Volume 20, No. 1 January 2001

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Monitoring Times

The Leader in Shortwave and Scanner Communications

MT: Celebrating 20 Years and Counting!

Monitoring in the Caribbean

Special: Inauguration Frequencies

Also in this issue:

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This log-periodic antenna is constructed on a high-quality fibre-glass substrate, with a 20dB amplifier directly mounted on the substrate, together with other surface-mount circuitry and a standard 9V PP3 type battery holder. A power switch is provided directly on the antenna.

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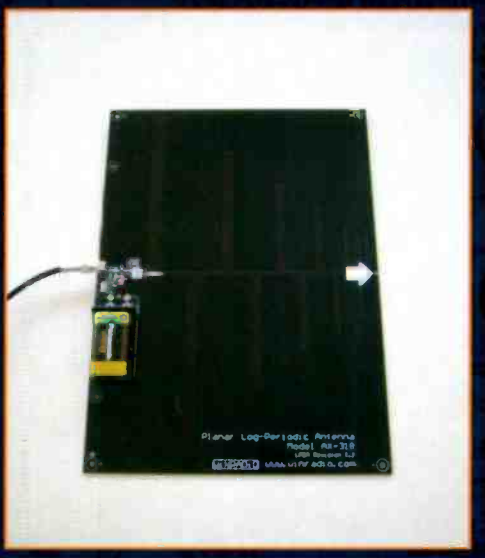

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Monitoring Times

Vol. 20, No. 1 January 2001

Listening in on the Caribbean

We conclude our comprehensive guide to shortwave listening in Latin America with listening tips and QSL addresses for the countries in and around the Caribbean and Gulf of Mexico. Very few of these countries operate external shortwave services, but the domestic broadcasts are all the more challenging. It's a great way to learn more about our neighbors to the south.

We also drop in on fellow DXers in Mexico at their annual conference. Photo inset: DX Night (photo credit: Roger Chambers)

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THE 2001 WRTH

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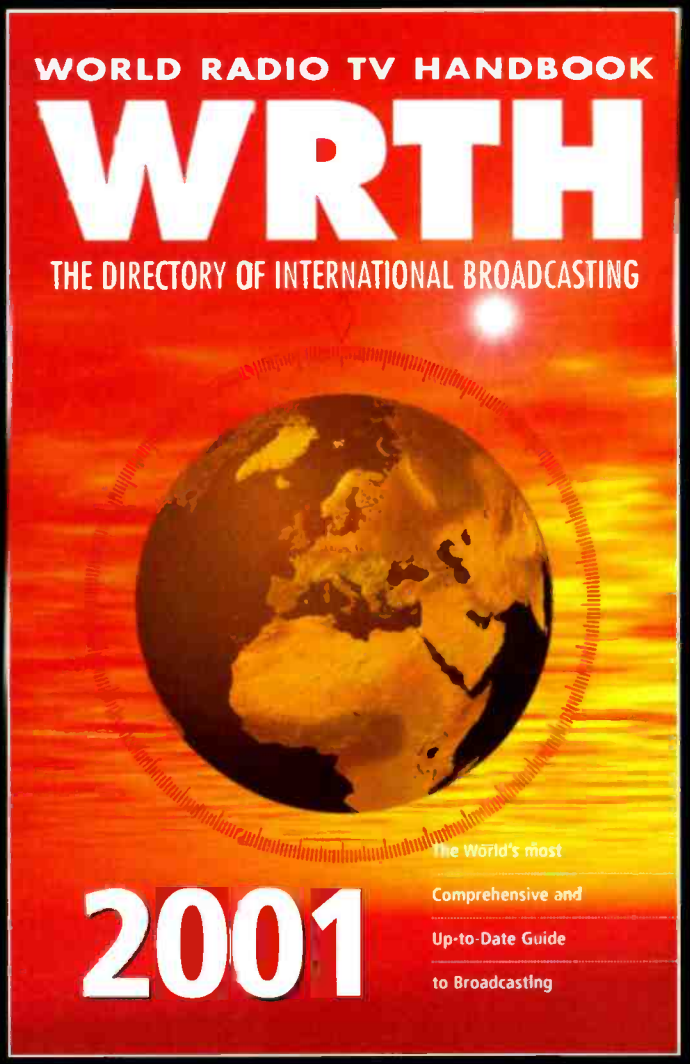

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Reviews:

Whether you just earned your amateur radio license on HF or whether you've been rag-chewing for years, the SG-2020 is an easy-to-operate, inexpensive transceiver from SGS. Is it what you've been looking for? (page 87)

Have you ever wondered how those spectrum display units work and what they do for you? Here's a review of AOR's SDU5500, plus an explanation of how the SDU and LCDs work (page 80).

The Icom IC-R2 has won a loyal following, but programming the tiny scanner is a challenge. It's much easier using a PC, and *MT* reviews one of the available software solutions – Butel's ARC2 program (p.82).

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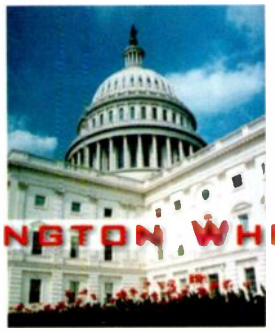


WASHINGTON WHISPERS

Fred Maia, W5YI

• **Special interests are still trying to kill the Low Power FM broadcast radio bill.** President Clinton notified Congress that he intended to veto an appropriations bill that had a broad range of "damaging riders" added to the legislation.

Clinton urged Congress "...to drop the rider that would prevent the Federal Communications Commission from licensing new low-power FM radio stations to provide for a diversity of voices in communities around the country."

The low-power plan, adopted in January, would create about 1,000 low-power stations operating at 10 and 100 watts and covering between four miles and seven miles from the transmitter.

The FCC already has received 1,200 applications in the 20 states where licenses will be awarded first. These LPFM broadcast stations would serve the needs of churches, local governments, community groups, and schools.

The first filing window, from May 30 through June 8, resulted in over 700 LPFM applications from Alaska, California, District of Columbia, Georgia, Indiana, Louisiana, Maine, Mariana Islands, Maryland, Oklahoma, Rhode Island and Utah.

The second filing window (August 28 to September 1) yielded 473 applications from Connecticut (38); Illinois (84); Kansas (36); Michigan (87); Minnesota (63); Mississippi (22); Nevada (23); New Hampshire (28); Puerto Rico (20); Virginia (58); Wyoming (14).

A third five-day filing window was scheduled to begin at the end of November 2000 for eligible organizations from American Samoa, Colorado, Delaware, Hawaii, Idaho, Missouri, New York, Ohio, South Carolina, South Dakota, and Wisconsin. Information on LPFM rules and the application process can be found on the web at <**www.fcc.gov/lpfm**>.

The fourth filing window is planned for the end of February 2001, and the fifth and final filing window will be held at the end of May 2001.

The new LP-10 and LP-100 FM microradio broadcast service will provide opportunities for new voices to be heard. It is opposed by the *National Association of Broadcasters* and existing users of the FM broadcast dial on competitive and interference grounds.

• **Alan Fried of Minneapolis had his micro-radio broadcast equipment seized by the FCC** in 1996 after he operated a 20-watt unlicensed alternative music station called "The Beat." He has exhausted his lower-court appeals and is now taking his case to the Supreme Court. Fried claims a constitutional right under First Amendment "free speech" grounds. He says his case is different from others in that he asked for a waiver of the rules, "...but the FCC did not respond whatsoever." Fried said he never received a complaint that it caused interference. It is doubtful that the Supreme Court will hear the case.

• **The good news is that the Internet is going wireless.** The bad news is that U.S.telecom companies are playing catch up, while their European and Asian counterparts lead the way.

Telecom companies throughout Europe are in the process of investing up to $300 billion to unite the mobile telephone with the Internet. If the "third generation" (3G) mobile Internet takes off, then Europe and Japan will be ahead of the United States in the adoption of a glamorous new technology. Finland allocated its third-generation spectrum licenses in March 1999. The United States is not scheduled to auction off 3G spectrum until Sept. 2002.

Mobile phone penetration in the U.S. today is 25 percent compared to 60 percent in some European countries. And 40 percent of U.S. users are still on analog networks. Digital networks are the norm in Europe and Asia. To make matters worse, the U.S. digital market is divided among different standards.

Earlier this year, the World Radiocommunication Conference specified three spectrum areas for potential third-generation (3G) high-speed wireless communications. Today's wireless devices can only transmit voice and brief text messages and cannot handle digital multimedia and other broadband content.

The problem is that spectrum bands under consideration in the U.S. are currently used by analog cellular service providers, the military and various wireless users and satellite broadcasters. Other countries do not have that problem.

President Clinton ordered various government agencies to work with the FCC and the private sector to expedite adoption of 3G wireless technology. A plan for high-speed wireless systems has now been developed that will result in 3G spectrum being allocated by July.

• **Congress is still trying to improve enforcement of the Citizen's Band (CB) Radio Service.** The major problem is harmful interference to nearby users of consumer telephones and televisions.

Introduced last year by Rep. Vernon Ehlers (R-Mich.), H.R. 2346 seeks to delegate authority to State and local governments to enact and enforce laws requiring users of CB radios to comply with FCC rules. It adds a new paragraph F to Section 302 of the Communications Act. Ehlers, by the way, holds a Ph.D in nuclear physics!

The bill contends that the FCC has stated that CB violations will only be investigated as time and manpower permit on a low priority basis and that "Many people believe that the FCC has not given the problem and the nuisances that rogue operators create significant priority and resources."

Similar bills have been introduced into both the Senate and House of Representatives before without success. No hearings were held on H.R. 2346 but on September 22, 2000, the bill was reported out of the House Commerce Committee and prepared for possible floor action. All bills not acted upon before the end of the last year's session are now dead.

The proposed bill only impacts "citizens band radio equipment not authorized by the Commission" and "unauthorized operation of citizens band radio equipment on a frequency between 24 MHz and 35 MHz." The bill specifically states that other licensed radio services (such as Amateur Radio) "shall not be subject to action by a State or local government under this subsection."

The FCC is also required to "provide technical guidance to State and local governments regarding the detection and determination of violations...."

"If the Commission determines that a State or local government has acted outside its authority in enforcing a statute or ordinance, the Commission shall preempt the decision enforcing the statute or ordinance."

LETTERS TO THE EDITOR

Welcome to our 20th Year!

As *Monitoring Times* begins its 20th year in the 21st Century, we take the opportunity to freshen up our look just a little, while continuing the tradition of depth and breadth of coverage you've come to rely on.

Satellite buffs will note we are moving to a new presentation for the Satellite Guide to make it more comprehensive. Keep these pages and by the end of the year you will have the entire transponder loading report plus all the audio services.

Satellite information is also posted in the Resources section of our website. Just go to **http://www.monitoringtimes.com** and follow the links. Readers with questions about TVRO should still direct them to Ken Reitz, but he will incorporate his answers into the *Beginner's Corner* which covers all facets of the hobby.

The two review columns omitted this month will return in February. Plane Talk will alternate with Milcom, so it will return next month as well.

Corrections

"I just finished reading '**An Ear for Radio**' in the November 2000 *Monitoring Times* by M.L. Shannon. Within the article a frequency of 460.025 is mentioned as a National Law Enforcement Mutual Aid Radio frequency. I have heard of 155.475 and the newer ITAC frequencies at 800 MHz but never this one. I've checked the usual sources (*Police Call, Monitoring America*, etc) but cannot find this frequency mentioned."

– Dan KE3UC

We checked with M.L. Shannon, who said Dan is right: "I made a mistake. 460.025 is CLEMARS; California Law Enforcement Mutual Radio, not NALEMARS. NALEMARS is 155.475."

"There were errors in my November article on '**Spanish National Radio**' concerning current staff. Mr. Javier Amorena is the Chief Editor of the foreign languages services, not the Director General, as stated in the article. The current Director of REE is Mr. Javier Garrigos. In addition, the former Director General of RTVE (the Spanish National Radio and Television Network), Mr. Pio Cavanillas, recently became a minister in the Government, not Mr. Amorena as was reported.

"My thanks to Victoria Laporta of the English Section Audience Relations Department of REE for bringing this to my attention. My sincere apologies for these inaccuracies."

– Roger Chambers, New York

"Surely Bob Grove was referring to WRNO and not WINB in his November **Closing Comments** column. WINB came on in 1962, WRNO in 1982. Guess I will have to do an article on WRNO one day!"

– Hans Johnson

You're absolutely right about the error, Hans, but the fault was mine, not Bob's. In adding some background material I found on the NASB web site, my fingers somehow typed WINB when I was thinking WRNO! Maybe you should write that article, though, for anyone not familiar with WRNO's colorful history - rb

Making MT Accessible

"After several visits to your Grove-Ent Web site, I am sure you are aware of the large number of visually disabled persons interested in the subjects covered by *Monitoring Times*. Not only is your site quite easy to navigate with the Lynx text based browser, it talks quite nicely with the speech software many of us use to read our screens. One little problem, however, and one which if resolved would result in my parting with the bucks to subscribe to the E-mail version of your magazine, is its PDF format!

True, as you state on your Web site, there is software that permits the Adobe file to be translated to straight ASCII text, but many of us blind computer users are unable to run such a program on our systems! I am one of those individuals, still using DOS and a 486 to access the Internet, primarily due to the fact it does 99% of what I want to do with a computer.

There are several proprietary devices used by the blind such as the Braille 'n Speak that would allow the reading of a straight ASCII *Monitoring Times*, so I am far from alone in my desire for a straight ASCII version, I am sure. Any chance of subscribing to such a beast for $19.95?

– Willie

Thanks for taking the time to explain the plight of those like yourself who have quite a dilemma in accessing PDF format materials from the Net.

We have discussed how we can best serve the visually impaired many times in the past, and the PDF format is the best solution for the largest number we've found so far. Much of our task is in the manpower and cost in preparing a separate format for an exceedingly small minority of potential readers, thus justifying its expense.

That said, the art director says it would be relatively easy to export the entire magazine into one huge text file. It could not be indexed, graphics and advertising would not be included, and would seem cumbersome to most of us, but if there is interest in such a format by you and other potential readers, please let us know and we will give it every consideration.

Making SW Accessible

We received an appeal from Harry Darr on behalf of Rose Barbati who would like to listen to WEWN and Vatican Radio but who is legally blind and confined to a wheelchair at the age of 38. Harry tried his Sony 2010 in her apartment but found reception poor without an outside antenna, which she is not allowed to have.

Harry would appreciate contact with blind SW listeners to help recommend a receiver with easy presets, plus indoor antenna and external speaker. Certainly she'd be interested in any used equipment someone might be looking to get rid of. Contact Rose Barbati in Wilmington, DE, at 302-656-2309, or Harry Darr in Newark, DE, at 312-368-9939.

Though Harry didn't suggest it, an alternative that would not require Rose to learn a whole new technology would be for a WEWN listener to tape the radio programs for her. But then, maybe the challenge of radio would make the time pass more quickly. She might soon find herself listening to Latin rhythms or the Mass in Spanish as she tunes around the dial!

Hey Harry...

"For several years I have been monitoring the ACARS transmission from the Indianapolis International Airport. I usually let the scanner run about eighteen hours a day seven days a week.

"This is the first time I ever received almost a complete text from ACARS, even though some garbling did take place. The equipment I use is a Radio Shack scanner PRO-2022, and using the Universal M-400 decoder version 2.02.

"I personally thought this was interesting since it was an extra long text to receive via ACARS."

– Warner Chapman

Here is the pertinent text, from a US Air flight: "HEY HaRRY . . PLZ LaV Xa \0SERVICE0MEEV THE0INDmVIdUAL IN SEAT 12D.0HE AXPARENTLY0XamD 13000FOR0a 1STcLASS0TICKET aND LAS TO SIT AFT0of VHE CURTaING."

Alternatives to Mainstream

"The SW broadcasters such as WBCQ and WWCR fill an important niche in broadcasting in my opinion. Where else can one hear unfiltered news? Where else can one hear about the rape of our liberties and freedoms that's going on in this nation? We need an alternative source of news and commentary and I find it in the WWCRs of this country. (And yes, though I consider computers to be expensive toys, the Internet is a very viable alternative source of information.)"

– Mark Burns, Indiana

"One gripe about AM domestic broadcasting – Is there some way radio hobbyists can revolt or have another Boston tea party against syndicated programming on big 50 kW stations - such as Dr Laura, Rush, Art Bell? It's not that much fun DXing the AM band any more. What should happen is put them on small pinwheel stations and save the big ones for local talk. Cruising through the dials I hear Art Bell on at least 15 stations. (*This letter was written before Bell went off the air - ed*) Also, the same should be done with sports and sports talk. I live in a suburb of Cleveland, Ohio, and I could care less about the Philadelphia 76ers."

– Karl Kaplan, Ohio

21st Century Blues

"We are in trouble! Ceramic egg antenna insulators are now a special order item at Radio Shack.

"Now you have to plan ahead if you want to build a dipole. A simple item like an egg insulator has gone the way of the vacuum tube.

"Radio Shack has used the Wal-Mart style of modular displays for a long time. I just never thought a staple item of our sport, an insulator, would ever be 'off modular.' 'Slow sales,' they say at RS."

– Rick Sitz, Florida

Waiting for the GO Code

"I Currently work on the North Warning System, based in Hall Beach Nunavut, Canada. When I first went to the Artic in 1974 it was called Dewline. At that time we also were part of a Survivable Low Frequency Communications System, but with SAC out of Offutt Air Force Base in Nebraska. From your picture on page 27 of the July issue we had the same printer. To change paper you had to first cut the end in a V, then hold a couple of rollers apart. If you did it wrong you spent the next hour dismantling the printer to remove the bits and pieces of paper from the innards. It was noisy, but the messages came through fairly fast. It had a voice section because I remember sitting there one day when a call came through from Offutt; this day they were just curious about the weather in the North!"

– name withheld by request

More 20th Century Nostalgia

"Here is a great web page that shows just about every SW Broadcast transmitter that has ever been used in the USA. Also links that explain what each transmitter was and what tubes were used etc, along with pictures. Have fun...."

http://www.transmitter.org/co-usa.html

– David Zantow, N9EWO, Wisconsin

Ah yes, more good stuff from our friends at TDP (Transmitter Documentation Project). Thanks, Dave.

Your "Letters" can be sent to Monitoring Times, Letters to the Editor, PO Box 98, Brasstown, NC 28902 or emailed to *mteditor@grove-ent.com*

-- Rachel Baughn, Editor

Radio Honor Roll

Radio honors go to **Mark Bajek**, **Bill Johnston**, and all the radio hobbyists who lobbied against a proposed Michigan law requiring a state-issued license to carry a scanner in a car, and to Representative **Mike Kowall** who "drove a stake through the heart of the bill" after he was made aware of its implications. Kowall said he wrote the bill in response to a request from Oakland County Sheriff's Dept. Any new draft will punish the criminals, not radio users, he said.

Mark Bajek posted a warning on a huge billboard at his own expense to rally the support of racing fans who enjoy using their scanners at the track to listen to driver communications. Bill Johnston mobilized the amateur radio operators and weather watch volunteers.

A New Phase in Amateur Satellite Radio

The next-generation AMSAT Phase 3D Amateur Radio satellite was successfully launched November 16 from the European Spaceport in Kourou, French Guiana, aboard an Ariane 5 vehicle. At 630 pounds and some 20 feet across when the solar panels are deployed, Phase 3D is the largest Amateur Radio satellite ever put into space. The launch culminates many heartbreaking years of planning, design, construction, and fundraising.

Phase 3D was one of four payloads to be ejected into orbit by the launch vehicle. The Ariane 5 placed Phase 3D into geostationary transfer orbit, from where it will be nudged into its final elliptical orbit. The satellite is not expected to be ready for general use for about nine months.

A "general beacon" was said to be transmitting on approximately 435.450 MHz. On its first day in transfer orbit the Phase 3D PSK beacon was heard transmitting telemetry by Norbert Nothoff, DF5DP, on 145.898 MHz – slightly different from the expected frequency. For full details on 3D's operation, see *MT*'s July 2000 special feature series.

Space Station Receives First Crew

The all-ham crew of US astronaut and ISS Expedition 1 Commander William "Shep" Shepherd, KD5GSL, and Russian cosmonauts Yuri Gidzenko and Sergei Krikalev, U5MIR, is now aboard the International Space Station. After blasting off from Baikonur Cosmodrome in Kazakhstan October 31, the crew arrived at the ISS early November 2 aboard a Soyuz vehicle that will remain docked with the space station.

The Soyuz lifted off from the same launch pad where the space race began 43 years ago last month with the launch of the Sputnik 1 satellite. "This is a huge, huge event," said US Astronaut Frank Culbertson, who directed the joint US-Russia program to put American astronauts aboard the Russian Mir space station in the 1990s.

The crew has a busy schedule that primarily involves getting the ISS up and running for future research activities. Amateur Radio operation is not expected to commence until mid-month

Tentative operating frequencies are: Worldwide downlink for voice and packet, 145.80 MHz; worldwide packet uplink, 145.99 MHz; Region 1 (Europe) voice uplink: 145.20 MHz; Region 2 and 3 voice uplink, 144.49 MHz. Crew members may use their personal call signs or one of the "club station" call signs issued for ISS use – NA1SS, RZ3DZR, or DL0ISS.

End of the Line for Mir?

In November, we reported that Mir was to be commercialized and kept aloft by the private company MirCorp. But November 16, the Russian government announced it had voted to deorbit the aging space station. MirCorp, which had tried to raise millions of dollars for the project, had this simple statement posted on its website, "MirCorp is aware of a Russian Space Agency statement on the possible deorbiting of the Mir Space Station in February. MirCorp is awaiting official notification on the future of Mir, and will provide more details when available."

Yuri Koptev, the head of the Russian space agency, said the Russian government has agreed that Mir would be taken out of orbit and brought down into the Pacific Ocean in a predetermined area off Australia between February 26 and 28. Koptev said an unmanned cargo ship would be sent to Mir in January. In February the cargo ship is to fire its rockets to push the space station quickly into the atmosphere.

Anatoly Kiselyov, head of the Khrunichev Center that designed and built Mir, said there was no way to guarantee that all sections would fall safely into the ocean. He advised sending a new crew to Mir to disconnect a network of cables laid across the station over its 14 years of existence and to take out clamps that hold its various modules together. Koptev said Mir was in too poor a state of repair to remain in orbit much longer.

Eleventh Hour Rescue for Iridium

The Iridium satellite telephone constellation won't be falling from the sky any time soon after all. The US Bankruptcy Court for the Southern District of New York accepted businessman Dan Colussy's bid to buy the bankrupt Iridium assets at the eleventh hour. Motorola was putting together a timetable to bring down the failed system of 66 low-Earth-orbiting satellites. Iridium's remaining subscribers were cut off in late August.

Colussy, an aviation industry figure, will purchase the operating assets of Iridium and its subsidiaries. He's expected to refocus the satellite service on a more targeted, industrial clientele. Colussy has already contracted with the Boeing Company to operate and maintain the constellation. Motorola has agreed to continue to provide subscriber equipment .

Iridium Satellite LLC will continue to provide commercial satellite communications to the U.S. government and plans to re-launch affordable satellite communications services within 60 days.

One wonders if Russian might be banking on a similar last-minute rescue for the Mir space station.

Crisis in the Airwaves

The lack of radio frequencies is quickly becoming as important a factor in aviation congestion as the lack of runways and limited airspace, say Federal Aviation Administration, airline and union officials. And unfortunately, the necessary technological advances are not expected to come soon enough to prevent an even greater crunch of delays and cancellations. Nor do the FAA and the airline industry agree on how to solve the problem.

The airlines argue that time is running out and are pushing for a system now being used in Europe, which could be in place in five years. The FAA says that system will be outdated in another 20 years and prefers a long-term digital solution that could solve the problem for generations but would take nine to 12 years to implement.

"It is impossible to overstate the seriousness of this problem," Anthony J. Broderick, former FAA associate administrator told the *Washington Post*. FAA officials say it is already difficult to find new radio channels when they are needed, particularly in high-altitude airspace.

The radio spectrum became crowded many years ago, but advances in radio technology allowed the FAA to double the number of radio channels by cutting each frequency in half. Later

BULLETIN BOARD

Jan 20: St Joseph, MO
10th NW Missouri Winter Hamfest sponsor Missouri Valley ARC and Ray-Clay ARC at the Ramada Inn (I-20 & Frederick Ave; exit 47 on I-29). Talk-in 146.85, 444.925; 8a.m.-3p.m., adm $3. FCC exams, exhibitors all indoors. Contact Carol Durham NOQII, 1009 Sunset Strip, Excelsior Springs, MO 64024; 816-630-6445; *NOQII@aol.com.*

Jan 21: North Babylon, NY
Ham Radio University 2001 - Sponsor Great South Bay ARC and clubs in Long Is/NYS area, at the Babylon Town Hall Annex, Phelps Lane; $2 donation. Forums on all aspects of amateur radio, information booths, tune-up clinic, VE test session. Information email Phil Lewis *N2MUN@optonline.net* or call 631-226-0698 or visit **http://www.arrlhudson.org/nli/hru2001.htm**

they were split again into the current arrangement –118.0 MHz, 118.25 MHz, 118.5 MHz, 118.75 MHz, etc. In the mid-1990s, the International Telecommunications Union adopted a long-term digital solution – called VDL-3 for "VHF Data Link, Mode 3" – as the worldwide standard. However, VDL-3, which the FAA has dubbed *Nexcom*, will take a minimum of nine to 12 years to develop, test, certify and implement, and some aviation professionals believe it would take even longer. The "brick wall" many experts foresee is expected to hit in three to five years.

The airlines would like the FAA to adopt a shorter-term analog plan that would split the frequencies again. This plan would split each frequency into 12 channels, leaving 8.33 kilohertz between each channel. The 8.33 plan allows only voice transmission, not data, and it would solve the problem for less than two decades.

On the other hand, the Europeans have already proved it will work because it is widely used there now. And because any airliner that flies to Europe must be equipped with an 8.33-capable radio, hundreds of U.S. airliners are already equipped with them. Twenty percent or more of U.S. airliners could switch to a U.S. 8.33 system now.

Rent this Space?

Looking for greater efficiency, the FCC proposed to allow companies to sublet frequencies licensed to them by the government. If approved, this would mark a huge difference in how the government manages commercial use of the airwaves. Currently, a company must buy a license from the Federal Communications Commission to use radio spectrum for wireless or broadcast services.

But the booming demand for frequencies has prompted regulators to look at ways to free up more space. Under the FCC's new proposal, companies holding licenses could lease out portions of unused airwaves to third parties without agency approval.

"The tremendous success of wireless communications services has come at a price," said FCC Chairman William Kennard. Mobile phones, wireless computers and two-way pagers "are consuming spectrum faster than we can make it available. The demand for spectrum is simply outstripping supply."

HDTV or Not?

Manufacturers finally agreed that in order to be called true HDTV (high definition television) a set must provide 1,080 lines of resolution on a wide screen. Hitachi and Toshiba are being required to disclose that many of their sets labeled as HDTV do not meet that standard in the wide letterbox format.

Search and Rescue Scores a Miss

Last fall the Arkansas Razorbacks were testing their new video scoreboard, designed to show replays of touchdowns, in preparation for a game with Alabama. Meanwhile, eight hundred miles away at Langley Air Force base in Virginia, a signal was picked up on the search and rescue frequency which indicates a downed plane. A Jumbotron, said an FAA official. But, when the local search and rescue team followed the coordinates provided by Langley, they eventually found themselves at the stadium. Somehow the fiber-optic transmitter of the Razorback's huge stadium scoreboard interfered with the frequency used by aircraft emergency locator transmitters.

Playing Cowboys and Indians not so bad

Okay, so maybe playing cowboys and Indians is no longer politically correct, but it may be less nerve-wracking than war games . Nervous administrators locked down an Auburn, New Hampshire, school this year when officials overheard talk of weapons and violence over the walkie-talkies used for school communications.

The mystery was solved when the incident was reported in the newspaper. A grandfather realized they had overheard two home-schooled children at a birthday party playing war games with a couple of radios.

Playing Cowboys and Indians would be safer entertainment only if the "Indians" stick to drums. Switching to smoke signals would be sure to call out the fire department!

Who was that speeding barcode?

Retired General Electric foreman Earl G. Long suggests that one idea for controlling speeding on the nation's roads is to replace the license plate by a bar code, which a radar gun and scanner can track from any lane on the road. A computer would be notified when a speed limit is broken, and would issue a statement to the violator and to gas stations, so that the vehicle could not buy gas until the fee is paid. Three violations would mean losing a driver's license for one year. Long proposes this idea to control speeding, save lives, and save money on insurance. Hm-m-m, now how could you personalize a bar code?

"Communications" is compiled by Rachel Baughn, Editor, from newsclippings sent in by our readers or emailed to *mteditor@grove-ent.com*. Our thanks to this month's reporters: Anonymous, MA, NY; Lee Derrickson, Dagsboro, DE; Wayne Glenn, Cypress, CA; Sterling Marcher, La Mirada, CA; Maury Midlo, Wimberley, TX; Doug Robertson, Oxnard, CA; Brian Rogers, Melvindale, MI; and the *ARRL Bulletin*. E-mail: Mark Bajek, Charles Crawford, Robert Felton, Bob Grove, Maryanne Kehoe, Larry Magne, Larry Van Horn.

Challenges for International Broadcasting:



Many Voices, Diverse Missions, Common Interests

By John Figliozzi

It is clear that international broadcasting – at least as we have known it – is facing several challenges.

There is the continuing challenge for stations to redefine themselves and their missions after operating for decades in a global structure shaped by the Cold War.

There is the challenge for stations to find more efficient ways to operate in an era when resources available to them are much less than they once were and must be stretched to address imperatives that did not exist even a few short years ago.

There is the challenge of striving for, promoting and maintaining the high level of programming quality that the stations say is the hallmark of public service broadcasting, in a political environment that no longer automatically accords respect to those working in the public service.

There is the challenge to adapt to a new and seemingly ever-changing media environment that regularly introduces new technological opportunities that demand significant attention and resources, but offer few immediately demonstrable, discernable or guaranteed benefits.

So Radio Canada International (RCI) uses a most appropriate title for the series of international broadcasting conferences it has sponsored and hosted over the past decade – namely, *Challenges for International Broadcasting*. Having begun in 1990, there have now been six biennial gatherings hosted in cities across Canada, with a seventh being planned for Toronto in the spring of 2002.

Participation has grown with each conference. Certainly the willingness of so many nations to travel to Canada to gather together and discuss their common interests and problems has to be an indicator of some measure of success. After all, in the Cold War era, any meaningful cooperation among broadcasters worldwide was inconceivable. A meeting like this, on international mass communications with truly global participation, was simply not possible.

At the recently concluded Challenges VI conference held May 21-24, 2000, at the Hotel Wyndham in Montreal, over 130 participants representing more than 90 stations, consultants and other institutions with interests in international broadcasting took the time to meet and mull over together this theme: "Programming: The Heart of International Radio." I was among them. The atmosphere was United Nations-like in the breadth and diversity of representation. It was also, in a sense, village-like in that the participants are employed in a specialized activity about which those outside this field of expertise understand little – a field which rarely is ascribed the level of importance the conference participants feel is deserved.

This article is the first in an occasional *MT* series during 2001 that will highlight the many and varied perspectives about international broadcasting held by its diverse participants. The discussions at the Challenges VI conference will be used as the backdrop in an endeavor to provide you with some sense of the wealth of information and lively discussion that characterizes these vibrant and important international conferences.

◆ A Global Public Good

One of the conference's organizers, Professor Howard Aster of Hamilton, Ontario's McMaster University, gave an introductory address in which he described international broadcasting as a "global public good." He argued that the state has an important role in "providing information as a public good" and in ensuring that the users of that information have access to it at low cost. Public broadcasting, he said, is unique in that it addresses individuals as citizens, not as consumers. "The global village will need public addresses."

Aster also pointed out that technology was threatening to foster an even greater divide than already exists between first and third world nations. There needs, he said, to be meaningful recognition that developing nations must have access to the new technologies if these countries are to improve their standing among nations and their people are to progress toward, and ultimately achieve, economic self-sufficiency.

◆ The Art and Craft of Radio

What contributes to a distinctive radio style and how is it achieved?

Bob Jobbins, Director of News and Programme Commissioning at the BBC World Service, said that his programming decisions are driven by the twin facts that the World Service is publicly funded and is imbued by its charter with a democratic purpose. The changes in media, he said, have required big changes at the BBC – namely, a four year plan to bring the World Service "closer to the listener."

Content is the key asset, he said; style alone is insufficient. Nonetheless, a tighter format was introduced to allow independent stations throughout the world that rebroadcast segments of the BBC program schedule to enter and leave the service easily and at will. Whereas traditionally the World Service had held to a formula that limited news content to no more than 55% of total airtime, a 24 hour news stream was instituted "to compete on the basis of immediacy" with CNN.

Music is used to create an identity or "brand," which he said will become increasingly important as the market grows more segmented.

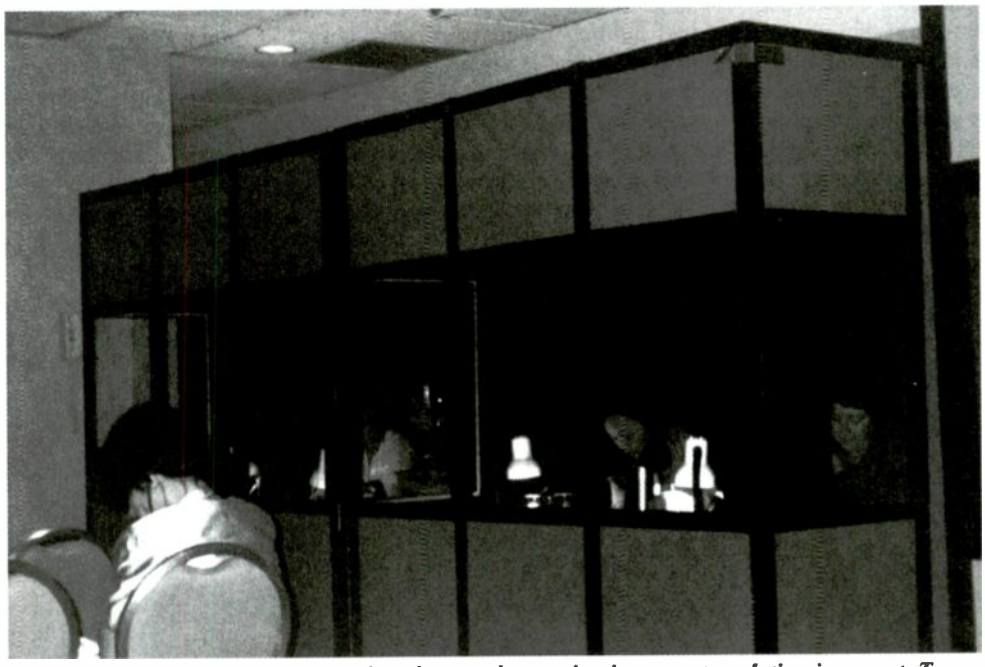
Journalism at the BBC stresses the importance of placing issues and events in context for the listener. Jobbins rejected the notion that news and non-news information were incompatible, arguing for what he termed "a wider brief." With the advent of the Internet, he said, the concepts of domestic and international broadcasting are redundant; everyone now is potentially an international broadcaster.

Jesse Sikivou of the Pacific Islands Broadcasting Association came at the subject from a much different perspective. He described his area of the world as "overly-romanticized" which more correctly should be seen as a deprived area buffeted by the Asian economic crisis and globalization. He pointed out that Pacific cultures emphasize oral history; so their concern is not international broadcasting (which he said ignores his area of the world anyway), but "making radio our own." He said it is a distinct and unique challenge to work in an environment of diverse, very small nations spread over a huge geographical area. Sikivou explained that this situation is magnified by the fact that economic reform efforts in the Pacific island nations do not classify broadcasting as a core activity. Therefore, funds to support it are drying up even as pressures are growing on stations to help to preserve and strengthen national identities, in part as a response to the globalization fostered by that economic reform.

Sanford Unger, Director of the Voice of America (VOA), described a post-Cold War shift in audience for the US international broadcaster that has required significant adaptations. As late as 1994, the former Soviet Union and central and eastern Europe accounted for 23% of the VOA's audience, with Africa making up another 23%. Today those allocations are 10% and 40% respectively, necessitating a wholesale redistribution of resources. He listed China, Bangladesh, Nigeria, Ethiopia and Afghanistan as the countries with the highest VOA listenership. "One size no longer fits all," argued Unger and pointed to the station's *News Now* and *Music Mix* "24/7" services, its 57 language services and VOA Special English. Unger said it was imperative for the VOA to become a multimedia organization – FM, medium wave and shortwave radio, television, satellite and the Internet – and quickly.

◆ Attracting Younger Listeners

Unger also identified another challenge for international broadcasters – attracting new and younger listeners without losing the audience it has. "What is the right mix?" he asked. How much news? How many features? How much "crisis broadcasting"? How much public service? A representative of a broadcaster in Kyrgystan in central Asia said that 70% of young people there have no familiarity with shortwave whatsoever. Therefore, reaching them would require that broadcasters work "in FM mode," as he put it. He suggested using "lots of music, limited news, short snippets of information and a little culture."



With representatives of so many nations in attendance, simultaneous translation is a must. Translators for English, French, Spanish and Mandarin use these booths to "broadcast" their translations to conference participants through the use of wireless receivers.

Jean-Paul Cluzel of Radio France Internationale (RFI) said his station "solved the problem" by resolving not to program for those under the age of 16! He said that RFI was aware of the problem, but concluded that it just did not have the necessary knowledge or expertise to address it. Jobbins of the BBC suggested that technology might be the critical factor here. He argued that the Internet was by far the most attractive media for the young and suggested that methods like interactive on-line programming, and giving the young opportunities to write and produce for it, might be the key.

Unger described another key challenge as how one effectively crosses the divide from being a propaganda broadcaster to promoting the free flow of information in the post-Cold War world. He suggested that there is a diversity of answers. The worst thing to happen, he cautioned, would be for stations to opt to become weak imitations of one another.

◆ National Audience or International Audience

With technology appearing to blur the lines between national and international broadcasting, a number of questions arise. At what point does a national broadcaster become an international broadcaster? Is it a technological event or does it take place only when the station makes a conscious effort to "invade" territory? And what of international programming on national radio – so-called "local placement"?

Setting a tone in his introduction, Eugeniusz Smolar of Polskie Radio, stated emphatically, "Reaching the willing mind is not an invasion!" (Overt and covert references to censorship and interdiction [jamming] were common throughout the conference and this

topic will be more substantially discussed in subsequent articles in this series.)

Jeff Cohen of the World Radio Network (WRN) pointed out that WRN, perhaps the most active promoter of local placement, has 350,000 listeners via its CBC Overnight service. WRN's experience, he said, is that the audience need not have any special interest in the country originating the programming. Rather, it is the quality and content of the programming that is of paramount importance. He also cited the popularity of news and current affairs programs and suggested that audiences preferred varied programs providing a broad perspective on numerous aspects of life.

Miroslav Krupicka of Radio Prague said that international broadcasting can serve any domestic market, as long as it recognizes the need to address different audiences with different programs. One means of doing this would be through international co-productions, which would also permit small broadcasters to survive and compete with large broadcasters. He also called for more support from international organizations for international broadcasting.

Dieter Weirich, Director General of Deutsche Welle (DW) contrasted the mission of his station with that of the BBC and the VOA. The main target of DW programming, he said, is people interested in Germany and its role in Europe and the world. DW considered and then decided that a "newsradio" concept, such as VOA *News Now*, was not appropriate because it would not provide listeners with the detail and context necessary to DW's mission. He said that DW was more "Europe-focused" than the BBC, which he described as having a more global orientation. He asserted that DW examines Europe from a German perspective.

As for the Internet, Weirich argued that programming on it has to be restyled for that medium, not simply migrated over from radio or television as if the Internet were just another delivery method. While he did not discount the possibility of international cooperation, he said that there was a question of whether DW's charter places legal constraints on the ability of the broadcaster to enter into agreements of this type with foreign entities. He said that he suspected that this might be the case for other broadcasters as well.

Finn Norgren of Radio Sweden expressed a strong belief in national/international service cooperation as an important means of strengthening international broadcasting's profile domestically. The latter is a vital ingredient, he argued, in ensuring the healthy future of international broadcasting in the present circumstances. He said that international and domestic broadcasters had a lot in common and that fostering a symbiotic relationship would only be a benefit to both. Doru Vasile Ionsescu of Radio Romania International fully supported this view stating her belief that domestic and international public broadcasting were actually "complementary" in nature and should be seen that way.

Hisashi Okawa of Radio Japan pointed out that NHK, its parent organization, has had to respond to the pressure placed on its available resources by the need to utilize and master new technologies. Therefore, he said, programming is now developed always with an eye toward multiple uses (international and domestic radio, television and the Internet). Today, for example, the Japanese Service of Radio Japan draws more than half of its programming from the domestic service. Initial feedback from its audience has been supportive of this move and Okawa foresees that Radio Japan will be making even fewer programs specifically for its overseas Japanese audience.

African nations on the panel offered a distinctly different perspective. Mansour Sow of Radio-TV Senegalaise, the government broadcaster, discussed the effects of what he described as the "invasion" of the BBC, VOA, Radio France Internationale (RFI) and commercial stations on the country's domestic channels. The fact that his country (Senegal) is 50% illiterate and that 75% of the population is under 30 years of age, adds to the monumental challenge for his station of gaining and keeping the attention of domestic listeners. He described shortwave as a medium which is no longer "comfortable" now that FM is available. And, if all broadcasters must generate revenue, he asked, what does this mean for international broadcasting?

Gervais Mbarga of Radio et TV de Cameroun suggested that radio might just become simply radio with current lines separating domestic and international broadcasting gradually being erased. In his view, technology would allow and encourage domestic broadcasters to target increasingly larger audiences eventually extending beyond geographic borders as a matter of course.

One of the panels leading a session at Challenges VI. This session World Conflicts and International Broadcasting was chaired by Alan Heil of the VOA (second from left) and included Professor Douglas Boyd of the University of Kentucky (to Heil's left).

❖ Technology and Conviction

In ensuing discussions, Graham Mytton, a noted researcher on international broadcasting and its audiences (and someone who will be quoted extensively in subsequent articles), reminded participants that the advent of digital AM broadcasting will give shortwave virtually the same "audibility" as FM and other media.

Radwan Abu Ayyash of the Palestinian Broadcasting Corporation argued that international broadcasting remains important because it allows each country, whatever its size, to assert that "it does matter who you are."

RCI's Director, Robert O'Reilly said that technology is just another "card" to be played. He stated that the role of RCI is distinct from that of the domestic Canadian Broadcasting Corporation (CBC) and sees no competition between the two. The role of RCI, he said, is to "tell the world what Canada is about" in the midst of a global media that largely ignores it. If using content from the CBC helps to advance that cause, so much the better. But he asserted that it is RCI, not the CBC, which is uniquely positioned to make that determination.

For his part, DW's Weirich posed the crucial question for international broadcasting more succinctly. "Do governments still believe in it?"

Look for more on this in a few months' time.

DXING MEXICAN STYLE

By Roger Chambers

All photos by Roger Chambers

Is shortwave listening the same the world around? Are DXers everywhere the same as in the U.S.? I recently had a chance to find out when I attended the Sixth Conference ("Encuentro" in Spanish) of Mexican DXers and Shortwave Listeners on August 4-6, 2000, in Oaxaca, Mexico. This conference was primarily a national meeting of Mexican radio enthusiasts. What I found was a diverse mix of experiences and views among the participants. For example ...

Leonardo Lopez Hernando, 30, is from Oaxaca. While he has been a listener to shortwave for six years, this was his first conference. He heard about it on Radio Mil's "*Encuentro DX*," one of four radio hobby programs broadcast over Mexican shortwave stations. He enjoyed learning about different radio equipment available, and meeting staff from Radio Mil. He listens primarily in Spanish to BBC, Radio Exterior de España, and Radio Havana Cuba.

It is possible to purchase many native handicrafts and art work on the Zócalo in Oaxaca, such as these baskets.

A tower of the Church of Santo Domingo from a patio of the Santo Domingo Cultural Center.

Alonso Aguilar Sánchez, from Tlacolula, Oaxaca, has been listening eleven years. He heard about the conference from the program "*Entre Medio*" on Radio Educación. This was his first conference, and he would like to attend the one next year. Along with most other Mexican DXers, his main radio is an analog set, and he listens primarily in Spanish.

Omar Gonzalez, from Mexico City, about 20, was attending his first conference, being a listener for only one year. He read about the conference in "*Voces en El Aire*," a monthly communications magazine. He found much of the information presented very useful for a beginner.

Rafael Grajeda, in his mid 30s, is from Veracruz. Though he has been a shortwave listener for about 20 years, he feels that the hobby is growing in importance in Mexico. He feels, as did many of the others, that Radio Enlace over Radio Nederland is the best overall program for the shortwave hobbyist on the air at the present time.

He also noted that these conferences have come a long way since the first one was held in Tetpec, Nayarit, where he was one of only seven people attending. Rafael has been to all of the subsequent conferences, and plans on going to the next one in Guanajuato next year.

Tribute to a DXer

Oaxaca, the capital city of Oaxaca State in southern Mexico, was the site of this annual meeting which has increased from seven at the first one at Nayarit in 1995 to seventy registered participants at Oaxaca.

At the August 1999 Mexican National DX Meeting held in Orizaba, Veracruz, the member clubs decided to hold the 2000 meeting in Oaxaca in response to a bid by Gerardo Iraizos. Less than two weeks later, Sr. Iraizos was tragically killed in a traffic accident. The Iraizos family was determined to continue these plans as a memorial to Gerardo. His son Amilcar, began the meeting with a moment of silence in tribute to Gerado Iraizos Bravo; another son, Martin, and his wife, Thalia, were instrumental in organizing the encuentro, thus fulfilling their father's dream.

Although greetings in English were extended to foreign participants during the introduction, the conference was formally held in Spanish. Many of those present were bilin-

A scenic view of the open field at Monte Albán.

A view of the pyramids at Monte Albán seen from the central plain, the size of several football fields surrounded by ruins.

gual and were able to translate as needed into English.

These conferences have traditionally been free of registration fees, the cost being borne by local governments and institutions hosting them. Even so, with prices for transportation, lodging, and meals comparatively higher than in the U.S., one can see the strong enthusiasm of Mexican hobbyists such as Miguel Angel Rocha Gomez, who traveled forty hours by bus from Chihuahua State to Oaxaca.

The Centro Cultural de Santo Domingo

All formal meetings were held in an auditorium of the Centro Cultural de Santo Domingo, once a convent and now an art museum. Upon entering the center, one wanders through an enclosed patio with beautiful arches and sculpture, through a gallery of modern Mexican art, into another open space, and downstairs to a crypt-like basement room (with unfortunately poor acoustics).

Ignacio Mauleón Cruz, his wife, mother, and children, at the DX Night. DXing is a family affair!

The first day began with a very thorough look at aeronautical utility DXing by Rafael Grajeda of Veracruz; Cesar Fernández, also of Veracruz, concluded with a more philosophical look at radio.

Saturday's seminars started with Pepe Gonzalez of Jalapa, Veracruz. With fifty years of DXing experience, he recently published a book on the history of shortwave radio in Mexico. Copies were available for about USD$7. His presentation was largely anecdotal and quite humorous. (For purchasing information, contact Pepe Gonzales at: <*iyoco@gorsa.net.mx*>.

Sr. Ernesto Luis Pi Orozco, the director of Radio Educación, spoke about his station which (on 6185 kHz) is the easiest Mexican station to hear in the Northeastern U.S. With a long history of presenting cultural and educational programming, Radio Educación has recently changed its shortwave programs to better serve an international audience, and is no longer in parallel with its medium wave outlet.

Late Saturday afternoon, Jeff and Thais White of Radio Miami International presented a video of a recent trip to several Asian countries, including stops at Radio Japan, Radio Korea, and Radio Taipei International.

Kayla Mauleon Cruz drawing raffle ticket numbers with Julian Santiago of Radio Mil, and Martin Iraizos, conference co-organizers.

This writer also spoke about the DX Edge and DXing Africa. Six DX Edges were presented as prizes, thanks to the assistance of the Ontario DX Association and Universal Radio. The prize winners then helped the speaker demonstrate how this useful tool works in calculating propagation for tropical band DXing. Many U.S. listeners use the DX Edge (or computer software or Internet sites) to better understand propagation. However, in Mexico these resources are often unknown or unavailable to the vast majority of radio listeners, many of whom are quite new to the hobby.

Radio Station HCJB in Quito, Ecuador, was represented for the first time at a Mexican "Encuentro," by Allen Graham, host of the popular *DX Partyline*. He had a humorous talk on various developments at HCJB, of great interest to both Spanish and English speakers.

The Influence of the Internet and the Role of Women

Sunday morning's sessions began a little differently with Anker Petersen of the Danish Shortwave Club International presenting an overview of how the Internet is changing the shortwave listening hobby. E-mail, electronic DX bulletins, and Real Audio have changed his club, and by extension, the radio hobby in Europe and North America.

While the Internet has become routine in Europe, Mexico is several years behind in common use of these new technologies. However, Anker feels that Internet access will show an increase in parallel with economic development in countries such as Mexico. The topic of the authenticity of QSL cards via e-mail and real audio reception was also discussed.

Anker Petersen from Denmark, speaking on how the Internet has changed the radio hobby, with simultaneous translation by Julian Santiago.

The hosts of the popular "*Encuentro DX*," Julian Santiago and Hector Garcia Bojorge, spoke about Radio Mil. Analysis of listeners' letters reveals a much younger age for listeners in Latin America (in their 20s) compared to mid-40s from Europe and North America.

This was followed by information on Radio Mexico Internacional presented by Alejandro Joseph. He noted that there was a great increase in interest in SW during the Gulf War. Yet, some stations, most notably Deutsche Welle, have cut their Spanish services in recent years. Swiss Radio International is threatening to do the same, and a petition was circulated protesting this cut, which was expected to occur in the fall.

A group photo at the DX night, many DXers using small analog receivers.

Norma Angelica Ortiz of Radio Educación addressed the role of women in the radio hobby. An interesting discussion followed, and eight year old Kayla Mauleón from Tuxtepec was invited onto the stage as an example of the shortwave listener of the future. Her father, Ignacio, started in the hobby just over a year ago. He was so impressed at last year's conference in Orizaba, Veracruz, that this year he brought his children, his wife and his mother. In Mexico, women are very much involved in the hobby, and shortwave listening is often a family affair.

The announcement that the 7th Mexican DX Conference will be in Guanajuato in 2001 formally ended the meeting portion of the Encuentro. Beginning with that conference, there will be a nominal registration fee of fifty pesos (just over US$5).

Radio Activities and DXing

We walked to the nearby Philatelic Mu-

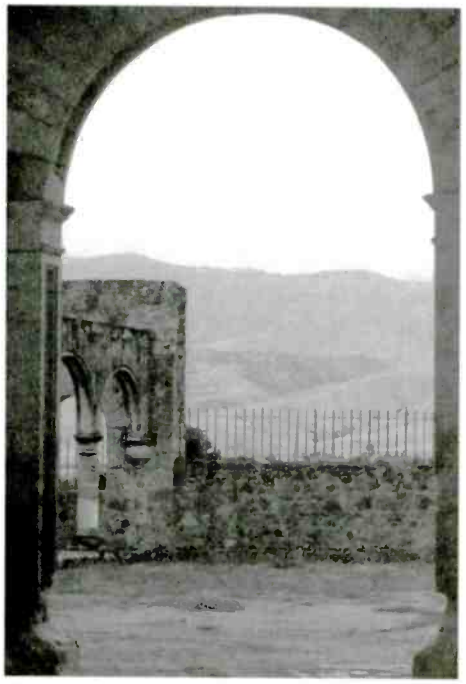
Julian Santiago of Radio Mil (left) and Luis Enesto Pi Ortiz of Radio Educación (right) represented two of Mexico's shortwave stations.

seum of Oaxaca, the only one of its kind in Mexico, to view a special display of radio and stamps, prepared with the help of local DXer and philatelist Alonzono Aguilar Sánchez. A personal tour was led by director Alejandra Mora, who acknowledged that many DXers often become stamp collectors.

After the formal talks, a raffle was held of items donated from several broadcasters, including mouse pads, reference books, and souvenir plates. The grand prize winner of a radio receiver, donated by the local Radio Shack, was Porfirio Mendez, head of "DX-Istmo," a club based in the Istmo region of southern Oaxaca state. DX-Istmo also became the newest member of the Mexican DX clubs which organize these annual affairs.

We enjoyed informal lunches. One day fourteen of us lunched on pizza at a nearby Italian restaurant. Of the fourteen present, some had ten or fifteen years of listening to shortwave, but over half had begun DXing less than three years ago.

Saturday was DX night. This was held in an open plaza outside the colonial Iglesia de Soledad. Most listeners were using small analog sets, though some digital receivers were also present. There were two shared wind-up antennas extending about twenty feet up the steep steps. About thirty people attended. Notable catches included Zambia on 6265 kHz, Radio Del Pacifico from Lima, Peru, on 4975 kHz, and several outlets of Radio Australia, Radio New Zealand and Voice of Russia on 16 meters. This social experience, exchanging information on radios, antennas, and what stations were heard, gradually broke up well after midnight.



One of the many arches at Cuilapan, a 16th century Dominican monastery a few miles outside of the city of Oaxaca.

Cultural Exchange

Leaving the Cultural Center near dusk the first evening coincided with the conclusion of a wedding at the colonial Santo Domingo Church next door. Always etched in my memory will be the picture of the formal wedding party, a woman selling flowers from a basket on her head, we casually dressed radio hobbyists, and neighborhood children at play.

A tiled dome of the Cathedral, on the Zócalo in central Oaxaca.

About six blocks away is the Zócalo – a lively open plaza, surrounded by the cathedral, shops, and artisan markets. It is a focus for music, food, and meeting friends and family. There is much activity here throughout the day. Early risers can have coffee and breakfast to take off the morning chill. Later in the morning, venders set up their booths selling arts and crafts of all kinds. In the afternoon and early evening, crowds stroll by, or relax listening to a concert band or marimba music in the large band shell. After dark, the Zócalo becomes an even more lively central gathering place. The crowds peak during the dinner hour, beginning about 8 pm and lasting until nearly midnight.

Some conference participants saw the Guelaguetza, a celebration of regional dancing from around Oaxaca, presented at the Hotel Monte Albán. Others opted for an earlier dinner at one of several restaurants nearby.

Allen Graham, host of the popular **DX Partyline** *on HCJB, Quito, Ecuador interviewing Jeff White of Radio Miami International at Monte Alban.*

John and Kathy Killian from Virginia, Allen Graham from Ecuador, and this writer spent one evening eating tlayudas (a large corn tortilla resembling a pizza with beans, cheese, and fresh vegetables). In this sidewalk cafe atmosphere, we had a chance to share various hobby experiences with a backdrop of marimba and mariachi music, while various street venders wandered among the tables selling chiclets, blouses, flowers, bracelets, wooden letter openers and combs. On the open square were business men getting shoes shined, young lovers walking hand in hand or sharing a park bench, and families just having fun.

Monte Albán

After the formal sessions concluded early Sunday afternoon, most participants were then whisked onto a bus to Monte Albán. Oaxaca and the surrounding valley is a region filled with many archeological sites, Monte Albán being the most important. The Zapotecs built these pyramids without the use of draft animals, the wheel, or metal between 100 and 800 A.D. Shortly after that, this site that once was a city of over 30,000 inhabitants was abandoned. The sheer grandeur of an open space the area of many football fields surrounded by numerous pyramids was overwhelming.

Martin Iraizos (and his wife Thalia) introducing Pepe Gonzales, who spoke on his book on history of Mexican shortwave radio.

As our bus arrived back in Oaxaca, we were in the midst of a downpour that is fairly common during the rainy season in southern Mexico.

While the conference was officially over, about twenty of us gathered on Monday at the Ethno-botanical gardens, still under construc-

The Church of Santo Domingo seen from a hotel roof near the Zócalo.

tion, for a brief tour. Then we went by regular bus to Xoxocotlan, about 8 miles outside the city. There we had the privilege to see a private radio collection of about 200 radios of the 1920s to 1950s, most in working condition. This was a very fitting conclusion to a gathering of radio hobbyists.

Broadcasters and a European View

Many participants mentioned the importance of "personal contact" among listeners and broadcasters. It was more than just a learning experience of lectures and seminars, but a social experience as well. Much was shared informally in small groups. Many friendships were made or renewed at this conference.

Broadcasters present felt it important to have direct feedback from listeners. In this setting, they can find out directly what listeners want to hear. Ernesto Luis Pi Orozco of Radio Educación thinks that there will be a long future of shortwave broadcasting in Mexico. Letters from listeners across Mexico and from around the world have convinced him of a bright future for shortwave radio as a primary source of news and information to the curious person who is interested in the language, culture, music, and ideas of contemporary Mexico.

Jeff White of Radio Miami International has been a major promoter of this conference for several years. He sees it as a wonderful opportunity to meet listeners face to face and find out what they want to hear, as well as a chance to introduce new listeners to his station.

One of the interior courtyards of the Santo Domingo Cultural Center, with Santo Domingo Church tower in the background.

The hobby is different for DXers from Europe. Anker Petersen from Denmark, had insightful comments on how the Internet is changing the scope of the DX hobby in Europe. The computer is often taking the place of the radio listening in Europe. Many listeners spend time on the Internet that previously would have been spent DXing. This trend will likely continue. Anker feels that as the economy of Mexico expands, the computer and Internet will become more important there as well. But he is uncertain on how to bring younger people into the hobby in Europe.

The Relevance for North Americans

What can North America radio hobbyists learn from their Mexican counterparts? The vitality of the radio hobby in Mexico is contagious. Compared to the U.S., the average age of listeners is much younger and not so predominantly male. Shortwave radio listeners in Mexico are often college students, children, or women. The average age at this conference was perhaps 30.

Allen Graham, the host of *DX Partyline* on HCJB, put an interesting and positive perspective on a hobby that many in North America feel is in the doldrums.

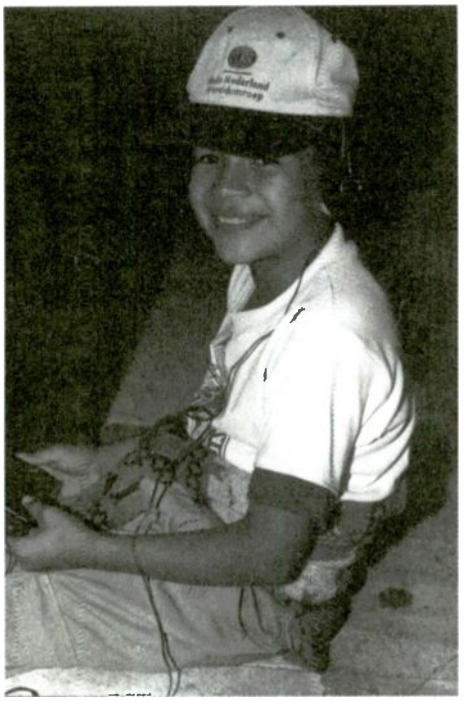
"I don't think we are going to increase interest in the hobby by any massive marketing campaign or promoting it on the radio itself. It gets down to the fact that if we love DXing, then we have to personally share it with someone else. A son or a daughter, or maybe a nephew or niece. Sit down with someone, share your love of radio with them, tell them why we enjoy it, whether it be about learning about different geographic locations, about culture, about language, or whatever it is that excites us personally about this hobby. The more I hear, the more I am convinced that is how it works."

We saw Ignacio Mauleón, his young daughter, his wife, and his mother as well – three generations, all shortwave listeners. I can't help but think that it's because Ignacio sat down and shared his excitement with his mother and his daughter. I think it has to be that type of "one on one" contact.

"How many times have we gone to weekend retreats for different activities? If you have a local club, try a retreat, or a special night for radio. Your club could invite a boy scout or girl scout troop out in a group, and maybe have some particular area of the hobby that you might share with them."

Allen may be on to something that many in North America have ignored. Perhaps this idea may inspire some *Monitoring Times* readers to act in this direction to bring an interest in radio to other people.

Whether or not the shortwave hobby in the US is revitalized or not, it certainly seems to be expanding in Mexico. The average listener is much younger, and many women are interested. The enthusiasm for hearing news, information, and music from around the world is contagious. As these younger listeners grow older, they will likely continue to listen to radio throughout most of their adult life. The future of the hobby and such conferences is indeed bright. Plans are already in the works for a seventh encuentro in Guanajuato. As these plans become finalized in the next few months, why not plan to join them in their annual celebration of DXing and the radio hobby in the summer of 2001?



Ten year old Kayla Mauleon Cruz enjoying herself at the DX Night.

MEXICAN SHORTWAVE BROADCASTING STATIONS

Here is more information on some Mexican shortwave broadcasting stations.

XEPPM, Radio Educación, Mexico City
6185 kHz
http://www.cnca.gob.mx/cnca/buena/radio/index.html

XERMX, Radio Mexico International, Mexico City
5985 kHz and 9705 kHz
http://www.nrm.com.mx/estaciones/radiomil/

XEOI, Radio Mil
6010 kHz
http:hello.to/rmi

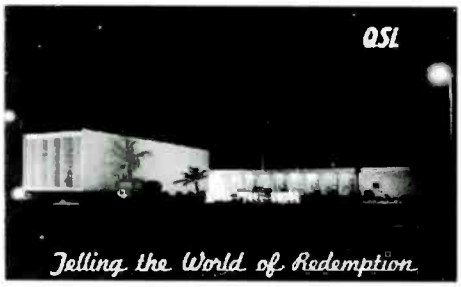
XEJN, Radio Huayacocotla, Huayacocotla, Veracruz
2390 kHz
http://www.sjsocial.org/Radio/huarad.html

Listening in South of the Border

by Dave White

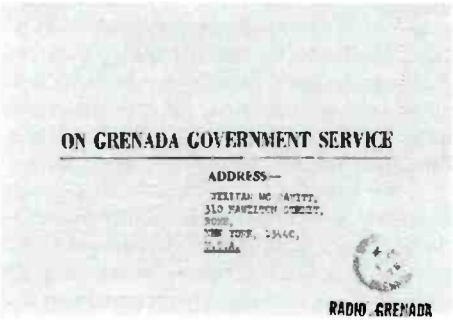
QSLs courtesy SWL QSL Card Museum, http://www.antique-corner.com/SWLQSL

In the continuing quest for interesting shortwave listening targets, as in everyday life, we sometimes forget to look in our own backyards. Beginning at the southern coast of California and extending to the northern coast of South America, there's a world of radio monitoring that is sometimes overlooked by DXers in search of a new challenge and program aficionados looking for some interesting listening.



Bonaire

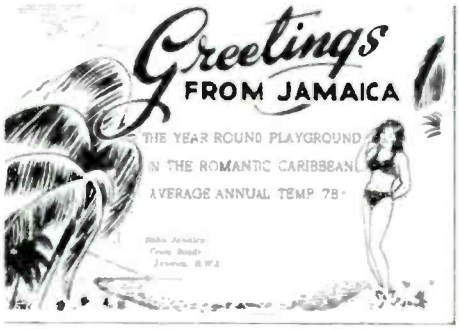
Mexico, Central America and the Caribbean have contributed much to the history of shortwave broadcasting, and continue to offer some intriguing and challenging adventures in radio. From the bustling big city streets of Mexico City and Havana, to the sleepy pace of the tropical islands, this region offers a wide range of cultures, ideologies, and musical styles. Still, there is a certain ambiance specific to the area occupied by USA's southern neighbor, the slender stretch of land that connects North America to South America, and the islands scattered throughout Caribbean.



Voices From Above

Religion has had a significant influence in the development of shortwave broadcasting in the region. For some religious broadcasters, this area, especially the Caribbean, is an excellent location from which to beam their message to the Americas, Europe and Africa. Other church-sponsored stations target smaller areas, particularly in the mountains of Guatemala and Honduras, where religious stations account for virtually all of the domestic shortwave operations.

Costa Rica is the home of one of the oldest Catholic stations in the world, Radio Fides. Although its website lists its former shortwave



frequency, Fides is currently using only medium wave and FM transmitters.

Trans World Radio operates two 50 kW medium wave transmitters in Netherlands Antilles, where it also used to operate a powerful shortwave transmitter.

The ubiquitous Dr. Gene Scott operates Anguilla's Caribbean Beacon and Costa Rica's World University Network, using transmitters formerly operated by Adventist World Radio in Costa Rica.

Voices From Home

Only two countries in the region, Mexico and Cuba, operate external shortwave services. Fidel Castro learned about operating an international propaganda station from the erstwhile Radio Moscow. Radio Havana Cuba broadcasts the party line to the Americas and

Europe in several languages. RHC is also the home of one of the hobby's longest running radio shows about radio, Arnie Coro's weekly *DXers Unlimited*. Other programming, consisting largely of news and features about life in Cuba, has an unabashedly pro-Castro, anti-American slant.

Radio Mexico International broadcasts in Spanish, English, and French at power output levels that barely qualify it as an international broadcaster, but which make it audible most of the time throughout the continental U.S. Programming deals with Mexican political, literary, social, scientific and musical interests.

Radio For Peace International is neither government-operated nor commercial. Its handful of paid staff and a few volunteers manage to maintain powerful signals on several frequencies from Costa Rica. RFPI bills itself as a "voice for global social and economic change." Its eclectic format ranges from programs about ecology and human rights to Glenn Hauser's *World of Radio* and *Continent of Media*.

Voices From Afar

Several major European and Asian international broadcasters make use of shortwave relay facilities in the Caribbean.

Radio Netherlands is one of the major employers in Netherlands Antilles, with a staff of about 50 operating its facilities in Bonaire. Attesting to the importance of the facility to RN, station personnel managed to get the transmitters back on the air in a matter of just a few days after its massive electrical generators were destroyed by fire several months ago.

Radio Netherlands also has a relay facility on the island of Antigua, as do Deutsche Welle, BBC World Service and Belgium's Radio Vlaanderen International.

China Radio International employs relay facilities in Cuba to beam programs in English, Spanish, and Mandarin to the U.S. and Mexico.

Spain's Radio Exterior España uses transmitting facilities in Costa Rica to reach the Americas.

At the U.S. Naval Computer and Telecommunications Station in Puerto Rico, Armed Forces Radio operates one of its worldwide network of shortwave facilities for the benefit of U.S. Navy vessels and remote military posts in the region.

Belize is home of a powerful Voice of America medium wave facility, operating 100 kW transmitters on 1530 and 1580 in the AM broadcast band.

Voices From The Past

For many years, Belize was one of the easiest Central America SW loggings, and one of most entertaining, with its BBC-like external service. Today, Radio Belize has abandoned shortwave and primarily uses FM to reach its target audience within the country's borders.

Radio Reloj proudly proclaims that it has been the #1 station in Costa Rica since 1958. The station's shortwave signal, with its distinctive time ticks in the background, used to be a popular target, but its SW transmitters are currently silent.

Time was, there were government, church-operated, or international broadcast relay stations in El Salvador, Galapagos Islands, Grenada, Guatemala, Haiti, Jamaica, Montserrat, Nicaragua, Panama, and Trinidad. One by one, they have disappeared, and haven't been replaced.

Common Threads

Countries in this region are culturally diverse, but share a number of geographic similarities. They have two annual seasons, warm and warmer. Their location, exposed to the ocean, contributes to their tourist appeal but makes them vulnerable to tropical storms and hurricanes. In fact, Honduras is still trying to recover from the effects of Hurricane Mitch in 1998. Active volcanoes and earthquakes are common in the region.

With the exception of Mexico, countries in this part of the world are comparatively small, but all share a geographic feature that is usually conducive to domestic shortwave broadcast activity, namely, lots of tall mountains. Unlike their South American neighbors with similar geography, however, most countries in this region, especially the Caribbean islands, have little or no domestic shortwave activity.

A common feature of the stations that do exist in this part of the world is that they often start and stop operations quite abruptly for technical, economic, political or other reasons. Accordingly, stations listed in our survey are those that have been reported in roughly the past year. Keep an eye on the DX press for news of stations being activated, reactivated, or shut down, and keep in mind that a station that is logged today can easily be off the air tomorrow.

Reception Tips

It only takes one bounce off of the ionosphere for signals from the region to reach antennas in the continental U.S., so even low powered stations can be received with relative ease on modest equipment when propagation is favorable and interference from other stations is minimal.

Sideband capability will come in handy at times in separating a station from interfering signals nearby. Radio Havana Cuba and Radio For Peace International each transmit in USB on at least one frequency. Armed Forces Radio in Puerto Rico uses USB exclusively.

All of the domestic stations operate in the tropical bands, so the basic rules of monitoring those frequencies apply. Your best opportunity will be when both your location and theirs are in darkness. In practice, most of the tropical band stations reported here have been heard most often near their local sunrise or sunset.

At times, you might actually hear a station's second, third, or even higher harmonic as well or better than its fundamental frequency, if it happens to be at a time of day when propagation favors the higher frequencies.

Equipment at domestic stations tends to be old, and funds for maintenance and upgrading limited, so transmitters tend to drift considerably. If you don't hear a station on the listed frequency, listen slightly above or

below it. Check the *MT Shortwave Guide* for current frequencies and times of English language broadcasts.

English can be heard on the various external services, relays, and larger religious stations. Most of the domestic stations broadcast primarily in Spanish and various local dialects which tend to sound somewhat like Spanish.

All of the domestic stations in Guatemala and most in Honduras carry religious programs. In Mexico, Costa Rica, Dominican Republic and Nicaragua, you may hear simulcasts of commercial AM or FM stations. Stations with some variation of "cultural" or "education" in their names have corresponding program formats.

Because the area is prone to natural disasters and, in Central America, civil wars and political upheaval, there are times when domestic shortwave activity in a particular area may increase. Keeping an eye on current events can be useful in targeting areas where stations may be newly activated or reactivated, or may maintain longer than usual operating hours, due to a weather emergency or political coup.

Tell Me More

Some SWLs have adopted this region as their particular area of DX interest and expertise. Quintessential Latin America DXer, Mark Mohrmann operates a constantly updated website devoted to loggings from "south of the border." It's at < **http://homepages.together.net/~hackmohr/**> and is a great resource for getting the hang of catching those colorful sounds from our tropical neighbors.

As you develop your listening skills, there's a unique thrill that comes from hearing a station that has been reactivated after a long period of silence, or catching a new signal coming on the air for the first time. Even if your Latin American listening never goes beyond casual, the cultural and musical diversity, and the relaxed pace of everyday life in the region, offer a nice break from the breakneck pace so characteristic of 21st century life. As they say in the islands, "No problem, mon!"

Listening In South of the Border

CARIBBEAN		Frequencies (kHz)
Anguilla	Caribbean Beacon	6090, 11775
Antigua	BBC relay	5975, 5995, 6195, 15220, 17840
	Deutsche Welle relay	6075, 9670, 9700, 15410, 17730, 17765, 17810
	Radio Netherlands relay	9590
	Radio Vlaanderen Int'l relay	15565
Cuba	China Radio International relay	5990, 9570, 15120
	Radio Havana Cuba	6000, 9550, 9820, 11705, 11760, 11815, 11875, 13660, 13680, 13750, 15230, 15250, 15340
	Radio Rebelde	5025, 6140, 9600
Dominican Republic	Radio Amanecer	6025
	Radio Barahona	4911, 4930, 5089
	Radio Villa	4960
	Radio Cristal Internacional	5012
Netherlands Antilles	Radio Netherlands relay	6165, 9895, 11750, 15315, 15565, 17605, 21590
Puerto Rico	Radio Vlaanderen Int'l relay	11980, 13670
	Armed Forces Radio (AFN)	6458.5

CENTRAL AMERICA		Frequencies (kHz)
Costa Rica	Faro del Caribe	5055, 9645
	Radio Casino	5954
	R. Exterior Espana relay	3210, 5970, 6540, 9540, 9620, 9765, 11815, 15170, 17850
	Radio For Peace International	6970, 7480, 15049, 15065, 21815, 25930
	Radio Universidad	6105
	World University Network	5030, 6150, 11870, 13750
Guatemala	Radio Buenas Nuevas	4800
	Radio Chortis	3380
	Radio Cultural - Guatemala City	3300, 5955
	Radio Cultural - Coatan	4780
	Radio K'ekchi'	4845
	Radio Mam	4825
	Radio Maya	2360, 3325
	Radio Tezulutlan	3370, 4835
	Radio Verdad	4052.5
	Voz de Nahuala	3360
Honduras	Radio Costeno	4930
	Radio Luz Y Vida	3250
	La Voz Evangelica	4820
	Radio Litoral	4832
Nicaragua	Rodio Miskut	5770

MEXICO		Frequencies (kHz)
	Radio Educacion	6185
	Radio Huayacocotla	2390
	Radio Mexico International	5985, 9705, 11770
	Radio Mil	6010
	Radio Transcontinental	4800.5
	Radio Universidad (UNAM)	9600

ABOUT THE AUTHOR

Dave White (*dave@k4cc.net*) proudly maintains a childlike gee-whiz fascination with hearing radio signals from far away places. At those times when he is forced to act like an adult, he is a freelance writer, web designer, and computer consultant.

