener rock music requests.
 1525 Radio RSA: Artist of the Week. Musical selections from a selected African artist.

1555 Radio RSA: Comment. See M 1145.

Wednesdays

- 1510 Radio RSA: They Make Music. A look at the artists behind the music.
 1515 BBC: Talks. See M 2315.
 1530 BBC: Comedy Show (except 29th: "Two Cheers For May"). Ambassador Mackenzie and his wild and wacky crew continue their efforts at "Flying The Flag" (through 22nd).
 1555 Radio RSA: Comment. See M 1145.

Thursdays

- 1510 Radio RSA: Our Wild Heritage. The diversity of plants and animals on the African continent.
 1515 BBC: Music For A While With Richard Baker. Richard Baker with classical music selections.
 1525 Radio RSA: Sounds of Soweto. Music from South Africa's most famous ghetto.
 1555 Radio RSA: Comment. See M 1145.

Fridays

- 1510 Radio RSA: Conversation Corner. Details not available at press time.
 1515 BBC: Music Review. See H 2315.
 1530 Radio RSA: African Tapestry. See W 1610.
 1555 Radio RSA: Comment. See M 1145.

Saturdays

- 1510 Radio RSA: P.O. Box 91313. See A 1110.
 1515 BBC: Sportsworld. See A 1401.
 1525 Radio RSA: Down Our Way. The entertainment scene in South Africa.
 1550 Radio RSA: Touring RSA. See S 1110.

1600 UTC

[12:00 PM EDT/9:00 AM PDT]

FREQUENCIES

1600-1605	SBC Radio 1, Singapore	5052 _{do}	11940 _{do}
1600-1610	Malawi B'casting Corp., Blantyre	3381 _{do}	
1600-1610	Radio Lesotho, Maseru	4800 _{do}	
1600-1610	Vatican Radio, Vatican City	11715 _{as}	15090 _{as} 17870 _{as}
1600-1615 sa	Radiodiffusion Nationale de la Republique du Burundi, Bujumbura	6140 _{af}	
1600-1630	Radio Pakistan, Islamabad	13665 _{me} 15605 _{me} 17555 _{me}	
1600-1630	Radio Sofia, Bulgaria	17895 _{af} 21480 _{af} 21530 _{me}	
1600-1630 mtwhf	Vatican Radio, Vatican City ^{MI}	11735 _{af} 11840 _{af} 15370 _{af}	
1600-1630	Voice of America, Washington	6248 _{eu} 7250 _{eu} 9645 _{eu}	
1600-1630	Voice of Vietnam, Hanoi	11740 _{eu} 15210 _{eu}	
1600-1630 mtwhf	Radio Portugal, Lisbon	6110 _{as} 7125 _{as} 9645 _{as}	
1600-1640	UAE Radio, Dubai, United Arab Emirates	9700 _{va} 15205 _{va} 15395 _{as}	
1600-1650	Deutsche Welle, Koin, Germany	21530 _{me} 9840 _{eu} 12020 _{eu} 15010 _{eu}	
1600-1700	BSKSA Saudi Arabia	15320 _{af} 15435 _{eu} 21605 _{eu}	
1600-1700	Radio 1, Accra, Ghana ¹	6170 _{as} 7225 _{as} 15105 _{as}	
1600-1700	Radio 2, Accra, Ghana	15415 _{as} 15595 _{as} 17810 _{as}	
1600-1700	Radio Beijing, China	21680 _{as} 9705 _{eu} 9720 _{eu}	
1600-1700	BBC London, England	4915 _{do} 7295 _{do}	
1600-1700	Voice of the Somali People	4130 _{af} 9570 _{af} 15110 _{af}	
1600-1700	Radio Moscow World Service	15130 _{af} 3955 _{eu} 5955 _{na} 5975 _{af}	
		6190 _{af} 6195 _{as} 7120 _{eu}	
		7150 _{af} 7230 _{eu} 7325 _{me}	
		9410 _{as} 9515 _{as} 9640 _{as}	
		11755 _{eu} 11940 _{af} 11955 _{as}	
		12095 _{me} 15070 _{me} 15260 _{pa}	
		15310 _{me} 15360 _{af} 15400 _{af}	
		15420 _{af} 15590 _{me} 17640 _{af}	
		17790 _{me} 17830 _{af} 17885 _{af}	
		21470 _{af} 21660 _{af} 21715 _{af}	
		6320 _{do} 6000 _{va} 9705 _{va} 9780 _{va}	
		9875 _{va} 11840 _{va} 15175 _{va}	
		15280 _{va} 15345 _{va} 15435 _{va}	
		15465 _{va} 15520 _{va} 17565 _{va}	

1600-1700	Radio Jordan, Amman	17605 _{va} 17780 _{va} 17790 _{va}
1600-1700	Radio Korea, Seoul, S. Korea	17810 _{va} 17840 _{va} 17870 _{va}
1600-1700	Radio Luxembourg	17880 _{va} 21785 _{va}
1600-1700	Radio Nigeria, Lagos	9560 _{??}
1600-1700	Radio RSA, South Africa	5975 _{om} 9870 _{af}
1600-1700	Radio Tanzania, Dar es Salaam	15350 _{om}
1600-1700	Radio Zambia Int'l, Lusaka ¹	4990 _{do}
1600-1700	SLBS, Freetown, Sierra Leone	7230 _{af} 15210 _{af} 15270 _{af}
1600-1700	Sri Lanka B'casting Corp.	5985 _{af} 9684 _{af} 11765 _{af}
1600-1700 mtwhf	Tristan Radio, Tristan da Cunha	9505 _{af} 11880 _{af} 17895 _{af}
1600-1700	Voice of America, Washington	3316 _{do} 5980 _{do}
1600-1700	WRNO New Orleans, Louisiana	6075 _{as} 9720 _{as}
1600-1700	KTBN Salt Lake City, Utah	9575 _{do} 11920 _{af} 15410 _{af}
1600-1700	WWCR Nashville, Tennessee	15580 _{af} 17800 _{af} 21625 _{af}
1600-1700	WHRI Noblesville, Indiana	15420
1600-1700	WYFR Okeechobee, Florida	15590 _{am}
1600-1700	Radio Franec Int'l, Paris	15690 _{am}
1600-1700	Christian Science World Svc	15105 _{am} 17830 _{am}
1600-1700 mtwhf	Voice of Kenya, Nairobi	15170 _{am} 15215 _{am} 17640 _{am}
1600-1700	Voice of Nigeria, Lagos	17620 _{af} 17850 _{af}
1610-1615 mtwhf	Radio Botswana, Gaborone	11580 _{as} 13625 _{as} 15610 _{am}
1615-1630 s	Radiodiffusion Nationale de la Republique du Burundi, Bujumbura	17555 _{am} 21640 _{af}
1615-1630 mh	Radio Budapest, Hungary	4934 _{do}
1615-1630	Radio Canada Int'l, Montreal	7255 _{af}
1615-1700	Swiss Radio Int'l, Bern ¹	5955 _{af} 7255 _{af}
1630-1700	Radio Cairo, Egypt	6140 _{af}
1630-1700	HCJB Quito, Ecuador	7220 _{eu} 9585 _{eu} 9835 _{eu}
1630-1700 mwf	Alma Ata Radio, USSR	11910 _{eu} 15160 _{eu} 15220 _{eu}
1630-1700	RTV Rwandiasse, Kigali, Rwanda	5995 _{eu} 7235 _{eu} 13650 _{eu}
1630-1700 mtwhf	RTV Morocco, Rabat	15325 _{eu} 17820 _{eu} 21545 _{eu}
1630-1700	Voice of America, Washington	11955 _{eu}
		15255 _{af}
		21455 21480 25950
		5035 _{do} 5915 _{do} 6135 _{do}
		3330 6055
		15335 _{af} 15360 _{af} 17595 _{af}
		6110 _{as} 7125 _{as} 9645 _{as}
		9700 _{va} 9760 _{va} 11710 _{va}
		15205 _{va} 15245 _{va} 15395 _{as}

PROGRAMS

Sundays

- 1610 Radio RSA: Science and Technology. See S 1135.
- 1615 BBC: Feature. See S 0230.
- 1625 Radio RSA: Yours and Mine. A request program, featuring the best in African music.
- 1645 BBC: Letter From America. See S 0545.

Mondays

- 1610 Radio RSA: Clinic of the Air. See M 0440.
- 1615 BBC: New Ideas. Innovative developments in technology and new products.
- 1625 Radio RSA: Yours and Mine. See S 1625.
- 1635 BBC: Talks. Singers explain their songs and then play them in "Cue For Song" (through 27th).
- 1645 BBC: The World Today. A look at a topical aspect of the international scene.

Tuesdays

- 1610 Radio RSA: Earth Rise Africa. The environment, flora and fauna of Africa.
- 1615 BBC: Megamix. See T 1130.
- 1625 Radio RSA: Yours and Mine. See S 1625.
- 1645 BBC: The World Today. See M 1645.

Wednesdays

- 1610 Radio RSA: African Tapestry. The different nations and peoples which form South Africa.
- 1615 BBC: Rock/Pop Music. See T 0630.
- 1625 Radio RSA: Yours and Mine. See S 1625.
- 1645 BBC: The World Today. See M 1645.

Thursdays

- 1610 Radio RSA: Let's Speak English. See S 1120.
- 1615 BBC: Network UK. Issues and events affecting people across the UK.
- 1625 Radio RSA: Yours and Mine. See S 1625.
- 1645 BBC: The World Today. See M 1645.

Fridays

- 1610 Radio RSA: Women In Africa. See M 1510.
- 1615 BBC: Science In Action. The latest news

about scientific innovations.

- 1625 Radio RSA: Yours and Mine. See S 1625.
- 1645 BBC: The World Today. See M 1645.

Saturdays

- 1610 Radio RSA: Our Wild Heritage. See H 1510.
- 1615 BBC: Sportsworld. See A 1401.
- 1625 Radio RSA: Music RSA. Musical selections from South Africa.



Jonathan Marks with Rick Kingma, busy with a Media Network production on Radio Netherlands.

1700 UTC

[1:00 PM EDT/10:00 AM PDT]

FREQUENCIES

1700-1705	Radio 2, Accra, Ghana	7295 _{do}		
1700-1710	Radio Bafoussam, Cameroon ¹	4000 _{do}		
1700-1715	Kol Israel, Jerusalem	11588 _{eu}	11655 _{eu}	
1700-1725	Radio Netherlands, Hilversum	6020 _{af}	15570 _{af}	
1700-1728	SLBS, Freetown, Sierra Leone	3316 _{do}	5980 _{do}	
1700-1730	Radio Sweden, Stockholm	6065 _{eu}	9615 _{eu}	
1700-1730	Radio Norway, Oslo	17760		
1700-1730	Radio Jordan, Amman	9560 _{??}		
1700-1730	Sri Lanka B'casting Corp.	6075 _{as}	9720 _{as}	
1700-1730	Voice of America, Washington	3980 _{va}	6040 _{va}	6110 _{as}
		7125 _{as}	9645 _{as}	9700 _{va}
		9760 _{va}	15205 _{va}	15395 _{as}
		9705 _{eu}	9720 _{eu}	
1700-1800	B'casting Service of the Kingdom of Saudi Arabia, Riyadh			
1700-1800	Radio 1, Accra, Ghana ¹	4915 _{do}		
1700-1800	Radio Africa, Equatorial Guinea	7190 _{af}		
1700-1800	Radio Beijing, China	4130 _{af}	7405 _{af}	8260 _{af}
		9570 _{af}	11575 _{af}	
1700-1800	Radio Cairo, Egypt	15255 _{af}		
1700-1800	Radio Luxembourg	15350 _{om}		
1700-1800	BBC London, England	3955 _{eu}	5955 _{na}	5975 _{af}
		6190 _{af}	6195 _{as}	7120 _{eu}
		7150 _{af}	7230 _{eu}	7325 _{me}
		9410 _{as}	9515 _{as}	9640 _{as}
		11755 _{eu}	11940 _{af}	11955 _{as}
		12095 _{me}	15070 _{me}	15260 _{pa}
		15310 _{me}	15360 _{af}	15400 _{af}
		15420 _{af}	15590 _{me}	17640 _{af}
		17790 _{me}	17830 _{af}	17885 _{af}
		21470 _{af}	21660 _{af}	21715 _{af}
1700-1800	WRNO New Orleans, Louisiana	15420		
1700-1800	WWCR Nashville, Tennessee	15690		
1700-1800	KTBN Salt Lake City, Utah	15590		
1700-1800	WHRI Noblesville, Indiana	15105	17830	
1700-1800	WYFR Okeechobee, Florida	17640		
1700-1800	Christian Science World Svc	11580 _{as}	13625 _{as}	17555 _{am}
		15610 _{am}	21640 _{af}	