Guide to QSL Addresses: Latin America and the Caribbean

By Gayle Van Horn

Considering the increasing number of stations in Central and South America leaving shortwave, you would think there isn't much left to hear, much less QSL. Apparently, that is not the case. Not only is there plenty to hear, my mail indicates there remains plenty to verify.

True, even a decade ago, a plenitude of stations remained active that are off the air now. Perhaps you recall the days of verifying Panama, Belize, El Salvador, and 4VEH in Port-au-Prince, Haiti. Before an active volcano wiped out Deutsche Welle's Montserrat and BBC's relay station, the low-powered transmitter was a terrific catch on 90 meters. Old timers tell me that, for a while, there was a once-a-week 10 minute program from Turks and Caicos' VSI8, but until they increased their power and moved to the 60 meter band hardly anyone in North America logged them (including me).

I was, however, fortunate to hear La Voz de Galápagos, six hundred miles off the coast of Ecuador, quite frequently until their shift to an AM/FM service. The station, run by the Catholic monks of the Franciscana Misión on Isla San Cristóbal, verified with an assortment of colorful cards featuring the colossal galápagos (Spanish for turtles), iguanas, and the blue-footed boobie birds. I doubt even E-Bay could pry loose my three cards!

Just as frustrating to listeners are the current crop of stations that do broadcast, only to find themselves abruptly in the same predicament as their predecessors. Costa Rica's Radio Litoral left the air, as there was simply not enough money to pay the staff and run the generators! In recent weeks, the station has returned again, despite U.S. donations being less than expected.

William Arias, the director of Costa Rica's oldest Catholic station Radio Fides, seems poised to open a new shortwave service, complete with website: **www.radiofides.co.cr** Radio Fides claims to already have 85% coverage of Costa Rica from its FM station atop the Irazú volcano, with repeaters in Cerro la Muerte, Santa Elena, and in Zarcaro. At this writing, it is uncertain when the service might begin.

On shortwave, Guatemala is characteristically an area of religious stations. Most are Catholic, but the Protestants are well represented by Radio Cultural on 3300 kHz. Señor Edgar Morales, director of Guatemala's Radio Verdad, noted in a verification letter that his station was operating with only 820 watts, and at the moment they cannot increase their power. He continues, "in the evening hours our voltage decreases to under 200 watts which the transmitter is accepting as minimum." Certainly a respectable catch, and they do verify reports.

A Word to the Wise

When reporting. remember that Latin America is characteristically an area of low-powered stations broadcasting on local time schedules. Do not report your programming in UTC. Most stations do not understand UTC and times should be given in their local time. If you're not sure of their local time zone, at least clearly mark the time for the capital city. *WRTH (World Radio TV Handbook)* lists a time zone map, as well as providing time zones by country.

As mentioned in last month's installment, in Latin America Spanish is the preferred language for reports, except for Brazil (Portuguese) and those that have English services. Comments on reception quality should be written in clear, concise sentences. Reporting the station's signal quality in SINPO codes will likely confuse the personnel.

Response time from the station may vary from a few months to years. If the latter, I would, if possible, re-log the station, as well as examining my last report to see if it could be improved.

For Latin American countries, my attitude on return postage is that, unless you have more money than common sense, sending IRCs is like throwing your money away. Opt for mint postage and a self-addressed-envelope. Large successful stations such as ones in Venezuela and Colombia may not even need return postage...but it certainly might assist your reply.

Ultimately, DXers who are willing to extend a kind approach and put extra effort into reception reports are the DXers who receive a verification.

Central America & the Caribbean

Anguilla
Caribbean Beacon
Box 690
Anguilla, British West Indies, Anguilla

Antigua
BBC World Service/Caribbean Relay Station
Deutsche Welle Relay Station
P.O. Box 1203
St. John's, Antigua

(on technical) Deutsche Welle
Raderbergguertel 50
D-50968 Cologne, Germany

Costa Rica
Foro del Caribe International y Misionera/TIFC
Apartado 2710
1000 San José, Costa Rica

Radio 88 Estéreo
(when active)
Apartado 827-8000
Pérez Zeledón, Costa Rica

Radio Casino
(when active)
Apartado 287
7301 Puerto Limán, Costa Rica

Radio Exterior de España Relay Station
Cariari de Pococi, Costa Rica

(or) Radio Exterior de Espana
Apartado de Correos
156.202, E-28080
Madrid, Spain

Radio Fides
Curio Metropolitano
2 piso
Apartado 5097
San José, Costa Rica

Radio For Peace International/RFPI
Apartado 88
Santa Ana, Costa Rica

Radio Reloj
Sistema Radiofónico H.B.
Apartado 341
1000 San José, Costa Rica

University Network
P.O. Box 1
Los Angeles, CA 90053 USA

Cuba
Radio Habana Cuba
P.O. Box 6240
Habana, Cuba 10600

Radio Rebelde
Departamento de Relaciones Publicas
P.O. Box 6277
Habana, Cuba 10600

(or) Calle 23 No.58 entrre L y M
El Vedado, Habana, Cuba

Dominican Republic
Emisora Onda Musical
(when active)
Palo Hincado 204 Altos
Apartado Postal 860
Santo Domingo, Dominican Republic

Radio Amanecer Int'l
(when active)
Apartado 4680
Santo Domingo, Dominican Republic

Radio Barahona
(when active)
Apartado 201
Barahona, Dominican Republic

Radio Cima
Apartado 804
Santo Domingo, Dominican Republic

Radio Cristal Internacional
Apartado 894
Santo Salcedo No. 18
Altos, Santo Domingo, Dominican Republic
Radio Norte
(when active)
Apartado Postal 320
Santiago, Dominican Republic

Radio Quisqueya
(when active)
Apartado Postal 363
Puerto Plata, Dominican Republic

Radio Santiago
(when active)
Apartado 282
Santiago, Dominican Republic

Guatemala

La Voz de Atitlán
Santiago Atitlán, Guatemala

La Voz de Guatemala/TGW
(when active)
18 Calle 6-70 2 piso
Zona 1, 01001 Guatemala City
Guatemala

La Voz de Nahualá
Nahualá, Sololá, Guatemala

Radio Buenas Nuevos
13020 San Sebastian
Huehuetenango, Guatemala

Radi Chortis
Centro Social
2004 Jocotán
Chiquimula, Guatemala

Radio Cultural/TGNA
Apartado de Correo 601
Guatemala City, Guatemala

Radio Cultural Coatán
San Sebástian, Coatán
Huehuetenango, Guatemala

Radio K'ekchí/TGVC
3ra Calle 7-15
Zona 1, 16015 Fray Bartolomé de las Casas
Alta Verapaz, Guatemala

Radio Mam
Acú Mam
Cuetzaltenango, Guatemala

Radio Maya de Barillas/TGBA
13026 Villa de Barillas
Huehuetenango, Guatemala

Radio Tezulutlán/TGTZ
Apartado de Correo 19
16901 Cabán, Guatemala

Radio Verdad-Estacion Educative Evangelica
Apartado No. 5
Chiquimula, Guatemala

Honduras

La Voz de la Mosquitia
(when active)
Puerto Lempira
Dpto. Gracias a Dios, Honduras

La Voz Evangélica/HRVC
Apartado Postal 3252
Tegucigalpa, M.D.C. Honduras

Radio Costeña
c/o Radio Ebenezer-1220 AM
Apartado 54666
San Pedro, Sula, Honduras

(or) Radio Costeña
Apartado 1473
San Pedro, Sula, Honduras

Radia HRET
Primera Iglesia Bautista
Domicilla, Puerto Lempira
Gracias a Dios 33101, Honduras

Radio HRML/La Voz de Misiones Internacionales
(when active)
Apartado Postal 20583
Comayaguela, M.D.C., Honduras

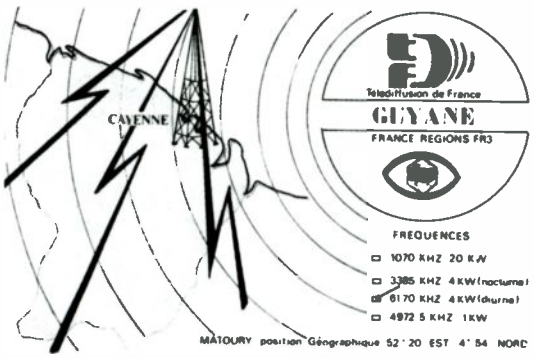
(or) c/o International Missions Fellowship
P.O. Box 6321
San Bernardino, CA 92412 USA
Radio Litoral
Apartado Postal 878
La Ceiba, Provincia
Atlántida, Honduras

Radio Luz y Vida/HRPC
Apartado 303
San Pedro Sula, Honduras

(or) Apartado 369
San Pedro, Sula Honduras

Mexico

La Hora Exacta/XEQK
(when active)
Real de Mayorazgo 83
Barrio de Xoco, 03330-Mexico



La Jarocha/XEFT
(when active)
Apartado Postal 21
91701-Veracruz, Veracruz, Mexico

Radio Educacion/XEPPM
Plaza San Juan
5, piso 2
San Juan de Letran, Mexico
Distrito Federal, Mexico

(or) Apartado Postal 21-940
04021-Mexico 21
Distrito Federal, Mexico

Radio Huayacocotla/XEJN
Radio Huaya, Dom. Gutiérrez Najera s/n
Apartado Postal 13
Huayacocotla, Veracruz, Mexico

Radio Mexico International/XERMX
Instituto Méxicano de la Radio
Apartado Postal 21-300
04021, Mexico 21
Distrito Federal, Mexico

Radio Mil/XEOI
NRM, Avda. Insurgentes Sur 1870
Col. Florida, 01030 Mexico 20
Distrito Federal, Mexico

(or) Apartado Postal 21-1000
04021 México 21
Distrito Federal, Mexico

Radio Transcontinental de América/XERTA
Apartado Postal 653
06002 México 1
Distrito Federal, Mexico

(or) Torre *Latinoamericana* (Desp. 3706)
06007 México 1
Distrito Federal, Mexico

Radio Universidad Autónoma de Méxica/XEYU
Adolfo Prieto 133
Colonio del Valle
03100 México 12
Distrito Federal, Mexico

Netherlands Antilles

Radio Nederland Weredomroep/Bonaire Relay
P.O. Box 45
Kralendiji, Netherlands Antilles

(or) Radio Netherlands
P.O. Box 222
Hilverrsum JG, The Netherlands

Nicaragua

Radio Miscut
Barrio Pancasan
Puerto Cabezas, Nicaragua

Puerto Rico

Armed Forces Network/AFRTS
Naval Medio Center
NDW Anacostia Annex
2713 Mitscher Rd., S.W.
Washington, DC 20373-5819

South America - Part 2

Antarctica

Radio Nacional Arcangel San Gabriel
Base de Ejercito Esperanza
9411-Antortida Argentina, Argentina
Antarctica

Colombia

Armonias del Coquetá
Apartado Aéreo 71
Florencia, Caquetá, Colombia

Caracol Florencia/La Voz de la Selva
(when active)
Apartado Aéreo 465
Florencio, Caquetá, Colombia

Colmundo Bogotá
Diagonal 58 No. 26-29
Santafé de Bogotá, Colombia

(or) Apartado Aéreo 36750
Santafé de Bogatá, Colombia

Colombia Estera
Carrera 16-A
No. 87-78 Bogota, Colombia

Ecos del Orinoca
(when active)
Gobernación del Vichada
Puerto Carreño, Vichada, Colombia

Emissora Ecos del Atrato
Apartado Aéreo 196
Quibdó, Chocó, Colombia

(or) Carrera 4a N 25-28 A.A. 196
Quibdó, Chocó, Colombia

La Voz de los Centauros/Caracol Villaviencio
Cra. 31 No. 37-71 Of. 1001
Villavicencio, Meta, Colombia

La Voz del Cinaruca
(when active)
Calle 19 No.19-62
Arauca, Colombia

La Voz Guaviare
Carrera 22 con Calle 9
San José del Guaviare, Colombia

La Voz del Llano
Calle 41 B No. 30-11
Barrio la Grama
Villavicencio, Meta, Colombia

La Voz del Rio Arauca
Carrera 20 No. 19-09
Arauca, Colombia

La Voz del Yopal
(when active)
Calle 9 No. 22-63
Yopal, Casanare, Colombia

La Super Estacion
Carrera 16-A
No. 87-78
Bogota, Colombia

Ondas del Meta
(when active)
Calle 41 B No. 30-11
Barrio la Grama
Villavicencio, Meta, Colombia

Ondas del Orteguaza
Calle 16 No. 12-48
piso 2 , Florenica
Caquetá, Colombia

Radio Macarena/Radia Auténtica
Calle 38 No. 32-41 piso 7
Edif. Santander, Villavicencio
Meta, Colombia

Radiodifusora Nacional de Colombia
Edificio Inravisión, CAN
Av. Eldorado, Santafé de Bogotá
Distrito Capital, Colombia

RCN/Radio Cadena Nacional
Apartado Aéreo 4984
Santefé de Bogota
Distrito Capital, Colombia

Radia Melodia/Cadena Melodia
(when active)
Apartado Aéreo 58721
Santafé de Bogotá
Distrito Capital, Colombia

Radio Mira
Apartado Aéreo 165
Tumaco, Nariño, Colombia

Radio Super/Ibagué
(when active)
Parque Murilla Toro 3-31
P. 3, Ibagué, Tolima, Colombia

Ecuador

Escos del Oriente
(when active)
Sucre y 12 de Febrero
Lago Agria
Sucumbios, Ecuador

Escuelas Radiofónicas Populares del Ecuador
Calles Juan de Velasco 2060 y Guayaquil
Casilla Postal 06-01-341
Riobamba, Chimborazo, Ecuador

Emissoras Jesús del Gran Poder
(when active)
Casilla 17-01-133
Quito, Pichincha, Ecuador

Emissoras Luz y Vida
Casilla 11-01-222
Loja, Loja, Ecuador

Escuelas Radiofónica Populares del Ecuador
Calles Juan de Velasco 2060 y Guayaquil
Casilla Postal 06-01-341
Riobamba, Chimbarazo, Ecuador

Estéo Carrizal
(when active)
Avenida Estudiantil
Quinto Velásquez
Calceta, Ecuador

HCJBWarld Radio/The Voice of the Andes
Casilla 17-17-691
Quito, Pichincha, Ecuador

La Voz de los Caras
(when active)
Casilla 608
Calle Montúfar 1012
Bahía de Caráquez
Manabi, Ecuador

La Voz de Saquisli/Radio Libertador
Calle 24 de Mayo
Saquisí, Cotopaxi, Ecuador

La Voz del Napo
Misión Josefina
Tena, Napo, Ecuador

La Voz del Rio Tarqui
(when active)
Manuel Vega 653 y Presidente Córdova
Cuenca, Azuay, Ecuador

La Voz del Upano
Vicariato Apostólico de Méndez
Misión Salesiana
10 de Agosto de s/n
Macas, Marona Santiago, Ecuador

(or) Casilla 602
Quito, Pichincha, Ecuador

Radio Bahá'i
La Emisora de la Familia
Casilla 10-02-1464
Otavalo, Imbabura, Ecuador

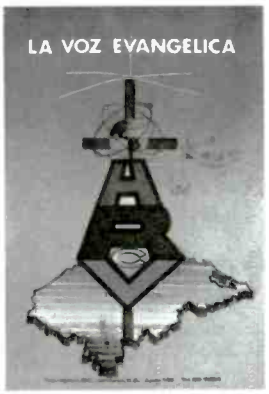
Radio Católica Nacional del Ecuador
(when active)
Av.América 1830 y Mercadillo
Apartado 540A
Quito, Pichincha, Ecuador

Radio Centro
Casilla 18-01-574
Ambato, Tungurahua, Ecuador

Radio Centinela del Sur/C.D.S. Internacional
Casilla 11-01-106
Loja, Loja, Ecuador

(or) Olmedo 11-56 y Mercadillo
Loja, Loja, Ecuador

Radio El Buen Pastor
Asociación Cristiana de Indigenas Saraguros (ACIS)
Reino de Quito y Azuay
Correo Central
Saraguro, Loja, Ecuador



Radio Federación Shuor
Casilla 17-01-1422
Quito, Pichincha, Ecuador

Radio Interoceánica
Santa Rosa de Quijos
Cantón El Chaco
Napo, Ecuador

Radio Municipal
(when active)
Alcaldía Municipal de Quito
García Moreno 887 y Espejo
Quito, Pichincha, Ecuador

Radio Nacional Espejo
Casilla 17-01-352
Quito, Pichincha, Ecuador

Radio Nacional Progreso
Casilla V
Loja, Loja, Ecuador

Radio Oriental
Casilla 260
Tena, Napo, Ecuador

Radio Popular de Cuenca
(when active)
Av. Loja 2408
Cuenca, Ecuador

Radio Quito
Casilla 17-21-1971
Quito, Pichincha, Ecuador

French Guiana
Radio France Internationale/
Swiss Radio International-Guyane Relay Station
TDF, Montsinéry, French Guiana

Radio France International Relay Station
Boite Postal 9516
F-75016 Paris, Cedex 16, France

Swiss Radio International Relay Station
Giacomettistrasse 1, CH-3000
Berne, Switzerland

RFO Guyane
43 bis, rue du Docteur-Gabriel-Devèze
Boite Postal 7013, Cayenne Cedex
French Guiana

Guyana
Voice of Guyana
Guyana Broadcasting Corporation
Broadcasting House
P.O. Box 10760
Georgetown, Guyana

Suriname
Radio Apintie
Postbus 595
Paramaribo, Suriname

Venezuela
Ecos del Torbes
Apartado 152
San Cristóbal 5001-A
Táchira, Venezuela

Observatorio Cagigol/YVTO
Apartado 6745
Armada 84-DHN
Caracas 103, Venezuela

Radio Amazonas
Av. Simón Bolívar 4
Puerto Ayacucho 7101
Amazonas, Venezuela

Radio Frontera
(when active)
Edificio Radio
San Antonio del Táchira, Venezuela

Radio Mundial Los Andes/Radio Los Andes 1040
(when active)
Calle 44 No. 3-57
Mérida, Venezuela

Radio Nacional de Venezuela
(when active)
Final Calle Las Marías
El Pedregal de Chapellín
1050 Caracas, Venezuela

Radio Occidente
Carrera 4a
No. 6-46
Tovar 5143, Merida, Venezuela

Radio Rumbos
(when active)
Apartado 2618
Caracas 1010 A, Venezuela

Radio Táchira
Apartado 152
San Cristóbal 5001-A
Táchira, Venezuela

Radio Valera
Av. 10 No. 9-31
Valera 3102
Trujillo, Venezuela

Ken Reitz, KS4ZR
ks4zr@firstva.com

Two Cheap (and easy) Scanner Antenna Solutions

If you've ever been disappointed with reception on your scanner using its factory "rubber duck" antenna you may be interested in two easy and cheap antenna solutions. The whole reason behind the design of the small, flexible antennas found on most hand held scanners and amateur radio handi-talkies (HTs) is to offer maximum reception on the bands received while keeping the size of the antenna reasonably short and, consequently, more portable.

The inherent problem with the design is that compromises have to be made to make the antenna, small which also makes reception less than ideal. But, if you listen to your scanner mostly in a desk top (as opposed to portable) mode you can regain some of the lost reception capabilities by replacing your factory antenna.

There are several "after market" antenna replacements on the market and Radio Shack offers a few. One is a "mag-mount" mobile antenna for $30 and one an outdoor antenna for $60. Another is the RS# 20-161 which covers 30 to 512 MHz and extends to 40 inches. It's designed for a desk top scanner, and its right angle plug makes it less useful for a hand held scanner. A second replacement, RS# 20-034 is only 9 inches long and at $15 dollars doesn't appear to be that much of an improvement over the factory antenna. That brings us to two replacements which are worth considering. One is a replacement which fits directly on your scanner and the other is an inexpensive outdoor antenna.

◆ Center-loaded Telescoping Whip Antenna

Most scanner antennas are attached via a BNC connector. This is a simple "twist-on twist-off" design which holds the antenna securely to the radio and is a long-running, industry-wide, standard antenna connector. The Radio Shack "Center-loaded Telescoping Whip Antenna" (RS# 20-006) is the same size as most scanner flexible antennas, about 6 inches when fully collapsed, but 26 inches when fully extended. It is equipped with a BNC connector. Coverage on this antenna is from 30 MHz to 1.3 GHz.

Radio Shack's telescoping whip antenna replaces your factory "rubber duck" antenna and improves reception from 25-1300 MHz. (Courtesy Radio Shack)

With the factory installed antenna on my scanner (a Radio Shack Pro-79), I can receive only one NOAA weather radio station which is about 60 miles away. With the telescoping whip, I can receive another lower powered station in the opposite direction another 60 miles away. Similar increase in reception can be heard on the public service frequencies as well as 2 meter amateur radio repeaters. If your scanner has an SO259 antenna connector, use a S9259/BNC adapter. This antenna sells for $9.99.

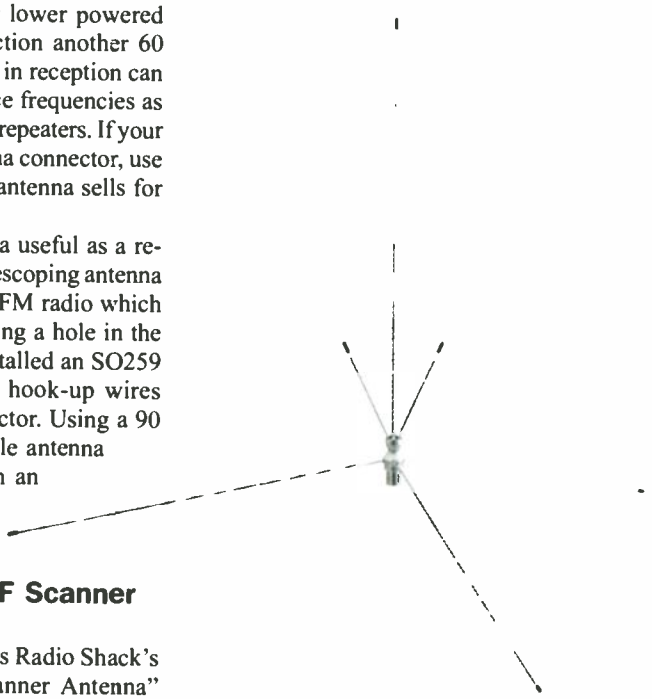
I also found this antenna useful as a replacement for the original telescoping antenna on a TV/AIR/Wx band AM/FM radio which was broken. By simply drilling a hole in the plastic case of the radio I installed an SO259 connector and soldered the hook-up wires inside the radio to the connector. Using a 90 degree/BNC adaptor this little antenna really improves reception on an otherwise under-performing radio.

◆ Outdoor VHF-Hi/UHF Scanner Antenna

An even better solution is Radio Shack's "Outdoor VHF-Hi/UHF Scanner Antenna" (RS #20-176) which is designed to be used outside on a standard antenna mast. It has an SO259 connector at its base and requires coaxial cable with PL259 connectors at each end (sold separately). You'll need to convert one end to a BNC connector to feed your scanner. Coverage with this antenna is from 108 MHz to 1.3 GHz.

Results with this antenna attached to the same scanner were the most dramatic. Police repeaters not even heard on the factory duck came through loud and clear. Ham repeaters, airport towers, and business radios were equally improved. Three NOAA weather radio stations could be heard with this antenna. A local airport ATIS (Automatic Terminal Information Service) transmitter could be heard only on this antenna. Naturally, this much improvement will come with a little extra cost. But, at $20 this could be the most antenna for the bucks in the hobby though you will have to shell out extra for the necessary coax.

If you're in an urban setting you may not notice such drastic improvement in your reception because you're already close to the originating transmitters. But, if you're in a suburb, small town or out in the country away from the action, these antennas may be just the thing to perk up your scanner reception.



Radio Shack's Outdoor VHF-Hi/UHF scanner antenna dramatically improves your scanner reception for $20, and it works great for transmitting on amateur 2 meters and 70 cm too! Mount it in the attic for the perfect "stealth" antenna. (Courtesy Radio Shack)

◆ But Wait, There's More!

The best part about these two antenna solutions is that they're not just for receiving. Hooking them up to your 2 Meter, 220 MHz or 70 cm base transceiver or HT will

allow you to access repeaters you could never hit before with the factory rubber duck antenna. The telescoping whip will take the typical 5 watt output of an HT while the ground plane can handle up to 25 watts many mobile rigs put out.

Mounting the ground plane in the attic makes it the perfect "stealth" antenna [see sidebar]. Unseen by neighbors, it will give you omnidirectional reception/transmission away from the shielding of foil-backed thermal siding and will last forever out of the weather.

However, if you can have an outdoor antenna you can improve reception even more by mounting the ground plane on an existing TV mast or setting one up just for this antenna. "The higher the better" is the general rule with outside antenna heights. That's especially true in the VHF/UHF bands, because at these frequencies distance is limited mostly to "line-of-sight." That's why the Space Shuttle, *Mir* and the new International Space Station have such great signals when they're over our houses even though they're 200 miles away.

I've used the Radio Shack ground plane mounted in the attic, with an HT operating under 5 watts and have had great success working into repeaters 30 to 50 miles away. In places where outside antennas are frowned on by the "Powers That Be" or expense prohibits anything fancier, the attic mounted ground plane antenna just might be the solution to your 2 meter and scanning problems.

◆ E-mail Fiascos

From time to time funny things can happen with e-mail. Things just seem to disappear on their own. If you've sent an e-mail to me and have not received an answer it's entirely possible that, due to an itchy cursor finger, I may have deleted your questions. If you don't receive an answer from me within a week of sending it, please feel free to re-send it. I won't think you're pushy. Honest!

BEGINNER'S D-I-Y: THE ATTIC MOUNT

When you first enter your attic space you'll see a soft sea of pink or yellow spun fiberglass (depending on the brand used). After adjusting your eyes to the lower light levels, orient yourself to the layout of the house. It won't take long to determine where the room is in which the scanner/HT will reside. If you have a closet opening into that room you'll be able to see the framing members and the backside of the sheetrock when you peel back the insulation. Determine where the inside corner nearest the door is and, with a small hand operated or portable electric drill, bore a small hole into the sheetrock against the corner where the framing members meet.

After mounting the ground plane antenna in the attic, attach the coaxial feed line and tack the feed with a "nail-in mounting clip" (RS#278-1660) to a truss member to act as a strain relief. Now, route the feed through the hole in the ceiling closet. From inside the closet, tack the cable with more mounting clips and route it under the closet door and along the baseboard until it comes to the radio. You'll find this is a job requiring a certain amount of deftness balancing on the lower truss members of your roof. Be careful not to step through the ceiling! Don't forget to replace the insulation and seal the antenna access hole with Coax Seal. If you're planning to use this antenna to transmit you should consider using RG/8 coax, as it has considerably less loss than RG/58. It's about ten cents per foot more expensive but well worth the price.

Once you have your attic mount antenna in place you'll be amazed at the difference in reception. In my location I can receive only one NOAA weather station inside the house using the factory antenna, and that with a fair amount of noise. With the attic ground plane I can receive three different NOAA weather stations two of which are 120 miles apart. Ham repeaters inaccessible with the factory duck come in "full quieting" on the attic ground plane. Police and other public service transmissions keep this scanner talking not just hopping.

Getting Started

Ask Bob

Bob Grove, W8JHD
bgrove@grove-ent.com

***Q.** I have a digital home cordless phone and can't find its signal on my scanner.*

A. Nor will you. Digital cordless phones in the 902-928 MHz range are spread spectrum, employing frequency hopping techniques, and you won't hear a thing but a slight increase in background hiss when you tune to the middle of their transmission bandwidth.

***Q.** What is the relative sensitivity of wide-frequency-coverage handheld scanners on the 225-400 MHz military aircraft band? (Phil Paul, e-mail)*

A. Very nearly the same – typically within 5 dB (less than one S unit). On a quick examination (minimum detectable signal, or MDS) with our Hewlett Packard signal generator, testing five leading models, we found the most sensitive (-130 dBm) in this frequency range to be the Alinco DJX10T, the least sensitive (-125 dBm) to be the Icom R-10, and in between (-128 dBm) to be the Icom R-2, AOR AR8200B, and Sony SC1. This level is roughly equivalent to about 0.2 microvolts – excellent sensitivity.

But there are always unit-to-unit variances, and these specifications are too close to make generalizations about any particular model. Most important, the little antennas which come with these units are remarkably different in their relative performances, and the UHF military aircraft range is not a high priority in their design.

***Q.** Federal Aviation Administration regulations prohibit the use of certain electronic items aboard a commercial aircraft. Is this a valid concern?*

A. FAA regulations generally prohibit the operation of devices with oscillators because they may conceivably radiate enough energy to interfere with radionavigation instrumentation. The captain of the flight is the one who usually makes the determination of what you can operate, and when you can use it.

Different airlines have different policies in this regard. For a long time Delta allowed the use of scanners in straight flight, but not at the gate or during takeoff or landing phaases. Now they, too, prohibit the use of scanners throughout the flight. (*See Scanning Report, Jan 2000-ed*)

Because of the strict regulation of such devices by the FCC, such a danger is probably far fetched among certified devices. But the market abounds with uncertified electronics, and when massive human lives are at stake, it is better to be safe than sorry.

***Q.** I saw on TV that, along with the 11-year sunspot cycle, the sun also does a "flip" every 22 years; is that correct? (Ronald Blocker, Glenwood, IL)*

A. Not exactly. The sun doesn't flip, but the polarity of the magnetic field does. The "north/south" poles of the sun reverse every 11 years, coinciding with the sunspot cycle. Since it takes another 11 years to return to its original position, that's a total of 22 years for the complete magnetic pole cycle.

***Q.** I've noticed that some police cars here in Birmingham have recently mounted a triangle pattern of three UHF (450 MHz?) whips on their roofs. When I asked them what they were for, they said it was a secret. Any idea what it could be used for?*

A. One thing for sure: it is a secret! I spoke with someone familiar with the application, but he advised most strongly that it was not for public information. Judging from my contact's statement that it is used for crime fighting, but is not used for transmitting, my guess is that it is for tracking surveillance transmitters—possibly "bumper beepers," or something similar.

If your 450 MHz guesstimate is correct, listen throughout the 450-470 MHz spectrum, especially late at night when there aren't many radio transmissions, for pulses every few seconds. That may give you a clue. A spectrum analyzer is ideal for this.

If you don't hear (or see) the pulses in this range, they could be in the federal 406-420 MHz band, or even in the 216-222 MHz telemetry range.

***Q.** My power company tells me that they can read my meter remotely; any idea what frequency range it would be on? (Ed DeFreitas, e-mail)*

A. Ed answered his own question with a follow-up e-mail. According to Ed, the FCC ID number on the meter shows it to be a model F9CR-300 made by Schlumberger. They transmit their low-power telemetry in the 912-918 MHz range and are computer-monitored by the utility truck. Ed adds that apparently the meter readers don't get the exercise they used to!

Thanks, Ed, for an interesting insight into another modern application of radio.

***Q.** How do the batteries in the yellow flashers used at traffic barricades retain such a long life? Do they get recharged? (Mark Burns, Terre Haute, IN)*

A. Since these are strobe flashers (like a camera has), the duty cycle is very brief; most of its time is spent recharging a capacitor in anticipation of the next flash. Conventional spring-contact lantern batteries can run the units for days before replacement is necessary.

***Q.** I enjoyed reading "Waiting for the Go Code" in the July, 2000 issue of MT. What is "EMP?" James Ashe, Weymouth, MA)*

A. Electromagnetic pulse (EMP) is an instantaneous burst of broad-spectrum energy produced by the detonation of a nuclear device, containing both electric (voltage) and magnetic components. It is similar in this respect to lightning, which induces destructive currents in nearby conductors such as wiring and electronics.

Unlike the residual radioactive contamination from the blast, EMP does not linger after the first fraction of a second; its damage is done once the sudden inrush current burns out solid-state devices like transistors, diodes, and integrated circuits (ICs).

Getting Started

Bright Ideas

Gary Webbenhurst
ab7ni@arrl.net

I started writing this column one year ago. As the column evolved and matured, I feel I have established a jumping off point for readers. As I start the second year of the Bright Ideas column, I want to reflect on its purpose. Here is my definition of a bright idea: ***Some technique, new product, homebrewed equipment, skill, concept, plan, or expert advice that helps an individual to adapt, or improve their monitoring activities.***

Over the years, I have thought up, acquired, stumbled upon, stolen, and modified many tips and techniques for improving my equipment and overall enjoyment of the hobby. I present these ideas in my monthly columns. I try very hard not to re-use ideas from other sources. But, great minds do think alike, and occasionally an idea will appear that might have a similar concept posted elsewhere.

While the column is intended mostly for those relatively new to the monitoring hobby, my email feed back indicates that many experienced listeners also enjoy the column. I always look for feedback from readers. Often, I present an idea and a reader will improve on that idea. One example was my offer to provide readers with the ham radio test with ONLY the correct text answers given. A reader named Ross also inserted the correct graphic answer where the answer is a symbol, circuit, or other illustration. Great idea, Ross. Thanks.

If you have a better idea, or can build upon my idea or suggest another way to skin the cat, please write or email me. Remember that I write a couple of months in advance, so be patient. Your idea will appear, and you will be given full credit.

Occasionally, readers have a problem, but not the solution. That's OK too. If I can't find the answer, I'll bet a reader can.

We start the new year with new numbers.

Wow, check out this roofline with more than 20 antennas!

I have made a summary of my *Bright Ideas* column from the January 2000 through the December 2000 issues. This is a 22-page document in Word 97 format. If you would like a copy, just email me, and I will send it to you in a return email as an attachment. I hope you use your summary to go back and catch up on all of the 2000 columns and the many ideas listed for your use.

So what were the big hits of last year's columns? Based on reader feedback, here are the top two:

a. Programming every VHF/UHF Public Safety frequency into your scanner. Do it and I suspect you will find some local frequencies that are not generally known or even licensed. I am hoping that most of you have a newer model scanner, which nowadays usually feature several hundred memory channels. These scanners are usually computer programmable (and clonable.)

I have most of these software programs and have already done the dreary work of entering all those frequencies in a file I usually call ***All Public Safety***. If you elect not to do the typing yourself, please email me and tell me what radio and software program you use. I will gladly send you (via email) the database.

b. The other big hit of the year was the idea of a modified list of questions for the ham radio exams. I simply took the public domain list of all possible FCC questions and deleted all the incorrect answers. Thus the list is shortened by nearly 60%. No sense reading or studying the wrong answers. I was deluged with requests.

For me, the best part was all the readers who later sent emails with their new callsigns. Congratulations, new hams! Of course, the ham ticket is just the first step. Then the learning really begins.

If you would like a copy of the "Correct Answers Only" question pool, just email me. Remember to tell me if you want the entry level Tech, General or Extra version. If you need a format other than Word 97, please advise.

If you get *MT* online in PDF format, you can simply click on any URL given anywhere in *MT* and your browser will launch you right to the website. Cool!

Many of the newer scanners and ham transceivers are capable of wide band receive. I use my Yaesu VX-5R to listen to the audio channel of the TV stations. Whether it is a ball game or the five o'clock news, it serves my desire to stay informed I occasionally use the FM radio range to select a musical station (i.e. classical) and use it to help me fall asleep. The automatic power off feature (APO) means I do not need to worry about waking up to a dead radio.

I suggest you invest in the *Monitoring Times* anthology for 1999 and now the new 2000 edition. You can order at **www.grove-enterprises.com** or 1-800-438-8155.

Plan a visit to your local National Weather Service office. They have some really incredible radios, radar, and computers systems to show off.

There are many myths, legends and opinions in our hobby. But there are also cold facts. One of these is the simple principle that your ability to receive is never any better than your antenna. Next month I will have several tips for improving your "antenna farm."

A modest ham antenna farm. Do you see ALL the antennas?

Richard Barnett
ScanMaster@aol.com

Public Safety in Lubbock Texas

The following tremendous report on the city of Lubbock was sent to us by the folks at **http://www.lubbockradio.net**. This is just the kind of detail that we love to see in *MT, Police Call*, and other publications. We'll also give you more details on the highly anticipated Bearcat 780XLT scanner. This month we'll focus on additional non-trunking features. But first, let's visit legendary Lubbock, Texas.

City of Lubbock, TX

EDACS trunked radio system (call sign: WPFW709)

FREQUENCIES LCN
1. 856.2375
2. 856.7375
3. 857.2375
4. 857.7375
5. 858.2375
6. 858.7375
7. 859.2375
8. 859.7375
9. 860.2375
10. 860.7375
11. 856.4875
12. 856.9875
13. 857.4875
14. 857.9875
15. 858.4875
16. 858.9875
17. 859.4875
18. 859.9875
19. 860.4875
20. 855.9875

TALKGROUP IDENTIFICATION	AFS
LPD-FLEET ALL-CALL	01-010
LPD-DISPATCH CH-1	01-011
LPD-ALTERNATE DISPATCH	01-012
LPD-SECONDARY	01-013
LPD-TLETS (RECORDS)	01-014
LPD-TALK-1	01-015
LPD-TALK-2	01-016
LPD-SUPERVISORS	01-017
LPD-TACTICAL-1/SWAT	01-021
LPD-TACTICAL-2/SWAT	01-022
LPD-ADMINISTRATION	01-023
LPD-TRAINING	01-024
LPD-COMMAND-1	01-025
LPD-COMMAND-2	01-026
LPD	01-027
LFD-CHANNEL-1 DISPATCH	01-031
LFD-CHANNEL-3	01-032
LFD-CHANNEL-7	01-034
LFD-CHANNEL-2	01-041
LFD-NEW-12/1999	01-043
LFD-CHANNEL-4	01-044
FMO-FIRE MARSHAL OFFICE	01-052
LFD BACKUP DISPATCHING RADIO	01-060
LFD STATION 1, 18TH/AVE K	01-061
LFD STATION 2, MUNICIPAL DR	01-062
LFD STATION 3, MILWAUKEE/25TH	01-063
LFD STATION 4, UNIVERSITY/COLGA	01-064
LFD STATION 5, ZENITH	01-065
LFD STATION 6, INDIANA/34TH	01-066
LFD STATION 7, SLIDE/3RD	01-067
LFD BACKUP DISPATCHING RADIO	01-070
LFD STATION 8, 50TH/AVE T	01-071
LFD STATION 9, 50TH/UTICA	01-072
LFD STATION 10, MLK BLVD	01-073
LFD STATION 11, AIRPORT	01-074
LFD STATION 12, 79TH/SLIDE	01-075
LFD STATION 14, 96TH/AVE X	01-076
LFD STATION 15, 80TH/VENITA	01-077
CITY MARSHALS COURT	01-081
EOC-EOC-1	01-091
EOC-EOC-2	01-092
EOC-EOC-3	01-093
LPD-SPECIAL EVENTS-1	01-094
LPD-SPECIAL EVENTS-2	01-095
LPD-SPECIAL EVENTS-3	01-096
LCSO COMM-1	01-101
LCSO COMM-2	01-102
STREETS-CREWS CH-1	02-011
STREETS-CREWS CH-2	02-012
STREETS-SURVEYING-1	02-013
STREETS-SURVEYING-2	02-014
LP&L-CH-1	02-021
LP&L-CH-2	02-022
LP&L-CH-3	02-023
LP&L-CH-4	02-024
LP&L-CH-5	02-025
LP&L-CH-6	02-026
LP&L-CH-7	02-027
LP&L-METER READERS	02-032
LBB-AIRPORT OPERATIONS	02-042
LBB-AIRPORT MAINTENANCE	02-043
LBB-AIRPORT GROUNDS	02-044
LBB-AIRPORT TALK-1	02-045
WATER-CH-1 DISPATCH	02-051
WATER-CH-2	02-052
WATER-CH-3 ENGINEERING	02-053
WATER-CH-4	02-054
WATER-CH-5	02-055
WATER-CH-6	02-060
WATER-CH-7	02-061
WATER-CH-8 RECLAMATION	02-062
WATER-CH-9	02-063
WATER-CH-10	02-064
WATER-CH-11 CONTROL	02-065
WATER-CH-12	02-066
DIGITAL MODULATION	02-071
FLEET SERVICES	02-072
RADIO SHOP	02-073
LUBBOCK CO SHERIFF	02-074
RADIO SHOP	02-075
RADIO SHOP	02-076
RADIO SHOP	02-077
WASTE-CH-1	02-081
WASTE-CH-2 LANDFILL	02-082
WASTE-CH-3	02-083
PARKS & REC CH-1	02-091
PARKS & REC CH-2	02-092
PARKS & REC CH-3	02-093
PARKS & REC CH-4	02-094
CITIBUS-1 PRIMARY	02-101
CITIBUS-2 DRS	02-102
CITIBUS-3 MAINTENANCE	02-103
CITIBUS-4	02-104
CITIBUS-TECH SHUTTLES	02-105
CIVIC CENTER 1	02-111
CIVIC CENTER 2	02-112
TRAFFIC ENGINEERING 1	02-121
TRAFFIC ENGINEERING 2	02-122
ANIMAL CONTROL 1	02-131
ANIMAL CONTROL 2	02-132
BLDG INSPECTORS	02-133
HEALTH DEPARTMENT	02-141
LISD POLICE	03-011
LUBBOCK EMS-1 CITY	03-021
LUBBOCK EMS-2 COUNTY	03-022
LUBBOCK EMS-3 ALTERNATE	03-023
LUBBOCK EMS-4 UMC	03-024

Patches

(see Nov. column info on patches)

EMS-ST.MARY'S PATCH	15-126
HOSPITAL PATCH	15-127
HOSPITAL PATCH	15-130
AERO CARE PATCH	15-157

(Note: additional information including decimal codes can be found on the listed web site.)

Lubbock Police Department Unit Numbers

Unit No.	Description
100's	Day Shift Patrol
100	Day Shift Captain
101	Day Shift Lieutenant
1x0's	Day Shift Sergeants
200's	Evening Shift Patrol
200	Evening Shift Captain
201	Evening Shift Lieutenant
2x0's	Evening Shift Sergeants
390's	K-9 Patrol
400's	Night Shift Patrol
400	Night Shift Captain
401	Night Shift Lieutenant
4x0's	Night Shift Sergeants
500's	Traffic Units
501	Traffic Lieutenant
510	Traffic Sergeant
512-519	Motorcycle Traffic Units
520	Motorcycle Sergeant
540's	Parking Enforcement
591	Public Information Officer
599	Patrol Colonel
600's	Property Crimes
700's	Persons Crimes / Juvenile
800's	Special Operations
900's	Administration and Training
950	Chief
999	Administration Colonel
5E1	Emergency Operations Center
5M1x	City Marshals
5M80's	Texas Alcoholic Beverage Commission Officers
9M50's	South Plains Mall Security (off-duty PD)
Hotel	Mounted Patrol (Horse)
Tango	Traffic Units
Victor	Victims Assistance
5L + #	LISD Police

Lubbock Fire Department Apparatus

Station 1*	18th and Ave. K	Engine 1	Truck 1
Station 2	Municipal Dr.	Engine 2	
Station 3	Milwaukee & 25th	Engine 3	Brush 3
Station 4	Univ. & Colgate	Engine 4	Truck 4 Hazmat 4
Station 5	Zenith	Engine 5	Brush 5
Station 6	Indiana and 34th	Engine 6	
Station 7	Slide and 3rd	Engine 7	
Station 8	50th and Ave. T	Engine 8	
Station 9*	50th and Utica	Engine 9	
Station 10*	MLK Blvd.	Engine 10	
Station 11*	Airport		
Station 12	79th and Slide	Engine 12	Truck 12 Hvy Rescue 12
Station 14	96th and Ave. X	Engine 14	Scuba 14
Station 15	80th and Venita	Engine 15	Tanker 1 & 2

Bearcat 780 Update – Part 3

In part 3 of this series on the highly anticipated Bearcat 780XLT scanner, we continue our focus on non-trunking functions begun last month. In October we began by covering the 780's remarkable Ericsson trunktracking capabilities, and next month we'll wrap up the series with a look at Motorola trunktracking.

◆ SEARCH OPERATION (Conventional Search)

You can program up to 10 search ranges in the BC-780. Once you begin searching, you can link the ranges together and turn them on and off just as you would turn on and off scan banks (this is known in Uniden-lingo as "Chain Search"). You can also change the search direction by pressing and holding (for two seconds) the up and down arrows. There is also a "Search Event Menu" in which you can set a multitude of parameters for each search range:

Step: Adjust the step size within the range, including the options of 5kHz, 10 kHz, 7.5 kHz, 12.5 kHz, 25 kHz, 100 kHz, Auto (default)

Mode: Change the mode (AM, FM, NFM, WFM)

Alpha Tag: Set an alpha tag (up to 16 characters) for the search range, such as "Lo Band Military"

You can also set additional parameters which will apply to all search ranges:

Delay: Just as you do for channels, you can set up to 8 levels of delay per search range, including: No delay, 1 second, 2 seconds, 4 seconds, -2 seconds, -5 seconds, -10 seconds, Infinite. The default setting is a two-second delay.

Note that the negative (or inverse) delays will allow you to hear snippets of conversation (such as 5 seconds of a transmission) before the scanner will resume scanning,

even if that transmission is continuing. This works well for search when you might just be interested in a sampling of what's happening within a range. An infinite delay means that the scanner will stop on any transmission (or squelch opening) and will hold there until the user resumes the search with a key press.

Attenuator: You can turn attenuation on for search ranges (20dB, we believe).

Tone Data: Using the system menu, you set whether you want the scanner to be in tone squelch or tone search mode. With tone search on, as soon as the scanner stops on any transmission during a search, it will begin looking for any CTCSS or DCS (digital) sub-audible tone. If a DCS tone is present, it will generally be found instantly. If a CTCSS tone is used, the scanner will check each of 38 possible tones until the correct tone is found. This is not as slick as the PRO-92 and PRO-2067 which find these tones instantly.

Tone Squelch in Search mode is where the 780 really shines. You can set the search ranges to only stop on transmissions with a CTCSS of 167.9, for example. One tone setting will apply to all search ranges. Additionally, you can do just the opposite by using Tone Lock (wasn't that once a rock band?) mode. In Tone Lock, you will be able to monitor all transmissions EXCEPT those with a tone of, for example, digital 023. (Note: You can also do this in standard channel programming.)

Record: You can flag all transmissions monitored in Search to be recorded via the tape-out jack.

Auto Store: Automatically program a bank with search hits if you desire.

Note: The very first time you set a range for a bank you must set the range through the Menu. After that, you can change the prescribed search range through the keyboard just as you would on any other scanner (or you can do it again in the Menu).

◆ DISPLAY

The large, backlit display on the BC-780 has a number of interesting features:

Two Lines of alpha (16 characters each): One line for Bank tags, Scan List Tags, and Search Range tags; One line for talkgroup and frequency tags. Both text lines will also display Menu items when required. The top alpha line will also display numeric talkgroup IDs.

Signal Strength Meter: six graduated signal strength bars

Frequency, mode, and talkgroup/subaudible characters: This portion of the display shows frequency (in large 7-segment characters) as well as the mode (in icons) and the sub-audible tone or talkgroup ID. Unlike other scanners which will only display a talkgroup number or a frequency in trunking mode, the 780 will show frequency and talkgroup (and your alpha text for the talkgroup can also display). In other words, while in trunking, you see every possible indicator. The talkgroup characters are used to display any subaudible tone that may be active in non-trunk mode.

Trunking repeater activity indicators: Unique to Uniden, these 30 small bars provide a great visual of repeater activity in a trunked system.

Channel/Scan List/Bank Characters: The top left, medium-sized, 7-segment characters can display the active channel number (1-500), or, while in trunking mode, they can display the currently active Scan List and Scan List memory position, or the currently active bank. The user chooses which to display with the Select key.

Trunk Type Indicators: An L (for LTR), E (for Ericsson/EDACS), or an M (Motorola) will display for trunked systems based on the user setting.

Other: The other standard icon indicators such as Bank numbers (1-10), Search, Scan, RMT, etc.

◆ RS-232 INTERFACE

There are a multitude of uses for the RS-232 interface. Unlike most scanners, the BC-780 provides a standard DB-9 serial connection on the back of the radio. A simple serial cable is all you need to connect the 780 to a PC (these cables are available at most every office supply, electronics and computer store for just a few dollars).

Computer Programming: Like many other high-end scanners, you can program the 780 with external software or back-up what you have programmed into software. With 500 channels, 1000 talkgroups, 16 characters of alpha for each, and much more, this is an extremely useful feature.

Computer Control: The 780 is also fully computer-controllable. All aspects of the 780 can be controlled by remote software. Best of all, you can leave the 780 in remote mode and use either software or the keys on the scanner itself! It's fully bi-directional. Under computer control all keys and the VFO on the 780 are operational!

Software from the folks at WinScan will be available for programming and control of the 780 shortly after its release (it runs at speeds up to 19.2kbps). The software will be available from Scanner Master and other dealers.

Cloning: With an adapter and two serial cables you can connect two 780s and clone the programming of one directly to another. Unfortunately you cannot clone with a BC-245, BC-895 or any GRE scanner.

SmartScanner: You can download frequencies, talkgroups, and alpha tags from Uniden's SmartScanner server via a phone line and modem connection.

◆ LTR TRUNKING

We are not very familiar with the operation of this aspect of the BC-780XLT, but you can trunk a Johnson LTR system. You can program IDs and scan them or search for IDs. The operation is slightly different than for Motorola and Ericsson trunking as LTR does not use a control channel but rather a subaudible method for operation.

More next month....

◆ Wrapping Up

After many years of writing the scanner column for *Monitoring Times* I will be stepping down in a few months. If you've been considering sending me material for future columns, I hope you'll do so right away. If I don't get a chance to use it, I'm sure the next editor will. Thanks very much for your support.

Larry Van Horn
larry@grove-ent.com

Canadian VHF/UHF Allocations

In this edition of *Service Search* we feature a spectrum chart of VHF/UHF assignments used in Canada. Many thanks to Industrial Canada.

If you want to search for specific Canadian frequencies visit the Darkwing Duck website at **http://neon.polkaroo.net/~darkwing/tafl/start.html**. There is a search engine on this site that will search the Industry Canada Technical and Administrative Frequency Lists (TAFL) frequency database. Information on frequency assignments of the Department of National Defense or of Canadian security agencies are not included in the TAFL.

26.965-27.405	Citizen Band (channels 1-40, same frequencies as US CB channels)
28.000-29.700	Amateur (10 meters)
29.700-30.005	Mobile/Fixed
30.000-32.000	Commercial and Military
30.005-30.010	Mobile/Space Research/Fixed
30.010-37.500	Mobile/Fixed
37.500-38.250	Mobile/Fixed/Radio Astronomy
38.250-39.986	Mobile/Fixed
39.986-40.020	Mobile/Fixed/Space Research
40.020-40.980	Mobile/Fixed
40.660-40.700	Industrial, Scientific, and Medical (ISM)
40.980-41.015	Mobile/Fixed/Space Research
41.015-50.000	Mobile/Fixed
46.000-47.000	Ministry of Natural Resources
49.000-50.000	Ontario Hydro and Cordless Phones
50.000-54.000	Amateur (6 meters)
54.000-72.000	Television Broadcasting (same standards as US channels)
72.000-73.000	Fixed/Mobile
73.000-74.600	Astronomy
74.600-74.800	Fixed/Mobile
74.800-75.200	Aeronautical Radio Navigation (Marker beacons)
75.200-76.000	Fixed/Mobile
76.000-88.000	Television Broadcasting (same standards as US channels)
88.100-108.000	FM Broadcasting (same standards as US channels)
108.000-117.975	Aeronautical Radio Navigation
117.975-137.000	Aeronautical Mobile (Routed)
137.000-137.025	Mobile-Satellite/Meteorological-Satellite/Space Operations/Space Research
137.025-137.175	Meteorological-Satellite/Space Operations/Mobile-Satellite/Space Research
137.175-137.825	Meteorological-Satellite/Mobile-Satellite/Space Operations/Space Research
137.825-138.000	Meteorological-Satellite/Space Operations/Mobile-Satellite/Space Research
138.000-144.000	Fixed/Land Mobile/Space Research (space-to-earth) (15-kHz channel spacing)
143.565	Government Services
143.625	Government Services
143.715	Government Services
143.730-143.995	Ministry of Transportation
144.000-148.000	Amateur (2 meters)
148.000-149.900	Fixed/Land Mobile/Mobile-Satellite (earth-to-space) (15-kHz channel spacing)
148.655	Fire Interagency
148.945	RCMP
149.680	Canadian Ski Patrol
149.900-150.005	Land Mobile-Satellite (earth-to-space)/Radio Navigation Satellite
150.050-156.025	Mobile/Fixed (15-kHz channel spacing)
153.320	Canadian Ski Patrol
154.070	Fire Frequency Ontario Fire Marshals
154.175	Fire Frequency Ontario Regional Mutual Aid
155.340	RCMP
155.400	RCMP
155.430	RCMP
155.460	RCMP
155.580	RCMP
155.610	RCMP
155.640	RCMP
155.670	RCMP
155.700	RCMP
155.730	RCMP
155.880	RCMP
155.970	RCMP
156.025-157.425	Maritime Mobile (25-kHz channel spacing)
157.175	Canadian Coast Guard (Marine channel)
157.450-160.700	Mobile/Fixed (15-kHz channel spacing)
159.585	Canadian Ski Patrol
159.810-161.565	Railroad (15-kHz channel spacing)
159.975	Canadian Ski Patrol
160.975-161.525	Mobile/Fixed (15-kHz channel spacing)
161.600-162.000	Maritime Mobile (25-kHz channel spacing)
161.650	Canadian Coast Guard (Marine channel)
161.825	Canadian Coast Guard (Marine channel)
161.900	Canadian Coast Guard (Marine channel)
162.000-174.000	Mobile/Fixed
162.045	Canadian Ski Patrol
162.400	Environment Canada-Weather Radio Canada (WX-2)
162.425	Environment Canada-Weather Radio Canada (WX-4)
162.450	Environment Canada-Weather Radio Canada (WX-5)
162.475	Environment Canada-Weather Radio Canada (WX-3)
162.500	Environment Canada-Weather Radio Canada (WX-6)
162.525	Environment Canada-Weather Radio Canada (WX-7)
162.550	Environment Canada-Weather Radio Canada (WX-1)
163.050	Department of Natural Resources
163.560	Canadian Ski Patrol
163.650	Canadian Ski Patrol
164.640	Canadian Ski Patrol
166.215	Canadian Ski Patrol
166.250	Parks Canada
166.980	Canadian Ski Patrol
169.980	Canadian Ski Patrol
173.640	Canadian Ski Patrol
173.760	Canadian Ski Patrol
174.000-216.000	Television Broadcasting (same standards as US channels)
216.000-220.000	Fixed/Land Mobile/Maritime Mobile
220.000-225.000	Amateur
225.000-312.000	Military Aeronautical (Exclusive use of Canadian government)
312.000-315.000	Military Aeronautical (Exclusive use of Canadian government)/ Mobile-Satellite (earth-to-space)
315.000-328.600	Military Aeronautical (Exclusive use of Canadian government)
328.600-335.400	Aeronautical Radio Navigation
335.400-387.000	Military Aeronautical (Exclusive use of Canadian government)
387.000-390.000	Military Aeronautical (Exclusive use of Canadian government)/ Mobile-Satellite (space-to-earth)
390.000-399.900	Military Aeronautical (Exclusive use of Canadian government)
399.900-400.050	Land Mobile Satellite (earth to space)/Radio Navigation Satellite
400.050-400.150	Standard Frequency and Time Signal Satellite (400.100 MHz)
400.150-401.000	Meteorological Aids/Meteorological Satellite (space-to-earth)/ Mobile Satellite (space-to-earth)/Space Research (space-to-earth)/Space Operation (space-to-earth)
401.000-402.000	Meteorological Aids/Space Operations (space-to-earth)/Earth Exploration Satellite (earth-to-space)/Fixed/Mobile except aeronautical mobile
402.000-403.000	Meteorological Aids/Earth Exploration Satellite (earth-to-space)/ Fixed/Mobile except aeronautical mobile
403.000-406.000	Meteorological Aids/Fixed/Mobile except aeronautical mobile
406.000-406.100	Mobile Satellite (earth-to-space)
406.100-410.000	Mobile except aeronautical mobile/Radio Astronomy/Fixed
410.000-414.000	Mobile except aeronautical mobile/Fixed/Space Research (space-to-space)
410.0125	RCMP UHF Dispatch
410.0375	Canada Post Corporation
410.1125	Canada Post Corporation
410.1375	Canada Post Corporation
410.2875	Canada Post Corporation
410.5625	Canada Post Corporation
410.7875	Canada Post Corporation
411.1875	Canada Post Corporation
411.7625	Canada Post Corporation
412.2875	Canada Post Corporation
413.0375	Canada Post Corporation
413.3375	RCMP UHF Dispatch
413.7375	Canada Post Corporation
414.000-415.000	Fixed/Mobile except aeronautical mobile/Space Research (space-to-space)
415.000-419.000	Mobile except aeronautical mobile/Fixed/Space Research (space-to-space)
415.0125	RCMP UHF Dispatch
415.0375	Canada Post Corporation
415.1125	Canada Post Corporation
415.1375	Canada Post Corporation
415.2875	Canada Post Corporation
415.5625	Canada Post Corporation
415.6875	RCMP UHF Dispatch
415.7875	Canada Post Corporation
416.7625	Canada Post Corporation
417.2875	Canada Post Corporation
418.0375	Canada Post Corporation
418.1375	Canada Post Corporation
419.000-420.000	Fixed/Mobile except aeronautical mobile/Space Research (space-to-space)
420.000-430.000	Mobile except aeronautical mobile/Fixed
421.0125-423.100	RCMP National Network (12.5-kHz spacing)
422.1625	Canada Post Corporation
422.9500	Canada Post Corporation
424.0125-428.100	RCMP National Network (12.5-kHz spacing)
427.1625	Canada Post Corporation
427.9500	Canada Post Corporation
430.000-450.000	Radiolocation/Amateur
450.000-455.000	Mobile/Fixed
451.6825	Canada Post Corporation
453.1875	Canada Post Corporation
453.3625	Canada Post Corporation
455.000-456.000	Fixed/Mobile/Mobile Satellite (earth-to-space)
456.000-459.000	Mobile/Fixed
456.0375	RCMP UHF (relays 155.970)
457.525-457.600	Shipboard use
459.000-460.000	Fixed/Mobile/Mobile Satellite (earth-to-space)
460.000-470.000	Mobile/Fixed
460.9625	Canada Post Corporation
462.5625	Canada Family Radio Service
462.5875	Canada Family Radio Service
462.6125	Canada Family Radio Service
462.6375	Canada Family Radio Service
462.6625	Canada Family Radio Service
462.6875	Canada Family Radio Service
462.7125	Canada Family Radio Service
467.5625	Canada Family Radio Service
467.5875	Canada Family Radio Service
467.6125	Canada Family Radio Service
467.6375	Canada Family Radio Service
467.6625	Canada Family Radio Service
467.6875	Canada Family Radio Service
467.7125	Canada Family Radio Service
469.1375	Canada Post Corporation
469.2625	Canada Post Corporation
469.5125	Canada Post Corporation
469.7875	Canada Post Corporation
467.525-467.575	Shipboard use
467.775-467.825	Shipboard use
470.000-608.000	Television Broadcasting (same standards as US channels)
608.000-614.000	Radio Astronomy/Mobile Satellite except aeronautical mobile satellite (earth-to-space)
614.000-806.000	Television Broadcasting (same standards as US channels)
806.000-890.000	Mobile/Fixed
890.000-902.000	Fixed/Mobile except aeronautical mobile/Radiolocation (Government of Canada shipboard radars only)
902.000-928.000	Fixed/Radiolocation (Government of Canada shipboard radars only)/Amateur/Mobile except aeronautical mobile/Industrial, Scientific, and Medical (ISM) [center frequency 915 MHz]
928.000-929.000	Fixed/Mobile except aeronautical mobile/Radiolocation (Government of Canada shipboard radars only)
929.000-932.000	Mobile except aeronautical mobile/Fixed/Radiolocation (Government of Canada shipboard radars only)
932.000-935.000	Fixed/Mobile except aeronautical mobile/Radiolocation (Government of Canada shipboard radars only)
935.000-941.000	Mobile except aeronautical mobile/Fixed/Radiolocation (Government of Canada shipboard radars only)
941.000-942.000	Fixed/Mobile except aeronautical mobile/Radiolocation (Government of Canada shipboard radars only)
942.000-944.000	Fixed/Mobile
944.000-952.000	Mobile/Fixed
952.000-960.000	Fixed/Mobile
960.000-1215.000	Aeronautical Radio Navigation

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DRAKE

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WiNRADiO RECEIVERS		
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Singapore Radio to Close

On October 21, 2000, the following teletype message was broadcast to all ships and stations from 9VG, Singapore Radio:

"With effect from 1st April 2001, SingaporeRadio/9VG will cease radio communication services on all HF (rt/wt)/VHF rt channels. The services to be ceased are radio telegram, radio telexogram, radio telephone calls and radio telex messages. We thank you for supporting and using 9VG services..."

By translating from radio legalese into plain English, we find that RT is radio telephony, or voice mode. WT is wireless telegraphy, teletype and Morse code. HF is high frequency, short wave, which stops at 30 megahertz (MHz), and VHF is very high frequency, which picks up from there. In other words, 9VG is closing just about everything.

In fact, the only service left will be the mediumwave Navtex (NAVigational TEleX) on 518 kilohertz (kHz). Navtex is still required by international maritime conventions, sending important bulletins to automated teleprinters and anyone else who wants to copy their SITOR-B (Simplex Telex Over Radio, mode B). Singapore covers the East and South China Sea, using the single-letter identifier of "C." Broadcasts are at 0020, 0420, 0820, 1220, 1420, and 2020 Coordinated Universal Time (UTC).

The rest of 9VG will become the latest victim of changing times, both in radio and in world shipping. As more government monopolies turn into private telecom giants with billion-dollar investments, they become ever less willing or able to throw money at maritime coastal radio, an unprofitable niche service which is no longer compulsory. This time, it's SingTel, Singapore Telecom, who is pulling the plug. As always, the company recommends that users try their satellite digital modes, which indeed are newer, slicker, sexier – and far more expensive.

Not affected, though, is 9VF. This other Singapore station is currently used by Japan's Kyodo News Service for scrambled and clear faxes of some truly wonderful newspapers from Tokyo. 9VF is heard on 16035 and 17430 kHz, both 60 and 120 lines per minute, and tuned 1.9 kHz lower on most USB radios. 9VF fills some skip zones for powerful JJC, Kyodo's flame-thrower main station in Japan, which is audible here in Los Angeles 24 hours a day.

❖ Croughton Global Stands Down

On October 11, 2000, Croughton Global amazed everyone listening, by standing-down from the whole US Air Force Global High Frequency System (GHFS). The operator calmly announced to the world that his station at a British air base had been proud to serve, but was now signing off forever. He went on to explain that Croughton would still transmit and receive, but that it would no longer be available for calls or patch requests.

Presumably, Croughton was going remote, as part of a plan called SCOPE (System Capable Of Planned Expansion). SCOPE and SCOPE Command move all control to Andrews Air Force Base in Maryland. However, it's not like the Global is going away, or becoming anything other than what it is today. It's just getting better equipment, more automation, and fewer people. It continues to provide great listening on 4724, 6712, 6739, 8992, 10780, 11175, 13200, and 15016 kHz, upper sideband.

Croughton is still on the air. Interestingly enough, its voice call has been heard in exercises and radio checks with Andrews. Its Automatic Link Establishment "address," CRO, is still seen. Callers, though, were advised to try the Global stations at Incirlik, in Turkey, or Thule, in Greenland.

❖ More Air Force Weather

Recently *MT* Assistant Editor Larry Van Horn interviewed Air Force Weather personnel about the current status of the HF regional broadcast system. The network has been pared down considerably since its early years and only Offutt (Elkhorn) and Salina, Puerto Rico, remain open for business. Officials did indicate that Guam (Andersen) occasionally comes up for broadcast.

Larry asked Air Force Air Weather Agency officers if Key West was still part of the system, and they confirmed that it was not.

Right after the November column went to press, the US Air Force Weather Agency added another frequency to the original 13530 kHz RTTY. This is 7784 kHz, a direct simulkey in the HF regional broadcast system. Of course, your exact frequency will depend on how your receiver and software handle RTTY. Shift is 850 hertz, speed is 75 baud. It's widely suspected that both these frequencies originate from the Salinas, Puerto Rico, US Navy communication station.

Several listeners have copied similar RTTY on or around 11119.3 kHz, but its origin is unknown. So far it's been inaudible in California, while the other two come blasting in.

While everyone calls this station "KAWN," this is really something of a misnomer. The KAWN circuit switch moved from Carswell AFB when it closed to Tinker AFB in Oklahoma. According to Air Force personnl this switch will move to Offutt AFB.While KAWN, the former Aviation Weather Network, is still the "weather wire" origination ID for most of the data sets broadcast here, other identifiers are seen. KHNC, Florida, is the Tropical Prediction Center of the National Hurricane Center. KMKC, Kansas City, is for Significant Meteorological advisories (SIGMETs, usually severe thunderstorms). KNGU is the US Navy weather center.

Check the cryptic-appearing headers on data sets to know what's being broadcast. METAR (Aviation Routine Weather), TAF (Terminal Aerodrome Forecast), and SPECI (Special) are airport observations in codes used by pilots.

SMXX plus a 2-digit number identifies a seagoing "Synoptic" observation. If BBXX follows, the data is in Ship Synoptic Code, where a callsign is followed by many standard items in 5-number groups. UMXX is raw instrument data. There's one more weird format, containing the words "OUTPUT FROM," which is apparently raw data from profilers. This is crunched by computer to generate a plot of the weather from the surface to 10 miles/ 16 km above the station.

The complete explanation of these codes runs 500 pages, but I'll post some of it to the column web page at **http://www.ominous-valve.com/uteworld.html**. Good luck decoding this stuff!

Utility World

Utility Logs

Hugh Stegman

ABBREVIATIONS USED IN THIS COLUMN

AFB	Air Force Base
ALE	Automatic Link Establishment
AM	Amplitude Modulation
ARQ	Automatic Repeat Request teleprinting system
AWACS	Airborne Warning And Control System
CANFORCE	Canadian Forces
CW	Continuous Wave (Morse telegraphy)
DEA	Drug Enforcement Agency
DoD	US Department of Defense
DX	Distant Transmitter
EAM	Emergency Action Message
FAX	Radiofacsimile
FEC	Forward Error Correction teleprinting system
FEMA	Federal Emergency Management
FHWA	Federal Highway Administration
GMDSS	Global Maritime Distress and Safety System
ID	Identifier
LDOC	Long Distance Operational Control
MARS	Military Affiliate Radio System
MFA	Ministry of Foreign Affairs
MWARA	Major World Air Route Area
NASA	National Aeronautics and Space Administration
NATO	North Atlantic Treaty Organization
Ops	Operations
PACAF	Pacific Air Force
PacTOR	Packet Teleprinting Over Radio
RAF	Royal Air Force
RSA	Republic of South Africa
RTTY	Radio Teletype
SHARES	Shared Resources
SITOR	Simplex Teleprinting Over Radio
UK	United Kingdom
Unid	Unidentified
US	United States
VOLMET	Aviation Weather observations
WWV	US Time and Frequency Standard Station, Ft. Collins, CO

All transmissions are USB (upper sideband) unless otherwise indicated. All frequencies are in kHz (kilohertz) and all times are UTC (Coordinated Universal Time). "Numbers" stations (encrypted, usually unidentified, broadcasts thought to be intelligence-related) are identified in () with their ENIGMA station designators, as issued by the European Numbers Intelligence Gathering and Monitoring Association.

2187.5 GMDSS Alert Channel, with a genuine Digital Selective Calling (DSC) Distress Relay about a sinking ship, at 1957. (Day Watson-UK)

2680.0 4XZ-Israel Navy (M22), with CW marker and encrypted traffic, at 2224. (Watson-UK)

2851.8 Unid-CW station with "R2U3 DE O9SP," then encrypted traffic in 5-letter groups, with 400-hertz modulation on the note, at 1917. (Watson-UK)

3415.0 ART2-Israeli intelligence (E10), with AM callup at 2230. (Ary Boender-Netherlands)

3840.0 YHF2-Israeli intelligence (E10), with AM callup at 2300. (Boender-Netherlands)

4027.0 Cuban cut number station (M8), with 5-letter groups in CW for 01903 90173 49272, at 0303. (Camillo Castillo-Panama)

4035.0 Cuban "Atencion" station (V2), Spanish speaking female with 5-number groups in AM, interfering with US Army MARS, at 0238. (Tom Sevart-KS)

4207.5 GMDSS Alert Channel, with Urgency traffic at 1957. (Watson-UK)

4331.0 4XZ-Israel Navy (M22), with CW marker at 2224. (Watson-UK) 4XZ with 5-letter code groups, at 2234. (Boender-Netherlands)

4396.3 A7KG-Slovak military, Zilnia, calling FCQR, at 0015. (Boender-Netherlands)

4472.0 Ascot 5050-British Royal Air Force, working Architect (RAF), reporting departure enroute to Cyprus, at 0205. (Ron Perron-MD)

4592.0 Unid-High end of weird, interrupted carrier that sweeps down to 4566, exactly one sweep per second, heard most nights in the US. (Sevart-KS)

4683.8 PBB-Dutch Navy, Den Helder, with RTTY channel bulletins (850/75), in the aeronautical band, at 1545. (Watson-UK)

4730.0 MKL-British Royal Air Force, Scotland, with encrypted CW traffic in 3-figure groups, then weather, at 2000. (Watson-UK)

4797.0 Unid-High end of sweeper going down to 4772 exactly once per second, like 4592, nightly. (Sevart-KS)

4880.0 ULX-Israeli intelligence (E10), with AM callup at 2300. (Boender-Netherlands)

4996.0 RWM-Russian CW standard time signal, creates 4-kHz beat note with WWV, at 1903. (Watson-UK)

5180.0 DoD Cape-US military, Cape Canaveral, FL, working *Liberty Star*, NASA Booster Recovery Vessel, after a shuttle launch at 2225. (Jay Steimel-AR)

5616.0 Gander-MWARA North Atlantic-B, Canada, working Air Force One at 0003. (Perron-MD)

5690.0 US Coast Guard Group Mayport, working Rescue 6003 in a large search, also using 5696, at 0610. (Allan Stern-FL)

5911.0 4XZ-Israeli Navy (M22), with CW marker and 5-letter code groups, at 0633. (Sevart-KS)

6379.0 4XZ-Israeli Navy (M22), with CW marker at 2305 and 2358. (Boender-Netherlands)

6637.0 Teal-US Air Force Reserve "Hurricane Hunter," giving position and ops-normal to Houston Radio, at 0816. (Steimel-AR)

6676.0 Usual VOLMET from Sydney, Australia, but replaced by a scrambled voice at 0702. (Sevart-KS)

6697.0 MKL-British Royal Air Force, working an aircraft whose callsign sounded like "Dagger 88," then working "F-3-Q," probably NATO, at 1605. (Patrice Privat-France)

6739.0 Nesh 01-US military aircraft, telling ground that, "The chair is against the wall," at 1440. (Jeff Haverlah-TX)

6761.0 Steel 63-US Air Force tanker, canceling refueling with unknown aircraft due to weather, at 0006. (Perron-MD)

6826.0 Cuban cut number station (M8), with 5-letter groups in CW, for 75281 81353 49641, at 1203. (Castillo-Panama)

6854.0 Cuban "Atencion" station (V2), Spanish speaking female with 5-number groups in AM, at 0301. (Castillo-Panama)

6866.0 Cuban cut number station (M8), with 5-letter groups in CW, for 37741 69643 84031, at 1202. Same station, different day, cut abruptly at 1204, back up at 1206. (Castillo-Panama)

6912.0 KPA2-Mossad, Israel (E10), with callup at 0119 and 0418. (Mid-Atlantic DXer-MD)

7419.5 WWJ40N-Federal Highway Administration, control for what he called the "Coast Guard Auxiliary and FHWA Net," announcing the net's new time of 0000 Wednesdays, then going to 9930 at 2250. (MADX-MD)

7554.0 Cuban "Atencion" station (V2), Spanish speaking female with 5-number groups in AM, at 0305. (Castillo-Panama)

7646.0 DDH7-Hamburg Meteorological, Germany, with RTTY (400/50) weather codes at 0611. (Sevart-KS)

7668.0 8BY-French Intelligence, Paris (M16), with CW marker "780/487/311," at 2151. (Watson-UK)

7784.0 KAWN-Circuit ID for US Air Force weather network, probably on a US Navy transmitter in FL, with coded weather data in RTTY (850/75), at 0611. (Sevart-KS) KAWN, weather and ship observations in RTTY (850/75), at 0840. (Watson-UK) *[New relay for the Air Force feed, including KAWN, KNHC, and others, simulkeying 13530.–Hugh]*

7889.0 Cuban cut number station (M8), with 5-letter groups in CW, at 1203. (Castillo-Panama)

7909.7 Unid-Ganfuda Oil Company, Libya, with a report on job progress and bad weather, in Sitor-A (ARQ), at 1931. (Watson-UK)

8050.0 FC8FEM-FEMA Region 8, sounding in ALE, at 2149. CIP46-probably Canadian Forces, calling CIP30 in ALE, at 2217. CIS201, calling CIP30 in ALE, at 2223. BLE-unknown, sounding in ALE at 2258. (MADX-MD)

8300.0 New Star Radio Station-Chinese female 4-figure "numbers" (V13), in AM, at 1230 and 1300. (Sevart-KS)

8588.0 Unid-Weirdest noise ever, sounds like a broken video game, transmits continuously from East Asia, parallel on 8703.5, at 1500. (John Maky-AR)

8861.0 Varig 3722, position for Canarias (MWARA South Atlantic-1), at 0756. (Perron-MD)

8894.0 Iberia 3721, working Niamey Control at 1752. (Privat-France)

8971.0 NATO exercise with High Voltage (US control), Eiffel 22 (French military aircraft), Trident 24 (US Navy P-3C), and Octopus 23 (British Royal Navy), at 1520. (Stern-FL & Perron-MD)

8992.0 Chalice Foxtrot-US Air Force AWACS, in a patch to Raymond 24, Tinker AFB, via Cape Radio, at 1530. Teal 68-US Air Force Reserve "Hurricane Hunter," several patches to Miami Monitor at 1708. (Stern-FL)

9005.4 Habitat-US Navy, Whidbey Island, WA, working unid aircraft at 0045. (MADX-MD)

9065.6 AAR4UK-US Army MARS, NC, asking for the SHARES 00-3 exercise frequency, told to contact DLA 303 on channel 2 (14396.5), at 2046. (Perron-MD)

9183.5 SU1-US Federal Bureau of Investigation, Salt Lake City, UT, calling SUP03 in ALE, then into an unknown data mode, at 0037. (MADX-MD)

9240.0 Unid-Very fast CW callup to 9BT, then 5-figure code groups, repeating each, at 1923. (Watson-UK) *[Numbers, but who? -Hugh]*

9261.0 Earthquake 4-Possible US government, working Earthquake 3 in an unknown exercise, at 2248. (Steimel-AR)

10096.0 Reach JHL 3-Transport aircraft under contract to US Air Force Air Mobility Command, working Recife (MWARA South America-2), at 0149. (Perron-MD)

10349.0 KFS-Globe Wireless, Dixon, CA, CW marker with Sitor and new GlobeData bursts, at 0234. (Larry Fields-Pacific High Seas)

10780.0 King One-US Air Force space shuttle range ops, sent by Cape Radio to 7676, at 2144. *Liberty Star*-NASA Booster Recovery Vessel, reporting ready at 2219.(Steimel-AR)

11119.3 KAWN-US Air Force weather, over unknown transmitter, RTTY (810/75) at 0432. (MADX-MD) KAWN, weather in RTTY (850/75), at 1456. (Sevart-KS) *[Location unknown, and might not be a true simulkey of 7784/13530. -Hugh]*

11175.0 NESH 01-US military aircraft, working West Coast (formerly McClellan Global), went to 8992, at 1434. (Haverlah-TX) Andrews, with EAM for "Bravo Force" at 2145 and 2157. (Larry McDermott-CA) Reach JHL 3-Contract transport for US Air Force, working Ascension at 2320. (Stern-FL)

11214.0 Scout 06-US Air Force AWACS, troubleshooting radar in a patch via Trenton Military, Canada, at 2126. (Perron-MD)

11217.0 German Navy 4741, reporting takeoff from Oceana, VA, at 2124. (Perron-MD)

11220.0 PACAF 01-Commander, US Pacific Air Forces, in a patch to PACAF Command Center at 2158. (Perron-MD)

11244.0 Andrews-US Air Force, MD, with a 13-character EAM, "For Region Delta," at 0233. (Haverlah-TX) Sherlock, EAM at 1913. Offutt, Offutt AFB, NE, with test count at 1919. (Steimel-AR)

11282.0 Navy JU 117-US Navy, giving position to San Francisco (MWARA Central/East Pacific-1), at 0219. (Perron-MD)

11300.0 Cairo Radio-MWARA Africa/Indian Ocean-3, Egypt, taking position of French Line 802, at 0101. (Ken Maltz-NY)

11300.1 Tripoli Radio-MWARA AFI-3, Libya, taking position of Speedbird 56, off-frequency and with an audio hum, at 0055. (Maltz-NY)

11318.0 Russian language VOLMET, probably Novosibirsk, at 0140. (Perron-MD)

11384.0 Tokyo Radio, trying to warn a commercial flight away from a volcanic ash cloud, finally had another aircraft relay, at 0748. (Steimel-AR)

13200.0 Offutt-US Air Force, NE, running patch from Starkey 30 to Shocker Control, KS, at 1549. (Sevart-KS)

13356.0 Air Jamaica 011, working Air Jamaica Operations on LDOC, diverting to JFK airport at 2309. (Perron-MD)

13434.0 WWJ40J-Federal Highway Administration net control, working WWJ40D and WWJ40N, then went to 7419.5 at 2240. (MADX-MD)

13530.0 KAWN-Relay of US Air Force weather network, simulkeying 7784, with coded weather data in RTTY (850/75), at 0908. (Watson-UK)

13775.0 Unid-High end of sweeper going down to 13700 exactly once per second, like 4592. (Sevart-KS)

13998.0 KZN508-Sailmail, Rockhill, SC, CW ID after PacTOR-II traffic at 1620. (MADX-MD)

14200.0 "1000"-Unknown station calling "1100" in ALE, at 0837. (Watson-UK)

14396.5 WGY 920-Idaho Emergency Operations Center, with SHARES Coordination Net check-in for exercise 00-3, at 2020. (Perron-MD)

14397.0 Unid-High end of sweeper going down to 14345 exactly once per second, like 4592. (Sevart-KS)

14695.0 4XZ-Israeli Navy, Haifa (M22), CW marker at 1828. (Watson-UK)

14996.0 RWM-Russian CW standard time signal, creates 4-kHz beat with WWV, at 1258. (Watson-UK)

16329.5 Unid-Zaire bank circuit, with ARQ exchange rates and financial news, at 1301. (Hall-RSA)

16412.7 Unid-Zaire bank circuit, possibly Kinshasa, in PacTOR at 1301. (Hall-RSA)

16787.0 Unid-Philippine news in English, Sitor-B at 1618. (Watson-UK)

16789.5 Unid-Philippine news, SITOR-B at 1532. (Sevart-KS)

16793.0 Unid Philippine news, SITOR-A at 1950. (Watson-UK)

17050.0 4XZ-Israeli Navy, Haifa (M22), CW marker at 1402. (Watson-UK)

17069.6 JJC-Kyodo News, Tokyo, with a FAX in Japanese, 60/576, at 0836. (Watson-UK)

17175.2 A9M-Hamala Radio, Bahrain, with CW marker at 1923. (Maltz-NY)

17180.0 RFFME-French Navy, La Regine, with RTTY marker at 1914. (Maltz-NY)

17206.1 IAR-Rome, Italy, with CW marker at 1920. (Maltz-NY)

17211.4 KFS-Globe Wireless, Dixon, CA, with CW ID, Sitor idle, and their new GlobeData mode, at 1613. (Watson-UK)

17408.4 HEC-Globe Wireless, Bern, Switzerland, with CW, SITOR, and GlobeData, at 1622. (Watson-UK)

17994.0 Canforce 80-Canadian Forces C-130, working Trenton Military at 1640. (Perron-MD)

18012.0 Circus Freize-French Forces, Fort de France, working Circus Orange, Dakar, Senegal, at 2021. (Perron-MD)

18212.0 9XK79-Deutsche Welle talkback link, Kigali, Rwanda, with RTTY (400/100) technical paper on electronics and radio, in Spanish, extremely rare to hear this one, at 0845. (Hall-RSA)

18220.0 JMH5-Tokyo Meteorological, with FAX typhoon warnings, at 9714. (Watson-UK)

19131.0 Atlas-US Drug Enforcement Agency, IA, working a flight of three Flint aircraft on drug interdiction, at 1827. Flint 913-DEA aircraft, telling Atlas that he and Flint 418 have left Sundance 400 (Medellin, Colombia) enroute to Sundance 100 (DEA, Bogota), at 2055. (Perron-MD)

20047.9 "S"-Russian Navy, Arkhangelsk, CW single-letter "beacon," at 1130. (Watson-UK)

21974.0 TAD-Turkish MFA, Ankara, with FEC traffic at 1200. (Hall-RSA)

23526.0 S76-Swedish Embassy, Lagos, Nigeria, sounding in ALE at 1321. S78, Tunis, sounding at 1322. (MADX-MD)

24370.0 RFGW-French MFA, Paris, with FEC traffic in French to L9C (Buenos Aires), at 1407. (Watson-UK) P6Z-French MFA, Paris, FEC call to L9C, Buenos Aires, at 1804. (Hall-RSA)

24539.0 Italian MFA, Rome, with ARQ traffic to Ambtela (Tel Aviv, Israel embassy), at 1315. (Watson-UK)

25040.0 RFGW-French MFA, Paris, FEC call to unknown embassy at 1537. RFGW, with long FEC embassy circular at 1738. (Hall-RSA)

25870.0 WFLA-Florida AM station talk show, undelayed program simulcast for traffic reporters in the field, FM at 1915. (Hugh Stegman-CA)

26132.5 ZSC-Globe Wireless, Cape Town, South Africa, working a ship in the GlobeData mode, CW identifier at 0840. (Watson-UK)

26143.0 WCC-Globe Wireless, DE, CW ID in Sitor and GlobeData markers, at 0021. (Stegman-CA)

26370.0 RFGW-French MFA, coded FEC message at 1506. (Hall-RSA)

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More Diplomatic Services on HF

This month we turn to monitoring the Turkish, Italian, Tunisian and Polish ministries of foreign affairs, and their embassies and consulates. Once again, search for these guys soon, as they are getting to be rarer catches these days.

MFA Ankara

Still a frequent user of FEC-A equipment, the Turkish diplomatic service has also equipped a number of its strategic embassies with the 240 baud 8 tone RS-ARQ system from Rohde & Schwarz. This system also uses the 228.7bd/170Hz ALIS system for ALE (automatic link establishment) functions. In most cases, MFA Ankara uses the callsign "TAD" and tends to call embassies by name.

The majority of FEC-A traffic is in plain language Turkish, or is off-line encrypted in 5 letter groups. The RS-ARQ traffic usually consists of files compressed with the popular PKZIP software and therefore sent with the system in 8-bit or "binary" mode. The zipfile headers give a good clue as to the sender, as in these examples:

MUSTnnnn.ZIP
Multi-addressed messages from the MFA
BA-dd-nn.ZIP
Messages number "nn" from Baku sent on day "dd"
AMMAnnnn.ZIP
Message number "nnnn" from Amman to the MFA

RS-ARQ operator chatter is very common with MFA and embassies identifying by location – for example "MOSK DE TAD" on the Moscow to Ankara link.

Here are some common frequencies for the Turkish MFA and its embassies:

4684 4754 5301 6724 8195 10254 10272 10810 10812 11016 11147 11149 11171 12224 12226 13303 13360 13362 13552 13554 13558 13875 13982 14617 14619 14941 14961 14963 15834 15843 15847 15966 16054 16213 16898 16902 16908 16963 17526 18475 18908 18912 18922 18953 18954 18960 18964 19054 19074 21957

Plain-language addressing is relatively simple to decipher, as in the following excerpt to Copenhagen. The MFA is always addressed as "disisleri":

nr : 67 normal 25.05.92 12:05 fm disisleri ck-50
to:
.kope.nhag be.
buyukelcilikleri calisma bolgesinde din gorevlisi ahmet naim sari ile esi ve cocuklarinin mevcut hizmet pasaportlarinin 02.03.1993 tarihine ...

MFA Tunis

With an operation more in common with military tactical networks, the Tunisian diplomatic network is a relatively easy catch, but many of its inner workings remain a mystery.

The majority of traffic is broadcast on the simple SITOR-B FEC system on three main frequencies, often with embassies replying with CW:

8846.4 13941.5 13956.4

Tactical callsigns are used, usually in trigraph form, and they tend to change on a daily basis. Some example callsigns used are "B9F", "G4V", "FGZ", "JDH", and "LBB", although these are curiously, but very distinctively sent like "bbbbbbb99999999fffffff." Operator chit-chat is in French.

Messages appear to be off-line encrypted using 5 letter groups and begin with the string "mnmnmn" preceded by the word "etoile" ("star" in English), the meaning of which is yet unknown.

A number of monitors have recently heard MIL-188-141A ALE on Tunisian frequencies which suggests that the days of the SITOR-B operation may well be numbered.

MFA Warsaw

Using the callsign SNN299, MFA Warsaw remains active largely using the unique POL-ARQ system and sometimes reverting to Baudot RTTY for broadcast messages. It makes use of a number of regular channels, for example 8148 and 11471 kHz, which are marked by a regular "VVV DE SNN299" identification in FSK Morse.

Embassies are addressed by location and can be seen in the headers of "claris" or plain-language messages, as in this example from the MFA to Athens, Berlin, Berne, Brussels and The Hague:

1. ateny - nagorska
2. berlin - gronot
3. berno - szczepkowska
4. bruksela - junosza -kisieelewski
5. haga - kulski

= = =
claris nr:4506 sl: 50 m:warszawa d:23.10.92
do:
---
w zwiazku z zyceniem dsa msw, proszadpodac odwrotnie clarisem ...

Encrypted messages consist of 5 number groups. Most message transfers are in fact automated – the operator at an embassy actually logging in to the MFA computer system over the air, moving to a specific "inbox," and simply retrieving his or her messages from a list of those available.

MFA Warsaw has been heard on the following frequencies above 10 MHz:

10388 10389 10415 10652 10788 10912 10917 11052 11120 11123 11467 11471 12078 12125 12131 12143 12216 12228 13446 13467 13521 13524 13546 13555 13852 13877 13917 13957 13972 13988 13991 14339 14359 14637 14639 14726 14732 14734 14784 14813 14903 14932 15652 15746 15772 15792 15853 16011 16072 16109 16245 16274 16428 17411 17448 18050 18060 18064 18092 18116 18130 18174 18202 19110

MFA Rome

The Italians are now infrequent visitors to HF, having migrated from CW to RTTY to SITOR-A and ARQ-E, finally settling on the 228.7bd and 240bd 8 tone RS-ARQ systems. A 1200bd FSK system is also in use (by the Italian Military, too), but remains undecodable.

Outstations are easy to spot in the headers of messages where their abbreviated names are preceded by "amb" for embassies, "con" for consulates and "min" for the representatives of various ministries. A simple header format also helps pin down the sender and recipient. The following example shows this perfectly where the embassy in Tripoli is relaying a message to Rome on Riyahd's behalf and also copying the message to several other embassies:

zczc
da ambriad
at maeroma
tx ambtrip
tg 743/210797/ord/2.2
cf
pc ambabud/ambkuwa/ambalge/ambamma/ambbeir/ambcair/ambdama ...

In common with most long-standing diplomatic operations, the Italians have a substantial list of channels, with the most success on the following frequencies:

6763.0 6804.7 6811.7 7858.7 8013.0 8033.5 8126.0 8131.7 8180.7 9087.5 9090.5 9090.7 9106.5 9126.7 9130.7 9140.7 9145.0 9150.7 9161.7 9180.0 9187.7 9191.7 9283.0 9296.0 9333.7 10150.0 10339.0 10485.7 10537.7 10547.7 10871.7 10886.1 11035.7 11096.5 11141.5 11276.7 11441.7 11463.0 11479.0 11480.0 12131.7 12150.0 12160.0 12250.0 13378.5 13378.6 13378.7 13381.5 13388.5 13398.5 13425.7 13904.7 13911.7 14534.5 14537.5 14543.7 14546.5 14566.7 14597.7 14668.5 14849.7 15683.5 15801.7 15811.7 15927.7 15937.7 16023.0 16032.0 16056.5 16319.5 16339.5 17422.7 17513.9 18161.5 18191.7 18443.0 18691.5 18694.0 19059.5 20055.5

It is common to see both plain language messages, as well as 5 letter and 5 number group off-line encrypted messages.

Resources at http://www.mindspring.com/~mike.chace/

Italian Diplo	mfatext/Italy.txt
Turkish Diplo	mfatext/Turkey.txt
Tunisian Diplo	mfatext/Tunisia.txt
Polish Diplo	mfatext/Poland.txt

Glenn Hauser
P.O. Box 1684-MT, Enid, OK 73702
wghauser@yahoo.com
www.angelfire.com/ok/worldofradio

The Clandestine Cranny

ASIA

The Falun Dafa Radio broadcasts switching among 12145, 12140 and 12135 at 2200-2300 to avoid Chinese jamming, are coming from the 100 kW transmitter at Kostinbrod, near Sofia, beam 57 degrees, revealed by someone who should know, R. Bulgaria's frequency manager Ivo Ivanov in the *Observer*. It's the first word we have that Bulgaria is actually transmitter site for this; are there non-Bulgarian sites for other FDR frequencies? Does Bulgaria now SW relay any other foreign or clandestine broadcasters?

We hope V. of Tibet, headquartered in Norway, is off WWCR's 15685 for good for the 1212-1300 in Tibetan and Mandarin which at pressetime had moved to 15705 via Kazakhstan, also on 15645 via Tajikistan, say the *Observers*.

Voice of Jammu Kashmir Freedom Movement, precisely measured on 5101.113, had English at 1400-1405, then Urdu to 1432*, says Stig Adolfsson, Sweden, in *SW Bulletin*. It was also a target of the Pele DXpedition to the Big Island of Hawaii: V. of Freedom of Jammu Kashmir, 5101.13v, heard from *1300, with English commentary, not news, at 1402-1407, definitely anti-US/UN and pro-Islamic slant, per Dave Valko; also monitored by Hans Johnson, *Cumbre DX* who theorizes that this comes from API-8, 100 kW unit at Islamabad, which is not in service for R. Pakistan at this hour, but comes up on 4790.3 [for Azad Kashmir Radio] within a minute of 5101 closing at 1432*

AFRICA

Ethiopia continues to be the target of several clandestine broadcasts, mostly via Germany, including one for the Somali-speaking minority, R. Xuriyo, 1630-1700 Tuesday and Friday on 15715 at 140 degrees, per Ivo and Anguel, the Bulgarian *Observers*.

Sudan is another hotspot: Mika Mäkeläinen in Finland reports in *hard-core-dx* an E-mail QSL from V. of Freedom and Renewal, 7000 kHz, after he sent a WAV-only sound file to infosaf@eol.com. But beware: an attachment in the reply had a virus and had to be deleted. Power said to be 10 kW, QTH undisclosed. Schedule every day from 0330-0430 and 1300-1400 UT, except on Friday, when they are on at 0600-0800. Verie signer Fathi A\Elaziz, SAF Secretary for Culture and Information - SAF meaning Sudan Alliance Forces.

The Voice of Sudan, on behalf of the National Democratic Alliance (NDA) against Sudan from its base in Asmara, Eritrea, has been closed down. Since April 2000, the NDA has been increasingly isolated by other opposition groups and was expelled from the Umma Party coalition for its resistance to negotiate with the regime in Khartoum. Reports also indicate that the US government, which has provided the group with at least $20 million in non-military aid, has recently become reluctant to provide the group with additional funding. The Voice of Sudan, which hit the airwaves in 1995 and was relatively easy to listen to around the world on SW, maintained warm relations with its overseas listeners and had a good QSL policy, say Martin Schöch, Nick Grace C., and Simon Davies, in *Clandestine Radio Watch*.

But perhaps it's not gone for good. Martin Schöch got an automated E-mail response from sudanvoice@mail.umma.org : Dear Listener, We apologize for the disruption of the Sudan Voice. It was the voice of freedom, peace and democracy. The station ceased its service due to the political development in the Sub-Saharan Africa, and will resume its service sooner. Sudan voice.

Sudan is the target of a new broadcast via Radio Netherlands relay in Madagascar. Andy Sennitt of *Media Network* reports since Nov 4, there have been weekly tests for the New Sudanese Council of Churches, in collaboration with the Dutch domestic public broadcaster NCRV. Station is called Voice of Hope (VOH), Saturdays 0427-0525 on 12060 and 15320, 335 degrees to East Africa, in English and Sudanese Arabic. Announced address: Plot No. 15, Komi Crescent, Lusira, 338829 Kampala, Uganda. Tel: +256 41 220334. E-mail: hope@africaonline.co.ug

RN also provides Madagascar facilities for V. of the People, breaking the broadcast monopoly of the Mugabe government in Zimbabwe. For B-00 the schedule changed from 7215 to 7120 at 1700-1755, 50 kW 265 according to a listing we found in the HFCC schedule.

After a spell on 7450, National Radio of the Saharan Arab Democratic Republic switched to 7357, despite WYFR, African Beacon, and other neighbors, reported by Noël Green in the UK at 0700-0800, and by Dave Kernick in the UK opening in Spanish at 1700, the rest in Arabic, until 2300, say the Bulgarian *Observers*.

AMEURASIA

It's a tricontinental affair when US-sponsored surrogates for Iraq and Iran add broadcasts to Europe for those countries' diasporas. On VOA *Communications World*, Kim Elliot reported: Present U.S. government policy does not allow VOA to broadcast to western Europe. But RFE/RL has just begun broadcasts to there. In international radio, audiences are sometimes larger among diasporas of the target country than in the target country itself. RFE/RL Persian at 2000-2300 on 7280, 9835; RFE/RL Arabic R. Free Iraq at 2100-2200 on 7150, 9634, 2200-2300 on 7115, 9645. Now Kim wonders when RFE/RL will begin a North American service?

AMERICA

Troubled Colombia keeps this continent active in the clandestine column: after missing for a few weeks, Voz de la Resistencia - Bloque Oriental, was back again on 6261v LSB, at 2155-2230* with very poor signal, even in nearby Cali, says Yimber Gaviria, closing with the usual *Compañeros de la FARC*.

AFGHANISTAN V. of Shari'ah, 7085v, popped on at *1257, heard past 1542 including English at 1530. Always drifting down considerably, and was down to 7082.17 by 1700 (Dave Valko, Pele DXpedition, Hawaii, *hard-core-dx*)

AUSTRALIA Christian Voice, Cox Peninsula has been licensed on 9865, 9875, 13780, 15165, 15185, 17645, 21680 (Lorna Manning, Site Adminlstrator, via Rifat Eusufzai, Bangladesh, *World Of Radio*)

Radio Australia registrations for Darwin, for B00, are: 13605 1100-1230 Chinese; 15425 2130-0000 Indonesian. Both with 250 kW (*Electronic DX Press*)

AUSTRIA English at 1430 from ROI is falr-good on 17855, 13730, not intended for NAm (Joe Hanlon, PA, *DXLD*) Only English to NAm now is 0230-0257* on 7325. Sackville relay 1600-1700 on 17865 only In German (gh)

BANGLADESH Bangladesh Betar, 15520.08, 1240-1258, English news, features, music, several IDs; terribly distorted. Modulation level varying a lot as well. Irregular. As bad as the signals are, I wouldn't be surprlsed if this disappears from SW in the not-too-distant future (Dave Valko, Pele DXpedition, HI, *hard-core-dx*)

BULGARIA Radio Varna in Bulgarian weekly "*Hello Sea*" Sun 2200-0400 Mon on 9955 Varna 100 kW, non-dlr to Eu/ME (*Observer*)

R. Bulgaria *Calling DXers & Radio Amateurs* Fri 2045 & Sat 2245 7200 7500; Sat 0045 & Sun 0345 7400 9400; Sat 1245 15700

*All times UTC; All frequencies kHz; * before hr = sign on, * after hr = sign off; // = parallel programming; + = continuing but not monitored; 2 x freq = 2nd harmonic; B-00=winter season, October 29-March 31; [non] = Broadcast to or for the listed country, but not necessarily originating there; u.o.s. = unless otherwise stated*

17500 (via Rumen Pankov, *BC-DX*)

R. Bulgaria mailbag announced that "even approaching the 21st century Radio Bulgaria's e-mail bul@nationalradio.bg was not reliable and they would like listeners to use the mailing address" (4 Dragan Tsankov Blvd., 1040 Sofia, Bulgaria or P.O. Box 900, 1000 Sofia, Bulgaria). (Jonathan Murphy, Eire, via Mike Barraclough, World DX Club)

CANADA For a photo tour of the Sackville RCI SW transmitter site see http://hawkins.pair.com/rci1.shtml (Andy Sennitt, *DXLD*)

CHNX, 6130, Halifax, reactivated October 25, at 0855 with repeating SW ID, 0900 joining CHNS 960, S9 signal (James A. Godfrey, OH) Good at times here with oldies after 0600 (Walt Salmaniw, BC) Oldies 96 format at 0630; remarkable signal for only 40 watts, but USB usage helps (Noël R. Green, UK, *DX Listening Digest*)

COLOMBIA R. Nueva Juventud, Pasto, Nariño, on 5553.5 heard at 0050-0230 in early November, is a 30-watt pirate testing again after a 5-year silence, playing a tape made in 1981. Nominal frequencies are 5550 and 5565. Will QSL reports to: Sr. Omar Alberto Cabrera, Cra. 1a No. 21-36, Barrio las Mercedes, Pasto, Nariño. Note that other pirates have been heard operating near the Ecuadorian border around this frequency, such as: 5555v La Voz del Valle, Sibundoy, Putumayo. 5555v Ondas del Sur, Sapuyes, Nariño (Rafael O. Rodríguez R., Bogotá, *DX Listening Digest*)

COSTA RICA RFPI's newly registered frequency schedule:
21815 J3E 3 kW 1200-0200 40 degrees
7480 10A3 30 kW 0000-0800 350
15065 10A3 10 kW 2000-0200 340
6970* 10A3 10 kW 0200-1100 10
5920* J3E 3 kW 0230-1100 150
* Alternate frequency
(Joe Bernard, RFPI, Oct 25, DX Listening Digest)

DOMINICAN REPUBLIC Radio Villa, 4960.2, Santo Domingo, 0034-0045, Back on the air, canned ID at 0042 (Mark Veldhuis, Netherlands, *hard-core-dx*)

DOMINICAN REPUBLIC On 4410.2, a religious station thought at first to be Peruvian turned out to be 3rd harmonic of 1470, La Voz de la Alabanza, San Francisco de Macoris, at 0207-0417 (Mark Mohrmann Coventry, VT, USA, Oct 25, DX Listening Digest) At 0826-0840 mix of tropical and pop music (Don Moore, MI)

ECUADOR HCJB's equatorial location and vertical incidence lazy-H antennas for 3 and 6 MHz are ideal for tests of digital shortwave, which were scheduled for December on behalf of Digital Radio Mondiale, monitored at three locations in Ecuador and in Bonaire (Charles Jacobson, Director of Engineering, HCJB via Allen Graham)

Without explanation, *Ham Radio Today* reruns appeared not only on UT Thursdays at 0130 and 0430, but also immediately following *DX Partyline* UT Sundays 0200 and 0500 in early November (gh)

Don't you believe *PWBR* 2001 that HCJB will cease broadcasting English and Spanish to the Americas in 2001. HCJB has purchased 400 acres on the coast near Salinas at Santa Elena, for a potential replacement transmitter site. The federal government has turned over to the local governments of Quito (and Guayaquil which also needs a new airport) responsibility for building a new airport. There are economic concerns whether it can be built. HCJB is being pro-active in planning for this possibility. It has a commitment to maintain English, Spanish and Quichua language broadcasts, and other languages are under evaluation. There could be some interruption in service while the move is being made. One team including Allen Graham recommends that at least one antenna be built to serve Europe from the new site [contrary to previous plans]. It is unknown when airport construction will begin, and HCJB will not make a move until it sees dirt being turned at the new airport site (Allen Graham, HCJB *DX Partyline*)

FINLAND YLE R. Finland, English to NAm this winter resumed morning half-hours at 1330 on 17660, 15400; also UT Sun only 0130-0200 (including Latin) on 9655, 12035 (gh)

Scandinavian Weekend Radio's power is 50 watts into half-wave dipole antenna 20 metres high on the ground. First Saturday in November we had a special NAm test at 290 degrees for 6 hours (22-04 UT), and we got correct reception report from New York, so 50 watts in shortwave can be heard quite far. A special broadcast is authorized for Dec 25. We, former pirates, will apply for a permanent license as soon as next set of licenses become available from the Finnish government. See http://www.swradio.net (Ville-Veikko Haikarainen, SWR via Mike Terry, BDXC-UK)

GREECE VOG from monitoring, found some of its English: News Mon-Fri 0300-0306 on 7450 5895 7375 9420; Mon-Fri 0610-0617 on 9420 15630 7475 17520; every day 1945-1955 on 7475 9375. *Hellenes Around the World* Sat 1700-1800 on 9420 15630; *It's All Greek to Me* Sun 1903-2000 9420 7450 17705 17565; repeat Sun 2203-2250 on 15650 9420 (John Babbis, Silver Spring MD, *DXLD*)

GUATEMALA About LV de Atitlán, which I visited last winter: Yes, they had been active on 1490. I heard them myself on a few trips to that part of Guatemala. The transmitter is actually still in place in the studio. It could be up and running as fast as someone could put the tower back together. It's in sections inside their building. Ditto the SW xmtr for 2390. FM on 103.5 is now broadcasting from Sololá on the other side of Lake Atitlán which they told me they did so they can be up higher and get good coverage of the whole lake (Chuck Hutton, *DXLD*)

GUIANA FRENCH It took about two months for the Montsinéry relay station to get back on the air following the September fire (unlike Bonaire in less than one week) (gh) RFI Spanish had resumed by Nov 7 at 1800-1830 and 2100-2130 on 17630, 21645, but no longer at 1400. I really missed their broadcasts. Too bad they refuse to beam English to us, but for listeners who understand Spanish, RFI is a real treat (Marty Delfín, San Juan, Puerto Rico, *DXLD*)

HONDURAS Radio Litoral varied up from nominal 4830 to 4832.1, and sign on varies as early as 1200; one day from *1219 (Hans Johnson, Hawaii, *Cumbre DX*)

INDONESIA The station on 3395 is nicknamed RRI Bandar Lampung but its official name is still RRI Tanjungkarang (Juichi Yamada, Japan, *Jembatan DX*)

INTERNATIONAL VACUUM *World Of Radio* on World Radio Network: To NAm, Saturday 1500 UT. To Europe, Africa, Asia/Pacific, Saturday 0900 UT.

IRAN New service on VOIRI schedule is "Ebri," perhaps meaning Hebrew? No, monitored in English as "Radio Shalom," 1900-1927 on 7175, 7255. Another "Ebri" broadcast is scheduled at 0430-0457 on 9830, 11985. VOIRI's unique 15084 channel has Persian most of the time: 0000-0627, 0730-1157, 1300-2357.
English:
0030-0127 6065 6135 9022
1100-1227 15185 15385 15585 21470 21730
1530-1627 7115 9635 11775
1930-2027 6110 7215 9022
2130-2227 9780 11740
(*Observer*, Bulgaria)

IRAQ Daily sample monitoring of 11785v 11787 9755 & 9717 over 21 days confirms improving audio quality of the domestic and external Arabic output, whilst foreign service via R. Iraq Int'l seems exceptionally bad, particularly on European languages. Beware on 11785 of co-channel Indonesia, Egypt and Sa'udi Arabia, now here with Holy Koran between 1500-1800 // 13690 15205 (Ray Merrall, UK, DSWCI *World News* via Noël Green)

Mother of All Battles Radio in Arabic 1700-2000 on 9755 and 11785v kHz with ID *"Idha'at umm al-ma'arik, idha'atu kul al-arab"*. (R. Petraitis, Lithuania, *Clandestine Radio Watch*)

ISRAËL IBA planned to replace 11605 with 6280 for English at 0500-0515 and 2000-2025 from Dec 15 to Feb 28 (via George Poppin, CA) Why go to a 48-meter frequency when we are enjoying high MUF levels? I think 9 and 11 MHz would work well as it is. I am very puzzled that stations are not taking advantage of the current peak of the solar cycle and are not using frequencies in 13, 16 or even 11 meters (incredible that so few stations—DW and France are the only ones—even bother to use 11 meters this season) (Joe Hanlon, PA, *DXLD*)

JORDAN New schedule of Radio Jordan in English: 1100-1530 on 11690 to Eu; 1530-1730 on 17680 to NAm (*Observer*, Bulgaria) 17680 can come in well depending on level of co-channel Chile; includes news on the hour, lots of music, some interview shows. News in English at 1700 can be better than Israël English at same time nearby on 17545. If Jordan would get a clear frequency it could really outshine Israël. Jordan's mailbag *Friends Abroad* is on the web schedule Sat 1530 (gh)

KIRIBATI Re 9810: According to Radio NZ International's Technical Manager Adrian Sainsbury, just home from Kiribati, there are no plans at present to repair the shortwave transmitter, because the Chief Engineer is currently on long term sick leave. While in Kiribati, Adrian helped repair shortwave and satellite receiving antennas (via Barry Hartley, RNZ via B. Clark, *Cumbre DX*)

LITHUANIA R Vilnius foreign service to NAm via Jülich, Germany has been 0000-0030 in Lith, 0030-0100 in English on 6120. From 1 Jan 2001, these will be moved to the Sitkunai center in Lithuania. Starting 20 Nov, regular tests will be made with the new NAm antenna at Sitkunai from around 2300 to 0100 on 6000, or 9735 with 100 kW. The final frequency will depend on the test results (Bernd Trutenau, Lithuania, *BC-DX*)

MALTA [non] Updated B-00 English schedule of Voice of Mediterranean via Rome 100 kW, non-dir:
0700-0730 Mon-Sat in English on NF 6010, instead of 5995/7150
0900-1000 Sun only in English on 11770
(*Observer*, Bulgaria)

MÉXICO XERMX started testing 11770 in Oct, replacing 5985, and still on 9705. Reports wanted to: rmi@eudoramail.com (Iván López Alegría, Nayarit DX Club via *DXLD*) Certainly better than 5985 most of the day at 1300-1700, 1900-0600, tho some adjacent QRM from 11765, 11775. No doubt still the old 10 kW unit, whilst the 100 kW they have had for years but never activated continues to gather dust (gh) I remember RMI azimuth map in 1975 with 11770 towards Buenos Aires, right angle null toward Europe (Wolfgang Büschel, *BC-DX*)

NEPAL Radio Nepal plans to set up another SW transmitter for western part of country at Surket (ABU via *EDXP*)

NEW ZEALAND Video buzz from here on 45.25 MHz is best around 2030 UT when F2 MUF permits. Can see NZ TV using a multi-standard VCR - Samsung SV-5000W (Bill Hepburn, Toronto, Ont.)

NICARAGUA In mid-Oct I was waiting on 5770-USB for R. Miskut to sign on. This happened at *1202 with abbreviated NA, two separate florid sign-on announcements with full details to marimba background, program summary, 1206 pro-sounding world news with alternating M&W casters, perhaps from a network, including at 1211 as signal peaked a brief English actuality about the LA transit strike; gradual fade out by 1225, thanks to our later sunrises (gh, OK)

PAKISTAN R. Pakistan World Service 0800-1105 (includes English news at 1100) moved 17525 to 17520 to avoid Russia and 21460 to 21465 to avoid Iran (Noël R. Green, UK, *DX Listening Digest*)

PAKISTAN Radio Pakistan's B00 sked: http://www.radio.gov.pk/exter.htm (Paul Ormandy, New Zealand, *hard-core-dx*) Wherein we find this new undated entry: "Assami Service (English) 0045-0115 9780, 11650, 15455 to: Assam" I hypothesize R Pak were in such a hurry to get the Assami service on the air they decided to start it in English before they have anyone to do it in Assamese; Or could it be like RAI broadcasting the Maltese service in Ital-

ian, Habana the Creole service in French? (gh)

PALAU In Oct, KHBN was missing from its scheduled frequencies; then in mid-November we heard it around 1330 in English on 9965. Previous schedule via George Jacobs indicated four transmitters in use (gh) Apparently has been reduced: Revised 10/16/00: China Transmitter 1030-1500 9965 318 China; South East Asia Transmitter 0900-1100 15725 270 Indonesia. Reply from station indicates most time is being leased to a Hong Kong church but High Adventure will retain license (Paul Ormandy, *hard-core-dx*)

PERÚ R. Celendín, 4655 at 2355-0230 is the new station here, announcing SW schedule of 2100-0300. Manager-owner is Manuel Infante, address is Jirón Galvez y Grau, en la esquina de la Distribuidora Pilsen Callao, Celendín, Departamento de Cajamarca (Rafael O. Rodríguez R., Bogotá, Colombia, *DX Listening Digest*)

Station reported on 4655 as "Cóndor Radiante, La Radio" is R. Celendín, heard at 2300-2330 with llanera music, IDs (Michael Schnitzer, Germany) Also at 0010 huayno music and comunicados, IDs (Jay Novello, NC) and 0124 folk music, greeting its engineer.

R. Acobamba, 5633.0 at 1104-1215, sign-on, huayno music.

The "R. Estéreo" on 4389.2 last month is actually R. Imperio, Chiclayo, heard between 0100 and 0300 (Pedro F. Arrunátegui, Perú, *Chasqui DX*)

Radio San Antonio, Callalli, 3375.1, was heard at 0115-0140* with good signal during my stay in Chincheros, Perú. Huaynos and comunicados until 0130, then signoff 0140* to return at 1100 (Takayuki Inoue Nózaki, *Relámpago DX Logging*)

Harmonic: 13564v, Radio Ondas del Pacífico, Ayabaca, (6782 x 2), 2305-0215+, good with Peruvian Folk music (Yimber Gaviria, Colombia, *DXLD*) 13565.2 at 0110-0300, strong second harmonic, heard better than fundamental 6782.6, with cumbia music hour (Rafael O. Rodríguez R., Bogotá, Colombia, *DX Listening Digest*)

PHILIPPINES For B-00, FEBC Manila is listed for only one English service, 1200-1230 on 15110 to SEAs. English from FEBA Seychelles has been increased (Bob Padula, *EDXP*)

Radio Philippines: 0230-0330 on 11805, 15120, 15270 kHz. Also 1730-1930 on 11730, 11890, 15190 (Dan Ferguson, IBB, *swl@qth.net*)

POLAND R. Polonia in English:
1300-1359 11820, 9525, 7270, 6095
1800-1859 7285, 5995
2030-2129 9540, 7265, 7185, 6030
(via Andreas Volk, *BC-DX*)

RUSSIA R. Mix Master, 4940, 1048-1057, Russian rock/pop mx, canned ads or promos by alternating M and W. Good signal with very slight QRM from weak co-channel AIR Guwahati playing Indian mx. Heard daily (Dave Valko, Pele DXpedition, HI, *hard-core-dx*)

SOMALIA Radio Hargeisa, 7530, just a carrier at 0400 and 1500, but by 1630 they have usually faded in enough to give about a half hour's worth of audio. USB+carrier, Somali music, 1700 same fanfare before the news that I have previously noted. Fading around this time, not sure of exact sign off (Hans Johnson, HI, *Cumbre DX*) R. Hargeisa, 7530, 1700-1900* poor signal though clear in USB. Plenty of talk and some indigenous music. Have been trying to hear this for over 20 years! (Paul Ormandy, Waianakarua, New Zealand DXpediton via *Cumbre DX*)

QSLing R. Hargeysa: Try via the Konsularische Vertretung Republic of Somaliland, Zedernweg 6, 50127 Bergheim, Germany. Include tape recording 2 IRCs or two US$. The guy responsible for this is a ham, so they know what we are talking about (Harald Kuhl, Germany) Real Audio file is easier and quicker. (Osman Omar, Radio Somaliland Head Office, Ottawa, Canada radiosomaliland@yahoo.com (via Ormandy, *hard-core-dx*) Look under **http://www.radiosomaliland.com** E-mail is radio@radiosomaliland.com (Martin Elbe, *hard-core-dx*)

SWITZERLAND In addition to the **http://www.swissinfo.org** site, SRI's rebroadcasting site at **http://rebroadcast.sri.ch** has packages in Spanish, German and English. The English product is called *Swiss Mix*, and I have been responsible for it for a number of years now. This was originally intended for overseas producers and stations for rebroadcasting purposes, and was available until now only on cassette. However, is now also open to the general public through the rebroadcasting site. *Swiss Mix* is a cross-section of mainstream SRI English Service output in a "mix" covering a wide range of fields. I also write the *"Letter From Switzerland,"* a personal look at life in Switzerland. This is a long-standing feature of *Swiss Mix*, and only available there (Bob Zanotti, Switzerland, *DXLD*)

[non] How SRI has disposed of its SW transmitters: 2 x 250 kW at Beromünster and 2 x 250 kW at Schwarzenburg were sold to R. P'yongyang, North Korea. 2 x 250 kW and 1 x 100 kW at Schwarzenburg sold to AWR Italy. Demolished 250 kW: 1 at Sarnen, 1 at Schwarzenburg, 2 at Lenk. Still in service is only 1 x 500 kW at Sottens (Ulrich Wegmüller, SRI, via Wolfgang Büschel)

However, one of the 250 kW to be demolished is now reportedly being sold to WMLK in Pennsylvania (Büschel) The transmitter has arrived in the United States, but will not be put on the air until March or April. WMLK has to get more electric power delivered to the transmitting site. You can't just plug a 250 kilowatt transmitter into the mains (Kim Elliott, VOA *Communications World* via John Norfolk)

TATARSTAN Winter schedule of Voice of Tatarstan (Tatarstan Awazy), in Tatar and Russian:

0500-0600	15105	250 kW	065 deg
0700-0800	15105	200 kW	117 deg
0900-1000	11915	200 kW	310 deg

All transmissions go out through the Samara site. For comments on program contents, write to: ul. Gorkovo 15, Kazan, Tatarstan 420015, Russia. Send your reception reports to: P. O. Box 134, Kazan, Tatarstan 420136, Russia. As a return postage, please include: 2 IRC or $1. Taped reports from outside Russia may be accepted only if sent by registered mail, or if there is a customs label on the envelope. Otherwise, your letter may be returned or thrown away by the customs at this side of the border. Info received from Ildus Ibatullin, the station's QSL manager, via Dmitri Mezin, Kazan, Russia. ("DM & ZM", *hard-core-dx*)

THAILAND Thai Meteorological Station, 8742.98, at 1346, English ID w/freqs, IS to 1350, then weather in Thai. So strong, I had to back off the RF gain! Heard between 1000-1030 the next day with weather in English at 1033 (Dave Valko, Pele DXpedition, HI, *hard-core-dx*)

TUNISIA Several European evening reports of ERTT on 2495 are explained this way: two Sfax 500 kW SW transmitters producing a difference product 9720 minus 7225 equals 2495 (Roberto Scaglione, BCL Sicilia Club)

TURKEY B-OO VOT in English, toward UK and NAm all from Emirler site: 1330-1430 17815; 1930-2030 on 6140-SSB and 7240; 2300-2400 6020, 9655; 0400-0500 6020 until Feb 17, 9655 from Feb 18 (TRT)

UKRAINE RUI in English: 2200 5905 9560 11770; 0100 7420 9610 9810 11840; 0400 9610 9810; 1200 15520 (via Alexander Yegorov, via Rachel Baughn)

RUI English hours to NAm: why bother? Co-channel VOR on 9810 in Spanish to SAm, and RFI Spanish splash from 9805, at 0100. Next at 0400, 9810 is still co-channel to VOR but Ukraine may sneak in. Bigger problem is 9805 R. Martí with its shadow jammer (Bob Thomas, CT, *DXLD*) Fair at 1200 on 15520 (Brian Alexander, Joe Hanlon, PA, *DXLD*)

UNITED NATIONS [non] UN Radio, English M-F 1730-1745 received well on 17735, 15495 (Chris Hambly, Australia, *World Of Radio*)

U S A From Nov 13, WGTG is under new management and changed to WWFV, World Wide Freedoms Voice, cheap airtime rates for all at $25 per hour. See **http://www.wwfv.org** / **http://www.wwfv.net** David Frantz will be staying on with WWFV for the time being during the transition to the new management/owners (*rec.radio.shortwave* via Mike Terry, BDXC-UK)

WBCQ-2, new daytime frequency 17495, started testing in Nov; Hoped to get fulltime client for 1300-2200 UT, such as BBC, WRN or RN. Using bi-directional rhombic antenna serving both Europe and North America. WBCQ also plans to get a satellite dish permitting uplinking of high-quality internet stream (it may be a long time before fibre-optic lines reach this remote location). On 9335-CUSB, new time for *World Of Radio* repeat, UT Sundays 0030; also to be on 17495. In the spring we shall be constructing a new antenna system to use with our three operating transmitters (Allan H. Weiner, WBCQ Central)

B-00 FCC private SW schedule is available at **http://www.fcc.gov/ib/pnd/neg/hf_web/hfff0w00.txt** {Jim Moats, OH}

WRMI: 0200-1000 7385 317 degrees, 1000-1300 9955 160, 1300-2300 15725 317, 2300-0300 9955 160.

WMLK has three additional frequencies registered, one shared with KJES, another actually in-band, in preparation for expanded operations. 0400-0900 7555 and/or 9465; 0800-1000 9475; 1700-2200 15265. [see SWITZERLAND]

WWBS Macon GA: still only 4 hours per week, 11900 SSB at 0000-0200 Sat & Sun 50 kW 30 degrees (from FCC schedule)

Art Bell's defamation lawsuit against Ted Gunderson, David Hinkson and WWCR filed May 15, 1998, in Davidson County, TN, has reached a confidential settlement releasing WWCR and Mr. Gunderson following a retraction and apology by Mr. Gunderson and the ownership of WWCR for the statements made by Mr. Hinkson (Art Bell website via M. Harrison, rec.radio.amateur.misc Oct 21 via John Norfolk) That's that. So WWCR had to pay Bell off besides apologizing? (gh)

World Of Radio additional time on WWCR: Sun 2000 on 12160. Realmedia files now available early UT Thursdays at WOR website; MP3 files available from **http://www.wrn.org/ondemand/worldofradio.html**

WJFP SW relay, 26470 FM, around 1330 had a long string of hard-sell *commercials* for "supporters" of the station. The originator on 91.1 holds a non-commercial license, but you'd never know it (gh)

URUGUAY R. Universo, Castillos, Dpto. de Rocha, plans a new 300-watt SW outlet on 6055 this year at 1600-0500, first simulcasting MW CW148, then with separate programming including a DX show (Horacio A. Nigro Montevideo, *DXLD*)

VIETNAM Whilst VOV is now installing itself in new luxurious office accommodation, and making use of hi-tech audio production facilities, it still cannot organise itself to produce a meaningful, topical schedule for its SW services, let alone designate the actual relays used. Its Web site is a disgrace, being a hotchpotch of ambiguous entries dating back to over 12 months; the B-00 printed schedule for English transmissions is incomprehensible, showing such idiotic freqs as "9295" and channels which were last used over a year ago! Can't anyone there proof-read their material before they send it out? Do they REALLY want listeners? !! (Bob Padula, Australia, *Electronic DX Press*)

[non] V. of Vietnam NAm service half hour English: 0100 and 0230 on 9525; 0330 on 9795 (Bob Thomas, CT) So the RCI relay moved from 9695 to 9525. On one occasion a very wrong feed came up at 0100 instead: Kol Israël in Hebrew! Back to Vietnam just in time to hear that "Marxism is correct and invincible," a Lenin lesson. Gee, thanks, Canada, just what the world needs (gh) Vietnam continues to jam the heck out of Radio Free Asia in Vietnamese but ignores the exile programs on KHWR, Que Huong and Radio Free Vietnam in the clear (Hans Johnson, HI, *Cumbre DX*)

HARMONICS A logbook from the egroups list is updated weekly at: **http://www.dxradio.demon.co.uk/harmonics.html** (Mark Hattam)

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

Global Forum

Broadcast Logs

Gayle Van Horn
gayle@webworkz.com

0018 UTC on 6185
MEXICO: Radio Educación. Spanish. Mexican baladas music to station ID. Male/female announcer duo with program segments of national interest. (Harold Frodge, Midland, MI)

0039 UTC on 4845
GUATEMALA: Radio Kekchi. Musical variety program from campesino to Spanish rock. Local ads and public service announcements to station identification segment "saludos de aviso Radio Kekchi...4845 en Guatemala Centroamericana." (Frodge, MI)

0055 UTC on 5875
UK: BBC World Service. Spanish service including musical bridge, Latin American news segment to Big Ben chimes. (William Mc Guire, Cheverly, MD) **BBC via Canada** noted 1146 on 6175. P. Nelson, Lansing, MI)

0100 UTC on 9905
FRENCH GUIANA: Swiss Radio Int'l relay. Swiss folk music segment to *Postcard From Switzerland* travelogue program. Excellent signal. (Frodge, MI; Sue Wilden, Noblesville, IN)

0154 UTC on 15275
RWANDA: Deutsche Welle relay. German radio drama. (Wilden, IN) **Deutsche Welle** audible 0300, 9640 with interval signal, ID and report on Yugoslavia. (McGuire, MD)

0229 UTC on 15048
COSTA RICA: RFPI. Anniversary phone in show caller noted he arrived with one bag of luggage, fell in love with the people, culture and country. Program finished up with Beatles' *Hard Days Night* at 0300. (David Norrie, Auckland, NZ/*HCDX*)

0305 UTC on 5770
NICARAGUA: Radio Miskut. Heard on late from tune-in at 0305 until last check at 0500. Which sounded like a soccer game, mentions of Nicaragua at 0418 amid static crashes, made for difficult listening. A good DX evening. (Walter Salmaniw, Victoria, BC, Canada/*HCDX*)

0600 UTC on 6045.5
PERU: Radio Santa Rosa. Spanish. Tentative logging for religious programming, fading with SINPO=23222. Peru's **Radio Tachna** 9504.6, 2230-2300 with news magazine show, musical jingles and commercials. Station ID as "transmite Radio Tacna." Noted signal better in LSB mode due to excessive interferences from Brazil's Radio Record. (Michael Schnitzer, Hassfurt, Germany/*HCDX*) Tentative on Peru's Radio Superior 5300, 1112 with huaynos and trumpets, fading by 1115. (Norrie, NZ/*HCDX*)

0615 UTC on 7260
VANUATU: Radio Vanuatu. English/Bislama service with religious programming to 0625. Address quote for bible society followed by instrumental music and interval signal of drums and chirping yellow bird. Station ID and Bislama newscast. Phone-in call. signal decreasing after 0955, almost inaudible by 0700. (Schnitzer, Germany; Jarmo Patala, Hyvinkaa, Finland/*HCDX*) Good signal in Pidgin service 0557, 720. (Norrie, NZ/*HCDX*)

0955 UTC on 4880.85
PERU: Radio Comas. Noted station with instrumental version of Peruvian anthem to canned sign-on identification at 0957. Brief "live" identification to musical bridge, chat and Peruvian campesino tunes. Lucky to get the ID as the modulation level is very low. (Dave Valko, PA, *Cumbre DX*)

1044 UTC on 24170
MONGOLIA: Voice of Mongolia. Noted on harmonic of 12085 with female's English service. *Letterbox* program segment to ID "Voice of Mongolia" noting weak signal and deep fades. Signal on 12085 had equal strengths. (Veldhuis, NLD/*HCDX*)

1436 UTC on 4620
CHINA: Neimengu PBS. Chinese. Westernized music segments to 1500, followed by Chinese pops, talk and possible news briefs. China's **Haixia PBS** -Voice of the Strait audible 4900 // 5050 at 1528. (Zacharias Z. Liangas, Thessoliniki, Greece/*HCDX*) **China Radio Int'l** relay via Spain in Chinese. Station ID, national and world news. (McGuire., MD) **CHR 2 Beijing** 7200, 2058 with interval signal and ID noted as "Zhongyang Renmin Guanpo Dientai," followed by Chinese national anthem. (Karl van Rooy, Netherlands/*HCDX*)

1507 UTC on 5005
NEPAL: Radio Nepal. Regional Asian music and English text from male announcer. Low modulation signal quality. (Liangas, GRC/*HCDX*)

1622 UTC on 12172
USA: WGTG. Ads for Joe Genteel Chrysler-Plymouth (Chicago area) and Soil-Tek composting toilets. Station ID at 1629 as, "this is GTN, the Genesis Communications Radio Network"; 1630 public service announcements for anti-gun control.(Frodge, MI)

1803 UTC on 3240
SWAZILAND: Trans World Radio. Noted with a radio drama segment in Ndebele language, per ILG Radio website. A-capella songs at 1818, nice signal, SINPO 34343, weaker by 24333. (Veldhuis, NLD/*HCDX*)

1850 UTC on 3316
SIERRA LEONE: SLBC. News segment item on continuing Israeli-Palestianian conflicts. Fair-to-good signal quality to 1950. (Liangas, GRC/HCDX)

1705 UTC on 12579
DIEGO GARCIA: Music program to *US Report* program to "AFN" identification. Moderate signal with Morse-code interference, SIO=222. (Daniele Canonica, Muggio, Switzerland)

2015 UTC on 4976
UGANDA: Radio Uganda. Program on religious themes including segment on analyzing dreams. Signal noted S-9 quality. (Liangas, GRC/*HCDX*

2053 UTC on 15184
EQUATORIAL GUINEA: Radio Africa. English sermons by male announcer interspersed with religious music. Bells and short hymn signaling the top of the hour and the beginning of the *Calvary Radio Hour* at 2100. Good signal and fair audio, hindered by somewhat stronger unid on 15180. (Mark Fine, Remington, VA) **Radio Nacional/Radic Malabo** 5003.4, 2109-2130 with Spanish service text on economics. Bata mentioned often to "Radio Malabo" ID 2129. (Veldhuis, NLD/*HCDX*)

2103 UTC on 9725
JAPAN: Radio Japan. *Asian News* program at tune-in to identification and frequency quote at 2106. (David Ross, Hamilton, Ontario, Canada)

2200 UTC on 9705.6
NIGER: La Voix du Sahel. French. Pop music tunes to listener phone calls and station identification. SINPO=34333. Unusual that // 5020 was silent for evening broadcast. (Eric Bergmann, Ansbach, Germany/*HCDX*)

2218 UTC on 10940
SICILY: AFN/AFRTS. R&B music to DJ's "it's 20 minutes past the hour and this is *Morning Show.*"Chit chat from Doug, Wild Bill and Brenda noting gasoline is $1.62 in Okinawa (same as Detroit!) Plus *Military News* segment. Public service announcements to *Military History* spot. Signal noted very weak at 2303 recheck. (Frodge, MI)

2246 UTC on 9737.45
PARAGUAY: Radio Nacional. Phone interview to commercials, one to tune of Mungo Jerry's *In the Summertime*, one for Rafaelo's. Heterodyne interferences noted, 1.8 kHz filter knocks most of it out. (Frodge, MI)

2304 UTC on 6458.5
PUERTO RICO: AFN/AFRTS. News and sports segment to public service announcements. Feature segments of *Earth & Sky* to *CBS Health Watch*. Eric Erickson with AFRTS news at 2311; // 10940.5 inaudible as is 12589.5 Puerto Rico and 12579 Diego Garcia. (Frodge, MI)

2300 UTC on 9690
ROMANIA: Radio Romania Int'l. English service to 2359, audio only on 9690 as fair-good quality. Parallel frequencies usually heard only on a seasonal occurrence at my location. (Lee Silvi, Mentor, OH)

Thanks to our contributors – Have you sent in YOUR logs? Send to Gayle Van Horn, c/o Monitoring Times (or e-mail gayle@webworkz.com)
English broadcast unless otherwise noted.

Global Forum

The QSL Report

Gayle Van Horn
gayle@webworkz.com

Latin Websites and More

ANGUILLA
Caribbean Beacon <http://www.dgenescott.com/homepage.htm>
ANTIGUA
BBC Relay <http://www.bbc.co.uk/worldservice/index_stat.html>
Deutsche Welle Relay <http://www.dwelle.de/english/Welcome.html>
Radio Vlaanderen Int'l Relay <http://www.rvi.be/>
COLOMBIA
Caracol Calambia <http://www.caracol.com.co>
RCN/Radio Cadena Nacional <http://rcn.com.co>
Radio Difusora Nacional <http://inravision.com/co/radiodifusora/onda>
Caracol Estero <http://www.coracolestereo.com/>
COSTA RICA
Faro del Caribe <http://www.crista.net/faro/faro/html>
Radio Exterior Espana Relay <http://www.rtve.es/rne.rae/>
Radio Fides <http://www.radiofides.co.cr>
Radio For Peace Int'l <http://www.rfpi.org>
Radio Reloj <http://www.rpreloj.co.cr/>
University Network <http://www.dgenescott.com/homepage.htm>
CUBA
China Radio Int'l Relay <http://www.cri.com.cn/>
Radio Havana Cuba <http://www.radiohc.org>
Radio Rebelde <http://ww3.cuba.cu/RRebelde/>
DOMINICAN REPUBLIC
Radio Amanecer <http://www.tricom.net/amanecer>
Radio Cristal Int'l <http://www.dominicano.com>
ECUADOR
HCJB <http://www.hcjb.org.ec>
MEXICO
Radio Educacion <http://www.cnco.gob.mx/cnca/buena/radio/index.html>
Radio Huayacocotla <http://www.sjsocial.org/Radio/huarad.html>
Radio Mexico Int'l <http://hello.to/rmi> <www.imer.gob.mx/estaciones/rmi.html>
Radio Mil <http://www.nrm.com.mx/estaciones/radiomil>
NETHERLANDS ANTILLES
Radio Netherlands Relay <http://www.rnw.nl>
PUERTO RICO
AFN/AFRTS <http://www.mediacen.navy.mil/> <http://www.afrts.osd.mil>
SURINAME
Radio Apintie <http://www.apintie.sr>

Two new Peruvians have been observed since last month's South American Directory:

La Voz de Albancay
Avenida Noviembre Lote 6
Urbanizacion Micaila Bastidas
Abancay, Apurimac, Peru

Radio Uripa
Avenida Tupac Amaru s/n
Uripa, Chincheros, Apurima, Peru

Additions and corrections are always welcomed. Thanks to Dave White for his website assistance and *Cumbre DX* for their Peruvian address update.

BRAZIL

Radiodifusion do Amazonas, 4805 kHz. Full data scenery card signed by Joaquim Marinho, plus personal note. Received in 56 days for a Portuguese report, two mint stamps and local AM bumper stickers. Station address: Caixa Postal 311, 69000-000 Manaus, Amazonas, Brasil. (Frank Hillton, Charleston, SC)

Radio Trans Mundial, 9530 kHz. Full data QSL card with illegible signature. Received in 93 days for a Portuguese report, one U.S. dollar and one mint stamp. Station address: Caixa Postal 18300, Aeropuerto, 04699-970, São Paulo, São Paulo, Brasil. (Hillton, SC)

CUBA

Radio Havana Cuba, 13680 kHz. Full data color scenery card unsigned, plus program guide. Received in 148 days for an English report. Station address: P.O. Box 6240, Habana, Cuba 10600. (Brian Bagwell, St. Louis, MO)

Radio Rebelde, 9600 kHz. QSL Folder card signed by Daimelis Monzonn-Esp. Relaciones Publicas. Received in 12 weeks for a Spanish report and one U.S. dollar. Email address: <rebelde@ceniai.inf.cu> (Richard Jary, Australia/*Cumbre DX*)

DIEGO GARCIA

AFN/AFRTS, 12579 kHz USB. Full data letter via email from Michael Foutch-Chief Broadcast Operations Specialist. Received in one day for an English email report. Email address: <qsl@mediacen.navy.mil>. (Mickey Delmage, Sherwood Park, Alberta, Canada)

ECUADOR

La Voz del Napo Full data station card signed by Ramiro Cabrera. Received in three months for a Spanish follow-up report and two mint stamps. Station address: Misión Jjosefina, Tena, Napo, Ecuador. (Sam Wright, Biloxi, MS)

HCJB, 9745 kHz. Full data scenery card unsigned. Received in 25 days for an English report and one IRC. Station address: Casilla 17-17-691 Quito, Pichincho, Ecuador. (Wright, MS)

GUATEMALA

TGMI Radio Buenas Nuevas, 4800 kHz. Full data station card unsigned, plus brief note. Received in 35 days for a Spanish report, one U.S. dollar and one mint stamp. Station address: 13020 San Sebastian, Huehuetenango, Guatemala. (Tom Banks, Dallas, TX)

HAWAII

AFN/AFRTS 6350 kHz USB. Partial data letter on Naval Mecio Center letterhead signed by April K. Gorenflo-Broadcast Operations Specialist. Received in 27 days for an English email report. Email address: (see Diego Garcia) (Bill Wilkins, Springfield, MO)

HONDURAS

Radio Luz y Vida 3250 kHz. Full data prepared Spanish QSL card returned and verified by Ubaldo Zaldivar, plus personal note. Received in 50 days for a Spanish report, SASE (used for reply). Station address: Apartado 303, San Pedro Sula, Honduras. (Duane Hadley, Bristol, TN)

IRAQ

Radio Iraq International, 9684 kHz. Full data, Folder QSL card unsigned. Received in 63 days for an English repart, no enclosures. Station address: P.O. Box 8145, CN, 12222, Baghdad, Iraq (or) P.O. Box 8125, Baghdad, Iraq. (Banks, TX)

MEDIUM WAVE

CBKN, 990 kHz AM, Shalath, BC, Canada. Full data QSL card signed by Dave Newberry-Chief Engineer. Received in 12 days via CBC Vancouver. Station address: P.O. Box 4600, Vancouver BC, V6B 4A2 Canada. (Patrick Martin, Rio Mirage, CA)

CKY, 580 kHz AM, Manitoba, Canada. Really nice full data QSL letter signed by George Buzunis-Chief Engineer, plus station history brochure. Received in 19 days for taped report. Station address: Rogers Broadcasting-Unit # 4, 166 Osborne St., Winnipeg MB R3L 1Y8 Canada. (Martin, CA)

KORG, 1190 kHz AM, Anoheim, CA. Full data verification letter signed by Miles Sexton-Manager. Received after nine years of trying! Station address: 1190 E. Ball Rd., Anaheim, CA 92805. (Martin, CA)

KSMH, 1620 kHz AM, Auburn, CA. Received second QSL via station form letter, signed by Tricia Lemmon-Development Manager. Received in 90 days for a taped report. Station address: P.O. Box 180, Tahoma, CA 96142. (Martin, CA)

XENU, 1550 kHz AM, Nuevo Laredo, Tamaulipas, Mexico. Brief email verie text from Sergio Korlowsky-Head Engineer, Organizacion Radiorama, with promise of a future QSL on station letterhead. Received email response 30 months after posted report, three months after an email follow-up. Email address: <xe2xpk@nld.brava.net>. (Paul Ormandy, Oamaru, New Zealand/*HCDX*)

MEXICO

Rodio Mil, 6010 kHz. Full data colorful logo card with illegible signature, plus personal letter, sticker, schedule and reception report form. Received in 547 days for a taped report. Station address: Apartado Postal 21-100, 04021 Mexico 21, DF Mexico. (Delmage, CAN)

MONGOLIA

Voice of Mongolia, 12085 kHz. No data card plus personal handwritten message signed as, "The Staff." Program schedule and Mongolian Airline folder included. Received in 40 days for an English report, a SASE and one U.S. dollar. Station address: P.O. Box 365, Ulaanbaatar 13, Mongolia. (Jim Boynton, Newton, MA)

NETHERLANDS ANTILLES

Radio Netherlands Bonaire Relay, 15315 kHz. Full data card signed by Jaime Baguena, plus station stickers. Received in 46 days for on English report and one IRC. Station address: P.O. Box 222, 1200 JG Hilversum, The Netherlands. (Hadley, TN)

PUERTO RICO

AFN/AFRTS, 6458.5 kHz USB. Partial data e-mail from Michael Foutch-Chief Broadcast Operations Specialist. Received in 27 days for an English email report. Email address: (see Diego Garcia). (Wilkins, MO)

SICILY

AFN/AFRTS 10940.5 kHz USB. Full data email from Michael Foutch-Chief Broadcast Operations Specialist. Received in one day for an English email report. Email address: (see Diego Garcia) (Delmage, CAN; Wilkins, MO)

John Figliozzi
jfiglio1@nycap.rr.com

Breakfast with Shortwave

You stir ever so slowly from what has been a deep, restful sleep. In the first strains of light cast by the just breaking dawn, you look over to "her" and, in the dimness, you do a double-take. Could she be smiling at you? That old feeling comes over you as you reach over and gently feel for...Ah, found it! The dulcet tones of the Lillibulero waft from the speaker as you roll over for another forty winks.

Hey, what did you think I was talking about? This is a radio magazine, pal!

If you take a keen interest in world affairs, there is nothing – well, okay, almost nothing – that compares with checking in on the world first thing in the morning. And, there's no better way than shortwave to get a jump on what's happened since you went to sleep.

Morning is shortwave radio's second prime time. While more stations broadcast in the evening, a nice cross-section of listening opportunities exists after daybreak. Your options are a little wider if you live on the east coast, but there are ample opportunities to get the information you want wherever you live. (The time and frequency section of the *MT Shortwave Guide* will tell you where to tune.)

The Comprehensive View

Every morning, the **BBC World Service** offers its excellent comprehensive one hour report in *Newshour* (1200). If you're up earlier (1000), the **Voice of America's** *News Now* service also adequately fills the same bill. The **BBC** also has an hour of world and British news, with full business and sports reports at 1100. If you're on the west coast, this hour of information is updated and broadcast at 1600 with the quarter-hour business report substituted with in-depth analysis, including the unparalleled *From Our Own Correspondent* on Wednesdays.

Business and Financial News

Business news is a staple of programs like *Newshour* and *News Now*. The latter has a five minute report beginning at 49 minutes past the hour. *Newshour* checks in with business and financial reports several times during the hour. Most regular newscasts on almost every station also carry some business news. For example, **Radio Japan** will track the yen and Asian business activities in its fifteen minute newscasts at the beginning of each of its one hour broadcasts at 1100, 1400 and 1700.

If you're a purist and want your dosage straight-up, the **BBC** has its quarter-hour *World Business Report* at 1130 and 1730.

Spotchecking Regions

If you have an affinity for a certain area of the world or have been keeping tabs on events in a global hot spot, there is an ample array of broadcasts to get you up to speed.

Events on the Korean peninsula and around Asia are reported by **Radio Korea International** (1130, 1300, 1600). **Radio Australia** has in-depth on-the-spot reports on the region in its daily program Asia-Pacific (1005, 1105, 1505) or you can hear a comprehensive fifteen minute newscast focused on the region at 1300 each day. If reception permits, news from the Pacific region can be had from **Radio New Zealand International** and its relay of the domestic *Late Edition* report (1105). And if you're on the west coast, **China Radio International's** one hour broadcasts at 1400 and 1500 start with news bulletins.

The **BBC** runs a weekday Caribbean Service, easily heard throughout North America (1100-1130 on 6195, 15220 kHz and 1200-1220 on 6195), that includes regional news, sports, business and lifestyle reports. **HCJB** Quito, Ecuador, features reports on Latin America in its newscasts at 1130, 1200 and 1230.

Listeners with an ear to Europe can tune in to **Radio Sweden's** daily *Sixty Degrees North* which concentrates on the Nordic and Baltic regions (1230, 1330, 1430). **Radio Austria International's** daily magazine *Report from Austria*, which maintains a focus on central and eastern Europe, is beamed to the west coast at 1630. West coast listeners can also access the **BBC's** *Europe Today* (1700) for a report on the entire region.

Lighten Up a Little

Not interested in all this hard news? At 1305 the **BBC** has its magazine of people, places and ideas, *Outlook*, on offer. **Radio Canada International** now broadcasts all three hours (1300-1600) of the **CBC's** excellent *This Morning* program that includes interesting discussions, interviews, music and drama.

Prefer music while having a cuppa and perusing the paper? **Radio Australia** relays the domestic two hour (1315-1500) program *The Planet*, wherein you will hear music from all over the world, cheerfully and intelligently presented. The **BBC** also has a strand of half-hour music programs of varying types at 1430 each day.

If it's spiritual thoughts and inspirational music you're looking for at the start of your day, **HCJB's** *Morning in the Mountains* (1130-1300) has been a breakfast visitor on shortwave for many years.

Weekends

Weekend mornings are an especially great time to listen. With a less hectic start to the day you can kick back, have that extra cup and really enjoy some fine programming.

Radio Canada International has three hours (1300-1600) that include news, the week in Canadian politics (*The House*) and a two hour tour-de-force of the off-beat and gentle humor of Arthur Black (*Basic Black*). *Sunday Edition* uses its three hours to hone in on the arts, books, politics and ideas.

Saturday mornings on the **BBC World Service** (1300-1700) offer reviews of *Global Business* (also Sunday 1705) and the week in British politics (*People and Politics*, also 1530 Sunday) before a three hour extravaganza of live sport (*Sportsworld*). Sundays (1300-1400) start with jazz (*Jazzmatazz*), then a worship service (*In Praise of God*). *Talking Point* (1405) is a global current affairs phone-in. This is followed by *From Our Own Correspondent* (1505). An hour-long classical concert (*Concert Hall*) is at 1605.

Radio Australia offers jazz and classical music, spirituality (*The Spirit of Things* – 1205 Saturday), science (*The Science Show* – 1305 Saturday), two hours of Aussie country music (*Country Club* – 1205 Sunday), discussions about *Books and Writers* (1405 Sunday) and religious experiences of multicultural Australia (*Encounter* – 1505 Sunday).

Regional breakfast programs from Ontario and Quebec (*Good Morning Quebec, Fresh Air* – 1200-1400) can be sampled by listeners to the **CBC North Quebec** shortwave service. **Radio Austria International** has some great Austrian music, a mailbag program and some *Profiles of Austria*, while **Radio Sweden** keeps you *In Touch with Stockholm*, plays Nordic rock music and peers into the arts, science and soul of Scandinavia.

Happy New Year and, until February, good listening!

How to Use the Shortwave Guide

0000-0100 twhfa USA, Voice of America 5995am 6130ca 7405am 9455af

① ② ⑤ ③ ④ ⑥ ⑦

Convert your time to UTC.

Broadcast time on Â and time off Á are expressed in Coordinated Universal Time (UTC) – the time at the 0 meridian near Greenwich, England. To translate your local time into UTC, first convert your local time to 24-hour format, then add (during Standard Time) 5, 6, 7, or 8 hours for Eastern, Central, Mountain or Pacific Times, respectively. Eastern, Central, and Pacific Times are already converted to UTC for you at the top of each page.

Note that all *dates*, as well as times, are in UTC; for example, a show which might air at 0030 UTC *Sunday* will be heard on *Saturday* evening in America (in other words, 7:30 pm Eastern, 6:30 pm Central, etc.).

Find the station you want to hear.

Look at the page which corresponds to the time you will be listening. On the top half of the page English broadcasts are listed by UTC time on Â , then alphabetically by country Ã, followed by the station name Ä. (If the station name is the same as the country, we don't repeat it, e.g., "Vanuatu, Radio" [Vanuatu].)

If a broadcast is not *daily*, the days of broadcast Å will appear in the column following the time of broadcast, using the following codes:

Day Codes	
s/S	Sunday
m/M	Monday
t/T	Tuesday
w/W	Wednesday
h/H	Thursday
f/F	Friday
a/A	Saturday
D	Daily
mon/MON	monthly

In the same column Ä, irregular broadcasts are indicated "tent" and programming which includes languages besides English are coded "vl" (various languages).

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

The frequencies Å follow to the right of the station listing; all frequencies are listed in kilohertz (kHz). Not all listed stations will be heard from your location and virtually none of them will be heard all the time on all frequencies.

Shortwave broadcast stations change some of their frequencies at least twice a year, in April and October, to adapt to seasonal conditions. But they can also change in response to short-term conditions, interference, equipment problems, etc. Our frequency manager coordinates published station schedules with confirmations and reports from her monitoring team and *MT* readers to make the Shortwave Guide up-to-date as of one week before publication.

To help you find the most promising signal for your location, immediately following each frequency we've included information on the target area Æ of the broadcast. Signals beamed toward your area will generally be easier to hear than those beamed elsewhere, even though the latter will often still be audible.

Target Areas	
af:	Africa
al:	alternate frequency (occasional use only)
am:	The Americas
as:	Asia
au:	Australia
ca:	Central America
do:	domestic broadcast
eu:	Europe
irr:	irregular (Costa Rica RFPI)
me:	Middle East
na:	North America
om:	omnidirectional
pa:	Pacific
sa:	South America
va:	various

Consult the propagation charts.

To further help you find a strong signal, we've included a chart on page 64 which takes into account conditions affecting the audibility of shortwave broadcasts. Simply pick out the section of the chart for the region in which you live and find the line for the region in which the station you want to hear is located. The chart indicates the optimum frequencies (in megahertz-MHz) for a given time in UTC. (Users outside North America can use the same procedure in reverse to find best reception from North America.)

Choose a program or station you want to hear.

Selected programs appear on the lower half of the page for prime listening hours – space does not permit 24 hour listings nor can every station be listed. However, listings for the most popular stations and selected lesser-known stations illustrate the variety available on shortwave. The format of the listings alternates among three different styles – by station, by genre and by day – month by month. Times listed are approximate and programs are subject to change.