1700-1800	Radio Moscow World Service	6000 _{va}	9705 _{va}	9780 _{va}
		9875 _{va}	11920 _{va}	15175 _{va}
		15280 _{va}	15345 _{va}	15435 _{va}
		15465 _{va}	15520 _{va}	17655 _{va}
		17605 _{va}	17780 _{va}	17790 _{va}
		17810 _{va}	17840 _{va}	17870 _{va}
		17880 _{va}	21785 _{va}	
1700-1800	Radio RSA, South Africa	7230 _{af}	15210 _{af}	15270 _{af}
		17790 _{af}	17835 _{af}	
1700-1800	Radio Tanzania, Dar es Salaam	5985 _{af}	9684 _{af}	11765 _{af}
1700-1800	Radio Zambia Int'l, Lusaka ¹	9505 _{af}	11880 _{af}	17895 _{af}
1700-1800	mtwhfa RTV Morocco, Rabat	15335 _{af}	17595 _{af}	17815 _{af}
1700-1800	Radio Nigeria, Lagos	3326 _{do}	4990 _{do}	
1700-1800	HCJB Quito, Ecuador	15270 _{am}	21455 _{am}	21480 _{am}
1700-1800	Radio Pyongyang, North Korea	9325 _{va}	9640 _{va}	9977 _{va}
		11760 _{va}		
1700-1800	Voice of America, Washington	9575 _{af}	11920 _{af}	15410 _{af}
		15580 _{af}	17800 _{af}	21625 _{af}
1700-1800	mtwhf Voice of Kenya, Nairobi	4934 _{do}		
1700-1800	Voice of Nigeria, Lagos	7255 _{af}		
1700-1800	war Voice of Peace, Baghdad, Iraq	6055 _{me}	11860 _{me}	21675 _{me}
1706-1800	Radio 2, Accra, Ghana	3366 _{do}		
1715-1730	Radio Buea, Cameroon ¹	3970 _{do}		
1715-1800	Radio Pakistan, Islamabad	11570 _{eu}	15605 _{eu}	
1728-1800	SLBS, Freetown, Sierra Leone	3316 _{do}		
1730-1745	Radio Bayrak, Cyprus	6150 _{va}		
1730-1745	a Radio Douala, Cameroon	4795 _{do}		
1730-1800	Radio Austria Int'l, Vienna	5945 _{eu}	6155 _{eu}	12010 _{me}
		13730 _{af}		
1730-1800	Radio Romania Int'l, Bucharest	15365 _{af}	17720 _{af}	17805 _{af}
1730-1800	Vatican Radio, Vatican City	17710 _{af}	17730 _{af}	21650 _{af}
		25950		
1730-1800	Voice of America, Washington	6040 _{va}	6110 _{as}	6180 _{va}
		7125 _{as}	9645 _{as}	9700 _{va}
		9760 _{va}	11710 _{va}	11960 _{va}
		15205 _{va}	15395 _{as}	
1740-1800	Cameroon Radio-TV, Yaounde	4850 _{do}		
1745-1800	mtwhfa Radio Douala, Cameroon	4795 _{do}		
1745-1800	RTV Madagascar, Antananarivo	3232 _{do}	3286 _{do}	5005 _{do}

1800 UTC

[2:00 PM EDT/11:00 AM PDT]

FREQUENCIES

1800-1810	Malawi B'casting Corp., Blantyre	3381 _{do}		
1800-1830	Radio Norway, Oslo	17755 _{na}		
1800-1830	Radio Canada Int'l, Montreal	15260 _{eu}	17820 _{eu}	
1800-1830	Radio Cairo, Egypt	15255 _{af}		
1800-1830	Radio Sweden, Stockholm	6065 _{va}	9655 _{va}	11900 _{va}
1800-1830	RTV Congolaise, Brazzaville ¹	3265 _{va}	4765 _{af}	
1800-1830	Voice of Vietnam, Hanoi	9840 _{eu}	12020 _{eu}	15010 _{eu}
1800-1840	w Radio Bertoua, Cameroon	4750 _{do}		
1800-1845	mtwhfa Radio Douala, Cameroon	4795 _{do}		
1800-1900	All India Radio, Delhi	11935 _{af}		
1800-1900	B'casting Service of the Kingdom of Saudi Arabia, Riyadh	9705 _{eu}	9720 _{eu}	
1800-1900	Cameroon Radio-TV, Yaounde	4850 _{do}		
1800-1900	Radio 1, Accra, Ghana ¹	4915 _{do}		
1800-1900	Radio 2, Accra, Ghana	7295 _{do}		
1800-1900	Radio Africa, Equatorial Guinea	7190 _{af}		
1800-1900	Radio Luxembourg	15350 _{om}		
1800-1900	Radiobras, Brasilia, Brasil	15265 _{eu}		
1800-1900	Radio Korea, Seoul	15575 _{eu}		
1800-1900	KNLS Anchor Point, Alaska	11925 _{as}		
1800-1900	KTBN Salt Lake City, Utah	15590		
1800-1900	WHRI Noblesville, Indiana	15105	17830	
1800-1900	Voice of Ethiopia, Addis Ababa	9662		
1800-1900	WRNO New Orleans, Louisiana	15420		
1800-1900	WWCR Nashville, Tennessee	15690		
1800-1900	Christian Science World Svc	13625 _{as}	15610 _{am}	17555 _{am}
		21640 _{af}		
1800-1900	WYFR Okeechobee, Florida	11580		
1800-1900	Radio Mozambique, Maputo	3265 _{af}	4855 _{af}	9618 _{af}
1800-1900	BBC London, England	5975	9410	9740
		11750	12095	15070
		15310	15400	17880
1800-1900	Radio Moscow World Service	7170	7235	7315
		9765	9795	9830
		9875	11630	11840

1800-1900	Radio New Zealand Int'l	15475	17570	
		21660	21715	
1800-1900	Radio Nigeria, Lagos	3326 _{do}	4990 _{do}	
1800-1900	Radio Tanzania, Dar es Salaam	5985 _{af}	9684 _{af}	11765 _{af}
1800-1900	Radio for Peace Int'l, Costa Rica	13660	21566	25945 _{all am}
1800-1900	Radio Zambia Int'l, Lusaka ¹	9505 _{af}	11880 _{af}	17895 _{af}
1800-1900	SLBS, Freetown, Sierra Leone	3316 _{do}		
1800-1900	Voice of America, Washington	9575 _{af}	11920 _{af}	15410 _{af}
		15580 _{af}	17800 _{af}	21625 _{af}
1800-1900	mtwhf RAE Buenos Aires, Argentina	11710		
1800-1900	Voice of America, Washington	6040 _{va}	6180 _{va}	9700 _{va}
		9760 _{va}	15205 _{va}	
1800-1900	mtwhf Voice of Kenya, Nairobi	4934 _{do}		
1800-1900	Voice of Peace, Baghdad, Iraq	6055 _{me}	11860 _{me}	21675 _{me}
1800-1830	a Radio Riga Int'l, Latvia, USSR	5935 _{eu}		
1815-1830	Kol Israel, Jerusalem	11585 _{eu}	11655 _{eu}	
1815-1900	Radio Bangladesh, Dhaka	12030 _{as}	15255 _{as}	
1815-1830	Radio Voice of Lebanon, Beirut	6549 _{5me}		
1830-1855	BRT, Brussels, Belgium	5910 _{eu}	17550 _{eu}	21810 _{af}
1830-1900	Radio Afghanistan, Kabul	7310 _{eu}	9635 _{eu}	
1830-1900	as Radio Canada Int'l, Montreal	15260 _{eu}	17820 _{eu}	
1830-1900	Radio Netherlands, Hilversum	6020 _{af}	15570 _{af}	17605 _{af}
		21685 _{af}		
1830-1900	mtwhf Radio Canada Int'l, Montreal	5995 _{eu}	7235 _{eu}	11945 _{eu}
		15325 _{eu}	17875 _{eu}	
1830-1900	Radio Sweden, Stockholm	6065 _{va}	15270 _{va}	
1830-1900	Radio Kuwait (speculative)	11675/13610		
1830-1900	Radio Sofia, Bulgaria	11735 _{af}	11840 _{af}	15370 _{af}
1830-1900	Radio Tirana, Albania	7120 _{eu}	9480 _{eu}	
1830-1900	Sri Lanka B'casting Corp.	9720 _{eu}	15120 _{eu}	
1830-1900	Swiss Radio Int'l, Bern	9885 _{af}	11955 _{af}	
1840-1845	Voice of Greece, Athens	11645 _{af}	12105 _{af}	15650 _{af}
1845-1900	Ghana B'casting Corp., Accra	6130 _{af}		
1845-1900	RTV Guinea, Conakry	4900 _{af}	7125 _{af}	
1845-1900	s RTV Mali, Bamako ³	4783 _{do}	5995 _{do}	7285 _{do}
		11960 _{do}		

1900 UTC

[3:00 PM EDT/12:00 PM PDT]

FREQUENCIES

1900-1915	Radio Tanzania, Dar es Salaam	5985 _{af}	9684 _{af}	11765 _{af}
1900-1925	Radio Netherlands, Hilversum	6020 _{af}	15570 _{af}	17605 _{af}
		21685 _{af}		
1900-1930	Kol Israel, Jerusalem	9435 _{na}	11605 _{na}	15640 _{na}
		17630 _{af}		
1900-1930 mtwhf	Radio Canada Int'l, Montreal	15260 _{eu}	17820 _{eu}	
1900-1930	Radio Afghanistan, Kabul	7310 _{eu}	9635 _{eu}	
1900-1930 t	Radio Budapest, Hungary	6110 _{eu}	7220 _{eu}	9520 _{eu}
		9585 _{eu}	9835 _{eu}	11910 _{eu}
1900-1930	Radio Sofia, Bulgaria	11735 _{af}	11840 _{af}	15370 _{af}
1900-1930	Voice of Vietnam, Hanoi	9840 _{eu}	12020 _{eu}	15010 _{eu}
1900-1945	Cameroon Radio-TV, Yaounde	4850 _{na}		
1900-1950	Deutsche Welle, Koln, Germany	9760 _{af}	11785 _{af}	11810 _{af}
		13790 _{af}	15350 _{af}	15390 _{af}
		17810 _{af}		
1900-2000	All India Radio, Delhi	11935 _{af}		
1900-2000	B'casting Service of the Kingdom of Saudi Arabia, Riyadh	9705 _{eu}	9720 _{eu}	
1900-2000	Ghana B'casting Corp., Accra	6130 _{af}		
1900-2000	Radio for Peace Int'l, Costa Rica	13660	21566	25945 all am
1900-2000	Radio 1, Accra, Ghana ¹	4915 _{do}		
1900-2000	Radio 2, Accra, Ghana	7295 _{do}		
1900-2000	Radio Africa, Equatorial Guinea	7190 _{af}		
1900-2000	Radio Algiers, Alger, Algeria	9640	15215	
1900-2000	Radio Kuwait (speculative)	11675/13610		
1900-2000	Radio Beijing, China	6955 _{af}	9440 _{af}	11515 _{af}
1900-2000	Radio Havana Cuba	15435 _{eu}		
1900-2000	Radio Luxembourg	15350 _{om}		
1900-2000 smtwhf	Radio New Zealand Int'l	13785 _{pa}		
1900-2000	KTBN Salt Lake City, Utah	15590		
1900-2000	WHRI Noblesville, Indiana	13760	17830	
1900-2000	WRNO New Orleans, Louisiana	15420		
1900-2000	WWCR Nashville, Tennessee	15690		
1900-2000	Christian Science World Svc	13625 _{as}	15610 _{am}	17555 _{am}
		21640 _{af}		
1900-2000	WYFR Okeechobee, Florida	11830	15215	15440
		15355	15566	21615
1900-2000	Radio Nigeria, Lagos	3326 _{do}	4990 _{do}	
1900-2000	Radio Zambila Int'l, Lusaka ¹	9505 _{af}	11880 _{af}	17895 _{af}
1900-2000 s	RTV Morocco, Rabat	15335 _{af}		
1900-2000	SLBS, Freetown, Sierra Leone	3316 _{do}		