The program listings emphasize broadcasts targeted to North America. In most cases, the stations and programs listed should be readily receivable in North America using a portable radio. Most broadcasters produce one broadcast in English per day that is repeated over a 24 hour period to all areas. If you are able to listen to transmissions to other areas of the world during "non-prime time" hours, referring to the prime time listings for those stations will likely be helpful in determining what programs will be broadcast.

Occasionally, a program or station listing may be followed by a reference to another listing for the same program or station at a different time. This is done to conserve space and make it possible to provide more listings.

MT Monitoring Team

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Program Highlights

John Figliozzi

New! - Rotating Formats

With the new year (and what a few know is the *real* start of a new millennium), we are commencing a new approach toward presenting station program schedules. We will be using three formats that will rotate in sequence. In addition to the day by day listing we have been using for some time, there will be a listing by station and, also, a listing by program type. Each format will appear four times a year, three months apart. In doing this, we hope to be able to provide more information and in a style that will assist you in finding more programs that appeal to you.

This month, our presentation is by station. For each station, the programs broadcast during the hour will be listed in time order and by day of the week, using the abbreviations detailed on the left side of this page. Where deemed necessary, a very brief description of the program is given in parentheses. Most stations will have their complete schedules listed. The exceptions are the U.S.-based non-governmental stations. Their programming consists mostly of religious, quasi-religious and unconventional or extremist political content. Therefore, only programs that fall outside these categories are listed for these stations.

As per usual, we'd like to hear what you think about all this. We'd also like you to help us maintain accuracy in these schedules by pointing out errors and providing us with corrected and new information.

Summer of Cricket

Yes, I know it's cold here, but it isn't in Australia where summer and the cricket season are in full swing. Radio Australia has live broadcasts of the Fifth Test against the West Indies as well as numerous one day internationals throughout the month. The schedule is as follows: Fifth Test from Sydney, Jan. 2-6, 0000-0700UT; vs. West Indies from Melbourne, Jan. 11; West Indies vs. Zimbabwe from Brisbane, Jan. 13; vs. West Indies from Brisbane, Jan. 14; vs. West Indies from Sydney, Jan. 17; vs. Zimbabwe from Melbourne, Jan. 21; West Indies vs. Zimbabwe from Sydney, Jan. 23; West Indies vs. Zimbabwe from Adelaide, Jan. 25; vs. West Indies from Adelaide, Jan. 26; vs. Zimbabwe from Sydney, Jan. 28; vs. Zimbabwe from Hobart, Jan. 30. All one day internationals air 0330-1130 UT. Frequencies: 0000-0758 on 17580 kHz; 0800-1358 on 11630 kHz; 0000-1358 on 21725 kHz

Frequencies

0000	0100		Anguilla, Caribbean Beacon	6090am			
0000	0100	vl	Australia, ABC/Alice Springs	4835do			
0000	0100	vl	Australia, ABC/Katherine	5025do			
0000	0100	vl	Australia, ABC/Tennant Creek	4910do			
0000	0100		Australia, Christian Voice	9875va	15165va	17645va	21680va
0000	0100		Australia, Radio	9660pa	12080pa	15240as	17580va
				17750as	17795va	21740va	
0000	0100		Bulgaria, Radio	7400na	9400na		
0000	0015		Cambodia, National Radio Of	11940as			
0000	0100		Canada, CBC Northern Service	9625do			
0000	0100		Canada, CFRX Toronto ON	6070da			
0000	0100		Canada, CFVP Calgary AB	6030do			
0000	0100		Canada, CHNX Halifax, NS	6130do			
0000	0100		Canada, CKZN St John's NF	6160do			
0000	0100		Canada, CKZU Vancouver BC	6160do			
0000	0059		Canada, R Canada International	5960am	9755am		
0000	0100		Costa Rica, R for Peace Intl	7480va	15048va	15065va	21815usb
0000	0100		Costa Rica, University Network	7490va	15048va	15065va	21815usb
0000	0100		Ecuador, HCJB	9745na	11840na	21455usb	
0000	0030		Egypt, Radio Cairo	9900am			
0000	0100	a/monthly	Finland, Scandv Weekend Radio	11690va	11720va		
0000	0100		Guyana, Voice of	3289da	5949da		
0000	0045		India, All India Radio	9705as	9950as	11620as	13605as
0000	0015		Japan, Radio	17810as	13650as		
0000	0100		Japan, Radio	6145na			
0000	0100		Liberia, Voice of Hope	6280af			
0000	0100		Malaysia, Radio	7295do			
0000	0100		Malaysia, RTM Kota Kinabalu	5980do			
0000	0100		Malaysia, RTM Sarawak	7160do			
0000	0030		Mexico, R Mexico International	9705am	11770al		
0000	0100	vl	Namibia, Namibian BC Corp	3270af	3289af		
0000	0100		Netherlands, Radio	6165na	9845na		
0000	0100		New Zealand, R New Zealand Int	17675pa			
0000	0100		New Zealand, ZLXA	3935do	7290do		
0000	0056		North Korea, R Pyongyang	4405va	11460na	11710na	13760na
				15180na			
0000	0100	vl	Papua New Guinea, NBC	9675do	11880do		
0000	0100		Singapore R Corp of Singapore	6150do			
0000	0100	vl/as	Solomon Islands, SIBC	5020do			
0000	0100	vl/a	Solomon Islands, SIBC	9545da			
0000	0100		Spain, R Exterior Espana	6055na			
0000	0030		Thailand, Radio	9680va			
0000	0030		UK, BBC World Service	3915as	5965as	5975na	6175na
			6195as	7105as	9410me	9590am	9915sa
				11945as	11955as	12095sa	15280as	15360as
				17615as	17790as			
0000	0100	as	UK, Global Kitchen/Merlin	3955eu	6180eu	7165eu		
0000	0100	f	UK, Global Kitchen/Merlin	6170eu				
0000	0100		USA, Armed Forces Radio	4278va	4319va	4993va	5765va
			6350va	6458va	6847va	10320va	10940va
			12579va	12689va	13362va	16847va	
0000	0100		USA, KAIJ Dallas TX	5755va			
0000	0100		USA, KTBN Salt Lake City UT	7510na			
0000	0100		USA, KWHR Naalehu HI	17510as			
0000	0100	twhfa	USA, Voice of America	5995am	6130ca	7405am	9455ca
				9775am	11695ca	13740am	
0000	0100		USA, WBCQ Monticello ME	7415na	9335na		
0000	0100		USA, WEWN Birmingham AL	5825va	7425na	9355na	
0000	0100		USA, WHRA Greenbush ME	7580na			
0000	0100		USA, WHRI Noblesville IN	7315sa			
0000	0100		USA, WINB Red Lion PA	12160am			
0000	0100		USA, WJCI Upton KY	7490va	13595as		
0000	0100		USA, WRMI Miami FL	9955am			
0000	0100		USA, WSHB Cypress Crk SC	9430am			
0000	0100		USA, WTJC Newport NC	9370na			
0000	0100	sm	USA, WWBS Macon GA	11900eu			
0000	0100		USA, WWCR Nashville TN	3215am	5070am	5935am	7435am
0000	0100		USA, WWFV McCaysville GA	9320va	12172am		
0000	0100		USA, WYFR Okeechobee FL	6085na	9505na	15060as	
0000	0100	vl	Vanuatu, Radio	3945da	4960do	7260do	
0000	0100		Zambia, Christian Voice	4965do			
0030	0100		Iran, VOIRI	6065am	6135na	9022na	
0030	0100		Kirgiziya, Kirgiziya Radio	4010eu			
0030	0100		Sri Lanka, Sri Lanka BC Corp	4940do	9770		
0030	0100		Sri Lanka, Sri Lanka BC Corp	4940do	6005as	6075as	9770as
				15425as			
0030	0100		Thailand, Radio	13695na			
0030	0100		UK, BBC World Service	5965as	5975na	6175na	6195as
			7105as	9410me	9590am	9915sa	11955as
			12095sa	15280as	15360as	17790as	
0030	0100		USA, VOA Special English	7215as	9890as	11760as	15185as
				15290as	17740as	17820as	
0030	0100		USA, Voice of America	7215as	9890as	11760as	15185as
				15290as	17740as	17820as	
0045	0100		Pakistan, Radio	9780do	11650do	15455do	
0050	0100		Italy, RAI International	6010na	9675na	11800na	
0050	0100		UK, International BC Tamil	11570as			

Selected Programs

BBC World Service (am)

0000 S News Summary, M World Briefing, T-A News; 0001 S Play of the Week (radio theatre); 0005 T-A Outlook (magazine); 0020 M Sports Roundup; 0030 M The World Today; 0045 T Patterns of Faith, W Plain English, H Heart & Soul (religion), F Best of 'The Edge' (youth culture), A Body & Mind (health).

HCJB, Ecuador

0000 S Nite Brite Kids Club, M A Firm Foundation, T-A Insight for Living; 0005 M Hour of Decision; 0028 T-A Money Minute; 0030 S Saludos Amigos, M Mountain Meditations, T-A A New Beginning; 0056 A Slice of Infinity.

Radio Australia

0000 D News; 0010 S/M Correspondents' Report, T-A Asia Pacific (regional report); 0030 S Educational series, M Health Report, T Law Report, W Religion Report, H Media Report, F The Sports Factor, A Feedback (letters/station news).

Radio Canada International

0000 D CBC News; 0005 S Quirks & Quarks (science), M Global Village (world music), T-A As It Happens (cont'd. from 2330).

Radio Japan

0000 D News; 0010 S Hello from Tokyo (listener contact), M Weekend Square (Japanese life); 0015 44 Minutes (feature magazine).

Radio Netherlands

0000 S Sound Fountain (soundscapes), M Dutch Horizons, T Research File (science), W Music 52-15 (international music), H Documentary, F Encore (best of RN), A A Good Life (global development); 0030 S Roughly Speaking (youth culture), M Sound Fountain, Tu EuroQuest (Europe in context), W A Good Life, H Dutch Horizons, F Research File, A Documentary.

Radio New Zealand International

0000 D RNZ News; 0006 S Books at One, M-F Cadenza (light classics), A Home Grown (NZ music, including Musical Chairs-artist feature 0030); 0030 S Future Indicative (for disabled).

Spanish Foreign Radio

0000 S Visitors' Book, M Window on Spain, T-A News; 0015 S American Chronicles, M Entremeses (food/tourism); 0028 M Music series; T-A Spanish Pop Music; 0032 S Spain in the American West; T-A Press Review; 0035 T Entertainment in Spain, W Kaleidoscope (life in Spain), H As Others See Us, F Arts in Spain, A Radio Club (letters); 0047 S Radio Waves, M Radio Club (repeat), T-A Spanish Language Course; 0057 Program Info.

Voice of America (News Now)

0000 T-A World News; 0010 T-A Regional News; 0014 T-A USA News; 0018 T-A Sports; 0022 T-A Features; 0030 T-A World News; 0033 A Press Conference USA; 0045 T-F Science; 0049 T-F Business; 0053 T-F Music feature.

WBCQ, Maine

7415 kHz: 0000 S The Real Amateur Radio Show, M Le Show (humor/entertainment), F Scream of the Butterfly; 0030 H World of Radio.

WHRI, Indiana

5745 kHz 0030 S DXing with Cumbre, 0000 A DXing with Cumbre.

WWCR, Tennesee

3215 kHz: 0030 M The Old Record Shop (vintage recordings).

Hauser's Highlights

ISRAËL: Kol Israël

Hebrew (Reshet Bet - Second Network):

2300-0e00	7545	Eu/NAm
0430-0e00	11590	Eu/NAm
0500-1e55	15760	Eu/NAm
0600-1e55	17535	Eu/NAm
1700-1e00	11590	Eu/NAm
1900-0e30	11585	Eu/NAm
1900-1e45	15640	SEu/CAm
1900-0e00	9345	u/NAm
1900-2e00	9390	Eu/NAm or 9395
2100-2e15	15640	SAm

Includes TV news 1900-1950.
(web site via *BC-DX*)

Hauser's Highlights

IRELAND [non] RTE Radio One

B-00 schedule:

0130-0200	6155	Rampisham	500 kW/175 deg. to SAm
1000-1030	11740	Singapore	250 kW/135 deg. to Eas/Au
1800-1830	9895	Skelton	300 kW/110 deg. to ME
1830-1900	13640	Sackville	50 kW/277 deg. to NAm
1830-1900	21630	Ascension	250 kW/085 deg. to Af

(*Observer*, Bulgaria)

0100 UTC Shortwave Guide

8:00 PM EST
7:00 PM CST
5:00 PM PST

Frequencies

0100	0200		Anguilla, Caribbean Beacon	6090am			
0100	0200	vl	Australia, ABC/Katherine	5025da			
0100	0200	vl	Australia, ABC/Tennant Creek	4910da			
0100	0200		Australia, Christian Voice	9875va	15165va	17645va	21680va
0100	0200		Australia, Radio	9660pa	12080pa	15240as	15415as
				17580va	17750as	17795va	21725va
0100	0200		Canada, CBC Northern Service	9625da			
0100	0200		Canada, CFRX Toronto ON	6070da			
0100	0200		Canada, CFVP Calgary AB	6030da			
0100	0200		Canada, CHNX Halifax, NS	6130da			
0100	0200		Canada, CKZN St John's NF	6160da			
0100	0200		Canada, CKZU Vancouver BC	6160da			
0100	0156		China, China Radio International	9570na			
0100	0200		Costa Rica, R for Peace Intl	7480va	15048va	15065va	21815usb
0100	0200		Costa Rica, University Network	7480va	15048va	15065va	21815usb
0100	0200		Cuba, Radio Havana	6000na	9820na	11705na	
0100	0127		Czech Rep, Radio Prague Intl	6200na	7345na		
0100	0200		Ecuador, HCJB	9745na	11840na	21455usb	
0100	0200	a/monthly	Finland, Scandv Weekend Radio	11690va	11720va		
0100	0145		Germany, Deutsche Welle	6040am	6145na	9640am	9700na
				9765na	12040na		
0100	0130	s	Germany, Universal Life	9435as			
0100	0200		Guyana, Voice of	3289do	5949da		
0100	0200		Indonesia, Voice of	9525va	11785va	15149va	
0100	0127		Iran, VOIRI	6065am	6135na	9022na	
0100	0110		Italy, RAI International	6010na	9675na	11800na	
0100	0200		Japan, Radio	9515va	11860as	11870va	15325as
				17835sa	17845as		
0100	0200		Liberia, Voice of Hope	6280af			
0100	0200		Malaysia, Radio	7295da			
0100	0200		Malaysia, RTM Kota Kinabalu	5980da			
0100	0200		Namibia, Namibian BC Corp	3270af	3289af		
0100	0125		Netherlands, Radia	6165na	9845na		
0100	0200		New Zealand, R New Zealand Int	17675pa			
0100	0200		New Zealand, ZLXA	3935da	7290da		
0100	0156		North Korea, R Pyongyang	3560va	11735va	15229va	17734va
0100	0115		Pakistan, Radio	9780da	11650da	15455da	
0100	0200	vl	Papua New Guinea, NBC	9675da	11880da		
0100	0200		Singapore R Corp of Singapore	6150da			
0100	0130		Slovakia, R Slovakia International	5930na	7230ca	9440sa	
0100	0200	vl/as	Solomon Islands, SIBC	5020da			
0100	0200	vl/a	Solomon Islands, SIBC	9545da			
0100	0200		Sri Lanka, Sri Lanka BC Corp	4940do	6005as	6075as	9770as
				15425as			
0100	0200		Spain, R Exterior Espana	6055na			
0100	0200		Switzerland, Swiss R International	9905am			
0100	0200		UK, BBC World Service	5965as	5975na	6175na	6195as
			9410me	9590am	9915sa	11955as	12095sa
			15280as	15310as	15360as	17790as	
0100	0200	as	UK, Global Kitchen/Merlin	3955eu	6180eu	7165eu	
0100	0200		Ukraine, R Ukraine International	7420na	9610na	9810na	11840na
0100	0200		USA, Armed Forces Radio	4278va	4319va	4993va	5765va
			6350va	6458va	6847va	10320va	10940va
			12579va	12689va	13362va	16847va	
0100	0200		USA, KAIJ Dallas TX	5755va			
0100	0200		USA, KT8N Salt Lake City UT	7510na			
0100	0200		USA, KWHR Naalehu HI	17510as			
0100	0130		USA, Voice of America	7115as	7200as	7200as	9850as
				11705as	11820as	15250as	15300as
				17740as	17820as		
0100	0200	twhfa	USA, Voice of America	5995am	6130ca	7405am	9455ca
				9775am	13740am		
0100	0200		USA, WBCQ Monticello ME	7415na	9335na		
0100	0200		USA, WEWN Birmingham AL	5825na	7425na	9355na	
0100	0200		USA, WHRA Greenbush ME	7580na			
0100	0200		USA, WHRI Noblesville IN	7315sa			
0100	0200		USA, WINB Red Lion PA	12160am			
0100	0200		USA, WJCR Upton KY	7490va	13595as		
0100	0200		USA, WRMI Miami FL	9955am			
0100	0200		USA, WSHB Cypress Crk SC	9430na			
0100	0200		USA, WTJC Newport NC	9370na			
0100	0200	sm	USA, WWBS Macon GA	11900eu			
0100	0200		USA, WWCR Nashville TN	3215am	5070am	5935am	7435am
0100	0200		USA, WWFV McCaysville GA	6890va	9320am		
0100	0200		USA, WYFR Okeechobee FL	6065na	9505as	15060as	
0100	0130		Uzbekistan, Radio Tashkent	5955as	5975as	7105as	7285as
				9540as			
0100	0200	vl	Vanuatu, Radio	3945do	4960da	7260da	
0100	0127		Vietnam, Voice of	9525na			
0100	0200		Zambia, Christian Voice	4965da			
0130	0159	s	Finland, YLE/R Finland	9655na	12035na		
0130	0145	vl	Libya, Voice of Africa	11815af	17725af		
0130	0200		Lithuania, Radio Vilnius	6120na			
0130	0200		Sweden, Radia	9495va			
0130	0200		UK, RTE Radio	6155ca			
0130	0200	twhfa	USA, VOA Special English	7405am	9775am	13740am	
0130	0200	twhfa	USA, Voice of America	5995am	6130ca	9455ca	

Selected Programs

BBC World Service (am)

0100 S/M The World Today, T-A News; 0105 T Meridian-Ideas, W Meridian-Screen, H Meridian-Music, F Meridian-Writing, A Meridian-Masterpiece; 0130 S Reporting Religion, T Music Mix, W UK Top 20, H/A Westway (drama serial), F World of Music; 0145 S Letter from America (Alistair Cooke comments), H UK Album Chart, A Music X-Press.

China Radio Intenational

0100 D News; 0110 S Report on Developing Countries, M-F Current Affairs, A Global Review; 0120 S In the Spotlight (cultural magazine), A Listeners' Garden; 0130 M People in the Know (China's leading citizens), T Sports World, W China Horizons (business), H Voices from Other Lands, F Life in China.

Deutsche Welle

0100 D News; 0105 S Talking Point (journalists), M Religion & Society, T-A Newslink (European current affairs); 0115 S Inside Europe, M Arts on the Air; 0130 T Insight (international affairs), W Man & Environment, H Living in Germany, F Spotlight on Sport, A German by Radio.

HCJB, Ecuador

0100 D Latin American & World News; 0109 S DX Partyline, M Musical Mailbag, T-A Studio 9 (Latin American regional report); 0130 T Inside HCJB, W El Mundo Futura, H Ham Radio Today, F Woman to Woman, A Musica del Ecuador.

Radio Australia

0100 D News; 0105 S The Europeans, A Oz Sounds (Australian music); 0110 M Awaye! (Aboriginal culture), T The Science Show, W The National Interest (Australian politics), H Background Briefing (documentary), F Hindsight (history), A Arts Talk.

Radio Habana Cuba

0100 M Weekly Review, T-S International News; 0110 T-S National News; 0115 T-S Viewpoint; 0130 M Mailbag Show, T-S News Bulletin; 0135 T-A Time Out (sports); 0140 S/W DXers Unlimited, M/F Caribbean Outlook, H Mailbag Show, A Weekly Review.

Radio Netherlands

0100 S/M News, T-A Newsline; 0105 S Europe Unzipped, M Wide Angle (weak in review).

Radio New Zealand International

0100 D RNZ News; 0104 S Eureka! (science)*, M-F In Touch with NZ (music/variety), A Home Grown (cont'd. from 0006)*; 0130 S Feature program or series*. [*may be preempted by live sport].

Radio Prague

0100 D News; 0105 S The Arts, M Letter from Prague, T-A Current Affairs; C110 S Saturday Music (classical/folk/jazz), M From the Weeklies; 0115 M Readings from Czech Literature, T Spotlight (Czech current events) or One on One (interview), H Czechs in History or Central Europe Today, A Mailbox; 0120 W Talking Point, F Economic Report.

Spanish Foreign Radio

0100 S Visitors' Book, M Window on Spain, T-A News; 0115 S American Chronicles, M Entremeses (food/tourism); 0128 M Music series; T-A Spanish Pop Music; C132 S Spain in the American West; T-A Press Review; 0135 T Entertainment in Spain, W Kaleidoscope (life in Spain), H As Others See Us, F Arts in Spain, A Radio Club (letters); 0147 S Radio Waves, M Radio Club (repeat), T-A Spanish Language Course.

Swiss Radio International

0100 D Newsnet (Swiss magazine); 0110 S Name Game (Swiss geography quiz-1st week) or Capital Letters (2nd/4th) or Sounds Good (Swiss music-3rd/5th), M SwissScene (includes Postcards from Switzerland-1st & Book Zone-3rd); 0115 H Book Zone (2nd only), A Business Spotlight; 0130 D Newsnet (Swiss magazine); 0140 S NameGame (Swiss geography quiz-1st week) or Capital Letters (2nd/4th) or Sounds Good 'Swiss music-3rd/5th), M Swiss Scene (includes Postcards from Switzerland-1st & Book Zone-3rd); 0145 H Book Zone (2nd only), A Business Spotlight.

Voice of America (News Now)

0100 T-A World News; 0110 T-A Regional News; 0114 T-A USA News; 0118 T-A Sports; 0122 T-A Features; 0130 T-A World News; 0133 A Communications World; 0136 T-F Dateline (news magazine); 0145 T-F Science; 0149 T-F Business; 0154 T-F Feature.

Voice of Vietnam

0100 D News; 0105 O Current Affairs; 0110 Su Weekly Review, M Sunday Show, T/W/F/A Press Review, H Talk of the Week; 0115 T Vietnam: Land & People, W Culture & Society, H Letterbox, F Vietnam Economy, A Rural Vietnam; 0120 S Music, A Literature and Arts.

WBCQ, Maine

7415 kHz: 0100 S A Different Kind of Oldies Show, M Radio New York International, H Idio-Audio, F Radio Detective (antique radio), A Allan Weiner Worldwide. 9335 kHz: 0100 S Pagan Poupourri.

WWCR, Tennessee

3215 kHz: 0100 M World of Radio; 0130 A World of Radio. 5070 kHz: 0100 M Big Band Classics.

YLE Radio Finland

0130 S Capital Cafe (conversations); 0154 S Nuntii Latini (news in classical Latin).

RTE, Ireland

0130 S/M Sportsnews; T-A The News at Six.

Voice of America (Special English)

0130 T-A News; 0140 T Agriculture Today, W/H Science Report, F Environment Report, A In the News; 0145 T Science in the News, W Explorations, H Making of a Nation, F American Mosaic; A American Stories.

Frequencies

0140	0200		Vatican City, Vatican Radio	7335au	9650au		
0200	0300		Anguilla, Caribbean Beacon	6090am			
0200	0300	twhfa	Argentina, RAE	11710am			
0200	0300	vl	Australia, ABC/Alice Springs	4835do			
0200	0300	vl	Australia, ABC/Katherine	5025do			
0200	0300	vl	Australia, ABC/Tennant Creek	4910do			
0200	0300		Australia, Christian Voice	9865va	15185va	17645va	21680va
0200	0300		Australia, Radio	9660pa	12080po	15240as	15415as
				15515va	17580va	17750os	21725va
0200	0210		Bangladesh, Bangla Betor	4882as			
0200	1215		Cambodia, National Radio Of	11940os			
0200	0300		Canada, CBC Northern Service	9625do			
0200	0300		Canada, CFRX Toronto ON	6070do			
0200	0300		Canada, CFVP Calgary AB	6030do			
0200	0300		Canada, CHNX Halifax, NS	6130do			
0200	0300		Canada, CKZN St John's NF	6160do			
0200	0300		Canada, CKZU Vancouver BC	6160do			
0200	0259		Canada, R Canada International	9535am	9755am	11865am	15260os
				17860os			
0200	0300		Costa Rica, R for Peace Intl	5920ol	5970vo	7480va	15048va
				21815irrg			
0200	0300		Costa Rica, University Network	5920al	6970vo	7480va	15048va
				21815irr			
0200	0300		Cuba, Radio Havana	6000na	9820na	11705na	
0200	0227		Czech Rep, Radio Prague Intl	6200na	7345na		
0200	0300		Ecuador, HCJB	9745na	11840na	21455usb	
0200	0300		Egypt, Radio Cairo	9475am			
0200	0300	a/monthly	Finland, Scandv Weekend Radio	11690va	11720va		
0200	0245		Germany, Deutsche Welle	7285as	9615os	9765as	11965as
0200	0300		Guyana, Voice of	3289do	5949do		
0200	0230		Hungary, Radio Budapest	9835na			
0200	0300		Kenya, Kenya BC Corp	4935do			
0200	0300		Liberia, Voice of Hope	6280af			
0200	0215	vl	Libya, Voice of Africa	17725af			
0200	0300		Malaysia, Radio	7295do			
0200	0300		Malaysia, RTM Kota Kinabalu	5980do			
0200	0230		Myanmar, Radio	7185do			
0200	0300		Namibia, Namibian BC Corp	3270af	3289af		
0200	0300		New Zealand, R New Zealand Int	17675po			
0200	0300		New Zealand, ZLXA	3935do	7290do		
0200	0256		North Korea, R Pyongyang	11844va	13649va		
0200	0300	vl	Papua New Guinea, NBC	9675do	11880do		
0200	0256		Romania, R Romania International	9570na	9690as	11830no	11740as
				11940pa	15370pa		
0200	0300		Russia, Voice of Russia WS	7180no	12020na	13655no	15470na
0200	0300		Singapore R Corp of Singapore	6150do			
0200	0300	vl/as	Solomon Islands, SIBC	5020do			
0200	0300	vl/a	Solomon Islands, SIBC	9545do			
0200	0300		South Korea, R Koreo Intl	7275na	11725sa	11810sa	15575na
0200	0300		Sri Lanka, Sri Lanka BC Corp	6005as	6075as	6130do	9770as
				15425as			
0200	0300		Taiwan, R Taiwan International	5950no	9680no	11740as	11825pa
				15125as	15345as		
0200	0300		UK, BBC World Service	5975na	6135am	6175na	9410me
			9770af	9915sa	11760me	11955as	12095sa
			15280as	15310as	15360as	17790as	
0200	0240	f	UK, Global Kitchen/Merlin	6170eu			
0200	0300		USA, Armed Forces Radio	4278va	4319va	4993va	5765va
			6350va	6458va	6847va	10320va	10940va
			12579va	12689va	13362va	16847va	
0200	0300		USA, KAIJ Dallas TX	5755vo			
0200	0300		USA, KJES Vado NM	7555na			
0200	0300		USA, KTBN Salt Lake City UT	7510na			
0200	0300		USA, KWHR Naalehu HI	17510as			
0200	0300		USA, Voice of America	7115os	7200os	9850as	11705as
			11820as	15250as	15300as	17740as	17820as
0200	0300		USA, WBCQ Monticello ME	7415na	9335no		
0200	0300		USA, WEWN Birmingham AL	5825va	7425na		
0200	0300		USA, WHRA Greenbush ME	7580na			
0200	0300		USA, WHRI Noblesville IN	7315sa			
0200	0300		USA, WINB Red Lion PA	12160am			
0200	0300		USA, WJCR Upton KY	7490va	13595as		
0200	0300		USA, WRMI Miami FL	7385om			
0200	0300		USA, WSHB Cypress Crk SC	9430no	7535na		
0200	0300		USA, WTJC Newport NC	9370na			
0200	0300		USA, WWCR Nashville TN	3215am	5070am	5935am	7435am
0200	0300		USA, WWFV McCaysville GA	6890va	9320am		
0200	0300		USA, WYFR Okeechobee FL	6065na	9505na		
0200	0300	vk	Vanuatu, Radio	3945do	4960do	7260do	
0200	0300		Zambia, Christian Voice	4965do			
0215	0220		Nepal, Radio	5005as	7165as		
0230	0300		Austria, R Austria International	7325no			
0230	0300		Slovakia, Adventist World Radio	7235as			
0230	0300		Sweden, Radio	9495na	7155alt		
0230	0300		Switzerland, Swiss R International	9885am	9905am		
0230	0257		Vietnam, Voice of	9525na			
0245	0300		Albania, R Tirana International	6115na	7160na		
0250	0300		Vatican City, Vatican Radio	7305am	9605am		
0250	0300	v'	Zambia, National BC Corp	6165do	6265do		
0257	0300	v	Malawi, Malawi BC Corp	3380do			

Selected Programs

BBC World Service (am)

0200 S The World Today, M-A News; 0205 M Wright Around the World (musical variety), T Health Matters, W Science View, H Sports International, F One Planet (ecology), A Discovery (science); 0230 S From Our Own Correspondent, T Everywoman, W Focus on Faith, H Pick of the World (BBC's best), F People & Places, A Essential Guide.

HCJB, Ecuador

0200 S Ham Radio Today, M Sunday Nite, T Let My People Think, W The Book & the Spade (archaeology), H Adventures in Odyssey (Christian stories for children), F Viewpoint (issues), A Walkin' in the Sunshine (country music); 0215 W Words for Women; 0230 T-A Leading the Way; 0256 T-A Bibles for the World; 0258 T-A A Time for Harvest.

Radio Australia

0200 D News; 0205 S Fine Music Australia, A Ockham's Razor (science); 0210 The World Today (ABC Radio flagship news program); 0230 S Innovations, A Earthbeat (ecology). [Special service: 0205 A Grandstand (live sports action) on 9660, 12080, 17580, 17715, 17750, 21725 kHz only.]

Radio Budapest

0200 D News; 0210 S DX Blockbuster; M Europe Unlimited (trade) or Heading for Hungary (travel) or Spotlight (culture) or And the Gatepost (letters), T-A Hungary Today (current events magazine).

Radio Canada International

0200 D News; 0208 S Canada Newsweek, M Maple Leaf Mailbag, T-S Canada Today (current events magazine); 0230 S Canada Review (business/tech edition), M Canada Review (arts edition).

Radio Habana Cuba

0200 M Top Tens, T-S International News; 0210 S The World of Stamps, T-A Spotlight on the Americas; 0230 M The Jazz Place, T-S News Bulletin; 0235 T-S Reports and music.

Radio Korea International

0200 D News; 0210 S Seoul Report (week in review), M Korean Pop Interactive (requests), T-A News Commentary; 0215 T-A Seoul Calling (magazine); 0230 S From Us to You (letters), M Multiwave Feedback (letters/DX news), T Exploring the New Millennium, W Cultural Promenade, H Economic Radar, F Korea & Its Splendors, A Notes of Nostalgia (traditional music).

Radio New Zealand International

0200 D RNZ News; 0205 S Playhouse (radio theatre)*, M-F In Touch with NZ (cont'd from 0104 including My Music-BBC panel game 0230), A World of Music (BBC)*. [*may be preempted by live sport].

Radio Prague

0200 D News; 0205 S The Arts, M Letter from Prague, T-A Current Affairs; 0210 S Saturday Music (classical/folk/jazz), M From the Weeklies; 0215 M Readings from Czech Literature, T Spotlight (Czech current events) or One on One (interview), H Czechs in History or Central Europe Today, A Mailbox; 0220 W Talking Point, F Economic Report.

Radio Taipei International

0200 D News; 0215 S Great Wall Forum (discussing the mainland), M Jade Bells & Bamboo Pipes (traditional music), T People, W Taiwan Today, H Journey into Chinese Culture, F Taipei Magazine, A Kaleidoscope (life in Taiwan); 0230 S Food, Poetry and Others (culture), T Trends (society), W Stage & Screen, H Hot Spots (nightlife), F East Meets West (visitors), A Reflections (literature); 0245 S Mailbag Time, M-A Let's Learn Chinese.

Voice of Russia

0200 D News; 0211 S News & Views, M Sunday Panorama, T-A Commonwealth Update; 0224 M Russia in Personalities; 0230 D News in Brief; 0232 S Moscow Yesterday & Today, M Timelines, T Folk Box, W Jazz Show, H Russian Musical Highlights, F Yours for the Asking or Music Calendar, A Christian Message; 0246 F Music At Your Request; 0254 H Russia: People & Events.

WBCQ, Maine

0200 S Marion's Attic (vintage recordings).

Radio Austria International

0230 D Report from Austria (magazine); 0235 S Listener Letters, M Week in Review; 0245 S Music from Austria, M Profile of Austria.

Radio Sweden

0230 S Weekend (Europe magazine-1st week)/Sweden Today (2nd)/Spectrum (arts magazine-3rd)/Studio 49 (topical discussion-4th), M In Touch with Stockholm (listener contact-1st)/Sounds Nordic (rock music-exc. 1st), T-A Sixty Degrees North (regional report); 0245 T Sports Scan, W Media Scan (1st/3rd), H Money Matters, F Nordic Report (1st)/Green Scan (ecology-2nd)/Heart Beat (health-3rd)/The S-Files (things Swedish-4th), A Review of the Newsweek.

Swiss Radio International

0230 D Newsnet (Swiss magazine); 0240 S Name Game (Swiss geography quiz-1st week) or Capital Letters (2nd/4th) or Sounds Good (Swiss music-3rd/5th), M Swiss Scene (includes Postcards from Switzerland-1st & Book Zone-3rd); 0245 H Book Zone (2nd only), A Business Spotlight.

Voice of Vietnam

0230 D News; 0235 D Current Affairs; 0240 Su Weekly Review, M Sunday Show, T/W/F/A Press Review, H Talk of the Week; 0245 T Vietnam: Land & People, W Culture & Society, H Letterbox, F Vietnam Economy, A Rural Vietnam; 0250 S Music, A Literature and Arts.

WBCQ, Maine

0200 S Marion's Attic (vintage recordings).

WWCR, Tennessee

5070 kHz 0245 S Ask WWCR (letters).

0300 UTC Shortwave Guide

10:00 PM EST
9:00 PM CST
7:00 PM PST

Frequencies

0300	0400		Anguilla, Caribbean Beacon	6090om			
0300	0400	vl	Australia, ABC/Alice Springs	4835do			
0300	0400	vl	Australia, ABC/Katherine	5025do			
0300	0400	vl	Australia, ABC/Tennant Creek	4910do			
0300	0400		Australia, Christian Voice	9865vo	15185va	17645va	21680vo
0300	0400		Australia, Radio	9660pa	12080pa	15240as	15415as
				15515va	17580va	17750as	21725va
0300	0330	sm w fa	Belarus, R Belarus International	5970eu	7210eu		
0300	0400	vl	Botswana, Radio	3356do	4820do	7255do	
0300	0400		Bulgaria, Radio	7400na	9400na		
0300	0400		Canada, CBC Northern Service	9625do			
0300	0400		Canada, CFRX Toronto ON	6070do			
0300	0400		Canada, CFVP Calgary AB	6030do			
0300	0400		Canada, CHNX Halifax, NS	6130do			
0300	0400		Canada, CKZN St John's NF	6160do			
0300	0400		Canada, CKZU Vancouver BC	6160da			
0300	0356		China China Radio International	9560na			
0300	0400		Costa Rica, Faro del Caribe	5054ca	6175ca	9644ca	
0300	0400		Costa Rica, R for Peace Intl	5920al	6970va	7480va	15048va
				21B15irrg			
0300	0400		Costa Rica, University Network	5920al	6970va	7480va	15048va
				21815irr			
0300	0400		Cuba, Radio Havana	6000na	9820na	11705na	
0300	0400		Ecuador, HCJB	9745na	11840na	21455usb	
0300	0330		Egypt, Radio Cairo	9475am			
0300	0400	a/monthly	Finland, Scandv Weekend Radio	11690va	11720va		
0300	0345		Germany, Deutsche Welle	6045na	9535na	9640na	9700na
				11750na			
0300	0310	mtwhf	Greece, Voice of	5890na	7450na	7475na	9420na
0300	0400	vl	Guatemala, Radio Cultural	3300do	5955do		
0300	0400		Guyana, Voice of	3289da	5949da		
0300	0400	sm	Honduras, Radio Luz y Vida	3250ca			
0300	0400		Japan, Radio	17825ca	21610pa		
0300	0400		Kenya, Kenya BC Corp	4935do			
0300	0400	vl	Lesotho, Radio	4800do			
0300	0400		Liberia, Voice of Hope	6280af			
0300	0345	vl	Libya, Voice of Africa	11815af	15420af		
0300	0400		Malaysia, Radio	7295do			
0300	0400		Malaysia, Voice of Islam	6175as	9750as	15295as	
0300	0400		Namibia, Namibian BC Corp	3270af	3289af		
0300	0400		New Zealand, R New Zealand Int	17675pa			
0300	0400		Oman, Radio Sultanate of	15355va			
0300	0400	vl	Papua New Guinea, NBC	9675do	11880do		
0300	0400		Russia, Voice of Russia WS	7180na	12020na	13655na	15470na
0300	0330		S Africa, Adventist World Radio	9515af			
0300	0325		S Africa, Channel Africa	9525af			
0300	0400		Singapore R Corp of Singapore	6150do			
0300	0400	vl/as	Solomon Islands, SIBC	5020do			
0300	0400	vl/o	Solomon Islands, SIBC	9545do			
0300	0400		Sri Lanka, Sri Lanka BC Corp	6005as	6075as	6130do	9770as
				15425as			
0300	0400		Taiwan, R Taiwan International	5950na	9680na	11745as	11825as
				15345as			
0300	0330		Thailand, Radio	15460na			
0300	0400		Uganda, Radio	4976do	5026do		
0300	0400		UK, BBC World Service	3255af	5975na	6005af	6135am
			6175no	6190af	6195eu	7160af	9410eu
			11730af	11760me	11765af	11955me	12095af
			15280as	15310as	15360as	15420af	17760as
			17790as	21660as			
0300	0330	a	UK, Wales Radio Intl/Merlin	9735na			
0300	0400		USA, Armed Forces Radio	4278vo	4319va	4993va	5765va
			6350va	6458va	6847va	10320va	10940va
			12579va	12689va	13362va	16847va	
0300	0400		USA, KAIJ Dallas TX	5755va			
0300	0330		USA, KJES Vado NM	7555na			
0300	0400		USA, KTBN Salt Lake City UT	7510na			
0300	0400		USA, KWHR Naalehu HI	17510as			
0300	0330	mtwhf	USA, Voice of America	4960af			
0300	0400		USA, Voice of America	6035af	60B0af	7105af	7290af
				7340af	7415af	9575af	9885af
0300	0400		USA, WBCQ Monticello ME	7415na	9335na		
0300	0400		USA, WEWN Birmingham AL	5825va	7425na		
0300	0400		USA, WHRA Greenbush ME	7580na			
0300	0400		USA, WHRI Noblesville IN	7315sa			
0300	0400		USA, WINB, Red Lion PA	12160am			
0300	0400		USA, WJCR Upton KY	7490va	13595as		
0300	0400		USA, WRMI Miami FL	73B5am			
0300	0400		USA, WSHB Cypress Crk SC	7535eu			
0300	0400		USA, WTJC Newport NC	9370na			
0300	0400		USA, WWCR Nashville TN	3215am	5070am	5935am	7435am
0300	0400		USA, WWFV McCaysville GA	5085va	6890am		
0300	0400		USA, WYFR Okeechobee FL	6065na	9505na		
0300	0400	vl	Vanuatu, Radio	3945do	4960do	7260do	
0300	0310		Vatican City, Vatican Radio	7305am	9605am		
0300	0400		Zambia, Christian Voice	6065do			
0300	0400	vl	Zambia, National BC Corp	6165do	6265do		
0300	0400	vl	Zimbabwe, Zimbabwe BC Corp	4828do	6045do		
0310	0340		Vatican City, Vatican Radio	9660af			
0330	0400		Albania, R Tirana International	6115na	7160na		
0330	0400		Hungary, Radio Budapest	9835na			
0330	0400		Myanmar, Radio	9730do			
0330	0400		Sweden, Radio	9495na			
0330	0400		UAE, Radio Dubai	12005na	13675na	15395na	15400na
0330	0357		Vietnam, Voice of	9795na			
0345	0400	f	Seychelles, FEBA Radio	11885af			
0357	0400	vl	Malawi, Malawi BC Corp	5995do			

Selected Programs

BBC World Service (am)

0300 D World Briefing; 0320 D Sports Roundup; 0330 S Science in Action, M Assignment, T-A World Business Report; 0345 T/W/F/A Analysis, H From Our Own Correspondent.

Channel Africa

0300 S Network Africa (week in review), M-F Dateline Africa (news magazine), A Channel Africa Sport.

China Radio International

0300 D News; 0310 S Report on Developing Countries, M-F Current Affairs, A Global Review; 0320 S In the Spotlight (cultural magazine), A Listeners' Garden; 0330 M People in the Know (China's leading citizens), T Sports World, W China Horizons (business), H Voices from Other Lands, F Life in China.

Deutsche Welle

0300 D News; 0305 S Saturday Review, M Sunday Review, T-A Newslink (European current affairs); 0315 S Spectrum (sci/tech), M Arts on the Air; 0330 T Insight (international affairs), W Man & Environment, H Living in Germany, F Spotlight on Sport, A German by Radio.

HCJB, Ecuador

0300 S Alive! (Christian lifestyles), M The Sower, T-A Hope for the Heart; 0313 T-A Getting the Message; 0315 M The Word Today, T-A Rendezvous (inspirational music); 0330 M Radio Reading Room (Christian lit.), T Unshackled (radio's oldest drama series), W CBF Presents, H The Living Word, F Otaochimow, A Inspirational Classics (liturgical music); 0345 W Wonderful Words of Life (hymns), F Science, Scripture & Salvation.

Radio Australia

0300 D News; 0305 S Correspondent's Report, A Rural Reporter; 0310 M-F The Margaret Throsby Interview; 0330 S Feedback (letters/station news), A Book Reading; 0340 A Lingua Franca (about language). [Special service: 0305 S/A Grandstand (live sports action) on 9660, 12080, 17580, 17715, 17750, 21725 kHz only.]

Radio Budapest

0330 D News; 0340 S DX Blockbuster; M Europe Unlimited (trade) or Heading for Hungary (travel) or Spotlight (culture) or And the Gatepost (letters), T-A Hungary Today (current events magazine).

Radio Habana Cuba

0300 M Breakthrough (science), T-S International News; 0310 T-S National News; 0315 T-S Viewpoint; 0330 M From Havana (Cuban music), T-S News Bulletin; 0335 T-A Time Out (sports); 0340 S/W DXers Unlimited, M/F Caribbean Outlook, H Mailbag Show, A Weekly Review.

Radio New Zealand International

0300 S/A RNZ News*, M-F Pacific Regional News; 0308 S A Question of Religion*, M Tagata o te Moana (Pacific culture), T Top 5, W Pacific Report, H Mailbag or RNZI Talk (meet the RNZI staff), F Dateline Pacific, A Music feature or series*; 0330 T New Releases, W Tradewinds, H The World in Sport, F Pacific Correspondent. [*may be preempted by live sport].

Radio Taipei International

0300 D News; 0315 S Instant Noodles, M Life on the Outside, T Taiwan Economic Journal, W Floating Air (traditional music), H Soundbite, F Miss Mook's Big Countdown (current pop hits), A Maluwan; 0330 M Women in Taiwan, T Formosa Oldies, H Life Unusual, A Carol's Cafe.

Voice of Russia

0300 D News; 0311 S/M/H Moscow Mailbag, T/F Science & Engineering, W/A Newmarket (business); 0330 D News in Brief; 0332 S Songs from Russia, M This is Russia, T Kaleidoscope (Russian events), W Russian Musical Highlights, H Moscow Yesterday & Today, F Russian by Radio, A Audio Book Club (Russian lit.); 0346 S You Write to Moscow; 0354 Russia: People & Events.

WWCR Tennessee

3215 kHz: 0300 M Pat Boone, A Golden Age of Radio. 5070 kHz: 0300 S Communications World; 0330 S World of Radio.

Radio Sweden

0330 S Weekend (Europe magazine-1st week)/Sweden Today (2nd)/Spectrum (arts magazine-3rd)/Studio 49 (topical discussion-4th), M In Touch with Stockholm (listener contact-1st)/Sounds Nordic (rock music-exc. 1st), T-A Sixty Degrees North (regional report); 0345 T Sports Scan, W Media Scan (1st/3rd), H Money Matters, F Nordic Report (1st)/Green Scan (ecology-2nd)/Heart Beat (health-3rd)/The S-Files (things Swedish-4th), A Review of the Newsweek.

Voice of Vietnam

0330 D News; 0335 D Current Affairs; 0340 Su Weekly Review, M Sunday Show, T/W/F/A Press Review, H Talk of the Week; 0345 T Vietnam: Land & People, W Culture & Society, H Letterbox, F Vietnam Economy, A Rural Vietnam; 0350 S Music, A Literature and Arts.

GRUNDIG Best in Technology

Yacht Boy 400 Professional Edition (YB 400PE)

The most powerful compact Radio AM/FM Shortwave Receiver.

"The Best compact shortwave portable we have tested" Lawrence Magne-Editor in Chief, Passport to World Band Radio.

The Big Breakthrough! Power, performance, and design have reached new heights! The Grundig 400 Professional Edition with its sleek titanium look is packed with features like no other compact radio in the world.

Pinpoint Accuracy! The Grundig 400PE does it all: pulls in AM, FM, FM-Stereo, every shortwave band (even aviation and ship-to-shore)-all with lock-on digital precision.

Ultimate Features! Auto tuning! The Grundig 400PE has auto tuning on shortwave and stops at every signal and lets you listen. With the exceptional sensitivity of the 400PE, you can use the auto tune to catch even the weakest of signals.
Incredible timing features! The Grundig 400PE can send you to sleep listening to your favorite music.
You can set the alarm to wake up to music or the morning traffic report, then switch to BBC shortwave for the world news.
The choice is yours!

Powerful Memory! Described as a smart radio with 40 memory positions, the Grundig 400PE remembers your favorites-even if you don't!

Never Before Value! Includes deluxe travel pouch, stereo earphones, owner's manual, external antenna and a 9 volt Grundig AC adapter. Uses 6 AA batteries (not included)

Style • Titanium look

Shortwave, AM and FM • Continuous shortwave from 1.6 - 30 MHz, covering all existing shortwave bands plus FM-stereo, AM and Longwave. • Single sideband (SSB) circuitry allows for reception of two-way communication such as amateur radio, military, commercial, air-to-ground, and ship-to-shore.

Memory Positions • 40 randomly programmable memory positions allow for quick access to favorite stations.

Multi-function Liquid Crystal Display • The LCD simultaneously displays the time, frequency, band, alarm and sleep timer.

Clock, Alarm and Timer • Two alarm modes: Beeper and radio.
• Dual clocks show time in 24 hour format.
• Sleep timer programmable in 15 minute increments.

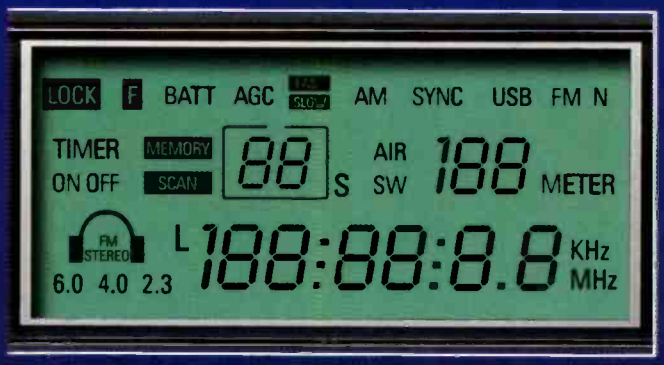
Dimensions: 7.75" L X 4.5" H X 1.5" W

Weight: 1 lb. 5 oz.

by GRUNDIG

Lextronix / Grundig, P.O. Box 2307, Menlo Park, CA 94026 • Tel: 650-361-1611 • Fax: 650-361-1724
Shortwave Hotlines: (US) 1-800-872-2228 (CN) 1-800-637-1648 • Web: *www.grundigradio.com* • Email: *grundig@ix.netcom.com*

GRUNDIG The Ultimate in



Ultra fine-tuning of 50Hz on LSB/USB, 100Hz in SW, AM and Aircraft Band and 20 KHz in FM.

• For Fixed-step Tuning: Big, responsive Up/Down tuning buttons.

• For direct frequency entry: a responsive, intuitive numeric keypad

The LCD

Big! Bold! Brightly Illuminated 6" by 3½". Liquid Crystal Display shows all important data: Frequency, Meter band, Memory position, Time, LSB/USB, Synchronous Detector and more.

The Signal Strength Meter

Elegant in its traditional Analog design, like the gauges in the world's finest sports cars. Large. Well Lit. Easy to read.

The Frequency Coverage

Longwave, AM and shortwave: continuous 100-30,000 KHz. FM: 87-108 MHz VHF Aircraft Band: 118-137 MHz.

The Tuning Controls

• For the traditionalist: a smooth, precise tuning knob, produces no audio muting during use.

THESE ARE THE SATELLIT 800 MILLENNIUM'S MAJOR FEATURES. FOR A DETAILED SPECIFICATION SHEET, CONTACT GRUNDIG.

Digital Technology

The Operational Controls
Knobs where you want them; Buttons where they make sense. The best combination of traditional and high-tech controls.

The Sound
Legendary Grundig Audio Fidelity with separate bass and treble controls, big sound from its powerful speaker and FM-stereo with the included high quality headphones.

The Technology
Today's latest engineering:
- Dual conversion superheterodyne circuitry.
- PLL synthesized tuner.

The Many Features
- 70 user-programmable memories.
- Two, 24 hour format clocks.
- Two ON/OFF sleep timers.
- Massive, built-in telescopic antenna.
- Connectors for external antennas – SW, AM, FM and VHF Aircraft Band.
- Line-out, headphone and external speaker jacks.

The Power Supply
A 110V AC adapter is included for North America (a 220V AC adapter is available upon request). Also operates on 6 size D batteries. (not included)

Dimensions: 20.5" L X 9" H X 8" W

Weight: 14.50 lbs.

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Lextronix / Grundig, P.C. Box 2307, Menlo Park, CA 94026 • Tel: 650-361-1611 • Fax: 650-361-1724
ines: (US) 1-800-872-2228 (CN) 1-800-637-1648 • Web: *www.grundigradio.com* • Email: *grundig@ix.netcom.com*

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Yacht Boy 300 Professional Edition (YB 300PE)

Power and Performance with the Affordable Yacht Boy 300 Professional.

Designed for the traveller, the titanium look digital radio provides incredible power and performance for an incredibly low price! Packed with features, this radio is an excellent value, accompanied with 3 AA batteries, AC adapter, earphones, supplementary Antenna and carrying case!

State-of-the-art features include:

- Digital tuning with 24 user-programmable memory presets
- 13 SW Bands (2.30-7.80 MHz; 9.10-26.10 MHz)
- Illuminated multifunction LCD display screen
- AM/FM stereo via earphones
- Clock, alarm and 10 to 90 minute sleep timer
- Digital tuning display
- Direct frequency entry
- DX/Local selector
- Titanium look finish
- External antenna jack
- Dynamic micro speaker
- Earphone jack
- Telescopic antenna

Dimensions: 5.75" L X 3.5" H X 1.25" W

Weight: 9.92 oz

by GRUNDIG

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Shortwave Hotlines: (US) 1-800-872-2228 (CN) 1-800-637-1648 • Web: www.grundigradio.com • Email: grundig@ix.netcom.com

Frequencies

0400	0500		Anguilla, Caribbean Beacon	6090am			
0400	0500	vl	Australia, ABC/Alice Springs	4835do			
0400	0500	vl	Australia, ABC/Katherine	5025do			
0400	0500	vl	Australia, ABC/Tennant Creek	4910do			
0400	0500		Australia, Christian Voice	9865va	15185va	17645va	21680va
0400	0500		Australia, Radio	9660pa	12080pa	15240as	15413as
				15515va	17580va	17750as	21725va
0400	0430		Belgium, Radio Vlaanderen Intl	11985am			
0400	0500	vl	Botswana, Radio	3356do	4820do	7255do	
0400	0500	vl	Cameroon, RTV/Yaounde	4850do			
0400	0500		Canada, CBC Northern Service	9625do			
0400	0500		Canada, CFRX Toronto ON	6070do			
0400	0500		Canada, CFVP Calgary AB	6030do			
0400	0500		Canada, CHNX Halifax, NS	6130do			
0400	0500		Canada, CKZN St John's NF	6160do			
0400	0500		Canada, CKZU Vancouver BC	6160do			
0400	0456		China China Radio International	9730na			
0400	0500		Costa Rica, R for Peace Intl	5920al	6970va	7480va	15048va
0400	0500		Costa Rica, University Network	5920al	6970va	7480va	15048va
0400	0500		Cuba, Radio Havana	6000na	9820na	11705na	
0400	0427		Czech Rep, Radio Prague Intl	7345na	7385na	9435na	
0400	0500		Ecuador, HCJB	9745na	11840na	21455usb	
0400	0500	a/monthly	Finland, Scandv Weekend Radio	11690va	11720va		
0400	0445		Germany, Deutsche Welle	7280af	9565af	11935af	11965af
0400	0500	vl	Guatemala, Radio Cultural	3300do	5955do		
0400	0500		Guyana, Voice of	3289do	5949do		
0400	0500	irreg	Iraq, Radio Iraq International	9684va	11787va		
0400	0500		Kenya, Kenya BC Corp	4935do			
0400	0500	vl	Lesotho, Radio	4800do			
0400	0500		Liberia, Voice of Hope	6280af			
0400	0500	vl	Malawi, Malawi BC Corp	3380do	5995do		
0400	0500		Malaysia, Radio	7295do			
0400	0500		Malaysia, Voice of Islam	6175as	9750as	15295as	
0400	0500	stwhfa	Mexico, R Mexico International	9705am			
0400	0430		Mongolia, Voice of	12015as	12085as		
0400	0500		Myanmar, Radio	9730da			
0400	0500		Namibia, Namibian BC Corp	3270af	3289af		
0400	0500		New Zealand, R New Zealand Int	17675pa			
0400	0500		New Zealand, ZLXA	3935do	7290do		
0400	0500	vl	Nigeria, Radio/Enugu	6025do			
0400	0430	vl	Nigeria, Radio/Kaduna	6090do	7275do		
0400	0500	vl	Papua New Guinea, NBC	9675do	11880do		
0400	0456		Romania, R Romania International	9570na	11830no	15335as	17735as
				15335			
0400	0500		Russia, Voice of Russia WS	7125na	7180na	12000na	12020na
				13665na	15445na	15470na	15595na
				17595no			
0400	0430		S Africa, Channel Africa	5955al			
0400	0500		Singapore R Corp of Singapore	6150da			
0400	0500	vl/as	Solomon Islands, SIBC	5020do			
0400	0500	vl/a	Solomon Islands, SIBC	9545do			
0400	0430		Sri Lanka, Sri Lanka BC Corp	6005as	6075as	6130do	9770as
				15425as			
0400	0500		Switzerland, Swiss R International	9885am	9905am		
0400	0500		Turkey, Voice of	6020na	7240as	9655as	21715as
0400	0500		Uganda, Radio	4976do	5026do		
0400	0500		UK, BBC World Service	3255af	5975na	6005af	6005af
			5135am	6175na	6190af	6195eu	7160af
			9410eu	11760me	11765af	12095af	15280as
			15310as	15420af	15575me	17760as	17790as
			21660as	21830me			
0400	0500		Ukraine, R Ukraine International	9610na	9810na		
0400	0500		USA, Armed Forces Radio	4278va	4319va	4993va	5765va
			6350va	6458va	6847va	10320va	10940va
			12579va	12689va	13362va	16847va	
0400	0500		USA, KAIJ Dallas TX	5755va			
0400	0500		USA, KTBN Salt Lake City UT	7510na			
0400	0500		USA, KVOH Los Angeles CA	9975am			
0400	0500		USA, KWHR Naalehu HI	17780as			
0400	0500		USA, Voice of America	6080af	7170af	7290af	7415af
				9575af	9775af	9885af	15205as
0400	0500		USA, WBCQ Monticello ME	7415na	9335na		
0400	0500		USA, WEWN Birmingham AL	5825va	7425na		
0400	0500		USA, WHRA Greenbush ME	7580na			
0400	0500		USA, WHRI Noblesville IN	7315sa			
0400	0500		USA, WINB Red Lion PA	12160am			
0400	0500		USA, WJCR Upton KY	7490va	13595as		
0400	0500		USA, WMLK Bethel PA	7555va	9465alt		
0400	0500		USA, WRMI Miami FL	7385am			
0400	0500		USA, WSHB Cypress Crk SC	7535eu	12020af		
0400	0500		USA, WTJC Newport NC	9370na			
0400	0500		USA, WWCR Nashville TN	2390am	3215am	5070am	5935am
0400	0500		USA, WWFW McCaysville GA	5085va	6890am		
0400	0455		USA, WYFR Okeechobee FL	6065na	9355eu	9505na	
0400	0500		Zambia, Christian Voice	6065do			
0400	0500	vl	Zambia, National BC Corp	6165do	6265do		
0400	0500	vl	Zimbabwe, Zimbabwe BC Corp	4828do	6045do		
0425	0440		Italy, RAI International	6145af	7120af		
0430	0457		Czech Rep, Radio Prague Intl	9865va	11600va		
0430	0500		Netherlands, Radio	6165na	9590na		
0430	0500	vl	Nigeria, Radio/Ibadan	6050da			
0430	0500	vl	Nigeria, Radio/Kaduna	4770do	6090do	7275do	9570do
0430	0500	vl	Nigeria, Radio/Lagos	3326do	4990do		
0430	0500		S Africa, Adventist World Radio	12080af			
0430	0500		S Africa, Trans World Radio	6035af			
0430	0500	mtwhfa	S Africa, Trans World Radio	4775af			
0430	0500		Sri Lanka, Sri Lanka BC Corp	6130do			
0430	0500		Swaziland, Trans World Radio	4774af	6035af		
0445	0500		USA, WYFR Okeechobee FL	9355eu			

Selected Programs

BBC World Service (am)

0400 S/M The World Today, T-A News; 0405 T Omnibus (documentary), W The Alternative (music), H Greenfield Collection (classical music), F Jazzmatazz, A Panel game or Quiz; 0430 S Global Business, M Westway (drama serial), T Body & Mind (health), W Patterns of Faith, H Plain English, F Heart & Soul (religion), A Write On (letters) or Waveguide (radio topics); 0445 T-A Off the Shelf (book readings).

Channel Africa

0400 S Network Africa (week in review), M-F Dateline Africa (news magazine), A Channel Africa Sport.

China Radio Intenational

0400 D News; 0410 S Report on Developing Countries, M-F Current Affairs, A Global Review; 0420 S In the Spotlight (cultural magazine), A Listeners' Garden; 0430 M People in the Know (China's leading citizens), T Sports World, W China Horizons (business), H Voices from Other Lands, F Life in China.

HCJB, Ecuador

0400 D Latin American & World News; 0409 S DX Partyline, M Musical Mailbag, T-A Studio 9 (Latin American regional report); 0430 T Inside HCJB, W El Mundo Futuro, H Ham Radio Today, F Woman to Woman, A Musica del Ecuador.

Radio Australia

0400 D News; 0405 S Ockham's Razor (science), A Pacific Focus-Environment; 0410 M-F The World Today (ABC Radio flagship news program); 0430 S Oz Sounds (Australian music), A Asia Pacific (regional report). [Special service: 0405 S/A Grandstand (live sports action) on 9660, 12080, 15580, 17715, 17750, 21725 kHz only.]

Radio Habana Cuba

0400 M Weekly Review, T-S International News; 0410 S The World of Stamps, T-A Spotlight on the Americas; 0430 M The Mailbag Show, T-S News Bulletin; 0435 T-S Reports and music.

Radio Netherlands

0430 S/M News; T-A Newsline; 0435 S Europe Unzipped, M Sincerely Yours (letters); 0455 S Insight (commentary).

Radio New Zealand International

0400 D RNZ News; 0405 S Whenua! (Maori culture), M-F Checkpoint (comprehensive news), A Tagata o te Moana (Pacific culture).

Radio Prague

0400 D News; 0405 S The Arts, M Letter from Prague, T-A Current Affairs; 0410 S Saturday Music (classical/folk/jazz), M From the Weeklies; 0415 M Readings from Czech Literature, T Spotlight (Czech current events) or One on One (interview), H Czechs in History or Central Europe Today, A Mailbox; 0420 W Talking Point, F Economic Report.

Radio Vlaanderen Internationaal

0400 S Music from Flanders, A Radio World, T-A News; 0404 T-A Belgium Today; 0408 M Tourism in Flanders, T-A Press Review; 0413 T Focus on Europe, W Green Society (ecology), H/A Around the Arts, F Economics; 0414 M Brussels 1043 (letters); 0418 T Sports, H Around Town, F International Report, A Tourism in Flanders; 0424 M-A Soundbox (Flemish rock).

Swiss Radio International

0400 D Newsnet (Swiss magazine); 0410 S Name Game (Swiss geography quiz-1st wk) or Capitol Letters (2nd/4th) or Sounds Good (Swiss music-3rd/5th), M Swiss Scene (includes Postcards from Switzerland-1st & Book Zone-3rd); 0415 H Book Zone (2nd only), A Business Spotlight; 0430 D Newsnet (Swiss magazine); 0440 S Name Game (Swiss geography quiz-1st week) or Capitol Letters (2nd/4th) or Sounds Good (Swiss music-3rd/5th), M Swiss Scene (includes Postcards from Switzerland-1st & Book Zone-3rd); 0445 H Book Zone (2nd only), A Business Spotlight.

Voice of Russia

0400 D News; 0411 M Sunday Panorama, T-S News & Views; 0424 M Russia: People & Events; 0430 D News in Brief; 0432 S Kaleidoscope (Russian events), M Audio Book Club (Russian lit.), T/H/A 20th Century, W/F Russian history/culture.

WBCQ, Maine

7415 kHz: 0400 S La Bon Bon Club.

WHRI, Indiana

5745 kHz: 0400 S DXing with Cumbre. 7315 kHz: 0405 S/A 20, The Countdown Magazine (Christian rock)

WWCR, Tennesee

3215 kHz: 0400 M Profiles; 0405 M America's Greatest Heroes. 5070 kHz: 0400 S Spectrum (communications magazine).

0500 UTC Shortwave Guide

12:00 AM EST
11:00 PM CST
9:00 PM PST

Frequencies

0500	0600		Anguilla, Caribbean Beacon	6090am			
0500	0600	vl	Australia, ABC/Alice Springs	4835do			
0500	0600	vl	Australia, ABC/Katherine	5025do			
0500	0600	vl	Australia, ABC/Tennant Creek	4910do			
0500	0530		Australia, Christian Voice	9865va	15185vo	17645va	21680va
0500	0600		Australia, Radio	9660pa	12080pa	15240as	15515va
				17580va	21725vo		
0500	0600as		Australia, Radio	17750as			
0500	0600	vl	Botswana, Radio	3356do	4820do	7255do	
0500	0600	vl	Cameroon, RTV/Yaounde	4850do			
0500	0600		Canada, CBC Northern Service	9625do			
0500	0600		Canada, CFRX Toronto ON	6070do			
0500	0600		Canada, CFVP Calgary AB	6030do			
0500	0600		Canada, CHNX Halifax, NS	6130do			
0500	0600		Canada, CKZN St John's NF	6160do			
0500	0600		Canada, CKZU Vancouver BC	6160do			
0500	0559		Canada, R Canada International	9760af	11850af	11905me	
0500	0556		China China Radio International	9560na			
0500	0600		Costa Rica, R for Peace Intl	5920al	6970va	7480va	15048va
0500	0600		Costa Rica, University Network	5920al	6970va	7480va	15048va
0500	0600		Cuba, Radio Havana	9550na	9820na	9830na	
0500	0600		Ecuador, HCJB	9745na	11840na	21455usb	
0500	0600	a/monthly	Finland, Scandv Weekend Radio	11690va	11720va		
0500	0545		Germany, Deutsche Welle	5960na	6120na	9670no	11795no
0500	0600		Guyana, Voice of	3289do	5949do		
0500	0515		Israel, Kol Israel	6280va	9435va	17545va	
0500	0600		Japan, Radio	5975eu	6110na	7230eu	11715as
				11760as	15150as	17810as	21755po
0500	0600		Kenya, Kenya BC Corp	4935do			
0500	0600		Kuwait, Radio	15110va			
0500	0600	vl	Lesotho, Radio	4800do			
0500	0600	vl	Liberia, R Liberia International	5100do			
0500	0600		Liberia, Voice of Hope	6280af			
0500	0600	vl	Malawi, Malawi BC Corp	3380do	5995do		
0500	0600		Malaysia, Radio	7295do			
0500	0600		Malaysia, RTM Sarawak	7160do			
0500	0600		Malaysia, Voice of Islam	6175as	9750as	15295as	
0500	0530	twhfa	Mexico, R Mexico International	9705am			
0500	0600		Myanmar, Radio	9730do			
0500	0600		Namibia, Namibian BC Corp	3270af	3289af		
0500	0530		Netherlands, Radio	6165na	9590na		
0500	0600		New Zealand, R New Zealand Int	17675pa			
0500	0600		New Zealand, ZLXA	3935do	7290do		
0500	0600	vl	Nigeria, Radio/Enugu	6025do			
0500	0600	vl	Nigeria, Radio/Ibadon	6050do			
0500	0600	vl	Nigeria, Radio/Kaduna	4770do	6090do	7275do	9570do
0500	0600	vl	Nigeria, Radio/Lagos	3326do	4990do		
0500	0600	vl	Nigeria, Voice of	7255af	15120af		
0500	0600	vl	Papua New Guinea, NBC	9675do	11880do		
0500	0600		Russia, Voice of Russia WS	7125na	7180na	12020na	15445na
				15470na	15595na	17595na	
0500	0600	mtwhfa	Russia, Voice of Russia WS	12000na			
0500	0530		S Africa, Adventist World Radio	5960af	6015af		
0500	0530		S Africa, Channel Africa	15215af			
0500	0600	mtwhfs	S Africa, Trans World Radio	7200as			
0500	0600		Singapore R Corp of Singapore	6150do			
0500	0600	vl	Solomon Islands, SIBC	5020do	9545do		
0500	0600		Spain, R Exterior Espana	6055na			
0500	0600		Sri Lanka, Sri Lanka BC Corp	6130do			
0500	0600		Swaziland, Trans World Radio	6035af	7200af	9500af	
0500	0530		Switzerland, Swiss R International	9655eu			
0500	0530		Uganda, Radio	4976do	5026do		
0500	0600		UK, BBC World Service	5975na	6005af	6175am	6190af
			6195eu	7160af	9410eu	9740as	11760me
			11765af	11940af	11955pa	12095eu	15280os
			15360as	15420as	15575me	17640af	17760os
			17790as	21660as			
0500	0600		USA, Armed Forces Radio	4278va	4319va	4993va	5765vo
			6350va	6458va	6847va	10320va	10940va
			12579vo	12689va	13362va	16847va	
0500	0600		USA, KAIJ Dallas TX	5755va			
0500	0600		USA, KTBN Salt Lake City UT	7510na			
0500	0600		USA, KVOH Los Angeles CA	9975am			
0500	0600		USA, KWHR Naalehu HI	11565pa	17780as		
0500	0600		USA, Voice of America	5970af	6035af	6080af	7170af
				7295af	9700af	9775af	11825eu
				12080af	15205as		
0500	0600		USA, WBCQ Monticello ME	7415no	9330no		
0500	0600		USA, WEWN Birmingham AL	5825va	7425no		
0500	0600		USA, WHRA Greenbush ME	7435af			
0500	0600		USA, WHRI Noblesville IN	7315sa			
0500	0600		USA, WJCR Upton KY	7490va	13595as		
0500	0600		USA, WMLK Bethel PA	7555va	9465alt		
0500	0600		USA, WRMI Miami FL	7385am			
0500	0600		USA, WSHB Cypress Crk SC	7535eu	15195af		
0500	0600		USA, WTJC Newport NC	9370na			
0500	0505	sm	USA, WWCR Nashville TN	3210am			
0500	0505	twhfa	USA, WWCR Nashville TN	3215am			
0500	0600		USA, WWCR Nashville TN	2390am	3210am	5070am	5935am
0500	0600		USA, WWFV McCoysville GA	5085va	6890am		
0500	0600		USA, WYFR Okeechobee FL	5985na	9355eu	11550eu	
0500	0600	vl	Vanuatu, Radio	3945do	4960do	7260do	
0500	0530		Vatican City, Vatican Radio	9660af	11625af		
0500	0600		Zambia, Christian Voice	6065do			
0500	0600	vl	Zambia, National BC Corp	6165do	6265do		
0500	0530	vl	Zimbabwe, Zimbabwe BC Corp	4828do	6045do		
0502	0600		S Africa, Trans World Radio	9500af			
0515	0525		Rwanda, Radio	6055do			
0525	0600	vl	Ghana, Ghana BC Corp	3366do	4915do		
0530	0600	vl	Italy, IRRS	3985vo			
0530	0600		Thailand, Radio	15115eu			
0530	0600		UAE, Radio Dubai	13675au	15435au	21700au	
0530	0600	smtwhf	UK, BBC World Service	17885af			
0530	0600	vl	Zimbabwe, Zimbabwe BC Corp	5975do	6045do		

Selected Programs

BBC World Service (am)

0500 S News, M-A The World Today; 0505 S Wright Around the World (musical variety).

Channel Africa

0500 S Network Africa (week in review), M-F Dateline Africa (news magazine), A Channel Africa Sport.

China Radio International

0500 D News; 0510 S Report on Developing Countries, M-F Current Affairs, A Global Review; 0520 S In the Spotlight (cultural magazine), A Listeners' Garden; 0530 M People in the Know (China's leading citizens), T Sports World, W China Horizons (business), H Voices from Other Lands, F Life in China.

Deutsche Welle

0500 D News; 0505 S Talking Point (journalists), M Religion & Society, T-A Newslink (European current affairs); 0515 S Marks & Markets, M COOL! (youth magazine); 0530 T Insight (international affairs), W Man & Environment, H Living in Germany, F Spotlight on Sport, A German by Radio.

HCJB, Ecuador

0500 S Saludos Amigos, M Sunday Nite, T Let My People Think, W The Book & the Spade (archaeology), H Adventures in Odyssey (Christian stories for children), F Inspirational Classics (liturgical music), A Walkin' in the Sunshine (country music); 0515 Words for Women; 0530 S Inside HCJB, T-A A New Beginning; 0556 T-A A Slice of Infinity.

Radio Australia

0500 D News; 0505 S Pacific Review, A Pacific Focus-Sport; 0510 M-F Pacific Beat (Pacific islands magazine); 0530 S In Conversation-Rural, A Educational series. [Special service: 0505 S/A Grandstand (live sports action) on 9660, 12080, 17580, 17715, 17750, 21725 kHz only.]

Radio Habana Cuba

0500 M Top Tens, T-S International News; 0510 T-S National News; 0515 T-S Viewpoint; 0530 M The Jazz Place, T-S News Bulletin; 0535 T-A Time Out (sports); 0540 S/W DXers Unlimited, M/F Caribbean Outlook, H Mailbag Show, A Weekly Review.

Radio Japan

0500 D News; 0510 S Roundup Asia (regional magazine), A Hello from Tokyo (listener contact); 0515 M-F 44 Minutes (feature magazine).

Radio Netherlands

0500 S Sound Fountain (soundscapes), M Dutch Horizons, T Research File (science), W Music 52-15 (international music), H Documentary, F Encore (best of RN), A A Good Life (global development).

Radio New Zealand International

0500 D RNZ News; 0506 S Storytime (children), M-F Worldwatch (international news), A Focus on Politics; 0530 M Letter from America (BBC), T-H Today in Parliament, F The Pacific Report, A In a Mellow Tone (soft sounds); 0555 D Golden Kiwis (prominent NZers).

Spanish Foreign Radio

0500 S Visitors' Book, M Window on Spain, T-A News; 0515 S American Chronicles, M Entremeses (food/tourism); 0529 M Music series; T-A Spanish Pop Music; 0532 S Spain in the American West; T-A Press Review; 0535 T Entertainment in Spain, W Kaleidoscope (life in Spain), H As Others See Us, F Arts in Spain, A Radio Club (letters); 0547 S Radio Waves, M Radio Club (repeat), T-A Spanish Language Course.

Voice of Nigeria

0500 S Reflections, M-F Wave Train (music), A African Safari (music); 0505 S Link-Up (music requests); 0530 S/A News, M-F VON Scope (news magazine).

Voice of Russia

0500 D News; 0511 S/M Russian Musical Highlights, T/F Moscow Mailbag, W/A Science and Engineering, H Newsmarket (business); 0530 D News in Brief; 0532 S Moscow Yesterday and Today, M Jazz Show, T Yours for the Asking or Music Calendar, W Russian Musical Highlights, H Folk Box, F Audio Book Club (Russian lit.), A Timelines; 0546 T Music At Your Request, W Russia: People & Events.

WBCQ, Maine

7315 kHz 0500 S Tom & Darryl (electronic media), M-A Amos 'n Andy.

WHRI, Indiana

7315 kHz: 0500 S 20,The Countdown Magazine (Christian rock music chart). 5745 kHz: 0530 S DXing with Cumbre.

WWCR, Tennessee

3210 kHz: 0500 T-S Worldwide Country Radio (country music). 5070 kHz: 0530 M New Horizons (sci/tech); 0545 M Ask WWCR (letters).

Frequencies

0600	0700		Anguilla, Caribbean Beacon	6090am			
0600	0700	vl	Australia, ABC/Alice Springs	4835do			
0600	0700	vl	Australia, ABC/Katherine	5025do			
0600	0700	vl	Australia, ABC/Tennant Creek	4910do			
0600	0700		Australia, Radio	9660pa	12080po	15240as	15415as
				15515va	17580as	17750as	21725va
0600	0700	vl	Botswana, Radio	7255do	9600do	7255do	
0600	0700	vl	Cameroon, RTV/Yaounde	4850do			
0600	0615		Canada, CBC Northern Service	9625do			
0600	0700		Canada, CFRX Toronto ON	6070do			
0600	0700		Canada, CFVP Calgary AB	6030do			
0600	0700		Canada, CHNX Halifax, NS	6130do			
0600	0700		Canada, CKZN St John's NF	6160do			
0600	0700		Canada, CKZU Vancouver BC	6160do			
0600	0629		Canada, R Canada International	6045eu	6150eu	9780eu	
0600	0700		Costa Rica, R for Peace Intl	5920al	6970vo	7480va	15043irr
0600	0700		Costa Rica, University Network	5920al	6970va	7480va	15043irr
0600	0700		Cuba, Radio Havana	9550na	9820na	9830na	
0600	0700		Ecuador, HCJB	9745na	11840na	21455usb	
0600	0700	a/monthly	Finland, Scandv Weekend Radio	11690va	11720va		
0600	0645		Germany, Deutsche Welle	7225af	9565af	11785af	
0600	0700		Germany, Deutsche Welle	6140eu			
0600	0700		Germany, Voice of Hope	21590me			
0600	0700	vl	Ghana, Ghana BC Corp	3366do	4915do		
0600	0700		Guyana, Voice of	3289do	5949do		
0600	0700	vl	Italy, IRRS	3985va			
0600	0700		Japan, Radio	9685pa	7230eu	11740as	15195as
				21755pa			
0600	0700		Kenya, Kenya BC Corp	4935do			
0600	0700		Kuwait, Radio	15110va			
0600	0700	vl	Lesotho, Radio	4800do			
0600	0700	vl	Liberia, ELWA	4760do			
0600	0700	vl	Liberia, R Liberia International	5100do			
0600	0700		Liberia, Voice of Hope	6280af			
0600	0700	vl	Malawi, Malawi BC Corp	3380do	5995do		
0600	0700		Malaysia, Radio	7295do			
0600	0700		Malaysia, RTM Sarawak	7160do			
0600	0700		Malaysia, Voice of	6175as	9750as	15295as	
0600	0700		Myanmar, Radio	9730do			
0600	0700		Namibia, Namibian BC Corp	3270af	3289af		
0600	0700		New Zealand, ZLXA	3935do	7290do		
0600	0700	vl	Nigeria, Radio/Enugu	6025do			
0600	0700	vl	Nigeria, Radio/Ibadon	6050do			
0600	0700	vl	Nigeria, Radio/Kaduna	4770do	6090do	7275do	9570do
0600	0700	vl	Nigeria, Radio/Lagos	3326do	4990do		
0600	0700	vl	Nigeria, Voice of	7255af	15120af		
0600	0700	vl	Papua New Guinea, NBC	9675do	11880do		
0600	0700		Romania, R Romania International	9530na	11830na		
0600	0700		Russia, Voice of Russia WS	15460au	15470au	15525au	17570au
				17655au	21790au		
0600	0630		S Africa, Channel Africa	15215af			
0600	0615		S Africa, Trans World Radio	11640af			
0600	0700	mtwhf	S Africa, Trans World Radio	6035af			
0600	0700	a	S. Africa, Trans World Radio	7200af	9500af		
0600	0700		Sierra Leone, Sierra Leone BS	3316do			
0600	0700		Singapore R Corp of Singapore	6150do			
0600	0700	vl	Solomon Islands, SIBC	5020do	9545do		
0600	0700		Sri Lanka, Sri Lanka BC Corp	6130do			
0600	0700		Swaziland, Trans World Radio	6035af	7200af	9500af	
0600	0630		Switzerland, Swiss R International	9655eu			
0600	0700		Uganda, Radio	5026do	7110do	7196do	
0600	0700		UK, BBC World Service	6055af	6175am	6190af	6195eu
			7160af	9410eu	9580pa	9740as	11760me
			11765af	11940af	11955pa	12095eu	15310as
			15360as	15420af	15420af	15575me	17640af
			17760as	17790as	17885af	21660os	
0600	0700		USA, Armed Forces Radio	4278va	4319va	4993va	5765va
			6350va	6458va	6847va	10320va	10940va
			12579va	12689va	13362va	16847va	
0600	0700		USA, KAIJ Dallas TX	5755va			
0600	0700		USA, KTBN Salt Lake City UT	7510na			
0600	0700		USA, KVOH Los Angeles CA	9975am			
0600	0700		USA, KWHR Naalehu HI	11565pa	17780as		
0600	0630		USA, Voice of America	5970af	5995af	6035af	6080af
			7170af	7295af	11805af	11825eu	11930af
			12080af	15205as	15600af		
0600	0700		USA, WBCQ Monticello ME	7415na			
0600	0700		USA, WEWN Birmingham AL	5825va	7425na		
0600	0700		USA, WHRA Greenbush ME	7435af			
0600	0700		USA, WHRI Noblesville IN	7315so			
0600	0700		USA, WJCR Upton KY	7490va	13595as		
0600	0700		USA, WMLK Bethel PA	7555va	9465alt		
0600	0700		USA, WRMI Miami FL	7385am			
0600	0700		USA, WSHB Cypress Crk SC	7535af			
0600	0700		USA, WTJC Newport NC	9370na			
0600	0700		USA, WWCR Nashville TN	2390am	3210am	5070am	5935am
0600	0700		USA, WWFV McCoysville GA	5085va	6890am		
0600	0700		USA, WYFR Okeechobee FL	5985no	7355eu		
0600	0700	vl	Vanuatu, Radio	3945do	4960do	7260do	
0600	0620		Vatican City, Vatican Radio	4005eu	5883eu	7250eu	
0600	0700		Yemen, Rep of Yemen Radio	9779me			
0600	0700		Zambia, Christian Voice	9865do			
0600	0700	vl	Zambia, National BC Corp	6165do	6265do		
0600	0700	vl	Zimbabwe, Zimbabwe BC Corp	5975do	6045do		
0610	0620	mtwhf	Greece, Voice of	7475eu	9420na	15630eu	17520au
0615	0630	a	S Africa, Trans World Radio	11640af			
0630	0700		Georgia, Georgian Radio	11805eu			
0630	0700		USA, Voice of America	5995af	7170af	11825eu	11930af
				15205as			
0630	0700	as	USA, Voice of America	5970af	6035af	6080af	7295af
				11805af	12080af	15600af	
0630	0645		Vatican City, Vatican Radio	11625af			
0641	0656		Romania, R Romania International	6135eu	7105eu	9510eu	11940eu

Selected Programs

BBC World Service (am)

0600 S/M The World Today, T-A News; 0605 T Meridian-Masterpiece, W Meridian-Ideas, H Meridian-Screen, F Meridian-Music, A Meridian-Writing; 0630 S Agenda (trends), M Play of the Week (radio theatre), T Panel game or Quiz, W Music Mix, H UK Top Twenty, F Omnibus (documentary), A World of Music.

Channel Africa

0600 S Network Africa (week in review), M-F Dateline Africa (news magazine), A Channel Africa Sport.

HCJB, Ecuador

0600 S Saludos Amigos, M Mountain Meditations, T Chords of Love (sacred music), W CCR Drama, H CBF Presents, F Science, Scripture & Salvation, A Wonderful Words of Life (hymns); 0615 T-A Stories of Great Christians; 0630 S Did You Hear?, M Message of Truth, T-A Nightsounds.

Radio Australia

0600 D News; 0605 S Pacific Focus-Arts, A Feedback (letters/station news); 0610 M Australian Music Show (modern rock), T Presenter's Pleasure (staff music choices), W Blacktracker (Aboriginal music), H Australian Country Style, F Music Deli; 0630 S Correspondent's Report, A Arts Talk; 0640 M Music Deli, T Australian Music Show, W Presenter's Pleasure, H Blacktracker, F Australian Country Style.

Radio Habana Cuba

0600 M Breakthrough (science), T-S International News; 0610 S The World of Stamps, T-A Spotlight on the Americas; 0630 M From Havana (Cuban music), T-S News Bulletin; 0635 T-S Reports and music.

Radio Japan

0600 D News; 0610 S Weekend Square (Japanese life), A Roundup Asia (regional magazine); 0615 M-F Asian Top News (headlines from region's radio); 0625 M Music Journey Around Japan, T Let's Try Japanese, W Unforgettable Music Masterpieces, H Brush Up Your Japanese, F Music Beat.

Radio New Zealand International

0600 D RNZ News, 0606 S Feature or series on Maori affairs, M-F Best of Kim Hill (interviews), A Saturday Night (variety)*; 0630 S This Week in Parliament*, M Eureka! (science), T Spectrum (life in NZ), W Musical Chair (artist feature), H Bookmarks, F Sports Story. (*may be preempted by live sport).

Voice of Nigeria

0600 S This Week on VON, M Across the Ages, T Agenda for Peace, W Nigerian Newsletter, H West African Scene, F African Writers, A From the Rock.; 0615 S Listeners' Letters, M Nigeria 5: Politics, T Nigerian Scene, W Wheel of Progress, H World of the Arts, F Images of Nigeria, A Issues of the Moment; 0630 S/A Weekly Analysis, M-F World News; 0640 M-F Commentary & Press Review; 0655 M-F News about Nigeria.

WHRI, Indiana

5745/7315 kHz: 0600 A DXing with Cumbre.

WWCR, Tennessee

3210 kHz: 0600 M World of Radio, A Rock the Universe (Christian rock music); 0630 M Communications Worlc.
5070 kHz: 0600 T Ask WWCR (letters)

Hauser's Highlights

BELARUS': Radio Belarus International

External service IDs as "Radiostantsiya Belarus" in Belarusian. In English uses "Radio Belarus' International" or "Radio Minsk." Address: 4 Krasnaya Street, Minsk 220807, Belarus'. Tel: +375 17 239 5330 or +375 17 239583 (English svc); Fax: +375 17 236 6643; E-mail: via form on web site: http://www.tvr.by/

English to Europe:

0300-0330	SuM.W.FSa	1170 5970 7210
2030-2100	Tu.Th	1170 7105 7210
2130-2200	Tu.Th	1170 7105 7210

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Frequencies

0700	0800		Anguilla, Caribbean Beacon	6090om			
0700	0800	vl	Australia, ABC/Alice Springs	4835do			
0700	0800	vl	Australia, ABC/Katherine	5025do			
0700	0800	vl	Australia, ABC/Tennant Creek	4910do			
0700	0800		Australia, Radio	9660pa	12080pa	15240as	15415as
				17580va	17750as	21725va	
0700	0800	vl	Botswana, Radio	7255do	9600do	7255do	
0700	0800	vl	Cameroon, RTV/Yaounde	4850do			
0700	0800		Canada, CFRX Toronto ON	6070do			
0700	0800		Canada, CFVP Calgary AB	6030do			
0700	0800		Canada, CHNX Halifax, NS	6130do			
0700	0800		Canada, CKZN St John's NF	6160do			
0700	0800		Canada, CKZU Vancouver BC	6160do			
0700	0800		Costa Rica, R for Peace Intl	5920al	6970va	7480va	15048irr
0700	0800		Costa Rica, University Network	5920al	6970va	7480va	15048irr
0700	0800		Ecuador, HCJB	9780eu	11755pa	21455usb	
0700	0800	mtwhf	Eqt Guinea, Radio Africa	15185af			
0700	0800	as/vl	Eqt. Guinea, Radio East Africa	15185af			
0700	0800	a/monthly	Finland, Scandv Weekend Radio	11690va	11720va		
0700	0800		Germany, Deutsche Welle	6140eu			
0700	0800		Germany, Voice of Hope	5975eu	21590me		
0700	0800	vl	Ghana, Ghana BC Corp	3366do	4915do		
0700	0800	vl	Ghana, Ghana BC Corp	3366do	4915do		
0700	0800		Guyana, Voice of	3289do	5949do		
0700	0800	vl/mtwhf	Italy, IRRS	7120va			
0700	0800		Kenya, Kenya BC Corp	4935do			
0700	0800		Kuwait, Radio	15110va			
0700	0800	vl	Lesotho, Radio	4800do			
0700	0800	vl	Liberia, ELWA	4760do			
0700	0800	vl	Liberia, R Liberia International	5100do			
0700	0800		Liberia, Voice of Hope	6280af			
0700	0800	vl	Malawi, Malawi BC Corp	3380do	5995do		
0700	0800		Malaysia, Radio	7295do			
0700	0800		Malaysia, RTM Sarawak	7160do			
0700	0800		Malaysia, Voice of	6275as	9750as	15295as	
0700	0730	mtwhfa	Malta, Voice of Mediterranean	6010eu			
0700	0800		Myanmar, Radio	9730do			
0700	0800		Namibia, Namibian BC Corp	3270af	3289af		
0700	0705		New Zealand, R New Zealand Int	17675pa			
0700	0800		New Zealand, ZLXA	3935do	7290do		
0700	0800	vl	Nigeria, Radio/Enugu	6025do			
0700	0800	vl	Nigeria, Radio/Ibadan	6050do			
0700	0800	vl	Nigeria, Radio/Kaduna	4770do	6090do	7275do	9570do
0700	0800	vl	Nigeria, Radio/Lagos	3326do	4990do		
0700	0800		Palau, KHBN/Voice of Hope	9965as	9985as	15725as	
0700	0730	vl	Papua New Guinea, NBC	9675do	11880do		
0700	0756		Romania, R Romania International	17720af	21480af		
0700	0800		Russia, Voice of Russia WS	15460au	15460ou	17570au	17655au
				21790ou			
0700	0720	o	S Africa, Trans World Radio	7200af	9500af		
0700	0735	mtwhf	S Africa, Trans World Radio	6035af	9500af		
0700	0800		Sierra Leone, Sierra Leone BS	3316do			
0700	0800		Singapore R Corp of Singapore	6150do			
0700	0730		Slovakia, R Slovakia International	15460au	17550au	21705au	
0700	0800	vl	Solomon Islands, SIBC	5020do	9545do		
0700	0800		Sri Lanka, Sri Lanka BC Corp	6130do			
0700	0720		Swaziland, Trans World Radio	6035af	7200af	9500af	
0700	0800		Taiwan, R Taiwan International	5950no	9680na	11745as	
0700	0800		Uganda, Radio	5026do	7110do	7196do	
0700	0745	as	UK, BBC World Service	17885af			
0700	0800		UK, BBC World Service	6175am	6190af	9410eu	9580pa
				9740as	11760me	11765af	11940af	11955pa
				12095eu	15310as	15360as	15400af	15485eu
				15565eu	17640eu	17760as	17790as	17830af
				21660as				
0700	0800		USA, Armed Forces Radio	4278va	4319va	4993va	5765va
				6350va	6458va	6847va	10320va	10940va
				12579va	12689va	13362va	16847va	
0700	0800		USA, KAIJ Dallas TX	5755va			
0700	0800		USA, KTBN Salt Lake City UT	7510na			
0700	0800		USA, KWHR Naalehu HI	11565pa	17780as		
0700	0730	a	USA, Voice of America	6873va			
0700	0800		USA, WEWN Birmingham AL	5825va	7425na		
0700	0800		USA, WHRA Greenbush ME	7435af			
0700	0800		USA, WHRI Noblesville IN	7315sa			
0700	0800		USA, WJCR Upton KY	7490va	13595as		
0700	0800		USA, WMLK Bethel PA	7555va	9465alt		
0700	0800		USA, WRMI Miami FL	7385am			
0700	0800		USA, WSHB Cypress Crk SC	7535af			
0700	0800		USA, WTJC Newport NC	9370na			
0700	0800		USA, WWCR Nashville TN	2390am	3210am	5070am	5935am
0700	0745		USA, WYFR Okeechobee FL	7355eu	9985eu	11850eu	
0700	0800	vl	Vanuatu, Radio	3945do	4960do	7260do	
0700	0800		Zambia, Christian Voice	9865do			
0700	0800	vl	Zambia, National BC Corp	6165do	6265do		
0700	0800	vl	Zimbabwe, Zimbabwe BC Corp	5975do	6045do		
0705	0800		New Zealand, R New Zealand Int	15175pa			
0720	0735	smtwhf	Swaziland, Trans World Radio	6035af	7200af	9500af	
0730	0800		Austria, R Austria International	6155eu	13730eu		
0730	0758		Finland, YLE/R Finland	9510va	21670va		
0730	0800	th	Georgia, Georgian Radio	6080eu			
0730	0740	as	Guam, Trans World Radio	15330as			
0730	0800	vl	papua New Guinea, NBC	4890do	9675do		
0730	0800		Switzerland, Swiss R International	9885af	13635af	17665af	
0730	0745	mtwhf	vatican City, Vatican Radio	4005eu	5883eu	7250eu	9645eu
				11740eu	15595eu		
0740	0800		Guam, Trans World Radio	15200as			
0745	0800	as	Germany, Trans World Radio	12070eu			
0745	0755	as	Monaco, Trans World Radio	9870eu			
0745	0800	as	UK, BBC World Service	15575as	17885af		
0750	0800	as	Greece, Voice of	15170au			
0755	0800	mtwhf	Germany, Trans World Radio	12070eu			
0755	0800		Monaco, Trans World Radio	9870eu			

0800	0900		Anguilla, Caribbean Beacon	6090am			
0800	0830	vl	Australia, ABC/Alice Springs	4835do			
0800	0830	vl	Australia, ABC/Katherine	5025do			
0800	0830	vl	Australia, ABC/Tennant Creek	4910do			
0800	0900		Australia, Radio	5995pa	9580va	9710as	12080pa
			13605va	15240va	15415as	17750as	21725va
0800	0830		Belgium, Radio Vloanderen Intl	5985eu			
0800	0900	vl	Botswana, Radio	7255do	9600do	7255do	
0800	0900	vl	Cameroon, RTV/Yaounde	4850do			
0800	0900		Canada, CFRX Toronto ON	6070do			
0800	0900		Canada, CFVP Calgary AB	6030do			
0800	0900		Canada, CHNX Halifax, NS	6130do			
0800	0900		Canada, CKZN St John's NF	6160do			
0800	0900		Canada, CKZU Vancouver BC	6160do			
0800	0900		Costa Rica, R for Peace Intl	5920al	6970va	15048irr	
0800	0900		Costa Rica, University Network	5920al	6970va	15048irr	
0800	0827		Czech Rep, Radio Prague Intl	11600eu	15255eu		
0800	0900		Ecuador, HCJB	9780eu	11755pa	21455usb	
0800	0900	mtwhf	Eqt Guinea, Radio Africa	15185af			
0800	0900	as/vl	Eqt. Guinea, Radio East Africa	15185af			
0800	0900	a/monthly	Finland, Scandv Weekend Radio	11690va	11720va		
0800	0900		Germany, Deutsche Welle	6140eu			
0800	0900		Germany, Trans World Radio	12070eu			
0800	0900		Germany, Voice of Hope	5975eu	21590me		
0800	0900	vl	Ghana, Ghana BC Corp	3366do	4915do		
0800	0900	as	Guam, Trans World Radio	15200as	15330as		
0800	0900		Guyana, Voice of	3289do	5949do		
0800	0900		Indonesia, Voice of	9525va	11785va	15149va	
0800	0900	vl/as	Italy, IRRS	7120va			
0800	0900		Kenya, Kenya BC Corp	4935do			
0800	0900	vl	Lesotho, Radio	4800do			
0800	0900	vl	Liberia, ELWA	4760do			
0800	0900	vl	Liberia, R Liberia International	5100do			
0800	0900		Liberia, Voice of Hope	6280af			
0800	0810	vl	Malawi, Malawi BC Corp	3380do	5995do		
0800	0900		Malaysia, Radio	7295do			
0800	0825		Malaysia, Voice of	6275as	9750as	15295as	
0800	0900		Monaco, Trans World Radio	9870eu			
0800	0830		Myanmar, Radio	9730do			
0800	0900		Namibia, Namibian BC Corp	7165af	7215af		
0800	0900		New Zealand, R New Zealand Int	15175as			
0800	0900		New Zealand, ZLXA	3935do	7290do		
0800	0900	vl	Nigeria, Radio/Enugu	6025do			
0800	0900	vl	Nigeria, Radio/Ibadan	6050do			
0800	0900	vl	Nigeria, Radio/Kaduna	4770do	6090do	7275do	9570do
0800	0900	vl	Nigeria, Radio/Lagos	3326do	4990do		
0800	0900		Palau, KHBN/Voice of Hope	9955as	9965as	9985as	15725as
0800	0900	vl	Papua New Guinea, NBC	4890do	9675do		
0800	0900		Russia, Voice of Russia WS	9905au	15460au	15470au	17495au
				17525au	17570au	17655au	
0800	0900	s	S Africa, Amateur Radio League	9750af	21560af		
0800	0900		Sierra Leone, Sierra Leone BS	3316do			
0800	0900		Singapore R Corp of Singapore	6150do			
0800	0900	vl	Solomon Islands, SIBC	5020do			
0800	0900		Sri Lanka, Sri Lanka BC Corp	6130do			
0800	0900		Uganda, Radio	5026do	7110do	7196do	
0800	0900		UK, BBC World Service	6190af	9410eu	9740as	11940af
				11955pa	12095eu	15310as	15360as	15400af
				15485eu	15565eu	17640eu	17760as	17830af
				21660as	21830me			
0800	0900	as	UK, BBC World Service	15575as	17885af		
0800	0900		USA, Armed Forces Radio	4278va	4319va	4993va	5765va
				6350va	6458va	6847va	10320va	10940va
				12579va	12689va	13362va	16847va	
0800	0900		USA, KAIJ Dallas TX	5755va			
0800	0900		USA, KNLS Anchor Point AK	9615as			
0800	0900		USA, KTBN Salt Lake City UT	7510na			
0800	0900		USA, KWHR Naalehu HI	11565pa	17780as		
0800	0900		USA, Voice of America	11995as	13615as	15150as	
0800	0900		USA, WEWN Birmingham AL	5825va	7425na		
0800	0900		USA, WHRA Greenbush ME	7435af			
0800	0900		USA, WHRI Noblesville IN	7315sa			
0800	0900		USA, WJCR Upton KY	7490va	13595as		
0800	0900		USA, WMLK Bethel PA	7555va	9475alt		
0800	0900		USA, WRMI Miami FL	7385am			
0800	0900		USA, WSHB Cypress Crk SC	7535eu	9845pa		
0800	0900		USA, WTJC Newport NC	9370na			
0800	0900		USA, WWCR Nashville TN	2390am	3210am	5070am	5935am
0800	0900	vl	Vanuatu, Radio	3945do	4960do	7260do	
0800	0900		Zambia, Christian Voice	9865do			
0800	0900	vl	Zambia, National BC Corp	6165do	6265do		
0800	0900	vl	Zimbabwe, Zimbabwe BC Corp	5975do	6045do		
0815	0900	f	Seychelles, FEBA Radio	15460as			
0830	0900	vl	Australia, ABC/Alice Springs	2310do			
0830	0900	vl	Australia, ABC/Katherine	2485do			
0830	0900	vl	Australia, ABC/Tennant Creek	2325do			
0830	0900		Georgia, Georgian Radio	11910eu			
0830	0900		Switzerland, Swiss R International	9885as	21770af		
0840	0900	s	Armenia, Voice of	4810eu	15270eu		
0855	0900	s	Taiwan, CBS	11725as			

Frequencies

0900	1000		Anguilla, Caribbean Beacon	6090am			
0900	1000	vl	Australia, ABC/Alice Springs	2310do			
0900	1000	vl	Australia, ABC/Katherine	2485do			
0900	1000	vl	Australia, ABC/Tennant Creek	2325do			
0900	1000		Australia, Radio	9580va	13605va	21820va	
0900	1000	as	Australia, Radio	15400as	17750as		
0900	1000	vl	Botswana, Radio	7255do	9600do	7255do	
0900	1000	vl	Cameroon, RTV/Yaounde	4850do			
0900	1000		Canada, CFRX Toronto ON	6070do			
0900	1000		Canada, CFVP Calgary AB	6030do			
0900	1000		Canada, CHNX Halifax, NS	6130do			
0900	1000		Canada, CKZN St John's NF	6160do			
0900	1000		Canada, CKZU Vancouver BC	6160do			
0900	0956		China China Radio International	11730pa	15210pa		
0900	1000		Costa Rica, R for Peace Intl	5920al	6970va	15048irr	
0900	1000		Costa Rica, University Network	5920al	6970va	15048irr	
0900	1000		Ecuador, HCJB	11775pa	21455usb		
0900	1000	mtwhf	Eqt Guinea, Radio Africa	15185af			
0900	1000	as/vl	Eqt. Guinea, Radio East Africa	15185af			
0900	1000	a/monthly	Finland, Scandv Weekend Radio	11690va	11720va		
0900	0945		Germany, Deutsche Welle	6140eu	6160pa	11785af	12055as
				15410af	17625pa	17770va	17800af
				17820va	17860af	21560af	
0900	1000		Germany, Deutsche Welle	6140eu			
0900	1000	a	Germany, Good News World R	5985eu	5995eu		
0900	1000		Germany, Trans World Radio	12070eu			
0900	1000		Germany, Voice of Hope	5975eu	21590me		
0900	0915	vl	Ghana, Ghana BC Corp	3366do	4915do		
0900	0915		Guam, Trans World Radio	15200as	15330as		
0900	1000		Guyana, Voice of	3289do	5949do		
0900	1000	vl/as	Italy, IRRS	7120va			
0900	1000		Kenya, Kenya BC Corp	4935do			
0900	1000	vl	Lesotho, Radio	4800do			
0900	1000	vl	Liberia, ELWA	4760do			
0900	1000	vl	Liberia, R Liberia Internotional	6100do			
0900	1000		Liberia, Voice of Hope	6280af			
0900	1000		Malaysia, Radio	7295do			
0900	1000	s	Malta, Voice of Mediterroneon	11770eu			
0900	0920		Monaco, Trans World Radio	9870eu			
0900	1000		Namibia, Namibian BC Corp	7165af	7215af		
0900	1000		New Zealand, R New Zealand Int	15175as			
0900	1000		New Zealand, ZLXA	3935do	7290do		
0900	1000	vl	Nigeria, Radio/Enugu	6025do			
0900	1000	vl	Nigeria, Radio/Ibadon	6050do			
0900	1000	vl	Nigeria, Radio/Kaduna	4770do	6090do	7275do	9570do
0900	1000	vl	Nigeria, Radio/Lagos	3326do	4990do		
0900	1000		Palau, KHBN/Voice of Hope	9955as	9965as	9985as	15725as
0900	1000	vl	Papua New Guinea, NBC	4890do	9675do		
0900	1000		Russia, Voice of Russia WS	9905ou	15460au	15470au	17495au
				17525au	17570au		
0900	1000		Sierra Leone, Sierra Leone BS	3316do			
0900	1000		Singapore R Corp of Singapore	6150do			
0900	1000	vl	Solomon Islands, SIBC	5020do			
0900	1000		Sri Lanka, Sri Lanka BC Corp	6130do			
0900	1000		Uganda, Radio	5026do	7110do	7196do	
0900	0930		UK, BBC World Service	6195as	9605as	9740as	11760me
				11765as	11945as	11955pa	12095eu 15190sa
				15310as	15360as	15400af	15485eu 15565eu
				15575as	17640eu	17760as	17790as 17830af
				17885af	21470af	21660as	
0900	1000os		UK, BBC World Service	6190af	11940af		
0900	1000		UK, Merlin Network One	6130eu			
0900	1000		USA, Armed Forces Radio	4278va	4319va	4993va	5765va
				6350va	6458va	6847va	10320va 10940va
				12579va	12689va	13362va	16847va
0900	1000		USA, KAIJ Dallas TX	5755va			
0900	1000		USA, KTBN Salt Lake City UT	7510na			
0900	1000		USA, KWHR Naalehu HI	11565pa	17780as		
0900	1000		USA, Voice of America	11995os	13615as	15150as	
0900	1000		USA, WEWN Birmingham AL	5825va	7425na		
0900	1000		USA, WHRA Greenbush ME	7435af			
0900	1000		USA, WHRI Noblesville IN	7315so			
0900	1000		USA, WJCR Upton KY	7490va	13595as		
0900	1000		USA, WMLK Bethel PA	7555va	9475alt		
0900	1000		USA, WRMI Miami FL	7385am			
0900	1000		USA, WSHB Cypress Crk SC	7535eu	9455sa		
0900	1000		USA, WTJC Newport NC	9370na			
0900	1000		USA, WWCR Noshville TN	2390am	3210am	5070am	5935am
0900	1000	vl	Vanuatu, Radio	3945do	4960do	7260do	
0900	1000		Zambia, Christian Voice	9865do			
0900	1000	vl	Zambia, National BC Corp	6165do	6265do		
0900	1000	vl	Zimbabwe, Zimbabwe BC Corp	5975do	6045dc		
0915	1000	vl	Ghana, Ghana BC Corp	6130do	4915do		
0915	1000	vl/as	Ghana, Ghana BC Corp	4915do	4915do		
0915	0930		Guam, Trans World Radio	15330as			
0920	0950	s	Monaco, Trans World Radio	9870eu			
0930	1000		Georgia, Georgian Radio	11910me			
0930	1000	mtwhf	Guam, Trans World Radio	15330as			
0930	1000		Italy, Adventist World Radio	9660eu			
0930	1000		Netherlands, Radio	7260va	9790va	12065va	
0930	1000		UK, BBC World Service	6195as	9740as	11760me	11955pa
				12095eu	15190sa	15310as	15360as 15400af
				15485eu	15565eu	15575as	17640eu 17760as
				17790as	17830af	17885af	21470af 21660as

1000	1100		Anguilla, Caribbean Beacon	11775am			
1000	1100	vl	Australia, ABC/Alice Springs	2310do			
1000	1100	vl	Australia, ABC/Katherine	2485do			
1000	1100	vl	Australia, ABC/Tennant Creek	2325do			
1000	1100		Australia, Radio	9580va	13605va	17750as	21820va
1000	1045	a	Austria, R Austria International	6155eu	13730eu		
1000	1100	as	Bhutan, Bhuton BC Service	6035do			
1000	1100	vl	Botswana, Radio	7255do	9600do	7255do	
1000	1100	vl	Cameroon, RTV/Yaounde	4850do			
1000	1100		Canada, CFRX Toronto ON	6070do			
1000	1100		Canada, CFVP Calgary AB	6030do			
1000	1100		Canada, CHNX Halifax, NS	6130do			
1000	1100		Canada, CKZN St John's NF	6160do			
1000	1100		Canada, CKZU Vancouver BC	6160do			
1000	1056		China China Radio International	11730pa	15210pa		
1000	1100		Costa Rica, R for Peace Intl	5920al	6970va	15048irr	
1000	1100		Costa Rica, University Network	5920al	6970va	15048irr	
1000	1029		Czech Rep, Radio Prague Intl	21745va			
1000	1100		Ecuador, HCJB	11755pa	21455usb		
1000	1100	mtwhf	Eqt Guinea, Radio Africa	15185af			
1000	1100	as/vl	Eqt. Guinea, Radio East Africa	15185af			
1000	1100	a/monthly	Finland, Scandv Weekend Radio	11690va	11720va		
1000	1100		Germany, Deutsche Welle	6140eu			
1000	1100		Germany, Voice of Hope	5975eu	21590me		
1000	1100	vl	Ghana, Ghana BC Corp	6130do	4915do		
1000	1100	vl/as	Ghana, Ghana BC Corp	4915do	4915do		
1000	1030		Guam, Adventist World Radio	15330as			
1000	1100		Guam, Adventist World Radio	11660as			
1000	1100		Guyana, Voice of	5949do			
1000	1100		India, All India Radio	11585as	13700ou	15020as	17485au
				17840ou	17895ou		
1000	1100	vl/as	Italy, IRRS	7120va			
1000	1100		Japan, Radio	9695os	15590as	21755pa	
1000	1100		Kenya, Kenya BC Corp	4935do			
1000	1100	vl	Lesotho, Radio	4800do			
1000	1100	vl	Liberia, ELWA	4760do			
1000	1100	vl	Liberia, R Liberia International	6100do			
1000	1100		Liberia, Voice of Hope	11530af			
1000	1100		Malaysia, Radio	7295do			
1000	1100		N Marianos, KHBI Saipan	11870as			
1000	1100		Namibia, Namibian BC Corp	7165af	7215af		
1000	1100		Netherlands, Radio	7260va	9790va	12065va	
1000	1100		New Zealand, R New Zealand Int	15175as			
1000	1100		New Zealand, ZLXA	3935do			
1000	1100	vl	Nigeria, Radio/Enugu	6025do			
1000	1100	vl	Nigeria, Radio/Ibadan	6050do			
1000	1100	vl	Nigeria, Radio/Kaduna	4770do	6090do	7275do	9570do
1000	1100	vl	Nigeria, Radio/Logos	4990do	7285do		
1000	1100	vl	Nigeria, Voice of	7255af	15120af		
1000	1100		Palau, KHBN/Voice of Hope	9955as	9965as	9985as	15725os
1000	1100	vl	Papua New Guinea, NBC	4890do	9675do		
1000	1100		Seirra Leone, Sierra Leone BS	5980do			
1000	1100		Singapore R Corp of Singapore	6150do			
1000	1030		Singapore, RTE Radio	11740au			
1000	1100	vl	Solomon Islands, SIBC	5020do			
1000	1030		Sri Lanka, Sri Lanka BC Corp	4940do			
1000	1100		Uganda, Radio	5026do	7110do	7196do	
1000	1100		UK, BBC World Service	6195va	9740as	11760me	11955pa
				12095eu	15310as	15360os	15485eu 15565eu
				15575as	17640eu	17760os	17790as 21470af
				21660as			
1000	1100	m-whfa	UK, BBC World Service	17885af			
1000	1100	as	UK, BBC World Service	15190sa	15400af	17830af	
1000	1100	a	UK, BBC World Service	6190af	11940af		
1000	1100		USA, Armed Forces Radio	4278va	4319va	4993va	5765va
				6350va	6458va	6847va	10320va 10940va
				12579va	12689va	13362va	16847va
1000	1100		USA, KAIJ Dallas TX	5755va			
1000	1100		USA, KTBN Salt Lake City UT	7510na			
1000	1100		USA, KWHR Naalehu HI	9930as	11565pa		
1000	1100		USA, Voice of America	5985pa	6165ca	7370ca	9590ca
				11720as	15250as	15425as	
1000	1100		USA, WEWN Birmingham AL	5825na	7425na	7465na	
1000	1100		USA, WHRI Noblesville IN	6040na	9495sa		
1000	1100		USA, WJCR Upton KY	7490va	13595as		
1000	1100		USA, WRMI Miami FL	9955am			
1000	1100		USA, WSHB Cypress Crk SC	6095am	9455sa		
1000	1100		USA, WTJC Newport NC	9370na			
1000	1100		USA, WWCR Nashville TN	2390am	5070am	5935am	7435am
1000	1100		USA, WYFR Okeechobee FL	5950na			
1000	1100	vl	Vanuatu, Radio	3945do	4960do	7260do	
1000	1027		Vietnam, Voice of	9839os	12019as		
1000	1100		Zambia, Christian Voice	9865do			
1000	1100	vl	Zambia, National BC Corp	6165do	6265do		
1000	1100	vl	Zimbabwe, Zimbabwe BC Corp	5975do	6045do		
1030	1045	mtwhf	Ethiopia, Radio	5990do	7110do	9705do	
1030	1100		Malaysia, RTM Sarawak	7160do			
1030	1100		Mongolia, Voice of	12085au			
1030	1100		Sri Lanka, Sri Lanka BC Corp	4940do	11835as	15120as	17850as
1030	1100		UAE, Radio Dubai	13675eu	15370eu	15395eu	21605eu

1100 UTC Shortwave Guide

6:00 AM EST
5:00 AM CST
3:00 AM PST

Frequencies

1100	1200		Anguilla, Caribbean Beacon	11775am			
1100	1200	vl	Australia, ABC/Alice Springs	2310do			
1100	1200	vl	Australia, ABC/Katherine	2485do			
1100	1200	vl	Australia, ABC/Tennant Creek	2325do			
1100	1200		Australia, Radio	5995pa	6020va	9580va	12080pa
				13605vo	21820va		
1100	1200	vl	Botswana, Radio	7255do	9600do	7255do	
1100	1200	vl	Cameroon, RTV/Yaounde	4850do			
1100	1200		Canada, CFRX Toronto ON	6070do			
1100	1200		Canada, CFVP Calgary AB	6030do			
1100	1200		Canada, CHNX Halifax, NS	6130do			
1100	1200		Canada, CKZN St John's NF	6160do			
1100	1200		Canada, CKZU Vancouver BC	6160do			
1100	1200		Costa Rica, R for Peace Intl	15048irr	21815usb		
1100	1200		Costa Rica, University Network	15048irr	21815usb		
1100	1200		Ecuador, HCJB	12005am	15115va	21455usb	
1100	1200	mtwhf	Eqt Guinea, Radio Africa	15185af			
1100	1200	as/vl	Eqt. Guinea, Radio East Africa	15185af			
1100	1200	a/monthly	Finland, Scandv Weekend Radio	11690va	11720va		
1100	1200		Germany, Deutsche Welle	6140eu	15410af	17800af	21780af
1100	1200		Germany, Voice of Hope	21590me			
1100	1200	vl	Ghana, Ghana BC Corp	6130do	4915do		
1100	1200	vl/as	Ghana, Ghana BC Corp	4915do	4915do		
1100	1200		Guyana, Voice of	5949do			
1100	1200		Iran, VOIRI	15185as	15385as	15585as	21470as
				21730as			
1100	1200	vl/as	Italy, IRRS	7120va			
1100	1200		Japan, Radio	6120no	9695as	15590as	
1100	1200		Jordan, Radio	11690eu			
1100	1200		Kenya, Kenya BC Corp	4935do			
1100	1200	vl	Lesotho, Radio	4800do			
1100	1200	vl	Liberia, ELWA	4760do			
1100	1200	vl	Liberia, R Liberia International	6100do			
1100	1200		Liberia, Voice of Hope	11530af			
1100	1200		Malaysia, Radio	7295do			
1100	1200		Malaysia, TRM Sarawak	7160do			
1100	1200		Namibia, Namibian BC Corp	7165af	7215af		
1100	1125		Netherlands, Radio	7260va	9790va	12065va	
1100	1200		New Zealand, R New Zealand Int	15175as			
1100	1200		New Zealand, ZLXA	3935do			
1100	1200	vl	Nigeria, Radio/Enugu	6025do			
1100	1200	vl	Nigeria, Radio/Ibadan	6050do			
1100	1200	vl	Nigeria, Radio/Kaduna	4770do	6090do	7275do	9570do
1100	1200	vl	Nigeria, Radio/Lagos	4990do	7285do		
1100	1115		Pakistan, Radio	17520do	21465do		
1100	1200		Palau, KHBN/Voice of Hope	9955as	9965as	9985as	13840as
1100	1200	vl	Papua New Guinea, NBC	4890do	9675do		
1100	1200		Sierra Leone, Sierra Leone BS	5980do			
1100	1200		Singapore, R Singapore Intl	6150as	9600as		
1100	1130		Sri Lanka, Sri Lanka BC Corp	4940do	11835as	15210as	17850as
1100	1130		Switzerland, Swiss R International	9535eu			
1100	1200		Switzerland, Swiss R International	9540as	21770as		
1100	1200		Taiwan, Voice of Asia	7445as			
1100	1200		Uganda, Radio	5026do	7110do	7196do	
1100	1130	mtwhf	UK, BBC Caribbean Report	6195co	15220co		
1100	1130	as	UK, BBC World Service	6195na	15190sa	15220am	
1100	1200	smtwhf	UK, BBC World Service	17885af			
1100	1200	s	UK, BBC World Service	6190af	11940af		
1100	1200	as	UK, BBC World Service	5965na	6195va	9580as	9740as
			11760me	11955as	12095eu	15220am	15280as
			15310as	15400af	15485eu	15565eu	15575as
			17640eu	17700as	17830af	21470af	
1100	1200	a	UK, Flat Earth Radio/Merlin	21455me	21515af		
1100	1200	a	UK, Virgin Radio/Merlin	21455me	21515af		
1100	1200		USA, Armed Forces Radio	4278va	4319va	4993va	5765va
			6350va	6458va	6847va	10320va	10940va
			12579va	12689va	13362va	16847va	
1100	1200		USA, KAIJ Dallas TX	5755va			
1100	1200		USA, KTBN Salt Lake City UT	7510na			
1100	1200		USA, KWHR Naalehu HI	9930as	11565pa		
1100	1200		USA, Voice of America	5985pa	6110as	9645as	9760as
				11705as	11720as	15250as	15425as
1100	1200		USA, WEWN Birmingham AL	5825na	7425na	15745na	
1100	1200		USA, WHRI Noblesville IN	6040na	9495sa		
1100	1200		USA, WJCR Upton KY	7490va	13595as		
1100	1200		USA, WRMI Miami FL	9955am			
1100	1200		USA, WSHB Cypress Crk SC	6095am	11660va		
1100	1200		USA, WTJC Newport NC	9370na			
1100	1200		USA, WWCR Nashville TN	2390am	5070am	5935am	9475am
1100	1200		USA, WYFR Okeechobee FL	5950na	11830na		
1100	1200	vl/s	Vanuatu, Radio	3945do	4960do	7260do	
1100	1127		Vietnam, Voice of	7285as			
1100	1200		Zambia, Christian Voice	9865do			
1100	1200	vl	Zambia, National BC Corp	6165do	6265do		
1100	1200	vl	Zimbabwe, Zimbabwe BC Corp	5975do	6045do		
1110	1120		Greece, Voice of	9420eu	15630na		
1115	1145		Nepal, Radio	5005as	7165as		
1115	1130	mtwhf	Vatican City, Vatican Radio	5883eu	9645eu	11740eu	15595eu
				21850eu			
1130	1200		Belgium, Radio Vlaanderen Intl	9865as			
1130	1157		Czech Rep, Radio Prague Intl	11640eu	21745as		
1130	1135		Israel, Kol Israel	15640va	17545va		
1130	1200		Netherlands, Radio	6045eu	9855eu		
1130	1200		South Korea, R Korea Intl	9650na			
1130	1200		Sri Lanka, Sri Lanka BC Corp	4940do			
1130	1200	a	UK, Wales Radio Intl/Merlin	17625au			
1130	1200	f	Vatican City, Vatican Radio	15595va	17515va		
1145	1200	vl	Libya, Voice of Africa	11815af	17725af		

Selected Programs

BBC World Service (am)

1100 D World Briefing; 1120 D British News; 1130 S Arts in Action, M-F World Business Report, A World Business Review; 1145 M-A Sports Roundup. [Special service to the Caribbean on 6195 & 15220 kHz: 1105 M-F Caribbean Report; 1110 M-F Caribbean Sport; 1115 M-F Caribbean Magazine.]

HCJB, Ecuador

1100 S Morning Song, M-F Insight for Living, A Your Story Hour; 1128 M-F Money Minute; 1130 S The Living Word, M-F Morning in the Mountains (Christian breakfast show w/Bible Minute 1134, Scriptural Reading 1142, Beyond the Call 1148), A We Kids.

Radio Australia

1100 D News; 1105 S Jazz Notes, M-F Asia Pacific (regional report), A Book Reading; 1115 A Lingua Franca (about language); 1130 S In Conversation-Rural, M-F Sports Report; 1135 M-F Life Matters.

Radio Japan

1100 D News; 1110 S Hello from Tokyo (listener contact), A Roundup Asia (regional magazine); 1115 M-F Asian Top News (headlines from region's radio); 1125 M Music Journey Around Japan, T Let's Try Japanese, W Unforgettable Music Masterpieces, H Brush Up Your Japanese, F Music Beat.

Radio Korea International

1130 D News; 1140 S Multiwave Feedback (letters/DX news), M-F News Commentary, A From Us to You (letters); 1145 M Exploring the New Millennium, T Cultural Promenade, W Economic Radar, H Korea & Its Splendors, F Notes of Nostalgia (traditional music).

Radio New Zealand International

1100 D RNZ News; 1105 S Sunday Supplement (NZ opinions), M-F Late Edition (the day's news), A Deep Purple (relaxing music/nostalgia); 1125 S A Question of Religion.

WWCR, Nashville

9475 kHz: 1100 M Worldwide Country Radio (country music). 5070 kHz: 1130 S Musical Memories.

Hauser's Highlights

UZBEKISTAN: Radio Tashkent
49 Khoresm Street, Tashkent, Uzbekistan; Tel: +998 71 1330249; Fax: +998 71 1336068; E-mail: uzradio@uzpak.uz
ENGLISH daily:
0100-0130 As 5.955 5.975 7.105 7.285 9.540
1200-1230 As 5.060 5.975 6.025 9.715
1330-1400 As 5.060 5.975 6.025 9.715
2030-2100 Eu 7.105 9.540
2130-2200 Eu 9.540
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Hauser's Highlights

SEYCHELLES: FEBA
English:

1530-1600	11600	SEAs	S-W
1530-1545	11600	SEAs	H/F
1630-1700	11605	India	S
0345-0400	11885 EAf	F	
0815-0900	15460 SAs	F	
1245-1300	15535	ME	r

(Bob Padula, *EDXP*)

Frequencies

1200	1300		Anguilla, Caribbean Beacon	11775am			
1200	1300	vl	Australia, ABC/Alice Springs	2310da			
1200	1300	vl	Australia, ABC/Katherine	2485do			
1200	1300	vl	Australia, ABC/Tennant Creek	2325do			
1200	1300		Australia, Radio	5995pa	6020va	9580va	11650pa
				21820va			
1200	1300	mtwhf	Bhutan, Bhutan BC Service	5030da			
1200	1300	vl	Botswana, Radio	7255do	9600do	7255do	
1200	1300		Brazil, Radio Nacional Bras	15445am			
1200	1300		Bulgaria, Radio	15700eu	17500eu		
1200	1300	vl	Cameroon, RTV/Yaounde	4850do			
1200	1300		Canada, CBC Northern Service	9625do			
1200	1300		Canada, CFRX Toronto ON	6070do			
1200	1300		Canada, CFVP Calgary AB	6030do			
1200	1300		Canada, CHNX Halifax, NS	6130do			
1200	1300		Canada, CKZN St John's NF	6160do			
1200	1300		Canada, CKZU Vancouver BC	6160do			
1200	1259		Canada, R Canada International	6150as	11730as		
1200	1256		China China Radio International	9715as	9760pa	11675pa	11980as
				15415as			
1200	1300		Costa Rica, R for Peace Intl	15048irr	21815usb		
1200	1300		Costa Rica, University Network	15048irr	21815usb		
1200	1300		Ecuador, HCJB	12005am	15115va	21455usb	
1200	1300	as/vl	Eqt. Guinea, Radio East Africa	15185af			
1200	1300	a/monthly	Finland, Scandv Weekend Radio	11690va	11720va		
1200	1300		France, R France International	11670af	15155af	15195af	
1200	1300		Germany, Deutsche Welle	6140eu			
1200	1300		Germany, Voice of Hope	15715me			
1200	1300	vl	Ghana, Ghana BC Corp	4915da	6130do		
1200	1300		Guyana, Voice of	5949do			
1200	1227		Iran, VOIRI	15185as	15385as	15585as	21470as
				21730as			
1200	1300	vl/as	Italy, IRRS	7120va			
1200	1300		Jordan, Radio	11690eu			
1200	1220	fa	Kazakhstan, Radio Almaty	11840eu			
1200	1300		Kenya, Kenya BC Corp	4935do			
1200	1300	vl	Lesotho, Radio	4800do			
1200	1300	vl	Liberia, ELWA	4760do			
1200	1300	vl	Liberia, R Liberia International	6100do			
1200	1300		Liberia, Voice of Hope	11530af			
1200	1300		Malaysia, Radio	7295do			
1200	1300		N Marianas, KHBI Saipan	5915as	9880as		
1200	1300		Namibia, Namibian BC Corp	7165af	7215af		
1200	1300		Netherlands, Radio	6045eu	9855eu		
1200	1205		New Zealand, R New Zealand Int	15175as			
1200	1300		New Zealand, ZLXA	3935do			
1200	1300	vl	Nigeria, Radio/Enugu	6025do			
1200	1300	vl	Nigeria, Radio/Ibadan	6050do			
1200	1300	vl	Nigeria, Radio/Kaduna	4770do	6090do	7275do	9570do
1200	1300	vl	Nigeria, Radio/Lagos	4990do	7285do		
1200	1256		North Korea, R Pyongyang	3560va	9640va	9850va	9975va
				11335va	13650va		
1200	1300		Palau, KHBN/Voice of Hope	9955as	9965as	9985as	13840as
1200	1300	vl	Papua New Guinea, NBC	4890do	9675do		
1200	1230		Philippines, FEBC	15110as			
1200	1300		Sierra Leone, Sierra Leone BS	5980do			
1200	1300		Singapore, R Singapore Intl	6150as	9600as		
1200	1215		Somalia, Radio Golkayo	6985va			
1200	1230		Sri Lanka, Sri Lanka BC Corp	4940do			
1200	1300		Taiwan, R Taiwan International	7130as	9610au		
1200	1300		Uganda, Radio	5026da	7110do	7196da	
1200	1220	as	UK, BBC World Service	6190af	6195na	11940af	15220am
1200	1300		UK, BBC World Service	5965na	6195va	9515na	9580as
			9740as	11760me	11955as	12095eu	15220am
			15280as	15310as	15485eu	15565eu	15575me
			17640eu	17700as	17830af	17885af	21470af
1200	1300	a	UK, Flat Earth Radio/Merlin	9430na	21515af		
1200	1300	a	UK, Virgin Radio/Merlin	21455me	21515af		
1200	1300		Ukraine, R Ukraine International	15520eu			
1200	1300		USA, Armed Forces Radio	4278va	4319va	4993va	5765va
			6350va	6458va	6847va	10320va	10940va
			12579va	12689va	13362va	16847va	
1200	1300		USA, KAIJ Dallas TX	5755va			
1200	1300		USA, KTBN Salt Lake City UT	7510na			
1200	1300		USA, KWHR Naalehu HI	9930as	11565pa		
1200	1300		USA, Voice of America	6110as	9645as	9760as	11705as
				11715as	15250as	15425as	
1200	1300		USA, WEWN Birmingham AL	5825na	7425na	15745na	
1200	1300		USA, WHRI Noblesville IN	6040na	9495sa		
1200	1300		USA, WJCR Upton KY	7490va	13595as		
1200	1300		USA, WRMI Miami FL	9955am			
1200	1300		USA, WSHB Cypress Crk SC	6095am	11660va		
1200	1300		USA, WTJC Newport NC	9370na			
1200	1300		USA, WWCR Nashville TN	5070am	5935am	7435am	15685am
1200	1245		USA, WYFR Okeechobee FL	5950na	11830na	11970na	
1200	1230		Uzbekistan, Radio Tashkent	5060as	5975as	6025as	9715as
1200	1300	vl/s	Vanuatu, Radio	3945do	4960do	7260do	
1200	1300		Zambia, Christian Voice	9865do			
1200	1300	vl	Zambia, National BC Corp	6165do	6265do		
1200	1300	vl	Zimbabwe, Zimbabwe BC Corp	5975do	6045do		
1204	1220	mtwhf	UK, BBC Caribbean Report	6195ca	15220ca		
1205	1300	occsnl	New Zealand, R New Zealand Int	6095pa			
1215	1300		Egypt, Radio Cairo	17595as			
1220	1240	w	Kazakhstan, Radio Almaty	9620eu	11840eu		
1220	1300	as	UK, BBC World Service	6190af	11940af		
1230	1300	mtwhfa	Austria, R Austria International	6155eu	13730eu		
1230	1300		Bangladesh, Bangla Betar	7184as	9558as		
1230	1256		Belgium, Radio Vlaanderen Intl	9925eu			
1230	1300		Italy, Adventist World Radio	17820eu			
1230	1300		Sri Lanka, Sri Lanka BC Corp	4940do	6005as	6075as	9770as
				15425as			
1230	1300		Sweden, Radio	18960na			
1230	1300		Thailand, Radio	9810as			
1230	1257		Vietnam, Voice of	12019as			
1240	1300	t	Kazakhstan, Radio Almaty	9620eu	11840eu		
1245	1300	a	Seychelles, FEBA Radio	15535me			
1255	1300	mtwhfa	Taiwan, CBS	6180as	7250as	9630as	11725as
				11775as			

Selected Programs

BBC World Service (am)

1200 D Newshour. [Special service to the Caribbean on 6195 & 15220 kHz: 1205 M-F Caribbean Business; 1210 M-F Caribbean Report.]

HCJB, Ecuador

1200 S Hour of Decision, M-F Morning in the Mountains (cont'd. from 1130 w/ Latin American & International News 1200 & 1230, Sports News 1205, Insights 1206, Mission Network News 1224, Church Doctor 1233, Guidelines for Living 1245, The Gospel Truth 1255), A Children's Bible Hour; 1215 Adventure Pals; 1225 S A Firm Foundation; 1230 S Words to Live By, A Adventures in Odyssey.

Radio Australia

1200 D News; 1205 S Country Club (country music), M-H Late Night Live (discussion/interviews), F Sound Quality (innovative music), A The Spirit of Things (spiritual matters)

Radio Sweden

1230 S In Touch with Stockholm (listener contact-1st)/Sounds Nordic (rock music-exc. 1st), M-F Sixty Degrees North (regional report)A Weekend (Europe magazine-1st week)/Sweden Today (2nd)/Spectrum (arts magazine-3rd)/Studio 49 (topical discussion-4th); 1245 M Sports Scan, T Media Scan (1st/3rd), W Money Matters, H Nordic Report (1st)/Green Scan (ecology-2nd)/Heart Beat (health-3rd)/The S-Files (things Swedish-4th), F Review of the Newsweek.

WHRI, Indiana

9495 kHz: 1230 A Dxing with Cumbre.

WWCR, Tennessee

15685 kHz: 1200 T World of Radio, W Communications World, F The Big Backyard (Australian country music); 1215 S/M Ask WWCR (letters) A Eco Watch (ecology); 1230 A World of Radio. 5070 kHz: 1205 A This Week in Americana (antiques/collectibles).

Hauser's Highlights

SPAIN: R. Exterior de España

B-00 English:

Eu	2000-2100	9680	Mon-Fri,
	2200-2300	9680	Sat+Sun
Af	2000-2100	9595	Mon-Fri,
	2200-2300	9595	Sat+Sun
Am	0000-0200	6055	
	0500-0600	6055	

Sephardic:

NE/ME	1825-1855	17770	Mons only
SAm	0115-0145	11795	Tues only
NAm	0415-0445	9690	Tues only

URL: **http://www.rtve.es/rne/ree**

(via Andreas Volk, via Wolfgang Büschel)

Hauser's Highlights

FRANCE: RFI B-00

en anglais:

1200-1300 11670, 15155, 15195, 15540
1400-1500 11610, 17620, 17680
1600-1730 11995, 12015, 17850
1600-1730 11615, 15210

(via Norbert Fouquet, *Le Monde Vous Parle*)

QSL from Radio Moscow

1300 UTC Shortwave Guide

8:00 AM EST
7:00 AM CST
5:00 AM PST

Frequencies

1300	1400		Anguilla, Caribbean Beacon	11775am			
1300	1400	vl	Australia, ABC/Alice Springs	2310do			
1300	1400	vl	Australia, ABC/Katherine	2485do			
1300	1400	vl	Australia, ABC/Tennant Creek	2325do			
1300	1400		Australia, Radio	5995pa	6020va	9580va	11650pa
				21820va			
1300	1400	vl	Botswana, Radio	7255do	9600do	7255do	
1300	1320		Brazil, Radio Nacional Bras	15445am			
1300	1400	vl	Cameroon, RTV/Yaounde	4850do			
1300	1400		Canada, CBC Northern Service	9625do			
1300	1400		Canada, CFRX Toronto ON	6070do			
1300	1400		Canada, CFVP Calgary AB	6030do			
1300	1400		Canada, CHNX Halifax, NS	6130do			
1300	1400		Canada, CKZN St John's NF	6160do			
1300	1400		Canada, CKZU Vancouver BC	6160do			
1300	1400		Canada, R Canada International	9640na	13655na	17710na	
1300	1356		China Chino Radio International	9570na	11675pa	11900as	15180as
1300	1400		Costa Rica, R for Peace Intl	15048irr	21815usb		
1300	1400		Costa Rica, University Network	15048irr	21815usb		
1300	1400		Ecuador, HCJB	12005am	15115va	21455usb	
1300	1330		Egypt, Radio Cairo	17595as			
1300	1400	as/vl	Eqt. Guinea, Radio East Africa	15185af			
1300	1400	a/monthly	Finland, Scandv Weekend Radio	11690va	11720va		
1300	1400		Germany, Deutsche Welle	6140eu			
1300	1400		Germany, Overcomer Ministries	6110eu			
1300	1330	s	Germany, Universol Life	9710eu	9955na		
1300	1335		Germnay, Voice of Hope	15715me			
1300	1400	vl	Ghana, Ghana BC Corp	4915do	6130do		
1300	1330		Guam, Adventist World Radio	15225as			
1300	1400		Guyana, Voice of	5949do			
1300	1400	vl/as	Italy, IRRS	7120va			
1300	1400		Jordon, Radio	11690eu			
1300	1400		Kenya, Kenya BC Corp	4935do			
1300	1400	vl	Lesotho, Radio	4800do			
1300	1400	vl	Liberia, ELWA	4760do			
1300	1400	vl	Liberia, R Liberia International	6100do			
1300	1400		Liberia, Voice of Hope	11530af			
1300	1400		Malaysia, Radio	7295do			
1300	1400		N Marianas, KHBI Saipan	7460as			
1300	1400		Namibia, Nomibian BC Corp	7165af	7215af		
1300	1325		Netherlands, Radio	6045eu	9855eu		
1300	1400		New Zealand, ZLXA	3935do			
1300	1400	vl	Nigeria, Radio/Enugu	6025do			
1300	1400	vl	Nigeria, Radio/Kaduna	4770do	6090do	7275do	9570do
1300	1400	vl	Nigeria, Radio/Lagos	4990do	7285do		
1300	1400		Palau, KHBN/Voice of Hope	9955as	9965as	9985as	13840as
1300	1400	vl	Papua New Guinea, NBC	4890do	9675do		
1300	1359		Poland, Radio Polonia	6095eu	7270eu	9525eu	11820eu
1300	1356		Romania, R Romania International	11940eu	15290eu	15335na	17805na
1300	1400	as	S Africa, Channel Africa	11720af	17780af	21725af	
1300	1400		Sierra Leone, Sierra Leone BS	5980do			
1300	1400		Singapore, R Singapore Intl	6150as	9600as		
1300	1400		South Korea, R Korea Intl	9570as	13670am		
1300	1400		Sri Lanka, Sri Lanka BC Corp	4940do	6005as	6075as	9770as
				15425as			
1300	1330		Switzerland, Swiss R Internotional	9535eu			
1300	1400		Ugonda, Radio	4976do	5026do		
1300	1400		UK, BBC World Service	5965na	5995as	6190af	6195va
			9515na	9590na	9740as	11760me	11940af
			12095eu	15220am	15310as	15420af	15485eu
			15565eu	15575me	17640eu	17700as	17830af
			17885af	21470af			
1300	1400	a	UK, Flat Earth Radio/Merlin	9430na	21455me	21515af	
1300	1400	a	UK, Virgin Radio/Merlin	21455me	21515af		
1300	1400		USA, Armed Forces Radio	4278va	4319va	4993va	5765va
			6350va	6458va	6847va	10320va	10940va
			12579va	12689va	13362va	16847va	
1300	1400		USA, KAIJ Dallas TX	5755va			
1300	1400		USA, KNLS Anchor Point AK	9615as			
1300	1400		USA, KTBN Salt Loke City UT	7510na			
1300	1400		USA, KWHR Naalehu HI	9930as	11565pa		
1300	1400		USA, Voice of America	6110as	9645as	9760as	11705as
				11715as	15425as		
1300	1400		USA, WEWN Birmingham AL	11875va	15375na	15745na	
1300	1400		USA, WHRI Noblesville IN	6040na	15105na		
1300	1400		USA, WJCR Upton KY	7490va	13595as		
1300	1400		USA, WRMI Miami FL	15725am			
1300	1400		USA, WSHB Cypress Crk SC	9430na	9455na		
1300	1400		USA, WTJC Newport NC	9370na			
1300	1400		USA, WWCR Nashville TN	5070am	5935am	7435am	15685am
1300	1400		USA, WWFV McCaysville GA	9400va	12172am		
1300	1400		USA, WYFR Okeechobee FL	11550as	11740no	11830no	11970na
1300	1400		Zambia, Christion Voice	9865do			
1300	1400	vl	Zambia, National BC Corp	6165do	6265do		
1300	1400	vl	Zimbabwe, Zimbabwe BC Corp	5975do	6045do		
1306	1400	occsnal	New Zealand, R New Zealand Int	6095po			
1330	1400	s	Austria, R Austrio International	6155eu	13730eu		
1330	1359		Finland, YLE/R Finland	15400na	17660na		
1330	1400		Guam, Adventist World Radio	11755as	11980as		
1330	1400		India, All India Radio	9690as	11620as	13710as	
1330	1400		Sweden, Radio	9425va	17505alt		
1330	1400		Turkey, Voice of	17690as	17815eu		
1330	1400		UAE, Radio Dubai	13675eu	15395eu	21605eu	
1330	1400		Uzbekiston, Radio Tashkent	5060as	5975as	6025as	9715as
1330	1357		Vietnam, Voice of	7145eu	9730eu		
1335	1400		Germany, Voice of Hope	15715me	17550as		
1345	1400		Vatican City, Vatican Radio	15235au	17515au		

Selected Programs

BBC World Service (am)

1300 D News; 1305 S Jazzmatazz, M-F Outlook (magazine), A Global Business; 1330 S In Praise of God, A People & Politics; 1345 M-F Off the Shelf (book readings).

Channel Africa

1300 S/A Channel Africa Extra (weekend variety magazine).

China Radio Intenational

1300 D News; 1310 S Report on Developing Countries, M-F Current Affairs, A Global Review; 1320 S In the Spotlight (cultural magazine), A Listeners' Garden; 1330 M People in the Know (China's leading citizens), T Sports World, W China Horizons (business), H Voices from Other Lands, F Life in China.

HCJB, Ecuador

1300 S Weekend Magazine, M-F Precept, A Toonz!; 1313 M-F A Time for Harvest; 1315 M-F Proclaim; 1330 S Mountain Meditations, M-F Focus on the Family; 1356 M-F Today's Father; 1358 M-F Parent Talk Tip.

Radio Australia

1300 D News; 1305 S Country Club (cont'd. from 1205), A The Science Show; 1315 M-F The Planet (international music).

Radio Canada International

1300 D News; 1310 S The Sunday Edition (arts/politics/ideas), M-F This Morning (magazine), A The House (Canadian politics).

YLE Radio Finland

1330 S Capital Cafe (conversations), M-F Finland This Morning (magazine), A Finland This Week (review); 1345 A Starting Finnish (language course).

Radio Sweden

1330 S In Touch with Stockholm (listener contact-1st)/Sounds Nordic (rock music-exc. 1st), M-F Sixty Degrees North (regional report)A Weekend (Europe magazine-1st week)/Sweden Today (2nd)/Spectrum (arts magazine-3rd)/Studio 49 (topical discussion-4th); 1345 M Sports Scan, T Media Scan (1st/3rd), W Money Matters, H Nordic Report (1st)/Green Scan (ecology-2nd)/Heart Beat (health-3rd)/The S-Files (things Swedish-4th), F Review of the Newsweek.

WHRI, Indiana

15105 kHz: 1330 A DXing with Cumbre.

WWCR, Tennessee

15685 kHz: 1345 M Eco Watch (ecology). 5070 kHz: 1305 A Rock the Universe (Christian rock music).

(left) QSL from Radio Havana, Cuba. (right) Arnie and Olga Coro. Arnie hosts the DX program on Radio Havana.

Frequencies

1400	1500		Anguilla, Caribbean Beacon	11775am			
1400	1500	vl	Australia, ABC/Alice Springs	2310do			
1400	1500	vl	Australia, ABC/Katherine	2485do			
1400	1500	vl	Australia, ABC/Tennant Creek	2325da			
1400	1500		Australia, Radio	5995as	6080pa	9580as	11650pa
				11660va			
1400	1500	vl	Batswana, Radio	7255do	9600do	7255do	
1400	1500	vl	Cameroon, RTV/Yaounde	4850do			
1400	1500		Canada, CBC Northern Service	9625do			
1400	1500		Canada, CFRX Toronto ON	6070do			
1400	1500		Canada, CFVP Calgary AB	6030do			
1400	1500		Canada, CHNX Halifax, NS	6130do			
1400	1500		Canada, CKZN St John's NF	6160do			
1400	1500		Canada, CKZU Vancouver BC	6160do			
1400	1500		Canada, R Canada International	9640na	13655na	17710na	
1400	1456		China China Radio International	7405na	9700as	11675as	11825as
				13685af	15110as	15125af	
1400	1500		Costa Rica, R for Peace Intl	15048irr	21815usb		
1400	1500		Costa Rica, University Network	15048irr	21815usb		
1400	1429		Czech Rep, Radio Prague Intl	21745va			
1400	1500		Ecuador, HCJB	12005am	15115va	21455usb	
1400	1500	as/vl	Eqt Guinea, Radio East Africa	15185af			
1400	1500	a/monthly	Finland, Scandv Weekend Radio	11690va	11720va		
1400	1500		France, R France International	11610as	17620as	17680af	
1400	1500		Germany, Deutsche Welle	6140eu			
1400	1500		Germany, Overcomer Ministries	6110eu			
1400	1500		Germany, Voice of Hope	15715me	17550as		
1400	1500	vl	Ghana, Ghana BC Corp	4915do	6130do		
1400	1500		Guyana, Voice of	5949do			
1400	1500		India, All India Radio	9690as	11620as	13710os	
1400	1500	vl/as	Italy, IRRS	7120va			
1400	1500		Japan, Radio	7200as	9505as	9845as	11860va
1400	1500		Jordan, Radio	11690eu			
1400	1500		Kenya, Kenyo BC Corp	4935do			
1400	1500	vl	Lesotho, Radio	4800do			
1400	1500	vl	Liberia, ELWA	4760do			
1400	1500	vl	Liberia, R Liberio International	6100do			
1400	1500		Liberia, Voice of Hope	11530af			
1400	1500		Malaysia, Radio	7295do			
1400	1500		Malaysia, RTM Sarawak	7160do			
1400	1500		Namibia, Namibian BC Corp	7165af	7215af		
1400	1500	occsnal	New Zealand, R New Zealand Int	6095pa			
1400	1500		New Zealand, ZLXA	3935do			
1400	1500	vl	Nigeria, Radio/Enugu	6025do			
1400	1500	vl	Nigeria, Radio/Ibadan	6050do			
1400	1500	vl	Nigeria, Radio/Kaduna	4770do	6090do	7275do	9570do
1400	1500	vl	Nigeria, Radio/Lagos	4990do	7285do		
1400	1500		Oman, Radio Sultonate of	15140va			
1400	1500		Palau, KHBN/Voice of Hope	9955as	9965as	9985as	13840as
1400	1455	as	S Africa, Channel Africa	11720af	17780af	21725af	
1400	1500		Sierra Leone, Sierra Leone BS	5980da			
1400	1500		Singapore R Corp of Singapore	6150do			
1400	1500		Sri Lanka, Sr Lanka BC Corp	4940do	6005as	6075as	9770as
				15425as			
1400	1500		Switzerland, Swiss R International	12010as	15185as		
1400	1500		Taiwan, R Taiwan International	15125as			
1400	1430		Thailand, Radio	9530as			
1400	1430		Turkey, Voice of	17690as	17815eu		
1400	1500		Ugando, Radio	4976do	5026do		
1400	1500		UK, BBC World Service	5995os	6190af	6195as	9590na
			9740os	11940af	12095eu	15220na	15310as
			15485eu	15565eu	15575me	17640eu	17700as
			17830af	17840am	21470af	21660af	
1400	1500	a	UK, Flat Earth Radio/Merlin	15665na	21455me	21515af	
1400	1500	a	UK, Virgin Radio/Merlin	21455me	21515af		
1400	1500		USA, Armed Forces Radio	4278va	4319va	4993va	5765va
			6350va	6458va	6847va	10320va	10940va
			12579va	12689va	13362va	16847va	
1400	1500		USA, KAIJ Dallas TX	13815va			
1400	1500		USA, KJES Vado NM	11715na			
1400	1500		USA, KTBN Salt Lake City UT	7510na			
1400	1500		USA, KWHR Naalehu HI	9930as	11565as		
1400	1430	s	USA, Voice of Americc	18275va			
1400	1500		USA, Voice of Americo	6110as	7125as	9645as	9760as
				11705os	15205os	15395as	15425as
1400	1500		USA, WEWN Birmingham AL	11875va	15375na	15745na	
1400	1500		USA, WHRI Noblesville IN	6040na	15105na		
1400	1500		USA, WJCR Upton KY	7490va	13595as		
1400	1500		USA, WRMI Miami FL	15725am			
1400	1500		USA, WTJC Newport NC	9370na			
1400	1500		USA, WWCR Nashville TN	9475am	12160am	13845am	15685am
1400	1500		USA, WWFV McCaysville GA	9400am	12172am		
1400	1500		USA, WYFR Okeechobee FL	11550as	11740na	11830na	17760na
1400	1405		Vatican City, Vatican Radio	15235au	17515au		
1400	1500		Zambia, Christian Voice	9865do			
1400	1500	vl	Zambia, National BC Corp	6165do	6265do		
1400	1500	vl	Zimbabwe, Zimbabwe BC Corp	5975do	6045do		
1415	1420		Nepal, Radio	5005as	7165as		
1430	1500		Austria, R Austria International	6155eu	13730eu	17855au	
1430	1500		Guam, Adventist World Radio	15225as			
1430	1500		Guam, Trans World Radio	15330as			
1430	1500		Malaysia, RTM Koto Kinabalu	5980do			
1430	1500		Myanmar, Radio	5985do			
1430	1500		Netherlands, Radio	12070as	12090as	15595as	
1430	1500		Sweden, Radio	17505va	18960no		

Selected Programs

BBC World Service (am)

1400 D News; 1405 S Talking Point (global phone-in), M Meridian-Ideas, T Meridian-Screen, W Meridian-Music, H Meridian-Writing, F Meridian-Masterpiece, A Sportsworld (live action); 1430 M Music Mix, T UK Top Twenty, W/F Westway (drama serial), H World of Music; 1445 W UK Album Chart, F Music X-Press.

Channel Africa

1300 S/A Channel Africa Extra (cont'd from 1200).

China Radio Intenational

1400 D News; 1410 S Report on Developing Countries, M-F Current Affairs, A Global Review; 1420 S In the Spotlight (cultural magazine), A Listeners' Garden; 1430 M People in the Know (China's leading citizens), T Sports World, W China Horizons business), H Voices from Other Lands, F Life in China.

HCJB, Ecuador

1400 S Simply Worsaip, M-F Turning Point, A Kid's Corner; 1428 M-F RBC Spot Radio; 1430 S Moody Presents, M-F The Living Way, A Alive! (Christian lifestyles); 1450 M-F Beyond the Call.

Radio Australia

1400 D News; 1405 S Books and Writing, M-F The Planet (cont'c. from 1315), A New Dimensions ("progressive" ideas).

Radio Canada International

1400 D News; 1405 S The Sunday Edition (cont'd. from 1310), M-F This Morning (cont'd. from 1310), A Basic Black (humor).

Radio Japan

1400 D News; 1410 S Roundup Asia (regional magazine), A Weekend Square (Japanese life); 1415 M-F 44 Minutes (feature magazine).