1900-2000	Sri Lanka B'casting Corp.	9720 _{eu}	15120 _{eu}	
1900-2000	Voice of America, Washington	9575 _{af}	11920 _{af}	15410 _{af}
		15580 _{af}	17800 _{af}	21625 _{af}
1900-2000	BBC London, England	5975 _{va}	7325 _{va}	9410 _{va}
		12095 _{va}	15070 _{va}	17885 _{va}
1900-2000	Voice of America, Washington	6040 _{va}	6180 _{va}	9525 _{as}
		9700 _{va}	9760 _{va}	11710 _{va}
		11870 _{as}	15180 _{as}	15205 _{va}
1900-2000 mtwhf	Voice of Kenya, Nairobi	4934 _{do}		
1900-2000	Radio Moscow World Service	7170	7235	7315
		9765	9795	9830
		9875	11630	11840
		15475	17570	
1900-2000	Voice of Nigeria, Lagos	7255 _{af}		
1910-1915	Radio Botswana, Gaborone	3356 _{af}		
1920-1930	Voice of Greece, Athens	7430	9395	
1920-1930	Radio Buea, Cameroon ¹	3970 _{do}		
1930-1940	Radio Austria Int'l, Vienna	5945 _{eu}	6155 _{eu}	12010 _{me}
		1370 _{af}		
1930-1940 irr	Radio Burkina, Burkina Faso	4815 _{af}	7230 _{af}	
1930-2000	Radio Budapest, Hungary	6110 _{eu}	7220 _{eu}	9520 _{eu}
		9585 _{eu}	9835 _{eu}	11910 _{eu}
1930-2000	Radio Romania Int'l, Bucharest	5990 _{eu}	7195 _{eu}	9690 _{eu}
1930-2000	Radio Sofia, Bulgaria	6070 _{eu}	7155 _{eu}	15370 _{eu}
1930-2000 tes	KFBS Salpan	9475 _{af}		
1930-2000	Radio Sweden, Stockholm	6065 _{va}	9655 _{va}	
1930-2000	Voice of the Islamic Republic of Iran, Tehran	6030 _{eu}	9022 _{eu}	
1935-1955	RAI, Rome, Italy	7275 _{eu}	9710 _{eu}	11800 _{eu}
1935-1945	RTV Togo, Lome	5047 _{af}		
1940-2000 smwha	Ulaanbaatar Radio, Mongolia	11850 _{eu}	12015 _{eu}	
1945-2000 mwf	Tristan Radio, Tristan da Cunha	3290 _{do}		
1950-2000	Sudan Nat'l B'casting Corp.	9540 _{do}	9550 _{do}	11635 _{do}

*Fiesta!
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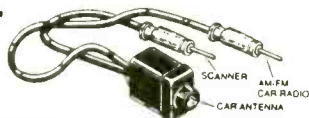
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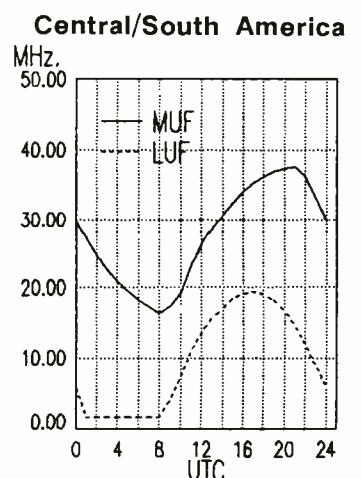
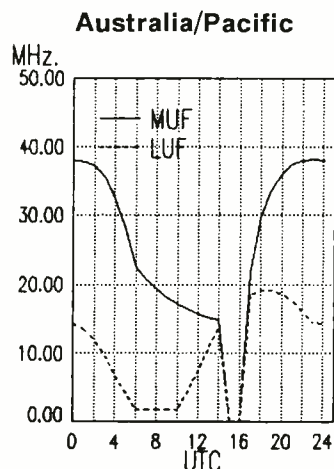
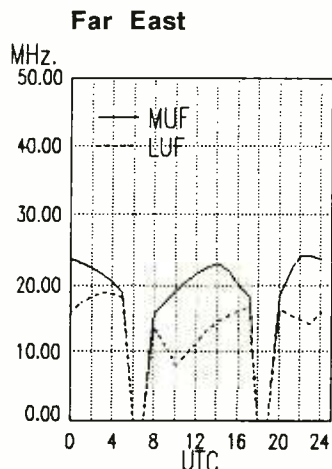
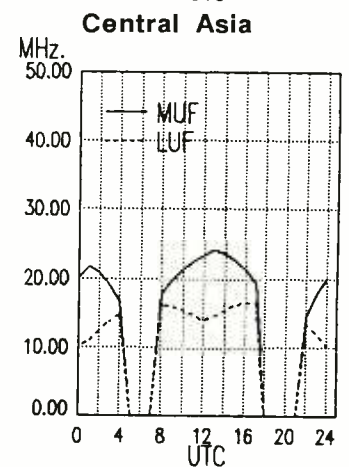
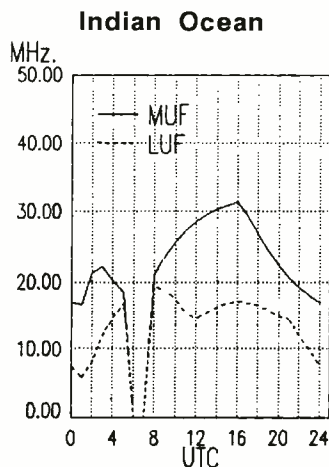
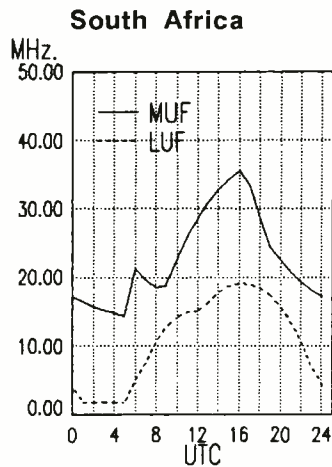
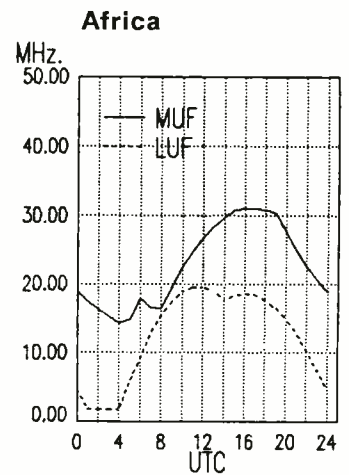
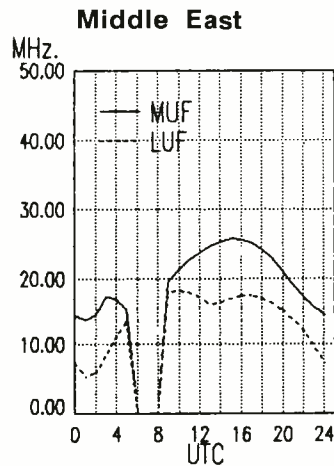
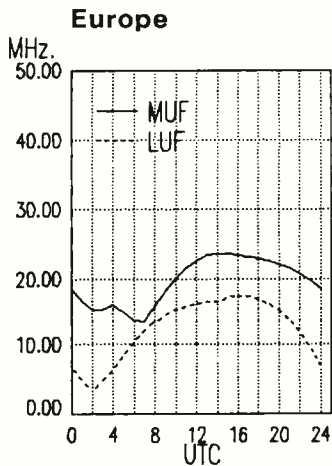
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shortwave guide

How to use the propagation charts

Propagation charts can be an invaluable aid to the DXer in determining which frequencies are likely to be open at a given time. To use the propagation charts, choose those for your location (they are divided into east coast, midwest and west coast of North America). Then look for the one most closely describing the geographic location of the station you want to hear.

Conditions for areas EAST of the Mississippi and ...

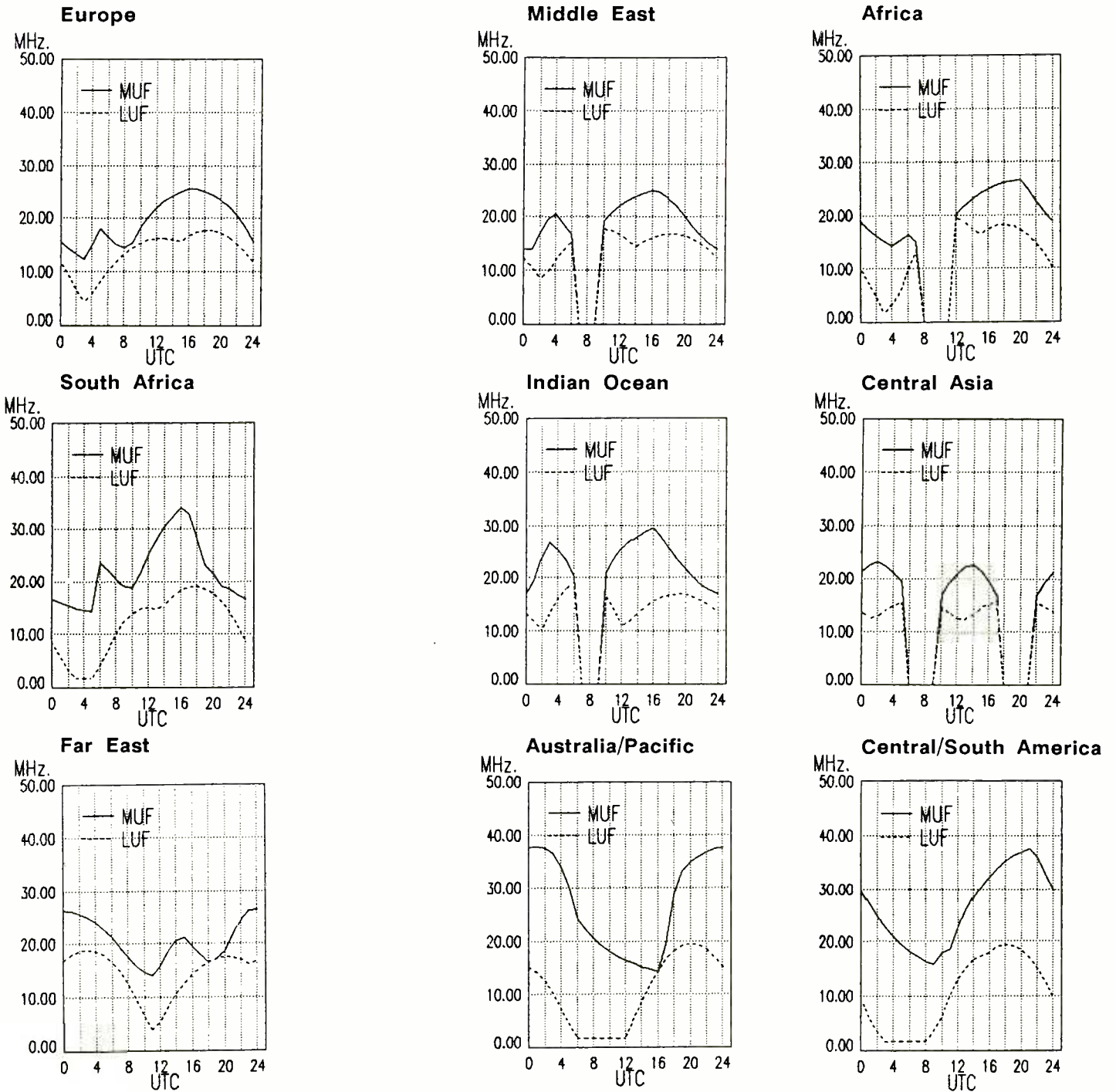


shortwave guide

Once you've located the correct charts, look along the horizontal axis of the graph for the time that you are listening. The top line of the graph shows the Maximum Usable Frequency (MUF) and the lower line the Lowest Usable Frequency (LUF) as indicated on the vertical axis of the graph.

While there are exceptions to every rule (especially those regarding shortwave listening), you should find the charts helpful in determining the best times to listen for particular regions of the world. Good luck!

Conditions for areas WEST of the Mississippi and ...



DAK Again

About a year ago, a California firm called DAK Industries came out with something really revolutionary: a world band portable with digital frequency readout, 20 presets (10 for shortwave), slew tuning, a clock with alarm and sleep features, a dial light, and other goodies -- all for a mere \$49.90.

The MR-101 was a compact world band portable that, at under 1-1/4 lbs (including batteries) was well-suited for taking along on trips. It covered FM in 200 kHz steps, mediumwave AM from 530-1630 kHz in 10 kHz steps, and the shortwave spectrum from 3.2-7.3 and 9.5-21.75 MHz in 5 kHz steps.

Now, DAK has introduced an improved version, the MR-101s, for the same price as the old. And, yes -- it really is improved.

Tuning Broader, Easier

Start with where it tunes. The old version went from 3.2 to 7.3 and 9.5 to 21.75 MHz. The new version covers 2.3 to 6.2 and 7.1 to 21.85 MHz. Adding the 120 meter band (2.3 to 2.498 MHz) doesn't mean squat with a simple radio like this, but what does count is the expanded coverage in the 7.3 to 7.6, 9.0 to 9.5 and 21.75 to 21.85 MHz range. These ranges are chocablock with great world band catches from nearly every corner of the globe.

Another change in specifications concerns how the radio tunes. In order to keep costs down, tuning features have been kept to a minimum. Not only is there no tuning knob, there's also no keypad. Instead, on the original MR-101 there was a pair of up/down multi-speed slewing buttons and five programmable channel memories. As such the old version required some fleet-fingered button pushing and hair-trigger reflexes to get the slewing controls to tune the set properly.

The MR-101s has the same basic tuning configuration, but now has three slew buttons -- up, down, and fast -- instead of the former two. These give the operator much more control over the tuning process. Even though the tuning rate is a bit slower, the new arrangement is a real plus.

One annoying tuning complication remains: the use of a hoary "SW1 SW2" control. (Recent-technology radios, being up-conversion, have one setting for the entire shortwave spectrum.) SW1 tunes from 2.3-6.2 MHz, SW2 from 7.1-21.85 MHz. It's an antiquated concept and an annoyance, but hardly a major drawback in a fifty buck radio.

For trips abroad, there is yet another drawback -- again, carried over from the original design: The 10 kHz tuning steps for AM are appropriate for the Americas, but not for most other parts of the world, where narrower channel spacing is the norm. So while the MR-101s is in many ways a worthy travel set, it's not much good for listening to AM outside the Americas.

More Useful Clock and Timer

Back to improvements. The clock in the old version used the 12-hour format -- great for local time but not a big help when it comes to world time (UTC). The new version uses a 24-hour clock.



Last year's model is back again -- and with real improvements.

While they were fiddling around with the clock, the radio's designers also added an "off" setting to the timer, which previously only had an "on" setting. This means the radio now cycles itself on and off for one event, like a VCR.

Specifications

OK, that's it for improvement in AM and shortwave features and operating controls. Now let's talk about specifications. If you recall our 1990 review of the MR-101, we faulted it mainly because it was so insensitive. Signals that come through loud and clear on normal radios would be reduced to a whisper, or even inaudibility, on the MR-101. You can live with a lot of shortcomings on a radio, but if it won't pick up stations, that pretty well slams the door shut.

The MR-101s is definitely more sensitive, although it is still lacking in this regard. Nonetheless, listeners on the east coast of North American or Europe, for example, should now be able to hear nearly all the stronger international broadcasters that are audible on better, more costly models. However you slice it, though, this set is really not sensitive enough for serious use in western North America.

Better FM

While the FM stage in the MR-101s is pedestrian -- and sounds it -- with headphones the audio quality is much improved. Truth be known, nearly no world band radios have serious FM performance. Still, DAK must have noticed the same thing and in the MR-101s has added manually switchable stereo, including a stereo LED indicator, to the FM. (You must use the optional headsets to hear the stereo, though.)

Equally important, the FM stage now tunes in 100, not 200, kHz increments, and thus may be used in nearly any part of the world. For globetrotters, that's a big improvement, indeed. Not to mention if you live outside the Americas and wish to order a unit from DAK.

The MR-101s' telescopic antenna isn't rotatable, though, so it's

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difficult to place the antenna at an optimum angle for reception -- either to reduce multipath distortion, or to use FM's excellent capture ratio to select between two stations on the same channel. Incidentally, that lack of rotation also makes it impossible to have the antenna fully erect for shortwave reception unless the radio is rested on its tipsy bottom (although the new bottom is arguably a tad less tipsy than the old). You just can't listen to shortwave properly on this set if it's on its back, which is otherwise the most convenient placement of a portable.

Deja Vu

As with the previous model, the MR-101s' digital shortwave tuning is in 5 kHz increments and the frequency display simply drops the least-significant zero. Thus, 11990 kHz reads out as 11.99 MHz. The MR-101s' lock switch only turns off the tuning circuitry -- not the power, and not even the easily activated dial light. When packing away the radio, then, it's best to remove the batteries beforehand so they won't be depleted en route. AM coverage stops at 1610 kHz -- even worse than the MR-101's upper limit of 1630 kHz, and well below the forthcoming new limit for the Americas of 1705 kHz.

Performance, otherwise, continues as before. Selectivity is better than that of some sets costing over twice as much, but is still rather broad. Audio quality, while a bit tinny, isn't too bad for a small portable.

The MR-101s' IF circuitry continues to be of the single-conversion variety -- the norm for a receiver in this price class. This means that you get lesser-strength "repeats" of radio signals that actually operate almost 1 MHz higher.

The MR-101s' quality of construction appears to be below average. Secondhand reports from MR-101 users suggest that this is, indeed, not likely to be a robust set. Even the microprocessor in our little-used original MR-101 has of late begun to "hang up" now and then. (Switching the set on and off thus far has cleared up this glitch.) An obvious problem continues to be the telescopic antenna's non-rotating swivel, which bends easily. Should that swivel break, it would be harder than most to replace -- assuming you can get the part.

The Bottom Line

DAK promotes its world band radio as though the 1930's have sprung back to life: joining a club, collecting stamps and QSL cards, making new friendships...endless gosh and golly. Of course, a radio such as the MR-101s is the last thing radio enthusiasts tend to treasure. Mainly, these starter models appeal to sophisticated adults -- those who have accounted for virtually all the growth in shortwave in recent years.

But if DAK's promotion is a bit shy of the mark, the radio isn't. DAK's MR-101s is even more receiver than was the MR-101, and for the same small sum. And note that someone at DAK or their manufacturer in China is keeping his or her ears to the ground, listening for ways to improve. Sometimes manufacturers produce models with serious drawbacks for years on end without doing a thing to remedy them. DAK, on the other hand, in the space of one year has made several useful improvements to its pioneering portable. For them, that's good business. For consumers, it's great news.



PASSPORT'S "RDI White Paper" equipment reports contain everything found during its exhaustive tests of communications receivers, antennas and advanced portables. These reports are now available in the U.S. from DX Radio Supply, EEB and Universal Shortwave; in Canada from PIF, C.P. 232, L.d.R., Laval PQ H7N 4Z9; in Europe from Interbooks, 8 Abbot Street, Perth PH2 0EB, Scotland, and Lowe Electronics stores; and in Japan from IBS-Japan, 5-31-6 Tamanawa, Kamakura 247. For a complete list of reports, send a self-addressed stamped envelope to RDI White Papers, Box 300M, Penn's Park PA 18943 USA.

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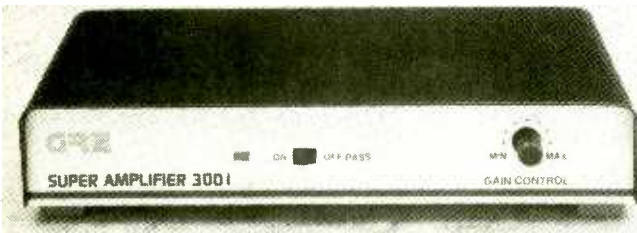
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Send check or money order to Datametrics, Inc., 2575 South Bayshore Dr. Suite 8A, Coconut Grove, Fl. 33133. 30 day return privileges apply.

New Twins from GRE America

Two new products from GRE America are bound to delight scanner enthusiasts: a wideband preamplifier and an 800 MHz converter. Both units are enclosed in identical compact, low-profile, steel cabinets, rugged and well-shielded. And both may be powered by either an internal 9-volt battery or external AC wall adaptor (neither is supplied).



GRE Super Amplifier 3001

The new 3001 is functionally identical to the popular hand-held Super Amplifier. Although specified for 100-1000 MHz applications, we tested the 3001 preamp from 27-1100 MHz. In our lab the unit rolled off sharply below 40 MHz, but continued to operate well through 1100 MHz, the highest frequency we could measure.

With an advertised gain of up to 20 dB (probably mid-VHF/UHF) and reasonably low noise, the 3001 showed no sign of overload in the presence of a moderately strong local FM broadcast signal.

The preamp is equipped with BNC connectors for input and output, assuming nominal 50 ohm applications. The input connector is a right-angle unit, pointing upward to accommodate the use of a BNC-base, vertical, attachable antenna (not included) such as the Grove ANT-8 adjustable whip for custom-adjustment to any frequency band of interest, or the GRE all-band rubber duckie (\$8.45 plus \$5.50 shipping from GRE). It can also be connected to a suitable outdoor antenna.

An interconnect cable is provided for use with scanners employing a Motorola (automotive) type external antenna jack. If the intended scanner has a BNC connector, then an adaptor like the Grove ADP-22 or Radio Shack 278-115 could be used with the existing cable.

Battery life is only 24 hours, so if the owner doesn't want to continually replace batteries, it would be a good idea to remember to turn the unit off when the scanner is not in use. A bright red LED front-panel power indicator should serve as an excellent reminder.

The 3001 may be left in the antenna line when switched off; a bypass function automatically re-routes the received signal around the unused amplifier to the output connector.

There is virtually no measurable insertion loss up to about 200-300 MHz; above that, however, signal loss becomes increasingly

noticeable. We would recommend that if the unit is not to be used during weak signal reception, it be removed from the antenna line.

A Few Facts About Preamps

When is a broadband preamp really useful? There is no simple answer, but there are some guidelines. Two facts dominate: the preamp **MUST** have a lower noise figure (weak signal sensitivity) than the scanner, and it **MUST** have wide dynamic range (overload immunity).

Even an ideal preamp (and there aren't any) could bring signal levels up so high that they saturate the scanner's own internal preamp circuitry, wreaking the same havoc that a poorly-designed preamp could cause.

If you are located in a city, surrounded by powerhouse transmitters, and you already have an outside antenna, you definitely don't want a wideband preamp. Out in the country, however, where signals are few and far between, such a preamp may be quite useful, assuming you want to hear for some distance. Even if you are in the city and you are using an indoor antenna so that signals are rather weak, you may benefit from a preamp.

The suburbs are unpredictable; you may have only moderately-strong average signals, but just down the street there may be a NOAA weather broadcaster or some equally insidious transmitter. In the suburbs you take your chances -- buy your preamp from a dealer who agrees that if it doesn't work you can bring it back!

Most people expect a miracle when they hook up a preamp. The fact of the matter is that the best preamp will only make the signals slightly better, and usually at the higher UHF frequencies. But that slight difference may mean the difference between intelligible reception and no copy.

Super Converter 9001

Until just a few short years ago, it was difficult to find a scanner that covered all the way up past the 900 MHz part of the spectrum. Even now, some of the most popular scanners cut off above 512 MHz. Many areas of the country have no need for the 806-960 MHz band because they haven't yet begun to fully utilize the lower frequencies, equipment for which is much less expensive.

But if you own such a frequency-restricted, programmable scanner and would like to hear what's going on in the 800 MHz band, yet don't want to buy a new scanner, this little GRE gem may be just what the doctor ordered.