Radio Prague

1400 D News; 1405 S Letter from Prague, M-F Current Affairs, A The Arts; 1410 S From the Weeklies, A Saturday Music (classical/folk/jazz); 1415 S Readings from Czech Literature, M Spotlight (Czech current events) or One on One (interview), W Czechs in History or Central Europe Today, F Mailbox; 1420 T Talking Point, H Economic Report.

Radio Sweden

1430 S In Touch with Stockholm (listener contact-1st)/Sounds Nordic (rock music-exc. 1st), M-F Sixty Degrees North (regional report)A Weekend (Europe magazine-1st week)/Sweden Today (2nd)/Spectrum (arts magazine-3rd)/Studio 49 (topical discussion-4th); 1445 M Sports Scan, T Media Scan (1st/3rd), W Money Matters, H Nordic Report (1st)/Green Scan (ecology-2nd)/Heart Beat (health-3rd)/The S-Files (things Swedish-4th), F Review of the Newsweek.

WWCR, Tennessee

15685 kHz: 1415 A As WWCR (letters).

1500 UTC Shortwave Guide

10:00 AM EST
9:00 AM CST
7:00 AM PST

Frequencies

1500	1600		Anguilla, Caribbean Beacon	11775am			
1500	1600	vl	Australia, ABC/Alice Springs	2310do			
1500	1600	vl	Australia, ABC/Katherine	2485do			
1500	1600	vl	Australia, ABC/Tennant Creek	2325do			
1500	1600		Australia, Radio	5995va	6080pa	9580as	11650pa
				11660va			
1500	1600	vl	Botswana, Radio	7255do	9600do	7255do	
1500	1600	vl	Cameroon, RTV/Yaounde	4850do			
1500	1600		Canada, CBC Northern Service	9625do			
1500	1600		Canada, CFRX Toronto ON	6070do			
1500	1600		Canada, CFVP Calgary AB	6030do			
1500	1600		Canada, CHNX Halifax, NS	6130do			
1500	1600		Canado, CKZN St John's NF	6160do			
1500	1600		Canada, CKZU Voncouver BC	6160do			
1500	1600		Canada, R Canada Internotional	9640no	13655na	17710na	
1500	1556		China Chino Radio International	7160as	9785as		
1500	1600		Costa Rica, R for Peace Intl	15048va	21815usb		
1500	1600		Costa Rica, University Network	15048va	21815usb		
1500	1530		Ecuador, HCJB	21455usb			
1500	1600		Ecuador, HCJB	12005am	15115va		
1500	1600	as/vl	Eqt Guinea, Radio Eost Africo	15185af			
1500	1600	a/monthly	Finland, Scondv Weekend Radio	11690va	11720va		
1500	1600		Germany, Deutsche Welle	6140eu			
1500	1600		Germany, Overcomer Ministries	6110eu	13810af		
1500	1600		Germany, Voice of Hope	15715me	17550as		
1500	1600	vl	Ghana, Ghana BC Corp	4915do	6130do		
1500	1600		Guam, Trans World Radio	15330as			
1500	1600		Guyana, Voice of	5949do			
1500	1600	vl/as	Italy, IRRS	7120va			
1500	1600		Japan, Radio	7200as	9750os	9845as	
1500	1530		Jordan, Radio	11690eu			
1500	1600		Kenya, Kenya BC Corp	4935do			
1500	1600	vl	Lesotho, Radio	4800do			
1500	1600	vl	Liberia, ELWA	4760do			
1500	1600	vl	Liberia, R Liberia International	6100do			
1500	1600		Liberia, Voice of Hope	11530af			
1500	1600		Malaysia, Radio	7295do			
1500	1600		Malaysia, RTM Kota Kinabalu	5980do			
1500	1600		Malaysia, RTM Sarawak	7160do			
1500	1530		Mexico, R Mexico International	9705am	11770al		
1500	1530		Mongolia, Voice of	12015as	12085as		
1500	1600		Myanmar, Radio	5985do			
1500	1600		Namibia, Namibian BC Corp	7165af	7215af		
1500	1600		Netherlands, Radio	12070as	12095as	15595as	
1500	1600	occsnal	New Zealand, R New Zealand Int	6095pa			
1500	1600		New Zealand, ZLXA	3935do			
1500	1600	vl	Nigeria, Radio/Enugu	6025do			
1500	1600	vl	Nigeria, Radio/Ibadan	6050do			
1500	1600	vl	Nigeria, Radio/Kaduna	4770do	6090do	7275do	9570do
1500	1600	vl	Nigeria, Radio/Lagos	4990do	7285do		
1500	1600	vl	Nigeria, Voice of	7255af	15120af		
1500	1556		North Korea, R Pyongyang	4405va	6574na	9335na	11710na
				13760na			
1500	1600		Palau, KHBN/Voice of Hope	9955as	9965as	9985as	13840as
1500	1600		Russia, Voice of Russia WS	7180no	7315as	9800as	9875os
				11500as			
1500	1530		S Africa, Channel Africa	17770af			
1500	1600		S Africa, World Beacon	6145af			
1500	1600	a	Seychelles, FEBA Radio	11600as			
1500	1600		Sierra Leone, Sierra Leone BS	5980do			
1500	1600		Singapore R Corp of Singapore	6150do			
1500	1600		Sri Lanko, Sri Lanka BC Corp	4940do	6005as	6075as	9770as
				15425as			
1500	1600		Uganda, Radio	4976do	5026do		
1500	1600		UK, BBC World Service	5975os	5995os	6190af	6195as
			9410eu	9515na	9590na	9740as	11860af
			11940af	12095eu	15220no	15310as	15400af
			15420af	15485eu	15565eu	17700as	17830af
			17840am	21470af	21490af	21660af	
1500	1600	o	UK, Flat Eorth Radio/Merlin	15665na	21455me	21515af	
1500	1600	o	UK, Virgin Rodio/Merlin	21455me	21515af		
1500	1600		USA, Armed Forces Radio	4278va	4319va	4993va	5765va
			6350vo	6458va	6847vo	10320vo	10940vo
			12579va	12689va	13362va	16847va	
1500	1600		USA, KAIJ Dallas TX	13815va			
1500	1600		USA, KJES Vado NM	11715no			
1500	1600		USA, KTBN Salt Lake City UT	7510na			
1500	1600		USA, KWHR Naalehu HI	9930as	11565pa		
1500	1600		USA, VOA Speciol English	6110as	9760as	9845as	12040os
				15460as			
1500	1600		USA, Voice of America	7125as	9575as	9645as	15205as
				15395as			
1500	1600		USA, WEWN Birmingham AL	11875va	15375na	15745na	
1500	1600		USA, WHRI Noblesville IN	6040na	15105na		
1500	1600		USA, WJCR Upton KY	7490va	13595as		
1500	1600		USA, WRMI Miami FL	15725am			
1500	1600		USA, WTJC Newport NC	9370na			
1500	1600		USA, WWCR Nashville TN	9475am	12160am	13845am	15685am
1500	1600		USA, WWFV McCaysville GA	9400am	12172am		
1500	1600		USA, WYFR Okeechobee FL	11830no	17750no		
1500	1600		Zambia, Christian Voice	4965do			
1500	1600	vl	Zambia, National BC Corp	6165do	6265do		
1500	1600	vl	Zimbabwe, Zimbabwe BC Corp	5975do	6045do		
1515	1600	vl	Malawi, Malawi BC Corp	3380do			
1530	1545		Afghanistan, Voice of Shari'ah	7002do	7073do	7083as	
1530	1545		Bangladesh, Bangla Betar	4882as	15520as		
1530	1600	vl	Botswana, Radio	3356do	4820do	7255do	
1530	1600		Iran, VOIRI	7115os	9635as	11775na	
1530	1600		Jordan, Radio	17680no			
1530	1545	smtw	Seychelles, FEBA Radio	11600as			
1530	1600		Slovakia, Adventist World Radio	13860as			
1545	1600	sh	Bangladesh, Bangla Betar	4882as	15520as		
1545	1600	smtw a	Seychelles, FEBA Radio	11600as			
1550	1600		Vatican City, Vatican Radio	9865ou	13765ou	15235ou	
1600	1700		Algeria, R Algiers International	11715va	15160va		

Selected Programs

BBC World Service

1500 D News; 1505 S From Our Own Correspondent, M One Planet (ecology), T Discovery (science), W Health Matters, H Science View, F Sports International, A Sportsworld (live action); 1530 S People and Politics, M People & Places, T Essential Guide, W Everywoman, H Focus on Faith, F Pick of the World (BBC's best).

China Radio Intenational

1500 D News; 1510 S Report on Developing Countries, M-F Current Affairs, A Global Review; 1520 S In the Spotlight (cultural magazine), A Listeners' Garden; 1530 M People in the Know (China's leading citizens), T Sports World, W China Horizons (business), H Voices from Other Lands, F Life in China.

HCJB, Ecuador

1500 S Encounter, M-F Back to the Bible, A Alive! (cont'd. from 1430); 1525 M-F Joni and Friends; 1530 S Back to God Hour, M-F Gateway to Joy, A Weekend Magazine; 1544 M-F Key Life.

Radio Australia

1500 D News; 1505 S Encounter (religion in Australia), M-F Asia Pacific (regional report), A Melisma (innovative music); 1530 M Health Report, T Law Report, W Religion Report, H Media Report, F The Sports Factor (documentaries).

Radio Canada International

1500 D News; 1505 S The Sunday Edition (cont'd. from 1310), M-F This Morning (cont'd. from 1310), A Basic Black (humor); 1530 F C'est La Vie (life in French Canada); 1545 M-H Out Front (experimental radio).

Voice of Russia

1500 D News; 1511 S Sunday Panorama, M-A News & Views; 1530 D News in Brief; 1532 S Kaleidoscope (Russian events), M Folk Box, T/H Yours for the Asking, W Jazz Show, F Moscow Yesterday & Today, A Timelines; 1546 T/H Music At Your Request.

WHRI, Indiana

6040 kHz: 1530 S/A DXing with Cumbre.

HCJB WORLD RADIO

The HCJB logo and mascot.

Frequencies

1600	1700		Anguilla, Caribbean Beacon	11775am			
1600	1700	vl	Australia, ABC/Alice Springs	2310do			
1600	1700	vl	Australia, ABC/Katherine	2485do			
1600	1700	vl	Australia, ABC/Tennant Creek	2325do			
1600	1700		Australia, Radio	5995va	6080po	9580va	9a55va
				11650po	11660va		
1600	1700	vl	Botswana, Radio	3356do	4820do	7255do	
1600	1700	vl	Cameroon, RTV/Yaounde	4850do			
1600	1700		Canada, CBC Northern Service	9625do			
1600	1700		Canada, CFRX Toronto ON	6070do			
1600	1700		Canada, CFVP Calgary AB	6030do			
1600	1700		Canada, CHNX Halifax, NS	6130do			
1600	1700		Canada, CKZN St John's NF	6160do			
1600	1700		Canada, CKZU Vancouver BC	6160da			
1600	1656		China China Radio International	7190af	9565af	9870af	
1600	1700		Costa Rica, R for Peace Intl	15048va	21815usb		
1600	1700		Costa Rica, University Network	15048va	21815usb		
1600	1630		Ecuador, HCJB	12005am	15115va		
1600	1700		Ethiopia, Radio	7165af	9560af		
1600	1700	a/monthly	Finland, Scandv Weekend Radio	11690va	11720va		
1600	1700		France, R France International	11995af	12015af	17850af	
1600	1645		Germany, Deutsche Welle	6170as	7225as	9735af	15380as
				15455af	17810as	21780af	
1600	1700		Germany, Deutsche Welle	6140eu			
1600	1700	a	Germany, Good News World R	15105af			
1600	1700		Germany, Overcomer Ministries	6110eu	13810af		
1600	1630	s	Germany, Universal Life	15105af			
1600	1630		Germany, Voice of Hope	17550as			
1600	1700	vl	Ghana, Ghana BC Corp	4915do	6130do		
1600	1700		Guam, Adventist World Radio	11980as			
1600	1630		Guam, Trans World Radio	15330as			
1600	1700		Guyana, Voice of	5949do			
1600	1627		Iran, VOIRI	7115as	9635as	11775na	
1600	1700	vl/as	Italy, IRRS	7120va			
1600	1700		Jordan, Radio	17680na			
1600	1700		Kenya, Kenya BC Corp	4935do			
1600	1700	vl	Lesotho, Radio	4800do			
1600	1700	vl	Liberia, ELWA	4760do			
1600	1700	vl	Liberia, R Liberia International	6100do			
1600	1700		Liberia, Voice of Hope	11530af			
1600	1700	vl	Malawi, Malawi BC Corp	3380do			
1600	1700		Malaysia, Radio	7295do			
1600	1630	twhfa	Mexico, R Mexico International	9705am	11770af		
1600	1700		Namibia, Namibian BC Corp	7165af	7215af		
1600	1625		Netherlands, Radio	12070as	12095as	15595as	
1600	1650	accsnal	New Zealand, R New Zealand Int	6095va			
1600	1700		New Zealand, ZLXA	3935do			
1600	1700	vl	Nigeria, Radio/Enugu	6025do			
1600	1700	vl	Nigeria, Radio/Ibadan	6050do			
1600	1700	vl	Nigeria, Radio/Kaduna	4770do	6090do	7275do	9570do
1600	1700	vl	Nigeria, Radio/Lagos	3326do	4990do		
1600	1700	vl	Nigeria, Voice of	7255af	15120af		
1600	1656		North Korea, R Pyongyang	3560va	6520va	9600va	9975va
1600	1615		Pakistan, Radio	11570me	15100af	15725eu	
1600	1700		Palau, KHBN/Voice of Hope	9955as	9965as	13840as	
1600	1700		Russia, Voice of Russia WS	4940me	4965me	4975me	6005me
				7305as	9830me		
1600	1630		S Africa, Channel Africa	9525af			
1600	1700		S Africa, World Beacon	6145af			
1600	1700		Sierra Leone, Sierra Leone BS	5980do			
1600	1700		South Korea, R Korea Intl	5975am	9515va	9870va	
1600	1700		Sri Lanka, Sri Lanka BC Corp	4940do			
1600	1640		UAE, Radio Dubai	13675eu	15395eu	21605eu	
1600	1700		Uganda, Radio	4976do	5026do		
1600	1700		UK, BBC World Service	3915as	5975as	6190af	6195as
			7160as	9410eu	9740eu	11940af	12095eu
			15310as	15400af	15420af	15565eu	17700as
			17830af	16740am	21470af	21660af	
1600	1700	mtwhfa	UK, BBC World Service	9515na			
1600	1700	o	UK, Flat Earth Radio/Merlin	15525eu	15665na	21515af	
1600	1700		UK, World Beacon	15455eu			
1600	1700		USA, Armed Forces Radio	4278va	4319va	4993va	5765va
			6350va	6458va	6847va	10320va	10940va
			12579va	12689va	13362va	16847va	
1600	1700		USA, KAIJ Dallas TX	13815va			
1600	1700		USA, KJES Vado NM	11715na			
1600	1700		USA, KTBN Salt Lake City UT	15590na			
1600	1700		USA, KWHR Noalehu HI	9930as			
1600	1700		USA, VOA Special English	13600af	15445af	17895af	
1600	1700		USA, Voice of America	6035af	6110as	7125as	9575as
			9645as	9760as	11920af	12040af	13710af
			15205as	15225af	15240af	15395as	
1600	1700		USA, WEWN Birmingham AL	11875na	13615na	15375na	15745na
1600	1700		USA, WHRA Greenbush ME	17650af			
1600	1700		USA, WHRI Noblesville IN	13760na	15105na		
1600	1700		USA, WINB Red Lion PA	13570eu			
1600	1700		USA, WJCR Upton KY	7490va	13595as		
1600	1700		USA, WRMI Miami FL	15725am			
1600	1700		USA, WSHB Cypress Crk SC	18910af			
1600	1700		USA, WTJC Newport NC	9370na			
1600	1700		USA, WWCR Nashville TN	9475am	12160am	13845am	15685am
1600	1700		USA, WWFV McCaysville GA	9400am	12172am		
1600	1700		USA, WYFR Okeechobee FL	11830na	15215na	17760na	18980eu
				21455eu	21525af		
1600	1610		Vatican City, Vatican Radio	9865au	13765au	15235au	
1600	1627		Vietnam, Voice of	7145eu	9730eu		
1600	1700		Zambia, Christian Voice	4965do			
1600	1700	vl	Zambia, National BC Corp	6165do	6265da		
1600	1630	vl	Zimbabwe, Zimbabwe BC Corp	5975do	6045do		
1615	1630	as	UK, BBC World Service	11860af	21490af		
1630	1700		Egypt, Radio Cairo	15255af			
1630	1700		Georgia, Georgian Radio	6180me			
1630	1700	s	Seychelles, FEBA Radio	11605as			
1630	1700		Somalia, Radio Galkayo	6985va			
1630	1700	mtwhf	UK, Merlin Network One	12065as			
1630	1700	vl	Zimbabwe, Zimbabwe BC Corp	4828do	6045do		
1645	1700		Bangladesh, Bangla Betar	7184eu	7462eu	9550eu	15520eu
1650	1700	mtwhf	New Zealand, R New Zealand Int	15120as			

Selected Programs

BBC World Service (am)

1600 S News Summary, M-F World Briefing, A News; 1601 S Corcart Hall; 1605 A Sportsworld (live action); 1630 M/T/H/F Analysis, W From Our Own Correspondent; 1645 M-F Sports Roundup.

HCJB, Ecuador

1600 S Message of Truth, M-F Haven, A Words of Hope; 1626 M-F Life Jewels, 1627 M-F Moments of Hope.

Radio Australia

1600 D News; 1605 S The National Interest (Australian politics), M Music Deli, T The Comfort Zone (Australian homes/gardens/food), W Verbatim (oral histories), H Hindsight (history), F Awaye! (Aboriginal culture), A Melisma (cont'd. from 1505); 1630 W Earshot (Australian voices).

Radio Austria International

1630 D Report from Austria (magazine); 1635 S Week in Review, A Listener Letters; 1645 S Profile of Austria, A Music from Austria.

WHRI, Indiana

15105 kHz: 1600 S DXing with Cumbre; 1602 A 20, The Countdown Magazine (Christian rock-music chart).

James Lathan, station manager, Radio for Peace International, Costa Rica.

Frequencies

1700	1800		Anguilla, Caribbean Beacon	11775am			
1700	1800	vl	Australia, ABC/Alice Springs	2310do			
1700	1800	vl	Australia, ABC/Katherine	2485do			
1700	1800	vl	Australia, ABC/Tennant Creek	2325da			
1700	1800		Australia, Radio	5995va	6080pa	9580va	9655va
				9815as	11880va		
1700	1800		Bangladesh, Bangla Betar	7184eu	7462eu	9550eu	15520eu
1700	1800	vl	Botswana, Radio	3356da	4820do	7255da	
1700	1800	vl	Cameroon, RTV/Yaounde	4850do			
1700	1800		Canada, CBC Northern Service	9625do			
1700	1800		Canada, CFRX Toronto ON	6070do			
1700	1800		Canada, CFVP Calgary AB	6030do			
1700	1800		Canada, CHNX Halifax, NS	6130do			
1700	1800		Canada, CKZN St John's NF	6160do			
1700	1800		Canada, CKZU Vancouver BC	6160do			
1700	1756		China China Radio International	9570af	9670af	9695af	11910af
				13700af			
1700	1800		Costa Rica, R for Peace Intl	15048va	21815usb		
1700	1800		Costa Rica, University Network	15048va	21815usb		
1700	1727		Czech Rep, Radio Prague Intl	5930eu	17485af		
1700	1800		Egypt, Radio Cairo	15255af			
1700	1800	mtwhf	Eqt Guinea, Radio Africa	15185af			
1700	1800	a/monthly	Finland, Scandv Weekend Radio	11690va	11720va		
1700	1730		France, R France International	11615af	15210af		
1700	1800		Germany, Deutsche Welle	6140eu			
1700	1800	a	Germany, Good News World R	11795me			
1700	1800		Germany, Overcamer Ministries	13810me			
1700	1800		Germany, Voice of Hope	9495me			
1700	1800	vl	Ghana, Ghana BC Corp	3366do	4915do		
1700	1800	a	Greece, Voice of	9420eu	15630na		
1700	1800		Guyana, Voice of	5949do			
1700	1800	irreg	Iraq, Radio Iraq International	7070va			
1700	1800		Israel, Kol Israel	11605va	17545va		
1700	1800		Japan, Radio	9505na	11970eu	15355af	
1700	1730		Jordan, Radio	17860na			
1700	1800		Kenya, Kenya BC Corp	4935do			
1700	1800	vl	Lesotho, Radio	4800da			
1700	1800	vl	Liberia, ELWA	4760da			
1700	1800	vl	Liberia, R Liberia International	6100da			
1700	1800		Liberia, Voice of Hope	11530af			
1700	1800	vl	Malawi, Malawi BC Corp	3380do			
1700	1800		Malaysia, Radio	7295da			
1700	1800		Namibia, Namibian BC Corp	3270af	3289af		
1700	1800	mtwhf	New Zealand, R New Zealand Int	15120as			
1700	1800		New Zealand, ZLXA	3935do			
1700	1800	vl	Nigeria, Radio/Enugu	6025do			
1700	1800	vl	Nigeria, Radio/Ibadan	6050do			
1700	1800	vl	Nigeria, Radio/Kaduna	4770do	6090da	7275da	9570do
1700	1800	vl	Nigeria, Radio/Lagos	3326do	4990da		
1700	1800		Palau, KHBN/Voice of Hope	9955as	9965as	13840as	
1700	1756		Ramania, R Romania International	9625eu	11740eu	11940eu	15365eu
1700	1800		Russia, Voice of Russia WS	9830me			
1700	1730		S Africa, Channel Africa	17860af			
1700	1800		S Africa, World Beacon	6145af			
1700	1800		Sierra Leone, Sierra Leone BS	5980da			
1700	1800	irreg	Sri Lanka, Sri Lanka BC Corp	4940da			
1700	1800	vl	Sudan, Radio Omdurman	7199da	9200do	9505da	
1700	1800		Uganda, Radio	4976da	5026do		
1700	1800		UK, BBC World Service	3255af	3915as	5975as	6005af
			6190af	6195eu	7160as	9410eu	9510as
			9630af	9740as	15400af	15420af	15575me
			17830af	17840na	21470af		
1700	1730	a	UK, Flat Earth Radio/Merlin	15525eu	15665na	21515af	
1700	1730	mtwhf	UK, Merlin Network One	12065as			
1700	1800		UK, World Beacon	15455eu			
1700	1800		USA, Armed Forces Radio	4278va	4319va	4993va	5765va
			6350va	6458va	6847va	10320va	10940va
			12579va	12689va	13362va	16847va	
1700	1800		USA, KAIJ Dallas TX	13815va			
1700	1800		USA, KTBN Salt Lake City UT	15590na			
1700	1800		USA, KWHR Naalehu HI	9930as			
1700	1800		USA, Voice of America	6040af	6110as	7125as	9645as
				9760as	11920af	12040af	15205as
				15240af	15395as	15455af	17895af
1700	1800	mtwhf	USA, Voice of America	5990as	6045as	9525as	9670as
				9795as	11955as	12005as	15255as
1700	1800		USA, WEWN Birmingham AL	11875na	13615na	15375na	15745na
1700	1800		USA, WHRA Greenbush ME	17650af			
1700	1800		USA, WHRI Noblesville IN	13760sa	15105na		
1700	1800		USA, WINB Red Lion PA	13570eu			
1700	1800		USA, WJCR Upton KY	7490va	13595as		
1700	1800		USA, WMLK Bethel PA	15265eu			
1700	1800		USA, WRMI Miami FL	15725am			
1700	1800		USA, WSHB Cypress Crk SC	18910af			
1700	1800		USA, WTJC Newport NC	9370na			
1700	1800		USA, WWCR Nashville TN	9475am	12160am	13845am	15685am
1700	1800		USA, WWFV McCaysville GA	9400am	12172am		
1700	1800		USA, WYFR Okeechobee FL	18980eu	21455eu		
1700	1727		Vietnam, Voice of	12070eu			
1700	1800		Zambia, Christian Voice	4965do			
1700	1800	vl	Zambia, National BC Corp	6165da	6265do		
1700	1800	vl	Zimbabwe, Zimbabwe BC Corp	4828da	6045do		
1715	1730		Vatican City, Vatican Radio	4005eu	5883eu	7250eu	9645eu
				15595eu			
1725	1740		Armenia, Trans World Radio	5855me			
1725	1740		Germany, Trans World Radio	5855eu			
1725	1740		Monaco, Trans World Radio	6145me			
1730	1800		Guam, Adventist World Radio	7455as	11560me		
1730	1745	vl	Libya, Voice of Africa	11815af	17725af		
1730	1800		Netherlands, Radio	6020af	11655af		
1730	1800		Philippines, Radyo Pilipinas	11720me	15190me	17720me	
1730	1800		S Africa, Adventist World Radio	12130af			
1730	1800		Slovakia, R Slovakia International	5915eu	6055eu	7345eu	
1730	1745		Swaziland, Trans World Radio	9500af			
1730	1745	mtwhf	Swaziland, Trans World Radio	3200af			
1730	1800		Switzerland, Swiss R International	9605af	13790af	15555af	
1730	1800	s	UK, BBC World Service	7385as	9780as	11660as	
1730	1800	mtwhf	UK, Merlin Network One	12065as	15560as		
1730	1745		United Nations, UN Radio	6125af	15265af	17710af	
1735	1745	vl/th	Paraguay, Radio Nacional	9739sa			
1745	1800		India, All India Radio	7410eu	9950as	11620eu	11935as
				13750af	15200af	17670af	
1745	1800		Swaziland, Trans World Radio	3200af	9500af		

1800	1900		Anguilla, Caribbean Beacon	11775am			
1800	1900	mtwhf	Argentina, RAE	15345eu			
1800	1900	vl	Australia, ABC/Alice Springs	2310da			
1800	1900	vl	Australia, ABC/Katherine	2485da			
1800	1900	vl	Australia, ABC/Tennant Creek	2325do			
1800	1900		Australia, Radio	6080as	7240pa	9580va	9655va
				9815as	11880va		
1800	1900	vl	Botswana, Radio	3356do	4820do		
1800	1900	vl	Cameroon, RTV/Yaounde	4850do			
1800	1900		Canada, CBC Northern Service	9625da			
1800	1900		Canada, CFRX Toronto ON	6070da			
1800	1900		Canada, CFVP Calgary AB	6030da			
1800	1900		Canada, CHNX Halifax, NS	6130da			
1800	1900		Canada, CKZN St John's NF	6160da			
1800	1900		Canada, CKZU Vancouver BC	6160do			
1800	1859		Canada, R Canada International	11720af	13640af		
1800	1900		Costa Rica, R for Peace Intl	15048va	21815usb		
1800	1900		Costa Rica, University Network	15048va	21815usb		
1800	1827		Czech Rep, Radio Prague Intl	5930eu	7315va		
1800	1830		Egypt, Radio Cairo	15255af			
1800	1900	mtwhf	Eqt Guinea, Radio Africa	15185af			
1800	1900	a/monthly	Finland, Scandv Weekend Radio	11690va	11720va		
1800	1830		Georgia, Georgian Radio	11910eu			
1800	1900		Germany, Deutsche Welle	6140eu			
1800	1900		Germnay, Voice of Hope	9495me			
1800	1900	vl	Ghana, Ghana BC Corp	3366da	4915da		
1800	1900		Guyana, Voice of	5949da			
1800	1900		India, All India Radio	7410as	9950as	11620as	11935as
				13790af	15200af	17670af	
1800	1900	vl	Italy, IRRS	3985va			
1800	1900		Kenya, Kenya BC Corp	4935do			
1800	1900		Kuwait, Radio	11990va			
1800	1900	vl	Lesotho, Radio	4800do			
1800	1900	vl	Liberia, ELWA	4760do			
1800	1900	vl	Liberia, R Liberia International	5100do			
1800	1900		Liberia, Voice of Hope	11530af			
1800	1900	vl	Malawi, Malawi BC Corp	3380do			
1800	1900		Malaysia, Radio	7295da			
1800	1900		Namibia, Namibian BC Corp	3270af	3289af		
1800	1900		Netherlands, Radio	6020af	11655af		
1800	1850	mtwhf	New Zealand, R New Zealand Int	15120as			
1800	1900		New Zealand, ZLXA	3935do			
1800	1900	vl	Nigeria, Radio/Enugu	6025do			
1800	1900	vl	Nigeria, Radio/Ibadan	6050do			
1800	1900	vl	Nigeria, Radio/Kaduna	4770do	6090do	7275da	9570da
1800	1900	vl	Nigeria, Radio/Lagos	3326do	4990do		
1800	1900		Palau, KHBN/Voice of Hope	9965as	13840as		
1800	1900		Philippines, Radya Pilipinas	11720me	15190me	17720me	
1800	1859		Poland, Radio Polonia	5995eu	7285eu		
1800	1900	as	Russia, Voice of Russia WS	5940eu	6045eu		
1800	1900		Russia, Voice of Russia WS	7340eu	9775eu	9830af	9890eu
				11510af			
1800	1830		S Africa, Adventist World Radio	5960af	6100af		
1800	1900	rr	S Africa, Amateur Radio League	3215af			
1800	1830		S Africa, Channel Africa	17870af			
1800	1900		S Africa, World Beacon	3230af	11640af		
1800	1900		Sierra Leone, Sierra Leone BS	5980do			
1800	1900	irreg	Sri Lanka, Sri Lanka BC Corp	4940do			
1800	1900		Swaziland, Trans World Radio	3200af	9500af		
1800	1900		Taiwan, R Taiwan International	3955eu			
1800	1900		Uganda, Radio	4976do	5026do		
1800	1830		UK, BBC World Service	3255af	5975as	6190af	6195eu
			9410eu	9510as	9740pa	15400af	15420af
			15575me	17830af	17840na	21470af	
1800	1900	mtwhf	UK, Merlin Network One	6130af	12065as		
1800	1830		UK, RTE Radio	9895me			
1800	1900		UK, World Beacon	15585af	17665af		
1800	1900		USA, Armed Forces Radio	4278va	4319va	4993va	5765va
			6350va	6458va	6847va	10320va	10940va
			12579va	12689va	13362va	16847va	
1800	1900		USA, KAIJ Dallas TX	13815va			
1800	1900		USA, KTBN Salt Lake City UT	15590na			
1800	1900		USA, KWHR Naalehu HI	9930as			
1800	1900		USA, Voice of America	6035af	6040af	9565as	9760as
				11920af	11975af	13710af	15240af
				15580af			
1800	1900		USA, WEWN Birmingham AL	11875na	13615na	15375na	15745na
1800	1900		USA, WHRA Greenbush ME	17650af			
1800	1900		USA, WHRI Noblesville IN	9495sa	13760na		
1800	1900		USA, WINB Red Lion PA	13570eu			
1800	1900		USA, WJCR Upton KY	7490va	13595as		
1800	1900		USA, WMLK Bethel PA	15265eu			
1800	1900		USA, WRMI Miami FL	15725am			
1800	1900		USA, WSHB Cypress Crk SC	15665eu	18910af		
1800	1900		USA, WTJC Newport NC	9370na			
1800	1900		USA, WWCR Nashville TN	9475am	12160am	13845am	15685am
1800	1900		USA, WWFV McCaysville GA	9400am	12172am		
1800	1900		USA, WYFR Okeechobee FL	18980eu			
1800	1827		Vietnam, Voice of	7440eu	9730eu		
1800	1900		Yemen, Rep of Yemen Radio	9779me			
1800	1900		Zambia, Christian Voice	4965do			
1800	1900	vl	Zambia, National BC Corp	6165do	6265do		
1800	1900	vl	Zimbabwe, Zimbabwe BC Corp	4828do	6045do		
1830	1900		Ascension Is, RTE Radio	21630af			
1830	1900		Belgium, Radio Vlaanderen Intl	5910eu	9925eu	13710eu	
1830	1900		Canada, RTE Radio	13725na			
1830	1900	as	Georgia, Georgian Radio	6080eu			
1830	1900		Mongolia, Voice of	12085as			
1830	1900		Netherlands, Radio	9895al	13700af	17605af	
1830	1900		Sweden, Radio	6065va	9765va		
1830	1900		UK, BBC World Service	3255af	6005af	6190af	6195eu
			9410eu	9630af	9740pa	15400af	15420al
			15575me	17830af	17840na	21470af	
1830	1900	as	USA, Voice of America	13675af	15455af	17895as	
1845	1900		Congo, RTV Congolaise	5985do			
1850	1855	mtwhf	New Zealand, R New Zealand Int	17675pa			
1855	1900		New Zealand, R New Zealand Int	17675pa			

Frequencies

1900	2000		Anguilla, Caribbean Beacon	11775am			
1900	2000	vl	Australia, ABC/Katherine	2485da			
1900	2000	vl	Australia, ABC/Tennant Creek	2325da			
1900	2000		Australia, Radio	6080as	7240pa	9500as	9580va
				9815as	11880va		
1900	2000	vl	Botswana, Radio	3356do	4820da		
1900	2000	vl	Cameroon, RTV/Yaounde	4850do			
1900	2000		Canada, CFRX Toronto ON	6070da			
1900	2000		Canada, CFVP Calgary AB	6030do			
1900	2000		Canada, CHNX Halifax, NS	6130do			
1900	2000		Canada, CKZN St John's NF	6160do			
1900	2000		Canada, CKZU Vancouver BC	6160do			
1900	2000		Canada. CBC Northern Service	9625do			
1900	1956		China China Radio International	9440af	11750af	13790af	
1900	1915		Congo, RTV Congolaise	5985do			
1900	2000		Costa Rica, R for Peace Intl	15048va	21815usb		
1900	2000		Costa Rica, University Network	15048va	21815usb		
1900	2000		Ecuador, HCJB	17660eu			
1900	2000	mtwhf	Eqt Guinea, Radio Africa	15185af			
1900	2000	a/monthly	Finland, Scandv Weekend Radio	11690va	11720va		
1900	1945		Germany, Deutsche Welle	11765af	11810af	13610af	15135af
				15390af	17810af		
1900	2000		Germany, Voice of Hope	7290me			
1900	2000	vl	Ghana, Ghana BC Corp	3366do	4915do		
1900	1945		India, All Indio Radio	7410as	9950as	11620as	11935as
				13790af	15200af	17670af	
1900	2000	vl	Italy, IRRS	3985va			
1900	2000		Kenya, Kenya BC Carp	4935do			
1900	2000		Kuwait, Radio	11990va			
1900	2000	vl	Lesotho, Radio	4800do			
1900	2000	vl	Liberia, ELWA	4760do			
1900	2000	vl	Liberia, R Liberia Internationol	5100do			
1900	2000		Liberia, Voice of Hope	11530af			
1900	2000	vl	Malawi, Malawi BC Corp	3380do			
1900	2000		Malaysia, Radio	7295do			
1900	2000		Namibia, Namibian BC Corp	3270af	3289af		
1900	2000		Netherlands, Radio	6020af	11655af	13700af	17605af
1900	2000		New Zealand, R New Zealand Int	17675pa			
1900	2000		New Zealand, ZLXA	3935do			
1900	2000	vl	Nigeria, Radio/Enugu	6025do			
1900	2000	vl	Nigeria, Radio/Ibadan	6050do			
1900	2000	vl	Nigeria, Radio/Kaduna	4770do	6090do	7275do	9570do
1900	2000	vl	Nigeria, Radio/Lagos	3326do	4990do		
1900	2000	vl	Nigeria, Voice of	7255af	15120af		
1900	2000		North Korea, R Pyongyang	4405va	6574na	9335na	11710na
				13760na			
1900	1930		Philippines, Radyo Pilipinas	11720me	15190me	17720pa	
1900	2000		Russia, Voice of Russia WS	5940eu	5950eu	6045eu	7205eu
			7340eu	9775eu	9875af	9890eu	11510af
1900	2000		Russia, World Beacon	7360eu			
1900	2000		S Africa, World Beacon	3230af	11640af		
1900	2000		Sierra Leone, Sierra Leone BS	3316do			
1900	2000	vl	Solomon Islands, SIBC	5020do			
1900	2000		South Korea, R Korea Intl	5975am	7275eu		
1900	2000	irreg	Sri Lanka, Sri Lanka BC Corp	4940do			
1900	2000	a	Sri Lanka, Sri Lanka BC Corp	6010eu			
1900	2000		Swaziland, Trans World Radio	3200af			
1900	2000		Thailand, Radio	9535eu			
1900	2000		Uganda, Radio	4976do	5026do		
1900	2000		UK, BBC World Service	3255af	6005af	6190af	6195af
			9410eu	9630af	9740pa	15400af	15575as
			17830af				
1900	2000	a	UK, BBC World Service	17840no			
1900	2000	hf	UK, Merlin Network One	6130af			
1900	2000		UK, World Beacon	9675eu	15585eu		
1900	2000		USA, Armed Forces Radio	4278va	4319va	4993va	5765va
			6350va	6458va	6847va	10320va	10940va
			12579va	12689va	13362va	16847va	
1900	2000		USA, KAIJ Dallas TX	13815va			
1900	2000		USA, KJES Vado NM	15385na			
1900	2000		USA, KTBN Salt Lake City UT	15590na			
1900	2000		USA, KWHR Naalehu HI	9930as			
1900	2000		USA, VOA Special English	9785me	12015me	13640me	
1900	2000		USA, Voice of America	4950af	6035af	7415af	9525pa
				9690as	9760as	11870pa	11920af
				11975af	13710af		
1900	2000		USA, WEWN Birmingham AL	11875na	13615na	15375na	15745na
1900	2000		USA, WHRA Greenbush ME	17650af			
1900	2000		USA, WHRI Noblesville IN	9495sa	13760na		
1900	2000		USA, WINB Red Lion PA	13570eu			
1900	2000		USA, WJCR Upton KY	7490va	13595as		
1900	2000		USA, WMLK Bethel PA	15265eu			
1900	2000		USA, WRMI Miami FL	15725am			
1900	2000		USA, WSHB Cypress Crk SC	15665eu	18910af		
1900	2000		USA, WTJC Newport NC	9370na			
1900	2000		USA, WWCR Nashville TN	9475am	12160am	13845am	15685am
1900	2000		USA, WWFV McCaysville GA	9400am	12172am		
1900	2000		USA, WYFR Okeechobee FL	18980eu			
1900	1927		Vietnam, Voice of	7145eu	9730eu		
1900	2000		Zambia, Christian Voice	4965do			
1900	2000	vl	Zambia, National BC Corp	6165do	6265do		
1900	2000	vl	Zimbabwe, Zimbabwe BC Corp	4828do	6045do		
1903	2000	a	Greece, Voice of	7450eu	9420eu	17705na	17565sa
1915	1925		Rwanda, Radio	6055do			
1930	2000		Austria, R Austria International	5945eu	6155eu		
1930	2000		Georgia, Georgian Radio	11760eu			
1930	2000		Iran, VOIRI	6110eu	7215eu	9022eu	
1930	2000	vl	Papua New Guinea, NBC	4890do			
1930	2000		Slovakia, R Slovakia International	5915eu	6055eu	7345eu	
1930	2000		Switzerland, Swiss R International	9605af	11910af	13660af	
1930	2000		Turkey, Voice of	6140as	7240as		
1935	1955		Italy, RAI International	5975eu	7285eu	9760eu	
1945	2000		Albania, R Tirana International	7210eu	9510eu		
1945	1955		Greece, Voice of	7475eu	9375eu		

2000	2100		Algeria, R Algiers International	11715eu	15160eu		
2000	2100		Angola, R. Nacional de Angola	3374va	7245va		
2000	2100		Anguilla, Caribbean Beacon	11775am			
2000	2100	vl	Australia, ABC/Alice Springs	2310do	A8C/Katherine		2485da
2000	2100	vl	Australia, ABC/Tennant Creek	2325do			
2000	2100		Australia, Radio	9500as	9580va	9815as	11880va
				12080pa	(as) 6080as	7240pa	
2000	2100	vl	Botswana, Radio	3356do	4820do		
2000	2100		Bulgaria, Radio	7200eu	7500eu		
2000	2100	vl	Cameroon, RTV/Yaounde	4850do			
2000	2100		Canada, CBC Northern Service	9625do			
2000	2100		Canada, CFRX Toronto ON	6070do	CFVP Calgary AB		6030do
2000	2100		Canada, CHNX Halifax, NS	6130do	CKZN St John's NF		6160do
2000	2100		Canada, CKZU Vancouver BC	6160do			
2000	2059		China China Radio International	7335eu	9440af	11735af	11790eu
				13640af			
2000	2100		Costa Rica, R for Peace Intl	15048va	15065va	21815usb	
2000	2100		Costa Rica, University Network	15048va	15065va	21815usb	
2000	2100		Ecuador, HCJB	17660eu			
2000	2100	mtwhf	Eqt Guinea, Radio Africa	15185af			
2000	2100	a/monthly	Finland, Scandv Weekend Radio	11690va	11720va		
2000	2045		Germany, Deutsche Welle	9725eu			
2000	2100		Germany, Voice of Hope	7290me			
2000	2100	vl	Ghana, Ghana BC Corp	3366do	4915do		
2000	2030		Hungary, Radio Budapest	6025eu	7135eu		
2000	2100		Indonesia, Voice of	9525va	11785va	15149va	
2000	2027		Iran, VOIRI	6110eu	7215eu	9022eu	
2000	2030		Israel, Kol Israel	6280va	9435va	15640va	15650va
2000	2100	vl	Italy, IRRS	3985va			
2000	2100		Kenya, Kenya BC Corp	4935do			
2000	2100		Kuwait, Radio	11990va			
2000	2100	vl	Lesotho, Radio	4800do			
2000	2100	vl	Liberia, ELWA	4760do			
2000	2100	vl	Liberia, R Liberia Internctional	5100do			
2000	2100	vl	Malawi, Malawi BC Corp	3380do			
2000	2100		Malaysia, Radio	7295do			
2000	2100	mtwnfa	Malta, Voice of Mediterranean	7440eu			
2000	2030		Mongolia, Voice of	12015eu	12085eu		
2000	2100		Namibia, Namibian BC Corp	3270af	3289af		
2000	2025		Netherlands, Radio	6020af	11655af	13700af	17605af
2000	2100		New Zealand, R New Zealand Int	17675pa			
2000	2100		New Zealand, ZLXA	3935do	7290do		
2000	2100	vl	Nigeria, Radio/Enugu	6025do	Radio/Ibadan		6050do
2000	2100	vl	Nigeria, Radio/Kaduna	4770do	6090do	7275do	9570do
2000	2100	vl	Nigeria, Radio/Lagos	3326do	4990do		
2000	2100	vl	Nigeria, Voice of	7255af	15120af		
2000	2100	vl	Papua New Guinea, NBC	4890do			
2000	2100		Russia, Voice of Russia WS	5940eu	5950eu	6045eu	7340eu
				9775eu	9890eu		
2000	2100		Russia, World Beacon	7360eu			
2000	2100		S Africa, World Beacon	3230af	11640af		
2000	2100		Sierra Leone, Sierra Leone BS	3316do			
2000	2100	vl	Solomon Islands, SIBC	5020do			
2000	2100	mtwhf	Spain, R Exterior Espana	9595af	9680eu		
2000	2100	irreg	Sri Lanka, Sri Lanka BC Corp	4940do			
2000	2015		Swaziland, Trans World Radio	3200af			
2000	2030		Switzerland, Swiss R International	6165af	9605af	11910af	13660af
				13790af			
2000	2100	vl	Syria, Radio Damascus	12085eu	13610eu		
2000	2030		Turkey, Voice of	6140as	7240as		
2000	2100		Uganda, Radio	4976do	5026do		
2000	2100		UK, BBC World Service	3255af	5975po	6005af	6190af
				6195eu	9410eu	9630af	9740pa
				11835af	15400af	17830af	
2000	2100		UK, World Beacon	9675af			
2000	2100		USA, Armed Forces Radio	4278va	4319va	4993va	5765va
			6350va	6458va	6847va	10320va	10940va
			12579va	12689va	13362va	16847va	
2000	2100		USA, KAIJ Dallas TX	13815va	KJES Vado NM		15385au
2000	2100		USA, KTBN Salt Lake City UT	15590na	KWHR Naalehu HI		17510as
2000	2030		USA, Voice of America	4950af	6035af	6095as	7415af
			9690as	9760as	11855af	11975af	13710af
			15240af	15580af	17725af	17885af	
2000	2100		USA, WEWN Birmingham AL	11875na	13615na	15375na	15745na
2000	2100		USA, WHRA Greenbush ME	17650af	WINB Red Lion PA		13570eu
2000	2100		USA, WHRI Noblesville IN	5745sa	9495sa	13760na	
2000	2100		USA, WJCR Upton KY	7490va	13595as		
2000	2100		USA, WMLK Bethel PA	15265eu	WRMI Miami FL		15725am
2000	2100		USA, WSHB Cypress Crk SC	11550eu	15665af		
2000	2100		USA, WTJC Newport NC	9370na			
2000	2100		USA, WWCR Nashville TN	9475am	12160am	13845am	15685am
2000	2100		USA, WWFV McCaysville GA	9400am	12172am		
2000	2100		USA, WYFR Okeechobee FL	7355eu	15565eu		
2000	2100	vl	Vanuatu, Radio	3945do	4960do	7260da	
2000	2030		Vatican City, Vatican Radio	9660af	11625af		
2000	2100		Zambia, Christian Voice	4965do			
2000	2100	vl	Zambia, National BC Corp	6165da	6265do		
2000	2100	vl	Zimbabwe, Zimbabwe BC Corp	4828do	6045do		
2025	2045		Italy, RAI International	7220af	9710af	11880af	
2030	2100	t h	Belarus, R Belarus International	7105eu	7210as		
2030	2100		Cuba, Radio Havana	13660eu	13750eu		
2030	2100		Egypt, Radio Cairo	15375af			
2030	2100		Germany, Adventist World Radio	9615af			
2030	2045	vl	Libya, Voice of Africa	11815af	17725af		
2030	2100		Poland, Radio Polania	6030eu	7185eu	7265eu	9540eu
2030	2100		S Africa, Adventist World Radio	9745af			
2030	2100		Sweden, Radio	6065va	9445va		
2030	2045		Thailand, Radio	9535eu			
2030	2100		USA, Voice of America	6035af	6095as	7415af	9590as
				9760as	11975af	13710af	15240af
				15580af	17725af	17885af	(as) 4950af
2030	2100		Uzbekistan, Radio Toshkent	7105eu	9540eu		
2030	2057		Vietnam, Voice of	7145eu	9730eu		
2040	2050	m	Vatican City, Vatican Radio	7611eu	9645eu		
2045	2100		India, All India Radio	7150au	7410eu	9650eu	9910au
				9950eu	11620au	11715au	
2050	2100		Vatican City, Vatican Radio	4005eu	5883eu	7250eu	(m) 9645eu
2055	2100	mtwhfa	Armenia, Voice of	4810eu	9965eu		

Frequencies

2100	2200		Anguilla, Caribbean Beacon	11775am			
2100	2115	mtwhfa	Armenia, Voice of	4810eu	9965eu		
2100	2130	vl	Australia, ABC/Alice Springs	2310da			
2100	2130	vl	Australia, ABC/Katherine	2485do			
2100	2130	vl	Australia, ABC/Tennant Creek	2325do			
2100	2130		Australia, Radio	7240pa	9500as	9580va	9660pa
				11880va	12080pa	17715va	21740va
2100	2200	vl	Botswana, Radio	3356da	4820do		
2100	2200	vl	Cameroon, RTV/Yoounde	4850do			
2100	2200		Canada, CBC Northern Service	9625do			
2100	2200		Canada, CFRX Toronto ON	6070do			
2100	2200		Canada, CFVP Calgary AB	6030do			
2100	2200		Canada, CHNX Halifax, NS	6130do			
2100	2200		Canada, CKZN St John's NF	6160do			
2100	2200		Canada, CKZU Vancouver BC	6160do			
2100	2159		Canada, R Canada International	5995eu	7235eu	9770eu	9805eu
				13650eu			
2100	2159		China China Radio International	7335eu	11735af	11790eu	13640af
2100	2200		Costa Rica, R for Peace Intl	15048va	15065va	21815usb	
2100	2200		Costa Rica, University Network	15048va	15065va	21815usb	
2100	2130		Cuba, Radio Havana	13660eu	13750eu		
2100	2127		Czech Rep, Radio Prague Intl	5930va	9430va		
2100	2200		Ecuador, HCJB	17660eu			
2100	2200		Egypt, Radio Cairo	15375af			
2100	2200	mtwhf	Eqt Guinea, Radio Africa	15185af			
2100	2200	f/monthly	Finland, Scandv Weekend Radio	11690va	11720va		
2100	2145		Germany, Deutsche Welle	9615af	9690af	9765va	15135va
				15410va	17560va	17835af	
2100	2200	vl	Ghana, Ghana BC Corp	3366do	4915do		
2100	2200		India, All India Radio	7150au	7410eu	9650eu	9910au
				9950eu	11620au	11715au	
2100	2200	irreg	Iraq, Radio Iraq International	9684va	11787va		
2100	2200	vl	Italy, IRRS	3985va			
2100	2200		Japan, Radio	6115eu	6180eu	11830eu	11855af
				17825na	21670pa		
2100	2110		Kenya, Kenya BC Corp	4935do			
2100	2200	vl	Lesotho, Radio	4800da			
2100	2200	vl	Liberia, ELWA	4760do			
2100	2200	vl	Liberia, R Liberia International	5100do			
2100	2200	vl	Malawi, Malawi BC Corp	3380do			
2100	2200		Malaysia, Radio	7295do			
2100	2200		Namibia, Namibian BC Corp	3270af	32B9af		
2100	2200		New Zealand, R New Zealand Int	17675pa			
2100	2200		New Zealand, ZLXA	3935do			
2100	2200	vl	Nigeria, Radio/Enugu	6025do			
2100	2200	vl	Nigeria, Radio/Ibadan	6050do			
2100	2200	vl	Nigeria, Radio/Kaduna	4770do	6090do	7275do	9570do
2100	2200	vl	Nigeria, Radio/Lagos	3326do	4990do		
2100	2156		North Korea, R Pyongyang	6574va	9335va		
2100	2200		Palau, KHBN/Voice of Hope	9985as			
2100	2200	vl	Papua New Guinea, NBC	4890do			
2100	2129		Poland, Radio Polonia	6030eu	7185eu	7265eu	9540eu
2100	2156		Romania, R Romania International	5955eu	7195eu	7215eu	9690eu
2100	2200		Russia, Voice of Russia WS	5940eu	5950eu	6045eu	7300eu
				7340eu	9890eu		
2100	2200		Russia, World Beacon	7360eu			
2100	2200		S Africa, World Beacon	3230af	11640af		
2100	2200		Sierra Leone, Sierra Leone BS	3316do			
2100	2200	vl	Solomon Islands, SIBC	5020do	9545do		
2100	2200	irreg	Sri Lanka, Sri Lanka BC Corp	4940do			
2100	2200	vl	Syria, Radio Damascus	12085eu	13610eu		
2100	2130	sa	UK, BBC World Service	5975ca			
2100	2200		UK, BBC World Service	3255af	3915as	5965as	5975pa
			6005af	6110as	6190af	6195va	9410eu
			9740pa	11835af	12095sa	15400af	
2100	2200		UK, World Beacon	9675af			
2100	2200		USA, Armed Forces Radio	4278va	4319va	4993va	5765va
			6350va	6458va	6847va	10320va	10940va
			12579va	12689va	13362va	16847va	
2100	2200		USA, KAIJ Dallas TX	13815va			
2100	2200		USA, KTBN Salt Lake City UT	15590na			
2100	2200		USA, KWHR Naalehu HI	17510as			
2100	2200		USA, Voice of America	6035af	6040me	6095as	7415af
				9595as	9670as	9760me	11870pa
				11975af	13710af	15185pa	15240af
				15580af	17725af	17735pa	17820as
2100	2200		USA, WBCQ Monticello ME	7415na			
2100	2200		USA, WEWN Birmingham AL	9975na	11875na	13615na	15375na
2100	2200		USA, WHRA Greenbush ME	17650af			
2100	2200		USA, WHRI Noblesville IN	5745na	9495so	13760na	
2100	2200		USA, WINB Red Lion PA	13570eu			
2100	2200		USA, WJCR Upton KY	7490va	13595as		
2100	2200		USA, WMLK Bethel PA	15265eu			
2100	2200		USA, WRMI Miami FL	15725am			
2100	2200		USA, WSHB Cypress Crk SC	11550eu	15665af		
2100	2200		USA, WTJC Newport NC	9370na			
2100	2200		USA, WWCR Nashville TN	7435am	9475am	12160am	13845am
2100	2200		USA, WWFV McCaysville GA	9320va	9400am	12172am	
2100	2200		USA, WYFR Okeechobee FL	7355eu	15565af	21525af	
2100	2200	vl	Vanuatu, Radio	3945do	4960do	7260do	
2100	2110		Vatican City, Vatican Radio	4005eu	5883eu	7250eu	
2100	2200		Zambia, Christian Voice	4965do			
2100	2200	vl	Zambia, National BC Corp	6165do	6265do		
2100	2200	vl	Zimbabwe, Zimbabwe BC Corp	4828do	6045do		
2115	2200		Egypt, Radio Cairo	9990eu			
2115	2130	mtwhf	UK, BBC Caribbean Report	5975ca	11675ca	15390ca	
2120	2200	s	Greece, Voice of	9420au	15650au		
2130	2200	vl	Australia, ABC/Alice Springs	4835do			
2130	2200	vl	Australia, ABC/Katherine	5025do			
2130	2200	vl	Australia, ABC/Tennant Creek	4910do			
2130	2200		Australia, Radio	7240pa	9660pa	11880va	12080pa
				17715va	21740va		
2130	2200	th	Belarus, R Belarus International	7105eu	7210as		
2130	2200		Guam, Adventist World Radio	11960as	11980as		
2130	2227		Iran, VOIRI	9780as	11740as		
2130	2200		Turkey, Voice of	9525eu			
2130	2145	tf	UK, BBC Calling Falklands	11680sa			
2130	200	f	UK, Wales Radio Intl/Merlin	6010eu			
2130	2200		Uzbekistan, Radio Tashkent	9540eu			

2200

2200	2300		Anguilla, Caribbean Beacon	6090am			
2200	2300	vl	Australia, ABC/Alice Springs	4835do			
2200	2300	vl	Australia, ABC/Katherine	5025do			
2200	2300	vl	Australia, ABC/Tennant Creek	4910do			
2200	2300		Australia, Radio	11715va	17795va	21740va	
2200	2300		Bulgaria, Radio	7200eu	7500eu		
2200	2300	vl	Cameroon, RTV/Yaounde	4850do			
2200	2300		Canada, CBC Northern Service	9625do			
2200	2300		Canada, CFRX Toronto ON	6070do			
2200	2300		Canada, CFVP Calgary AB	6030do			
2200	2300		Canada, CHNX Halifax, NS	6130do			
2200	2300		Canada, CKZN St John's NF	6160do			
2200	2300		Canada, CKZU Vancouver BC	6160do			
2200	2259		Canada, R Canada International	11705as			
2200	2256		China China Radio International	7175eu			
2200	2300		Costa Rica, R for Peace Intl	15048va	15065va	21815usb	
2200	2300		Costa Rica, University Network	15048va	15065va	21815usb	
2200	2245		Egypt, Radio Cairo	9990eu			
2200	2300	mtwhf	Eqt Guinea, Radio Africa	15185af			
2200	2300	f/monthly	Finland, Scandv Weekend Radio	11690va	11720va		
2200	2300		Germany, Overcomer Ministries	3965eu			
2200	2300	vl	Ghana, Ghana BC Corp	3366do	4915do		
2200	2220	s	Greece, Voice of	9420au	15650au		
2200	2230		Hungary, Radio Budapest	6025eu			
2200	2230		Hungary, Radio Budapest	6025eu			
2200	2230		India, All India Radio	7150au	7410eu	9650eu	9910au
				9950eu	11620au	11715au	
2200	2300	vl	Italy, IRRS	3985va			
2200	2225		Italy, RAI International	9675as	11900as	15240as	
2200	2300	vl	Liberia, R Liberia International	5100do			
2200	2210	vl	Malawi, Malawi BC Corp	3380do			
2200	2300		Malaysia, Radio	7295do			
2200	2300		Namibia, Namibian BC Corp	3270af	3289af		
2200	2300		New Zealand, R New Zealand Int	17675pa			
2200	2300		New Zealand, ZLXA	3935do			
2200	2300	vl	Nigeria, Radio/Enugu	6025do			
2200	2300	vl	Nigeria, Radio/Ibadan	6050do			
2200	2300	vl	Nigeria, Radio/Kaduna	4770do	6090do	7275do	9570do
2200	2300	vl	Nigeria, Radio/Lagos	3326do	4990do		
2200	2300		Palau, KHBN/Voice of Hope	9955as	9965as	9985as	
2200	2230	vl	Papua New Guinea, NBC	4890do			
2200	2300		Sierra Leone, Sierra Leone BS	3316do			
2200	2300	vl	Solomon Islands, SIBC	5020do	9545do		
2200	2230		South Korea, R Korea Intl	3975eu			
2200	2300	as	Spain, R Exterior Espana	9595af	9680eu		
2200	2300	irreg	Sri Lanka, Sri Lanka BC Corp	4940do			
2200	2300		Taiwan, R Taiwan International	5B10eu	9355eu		
2200	2230		Turkey, Voice of	9525as			
2200	2300		UK, BBC World Service	5965as	5975na	6175na	6195va
				7105as	9590na	9660as	11835af
				11955as	12080pa	12095sa	15400af
2200	2300	fa	UK, Global Kitchen/Merlin	3955eu	6170eu	7165eu	
2200	2300		Ukraine, R Ukraine International	5905va	9560va	11770va	
2200	2300		USA, Armed Forces Radio	4278va	4319va	4993va	5765va
			6350va	6458va	6847va	10320va	10940va
			12579va	12689va	13362va	16847va	
2200	2300		USA, KAIJ Dallas TX	13815va			
2200	2300		USA, KTBN Salt Lake City UT	15590na			
2200	2300		USA, KWHR Naalehu HI	17510as			
2200	2230	mtwhf	USA, Voice of America	6035af	7415af	11655af	11975af
				13710af			
2200	2300		USA, Voice of America	7215as	9770as	9890as	11760as
			15185as	15290as	15305as	17735pa	17820as
2200	2300		USA, WBCQ Monticello ME	7415na			
2200	2300		USA, WEWN Birmingham AL	9975na	13615na	15375na	
2200	2300		USA, WHRA Greenbush ME	17650af			
2200	2300		USA, WHRI Noblesville IN	5745na	9495sa	13760na	
2200	2300		USA, WINB Red Lion PA	13570eu			
2200	2300		USA, WJCR Upton KY	7490va	13595as		
2200	2300		USA, WRMI Miami FL	15725am			
2200	2300		USA, WSHB Cypress Crk SC	7510eu	15285sa		
2200	2300		USA, WTJC Newport NC	9370na			
2200	2300		USA, WWCR Nashville TN	5070am	7435am	9475am	13845am
2200	2300		USA, WWFV McCaysville GA	9320va	9400am	12172am	
2200	2245		USA, WYFR Okeechobee FL	7355eu	11740na	15565af	21525af
2200	2300	vl	Vanuatu, Radio	3945do	4960do	7260do	
2200	2300		Zambia, Christian Voice	4965do			
2200	2210	vl	Zambia, National BC Corp	6165do	6265do		
2230	2300		Albania, R Tirana International	7130eu	9540eu		
2230	2300		Australia, Christian Voice	13780va	15165va	17645va	21680va
2230	2300	mtwhf	Austria, R Austria International	5945eu	6155eu	13730af	
2230	2300		Belgium, Radio Vlaanderen Intl	13660am			
2230	2300		Cuba, Radio Havana	9550am			
2230	2257		Czech Rep, Radio Prague Intl	7345na	9435af		
2230	2300		Hungary, Radio Budapest	3975eu			
2230	2300	vl/as	Solomon Islands, SIBC	5020do			
2230	2300	vl/o	Solomon Islands, SIBC	9545do			
2230	2300		Sweden, Radio	6065va	7235va		
2245	2300		India, All India Radio	9705as	9950as	11620as	13605as
2245	2300		USA, WYFR Okeechobee FL	11740na			
2245	2300		Vatican City, Vatican Radio	7305as	9600as	11830as	

Frequencies

2300	0000		Anguilla, Caribbean Beacon	6090am			
2300	0000	vl	Australia, ABC/Alice Springs	4835do			
2300	0000	vl	Australia, ABC/Katherine	5025do			
2300	0000	vl	Australia, ABC/Tennant Creek	4910do			
2300	0000		Australia, Christian Voice	13780va	15165va	17645va	21480va
2300	0000		Australia, Radio	9660pa	12080pa	17715va	17795va
				21740va			
2300	0000	vl	Cameroon, RTV/Yaounde	4850do			
2300	0000		Canada, CBC Northern Service	9625do			
2300	0000		Canada, CFRX Toronto ON	6070do			
2300	0000		Canada, CFVP Calgary AB	6030do			
2300	0000		Canada, CHNX Halifax, NS	6130do			
2300	0000		Canada, CKZN St John's NF	6160do			
2300	0000		Canada, CKZU Vancouver BC	6160do			
2300	2359		Canada, R Canada International	5960am	9755am		
2300	2359	mtwhf	Canada, R Canada International	6040am	9535am	11865am	
2300	2356		China, China Radio International	5990na			
2300	0000		Costa Rica, R for Peace Intl	15048va	15065va	21815usb	
2300	0000		Costa Rica, University Network	15048va	15065va	21815usb	
2300	2330		Cuba, Radio Havana	9550am			
2300	0000		Egypt, Radio Cairo	9900am			
2300	0000	f/monthly	Finland, Scandv Weekend Radio	11690va	11720va		
2300	2345		Germany, Deutsche Welle	9470as	9815as	13690as	17655as
2300	0000	vl	Ghana, Ghana BC Corp	3366do	4915do		
2300	0000		India, All India Radio	9705as	9705as	9950as	11620as
				13605as			
2300	2315	vl	Italy, IRRS	3985va			
2300	0000	vl	Liberia, R Liberia International	5100do			
2300	0000		Malaysia, Radio	7295do			
2300	0000		Malaysia, RTM Kota Kinabalu	5980do			
2300	2330		Mexico, R Mexico International	9705am	11770al		
2300	2330		Mongolia, Voice of	12015as	12085as		
2300	0000		Namibia, Namibian BC Corp	3270af	3289af		
2300	2359		New Zealand, R New Zealand Int	17675pa			
2300	0000		New Zealand, ZLXA	3935do			
2300	2305	vl	Nigeria, Radio/Enugu	6025do			
2300	2305	vl	Nigeria, Radio/Ibadan	6050do			
2300	2305	vl	Nigeria, Radio/Kaduna	4770do	6090do	7275do	9570do
2300	2305	vl	Nigeria, Radio/Lagos	3326do	4990do		
2300	0000		Palau, KHBN/Voice of Hope	9965as	9985as		
2300	2359		Romania, R Romania International	7195eu	9570na	9690eu	9690eu
				11940na			
2300	0000		Sierra Leone, Sierra Leone BS	3316do			
2300	0000	vl/as	Solomon Islands, SIBC	5020do			
2300	0000	vl/a	Solomon Islands, SIBC	9545do			
2300	0000		Sri Lanka, Sri Lanka BC Corp	4940do			
2300	0000		Turkey, Voice of	6020eu	9655na		
2300	0000		UK, BBC World Service	3915as	5965as	5975na	6035as
				6175na	6195va	7105as	9590na
				11945as	11955as	12095sa	15280as
2300	0000	fo	UK, Global Kitchen/Merlin	3955eu	6170eu	7165eu	
2300	0000		USA, Armed Forces Radio	4278va	4319va	4993va	5765va
			6350va	6458va	6847va	10320va	10940va
			12579va	12689va	13362va	16847va	
2300	0000		USA, KAIJ Dallas TX	13815va			
2300	0000		USA, KTBN Salt Lake Cry UT	15590na			
2300	0000		USA, KWHR Naalehu HI	17510as			
2300	2330		USA, VOA Special English	6045as	7140as	9545as	11925as
				15395as			
2300	0000		USA, Voice of America	7215as	9770as	9890as	11760as
				15185as	15290as	15305as	17735pa
2300	0000		USA, WBCQ Monticello ME	7415na			
2300	0000		USA, WEWN Birmingham AL	7425na	9385na	9975na	13615na
2300	0000		USA, WHRA Greenbush ME	17650na			
2300	0000		USA, WHRI Noblesville IN	5745na	9495sa	13760na	
2300	0000		USA, WINB Red Lion PA	13570am			
2300	0000		USA, WJCR Upton KY	7490va	13595as		
2300	0000		USA, WRMI Miami FL	9955am			
2300	0000		USA, WSHB Cypress Crl SC	7510va	15285sa		
2300	0000		USA, WTJC Newport NC	9370na			
2300	0000		USA, WWCR Nashville TN	3215am	5070am	7435am	13845am
2300	0000		USA, WWFV McCaysville GA	9320va	12172am		
2300	2345		USA, WYFR Okeechobee FL	11740na			
2300	0000	vl	Vanuatu, Radio	3945do	4960do	7260do	
2300	2315		Vatican City, Vatican Radio	7305as	9600as	11830as	
2300	0000		Zambia, Christian Voice	4965do			
2330	0000		Canada, R Canada International	5960am	9755am		
2330	2357		Czech Rep, Radio Prague Intl	7345na	9435na		
2330	2345	vl	Libya, Voice of Africa	11815af	17725af		
2330	0000		Malaysia, RTM Sarawak	7160do			
2330	0000		Netherlands, Radio	6165na	9845na		
2330	0000		Switzerland, Swiss R International	9885sa	11660sa		
2330	0000		USA, VOA Special English	6045as	7130as	7130as	7140as
				9545as	9620as	11805as	11925as
				13745as	15205as	15395as	
2330	2357		Vietnam, Voice of	9839as	12019as		

Selected Programs

BBC World Service (am)

2300 D The World Today; 2330 S Greenfield Collection (classical music), F Global Business, A Arts in Action.

China Radio International

2300 D News; 2310 S-H Current Affairs, F Global Review, A Report on Developing Countries; 2320 F Listeners' Garden, A In the Spotlight (cultural magazine); 2330 S People in the Know (China's leading citizens), M Sports World, T China Horizons (business), W Voices from Other Lands, H Life in China.

Radio Australia

2300 D News; 2305 F Book Reading, A Ockham's Razor (science); 2310 S Correspondent's Report, M-H Asia Pacific (regional report); 2315 F Lingua Franca (about language); 2330 S Earthbeat (ecology), M Innovations, T Arts Talk, W Rural Reporter, H Media Report, F In Conversation-Science.

Radio Canada International

2300 S/A The World This Weekend, M-F The World At Six; 2330 S Inside Track (sports anthologies), M-F As It Happens (current events magazine), A Madly Off in All Directions (comedy/satire).

Radio Netherlands

2330 S/A News; M-F Newsline; 2335 S Sincerely Yours (letters), A Europe Unzipped; 2355 A In-sight (commentary).

Radio New Zealand International

2300 S-H Midday Report, F/A RNZ News; 2312 F Focus on Politics, A This Week in Parliament; 2333 F The Sampler (latest CDs), S Spectrum (life in NZ).

Radio Prague

2330 D News; 2335 S Letter from Prague, M-F Current Affairs, A The Arts; 2340 S From the Weeklies, A Saturday Music (classical/folk/jazz); 2345 S Readings from Czech Literature, M Spotlight (Czech current events) or One on One (interview), W Czechs in History or Central Europe Today, F Mailbox; 2350 T Talking Point, H Economic Report.

WBCQ, Maine

7415 kHz: 2300 A Radio Tantran Worldwide.

WHRI, Indiana

9495 kHz: 2330 A DXing with Cumbre.

WWCR, Tennessee

5070 kHz: 2300 S Golden Age of Radio, M-F World Wide Country Radio (country music)

Tahiti

RFO

POLYNÉSIE FRANÇAISE 88.1/5 PAPEETE

FREQUENCES

740 KHZ	20 Kw
6135 KHZ	4 Kw
9750 KHZ	4 Kw
11825 KHZ	20 Kw
15170 KHZ	20 Kw

R.F.O. votre Radio

QSL from R.F.O. in Tahiti.

Thank You ...

Additional Contributors to This Month's Shortwave Guide:

John Babbis, Silver Spring, MD; Tom Banks, Dallas, TX; Jim Boynton, Newton, MA; Adrian Sainsbury, Radio New Zealand; Bob Fraser, Cohasset, MA; Clyde W. Harmon, Anniston, AL; Glenn Hauser, Enid, OK/*World of Radio, DX Report*; Frank Hillton, Charleston, SC; Hans Johnson, WY/Ulis Fleming, MD /*Cumbre DX/DXing With Cumbre*; Michael Murray, UK; George Poppin, San Francisco CA; David Reeder, Flower Mound, TX; Robert Thomas, Bridgeport, CT; George Woods/*Media Scan*; BBCM; *BBC On-Air;*Harold Sellers, *DX Ontario;*Alexander Yegorov, Radio Ukraine Intl; *Hard Core DX* ; Radio Sweden/*Media Scan*; Usenet Newsgroups; *Worldwide DX Club.*

Satellite Service Guide

Robert Smathers
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All Frequencies MHz

Panamsat Galaxy 7 - Ku-Band - 125 degrees West longitude

T01(V)	11720		
T02(H)	11750	Occasional video	
T03(V)	11750		
T04(V)	11780		
T05(H)	11810		
T06(V)	11810		
T07(V)	11840		
T08(H)	11870		
T09(V)	11870		
T10(V)	11900		
T11(H)	11930		
T12(V)	11930		
T13(V)	11960		
T14(H)	11990		
T15(V)	11990	Occasional video	
T16(V)	12020		
T17(H)	12050		
T18(V)	12050		
T19(V)	12080		
T20(H)	12110	Occasional video	
T21(V)	12110		
T22(V)	12140		
T23(H)	12170		
T24(V)	12170	Occasional video	

Panamsat Galaxy 9 - C-Band - 127 degrees West longitude

1(V)	3720		
2(H)	3740	Gospel Music Television	VC2+
		Truth Radio	5.40
		Truth Net	5.80
		Genesis Communications Network	7.28
		Christian Media Network	7.78
3(V)	3760	NHK Japan Feeds Circuit	ITC
4(H)	3780	STARZ!-East	VC2+
5(V)	3800		
6(H)	3820		
7(V)	3840		
8(H)	3860	STARZ!-West	VC2+
9(V)	3880		
10(H)	3900		
11(V)	3920		
12(H)	3940	STARZ! Theatre-East	VC2+
13(V)	3960		
14(H)	3980		
15(V)	4000		
16(H)	4020	Encore-East	VC2+
17(V)	4040		
18(H)	4060		
19(V)	4080		
20(H)	4100	Encore Westerns-East	VC2+
21(V)	4120		
22(H)	4140		
23(V)	4160		
24(H)	4180		

Loral Orion Telstar 7 - C-band - 129 degrees West longitude

1(H)	3720	Worldlink TV	Digital
2(V)	3740	Data Transmissions	
3(H)	3760	Data Transmissions	
4(V)	3780	Data Transmissions	
5(H)	3800	Data Transmissions	
6(V)	3820	Data Transmissions	
7(H)	3840	Data Transmissions	
8(V)	3860	Data Transmissions	
9(H)	3880	Data Transmissions	
10(V)	3900	Data Transmissions	
11(H)	3920	Data Transmissions	
12(V)	3940	Time Warner	Digital
13(H)	3960	Data Transmissions	
14(V)	3980	Data Transmissions	
15(H)	4000	Data Transmissions	
16(V)	4020	Kingdom Vision Network	ITC
17(H)	4040	Data Transmissions	
18(V)	4060	Time Warner	Digital
19(H)	4080	Data Transmissions	
20(V)	4100	Time Warner	Digital
21(H)	4120		
22(V)	4140	Data Transmissions	
23(H)	4160	Time Warner	Digital
24(V)	4180		

Loral Orion Telstar 7 - Ku-band - 129 degrees West longitude

1(V)	11720	Occasional video	
2(H)	11740		
3(V)	11760	Data Transmissions	
4(H)	11780		
5(V)	11800	Data Transmissions	
6(H)	11820	Occasional video	
7(V)	11840	Data Transmissions	
8(H)	11860	Data Transmissions	
9(V)	11880	Occasional video	
10(H)	11900	Data Transmissions	
11(V)	11920	Occasional video	
12(H)	11940		
13(V)	11960	Telstar 7 ID Slate	ITC
14(H)	11980		
15(V)	12000	Data Transmissions	
16(H)	12020		
17(V)	12040	Occasional video	
18(H)	12060		
19(V)	12080	Data Transmissions	
20(H)	12100		
21(V)	12120		
22(H)	12140	Data Transmissians	
23(V)	12160	Data Transmissions	
24(H)	12180		

GE Americom Satcom C3 - C-Band - 131 degrees West longitude

1(V)	3720	Fox Family Channel	Digital
2(H)	3740	The Learning Channel (TLC)	VC2+
3(V)	3760	Pay-per-view	Digital
4(H)	3780	Lifetime	VC2+
5(V)	3800	Odyssey	ITC
6(H)	3820	Court TV/Northwest Cable News	Digital
7(V)	3840	CSPAN	ITC
		CSPAN Audio 1: Various shortwave broadcasters	5.20
		CSPAN Audio 2: BBC World Service	5.40
8(H)	3860	Style!	Digital
9(V)	3880	Music Choice	Digital
10(H)	3900	America's Store	ITC
11(V)	3920	Data Transmissions	
12(H)	3940	History Channel-East	VC2+
13(V)	3960	Weather Channel	VC2+
14(H)	3980	New England Sports Network	Digital
15(V)	4000	MTV/VH-1 Suite	Digital
16(H)	4020	Showtime	Digital
17(V)	4040	The Movie Channel-East	VC2+
18(H)	4060	TV Land	ITC
19(V)	4080	Viacom	Digital
20(H)	4100	Jones Earth Segment	Digital
21(V)	4120	Comedy Central-East	VC2+
22(H)	4140	Discovery-themed services	Digital
23(V)	4160	E! Entertainment TV-East	VC2+
24(H)	4180	Oxygen	VC2+
		WOKIE Satellite Network	7.50

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A Change in Global Weather?