The new 9001 is a desktop version of the popular hand-held "Super Converter." Designed to connect to the typical Motorola antenna connector on the back of 512 MHz-and-below scanners, the 3001 steps up the listening spectrum 400 MHz higher; if you want to hear 856.375 MHz, you would enter 456.375 into your scanner.

Equipped with BNC input and output connectors, an external whip like the Grove ANT-8 or all-band GRE rubber duckie (\$8.45 from GRE at the time of purchase), or even an outdoor antenna may be used. A very professional layout utilizing surface mount components assures minimum losses, even when left in the antenna circuit and switched into the off (bypass) position.

In this switched-out mode, there is no detectable insertion loss at 800 MHz, but by 900 MHz we measured about 5 dB. Gain also rolls off rapidly above 900 MHz since it is assumed that the converter is not likely to be used with scanners allowing reception above 512 MHz (912 MHz converted).

Even so, the 9001 is rated by the manufacturer for 810-950 MHz applications, which it would provide when used with a scanner which covers 410-550 MHz, and if most of the desired signals are within a reasonable distance.

The 3001 and 9001 may be ordered for \$69.95 and \$95.95 respectively, plus \$5.50 shipping, from the manufacturer: GRE America, 425 Harbor Blvd., Belmont, CA 94002, or from MT advertisers.




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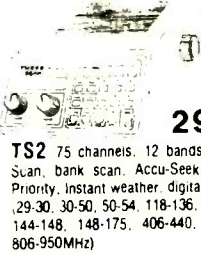
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Why a 10-MHz frequency standard?

There are times when WWV can not be copied clearly on 10 MHz. This depends upon the time of day and propagation conditions at a particular time of day or night. A secondary frequency standard, WWV being the primary one, can be mighty useful at those times. Furthermore, a secondary standard may be

carried to the location where it is needed, such as the workshop.

Applications for the 10-MHz standard

Perhaps the most common application for a frequency standard is to calibrate the readout of a receiver, or to at least check its accuracy. Once the secondary standard has been tuned for zero beat with WWV, it should stay on frequency for a long time if it is not dropped on the floor or misadjusted. We may use the harmonics of the 10-MHz standard to check dial calibration at 20 and 30 MHz as well.

Another application for our standard is seen when we need to calibrate the time base in a piece of test equipment, such as a frequency counter. For example, I recently

assembled a Heath frequency counter kit. The time base in the unit used a TV color-burst crystal (3.5795 MHz).

The time-base oscillator frequency is not one that can be heterodyned with WWV for calibration of the counter. I found this rather annoying, so I built the circuit in Figure 1. I then heterodyned its output signal with that of WWV at 10 MHz and adjusted C1 to obtain a zero beat.

I was then able to attach my frequency counter to the secondary standard and adjust its time-base crystal trimmer until the digital readout indicated 10.000 MHz. I will have many such applications for the standard in the future.

The circuit

Figure 1 shows the 10-MHz oscillator I use. L1 and C1 permit the 10-MHz crystal to be moved above and below the marked frequency. C1 is used as the calibration trimmer. Q1 is an MPF102 or similar JFET. L2 is tuned to 10 MHz by means of C2. The trimmer is tweaked for maximum output power from the oscillator. This may be done by observing your receiver S meter (at 10 MHz) and adjusting C2 for maximum meter indication.

R2 provides a resistive load for the Q1 oscillator. This is necessary to help maintain oscillator calibration and to prevent frequency changes when various items are connected to L3 -- such as a frequency counter or whip antenna. Figure 2 contains a pictorial drawing that shows how the components are connected in the circuit.

Construction notes

You can assemble this frequency standard on a scrap of PC board, or you can use perforated board as the chassis. Keep the leads as short as practicable to prevent Q1 from oscillating at VHF. If you choose to use a small piece of copper-clad PC board as the foundation, you can solder a few 1 megohm, 1/4 or 1/2 watt carbon resistors to the PC board (vertically).

These resistors will then serve as effective insulating terminals to which you can solder the various circuit components. The pigtails for the upper ends of the resistors can be trimmed to a length of 1/4 inch before the

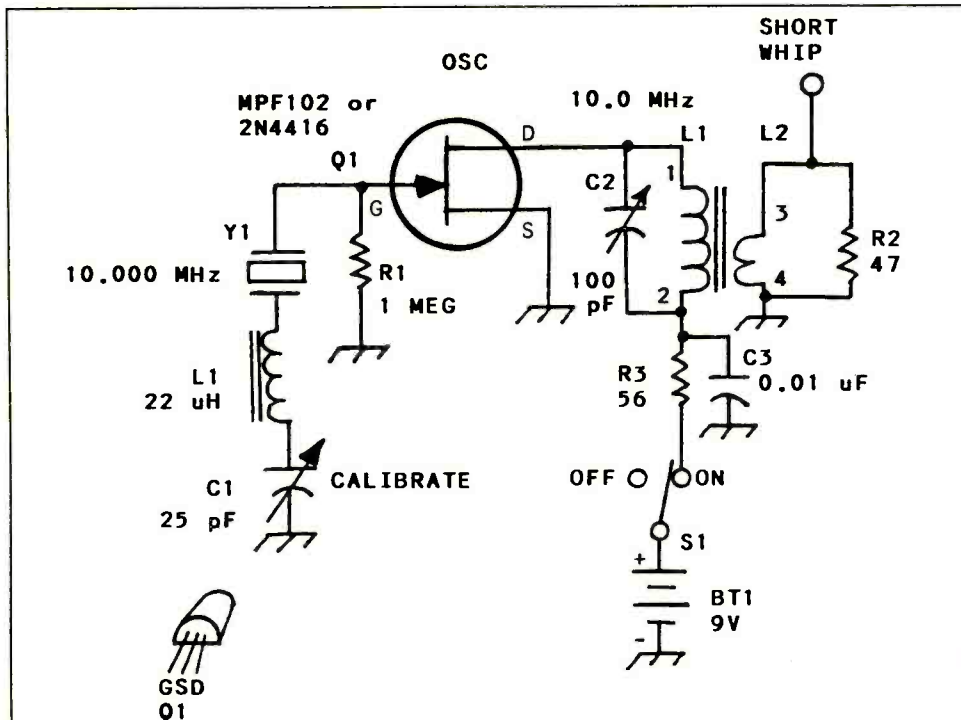


Figure 1 -- Schematic diagram of the 10-MHz secondary frequency standard. C3 is a disc ceramic unit. Resistors are 1/4 or 1/2 watt carbon film or composition. C1 is a 25 or 30 pF ceramic, plastic or mica trimmer. C2 is a ceramic or mica trimmer, 10 to 100 pF. BT1 is a 9-V transistor radio battery. L1 is a 22-uH miniature RF choke (Mouser Elect. or Oak Hills Research). L2 is a 3.6-uH toroidal inductor. Use 30 turns of no. 28 enamel wire on an Amidon Associates or Oak Hills Research T50-6 (yellow) toroid core. L2 has 5 turns of no. 28 enamel wire, wound over the main L2 winding. For S1 use a SPST toggle or other switch. Y1 is a surplus computer 10,000-MHz fundamental crystal.

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oscillator components are soldered to them.

You may wish to try your hand at making a simple circuit board. If so, draw the pattern on the copper side of some PC board stock, then remove the unwanted copper by means of a hobby motor with a small cone-shaped abrasive bit. This is the method I used when I made my PC board.

Crystal Y1 can be purchased for less than \$2 from many mail-order surplus houses. I obtained mine for \$1.25 from BCD Electro, P.O. Box 450207, Garland, Texas 75045-0207. Send \$1 for the catalog. Toroid cores are available from Oak Hills Research, 20879 Madison Avenue, Big Rapids, Michigan 48307 (send \$1 for the parts catalog).

The remainder of the oscillator parts are available from Mouser Electronics, P.O. Box 699, Mansfield, Texas 76063 (catalog free).

The whip antenna can be one of the surplus telescoping units (length not critical), or you can use a 1-1/2 foot length of brazing rod or coat-hanger wire.

Some closing thoughts

The Figure 1 oscillator may be used as a code-practice oscillator if you are aspiring to become a ham-radio operator. Q1 may be keyed by breaking the +9-V battery lead with your key, or you can open the Q1 source lead and insert your key between it and circuit ground.

If you key the source lead, be sure to add a 0.01-uF ceramic bypass capacitor between the Q1 source and ground. It should be connected as close to the transistor body as possible. You can monitor your sending by listening to WWV and tuning the receiver for the beat note you prefer.

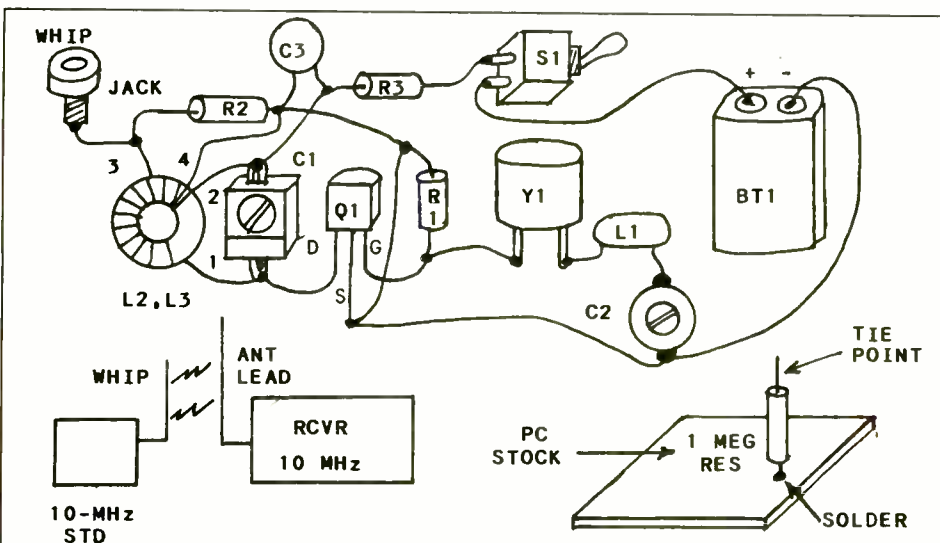
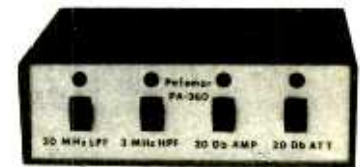


Figure 2 -- Pictorial layout of the 10-MHz secondary frequency standard. Insert drawings show how to couple the standard to a receiver that is tuned to 10.000 MHz, and how to use 1-megohm resistors as insulating circuit tie points.

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Feedback

Welcome back to another Experimenter's Workshop. Several months ago I stated I had a hard time finding the service manual for Sony shortwave receivers. I was immediately inundated with correspondence from readers saying that any Sony authorized parts distributor could supply the necessary manual. Since the list is long, let me just say that your owner's manual for your favorite Sony receiver should have a list of parts distributors. Contact the distributor closest to you for prices and ordering information on the service manuals needed.

Steve Jones, VE3SDJ, wrote concerning the "cloaking tones" used by the Ontario Provincial Police and the Metro Toronto Police departments. Steve states that the tones are used to transmit data and voice information on the same frequency.

Since the CTCSS tone encoding opens up the intended receiver when voice is present, this keeps the various receivers quieted during data transmissions. The data transmissions on both systems are used to control the mobile radios. The CTCSS tones are not meant to cloak the transmissions. Using the data,

mobile units can determine which units are on various channels.

It's good to know that this column is being read by people in the know. It was information originally provided by a reader that formed the basis for that particular column. Thanks for the update, Steve.

Several shortwave listeners have written asking for a source of 455 kHz ceramic resonators (filters) that were used in the Hallicrafter S-120 mods (EW column in Sept. '90 MT).

Herein lies a problem. Originally, Chris Hethorn of the Small Parts Center in Lansing, Michigan, was my source of 455 kHz ceramic resonators. Unfortunately, Chris has sold his cottage industry and I have not used another source. Anyone interested might try the current Digi-Key catalog (701 Brooks Avenue South, Thief River Falls, MN 56701-0677).

Interference Filters You Can Build

John Thomas, AB8Z, of Parma, Ohio, sent along a couple of circuits that should help shortwave listeners plagued by strong local broadcast interference. Figure 1 shows a low-pass filter designed to pass signals from 500 kHz downward. Figure 2 shows a high-pass filter circuit designed to pass 2000 kHz and up. A combination of these two circuits should drastically reduce local broadcast station interference and allow the serious listener to listen to VLF and SW without the annoyance of local signals cropping up in the bandpass.

Taping Output on the DX-440

Richard Amirault of Malden, Massachusetts, has provided a much needed mod for the Radio Shack DX-440 receiver. This is really a Sangean ATS-803A receiver with an RS logo on the case. Hence, it ain't a bad radio.

Rich says that to add "tape-out" audio for taping SW broadcasts is a simple matter of installing a five pin DIN jack inside the radio. Here is how he did it.

Remove all the batteries from the receiver. Open the back of the radio and locate the small PC board near the earphone and power jacks. Carefully pry the two plastic spring standoffs so the small PC board can be pulled up slightly to facilitate soldering. Remove the plastic plug covering the hole where the tape out jack goes.

On the small PC board, next to the hole in

Figure 1: LF-VLF Low-Pass Filter
(500 kHz & downward)

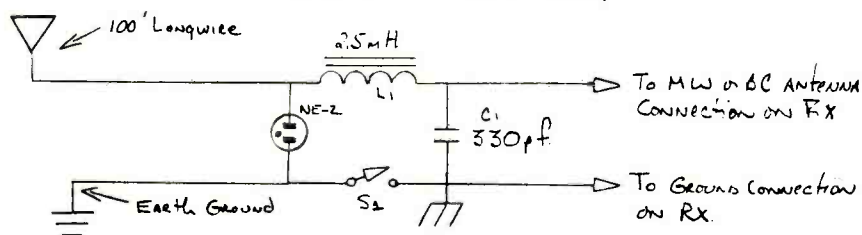
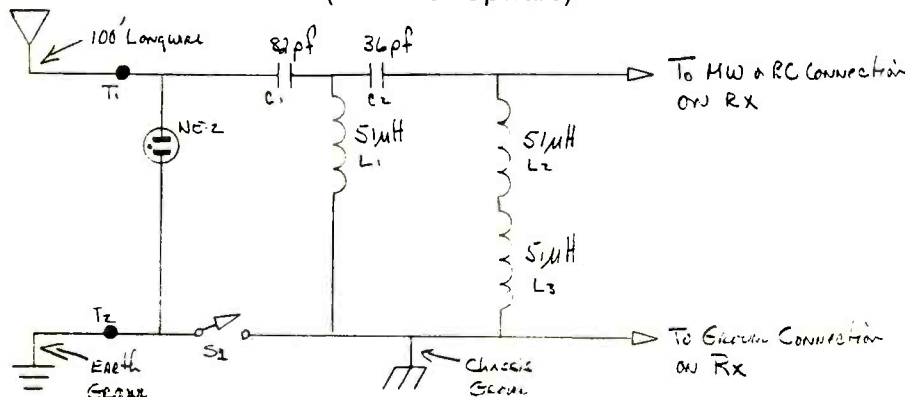


Figure 2: HF High-Pass Filter
(2MHz & Upward)



Notes:

1. All capacitors are disk ceramic or silver mica.
2. NE-2 lamp is used as static discharge protection.
3. Switch S-1 is a SPST slide or toggle. Experiment with opening and closing this switch to provide best reception and lowest background noise.
4. Terminals T₁ and T₂ are 5-way binding posts for antenna and ground connections.
5. All inductors are RF chokes.
6. Check your local Radio Shack® for parts.

Monitoring Times invites you to submit your favorite projects for publication. For more information, contact Rich Arland, c/o MT, P.O. Box 98, Brasstown, NC 28902

the case for the tape out jack, locate five soldered holes with no wires or components soldered into them. These five holes are arranged in an arc. That is the place where a five pin PC mount DIN jack will go. Remove the solder from these holes (use desoldering wick) and insert the PC mount DIN jack from the underside of the PC board. Solder all five pins. Don't forget the extra two pins at the very edge of the PC board as they are used to provide extra strength and rigidity for pulling and pushing plugs into the jack.

Pop the PC board back onto the plastic standoffs, check that the jack lines up with the hole in the case and reassemble the case.

Figure 3

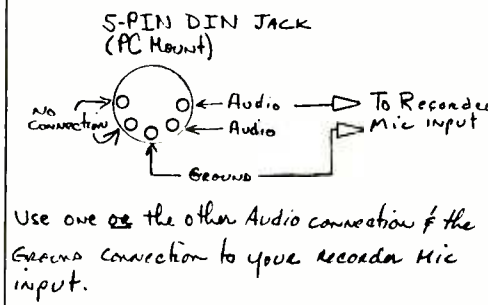


Figure 3 shows the pin-out of the DIN jack. Notice there are two audio outputs. This is to facilitate the stereo output for FM listening. On SW only one audio output is needed. Select one or the other audio output and the ground pin and make up a small patchcord to go between the DX-440 and your recorder "mic" input.

Since the levels present at the DIN jack are not line-levels, you can couple the audio from the DX-440 directly into the mic input to your recorder. There is no need for attenuating patchcords. The level present at the tape-out of the DX-440 is constant and not dependent upon settings of the DX-440 volume or balance controls. Great mod, Rich, thanks.

More Sources for Filters

Thanks to the sharp eyes of Art Delibert of Takoma Park, Maryland, we now have a source of ceramic filters for receiver mods. Fortunately for us, we need look no further than the ads in *MT*. Kiwa Electronics, 612 South 14th Avenue, Yakima, Washington 98902, provides filter modifications for Sony 2010/2001D receivers. Art further states that the Kiwa mods consist of NKT (not Murata) filters LF-H4S (4 kHz at 6 dB) and LF-H2S (2 kHz at 6 dB) plus instructions and diagrams. Cost is \$25 including first class postage.

It is also stated that during the course of developing the MAP unit, Kiwa found that the NKT filters exhibited better skirt selectivity, shape factor, ultimate rejection and distortion figures than the Murata filters. Readers desiring to procure filters for mods to receivers other than Sony's 2010 contact Kiwa directly for price and ordering information. Good job, Art.

Thanks to the efforts of Frank McJunkins, K7RSD, of Seattle, Washington, we now have some info regarding Murata filters, and where to procure same. Frank wrote Murata at its North American headquarters, 2200 Lake Park Drive, Smyrna, Georgia, 30080-7604 to enquire about small quantities of Murata filters. Murata's Engineering Prototype Order Department (EPOD) can handle small quantity orders of Murata filters for experimenters' needs. This is a step in the right direction, as not everyone needs a thousand filters just to perform a mod on their favorite receiver. Thanks for the info, Frank, and thanks, too, for the schematic for the Bearcat III scanner.

Coming Up

At this time I'd like to solicit input from the readers about emergency communications monitoring. This is not limited to VHF/UHF scanning, but should include shortwave as well. Share your thoughts and ideas for listening when "the lights go out." Could be the basis for an upcoming EW column if enough input is received. 73s es gud DXing.

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When Fading Gets Adverse, Use Reception That's Diverse

We all know the frustration that results when the signals which we want to receive are subject to severe fading. One minute they're coming in fine, the next they may be inaudible. This has always been a serious problem in long-haul shortwave communications, due to the variations which are common within the ionosphere which reflects these shortwaves on their long distance circuits.

Diversity is the Mother of Invention

So, as you might imagine, radio operators, technicians, and engineers have given much attention to how to reduce the effects this signal fading has on our communications. Let's see how their thinking must have gone.

If the signal fades, the output from our receiver fades, right? Well, yes and no. Signals will fade no matter what we do, but the effect of this fading on our receiver's output might be lessened considerably in many ways.

The first way you might think about is the automatic volume control (AVC) which all modern receivers have. The AVC

automatically turns down the receiver gain when signal strength is strong, and turns it back up as the signal strength fades. This helps quite a bit in many instances, we wouldn't want to be without the help of our AVC circuits.

But there are several other ingenious approaches to reducing fading which are collectively called "diversity reception." Diversity reception, loosely translated, means receiving the desired signal by more than one path.

The success of the first type of diversity reception that we'll discuss is based on the fact that, due to variations in the reflections of the signal from the ionosphere, signal fading is not the same all over your neighborhood at any one point in time. That is, if you are experiencing fading of the signal coming from the antenna on your roof, it may be true that an antenna on your neighbor's roof has a strong signal booming in, while you can't even hear the programming with your antenna.

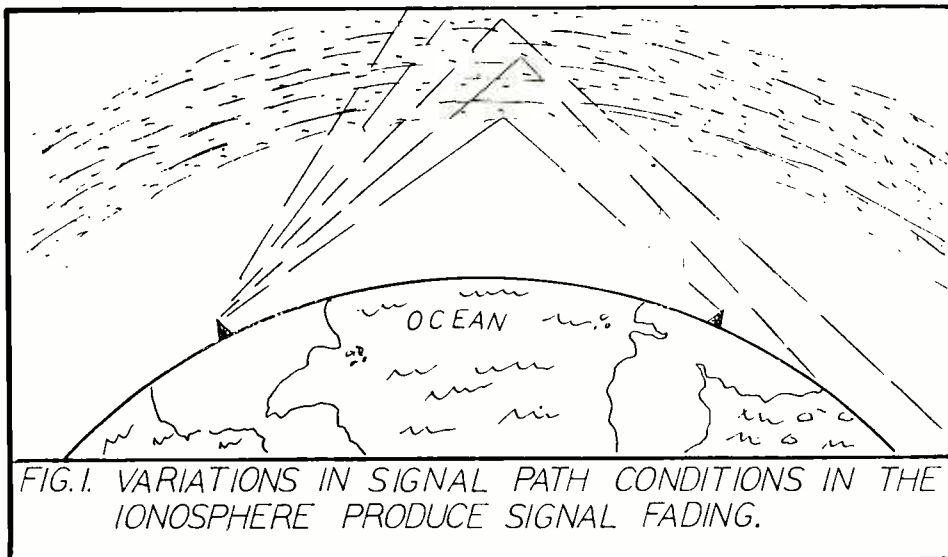
So, if you could just switch from your antenna to your neighbor's antenna as the signal fades from yours and is yet strong in your neighbor's, you would have a much

more listenable output from your receiver. Or, if you had a separate receiver connected to each antenna, you could note how the fading differed in the two receivers. You'd probably want to turn down the volume on the one with no signal (to reduce the noise it will be making). Using this diversity technique, you could get more of the programming than ordinary reception with one antenna allows.

This technique of switching between antennas located at widely separated locations to follow the strongest signal-source is known as "space diversity." You can check this technique out yourself if you have two or more widely separated antennas. Rig up a situation where you can switch quickly between the antennas, and when the signal fades down on the one connected to your receiver, switch through the others and note the variations in signal strength. Very likely one or more of your other antennas will have the signal at a stronger level than the one which has faded out.

In a true diversity receiving setup the switching between antennas is done automatically by electronic circuitry. But, to demonstrate the effect to yourself, an easy-to-turn rotary switch can be used for the manual method just described.

For space diversity reception, the greater the separation between antennas the better. Some writers suggest that only a portion of a wavelength is enough separation, but others feel that one or a few wavelengths is appropriate. If you want to try space diversity reception, but don't have much space, try within the space that you do have and see what it will do. Or, you might want to try one of the other kinds of diversity reception discussed below which doesn't require so much real estate.



Polarization Diversity

Sometimes fading is caused by a change in the polarization of the incoming signal, due to changing conditions in the ionosphere. Since antennas tend to respond maximally to signals polarized in the same orientation as the antenna, switching between antennas of different polarities may provide the desired diversity effect.

If you have a vertical and a horizontal antenna cut for the same band, you could try polarization diversity with a switch for these two antennas as described above for space diversity.

Frequency Diversity

Frequency diversity is perhaps the simplest of all: it can even be accomplished with only one antenna and one receiver. Frequency diversity is possible when a station broadcasts on more than one frequency with the same program on each frequency simultaneously.

To try frequency diversity, if you have two receivers you can tune them both to the same station, but on different frequencies. For instance, if the station simultaneously broadcasts its programming on 40 meters and 30 meters, tune one receiver to the 40 meter frequency, and the other to the 30 meter frequency. It is unlikely that the signals on both frequencies will fade in and out at the same time, so you can get some diversity effect this way.