Frankly, across the big pond, here in Britain, we are just not used to experiencing severe weather. Britain's first and last hurricane came and went in October 1987, I think it was, leaving a trail of devastation across the southern part of a shocked Britain. One forecaster of the time is always remembered for his comment that the hurricane (which had been spotted out in the Atlantic) would not reach Britain. A few hours later, roofs over many southern counties had been blown off houses.

This underestimate of wind speed resulted in a "Fish" factor (named in honor of the forecaster) being apparently applied to all future wind speed forecasts; artificially high speeds are frequently quoted for any system about to cross Britain, to ensure that the wind is invariably lower than expected. A year or so later, another severe depression damaged our roof – and thousands of others in the southwest.

In late October, a deep depression was correctly forecast to cross southern Britain, and wind speeds of 90 mph (exceptionally high for these coasts) were quoted. In fact, Plymouth recorded 92 mph; near London, a speed of 96 mph was recorded. For safety, I dismantled my exposed high resolution system dish, only replacing it a few days later when conditions stabilized. Figure 1 shows the near total cloud cover over Britain on October 31, with more severe flooding forecast from the latest depression seen on the right-hand side of this image. Britain and Ireland are just visible at the upper-right.

The talking point now is "global warming" and whether Britain is seeing confirmation of a change in the climate. It is true that the last two years have seen more cloud cover and low pressure systems move across the southwest of Britain. The period October through to the New Year may have become our "storm season." In Britain, by monitoring Meteosat-7 and its retransmissions of GOES-8 WEFAX, we can watch the weather systems cross America; the reciprocal arrangement means that GOES-8 and GOES-10 carry images of Europe. Watch GOES Meteosat images if you wish to keep up with our climate change!

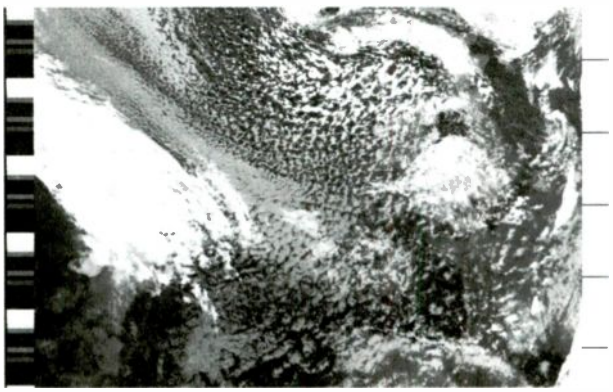

Fig 1: Three deep depressions surround Britain on October 31 in this NOAA-14 APT infrared image.

◆ Operating WXSATs

While NOAA-16 continued its on-orbit testing phase, its first footprint overlap with NOAA-14 happened during October and early November. The APT transmitter was switched off until the end of the overlap to prevent VHF interference. Although NOAA-16 provides better quality VHF imagery, NOAA-14 remains the operational spacecraft until NOAA-16's post-launch testing period ends – expected around January 2001. Meanwhile, the HRPT transmitters remained on to continue providing early afternoon imagery. The visible-light pictures are so much better than NOAA-14 because of the earlier pass times.

The two satellites have slightly different orbital periods, and therefore complete slightly different numbers of orbits per day (referred to as "Mean Motion" in Kepler elements): NOAA-16 14.10938 orbits per day, and NOAA-14 14.12474 orbits per day. NOAA-14 has an orbital altitude of about 860km compared with NOAA-16's 880km (at the time that I checked), resulting in NOAA-14 gaining a little on NOAA-16 during each orbit.

NOAA-15 has been left transmitting both HRPT and APT, though with the instrumentation having problems, imagery has been mostly unusable, with just an occasional pass providing a good picture. NOAA-15 has had a history of problems, including signal degradation, resulting in a transfer of HRPT transmissions to 1702.5 MHz.

Meteor 3-5 resumed operations in early November, but that also has picture degradation causing a loss of resolution. Meteor 2-21 was switched off at about the same time. Fortunately, all the geostationary WXSATs have maintained reliable transmissions – give or take an occasional ground station problem.

◆ Reader's upgrade

Joseph Gresham has been monitoring wefax and APT imagery for four years; he decided to upgrade to GOES GVAR using the Aquila system to supplement his home-built hardware and has enjoyed the higher resolution offered. He e-mailed an image of his home state of Florida after a cold front pushed through on October 15, at full zoom. "It was a strong front for October and gave a low 50 degrees in central Florida, beating the current record."

See Swagur ad on page 89 for equipment to capture weather satellite imagery.

Fig 2: Florida 1603UTC October 15, 2000

Frequencies

NOAA-14 and NOAA-16 transmit APT on 137.62 MHz
NOAA-12 and NOAA-15 transmit APT on 137.50 MHz
Meteor 3-5 may transmit APT on 137.30 MHz when in sunlight
Resurs 1-4 transmits APT on 137.85 MHz
Okean-O, Okean-4 and Sich-1 sometimes transmit APT briefly on 137.40 MHz
GOES-8 and GOES-10 use 1691 MHz for WEFAX

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Federal Agencies at Inauguration 2001

This month the country witnesses an event that only occurs every four years – the inauguration of the President of the United States. If you are going to travel to the nation's capitol, be sure to take along your scanner for some of the best federal listening that can be heard anywhere.

In the December 1996 issue of *MT*, Alan Henney of the *Capitol Hill Monitor* group compiled a guide to monitoring this historic event. In case you missed that issue and you have internet access, drop by **http://henney.com/guide.htm** for a complete list of all the frequencies in his original article.

Since 1996 quite a few changes have been observed in the District federal agency and military communications systems. The use of trunked systems have replaced quite a few of the discrete VHF/UHF channels. In this issue of *The Fed Files* we will cover some of those changes. Be sure to check out our *Milcom* column in this issue for updates on military communications in the DC area.

◆ Government Itinerants

Government itinerant frequencies can provide some of the most interesting listening in the federal spectrum if hobbyists watch for activity. Here are the older allocations currently in use:

Wide area itinerants: 163.1000 418.0500 418.5750 MHz

Common use itinerants: 168.3500 408.4000 418.0750 MHz

Station assignments made under older procedures on the above frequencies will stop December 31, 2004. In the meantime, the new rules are being used to implement a whole new series of government itinerant frequencies as indicated below.

◆ New Common Use Frequencies

Wide-area, common-use frequencies are allotted for use by all U.S. Government agencies and provide users with frequencies for radio communications that do not justify the assigning of a radio frequency exclusively to that use, (i.e., the frequency can be shared with other users).

The following paired frequencies are for use in wide-area (i.e., county-wide, statewide, continental US, and US plus possessions) operations of a transient nature that require the use of a repeater station. According to the new government regulations, unpaired single frequency operations will be authorized on the repeater transmit frequencies and on the repeater receive frequencies below, only if all of the other wide-area, common-use frequencies are in use.

Wide-Area, Common-Use Paired Frequencies (MHz)

Repeater Transmit	*Repeater Receive*
163.1000	168.3500
409.0500	418.0500
409.3375	418.3375

The following frequencies are for use in wide-area operations of a transient nature that do not require the use of a repeater station, and will be used in the simplex mode (use of a base station is allowed).

Wide-Area, Common-Use Simplex Frequencies (MHz)

412.8250 412.8375 412.8500 412.8625

Government users of these frequencies do so on a shared, non-priority basis only. None of these frequencies is intended for the exclusive use of any one agency.

A new category of government itinerants is now operational. The feds have set aside frequencies for local-area, common use. The following paired frequencies are being used only for local operations requiring the use of a repeater station at a fixed location. Like the wide-area frequencies mentioned above, these local frequencies can be used for unpaired operations.

Local-Area, Common-Use Paired Frequencies (MHz)

Repeater Transmit	*Repeater Receive*
173.6250	167.1375
407.5250	416.5250
409.0750	418.0750

The following frequencies are being used only for local area operations that do not require the use of a repeater station and can only be used in the simplex mode (use of base stations is allowed on these frequencies).

Local-Area, Common-Use Simplex Frequencies (MHz)

163.7125 168.6125 412.875 412.8875 412.9000 412.9125

◆ Other Capitol District Federal Agencies

In addition to the itinerants mentioned above, inaugural scanner monitors should program the following frequencies for the agencies mentioned below.

US Capitol Police (USCPD)

Capitol Police channel usage varies from day to day. The department tends to use the first three channels for routine dispatch operations, and the last two are normally used by specialized units, command staff, and personal protection personnel. The Capitol Police equivalent of a SWAT unit is called CERT (Containment and Emergency Response Team). The department has a First Responder Unit (FRU) that responds to emergencies, and a Civil Disturbance Unit (CDU), both of which will be busy with inaugural events.

162.2500	Channel 4/9 (Repeater/simplex)
162.6125	Channel 5/10 (Repeater/simplex)
165.5375	Channel 2/7 (Repeater/simplex)
169.2250	Channel 1/6 (Repeater/simplex)
170.1750	Channel 3/8 (Repeater/simplex)

Capitol Hill Voice Pagers

169.5750	House Republican Pager
170.3750	House Democrat Pager
171.1750	Senate Democrat Pager
171.9750	Senate Republican Pager
406.6750	Senate Republican Pager
406.8000	Senate Democrat Pager
416.1500	Architect of the Capitol Pager

Other Capitol Hill Radio Users

163.1000	Supreme Court Security Channel 1
163.2750	Supreme Court Security Channel 2 (paired with 166.100)
408.1250	Library of Congress Security Channels 1/2 (Repeater/simplex)
410.2000	Government Printing Office Security
414.8750	Architect of the Capitol Channels 1/2 (Repeater/simplex)
418.0750	Parking Enforcement (simplex)

◆ National Park Service (NPS)

The National Park Service is divided into 12 management units in the capital area. Only those directly involved in the inauguration are listed below. Many of these frequencies, however, are shared, so you may hear traffic from other locations in the area.

166.7250	Channel 1/6 (Repeater/simplex) Secondary
166.8500	Channel 4 Tactical (Simplex)
166.9250	Channel 2/7 (Repeater/simplex) Dispatch
167.0750	Channel 3/8 (Repeater/simplex) Administrative

The old NPS UHF system is officially no longer used. However, 411.625 and 411.725 could be activated. The other two frequencies will probably not be used for technical reasons.

National Park Operations – National Capital Area

166.9500 C&O Canal Park Rangers
168.3000 GW & Clara Barton Parkways Maintenance
168.4250 Parks East (Fort Washington)
171.6500 White House Visitor Control Ops
172.4750 Parks Central (Rock Creek Park/Moll)
172.7500 White House Maintenance Unit
411.6750 White House Liaison
411.8250 Kennedy Center (Park Police)
461.3250 Kennedy Center (Contract Security)
464.8875 Kennedy Center (Staff)

C&O Park Rangers routinely operate on the Parkway maintenance channels (168.300). US Park Police have often used 411.825 when providing traffic control and support during major events at the Kennedy Center. This frequency, however, is now used by a government trunk system in the area.

Smithsonian Institution

150.2000 Personal Protection
169.0500 Motor Pool
169.2000 Security Channel 1/2 (Repeater/simplex)
169.7250 National Zoo Security

National Gallery of Art

168.3500 Administration
406.5500 Security Channel 1
408.0000 Security and Safety Channel 2
408.4000 Security

US Marshals Service

162.7125 Special Operations (input 170.800)
162.7875 DC Superior Court Operations
163.2000 DC, Maryland and Northern Virginia District Court Operations
163.8125 Marshal Tactical

Channel numbers vary depending upon the radio. Other channels that could be assigned for use include 170.750, 170.800, 170.850, 170.875 and 170.925.

General Services Administration (GSA)

163.0750 GSA Headquarters Administration
168.5750 GSA Region Building Maintenance
414.4750 Federal Protective Service Channel 5/6 (Repeater/simplex)
415.2000 Federal Protective Service Channel 1/3 (Repeater/simplex)
417.2000 Federal Protective Service Channel 2/4 (Repeater/simplex)
464.7750 National Building Museum (Pension Building)

The Federal Protection Service has additional frequencies that are used at specific sites. Contracted security guards at the National Building Museum use 464.775.

◆ State Department (DOS)

The State Department, including its Washington Field Office (WFO), provides security to foreign official visitors, except heads of state, who are protected by the Secret Service.

Department of State-Washington Field Office

411.1500 Secondary Channel 2/4 (Repeater/simplex)
418.4500 Primary Channel 1/2 (Repeater/simplex)

Department of State-Protection Operations

411.0750 Agent to Agent Channel (Simplex)
411.4250 Escort Operations Channel 1/2 (Repeater/simplex)
415.9000 Escort Operations Channel 3/5/8 (Repeater/simplex)
417.8500 Escort Operations Channel 4/7 (Repeater/simplex)

Other Department of State Nets

164.1250 Motor Pool (General)
168.2250 Administration and Maintenance
408.6000 Building Security
409.6250 Motor Pool (Sedans)

◆ Secret Service

The Secret Service protects the first family, past presidents and foreign heads of state. Much of the traffic is encrypted. You may expect to hear related activity on other frequencies such as those belonging to the White House Communications Agency channels listed in its section below.

164.4000 Papa (Technical Services)
164.6500 Tango (Vice President Protection)
164.8875 Oscar (Presidential Protection)
165.2125 Mike (Visitor Protection)
165.3750 Charlie (Presidential Protection)
165.6875 Washington Field Office (input 166.400-Golf)
165.7875 Baker
166.4625 X-Ray, Treasury Common
167.0250 Whiskey (Paging)
170.0000 Juliet (Paging, input 408.025)

◆ Uniformed Division, Secret Service (UDSS)

The Uniformed Division of the Secret Service was created during the Nixon administration to provide external guard services for the White House and at selected U.S. and foreign facilities in the Washington area.

407.9250 K-9 Unit to Unit (Simplex)
414.6750 Foreign Missions Division Primary Channel 3/4 (Repeater/simplex)
414.8500 Special Use Channel 7/8 (Repeater/simplex)
415.6500 Special Use Channel 9/10 (Repeater/simplex)
415.9750 Foreign Missions Division Secondary Channel 5/6 (Repeater/simplex)
418.3500 Treasury Building Channel 2 (Simplex)
418.7750 White House Protection Division Channel 1 (Simplex)

◆ Executive/Congressional Security/Driver Details

Many of these frequencies below are encrypted. Not all cabinet secretaries have a security detail, and in some cases, a specially trained driver doubles as the security detail.

Security for Supreme Court justices, when required, is provided by the US Marshals Service, usually using 162.7125. The Army Criminal Investigation Division (CID) provides security for the Secretary of Defense and most senior military figures as well. They use encryption on the Fort Belvoir trunk system (see *Milcom* this issue). The Secretary of Interior detail operates on the US Park Police channels listed with the Interior Department frequencies (above).

162.6125 House Speaker/Senate President Pro Tem (US Capitol PD)
162.9000 Secretary of Labor
171.3625 Secretary of Transportation
173.0250 Attorney General (FBI also 170.625)
411.4250 Secretary of State (Diplamatic Security Bureau)
413.4250 Secretary of Health and Human Services
414.6250 Secretary of Commerce
415.2250 Secretary of Agriculture

◆ White House Communications Agency (WHCA)

White House Communications Agency (WHCA) provides telecommunications and related support to the President, Vice President, White House Senior Staff, National Security Council, U.S. Secret Service and others as directed by the White House Military Office. This support includes non-secure voice, secure voice, record communications, audiovisual services, automated data processing support and photographic and drafting services both in Washington, D.C. and trip sites worldwide.

WHCA personnel routinely use Secret Service channels and their administrative operations are reportedly on the Fort Belvoir trunk system listed in the *Milcom* column. Here is a list of WHCA channels in the VHF/UHF spectrum.

32.2300 Alpha
36.2100 Simplex
41.1700 Simplex
41.1900 Simplex
41.8500 Simplex
41.8700 Simplex
162.6875 Duplex-Yankee/Base (paired with Zulu)
164.4000 Papa
164.6500 Tango
164.8875 Oscar
165.2125 Mike
165.3750 Charlie
165.7875 Baker
166.2000 Simplex
166.4625 Treasury Common
166.5125 Sierra
166.7000 November
167.0250 Whiskey (Paging system paired with 408.025 in some locations in the US)
167.9000 Hotel
169.9250 Delta
171.2875 Duplex-Zulu/mobile (paired with Yankee)

◆ Washington, DC Department of Commerce/NTIA Federal

Recently a new trunk system was discovered in the Washington area. All known information has been presented below. Updates are requested for users on this system.

System: Motorola Type II (System 4E00)
Base Frequency: 406.100, Offset: 25-kHz
Frequencies: 406.250 406.750 406.850 408.450 408.700 408.900 410.375

Until next month, 73 and good hunting.

Don Veeneman
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Sorting Out the Systems

The New Year is a good opportunity to review some of the material covered in previous columns, and the following electronic mail message I recently received is representative of many questions beginning listeners have about scanners and trunking systems.

Subject: scanner information.

Hi Dan,

I would like some information on trunking scanners. For one thing, which is the best: the BC245XLT or the Radio Shack Pro-92? They each receive Motorola type I and II as well as EDACS systems; however one has to be better than the other. Also, can you tell me the difference in the trunking systems SMARTNET, PRIVACY PLUS, also AEGIS, ASTRO, ESAS, and LTR. What in the world is all of this? Please help me if you can.

Thank you.

Bob

Determining a "better" scanner is like determining a better car – it depends on a lot of subjective factors. Different people have different needs and requirements, so the short answer is, it depends.

◆ Uniden BC245XLT

The BC245XLT is a second generation handheld trunk-tracking scanner made by Uniden. It tracks Motorola and EDACS systems, but does not follow LTR. It has memory for 300 channels and includes a computer interface. The protocol used by the interface is available to the public and several individuals have written free utilities that allow a computer to control the operation of the scanner.

The receiver itself appears to be a solid performer, with good sensitivity and solid trunk tracking capability. Reports from users are generally positive, with the exception of complaints regarding a confusing user manual. With so many features and capabilities, it's not easy to explain everything clearly!

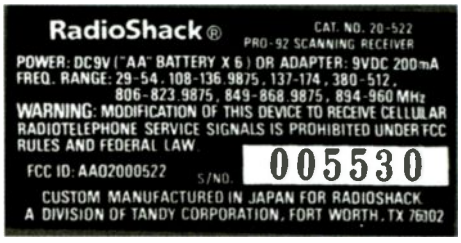
◆ Radio Shack PRO-92

The PRO-92 is a trunk-tracking scanner built by GRE and sold by Radio Shack. It has the capability of tracking Motorola, EDACS, and LTR systems. It also has Specific Area Message Encoding (SAME) weather support and other conventional scanning features.

There are currently three different types of PRO-92 scanners out there, which has been the subject of some controversy. The original unit, first available in late 1999, uses sub-audible tones in the voice channel to track trunked systems. Although many users were happy with the scanner, there were a number of reported problems related to large, very busy Motorola systems. There were also problems with the displayed talkgroup ID changing when signal reception was weak.

All trunk-tracking scanners are controlled by an internal microprocessor. The software that instructs the microprocessor what to do is called *firmware*, and each release of firmware has an associated version number. The original PRO-92 has a firmware version of 1.00 and follows Motorola systems using information in the voice channel called "low speed handshake." This method works well in many environments and is the only way to track LTR.

Last summer Radio Shack introduced the PRO-92A, an "enhanced" scanner that replaced the low speed handshake of the original model with a control channel decoder to track Motorola systems. This is the same method used by Uniden trunk-tracking scanners, and improves performance on many larger Motorola systems. These units may be identified by looking for an "A" in the upper right corner of the back label, or by confirming that the firmware version is 3.25.



Just a couple of months later yet a third variant appeared. Although it is still the 92A model, this version is manufactured in China instead of Japan and there's a minor change to the SAME messages. This variant has a "B" in the upper right corner of the back label and the firmware version is 3.28.

All versions of the PRO-92 appear to track EDACS systems equally well. There are reportedly changes to later firmware versions to improve LTR trunking.

Catalog Number	Date Code	Firmware
20-522	07A99 to 04A00	1.00
20-522 A	05A00 and 06A00	3.25
20-522 B	07A00 and following	3.28

I bought a PRO-92A, version B last November at my local Radio Shack, on sale for $199. It was an interesting experience because there were three different versions all in stock at the same time. The sales person was not aware of the differences, but was kind enough to let me swap battery packs and check the firmware version.

You can check the version yourself by turning the scanner on and pressing the "3" key while the Welcome to Multi-System Trunking appears. My original PRO-92 from 1999 displays Version 1.00 while the one I just purchased shows Version 3.28.

◆ Smartnet

Smartnet refers to a Motorola analog trunking system. Scanner listeners often refer to these systems as Type II, and they can be tracked with almost any trunking scanner. There is also a second-generation product from Motorola called Smartnet II.

A Smartnet system may have as many as 28 channels, up to four of which are usually assigned as control channels. Since the control channel is transmitted continuously (100% duty cycle), it is typically changed each day to reduce the wear and tear on the transmitter and antenna components.

Smartnet systems are organized by talkgroup, and can support more than 48,000 individual radio IDs and 4,000 talkgroups. Frequency and talkgroup assignments for specific cities and agencies are available in printed form and on the Internet.

Motorola radios are typically capable of dual-mode operation, meaning they can work through either trunked or conventional repeaters. These radios can also operate *talk-around*, meaning they can transmit and receive directly with other mobiles on a single frequency without needing a repeater.

Smartnet transmissions have different priority levels, with emergency being the highest.

In case of repeater failure, Smartnet supports a mode called *failsoft*. Each mobile radio is assigned a voice channel and will tune to it when a sub-audible fail-safe tone is present. The radio then operates in conventional mode. This feature made the news last fall on election night, when the new Nashville Metro system in Tennessee went into failsoft for about 30 minutes, leaving police and fire crews out of contact just before the War Memorial Plaza was to be opened to the public.

You may also hear about Smartzone, which is an enhanced version of Smartnet. Smartzone is basically a network of Smartnet systems all tied together. When a mobile is turned on or drives into the coverage area of a new repeater site, it transmits its ID and talkgroup affiliation to a *zone controller*. This registration allows the zone controller to know where all members of a talkgroup are located. Calls for a talkgroup are then transmitted only from the repeater sites that have registered users in that talkgroup.

◆ Privacy Plus

Privacy Plus is a Motorola marketing name for their older Type I trunking system. The "Privacy" refers to an improvement over conventional systems, where anyone with a radio could potentially hear every call. Privacy Plus radios won't complete the audio path to the speaker if the radio isn't programmed to be part of the transmission.

From a user point of view, Privacy Plus radios work the same way as Smartnet radios except that Privacy Plus radios don't have emergency call or dynamic regrouping capability, and they cannot automatically switch between systems.

◆ AEGIS

Technological advances are also affecting radio systems. The current trend is a transition from the older analog systems to new digital networks. AEGIS is Ericsson's first generation digital system, first offered as an upgrade to EDACS in 1993.

AEGIS, like other digital voice systems, takes the analog microphone input and digitizes it using a vocoder (voice encoder/decoder). The resulting data stream is further encoded with error correction information before transmission.

AEGIS users tend to be police detectives and medical personnel, interested in somewhat more privacy.

AEGIS is a closed, proprietary protocol, and I am not aware of any commonly available decoders for the system. Trunking scanners will not follow AEGIS transmissions, and listening to the channel in conventional mode will result in hearing digital data bursts.

◆ ASTRO

ASTRO is another Motorola marketing term for their digital two-way radio products. These radios can use the same trunking signals as analog units, but transmit and receive voice signals in digital format. Because most ASTRO systems use the older 3600-baud control channel format, trunking scanners can usually follow the transmissions and display the talkgroup IDs. However, the voice portion is digital so the scanner won't be able to deliver the audio. It is possible to run both analog and digital radios on the same system.

ASTRO is slowly migrating to the APCO Project 25 family of digital radio standards, including the Common Air Interface (CAI). More information about Project 25 can be found in the July 2000 *Tracking the Trunks* column and on my website.

◆ Logic Trunked Radio (LTR)

E.F. Johnson developed Logic Trunked Radio (LTR) as a simple, multi-channel mobile radio system, one step up from a conventional repeater. LTR was covered in detail in the May 2000 *Tracking the Trunks* column.

LTR does not use a dedicated control channel; instead each channel includes a sub-audible data stream that identifies the current talkgroup assignment. Because there is no control channel, each radio is assigned a "home" channel that it tunes to when it is in standby mode.

A repeater base station is made up of one or more channels, and each channel can support up to 250 identifiers. These IDs may be assigned to talk groups or to individual radios.

Currently, the PRO-92 handheld and the PRO-2067 mobile scanners support LTR trunk tracking.

◆ Extended Sub-Audible Signaling (ESAS)

Uniden has an enhanced LTR protocol called Extended Sub-Audible Signaling (ESAS) that provides automatic, wide-area networking, voice mail, and individual unit paging. It allows radios to be uniquely identified and allows "roaming" between different LTR systems.

That's all for this month. As always, I welcome electronic mail at *dan @ signalharbor.com* and you can find more information about radio topics on my website at **http://www.signalharbor.com**. Until next month, happy monitoring!

Larry Van Horn
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Inauguration 2001 — Military Frequencies

As mentioned in the *Fed Files* column, this month we are profiling United States government communications systems in the Washington D.C. area for scanner listeners heading to the Presidential Inaugural this month.

❖ Andrews AFB/Bolling AFB, Maryland

Andrews Air Force Base (AFB) has evolved to become one of the most modern bases in the Air Force. With more than 10 Air Mobility Command (AMC) units, 30 tenant units, the Naval Air Facility housed on the base, and Malcolm Grow Medical Center (third largest hospital in the Air Force), this is a very busy military installation.

Located 10 miles southeast of Washington, D.C., Andrews is the home of the 89 Airlift Wing (AMC) and Air Force One. This base frequently hosts the President and Vice President of the United States, congressional delegations, foreign heads of state and many other dignitaries and distinguished visitors.

The major VHF/UHF communications system is a Motorola Type II UHF trunk system. According to Lindsay Blanton and the *Southeast US Trunk Information* website (**http://www.lcblanton.com/trunked.htm**), effective July 15, 2000, elements from Andrews AFB realigned their trunk system communications functions in anticipation of future radio system consolidation with Bolling AFB in the Washington DC area.

Bolling AFB is located 3 miles south of the nation's Capital on the east bank of the Potomac River. The major command at Bolling AFB is the 11th Wing, "The Chief's Own." Major elements of this command are the 11th Operations Group, 11th Support Group, 11th Logistics Group and the 11th Medical Squadron. Major tenant/organizations at Bolling include the Defense Intelligence Agency (DIA), Air Force Surgeon General, Air Force Chief of Chaplains, Air Force Legal Services Agency, 497th Intelligence Group, and the Air Force Historian.

Analog System Sabers, Spectras and MT2000s are being replaced by XTS3500s and Astro Spectras. Just about everybody on Andrews AFB has a radio on this trunk system including Navy and Marine Corps units at the Naval Air Facility. Some encrypted transmissions will be heard and it has been reported these are security elements associated with VIP protection. Frequencies 409.350, 409.725 are usually used for phone patch operation, and 406.350, 406.950, 407.150, 407.425 are commonly used for control channel signals.

System: Motorola Type II SmartNet (System IF 6B01)
Base Frequency: 406.000 MHz, Offset: 25-kHz
Connect Tone: 128.57-Hz
Frequencies: 406.350/413.025 406.950/413.200 407.150/413.275 407.425/413.375 408.025/415.150 408.200/415.825 408.750415.950 409.350/416.350 409.725/417.750

Talkgroups:

16	Group 1 Announcement Talk Group [1A]
48	Command Net [1B]
80	Public Affairs [1C]
112	Protocol [1D]
144	Emergency Preparedness Office [1E]
176	89 Airlift Wing/Presidential Pilots Office [1F]
208	Command Post Ops [1G]
240	AJDIC, Command Ops [1H]
272	AJDIC, Field Ops [1I]
304	VIP Billeting [1J]
336	Airlift Squadron Ops 1 [1K]
368	Airlift Squadron Ops 2 [1L]
400	Airfield Environmental Response [1M]
432	Emergency [1N]
2352	Andrews Help Desk [10]
Group 1 Dynamic Regroup [1P]	
464	Group 2 Announcement Talk Group [2A]
496	NP Call Patch [2B]
528	NP TAC-1 Patch [2C]
560	Special Emergency Response [2D]
592	Prince George's County Fire Department Patch [2E]
624	Prince George's County Fire Department Patch [2F]
656	NSIADC (Field Response) [2G]
688	Naval District Washington Command Net Interface [2H]
720	Coordination Command [2I]
752	Coordination Ops 1 [2J]
784	Coordination Ops 2 [2K]
816	Coordination Ops 3 [2L]
848	Coordination Ops 4 [2M]
880	Fire Mutual Aid 1 [2N]
912	Fire Mutual Aid 2 {20]
Group 2 Dynamic Regroup [2P]	
944	Group 3 Announcement Talk Group [3A]
11280	Ground Control 1 (Eng) [3B]
11312	Ground Control 2 (Flight Ops) [3C]
11344	2045 Communications Group, Det 2 GLOBECOM Communications Support, Brandywine [3D]
11376	Priority Army Transport (PAT) Maintenance (JCS Flight) [3E]
11408	89 Communications Group/89 Communicotians Squadron Computer Ops/Maintenance [3F]
11440	89 Wing Center Building Ops [3G]
11472	Security (WAF) [3H]
11504	Security Special Ops Group [3I]
11536	Security EPU [3J]
11568	Security PSO [3K]
11600	Law Enforcement Tac 1 [3L]
11632	Law Enforcement Tac 2 [3M]
11664	Unknown User/Usage [3N]
11696	ADITC Control Ops [30]
Group 3 Dynamic Regroup [3P]	
976	Group 4 Announcement Talk Group [4A]
2480	89 Airlift Wing Command Net [4B]
1008	89 Airlift Wing Common [4C]
1040	89 Airlift Wing Public Affairs Support [4D]
1072	89 Airlift Wing Ops Support Squadron (Base Ops) [4E]
1104	89 Airlift Wing Ops Support Squadron (Airfield) [4F]
1136	89 Airlift Wing, 1st Helo Squadron Ops 1 [4G]
1168	89 Airlift Wing, 1st Helo Squadron Ops 2 [4H]
1616	Aircraft Refueling Ops [4I]
1648	General Dynamics Contractor Ops 1 [4J]
1680	Boeing Contractor Ops 2 [4K]
1712	General Electronics Contractor Ops 3 [4L]
1744	Raytheon Contractor Ops 4 [4M]
1776	Field Ops 1 [4N]
1808	Field Ops 2 [40]
Group 4 Dynamic Regroup [4P]	
1840	Group 5 Announcement Talk Group [5A]
1872	Specialized Tactical Ops Response Management (STORM) Command [5B]
1904	STORM Ops [5C]
1936	STORM EMS [5D]
1968	STORM Stage [5E]
2000	STORM Sector 1 [5F]
2032	STORM Sector 2 [5G]
2064	STORM Sector 3 [5H]
2096	STORM Sector 4 [5I]
2128	STORM Sector 5 [5J]
2160	STORM Sector 6 [5K]
2192	STORM Rehab [5L]
2224	STORM Spare 1 [5M]
2256	STORM Spare 2 [5N]
2288	STORM Spare 3 [5O]
Group 5 Dynamic Regroup [5P]	
3184	Group 6 Announcement Talk Group [6A]
3216	Law Enforcement Ops [68]
3248	Security Ops [6C]
3280	Engineering 1 [6D]
3312	Building Ops [6E]
3344	Electrical Maintenance [6F]
3376	Cargo Ramp Control [6G]
3408	Environmental Inspection [6H]
3440	Telecom [6I]
3472	Logistics [6J]
3504	Recreation-Officers Club [6K]
3536	Recreation-NCO Club [6L]
3568	Recreation-Golf Course [6M]
3632	Unknown User/Usage [6N]
4432	Unknown User/Usage [60]
Group 6 Dynamic Regroup [6P]	
3664	Group 7 Announcement Talk Group [7A]
3696	Fire Department Dispatch [7B]
3728	Fire Department Command [7C]
3760	Fire Department Incident 1 Ops [7D]
3792	Fire Department Tac 1 [7E]
3824	Fire Department Incident 2 Ops [7F]
3856	Fire Department Tac 2 [7G]
3888	Fire Department Incident 3 Ops [7H]
3920	Fire Department Tac 3 [7I]
3952	Fire Department Incident 4 Ops [7J]
3984	Fire Department Tac 4 [7K]
4016	Fire Department Call [7L]
4048	Fire Department EMS Coordination 1 [7M]
4080	Fire Department EMS Coordination 2 [7N]
4112	Fire Department EMS Coordination 3 [70]
Group 7 Dynamic Regroup [7P]	
4816	Group 8 Announcement Talk Group [8A]
4848	Airevac Command [8B]
4880	Airevac Base EMS [8C]
4912	Airevac Medical Evac Control/Assessment Center [8D]
4944	Airevac Holding Center [8E]
4976	Airevac Field Ops [8F]
5008	Airevac Hospital Patch 1 [8G]
5040	Airevac Hospital Patch 2 [8H]
5072	Airevac Hospital Patch 3 [8I]
5104	Airevac Hospital Patch 4 [8J]
2544	Prince George's Trauma Center [8K]
5136	Airevac MASH Supply [8L]
5168	Airevac MASH Support Ops [8M]
5200	Airevac MASH Log [8N]
5232	Airevac MASH Tactical [80]
Group 8 Dynamic Regroup [8P]	
5264	Group 9 Announcement Talk Group [9A]
5296	89 Wing/89 Operations Group Special Air Mission SAM Command [9B]
5328	89 Wing/89 Ops Group SAM Support 1 [9C]
5360	89 Wing/89 Ops Group SAM Support 2 [9D]
5392	89 Wing/89 Ops Group SAM Support 3 [9E]
5424	89 Wing/89 Ops Group SAM Support 4 [9F]
5456	89 Wing/89 Ops Group SAM Support 5 [9G]
2416	89 Wing/89 Ops Group SAM Catering [9H]
5488	89 Wing/89 Ops Group SAM Executive Escort 1 [9I]
5520	89 Wing/89 Ops Group SAM Executive Escort 2 [9J]
5552	89 Wing/89 Ops Group SAM Executive Escort 3 [9K]
5584	89 Wing/89 Ops Group SAM Executive Escort 4 [9L]
5616	89 Wing/89 Ops Group SAM Rapid Transport 1 [9M]
5648	89 Wing/89 Ops Group SAM Rapid Transport 2 [9N]
5680	89 Wing/89 Ops Group SAM Shuttle [90]
Group 9 Dynamic Regroup [9P]	
5712	Group 10 Announcement Talk Group [10A]
5744	89 Airlift Wing/89 Comms Squadron Command [10B]
5776	89 Airlift Wing/89 Comms Squadron Ops 1 [10C]
5808	89 Airlift Wing/89 Comms Squadron Ops 2 [10D]
5840	89 Airlift Wing/89 Comms Squadron Ops 3 [10E]
5872	89 Airlift Wing/89 Comms Squadron Logistics 1 [10F]
5904	89 Airlift Wing/89 Comms Squadron Logistics 2 [10G]
5936	89 Airlift Wing/89 Comms Squadron Logistics 3 [10H]
5968	89 Airlift Wing/789 Comms Squadron Command [10I]
6000	89 Airlift Wing/789 Comms Squadron Ops 1 [10J]
6032	89 Airlift Wing/789 Comms Squadron Ops 2 [10K]
6064	89 Airlift Wing/789 Comms Squadron Ops 3 [10L]
6096	89 Airlift Wing/789 Comms Squadron Logistics 1 [10M]
6128	89 Airlift Wing/789 Comms Squadron Logistics 2 [10N]
6160	89 Airlift Wing/789 Comms Squadron Logistics 3 [100]
Group 10 Dynamic Regroup [10P]	
6192	Group 11 Announcement Talk Group [11A]
6224	Executive Flight Support 1 [11B]
6256	Executive Flight Support 2 [11C]
6288	Executive Flight Support 3 [11D]
6320	Navy Ops 1 [11E]
6352	Navy Ops 2 [11F]
6384	Navy Flight Line Ops [11G]
6416	459 Comms Squadron Maintenance [11H]
6448	89 Comms Squadron Maintenance [11I]
6480	789 Comms Squadron Maintenance [11J]
6512	Air National Guard Readiness Center [11K]
6544	113 Wing Support 1 (DCANG) [11L]
6576	113 Wing Support 2 (DCANG) [11M]
6608	113 Wing Logistics 1 (DCANG) [11N]
6640	113 Wing Logistics 2 (DCANG) [110]
Group 11 Dynamic Regroup [11P]	
7216	Group 12 Announcement Talk Group [12A]
7248	459th Command (AFRES) [128]
7280	459th Ops 1 (AFRES) [12C]
7312	459th Ops 2 (AFRES) [12D]
7344	459th Ops 3 (AFRES) [12E]
7376	459th Logistics 1 (AFRES) [12F]
7408	459th Logistics 2 (AFRES) [12G]
7440	459th Logistics 3 (AFRES) [12H]
7472	459th Support 1 (AFRES) [12I]
7504	459th Support 2 (AFRES) [12J]

7536 459th Support 3 (AFRES) [12K]
7568 459th Flight Line Ops (AFRES) [12L]
7600 459th Flight Comm Support (AFRES) [12M]
7632 459th Special Ops (AFRES) [12N]
7664 459th Spare (AFRES) [12O]
Group 12 Dynamic Regroup [12P]

8016 Group 13 Announcement Talk Group [13A]
8048 113 Wing/201 Airlift Squadron Flight Line Ops (DCANG) [13B]
8080 113 Wing/201 Airlift Squadron Ops (DCANG) [13C]
8112 113 Wing/201 Airlift Squadron Logistics (DCANG) [13D]
8144 113 Wing/231 Combat Comms Squadron Flight Line Ops (DCANG) [13E]
8176 113 Wing/231 Combat Squadron Ops (DCANG) [13F]
8208 113 Wing/231 Combat Squadron unknown usage (DCANG) [13G]
8240 459 Airlift Wing unknown usage (AFRES) [13H]
8272 459 Airlift Wing unknown usage (AFRES) [13I]
8304 459 Airlift Wing Comms Support (AFRES) [13J]
8336 89 Air Wing/99 Airlift Squadron unknown usage [13K]
8368 113 Wing/201 Airlift Squadron unknown usage (DCANG) [13L]
8400 113 Wing Delta Command Post (DCANG) [13M]
8432 113 Wing Watergate Command Post (DCANG) [13N]
8464 113 Wing Hotel Control (DCANG) [13O]
Group 13 Dynamic Regroup [13P]

8816 Group 14 Announcement Talk Group [14A]
8848 113 Wing/231 Combat Comms Squadron Security Ops (DCANG) [14B]
8944 113 Wing/231 Combat Comms Squadron Ops (DCANG) [14C]
8912 113 Wing/231 Combat Comms Squadron (DCANG) [14D]
8944 113 Wing/231 Combat Comms Squadron (DCANG) [14E]
8976 Unknown User/Usage [14F]
9008 Unknown User/Usage [14G]
9040 Unknown User/Usage [14H]
9072 Unknown User/Usage [14I]
9104 Unknown User/Usage [14J]
9136 Unknown User/Usage [14K]
9168 Unknown User/Usage [14L]
9200 Unknown User/Usage [14M]
9232 Unknown User/Usage [14N]
9264 Unknown User/Usage [14O]
Group 14 Dynamic Regroup [14P]

9392 Group 15 Announcement Talk Group [15A]
9424 113 Wing/113 Fuels Flight (DCANG) [15B]
9456 113 Wing/113 Transportation Flight (DCANG) [15C]
9488 113 Wing/113 Civil Engineer Squadron (DCANG) [15D]
9520 113 Wing/113 Security Forces Flight (DCANG) [15E]
9552 113 Wing/113 Comms Flight (DCANG) [15F]
9584 113 Wing/113 Disaster Preparedness (DCANG) [15G]
9616 113 Wing/113 Maintenance Squadron (DCANG) [15H]
9648 113 Wing Unknown Usage (DCANG) [15I]
9680 113 Wing Unknown Usage (DCANG) [15J]
9712 113 Wing Unknown Usage (DCANG) [15K]
9744 113 Wing Unknown Usage (DCANG) [15L]
9776 113 Wing Unknown Usage (DCANG) [15M]
9808 113 Wing Unknown Usage (DCANG) [15N]
9840 113 Wing Unknown Usage (DCANG) [15O]
Group 15 Dynamic Regroup [15P]

10032 Group 16 Announcement Talk Group [16A]
10064 113 Wing Munitions Support Area (DCANG) [16B]
10096 VMFA-321 Ops (USMC) [16C]
10128 VMFA-321 unknown usage (USMC) [16D]
10160 VMFA-321 Alternate (USMC) [16E]
10192 VMFA-321 unknown usage (USMC) [16F]
10224 WAF & VR-1 Maintenance Ops (USN) [16G]
10256 Unknown User/Usage [16H]
10288 Unknown User/Usage [16I]
10320 Unknown User/Usage [16J]
10352 Unknown User/Usage [16K]
10384 Unknown User/Usage [16L]
10416 Unknown User/Usage [16M]
10448 Unknown User/Usage [16N]
10480 Unknown User/Usage [16O]
Group 16 Dynamic Regroup [16P]

UHF Conventional Frequencies
406.350 Command Post 1
406.950 Fire Ops Talk 1
407.150 Fire Ops Talk 2
407.425 89 Wing Ramp Control
408.025 Security Talk 1
408.200 Security Talk 2
408.425 89th Air Wing Commanders Net
408.750 Security Talk 3
408.950 Ground Control/Tower
409.350 Law Enforcement repeater input (output 413.375) PL 127.3-Hz
409.725 Law Enforcement/Security
413.000 Security Support Services PL 127.3-Hz
413.000 Ground Support Unit
413.025 Fire and Medics
413.200 Ready Line
413.275 Ground Control
413.300 Ground Control
413.350 Transit Ops
413.375 Law Enforcement repeater output (input 409.350)
415.150 Ramp Ops
415.825 Base Taxi 1 PL 156.7-Hz
415.950 Base Taxi 2 PL 156.7-Hz
416.250 Transportation Command Staff PL 156.7-Hz
416.350 Transportation Executive PL 156.7-Hz
417.150 Transportation Control PL 156.7-Hz

VHF/UHF Air Ops
113.100 ATIS
118.400 Tower
119.300 Ground Controlled Approach
121.800 Ground Control
122.850 Pilot to Dispatch
129.525 89th Air Wing SAM Air-to-Air
136.725 89th Air Wing SAM Air-to-Air
141.550 89th Air Wing Command Post and Wing Ops (AM) "SAM Control"
141.700 89AW/1HS Command Post/Squadron Ops (AM) "Muscle Control"
142.750 89th Air Wing Command Post/Ops (AM) "Venus Control"
163.5125 89AW/1HS Maintenance and Command Post
165.375 Secret Service Charlie/VIP Aircraft
225.600 89AW/1HS Tactical Discrete
251.050 ATIS
268.000 DoD Switchboard Secondary "Wheelhouse"
275.800 Ground Control
289.600 Tower
292.200 89th Air Wing/1st Helicopter Squadron Ops "Muscle Ops"
293.500 DoD Switchboard Primary "Wheelhouse"
297.500 89th Air Wing/1st Helicopter Squadron Air-to-Air
344.600 Metro (Base Weather)
372.200 Pilot to Dispatcher
378.100 89th Air Wing Command Post/Wing Ops

❖ Military District of Washington (MDW)

The Military District of Washington (MDW) command has four major installations: Fort Myer Military Community, which includes Fort Lesley J. McNair in Washington, D.C., and Fort Myer, VA; Fort Belvoir, VA with its sub-installation Fort A.P. Hill, VA; Fort Hamilton, NY; and Fort Meade, MD.

Major subordinate units and activities assigned to MDW include Arlington National Cemetery; the third U.S. Infantry (The Old Guard); the U.S. Army Band "Pershing's Own"; the 12th Aviation Battalion; the Joint Personal Property Shipping Office, Washington Area; the White House Transportation Agency and the Army Signal Activity-MDW (ASA-MDW).

The Army's MDW has overall responsibility for the coordination and operation of Defense Department participation in government ceremonies in the capital area. The routine frequencies used by the various installations are not usually used in support of special events, except for units with a specific executive support mission.

32.530 Service Center Motor Pool
32.870 Service Center Motor Pool
36.710 Escort Net (paired with 36.890)
36.890 Escort Net (paired with 36.890)
36.910 Transportation Dispatch
139.000 Contingency Net
139.050 Logistics Net
139.075 Transportation Net
139.100 Ceremonial Net and Special Events Net
139.175 Ops Net (paired with 142.275)
139.200 Miscellaneous Net
139.225 Ops Net (paired with 142.325)
139.275 Ops Net (paired with 142.475)
139.350 Public Affairs Net
139.425 Contingency Net (paired with 143.300)
141.075 Contingency Net
141.125 Contingency Net
141.175 Contingency Net
141.275 Law Enforcement Net
141.275 Contingency Net
141.375 Contingency Net
141.425 Contingency Net
141.475 Contingency Net
142.275 Ops Net (paired with 139.175)
142.325 Ops Net (paired with 139.225)
142.450 Ops Net
142.475 Ops Net (paired with 139.275)
142.950 Ops Net
143.000 3rd Infantry Support Net
143.175 3rd Infantry-Ceremonial and Special Events Net
143.300 Contingency Net (paired with 139.425)
148.825 Paging System
375.000 Helipad Communications
406.725 Defense Protection Service
408.175 Defense Protection Service

❖ Fort Belvoir, Virginia

Fort Belvoir is home to the Army's major command headquarters. Units and agencies of nine different Army major commands, 16 different agencies of the Department of the Army, eight elements of the U.S. Army Reserve and Army National Guard and nine Department of Defense agencies are located here.

The major comm system on the fort is a Motorola trunk system.

System: Motorola Type II SmartNet (System ID 2C36)
Base Frequency: 406.200 MHz, Offset: 25-kHz
Frequencies: 406.200 406.300 406.525 406.775 407.025 408.850 409.250 411.200

Trunker File:
v406.2000,17c,f9,d75
v406.3000,180,d0,da1
d 406.5250,189,ffff,C
v406.7750,193,110,cb2
v407.0250,19d,135,cad
v408.8500,1e6,11b,e6f
dv409.2500,1f6,128,e4
v411.2000,244,14f,d3c

❖ Washington Naval District, D.C.

Naval District Washington includes the District of Columbia, the Maryland counties of Calvert, Charles, Montgomery, Prince George's and St.Mary's and the Northern Virginia counties of Loudoun, Faquier, Fairfax, Prince William, Stafford, King George, Westmoreland and Arlington.

In total, the District comprises 126 commands and activities. Naval District Washington is also known as the Quarterdeck of the Navy.

Headquarters of the District is located at the Washington Navy Yard, and the Anacostia Annex is a personnel support base for the District.

The District's major communications system is an EDACS VHF trunk system profiled below.

Frequencies: 138.175 (LCN1) 140.125 (LCN2) 140.625 (LCN3) 138.650 (LCN4) 140.275 (LCN5) 140.225 (LCN6) 140.550 (LCN7) 139.525 (LCN8) 139.475 (LCN9) 140.300 (LCN10) 150.150 (LCN11)
System wide frequencies: 138.575 (Security talk around) 138.550 (Fire talk around) 143.550 (Non-public safety talk around)

Talkgroups:
02-000 Naval District Washington System Wide Net [256]
02-021 Commander, Naval District Washington Comm Net [273]
02-022 Commander, Naval District Wash. Chief of Staff [274]
02-041 Chief of Naval Ops Aide [289]
02-042 Ceremonial Guard [290]
02-043 Quartermaster [291]
02-061 Naval Public Works (building/grounds shops) [305]
02-062 Naval Public Works (plumbing/electric shops) [306]
02-063 Navy Exchange [307]
02-064 Anacostia Naval Station (Venus Control) [308]
02-065 Anacostia Naval Station (Delta Control) [309]
02-066 NSRDC Oerationps [310]
02-067 Naval Intelligence Center Opss [311]
02-070 Washington Naval Security Station Ops [312]
02-071 Washington Naval Air Facility Ops [313]
02-076 Navy Yard Work Control [318]
02-077 Navy Yard Harbor Master [319]
02-081 Medical Command (Dispatch) [321]
02-082 Medical Strike Force Team 1 [322]
02-083 Medical Strike Force Team 2 [323]
02-084 Medical Coordination Net [324]
02-101 Range Control Command [337]
02-102 Range Ops 1 [338]
02-103 Range Tac [339]
02-104 Range Tac [340]
02-121 Naval Public Affairs [353]
02-122 Naval Logistics and Supply Command [354]
02-123 Naval District Washington Motor Pool 1 [355]
02-124 Naval District Washington Motor Pool 2 [356]
02-125 Naval District Washington Transportation (buses) [357]
02-127 Naval District Washington Courier [359]
02-141 Naval District Washington Telecom [369]
02-142 Naval District Washington Engineering [370]
02-143 Naval Museum [371]
03-001 Naval Criminal Investigative Service (Dispatch 1) [385]
03-141 Naval Criminal Investigative Service (Ops 2) [497]
03-142 Naval Criminal Investigative Service (Ops 3) [498]
03-150 Naval Criminal Investigative Service (Training) [504]
04-021 Security Net (Centralized Dispatch) [529]
04-022 Navy Yard Security Tac [530]
04-023 Naval Research Laboratory Security Tac [531]
04-024 National Naval Medical Center Security Tac [532]
04-025 Naval Observatory Security Tac [533]
04-026 Naval Criminal Investigative Service [534]
04-027 NSRDC Security Net [535]
04-030 P-MARS [536]
04-031 REKCUS - Rapid Response Team [537]
06-021 National Naval Medical Center Ops 1 [785]
06-022 National Naval Medical Center Ops 2 [786]
06-041 National Naval Medical Center MedComm Control [801]
06-042 National Naval Medical Center Disaster Net [802]
06-043 National Naval Medical Center Spare [803]
06-044 National Naval Medical Center Spare [804]
06-045 National Naval Medical Center Spare [805]
06-046 National Naval Medical Center Blue Control [806]
06-121 Fire Department Central Net Dispatch [865]
06-122 Fire Department Tac 1 [866]
06-123 Fire Department Tac 2 [867]
06-124 Fire Department Wardens [868]
06-125 Fire Department Crash/Rescue/Command Post [869]
06-126 EMS Control [870]
06-127 Hazardous Incident Response Team (HIRT) [871]
06-130 Fire Mutual Aid 2 [872]
06-131 Fire Mutual Aid 1 [873]
15-155 Non-Public Safety Patch [2045]
15-156 Fire Patch [2046]
15-157 Security Patch [2047]

USMC HMX-1 Executive Flight Squadron (Nighthawk/Marine 1 and 2)
30.150 Squadron Comman (Nationwide)
46.750 Squadron Support (Anacostia)
142.750 Squadron Support (Anacostia)
265.800 Squadron Common (Quantica)
273.950 Squadron Common (Nationwide)
276.400 Squadron Support (Anacostia)
320.400 Squadron Maintenance (Quantica)

Thanks to the many listeners who have helped us put this month's column together. If you have an update please send it to the email address in the masthead. Until next month, 73 and good hunting.

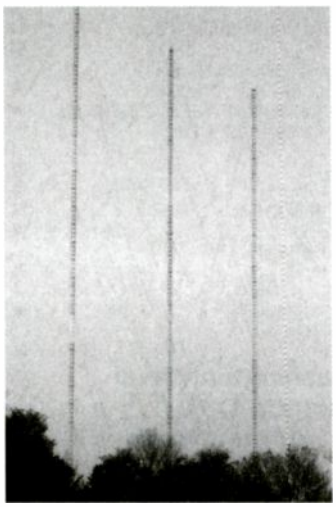
Doug Smith, W9WI
w9wi@bellsouth.net

Good Books

Internet resources are certainly convenient and inexpensive, but every once in awhile, it's easier to deal with old fashioned paper. Just in time for the peak of the DX season, the National Radio Club has updated two of its most popular publications for the AM Dxer.

The *AM Radio Log* is in its venerable 21st Edition, but new DXers may not realize how indispensable it can be! The *World Radio-TV Handbook* is an excellent reference for shortwave DXing, but for the mediumwave broadcast band you need something specialized, and this is it. If you're on the Web, see **http://www.nrcdxas.org/catalog/amlog/** for more information including sample pages. This book is $22.95 in the U.S. and Canada.

Also in a new edition is the NRC's *AM Station Map Book*. This book maps the locations of each U.S. and Canadian station on a given frequency. If you hear mention of "Wyoming weather" on 950 kHz, you can tell instantly what stations on that frequency have coverage in Wyoming; chances are, you just logged KMER in Kemmerer. The *Map Book* also provides geographic coordinates of transmitter locations. Several pages at the front explain in great detail how to calculate the distance and direction to a station, and how to calculate the sunrise and sunset times at that station's location. This publication is $17.95.



These three towers, located across the Cumberland River from downtown Clarksville, Tennessee, are used by WCTZ-1550.

Both NRC publications can be ordered from the NRC Publications Center, Box 164, Dept. W, Mannsville NY 13661-0164. While you're at it, you should consider joining the club. Annual dues are $26 in the USA; write Box 118, Poquonock CT 06064-0118.

If your tastes in DX extend to FM, note that the 1999 18th Edition of the *FM Atlas* is still available. It's like a combination of the *AM Log* and the *AM Map Book* in a single publication. (Of course, it covers FM stations instead of AM.) This book can be ordered from Grove Enterprises; it's $19.99. Information is on **http://members.aol.com/fmatlas**.

◆ Expanded-band news

There has been a flurry of activity on the expanded band this winter. In California, **KAZT-1670** in Redding has appeared. This station simulcasts KNRO-600 with an all-sports format.

In Augusta, Georgia, **WAWX-1630** is on the air. This station airs a talk/sports format in parallel to WRDW-1480, one of Georgia's oldest stations. Many Eastern DXers are reporting this station now interfering with KCJJ-1630, which had been nearly a clear-channel operation. At my location in Middle Tennessee, KCJJ is still very dominant with WAWX only weakly audible underneath.

The third new station is **KQJD-1660** West Fargo, North Dakota. The format is talk and nostalgic music. North Dakota is a tough state to log, and unfortunately 1660 is probably the most crowded frequency in the expanded band, so KQJD may not help much. Try for KFNW-1200 at sunrise or sunset; this station has made it over the noise from time to time.

Wyoming is another state that's hard to log in the East. **KKWY** has been operating there on 1630 for over a year, but a makeshift antenna and a rather "wimpy" signal have kept many (including myself) from hearing it. Some have reported trouble receiving KKWY while driving in Cheyenne, within a few miles of the tower! Reports are now suggesting that this station may have installed a proper antenna; signal strengths are way up in the West. Unfortunately, KCJJ on the same frequency is still making reception difficult in the East, and the new Georgia station won't help matters any.

Rumors are circulating on the Internet that long-silent **KRCK**-1500 Burbank, California, may soon return to the air – on 1690 kHz. It's hard for me to rationalize how this could happen, as the only assignment on that frequency in California is in Roseville, approximately 300 miles away. But stranger things have happened on the AM dial. (I was stunned by the number of applications for new AM stations as reported last month!)

A number of DXers, some as far west as Arizona, have reported logging Radio Marti on 1710 kHz. This is the U.S. government station broadcasting to Cuba from the Florida Keys, but its only MW frequency is 1180 kHz. Few radios in Cuba are capable of tuning the expanded band, so operation on 1710 kHz wouldn't make a whole lot of sense. There is a good chance this reception is actually a spurious response of people's receivers, generated by a very strong signal on Radio Marti's shortwave frequency of 6030 kHz.

◆ Bits & Pieces

- Argentine DXer Luis Bronzini LU3FS wrote last year asking about good portable radios for DXing. He ended up purchasing a Sony ICF-F10S. This receiver tunes 526.5-1606.5 kHz, (unfortunately not covering the expanded band, which is used in Argentina) as well as 5-18 MHz shortwave. It's 8.1" x 5.15" x 2.6" in size, and runs from two D cells. The cost was US$26 in Argentina. Luis finds the AM sensitivity good and the intermodulation (spurious response) characteristics acceptable.
- Barney Fontenot wrote looking for a list of Texas TV stations. At **http://personal.bellsouth.net/~w9wi** I have a database of North American stations, sorted either by state or by channel. A printed guide based on the same information is available from the Worldwide TV-FM DX Association for $19.95. Write Box 501, Somersville CT 06072. Another good Internet resource for broadcasting information (AM, FM, and TV) is Chip Kelley's site **http://www.100000watts.com** . And for Mexican information, take a look at **http://mexicoradiotv.com** . Finally, one should never overlook the FCC's website on **http://www.fcc.gov** .
- Let us know what you're hearing at your cozy monitoring post now that winter has returned. Write: *w9wi@bellsouth.net* or Box 98, Brasstown NC 28902-0098. Good DX!

OUTER LIMITS

THE CLANDESTINE, THE UNUSUAL, THE UNLICENSED

George Zeller
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Holidays Boost Pirate Radio Broadcasting

All shortwave pirate stations maintain erratic and random broadcasting schedules, an obvious strategy designed to avoid busts by the government. But, despite this obvious point, pirate activity always increases substantially around major holidays. The Christmas and New Year season is traditionally the biggest example of this ancient rule. So, after you unwrap the new receiver that you found under the tree, the pirate band around 6955 kHz should be one of your first targets.

A minor seasonal decline in summer shortwave pirate activity, fed by vacations and high static levels, led some shortwave publications to wonder if pirate radio was a dying phenomenon. This slump was never as severe as advertised in some quarters, and it certainly disappeared entirely during the latter part of 2000.

As we move into 2001, it will pay to remember the holiday rule. Many pirates have a liberal definition of holidays, so don't overlook Groundhog Day, Valentines Day, April Fool's Day, Halloween, and otherwise "minor" festivals.

What We Are Hearing

Once again this month, *MT* readers heard nearly two dozen North American shortwave pirate stations, all on 6950 or 6955 kHz. This variety shows us that pirate radio remains very much alive.

Blind Faith Radio- Still maintaining a steady classic rock format, Dr. Napalm remains a major force in current pirate radio. (Merlin)
Eat it Radio- The Captain hosts rap music on this new one, while urging other pirates to broadcast. Given the genre, the ID is tamer than the music lyrics. (Uses eatitradio@juno.com e-mail)
Fight for Free Radio- This new one uses a longtime pirate radio slogan. But, its program content mainly tries to start fights *within* free radio. (Send logs to Free Radio Network web site at **www.frn.net**)
Ground Zero Radio- After long waits, QSLs have arrived from this one. Hard rock music is their normal fare. (Blue Ridge Summit)
Jean Chretien Station- Given the Canadian election, some pirates began to feature Canadian political content. This one features Jean saying, "We will not let them tear them down." (None)
KBFA- The call letters stand for a slogan, "Broadcasters of Free America." Most of their programming is rock, sometimes relays of licensed stations. (None)
KIPM- We had logs for Alan Maxwell's complex drama station from all over North America. Obviously his signal gets out. He uses TV audio from the "Outer Limits" show. (Elkhorn)
K-Mart Radio- This one claims an affiliation with Blind Faith Radio. Its rock oldies fit the genre. (Merlin)
Radio Free Euphoria- Captain Ganja, who has been active lately, announces that he now accepts both mailed reception reports and ones via e-mail. (Belfast; also uses theganjaman@budsmoker.com e-mail)
Radio Exotica 2000- This new one features some of the most unusual programming of the year, including rooster crows, dog barks, and a discussion of "crow calling." Look for their "gong" interval signal. (None)
Radio Neptune- The name is planetary on this new station, but their music is rock. (Blue Ridge Summit)
Radio Nonsense- Somebody has been relaying old programs from Joe Mama. Despite his death in a car accident a few years ago, his shows live on via pirate radio. (Belfast)
Radio Three- Sal Amoniac is the announcer here for moldy pop music. The station also has a parody version that alters most identifications. (Logs solicited to *The ACE*, both on the real station and the parody)
Radio USA- Mr. Blue Sky, definitely the oldest veteran North American pirate broadcaster, still holds forth with punk rock and pirate advocacy. (Belfast)
Sycko Radio- This rocker now announces a parallel FM frequency at 88.3 MHz on the "dead end of the dial." Despite the spelling, the name is pronounced "Psycho." (Still none)
Voice of Captain Ron Shortwave- Captain Ron often materializes around holiday periods with a mix of rock and sketches. (Uses captainronswr@yahoo.com e-mail)
Voice of Oz- This old timer has resurfaced, but it's not clear if their shows are classic tapes or new programming. (Belfast)
WHYP- James Brownyard continues to be the most active North American pirate, featuring rock music and antique Lake Erie regional weather forecasts. He's experimented with AM mode transmissions lately. (Uses whyp1530@yahoo.com e-mail)
WLOW- Their announced "last broadcast," said to be live from New York City, was heard several times. It included sketches such as the station's interview with FCC chairman William Kennard. (Uses Free Radio Network web site at **www.frn.net**)
WMFQ- If you're trying to get a pirate QSL, this one is an excellent target. Their rock music is aired mainly to promote QSLing. (Providence) (Uses Free Radio Network web site at **www.frn.net**)

Reports and QSLs

Reception reports to pirate stations require three first class stamps for USA maildrops or $2 US to foreign locations. This finances postage for a souvenir QSL to your mailbox. Your letters go to these addresses: PO Box 1, Belfast, NY 14711; PO Box 28413, Providence, RI 02908; PO Box 109, Blue Ridge Summit, PA 17214; P. O. Box 69, Elkhorn, NE; 68022; and PO Box 293, Merlin, Ontario N0P 1W0. A few pirates, as listed, prefer e-mail or internet web site reports instead.

Thanks

Your input is always welcome via PO Box 98, Brasstown, NC 28902, or via my e-mail address atop the column. We all thank this month's contributors: John T. Arthur, Belfast, NY; Ranier Brandt, Hoefer, Germany; Ross Comeau, Andover, MA; Joe Filipkowski, Providence, RI; Bill Finn, Philadelphia, PA; Harold Frodge, Midland, MI; Captain Ganja, Belfast, NY; Nick Grace, Washington, DC; Raul Gonzalez, Santiago, Chile; Paul Griffin, San Francisco, CA; Sheldon Harvey, Montreal, Quebec; William T. Hassig, Mt. Prospect, IL; Vince Havrilko, Beale AFB, CA; Hans Johnson, AZ; Jim Keeling, St. Charles, MO; Ed Kusalik, Coaldale, Alberta; Chris Lobdell, Stoneham, MA; Greg Majewski, Oakdale, CT; Bill McClintock, Minneapolis, MN; Cachito Marnani, Santiago, Chile; Frederick Moe, Warner NH; Adrian Peterson, Indianapolis, IN; Mike Prindle, New Suffolk, NY; Martin Schoech, Merseburg, Germany; Lee Silvi, Mentor, OH; Adam C. Smith, Federal Way, WA; Bud Stacey, Setsuma, AL; Niel Wolfish, Toronto, Ontario, Mike Wolfson, Ashland, OH; and Dave Zantow, Janesville, WI.

BELOW 500 kHz

DXING THE BASEMENT BAND

Kevin Carey, WB2QMY
lowband@gateway.net

DX Camp Results, WWVB Software

As I write this month's column, I've just returned from another DX Camp with members of the Mohawk Valley Shortwave Listeners' Club (**http://www.angelfire.com/mo/mvswlc/**). As in past years, the 2000 camp was held at Brantingham Lake in the Adirondack Mountains of upstate New York. The site offers a rare opportunity to DX the entire radio spectrum with virtually no man-made static (QRM), and with any antenna you choose to put up.

I combined my receiving efforts with Jacques d'Avignon by connecting to his Wellbrook Large Aperture Loop via a multi-coupler unit. The loop gave very impressive performance throughout the spectrum and was comparable to the 2000 foot Beverage antenna I used at the camp a few years earlier. This year, I strayed briefly from longwave fare to hear several interesting utilities, medium wave stations and even a pirate. However, the topic of this column is longwave, so we'll stick to that for now.

When we compared this year's logs to those from a few years ago, some interesting changes were noted. In the past, high power Canadian beacons dominated the band, with only a few U.S. stations being heard to the east or west of us. This year, however, many U.S. beacons were heard. Stations as far south as Florida, and several states to the east and west of us were heard quite clearly. In fact, we seemed to have a "pipeline" into New England. (Jacques later commented that he logged just about every beacon in Vermont!) Table 1 shows some notable selections from Jacques' LF log.

DX Camp Loggings from Northern NY

FREQ.	ID	LOCATION
224	VWD	West Dover, VT
266	BR	Atlanta, GA
272	PFN	Hudson, NY
307	LUX	Laurens, SC
323	VWP	Argentia, NF
326	BHF	Freeport, Bahamas
338	DRY	Manchester, NH
356	PB	West Palm Beach, FL
356	AY	St. Anthony, NF
362	OX	Oxford, CT
371	GW	Kuujjuarapik, QC
385	NA	Natashquan, QC
391	DDP	San Juan, PR
404	IUB	Baltimore, MD
407	AQ	Appleton, WI
414	OGY	New York, NY
417	EK	Worcester, MA
419	RYS	Detroit, MI
450	PPA	Puerto Plata, Dom. Rep.
526	ZLS	Stella Maris, Bahamas

The DX Camp was a rewarding experience for everyone. For me, just getting away from e-mail, telephones, and TV has become almost as important as DXing itself. Moreover, in a camp setting, you get the camaraderie of fellow listeners. Although this year's event was a bit smaller than previous camps (7 attendees) there was a good exchange of information among participants and lively discussion about the SWL hobby. I left with renewed interest and optimism for what we do.

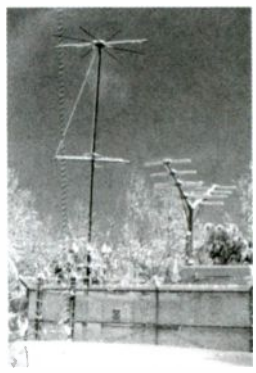
◆ *Radio Clock* Software

Most longwave listeners have heard the pulsating carrier of WWVB (60 kHz) at one time or another. Unlike its HF counterpart, however (WWV), this station gives no voice announcements. Its time signals are sent in a binary coded fashion that must be decoded by specialized, often expensive equipment. *Radio Clock* software promises to change all of that.

Using your LF receiver and free, downloadable software from the *Radio Clock* web site (**http://sapp.telepac.pt/coaa/radioclock.htm**), you can turn your PC into an super-accurate clock, according to Bev Ewen-Smith, developer of the program. In addition to WWVB, European readers can use the software to decode the following time signals: MSF/60 kHz (Rugby, England), HBG/75 kHz (Prangins, Switzerland) and DCF77/77.5 kHz (Mainflingen, Germany). It will also work with some HF time stations located outside the U.S. Full details are given on the company's web site.

For a nominal registration fee, *Radio Clock* can be upgraded to automatically reset your computer's clock, ensuring that it always displays the correct time. *Radio Clock* requires a PC with Windows 95/98, a 16-bit Sound card that supports 8k samples, and a frequency-stable receiver with USB/LSB or CW operation.

Comments from *MT* readers regarding this software are most welcome. I am primarily a Macintosh user, so I have not had a chance to evaluate its performance at my station.



"Snowy Beacon" *AS (359 kHz), Near Amherst, NH (Photo by Sherman Wolf)*

◆ Web Updates

Les Rayburn, N1LF (Alabama), has a very interesting Lowfer section on his web site at **http://www.highnoonfilm.com/xmgr.** If you've ever been curious about what a Lowfer installation looks like, I highly recommend a visit to the site. It covers the details of both of Les' beacons – XMGR (189.500 kHz), and 1LF (187.300 kHz).

The latter is a temporary station being used to assist the Shelby County Airport Authority in evaluating the coverage of a recently decommissioned NDB. Depending on the results of the tests, the former beacon may be returned to the air. Another nice feature of the website is a complete list of active lowfer stations in North America.

Ready for a history lesson? Kriss Larson's write-up on the history of the U.S. Aerobeacon System is a most fascinating read. It chronicles the nearly 70 year history of beacons as navigational aids. It explains the almost forgotten "A/N" system of navigation, discusses "TWEB" weather stations and shows maps of beacon density over the years. You'll find the complete story online at **http://members.aol.com/trekkspill/aerobcn.html**.

Finally, via the Internet, comes word of an "pseudo-Lowfer" station you may want to try for – RW on 480 kHz located in Colorado Springs, CO. I say "pseudo" because this station is not operating within the standard lowfer band of 160-190 kHz.

To be honest, I can't explain how this out-of-band operation is permitted under the FCC rules. Nevertheless, the operator claims the frequency is no longer used by other services and he feels he is on safe ground. Should you hear RW's signal, reception reports may be sent to Paul Signorelli (W0RW), P.O. Box 6069, Colorado Springs, CO 80934.

That does it for another issue. As we begin a new year, why not drop me a line to tell what *you* are doing on longwave. Loggings, questions and column ideas are always welcome at *Below 500 kHz*, c/o Monitoring Times, P.O. Box 98, Brasstown, NC 28902. E-mail at *lowband@gateway.net* is also welcome.

Peace, and good DX in 2001.

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Bearcat 780XLT 500 ch. Trunktracker III base/mobile	$379.95
Bearcat 278CLT 100 ch. AM/FM/SAME WX alert scanner	$159.95
Bearcat 245XLT 300 ch. Trunktracker II handheld scanner	$194.95
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Bearcat Sportcat 200 alpha handheld sports scanner	$169.95
Bearcat Sportcat 180B handheld sports scanner	$149.95
Bearcat 80XLT 50 channel handheld scanner	$99.95
Bearcat 60XLT 30 channel handheld scanner	$74.95
Bearcat BCT7 information mobile scanner	$139.95
AOR AR8200 Mark II Wide Band handheld scanner	$539.95
AOR AR16BO Wide Band scanner with quick charger	$209.95
ICOM ICR8500 wideband communications receiver	$1,469.95
ICOM PCR1000 computer communicatlons receiver	$379.95
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ON THE HAM BANDS

THE FUNDAMENTALS OF AMATEUR RADIO

T.J. "Skip" Arey, N2EI
tjarey@home.com

Be it resolved ...

Well, we all made it through to the REAL two thousandth year. This twenty-first century should show many advancements in amateur radio technology. There is a lot to be excited about. But, let's start the year off right. I would like to propose a number of "resolutions" related specifically to ham radio. What's especially nice about these resolutions is that, by and large, they will be a lot of fun to keep. So forget about those diets and the cessation of various and sundry vices. Let's make a few promises to have some fun.

◆ Resolution 1: Get Licensed

Let's get the big one out of the way first. Okay, I have been cajoling you to get your ham ticket through the pages of *MT* for over a decade. I'd really really, really like to stop bugging you about it. So why not make this the year to join in all the fun that amateur radio has to offer?

As you know from my recent columns, the new "three tier" licensing structure's Technician Class license should be well within the skill level of anyone reading this magazine. Study materials are readily available from various sources such as the American Radio Relay League **http://www.arrl.org** and practice tests can also be found on the Internet at many sources such as **http://www.ac6v.com** or **http://www.qrz.com** . You can also use these sources to track down your local ham clubs and the nearest volunteer examiner testing site.

Once you have that first license you will be able to take full advantage of all the other resolutions we will be talking about in the rest of this article. Conventional wisdom says it takes an hour or so set aside each day to learn what is needed to pass the test. Truth be told, I've seen more than a few folks pass by putting in as little as a half hour a day during their lunch break. Study for your ham ticket is much more productive than indulging in office gossip.