This kind of setup isn't ideal, because when one receiver has a fade out it may still receive a lot of noise. But it is one way to get acquainted with frequency diversity.

You can even do the same thing with one receiver, but less well, by tuning between the two (or more) frequencies on which a station is broadcasting. As the signal fades on one frequency, tune quickly to the same station on another of its frequencies and you may find it is booming in there just fine.

Expensive Equipment

Commercial diversity equipment is expensive and not easy to locate. At present I don't know of a supplier of diversity receivers or adaptors. If you do, let me know. If I can find sources of equipment or build-it-yourself plans, I'll mention them in this column in the future.

"Tornado Special" Note

Bob Grove's eye caught the fact that the photo of the Tornado-alley special antenna, mentioned in this column recently, was horizontally polarized. This is in contrast to the polarization of the weather signals it is to receive, which are vertically polarized.


So, if you're building this or a similar antenna, your signal strength should increase quite noticeably if you rotate the antenna so that the elements are in a vertical orientation rather than the horizontal as shown in the photo. Thanks, Bob.

RADIO RIDDLES

Last Month we discussed polarization diversity, and the Radio Riddle asked you what other useful kinds of diversity reception there are. Well, we've covered space diversity, polarization diversity, and frequency diversity today.

But there is one more kind of diversity reception that has so many relatives that, for next month's Radio Riddle, I'll ask you what it is, and (hint) what does it have to do with things like SITOR, AMTOR, packet radio, and the CW prowords QSM and QSZ?

Get an answer to this question, and much more, in your next month's *Monitoring Times*. Till then, Peace, DX and 73.



Reading MT teaches me more about monitoring each month. I find it very helpful and look forward to each issue.

--1991 Reader's Survey comment

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Q. Are there any FM operations in the 118-137 MHz AM aircraft band? (Bob Stewart, Ft. Worth, TX)

A. No. There have been occasional reports of DEA and Customs aircraft using FM air-to-ground on splinter channels, but not by allocation which specifies AM only, 25 kHz channel spacing.

Q. I have just bought a cellular telephone. What are the odds of someone listening in on my conversations? (Carl Hinke, Victoria, BC)

A. The odds are better that someone IS listening than NOT listening.

Q. Whatever happened to MT columnist Havana Moon? (Alfred Fawbush, Houma, LA)

A. During the days when "spy numbers" stations could be found lurking in every corner of the shortwave band, Havana Moon, a pen name for a former intelligence officer, brought MT readers up to date on the latest goings-on in this cloak-and-dagger radio rhapsody.

With glasnost, the transmissions have decreased dramatically, and there is little left to tell that isn't covered in my *Shortwave Directory*. Havana Moon writes occasionally for *Popular Communications*, mostly on an

historical and conjectural perspective.

Q. In a previous column, you said that people who claim to hear cellular phones in the 450 MHz band are actually hearing conventional mobile phones assigned to that band. I have personally seen cellular phones in use and heard the voices of the user in the 450 MHz band. What gives? (Stan Thorn, Geneva, IL)

A. While some listeners tuned to the 454.025-454.975 MHz radio telephone band think they are hearing 870 MHz cellular phones, reports of actual cellular conversations being heard in the 450 MHz range probably result from the scanners' oscillator harmonics mixing with the cellular signals and being detected.

In other words, there are no cellular systems working in the 450 MHz band, but cellular calls may be heard on some scanners tuned to that range due to design deficiencies.

Q. Is it possible to look into your crystal ball to the year 2000 and tell what equipment will be like and what the shortwave and satellite broadcasting bands will be? (Herb Siegel, Chelsea, MA)

of the recording and, lo and behold, the drive was fixed!

Improving Shortwave Audio

Shortwave reception is known for its poor sound. Chuck Woiski of Inwood, New York, found an excellent fix. Resurrecting an old 5-band audio equalizer with a built-in amplifier, Chuck connected it between the speaker output of his receiver and a hi-fi speaker. Now he can custom-adjust the sound for each station to his satisfaction.

Any inexpensive audio equalizer can be used for this application. Annoying squeals and other interference can be reduced as well by attenuating the frequency corresponding to the noises. Thanks, Chuck.

Questions or tips sent to "Ask Bob," c/o MT, are printed in this column as space permits. If you desire a prompt, personal reply, mail your question along with a self-addressed, stamped envelope (no telephone calls, please) in care of MT.

Q. I could do a much better job in 1992; that's when the World Administrative Radio Conference (WARC '92) meets in Geneva, Switzerland, to plan such changes.

My guess is that we will see more digital signal processing (DSP) for better reception, and computerized receivers with greater functional capabilities for information retrieval.

Increased spectrum for satellites is unlikely until they use what they already have, although plans for high definition television (HDTV) call for wider bandwidths. Shortwave broadcasting spectrum is likely to remain pretty much the same in total, although amateur radio is requesting a frequency swap in the 40 meter band.

Q. What are the mailing addresses for shortwave religious broadcasters WWCR and WCSN? (George Wight, Groveland, CA)

A. As listed in the *World Radio TV Handbook*, WWCR (Worldwide Christian Radio) is 3314 West End Avenue, Nashville, TN 37203; and WCSN (Herald Broadcasting division of the Christian Science Monitor) is PO Box 860, Boston, MA 02123.

Q. Is there a hand-held programmable scanner that has CTCSS (PL) sub-audible tone squelch capability like the Uniden BC-760XLT? (David Onstott, Lexington, SC)

A. No.

Q. Where can I obtain a base diagram for the old 1629 "seeing eye" tube? (Kevin Neal, Flippin, AR)

A. Old tube manuals are extremely hard to find. Try a large library to see if they have an early edition of the *Radio Amateur's Handbook* published by the American Radio Relay League (ARRL).

Next, send for a free sample copy of the excellent *Antique Radio Classified* (PO Box 2, Carlisle, MA 01741) and mention

Bob's Tip of the Month:

WHEN NOISE ANNOYS

Using Computer Noise to Adjust Disk Drive Speed

As Roger Palaski of Peoria, Illinois, sat wearily listening to the annoying interference on his shortwave receiver caused by his nearby Commodore 64 computer as it loaded data into his floppy drive, a thought occurred to him. Could this be a diagnostic tool for a defective drive? He decided to find out.

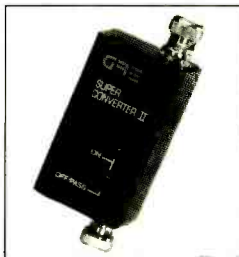
Taping the sound of a properly-operating drive, he then listened to the sound from a defective drive--there was a distinct difference! Suspecting the problem may have been speed, Roger then adjusted the defective drive until its sound matched that

Improve Your Scanning Coverage!

GRE America is proud to introduce a new family of products to enhance your scanning pleasure! First, GRE has designed the new **Super Converter 9001** for base model scanners. The 9001 converts 810 MHz - 950 MHz down to 410 MHz - 550 MHz. The 9001 is the perfect alternative to buying a new, expensive scanner covering the 800 MHz band. Next, GRE announces the new **Super Amplifier 3001** for base model scanners. The 3001 will increase gain by as much as 20 dB, and is engineered to help scanners with low sensitivity pull in weak signals. Both products use BNC connectors, (1) 9 volt battery and have an off/pass switch for returning to normal operation.



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Monitoring Times); their advertisements abound with things like that.

Finally, can any of our readers help? We would love to have an old tube manual on hand to assist fellow experimenters.

Q. When certain frequencies are entered into my Regency MX-7000 or AOR AR1000 scanners in my car, the Whistler Spectrum II radar detector goes bananas. Whistler has checked the unit and gives it a clean bill of health, although they say they will shield it for \$25. Any suggestions? (David Whittely, Richmond, TX)

A. Yes. Shut it off and don't drive over the speed limit.

It sounds as if the scanner's oscillators--and possibly their harmonics--are being picked up by the radar detector as a signal. I would opt for the shielding (assuming that the detector is getting the signal through its plastic case).

If that doesn't work, you may have to shield the cabinets of the scanners as well. Keep the scanners and their associated antennas as far from the Whistler as possible.

Q. My scanner picks up signals better in the manual mode than when it is scanning; how come? (Larry Hoffer, Milwaukee, WI)

A. I would bet that this happens only on weak signals; if not, it's time to get it fixed!

All scanners take a certain amount of time for their electrically-tuned circuits to stabilize as they switch from frequency to frequency; the faster you scan, the more likely that the circuits are not fully tuned at each setting. Weak signals are the most vulnerable because you need all the sensitivity you can get, while stronger signals quickly rise above the squelch threshold level and hold the channel, even though they aren't perfectly tuned.

Try entering the frequencies in numeric order so that the circuitry does not have to reset so widely between each scanned channel; this often helps.

Q. Why didn't ICOM include an infrared remote control unit for their luxurious R9000 receiver as they did for the R71A and R7000? (Stephen Newlyn, Elizabeth Downs, Australia)

A. I called ICOM to get an answer to this and they didn't know either! Our guess, however, is that the R9000 is so complex that their standard controllers couldn't begin to provide the requirements for the 9000. That is why it is equipped with a computer control interface.

BOB ASKS:

The spectrum is filled with signals of unknown origin, but one VHF low-band "beeper" has been puzzling Bob Grove for about ten years. Since it is heard in North Carolina in the mid-afternoon, Bob suspects it may be coming from the western or southwestern U.S.

The 1000 Hz pulse tone with a repetition rate of approximately 8 pulses per second is heard on 40.64 MHz. The 40.60-40.70 MHz range is commonly used for hydrotelemetry, wildlife tracking and other forms of remote signaling.

Bob says that the first reader to correctly identify and document the origin and nature of the pulse transmitter for him will be rewarded with a one-year subscription to MT!

LETTERS

continued from page 3

these men believed fervently in the commercial potential of shortwave. But despite their considerable talents and fortunes, none were able to make the medium fly commercially.

The bottom line is this: As destructive as the philosophy is to incubating creative ventures like commercial shortwave, advertisers go with proven winners. And shortwave has no commercial track record. Without that record, Carlson couldn't sell it so he sold it. The Canadian government, which no doubt saw Radio Canada International as an investment in the advertising of Canada, didn't believe, either. When Ottawa found that they had to save money, they didn't go to the Department of Wingnuts. They went right for shortwave. So did Radio RSA in South Africa.

Let me close with the 1991 editorial made by Andy Sennitt, editor of the *World Radio TV Handbook* -- a book that you'd think would have a very big interest in painting the best possible face on the shortwave industry. "In many cases where shortwave used to be the only viable medium, signals of domestic audio quality can now reach the listener through satellite... Operations which in former times would have used shortwave as a matter of course...no longer use it on a regular basis. Some of those for whom shortwave has been a way of life are finding it hard to accept the new reality."

I can't argue with his facts. But I can argue with his spirit. As they used to say, "With friends like that, who needs enemies?"

Robert Thomas II of Bridgeport, Connecticut, was one of the first to express amazement at the recent Radio Canada International "bombshell."

"Ian McFarland said that he was leaving RCI with 'mixed feelings.' And he said that he would be invited to join Radio Japan's English service. He wasn't specific as to what duties he'll undertake and he really didn't say if he'd have any input on Radio Japan's DX Corner."

It is incredible. McFarland was a shortwave institution that cannot be replaced. Although we very much hope he is not gone permanently from the DX scene, at the moment the loss feels very much like the death of a loved one. Now here's a place a letter-writing campaign could very well produce results. Write to restore RCI's English and French programming; write to bring Ian back; write to Radio Japan to let Ian do what he does best in a shortwave DX show

Family physician, Dr. Jerry Waldyke of Dexter, Michigan, voiced concern over a recent article, "Man: The Human Receiver," by Bob Grove. While sharing the same worries regarding the effects of electromagnetic fields on the human body, he felt the article placed equal importance to all studies, regardless of scientific method or whether the subjects were human or animal. Dr. Waldyke maintains, "I have researched some of these studies in the medical literature, and find that there have, so far, been no conclusive results. I am especially concerned about the effects of TV screens and computer monitors on the unborn child. The latest studies again show that there is no link between exposure to these factors and anomalies in the child."

Point well taken, Doctor Waldyke, but the article does not pretend to have the final answer, especially in a field in which even present-day studies have often been inconclusive or even contradictory, as you point out. The article is more a chronology of experimental observations collected over much of this century. Their implications, while certainly not conclusive, do cry out for just the kind of serious concern you are expressing. Man-made radiation will only continue to increase, and we've certainly not heard the end of this debate.

The reaction to the new frequency section in last month's issue was mixed. Says Glenn Thompson of Menomonie, Wisconsin, "I've been a subscriber to *Monitoring Times* since volume 1, issue 1, and have enjoyed the magazine very much. The 'Shortwave Guide' has always been useful; however it is even more so now that you are adding a destination code to each frequency. If it gets any easier, someone will have to come to my house and tune the receiver for me."

From Laura Quarantiello of San Marcos, California, "May I compliment you on the 'new, improved' shortwave guide. That's quite a bit of information to deal with each month and keep current. I think you're doing a super job. Kudos!"

Says John Palumbo of Windber, Pennsylvania, "I think the new system for the Shortwave Guide is just great! It sure clears up a lot of the mystery."

Unapproving was Richard C. Cinert, address unknown, who wrote simply, "Drop the exotic listings and list only stations you can hear in the USA." Also voting "no" was Nathaniel Finestone of Mountainside, New Jersey. "The reason why I subscribe to *Monitoring Times* is to keep current on frequencies and schedules for English

broadcasts that are relatively easy to hear. The March issue dropped many of these and replaced them with flea-sized operation such as Radio Buea at 1715 on 3970 kHz. Keeping up-to-date on Radio Moscow's frequencies ought to have a much higher priority than that kind of esoteric information.

Frequency Manager Greg Jordan, strapped with the problems of having to move every three or four months, is now settled and has promised renewed energy toward the section. Additional monitors have been invited on board.

It's All Greek to Me

Nick Fooskas of Clifton Heights, Pennsylvania, has a special interest in Greek radio. Asks Nick, "Does Greece have any other shortwave stations other than the Voice of Greece?"

Try for Radiophonikos Stathmos Makedonias (Macedonia) from 1000 to 2225 UTC on 9935 and 11595 kHz.

Jack Schultz of Kent, Washington, writes to say that he really enjoys the articles on satellite TV. "You have more information than the satellite TV magazines," he says.

Dr. Barry Schwartz of Bala-Cynwyd, Pennsylvania, wants to know "How did you happen to choose the Logan Circle of the Benjamin Franklin Parkway in the spring in Philadelphia" for the cover of the April issue?!

Well, Barry, our point was that on any typical block of apartments there may be an FCC violator, and indistinguishable from any typical traffic may be the souped-up FCC field car. So Robin Miller, who produces our covers, did an outstanding job with a typical photo of a typical street.

If any of our readers have spare slides or extra-sharp color prints you think would make a good cover photo, we'd love to see them. Vertical-format for both slides or pictures is recommended. Please be sure to identify both the picture and yourself. If your slide is used for a cover, you will receive not only the credit, but \$35 to boot.

Steve Marshall says that he thinks that Bob Kay did a disservice to scanning "when he toyed around with that hapless NBC person. The way I see it," says Steve, "the more people who know about the hobby the more likely they are to try it out. Who cares if they buy a scanner to try their hand at 'snooping?' Sooner or later, they'll get bored and open up their ears to what else is out there."

CONVENTION CALENDAR

Date	Location	Club/Contact Person
May 3-4	Sioux City, NE	3900 ARC/ Dick Pitner W0FZO 2931 Pierce St, Sioux City, IA 51104
May 3-5	Fresno, CA	Fresno ARC/ Jeff Barrett N6SIV P.O. Box 783, Fresno, CA 93712
May 4	Grand Junction, CO	CO CO Assoc of DXers* Location: Holiday Inn, 8am-??
May 4-5	Anderson, SC	Blue Ridge ARS/ Sue Chism N4ENX Rt 6 203 Lakewood Dr, Greenville, SC 29607
May 5	Yonkers, NY	Metro 70 cm Net ARC/ Otto Supliski WB2SLQ 53 Hayward St, Yonkers, NY 10704
May 5	Dalton, MA	NOBARC-Dalton/ 413-458-8452 Dalton American Legion; \$1 admission; XYLs, YLs and kids free
May 12	Medina, OH	Medina M2M Club/ Gary Chamberlain KA8DJZ 755 Shaker Dr, Medina, OH 44256
May 17-19	Rochester, NY	Atlantic Div/NY State/ Harold Smith K2HC 153 Mason Ave, Rochester, NY 14626
May 17-19	Tulsa, OK	Oklahoma State Conv/ Merlin Griffin WB5OSM 5332 S. Irvington, Tulsa, OK 74135
May 18	Colorado Sprgs, CO	Colorado Assoc of DXers* Location: PPRAA shops at Bluff Acad Blvd and Austin Bluffs Pkwy; 8am - ??
May 18	DeWitt, IA	Clinton ARC/ James Beakey NI0Q 1817 N. 10th St, Clinton, IA 52732
May 18-19	Yakima, WA	E. Washington Section Conv/ Roger Wilson N7NPL 112 N. 30th Ave, Yakima, WA 98902
May 18-19	Birmingham, AL	Alabama State Convention/ Mildred Cullen AA4XF 2331 Ivy Lane, Birmingham, AL 35226
May 18-19	Birmingham, AL	Birmingham ARC, AL Historical Radio Soc AL.HRS, 4721 Overwood Cir, Birmingham, AL 35222; 205-822-6759 or 595-2856. Swap meet and hamfest; Location: JC Birmingham Civic Center, new and old equipment, displays, forums.
May 19	Wrightstown, PA	Warminster ARC/ Mark Kempisty N3GNW 3854 Moosewood Ave, Trevose, PA 19047
May 31-Jun 2	Seaside, OR	NW Div Conv/ Ken Hart N7JAS 16632 SW Rosa Rd, Beaverton, OR 97007
June 1	Knoxville, TN	RAC of Knoxville/ Steve Fritts WA4GZE 400 Tobler Ln, Knoxville, TN 37919 Location: Knoxville Convention Center, downtown Knoxville 9am-5pm; \$4 advance tickets, \$5 at door.
June 1	Columbia, MO	Central MO ARA/ Jesse Brown WM0Y 1915 Blue Ridge Rd, Columbia, MO 65202
June 2	Tamaqua, PA	Tamaqua Transmitting Soc & Anthracite Rptr Assoc Allen Breiner Sr W3TI 212 Race St, Tamaqua, PA 18252
June 2	Manassas, VA	Ole Virginia Hams/ Ken Moan KM4UH PO Box 1255, Manassas, VA 22110
June 2	Salina, KS	Central Kansas ARC/ Jim McKim W0CY 1721 Glenn, Salina, KS 67401
June 2	Princeton, IL	Starved Rock RC/ Pete Jacobsen AA9R 19 Briarcliff Dr, ASpring Valley, IL 61362
June 2	Queens, NY	Hall of Science ARC/ Stephen Greenbaum WB2KDG P.O. Box 131, Jamaica, NY 11415; [718]898-5599 Location: NY Hall of Science parking lot, Flushing Meadows Park, off 47th Ave & 111 St; 9am-3pm, \$4 donation; Talk-in 445.175 rptr, 146.52 simplex
June 8	Winston-Salem, NC	Forsyth CO ARC/ Jim or Dolly Rodgers P.O. Box 11361, Winston-Salem, NC 27116 [919]760-2493 Location: Benton Convention Center, 9am-5pm
June 8	Loveland, CO	Loveland Superfest/ CO Assoc of DXers* Location: Larimer CO Fairgrounds; 8am - ??
Jun 7-9	Arlington, TX	West Gulf Div Conv/ John Fleet WA5OHG PO Box 2502B, Dallas, TX 75225
June 9	Willow Sprgs, IL	6 Mtr Club of Chicago/ Josweph Gutwein WA9RIJ 7109 Blackburn Ave, Downers Grove, IL 60516
June 9	Lancaster, NY	Lancaster ARC/ Nick Mueller WA2CJJ 5645 Genesee St, Lancaster, NY 14086 Location: Elks Club Hall, Rt 20-Broadway across from Lancaster P.O.; Admission \$4/person; Phone 716-681-6410/683-8880/894-0343; 146.550 simplex/224.640 rptr.
Jun 14-15	Albany, GA	Albany Amateur RC/ John Crosby K4XA PO Box 1205, Albany, GA 31702
June 22	Lempster, NH	Conn. Valley FM Assoc/ Conrad Ekstrom WB1GXM P.O. Box 1076, Claremont, NH 03743-1076; [603]543-1389 Location: Goshen-Lempster Coop. School Gym, Rt 10, Lempster, 10 ml. so. of Newport, NH, 25 no. of Keene. 7am-2pm, \$1 admission. Talk-in 146.16/76.
June 29	Glenwood Sprgs, CO	CO CO Assoc of DXers* Location: Glenwood Springs, CO, Mountain College
June 30	Wilkes-Barre, PA	Murgas ARC/ Robert Nygren WA3YON RD1 Box 134-6, Sweet Valley, PA 18656

* Colorado Assoc of DXers: P.O. Box 22202, Denver, CO 80222-0202 for info

Monitoring Times is happy to run brief announcements of radio events open to our readers. Send your announcements at least 60 days before the event to: Monitoring Times Convention Calendar, P.O. Box 98, Brassstown NC 28902.

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*Letters should be addressed to **Letters to the Editor**, Monitoring Times, P.O. Box 98, Brassstown, NC 28902. Please include your name and address (may be withheld at your request).*

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FCC "Anti-Scanner" Update

The April editorial on a possible banning of public safety frequencies from mobile receivers and transceivers by the FCC has created quite a stir in both the amateur and scanner listening communities. Some computer bulletin boards (BBSs) have been very creatively exaggerating the actual purport of the FCC Notice of Inquiry.

To relieve tension in the radio community, a high-placed source in the FCC has provided *Monitoring Times* an excellent insight into the real issues of the NOI. At present, some state laws ban mobile scanners and amateur transceivers which allow public safety frequency reception. The FCC is looking into a possible preemption of those laws.

At this time, the FCC is inviting comments from licensees only, not recreational monitors. In spite of commissioner Sherrie Marshall's constant references in public meeting to "scanners" and "anti-scanner laws," only amateur radio transceivers are at issue in the NOI; there is no "hidden agenda" to require the removal of public safety frequencies from scanners. Such an action would be a privacy issue to be considered by the Justice Department, not an FCC rulemaking.

The comment period for the NOI closes July 8, 1991. After several months of consideration by the Commission, a decision will be made whether to take any action at all. If they do, it will be either a denial of the original petition to pre-empt state laws banning public safety monitoring in vehicles, or a report and order to preempt (overrule) those state laws. Such a preemption order would undoubtedly be appealed by the affected states.

Our source believes that, in spite of concerns by the monitoring community - - and comments by one of the commissioners -- there is no consideration at this time at any federal level to remove law enforcement frequencies from scanners.

Bob Grove, WA4PYQ
--Publisher



CONNECTICUT SETS PRECEDENT IN CORDLESS LISTENING LEGISLATION

The Connecticut House of Representatives on April 3, 1991, soundly rejected by an 82-64 vote a bill which would have made it a crime to intentionally listen in on cordless telephone conversations. In that state, a suspected drug dealer, charged as the result of his intercepted phone conversation, is attempting to have the evidence suppressed.

Monitoring Times applauds the enlightened Connecticut legislators who realistically observed that such a bill would be unenforceable, just like the Electronic Communications Privacy Act. We hope that this forward-looking, landmark decision will serve as a model for future cases involving monitoring of the open airwaves.

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Options. IC-R7000: RC-12 remote control, EX-310 voice synthesizer, CK-70 DC adapter, MB-12 mobile bracket. IC-R71A: RC-11 remote control, EX-310 voice synthesizer, CK-70 DC adapter, MB-12 mobile bracket, FL-32A 500Hz, FL-63A 250Hz and FL-44A filters.

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*Specifications of the IC-R7000 guaranteed from 25-1000MHz and 1260-1300MHz. No coverage from 1000-1025MHz.

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