◆ Resolution 2: Upgrade Now

So the rest of you thought you were off the hook, huh? This last year took us from five theory exams and three code tests down to three theory tests and one code test. As someone who got his Extra the old fashioned way, I do not begrudge anybody going through the new license system. However, I think that not taking full advantage of the new system is the biggest waste of opportunity I can imagine.

I recently had a chance to examine the new ARRL Extra Class License Manual (7th edition) and I am impressed with the new training materials. I wish such books were around when I went through the system. Back when I was first licensed I upgraded through the system at a rate of one license per year from Novice through Advanced. (Getting married and raising a family forced me to postpone the Extra for a bit, but I got there eventually).

So now that there are only three steps, why not set a goal to upgrade every year? If you are not currently licensed (see Resolution 1) you'll be an Extra in three years. Everyone else, plan to study for the next test until you can have a sked with Old Uncle Skip 7015 kHz. I'll keep an ear out for you.

◆ Resolution 3: Try a New Mode

Even in the wonderful world of Amateur Radio, it's possible to get stuck in a rut. I've run across more than a few folks whose rigs seem stuck on one band, in one mode, maybe even stuck on one frequency. Amateur radio offers literally dozens of different ways to put out a signal. Of course we all have our favorites. For example, I lean toward low power (QRP) and CW operation. But I do, in fact, own a number of higher power transceivers and I even have a microphone or two in the shack as well.

So, right off the bat, if you are a code aficionado, try plugging in a mike and having a ragchew on 40 meters. If you lean toward voice modes, dust off your key and drop in on the slow speed nets and get your fist back in shape. But even beyond these few simple shifts of a few switches on your existing transmitter, I'd like to challenge you to try something really new this year. For example, the various "digital" modes are becoming all the rage. Modern home computers can substitute for what once took a room full of specialized equipment. RTTY, packet, PSK31 and Ultra High Speed CW are all just a shareware program or two away.

◆ Resolution 4: Get an Award

Did I ever tell you how it took me fifteen years to get DXCC? My problem was that I was having so much fun doing various other things on the ham bands that I never really put my mind to serious DXing. Oh I'm sure I had well over a hundred countries in the logs and maybe even had the cards floating around. I just never got around to filling out the paperwork.

Don't let his happen to you! Start by going through your logs and QSL card collection. What do you have and what do you still need to complete Worked All States (WAS), Worked All Continents (WAC) or the DX Century Club (DXCC) basic award? If you all ready have the basic awards, what would you need to complete each award on each of the 5 possible bands? Five Band Worked All States is as easy as figuring out what's missing from your log and going after it in the various state QSO parties and the domestic

contests. Or maybe you will want to complete each award in a particular mode.

My goals for this year are to get at least 50 new countries toward a QRP endorsement for DXCC. Getting any new award is just a matter of setting goals and going after them.

◆ Resolution 5: Enter a Contest

Jumping into the contest game is a great way to accomplish many of the goals you may set in Resolution 4. It's also a great way to have at it with Resolution 3. When you get rolling in a contest and start to achieve a rhythm, your operating skills become razor sharp. If your code is a bit rusty you can jump 5 words per minute just through the adrenaline rush of trying to fall in with all those high speed contest Ops. Pick a contest that appeals to you and set aside the time to give it a good shot. Make a point of submitting your logs to the contest authority. You may not find you name listed at the top of the list but even the Big Guns will know you showed up for the party.

◆ Resolution 6: Build Something

Home brewing and kit building have come back into fashion in ham radio. For some of us it never went away. But now, thanks to a number of small companies and clubs dedicated to the hobby, everything from simple one and two transistor designs up to full blown competition grade transceivers can be built by the average hobbyist. There is also nothing wrong with finding a nice schematic in a manual or text book and building it up on a piece of perf-board.

If you have never built anything before, a good place to start is with a basic keyer kit such as one of the Embedded Research "Tick" series of keyers: **http://www.frontiernet.net/~embres/** If you are a bit more adventurous, the NorCal QRP Club **http://www.fix.net/~jparker/norcal.html** and the New Jersey QRP Club **http://www.njqrp.org/** always have a kit or two available at very reasonable prices.

◆ Resolution 7: Try a New Antenna

Never forget Old Uncle Skip's 73rd law. WIRE IS CHEAP! Far too many hams go through life pumping electrons into a simple dipole or modest beam. Good antennas, to be sure, but there is a lot more fun to be had by experimenting with loops, curtains, zepps and a dozen other antennas that can be put up for very little money while improving overall station performance.

There are many excellent books dedicated to antenna experiments. The *ARRL Antenna Book* is a good place to start. Also, you may want to visit W4RNL L.B. Chebik's website at **http://www.cebik.com/radio.html** and start to give some thought to broadening your antenna horizons.

If you don't have the real estate to set up your next super-duper antenna, why not take your show on the road? Find a nice big field surrounded by a few well places trees and then (with permission of course) set up a field operation for an afternoon. I keep 20, 40 and 80 meter loops packed in large coffee cans in my trunk so I can take full advantage of what nature has to offer when I am traveling. This year I want to try to put up a 20 meter curtain antenna for Field Day. It will be a biggun' but I have till June to figure out the logistics.

◆ Resolution 8: Participate in a Public Service event

It doesn't matter if it's manning a check point at a walk-a-thon or running a Sky-Warn net. Find your local amateur radio emergency services group and offer to help out. Every county or region of the country has Amateur Radio Emergency Services (ARES) and Radio Amateur Civil Emergency Service (RACES) coordinators. Check the ARRL website **http://www.arrl.org** for operations in your area. I have always maintained that public service is the "rent" we pay for all these neat frequencies we get to play with. Do your part. You'll be surprised how much fun it can be.

◆ Resolution 9: Write your Representatives

Government officials often praise the amateur radio service. But most politicians have short memories and also tend to listen to whoever they are hearing from at the moment. Take a few moments as often as possible to remind your State and Federal officials of all the good that amateurs do for the community. Solicit their support on issues such as protection of the amateur frequency spectrum and antenna variances.

◆ Resolution 10: Bring Someone New Into the Ham Radio Hobby

With this resolution we've come full circle. Now we're back at the top of the article, but now you're showing this page to someone else. Potential hams are everywhere: at work, at school, at social gatherings. I've got more than one person on track for their license when they first commented on the "large cell phone" (actually my Yaesu FT-50 dual bander) I had on my belt.

If you are a member of a local club why not get the group to offer a license class? The new licensing structure represents a great opportunity to get folks involved in the amateur radio hobby. One of the most gratifying things that ever happened to me as a ham was overhearing two hams talking on the local repeater. One said "My 'Elmer' was Skip N2EI." The other said "Mine too."

If you pick just one or two of these resolutions and give them a fair effort, I can assure you that your Amateur Radio experience will be better than ever before in the year 2001. Have fun. I'll be listening for you on the low bands.

NOTICE: It is unlawful to buy cellular-capable scanners in the United States made after 1993, or modified for cellular coverage, unless you are an authorized government agency, cellular service provider, or engineering/service company engaged in cellular technology.

Marc Ellis
mfellis@enteract.com

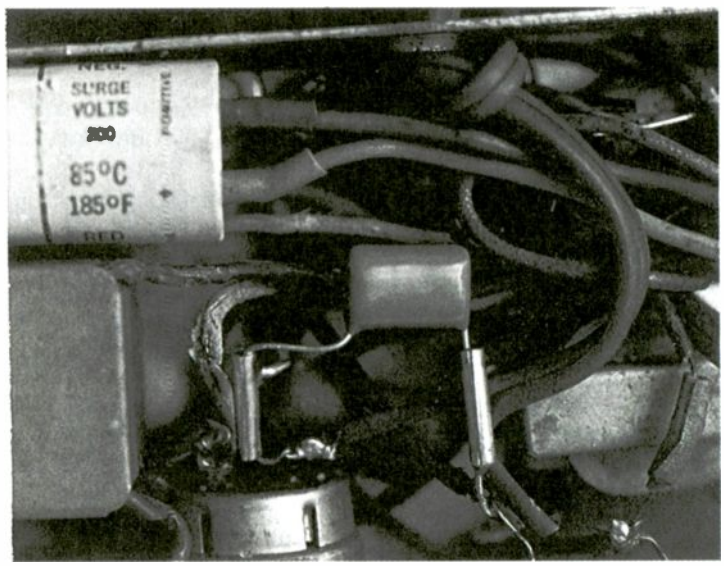
Firing up the Transitone

In last month's column, we dug into the circuitry of the little Philco Transitone that I had selected as our first restoration project. The bad news was that most of the set's problems had been solved by the very competent repair person who preceded me. All but one of the original wax-covered paper caps had been replaced, as had the electrolytic capacitor in the power supply. The original dynamic speaker, which probably had a burned-out field coil, had also been replaced (with a more modern permanent magnet type). A power resistor had been wired in to serve in the power supply filter circuit in place of the missing field coil. The good news was that we were able to learn as much from these very sound repairs as if I had done them myself.

Now there was little left for me to do except to replace the one wax cap and some deteriorating hookup wire, then plug in a proper 35A5 tube in place of the 50A5 our previous repair person had pressed into service from his junk box. (I have to apologize for a slip of the "pen" last month, when I mistakenly identified the 50A5 as a 70A5.). Having done these things and squirted some contact cleaner inside the housing of the volume control, I plugged in the set and turned it on. It worked fine, and I would have been a little surprised if it hadn't!

◆ Cap Replacement Strategy

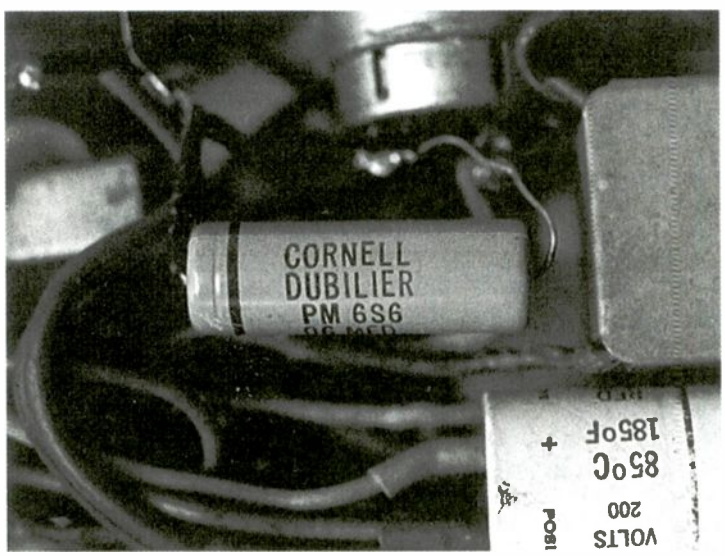
However, I did decide to take on one extra job for purposes of illustration. Choosing the most visible paper capacitor (or perhaps this one was new enough to have Mylar insulation) to make photography easier, I replaced it (unnecessarily). The reason: to illustrate for you my system for replacing capacitors, resistors, and other small components.



Here the originally-installed Cornell Dubilier capacitor has been replaced by a modern unit installed with Radio Shack "butt connector" sleeves. Joints could be covered with shrink tubing for improved cosmetics.

I learned long ago that it is a mistake to try to unsolder the leads of a defective component in order to wire in the new one. Even if desoldering braid is used, I've found that (at the very least) this spoils the original appearance of the wiring in the radio. It can also quite easily cause heat damage to other components wired to the same terminals, not to mention accidentally burned insulation on adjacent wires.

I recommend snipping out the component, leaving its leads as wired. Then I use the little metal splicing sleeves sold by Radio Shack to connect the new component to the old leads. The devices are called "butt connectors" (Cat. No. 64-3036A). I paid $1.49 for a package of 20 (10 each to accept 22-18 gauge wire; 10 each to accept 14-16 gauge).



The Cornell Dubilier capacitor in the center of the picture is the one I chose for my cap replacement demonstration.

They are really designed for solderless application with a crimping tool, but of course they take solder perfectly well. The smaller diameter is most useful in radio work and is trimmer looking. However, the larger size is perfectly usable also. Maybe some reader will discover a bulk source of the smaller size.

◆ New Lindsay Books

In the past few months, **Lindsay Publications** has come up with several additions to the library of "Oldies But Goodies" it has reprinted and made available to us antique radio freaks. Here are the first two to reach my desk. Order either of them directly from Lindsay Publications, PO Box 538, Bradley, IL 60915. Send a check or MO for your total order (plus 6 1/4% sales tax for Illinois residents and $1.25 shipping for one book or $1.95 for both). You may also order on line at **http://www.lindsaybks.com**.

Crystal Receiving Sets and How to Make Them by Bernard E. Jones. Originally published (exact date unknown – early 1920s era) by Cassell & Co., Ltd. 124 pages, 5-1/2" x 8-1/2", soft cover. Price $10.95.

Most of us have seen dozens of schematics and other illustrations for home-built crys-

tal sets – many of them distinguished only by their similarity. But the special British construction twists illustrated in this volume provide fascinating new insights into crystal set construction. The profusely illustrated book contains 114 figures. Among the 15 chapter titles in the Table of Contents, my eye was especially drawn to: "Set with Plug-In Basket Coils," "Combined Crystal and Valve Receiver," "Some Miniature Receiving Sets," "Receiving CW Signals on a Crystal Set," and "Converting Low-Resistance Phones."

The Impoverished Radio Experimenter–Volume 1 Published 2000 by Lindsay Publications, Inc. 48 pages, 5-1/2" x 8-1/2", soft cover. Price $5.95.

One of the relatively few original (as opposed to reprinted) Lindsay books, this one I believe was written by Lindsay himself – though there is no author credit. The book is definitely for you if you are interested in experimenting with classic radio circuits, but don't particularly care to go to the trouble and expense of obtaining vintage tubes and other components.

The book begins with a brief review of vacuum tube evolution, beginning with the classic types of the 1920s and ending with the miniature tubes of the 1940s. Next follow details on building a crystal set, fabricating tube test beds using the author's modern adaptation of breadboard construction, comparison-testing a grid-leak detector circuit using tube types from all eras, adjusting grid bias on audio amplifiers.

The text proper ends with a discussion of tetrode and pentode tubes, but a useful appendix lists reference books, discusses the tube numbering system, lists characteristics of classic tubes, and presents two simple power supplies for energizing battery receivers. The little volume concludes with a simple regenerative receiver project using the construction techniques explained earlier.

◆ Addition to Radiomania Series

Last April, we reviewed Volume III in **Radiomania Books'** very useful *Guide to Tabletop Radios* series. Now publisher Mark Stein has extended his field to console radios:

The Complete Guide to Antique Radios: Pre-War Consoles by Mark V. Stein. Published 2000 By Radiomania Books, 2109 Carterdale Rd., Baltimore, MD 21209. 240 pages, 8-1/2" x 11", soft cover. Price $29.95 postpaid and autographed by author. Or order at a discount from the publisher's website at **http://www.radiomania.com**.

This contribution to the collector's library employs the same formula used with the earlier *Tabletop Radios* series: a clear thumbnail picture of each radio is captioned with model number and year, tube count, number of bands, and an estimate of collector value. The sets are grouped alphabetically by manufacturer and numerically by model number.

The first comprehensive reference on console radios I have ever seen, this volume contains pictures and data on over 3,000 models beginning with the 1929-1930 production year and ending with the cessation of civilian radio production in 1942. A helpful resource section at the front of the book provides guidelines in determining the value of a radio and leads the reader through an evaluation procedure including cabinet and chassis and trim considerations. Concluding the section is a listing of resources such as dealers, restoration services, collectors and clubs.

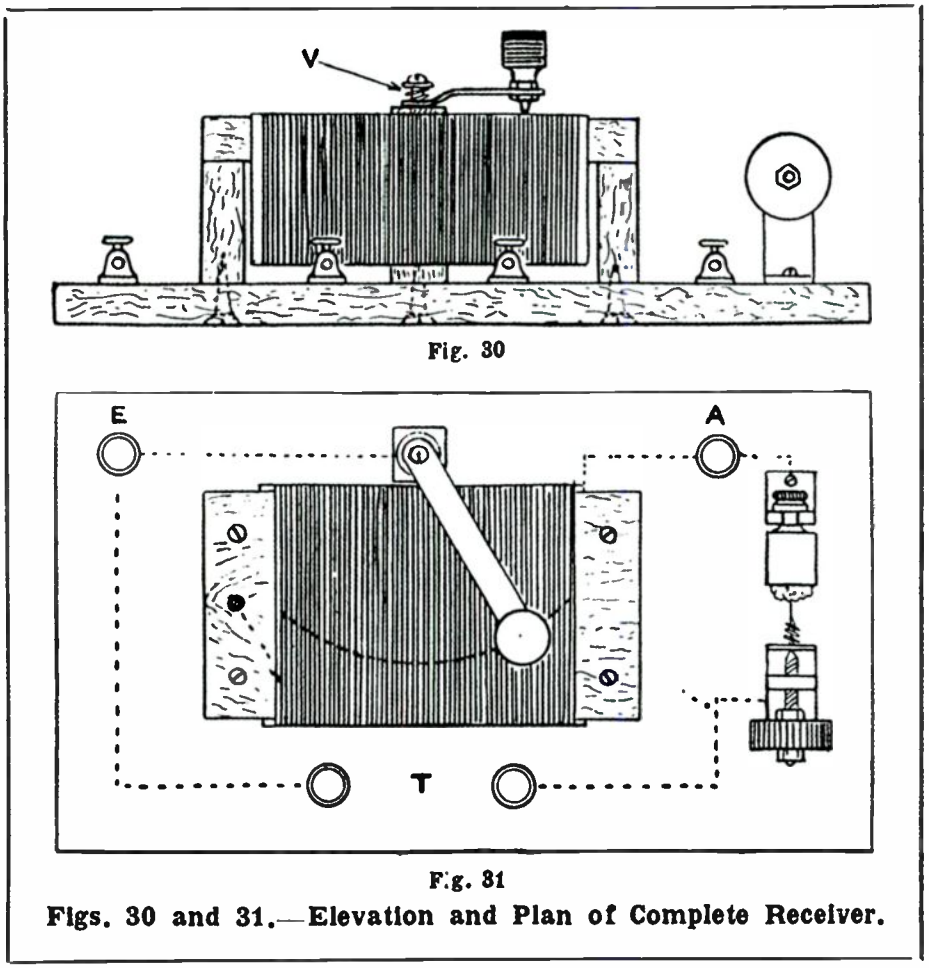


Fig. 30

Fig. 31

Figs. 30 and 31.—Elevation and Plan of Complete Receiver.

Illustration of "Set With Semicircular Tuner" from Lindsay Publications reprint *Crystal Receiving Sets and How to Make Them* (see text).

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Don't Try Drinking This Beverage!

This month let's take a look at a highly directive antenna famous for its ability to reject noise and interference. Although it is not a high-gain antenna, it can often bring in a station clearly when that station, if received on a less-directional antenna, is buried by noise and/or interference. For these reasons this antenna is respected by AM broadcast band DXers, 160 meter ham radio operators, and others who need a directive antenna on the medium-frequency or lower bands. In days now gone by the Beverage provided major support for trans-oceanic radio communications at frequencies as low as 50 kHz!

Some Background

The Beverage antenna (fig. 1A) was invented by Harold Beverage in 1920 when long waves were utilized much more frequently for radio communication than is now the case. This antenna is typically one to 10 wavelengths long, and, as the wavelengths first used with this antenna were quite long, the first Beverage reported was 7 miles in length!

On the other hand, some people have had decent success on the AM broadcast band with "quasi-Beverages" (see below) as short as 200 ft. The Beverage is a non-resonant, wideband antenna and functions well even at wide departures from its center, design frequency.

You shouldn't mount this antenna high, only a small fraction of a wavelength. Reported effective heights range from 4 ft to 30 ft with the higher being for the low-frequency band. About 12 feet seems to be good for the AM broadcast band.

If you do mount the wire element high (more than a small fraction of a wavelength) then the antenna is no longer a Beverage. It is then a long-wire antenna, and a long-wire performs differently than a Beverage. Although Beverages are generally considered to be appropriate only for the MF band and lower frequencies some reports claim that they function well even to the high end of the HF band.

The Beverage's excellent directivity can be made even sharper by combining several Beverage antennas into a phased array. This not only makes the overall antenna system more directive, it increases its gain. Due to the low efficiency of a single Beverage, ordinary Beverages are not usually used for transmitting. However, phased arrays of Beverages have been successfully employed for transmitting.

Some Theory of Operation

The Beverage's ability to pull weak signals out of the interference is due primarily to its directive reception. We've talked about signal to noise ratio many times in the past, and it is important here. Due to the antenna's

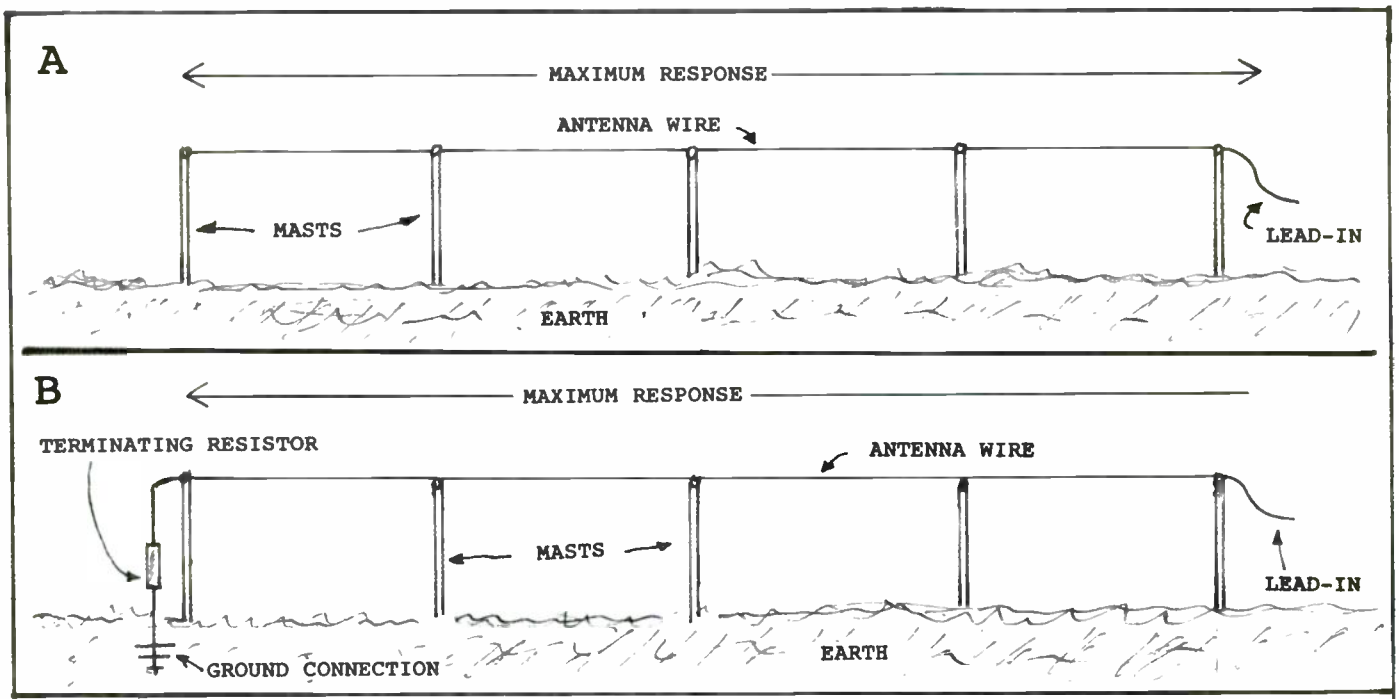

Fig 1. A single-wire, un-terminated, bi-directional Beverage antenna (A), a terminated, uni-directional Beverage antenna (B).

This Month's Interesting Antenna-Related Web site:

Try this site for more information on Beverage antennas, and texts of interviews with Beverage himself.

http://www.geocities.com/CapeCanaveral/1138/bev-page.html

Send in your suggestions for inclusion here as an interesting antenna-related web site to: *<clemsmal@bitterroot.net>*.

directionality it responds primarily to signals from the direction(s) toward which it is oriented (see fig. 1). This means that the strength of signals from those directions are maximized, and the strength of the interfering signals and noise from other directions is minimized. Therefore, even with only a modest signal-strength received from the desired signal, the interference from other directions is usually lower in received strength than the desired signal. Thus the signal to noise ratio is improved, and quality of reception is better than with an antenna that is not so directional.

The Beverage antenna was the first of a group of antennas which are known as "wave antennas." The simplest Beverage (fig. 1A) is a single wire stretched a few feet above the ground and run in a straight line either directly toward, or directly away from the direction of the station it is desired to receive. This antenna is bidirectional, receiving well off either end and rejecting signals and noise from other directions.

The simple Beverage can be made unidirectional by grounding the end opposite the feedpoint through a non-inductive resistor. More advanced wave antennas can utilize multiple conductors and specially designed transformers to match the feedline, and provide unidirectional reception. Some designs even allow reception of signals from one direction by one receiver, and reception of signals from the opposite direction by a second receiver.

Wave antennas function with vertically-polarized radio waves. If the earth under the antenna element is lossy, such as sandy soil, then the RF wave being received tends to tilt forward as it moves along the antenna due to its "foot dragging" in the soil. This tilts the wave to a lower, less-vertical angle, and induces current in the "two-conductor transmission line" formed by the antenna's element and the earth.

◆ Let's Make One

Beverage started the work leading to the development of the Beverage antenna by studying the directional effects of a wire antenna laid in a very long, straight line on the ground. Consider the situation where the ground is dry, and thus non-conductive. Then the antenna is actually somewhat above radio ground when it is laying on the earth's surface. You can make this type of "Beverage precursor" by simply laying a very long (a wavelength or more), insulated wire in a straight line on poorly-conducting ground.

The feedpoint will be at either end of the wire, and should be considerably lower in impedance than the 600 or so ohms of a Beverage. I suspect that a direct connection to 50 or 75-ohm coax might work OK. If you want the antenna to be unidirectional, then make the feedpoint the end farthest away from the station you want to receive (fig. 1B), and put a resistor from the other end of the wire to a good ground connection. A variable, relatively non-inductive (carbon) potentiometer can be used to determine the approximate resistance which minimizes signals from the undesired direction while not reducing those from the desired direction.

For a more Beverage-like antenna, elevate the antenna 4 to 30 feet above the earth; greater heights for lower frequencies. Rocky or sandy soil beneath the antenna is best; the antenna won't function properly over highly-conductive ground or water. If it is a full wavelength long or preferably more, then it is a Beverage. If it is shorter than this, it is a Beverage-wannabe.

As mentioned above these wannabes can sometimes give good results. A 9:1 balun is recommended for approximate matching of a Beverage to 50 or 75-ohm coax feedline. Terminating resistors for making this antenna unidirectional are often in the range of 600 to 800 ohms; you can find the value for yours as suggested earlier.

For receiving antennas a low-wattage resistor is fine until lightning or a nearby high-powered transmitter induce more current into the antenna than the resistor can carry. I notice that Clark Electronics, RR2, Box 2925, Belfast ME 04915 sells matching transformers especially made for Beverage antennas. Phone: 207-338-0474.

http://www.qsl.net/k1fz/index.html

RADIO RIDDLES

Last Month:

I said: "Well, we've talked about radio horizon, radio ground, and radiovision. Now tell me what 'radionics' means."

Well, radionics is a term devised to mean "electronics as applied in the field of radio" just as "avionics" is currently used to designate "electronics as applied in aviation." Radionics was never really a popular term, and has now fallen into disuse. Today the broad field of radio technology is simply considered to be one branch of electronics, and no special name other than "radio," or "radio technology" is commonly utilized to identify it.

This Month:

OK, so we've talked about radio horizon, radio ground, radiovision, and radionics. Now what does "radiotrician" mean?

You'll find an answer for this month's riddle, another interesting, antenna-related web site, and much more, in next month's issue of *Monitoring Times*. 'Til then Peace, DX, and 73.

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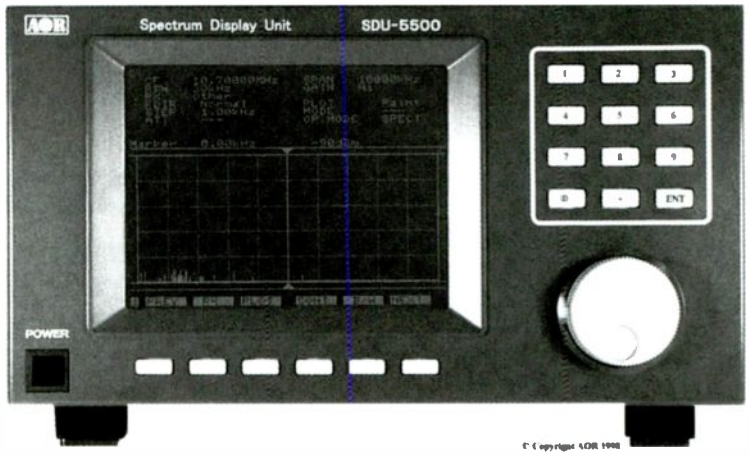
AOR's Spectrum Display Unit and LCD Basics

AOR has been busy creating some very interesting products that are aimed at serious monitoring folk (like you and me). One product is the **SDU5500**, which can display signals across a range of frequencies, almost simultaneously. If you have a receiver with an IF output this product will interest you most.

If you don't, the **ARD2** is an AOR product which is compact and totally self-contained that decodes and displays ACARS messages from commercial aircraft.

Both products utilize LCDs: liquid crystal displays. In fact, without the LCD technology, neither product would be possible at the size, cost or low power consumption. Before we launch into the SDU5500, let's take a quick look at the LCD technology.



LCD and Blood

I'm sure, you, like me, have worked so hard on a project that you feel like you gave it your blood. Right? Well, here I'm really talking about blood! In the late 1800s chemists studying blood chemistry noticed that the cholesteric component of the blood exhibited interesting optical properties. They noticed that when a light beam was passed through these fatty acids the light's polarization was changed. Since light can be considered to be an electromagnetic wave, its polarization is defined by the relative relationship of its electric field, magnetic field and its axis of propagation. Got that?

In 1974 I first became professionally involved with LCDs at General Electric as a Senior Scientist responsible for developing LCD technology into avionics instrument products. One way we can consider the effects of light polarization is in terms of looking through a picket fence.

If we look through just one picket fence, we don't see much effect. However, if we put one picket fence in front of another, and look through both, the results vary widely. If the two picket fences are aligned with each other, each picket exactly in front of the other, we still don't see much effect. But, if we move one fence so that the pickets of one are aligned with the *spaces* of the other fence, we see exactly nothing! So, what we see is dependent upon the relative position of the fences.

Think of the polarized light as the relative position of the picket fences. So, if we polarize the light in one "direction" with one fence and then "move" the second fence, we can modulate the intensity of the light from full on (bright), to full off (dark).

Today, chemists have developed synthesized cholesteric-like chemicals whose "picket fence" position can be moved by an electric field. Welcome to the world of liquid crystal displays! Since the LCD chemicals respond to electric fields, little electron transport (electric current) is required for operation, hence LCDs' portable, battery operated capability.

In the past ten years, LCDs in various advanced forms have recently begun replacing cathode ray tubes (CRT). AOR uses a colored LCD as the heart of its SDU5500. Although the SDU5500's display is very readable, it uses an older STN LCD technology.

Seeing what there is to hear

During World War II both sides monitored the radio spectrum using a device called a Panadapter. Their purpose was to discover enemy radar and communications frequencies. The heart of the Panadapter consisted of a CRT, some wide frequency amplifiers, a detector, and a sweep generator. It was connected to the IF (intermediate frequency) output of a receiver, before the filters which narrow a receiver's response so just one signal can be detected clearly.

By sweeping the center frequency of its detection amplifiers the Panadapter could "see" all signals within the wide frequency bandwidth of the receiver's intermediate frequency amplifier.

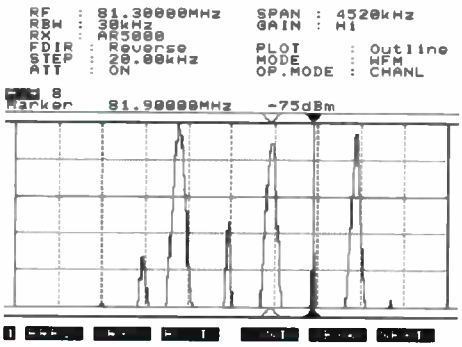
The SDU5000 operates in a similar manner to the Panadapter but adds the capability of controlling the radio. Therefore, with compatible radios, the SDU5500 can move the receiver's frequency, giving a wider spectrum display. In addition, the SDU can set other receiver functions such as the size of the frequency step during scanning.

The SDU5500's ad from AOR says it can be used with any receiver with an IF output. The SDU5500's internal software can automatically control five different receivers: AOR AR5000, AOR AR3000A and ICOM R7100, R8500, R9000. If, however, you don't have one of these receivers you can still use the "Other" menu selection of the SDU5500. I planned to connect my ICOM R7000 to the SDU5500, since some ads for the SDU5500 included the R7000 in the list of compatible radios. More about this later.

SDU5500, Figure One, is housed in a metal box 8.85 x 4.9 x 9.4 inches, which is mostly air. The main circuit board is mounted behind the 4.7 inch, color LCD. It is powered by a 12 volt "wall-wart" power supply.

The front panel has a keypad for entering data, a spin wheel knob for controlling display markers and six function keys to manipulate on-display function menus.

Connecting the SDU5500 is a simple matter of connecting two cables: one to the IF output of the receiver and the other is a serial data line between the two. If you have one of the five SDU controllable receivers, you're ready to "see" active signals around your center listening frequency.



What Will You See?

Figure Two shows the business end of the SDU5500, the LCD screen. The very center of the screen is the frequency to which the receiver is tuned. If you hear a signal you'll see a peak in the center of the screen.

The SDU5500's LCD also provides numeric digital information such as Receiver Frequency, Bandwidth, Frequency Step Size, Sweep Frequency Span and Mode.

In Figure Two we can see from the top display that the receiver is tuned to 81.30000 MHz. Since the Span is set to 4520 kHz, we are "looking" at signals 2260 kHz (4520/2) on either side of 81.3 MHz. Therefore, Figure Two is displaying a spectrum from 79.04 to 83.56 MHz. The display is indicating that five strong signals are currently on the air.

How Does It Work?

Well, the problem I encountered was a show stopper: In spite of the number of claims I had seen to the contrary, my R7000 displayed nothing on the SDU5500's screen. I checked and rechecked all connections. Nothing on the display! I rechecked software that was created for receivers not supported by SDU5500's internal receiver control software. In this software package the R7000 was listed as working with the SDU5500.

Finally, I called AOR. The technical person at AOR USA explained to me, almost immediately, that the SDU5500 "will not work with the ICOM R7000."

Hello!! Checking the R7000 with an oscilloscope showed that the R7000's IF output was the problem. My first thought was to build an amplifier that would boost the 10.7 MHz output. A good choice for this type of application is Mini Circuits' line of wide frequency RF amplifier chips. So, I checked my parts box and put together a simple circuit.

Connecting the amplifier between the R7000 and the SDU5500 and tuning the R7000 to the FM broadcast band finally resulted in a display of signal peaks.

Why Roll Your Own?

Although I was going to make part of this column a how-to construction on the amplifier, I found that Ramsey Electronics has a mini-kit, SA-7, that should do the job nicely. Check it out at **http://www.ramseyelectronics.com** . At $14.95, why bother to roll your own?

Summary of SDU5500

A spectrum display adds a whole new dimension to monitoring. It is especially useful in searching for new active frequencies. The SDU5500 is a sophisticated and useful addition to any scanner user. But, there are a number of factors to be considered. The screen update rate of the SDU5500 is not exactly real time. This makes "jumping" on short-duration signals very difficult.

If you are not going to use the SDU5500 with one of the five supported receivers, you may need an IF output amplifier and additional software. Finally, at a price of over $1000, it's not exactly priced like an accessory.

The SDU5500 is available from Grove at **http://www.grove-ent.com**. Also check AOR's website at AOR UK **http://www.aoruk.com/**, AOR Japan **http://www.aorja.com** and AOR USA **http://www.aorusa.com** .

Next time we'll take a look at the AOR ARD-2 ACARS product and compare it alongside PC based ACARS products for performance, features, convenience and price. Till then, stay warm.

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http://www.megsinet.com/parnass

Butel Receiver Control Software for the IC-R2

The ICOM IC-R2 portable, wide coverage scanner has amassed a following among scannists since we reviewed it in April 1999 *MT*. Its tiny size, good performance, and CTCSS decoding squelch make the IC-R2 a keeper.

Being such a small radio, the IC-R2 lacks a full numeric keypad and the programming procedure is complicated. It's much easier to program the IC-R2 using a computer loaded with the proper software once you have a suitable interconnecting cable.

Figure 1. ICOM IC-R2 wide coverage receiver

While some radios can be controlled (e.g., tuned) in real time by a computer, the IC-R2 computer interface is limited to cloning, or programming chores. There are at least four programming packages available for programming the IC-R2 using an IBM compatible PC:

1) Goran Vlaski's programming utility, available free by download from **http://www.digital-laboratary.de**
2) R2Pepper programming utility which runs in a DOS window, available from Richard Cochran at *rcochran@netcom.com*
3) RT Systems software and cable, available for $20 ($39 with cable) from RT Systems, PO Box 12188, Huntsville, AL 35815. Tel. 800-750-9689, **http://www.rtsars.com**
4) ARC2 (Advanced Receiver Control) software, produced by Butel Software, P.O. Box 101, 4290 AC Made, The Netherlands. It is available for $19 by download from **http://www.butel.nl**

◆ Butel ARC2

Butel is a Dutch firm which offers programming and control software for several radios. Butel's ARC2 is a 16 bit Windows program designed for programming the IC-R2. You can download a trial version of ARC2 software from Butel's web page (see above). The trial version is fully functional except it won't write to your IC-R2 until you buy a registration key. We used an enabled version 1.00 for this review.

◆ Main Window

ARC2's main window (fig. 2) is visible at all times. The pulldown menus are listed in a row along the top. The File, Edit, and Help menus are located in the same positions as other Windows programs (first, second, and last).

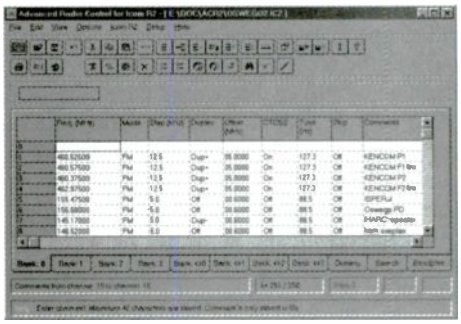

Figure 2. ARC2 main window permits access to each memory bank.

Underneath the row of menu labels are two rows of buttons which serve as shortcuts for the menu choices. The buttons are identified using small graphic icons. If you are experienced with using the PC, you'll recognize the print and open file symbols, but many of the other symbols are unfamiliar. You can find the meaning of a shortcut button by reading the documentation (via the Help menu) or placing the mouse cursor over the button. A small label appears describing the function in English.

At the center of the main window is a grid or table for each memory bank. The bank names appear as tabs below the table. There is a separate bank to hold search limits and another for the band plan, which lets you choose band edges, default modes and step sizes. A dummy bank is provided as a scratchpad for temporary storage but its data is not uploaded to the radio.

Each line in the table represents one memory channel. You can type in a frequency and select other attributes using pulldown menus. The frequencies are displayed with leading zeros, e.g., 042.6200 instead of 42.6200. This makes them more difficult to read and Butel's Gommert Buysen wrote that future releases will permit users to suppress leading zeroes.

ARC2 lets you name banks and memory channels. The labels are displayed on your computer monitor and stored on the hard drive, but are not actually uploaded into the radio. We use a Brother Ptouch PT9200PC label printer to create an adhesive bank label for our IC-R2 (fig. 6).

◆ R2 Setup Window

The R2 Setup window (fig. 3) opens by selecting the ICOM R2 pulldown menu, then Options. It controls global settings, such as the backlight mode, power saver, scan timing, etc. These are the same options you can control on the radio by pressing and holding the V/M key.

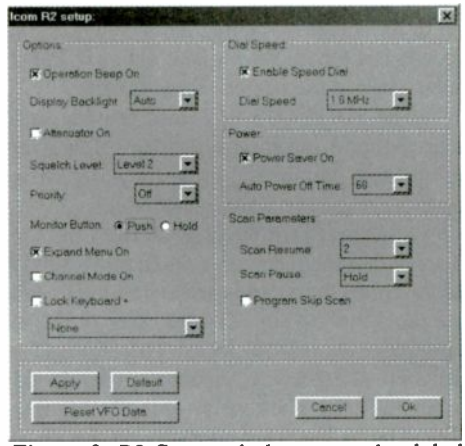

Figure 3. R2 Setup window controls global parameters

◆ Advanced Data Import Window

ARC2's Advanced Import feature (fig. 4) sets it apart from the other IC-R2 programs. It can parse the clipboard or a .txt, .csv, or .htm file, distinguish frequencies from the surrounding words, and let you import some or all of the frequencies into the memory channel table. Once the import is complete, you can tweak the mode and offset values if necessary.

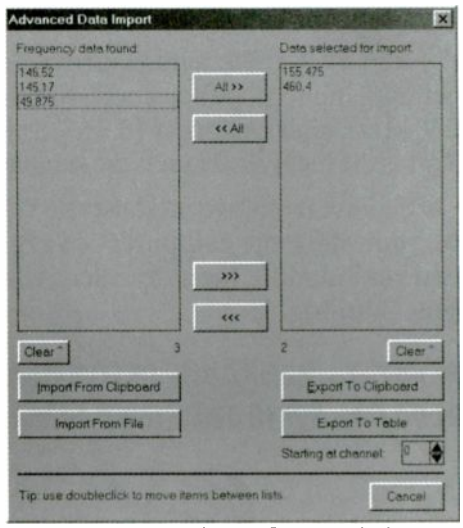

Figure 4. Advanced Data Import window can read frequencies from a file or the clipboard.

This lets you copy frequencies you see posted in Usenet articles, receive via email or

have saved in a file. While reading the article, you merely highlight part or all of the article with the mouse, copy it to the clipboard (by pressing Control-C), then invoke the Advanced Import operation and choose the frequencies you want to import.

You can import frequencies directly from a web page using ARC2's Web Frequency Catcher. You open a page in your web browser and issue the proper keystrokes to copy the entire page to the clipboard, then let ARC2 read the data from the clipboard while it looks for frequencies. While ARC2's Web Frequency Catcher function is useful, you can perform the same operation using the Advanced Import feature.

ARC2 stores data in its own native format using files named with an .ic2 extension. ARC2 lets you export data from the program to a .csv file for use by other programs (fig. 5). You can also import .icf data generated by other software packages and Percon database searches (**http://www.perconcorp.com**)

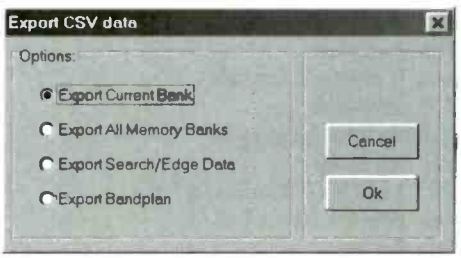

Figure 5. Export CSV Data window permits programming data to be written into comma-separated values files.

❖ Printing

ARC2 contains a flexible report facility so you can print programming data on paper. Five report styles are available: Search limits, all memory banks, a single memory bank, all memory and search banks, and the band plan.

❖ Summary

ARC2 installed on our computer, a 266 MHz Pentium II, without a problem. It is easy to use and we can run it concurrently with other programs. Writing the data to our IC-R2 requires 30 seconds.

The documentation, supplied in the form of a Help file, is quite good although missing a few commands, e.g., Backup and Restore.

Why would you purchase commercial software if you can obtain Goran Vlaski's or Richard Cochran's freeware? That's a good question. Both freeware programs are basic utilities that work as they should and provide a no cost way to program the IC-R2.

The Butel software provides several additional features such as report printing, data import/export, flexible COM port assignment, bank and channel labels, channel sorting, etc. We found ARC2 easier to use and more "polished" than the freeware.

❖ Icom R3 Correction

Regarding R3 Alpha Tags: In the October column I said that the Icom R-3 did not support alphanumerics. In fact, it does accept up to six alpha characters to tag each memory channel. Sorry for the oversight.

Figure 6. Bank label attached to ICOM IC-R2 battery cover.

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BEGINNER'S CORNER

BELOW 500 kHz

CLOSING COMMENTS

COMPUTERS & RADIO

JAN TalkPCR by QROSoft
FEB WinRadio WR XRS plug-ins, WR Trunking Optian
MAR AR8200 Workshop; ARC8200 ToolBox by BuTel; ScanCat 7.50 SE
APR Handheld Computer Market and GPS for Palm Pilot
MAY Swezey Digital Filter Prog; GNASP1
JUN Chramasound, SR5 Spectrum Analyzer V2.0, Analyzer 2000, Spectrogram, Spectran
JUL Ten-Tec RX-320: Ten-Tec utility,Dxtra, GNR, KF5OJ
AUG More for RX-320: AT/SWL99, ERGO, N4PY v 1.04
SEP PC-Control progs PCR-1000, PCRPilot3C, RX-320 Controller
OCT What to look for in a computer for radio monitoring
NOV On-Line Databoses: SPEEDX; ADDX Kurier; Prime Time SW; WWW SWL Guide; LI Area Scanning Resource; PeCon; Airport Guide, WW Airport Path Finder; FCC; ILG Radio
DEC Radio control: Radio Max 5.4, Scanner Wear 2.5, ScanStar 7.62, Scancat 7.5 SE]

DIGITAL DIGEST

JAN Digital Beginner's Freqs
FEB Something for Everyone: more beginner's freqs; ALE update
MAR Voice Frequency Telegraphy Systems
APR More on VFT ond French Forces
MAY Differentiol GPS
JUN Ecoutez vous Francais? (French diplo channels)
JUL Got Sync? (IDing signals you can't decode); decoders update
AUG Russian Intelligence-Gathering
SEP Aid Agencies on HF Radio
OCT ALE Networks Update
NOV Digital Meteorology
DEC Digital Utilities: Where to Listen, what to log; new ALE net

EASY ACCESS RADIO

JAN Sony FRS U-ceiver
FEB Sharp Wizard OZ-750
MAR Palm IIIe
APR Pryme's PR-460 GMRS HTs
MAY Alinco's Clear DJ-V5 Dualbander
JUN What's New with CB? Cobra and Cherokee
JUL Drake Minitolk 99 FRS radio
AUG GE Sedona FRS
SEP Sangean DT-300 radio

THE FED FILES

JAN Campaign 2000 (fed protection freqs); 168-168.9875 alloc
FEB National Interagency Fire Center; 169-169.9875 alloc
MAR Data Sigs in New England; fires in Southeast; 170-170.9875 alloc
APR NASA Trunked Systems; 171-171.9875 alloc.
MAY Intl Boundary and Water Commission; Wash DC freqs; 172-172.9875 alloc.
JUN SHARES on ALE; FBI aircraft, FEMA freqs; 173-173.9875 alloc.
JUL Postal Inspection Profile; 29.9-30.550, 32-33 alloc.
AUG Feds in the Civilian AirBand; hurricane season resources; Canadian Fed Freq resource; 34-35, 36037, 38-39 alloc.
SEP Gov't Trunking Systems; 40-49.974 alloc.
OCT New Federal Bandplans (Itinerant, common use, interagency; Hydro, Mics)
NOV Scanning Houston, DOE, Idaho; AZ, CO, NV, NM, OR; UHF Land Mobile Svc
DEC Federal Freqs in Alaska; NASA Comms; Pisgah Natl Forest; 408-410 alloc.

LAUNCHING PAD

JAN 4 Best Kept Secrets: Lyngemark sat charts, SBCA, Professional Sat Repair, smallear.com
FEB SWLing with Pictures! Panamsat 5; DXing with a small dish
MAR NSS 806 Intl Sat Workhorse
APR The LNBF Advantage
MAY TVRO Time Machine: YUSA
JUN Sat DX Equip for Tight Spaces
JUL Tuning in SCPC Radio
AUG Easy Satellite Service Tips
SEP Your Satellite TV Q&A's
OCT The ST-6600 MPEGII Rx
NOV Int'l TV Viewing and Q&As
DEC 4DTV Soves the Day (Maybe)

MILCOM (odd months)

JAN Military Trunking: Pendleton, Ft Huachuca; Motorola mil sys; Fed trunking standard groups
MAR Air Show Season 2000
MAY HILL AFB Trunking; Buckeye State Milair; Armed Forces Day
JUL New Blue Angel Freq; Mil Sat Freqs; 113th Fighter Wing/ 121st Squadron, 201st Airlift Squadron
SEP Eglin AFB; US Army trunking
NOV San Antonio Trunk Sys Update; Ft Lewis, Wash; Pendleton; VHF Military Land Mobile Service

ON THE HAM BANDS

JAN Hello, Y2k; Onelist web site; 80 metre direct conversion receiver
FEB Intro to ten Meters - signals, antennas, gear
MAR Restructuring (a personal perspective)
APR What? Still no computer?; restructuring; RS HTX 10
MAY NOGAnaut transmitter; Amateur Radio 101; Sporadic E
JUN Beacon Peekin'; summer
JUL QRP versus QRO; Flight of the Bumblebees; Final Final
AUG Tried the New Mode in Town? PSK31 (LVH)
SEP Welcome to HF Operation
OCT The Courtesy of QSLing; CQ WW DX contest; GoldenClassics
NOV The Cult of K2
DEC All I Want for Christmas (Dec contests)

OUTER LIMITS

JAN How to Hear Pirate and Clondestine BC
FEB Pirate programming, LPFM
MAR DXing Clandestine Radio Stations; Schoech address site
APR Mixed Reactions to LPFM; Mexican Clandestine?
MAY WHYP most active NA pirate; Euros on 19 Meters
JUN Clandestine Web Sites
JUL Peruvian Broadcaster Invades Pirate Band; Pirates Going Legit
AUG Mobilization Radio Targets DC
SEP Current Pirate Programming
OCT Pirate DX Season; WCPE offer; new web sites
NOV Pirating with Cumbre on the Air
DEC Best SW Radio Site, Clandestine Radio Com; Holiday Pirates

PLANE TALK

JAN Bern Radio; Mare from BWI
FEB Navigational Aids; Ramp rats and related activities
MAR Potomac area TRACON; Aera websites; airline info; software updates (AirNav Lite, Xavius)
APR Aeronautical Radio, Inc.
MAY Continental Airlines Cruisin'; Minneapolis ARTCC freqs
JUN Chicago, and the Funnies
JUL A Visit to Minneapolis ARTCC
AUG Dallas Ft Worth ATC; France's Friendly Skies?;The State of Aviotion in Australia
SEP Baltimore-Washington Intl updote and airline co freq list
OCT Welcome to Bay and JFK
NOV New York to Konsos
DEC Seattle, Portlond airports; ARINC HF freqs; Weather Products

PROGRAMMING SPOTLIGHT

JAN Charting Future for SW BCing - II
FEB The Best SW Media Programs
MAR RNZI Loses Sport; BBCWS Loses Mind
APR Don't Overlook These Gems!
MAY Things learned ot Winterfest
JUN The BBC (Yes, Again!)
JUL Europe's Summer of the Arts
AUG The SWL's "National" Sports
SEP Live from Australia: Olympics
OCT So much for that firewall (VOA)
NOV Ruminations of a Blocked Writer
DEC Half Full or Half Empty?(RN Media Network & R Australia)

QSL REPORT

JAN QSLing Mediumwave
FEB QSLing Brazilians
MAR Ethiopia - Radio from the Horn
APR Czech Radio, Past and Present
MAY Shine rodio (Turkey)
JUN Get Creative (email QSLs)
JUL full column of QSL reports
AUG Language Translation Software
SEP Asia-Pacific Station Websites
OCT African Station Websites
NOV Address Update
DEC S American website directory

RADIO RESTORATIONS

JAN Starting Out, Crystal Sets, Vacuum Tube Detectors
FEB Battery Sets of the 1920s
MAR The First A.C. Sets
APR The Screen Grid Revolution
MAY The Rodio as a Home Applionce
JUN Depression Downsizing
JUL A.C.-D.C. Evolution
AUG New Twists on Tuning
SEP Your Grounding in Safety
OCT Equipping your Workshop
NOV Restoring Your First Set
DEC Digging into the Transitone

SATELLITE RADIO GUIDE

Satellite Loading Report:
JAN Telstar 7

FEB SBS-6, GE-5
MAR GE Americom Satcom K2, GE-2
APR GE-3
MAY Telstar 4, Galaxy 7
JUN Telstar 6
JUL Galaxy 3R, Telstar 5
AUG Galaxy 11
SEP GE-1, GStar-4
OCT Telesat E2, E-1, Solidaridad-1
NOV Solidaridad-2, SatMex-5
DEC Morelos 2, Galaxy 10-R & 5

SCANNER EQUIPMENT

JAN Radio Shack PRO-92 Portable
FEB Yaesu VF-500 Portable Scanner
MAR Uniden Sportcat SC-200; MetroWest battery pack; Uniden scanner clock radio ergonomics
APR Understanding Intermod; PRO-92 follow-up
MAY Radio Shack PRO-94
JUN Radio Shack PRO-2052
JUL Electra Tiger Scan TSA
AUG Patches, Crystals, and Index
SEP Radio Shack PRO-2067
OCT ICOM IC-R3 Wide Coverage
NOV AOR AR-3000A
DEC Alinco DJ-X2T Wideband

SCANNER LOGS

JAN Brasstown NC; Chatt TN; Pima AZ
FEB Hickory NC; SC, GA Dept Natural Res; Dahlonega GA Army Ranger Trunk
MAR White Sands NM; Milair FL; Patrick AFB, Cape Canaveral; New Orleans LA trunk
APR So CA aero; FL milair; MD air-air; Montgomery Co TX; Kansas City ARTCC; Lo-Band Skip
MAY Italian VHF Lo-Band skip; GTE Airfone freqs; cruise log requests
JUN LAX; Phoenix Air Cargo; Calif skip; Florida milair; MD state PD; Italian skip logs
JUL Avery Co, NC; Mexico VHF assignments; More Italian Skip; Space Shuttle audio/video retransmissions by ham radio
AUG ASCIET 2000 military exercise
SEP MD State Patrol; Chicago Area

SCANNING REPORT

JAN Airborne Scanners grounded again?; new band (746-806); Wash Co OR trunk update; Maine scanning
FEB Industry Keeps on "Trunkin'" (BC-245, PRO-94, PRO-92)
MAR CES 2000; Police Call Business samples (FL)
APR Passing of Two Scanner Heroes; scanning w/the Palm Pilot; 245 keyboard lock; Hawaiian scanning
MAY Good News Holyoke MA; PRO-92 vs BC-245 revisted; Hershey Park PA;Mammoth Mt CA
JUN Advances in Scanners; Smart-Link; Boston MA; Utah; Kansas City EDACS; Sparks, NV
JUL Itinerant Matters; ECPA Challenge Denied; APCO Convention - Boston and Mass
AUG It was Great'n in Dayton; Sconning at Daytona; Dougherty Co GA trunked system; websites for scanning Disney
SEP News from a Newbie; scanner suggestions; air phones; Wyoming monitoring
OCT Airport Scanning, Michigan air, airport trunking, ramp freqs; CA ground crew licenses (Police Call)
NOV BC780XLT Update (new features); Daytona FL trunking update; Jackson MS trunking; Natick MA; Plymouth MA info
DEC Sunshine State (FL gives contract to Ericsson); MI digital system; W Hartford CT TRS; Puerto Rico TRS; BC780 part 2

SERVICE SEARCH

JAN Public Safety pool
FEB Public Safety Pool - II
MAR Bus: Railroad Alloc
APR Petroleum and Power Alloc
MAY VHF-low bandplans from Italy, France; UK cordless phones
JUN Fast Food Frequency Pairs
JUL Amateur Satellite Bandplans
AUG National Civilian Aeronautical Band Assignments
SEP New Zealand VHF Band Plans; US Low Band alloc
OCT The California Highway Patrol
NOV Channel Plan for 220-222 MHz Private Mobile Radio Services
DEC Highway Maintenance

SHORTWAVE EQUIPMENT

JAN Kaito KA-007 Free-power Radio
FEB Receiver News: Watkins-Johnson, Baygen, NASA HF-5E, RN Receiver Shopping List
MAR MFJ-784B Tunable DSP Filter
APR Wellbrook ALA 1530 Loop
MAY Sangean ATS 505
JUN Palstar R30
JUL Ten-Tec RX-340
AUG What do specs really mean?
SEP What is synchronous detection?
OCT What is receiver sensitivity?
NOV What is dynamic range?
DEC What is receiver selectivity?

TRACKING THE TRUNKS

JAN Trunking Theory 101
FEB A Trunked System Demo
MAR Motorola Systems (O'Hare; Disneylnd; Arlington, TX)
APR Ericsson's EDACS Trunking (Ocean City MD; Brevard Co FL; Illinois SP; DFW Airport TX)
MAY Logic Trunked Systems (Chicago IL; Bloomington IN; Evansvile IN; Marshfield, MA; Rochester NY; Milwaukee WI)
JUN The Case for APCO Project 25 (MI state, FL HP, CT state, Meso AZ, Fairfax Co VA, Baltimore)
JUL Readers Track (Evansville IN; Albuquerque NM; Rochester; Disneyland; Austin TX)
AUG Figuring Out Fleet Maps
SEP Con These Systems Deliver?
OCT Multiple Site Solutions
NOV Mailbag: (Allentown PA; BWI; Sullivan Co TN; Galveston TX) BC780XLT, PRO-92. BC245XLT
DEC Who's on Where?

UTILITY WORLD

JAN Solar Peak, the High End
FEB Ute Alphabet Soup? Panama changes; Cuban Spook Sked
MAR ALE: The Future Arrives
APR Black Fax from the Sky; Panama
MAY Weather Changes – Air Force, Russia, S Africa, Greece, USCG
JUN US Air Force Air/Ground Net
JUL The Sun Sets on Portishead Radio; new version PC- ALE
AUG Hear the Hurricane Hunters
SEP KPH from the Dead; RTTY bcasting? MARS and PSK31
OCT To Catch a Spy; Tracking XPH
NOV US Military Expanding HF Services, USAF Weather net
DEC The Guide to MUF Surfing

VIEW FROM ABOVE

JAN Seasonal changes: FengYun-2 fixed; software updates
FEB What's New in 2000? Preferred orbits; winter images
MAR View from the Top of the Century: Non-APT WXsats,
APR Geoff Perry, an appreciation; software updates; Internet sites
MAY Spring weather, space weather; Sich-1; solar interference
JUN WXsats Turn 40; Fengyun-2A ceases ops; GOES-L
JUL GOES-L Launch; Volcano prediction; Fire monitoring
AUG Surface Events from Satellite; Metear 3-5; GOES-11 works
SEP High Resolution Satellite Imagery; New Fengyun wxsat
OCT A World of Change; NOAA-L Launch; glimpse of the future
NOV Readers Get the Picture: glimpse of the future part 2
DEC Performance Anxiety (NOAA-L early orbit stages)

WASHINGTON WHISPERS

JAN FCC restructuring
FEB FCC Reallocates Spectrum
MAR Ham Structure Simplified
APR FCC Creates Low Power FM
MAY Radio freqs a commodity
JUN Anti-Eavesdropping Legislation
JUL The FCC Rulemaking Process
AUG FCC Proposes ultra-wideband
SEP Low Power FM Update
OCT One-Stop Shopping at Firstgov
NOV FCC Creates MURS Service
DEC Privacy Questions and Gov't

MT REVIEWS:

AOR Antenna Line	Nov
CCRadio vs. GE Superadio	Mar
Diamond vs Condor scanner ant	Sep
Grove FTR-100 Notch Filter	Oct
Grundig 500 sneak preview	May
Hamtronics Aviation Rx Module	Aug
Icom W32A TXer as a scanner	Feb
Protek 3201 RF Field Analyzer	Dec
Ramsey FM-100 Stereo transmitter	Apr
Ramsey Mobile RDF System	Jul
Stridsberg FLT201A Notch Filter	Jan
Stridsberg MCA204 Multicoupler	Jan
Super Select-A-Tenna	Jul
Timestep feed and converter for GOES reception (from Swagur)	May
Wellbrook Antenna Splitter AS1030	Sep

MT REVIEW

SGC SG-2020 HF Transceiver

By Bob Grove

The price is right, and it's easy to operate. So how does the SG-2020 transceiver work? We recently tested this 12 volt-powered HF SSB/CW rig on the air and found it very straightforward to use.

Receiving 400 kHz through 29.7 MHz continuously and transmitting at 20 watts PEP (adjustable 0-20 W) on all ham bands within that range, this microprocessor-controlled transceiver measures only 6"W x 2.75"H x 7.25"D and weighs a mere 2.5 pounds. The microphone is included in the purchase price.

The backlit LCD displays frequencies to 100 Hz (2 Hz tuning steps) and tuning stability is 10 ppm. CW, USB, and LSB modes may be selected for any frequency. The 40-channel memory can work in simplex or semi-duplex, with fast 10 millisecond T/R break-in. The fully-adjustable iambic "A" mode keyer operates under microprocessor control from 5-50 wpm.

Receiver sensitivity is 0.3 microvolts for 6 dB S/N, with a third-order intercept point of +1.8 dBm. A noise blanker is selectable and RF gain is controllable. Receiver current is a mere 300 mA. Even at full transmit power, current consumption is less than 3 amps for 20W CW, dropping to a mere 0.8A for SSB. A common LED light bar reveals transmit power and received signal strengths. SWR and battery voltage is metered as well.

The RF speech processor employs VOGAD baseband processing and RF clipping. Split, RIT, and XIT features are included and the audio bandpass is tunable from 100-2700 Hz.

Our Test

We were fortunate to find a European DX contest going on 20 and 15 meters, an ideal way to test the QRP transceiver. Using a GAP vertical antenna, we were generally clobbered by the high-powered contesters at 20 watts USB, while our 100-watt "big rig" consistently made it through. But on clear frequencies, satisfactory QSOs were readily accomplished, with stations giving us good signal reports for both strength and audio.

We did find the radio extremely sensitive to power supply voltages; only one of three AC power supplies rated at 12 VDC would activate the radio. Other users have reported the same phenomenon, indicating that it needs more than the minimum voltage called for in the manual to operate the rig.

A characteristic reported by other SGC owners is a somewhat chirpy CW note on transmitting, but we didn't try this mode. We did find the built-in speaker perfectly intelligible and adequately loud on all reception modes given the small size of the case.

The Bottom Line

At under $700, with as many features as this little rig has, it's an unusual value in today's amateur radio market and makes a fine QRP take-along rig for backpacking, mobiling, or camping.

The SG-2020 carries a list price of $675 and is available from SGC Inc., SGC Building, 13737 SE 26th St., Bellevue, WA 98005. Phone (800) 259-7331 or visit their website at **http://www.sgcworld.com.**

What's NEW

Tell them you saw it in Monitoring Times

The only receiver/ scanner you'll ever need?

The Fairhaven RD500VX is a unique example of receiver design which blurs the line between hardware and software solutions. Unlike the "black box" or PC card receivers, the RD500VX retains the look and feel of a traditional wide coverage receiver with its heavy aluminum tuning knob, while reaping the benefits of extensive, programmable database and memory records – *without* lugging along the computer.

Spectrum coverage on the RD500X is 0 to 1750 MHz – it's an HF Receiver with pass band shift, notch and peak filter and noise blanker, sync modes, CW and USB/LSB and smooth 5Hz tuning steps. It's also a VHF/UHF Scanner with pause/hold/auto-memory write, auto-tune AFC and many different scan modes. It has AM/NBFM/WBFM and stereo, and TV sound and video output.

With the ability to record a whopping 54,700 text records, the RD500VX has storage capacity to hold station names and information on every signal that it encounters. Imagine tuning a radio where every channel has a name, city and description instantly displayed. Thousands of station records can be stored and sorted through: just type in a few letters or a complete description such as "Volmet," "Fire," or "Voice of America." Its 2 Megabytes of RAM can store information equivalent to several scanning directory books. No more thumbing through scanning directories!

Data entry can be achieved in a number of ways to add, edit or replace the database loaded into the receiver at the factory. The RD500VX can link up to your personal computer where the included suite of software makes it easy to import, process and edit most file formats from document scanners, the Internet and other sources. Data may also be entered directly using the remote control handset or the receiver buttons. If a large amount of information is to be inputted and a PC is not available, a PC keyboard can be plugged into the rear DIN socket.

The RD500VX has a built-in digital sound recorder and editor so a news flash or rare DX can be recorded, or in contest working, important details need not be lost. Up to 4 minutes of sound can be permanently stored.

The RD500VX has been selling in the UK for 899BSP (about $1,456 USD), but they have just opened a US distributorship. Contact Grove Enterprises (800-438-8155) for price and availability. For more information, watch for our in-depth review in a future issue, or contact Fairhaven Radio USA, 11278 Los Alamitos Blvd. #105, Los Alamitos, California 90720, Tel 1 562 430 0268, Fax 01144 8700 55 88 99.

New Hope for Rural Surfers

A mere 7 or 8 years ago, when Grove Enterprises wanted to put their radio catalog on the Web, they had to install a T1 line across the mountain and become an Internet Service Provider themselves, because there was no internet access in Western North Carolina without making a long-distance call. Even today, although folks can choose between several local dial-up providers, most still only connect at speeds slightly under 28.8 bps, since cable options are not available in most areas.

However, now a trip to your local Radio Shack can get you connect speeds of around 350kbps and you don't even have to go through a phone or cable line! Welcome to Starband – the new name for the Gilat-to-Home (GTH) two-way, always-on satellite-delivered Internet service for the consumer market. The package was expected to become available to consumers in November.

Starband uses a specially designed 24x36-inch satellite dish equipped with both a satellite transmitter and receiver for two-way satellite connectivity. The Starband system can also be configured to receive satellite television service from **DISH Network** using a single dish. Inside the home, the system currently consists of a preconfigured desktop PC that includes a satellite receiver card and a satellite transmitter card plugged into two PCI slots. In the near future, Starband will also offer an external "satellite modem" option that packages the PCI cards in a stand-alone box and connects to a PC through the USB port. In both cases, no telephone connection, no dial-up account and no terrestrial Internet service provider are needed.

The system can be purchased through Radio Shack and other Microsoft Network (MSN) dealers or from DISH network dealers. No prices are quoted on line, but start-up hardware costs will run about $700, plus a monthly $70 fee for unlimited, always-on internet connection.

This past fall, Starband joined forces with Northern Arizona University (NAU) to provide service to 120 locations within the Navajo, Hopi and Havasupai Indian reservations in some of the most remote areas of Arizona, Utah and New Mexico. Using equipment delivered by mule train, these communities (one at the bottom of the Grand Canyon) will suddenly be connected to the world by a higher speed internet connection than most of middle-class America...

Thanks to reader John Thomas and to *MT* Art Director Bill Grove for this news tip.

Harley's Angels

Since 1992, motorcycle theft has increased more than 46 percent. More than 85 percent of stolen motorcycles are never recovered. But that's not the case with the GPS Vision security system standing guard. Designed exclusively for Harley-Davidson motorcycles, this new device is making a real difference in prevention of theft and recovery of a stolen bike.

Using a compatible pager, PC, or personal messaging device such as Motorola's Timeport P935, the owner can be alerted when someone tampers with the motorcycle, can track the location of a stolen bicycle, can remotely transmit commands which trigger a siren and flashing lights, and can also disable two electrical circuits to disable the ignition.

The basic Immobiliser security system retails for $395, while the GPS ViSiON retails for $795. An optional accessory pack costs $195.To find a motorcycle dealership near you that carries the Immobiliser, call (281) 897-9991 or e-mail immobiliser@immobiliser.com. Or, to learn more about the product, visit **http://www.immobiliser.com**.

A version for cars is under development.

The Designer Pouch

Neoprene has taken a leap forward in professional and attractive appearance. Cutting Edge Enterprises announces a new line of PowerPort pouches called the Hold-It NEO, available in "Can't Lose It Red" or "Covert Black." The NEO provides cushioning from shocks and ample coverage. Prices for the Hold-It NEO start at $14.95.

You'll have to contact CEE to find the correct model for your radio; the information was not yet posted on the web site at **http://www.powerportstore.com** at press time. Call 800-206-0115,

email info@powerportstore.com, or write 1803 Mission Street, Suite PMB-546, Santa Cruz, CA 95060.

The Mighty Pen

If your short-term memory is as bad as mine, you should never be without a pen when listening to the scanner. Here's a product designed for use with cellphones that could be the solution for handheld scanner, FRS and amateur radio users as well.

The Cellular Pen is a mini-sized ballpoint pen enclosed in a plastic housing that can be attached with an adhesive strip to the side of a phone, radio, or leather or plastic carrying pouch. It comes in six great colors.

The price is $3.98 each plus 50 cents shipping; call 800-422-3064; write 3100 South Yale Avenue, Marina Del Rey, CA 90202; or visit **http://www.cellularpen.com**. Imprints are also available for a minimum order of 150 pieces.

SMD Electronic Projects

By Homer L. Davidson

Surface mount devices befuddle most of us with thumbs instead of fingers, but in this book's first 30 pages, Davidson shows us how it can be done. Nearly three dozen projects include receivers, baby monitors, timers, flashers, test devices, recorders, tone generators, and more simple circuits along with their PC board layouts.

And if you need those SMD parts, check Grove's closeout special on thousands of leadless devices for experimenters and manufacturers: **http://www.grove-ent.com/partslist.html**

SMD Electronic Projects, $29.95 from Howard W. Sams; order (800) 428-7267 or fax (800) 552-3910.

Radio Stations in the United Kingdom

British DX Club
(ISBN 09514723-9-9)

The 17th edition of *Radio Stations in the UK* is a comprehensive 56 page directory of mediumwave and FM radio stations in the UK. It covers all BBC, independent and long-term restricted service license services and is a must for anyone interested in UK domestic radio. This edition again includes a free supplementary guide to radio stations in the Republic of Ireland.

Features include: many new stations on the air since the last edition; improved layout in frequency lists with separate column for location/transmitter site; all stations listed by frequency as well as in alphabetical A-Z order; frequencies cross-referenced to show parallel channels; transmitter sites and powers, postal and e-mail addresses, telephone and fax numbers; comprehensive listing of Low Power AM and FM stations; the Irish supplement also includes details of many new FM relays.

Radio Stations in the UK is available from British DX Club, 126 Bargery Road, Catford, London SE6 2LR, UK. PRICE per copy, including postage, is 3.00 pounds sterling, or 7 International Reply Coupons, or 5 US dollars/DM 10. For airmail outside Europe please add 1 US dollar or 1 IRC. Full details also on the BDXC-UK web site at: **http://www.bdxc.org.uk** or email *bdxc@hotmail.com*

Australasian Shortwave Guide

By Bob Padula

The B-2000 print edition of the *Australasian Shortwave Guide*, No. 10, has some 1700 entries of broadcasts in all languages, beamed to Australia and the Pacific, and in English to Asia, the Far East, Siberia, and the Indian sub-continent.

The data shows studio country, transmitter country, organization, start time, end time, frequency, language, target zone, broadcast days, and notes. The information is given in two sections - by order of Studio Country, and Start Time. The *Guide* covers the international Transmission period from October 25, 2000, to March 24, 2001.

Much of the information has been provided by engineering contacts within the broadcast field, as well as from professional monitoring. The *Guide* is a labor-of-love not-for-profit project. The price per copy, which just covers cost of production and postage, is A$10 (within Australia) or US$10 (A$15 / 10 IRCs). Payments may be made in cash (any currency), Australian mint stamps, money order, international bank draft, or IRCs. Personal checks not in Australian dollars and drawn on an Australian bank *cannot* be accepted.

Orders should be sent to: Bob Padula, 404 Mont Albert Road, Surrey Hills, Victoria 3127, Australia; Tel/FAX: +61 3 9898 2906; E-mail: *bobpadula@bigpond.com* or **http://members.tripod.com/~bpadula/edxp.html**

Books and equipment for announcement or review should be sent to " What's New?" c/o Monitoring Times, P.O. Box 98, 7540 Highway 64 West, Brasstown, NC 28902. Press releases may be faxed to 828-837-2216 or emailed to mteditor@grove-ent.com.

HERE'S WHAT OUR READERS ARE SAYING ABOUT *MT EXPRESS*:

"No doubt about it, the future is here! Sure nice to get the magazine so early, this has got to be the way! Thanks for a great job!"

- Charles (Chuck) Boehnke
Keaau, Hawaii

"You and the MT staff that put this project together have done a FANTASTIC job. You would seem to be the leaders in the field presenting material in this manner so it can be archived so easily. This is the way to receive a magazine."

- Don Nauer

INDEX OF ADVERTISERS

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STOCK EXCHANGE

Ads for **Stock Exchange** must be received 45 days prior to publication date. All ads must be paid in advance to *Monitoring Times*.
Ad copy must be typed for legibility.

1-3/4" SQUARE DISPLAY AD: $50 per issue if camera-ready copy or, $85 if copy to be typeset. Photo-reduction $5 additional charge. For more information on commercial ads, contact Beth Leinbach, 828-389-4007.

Monitoring Times assumes no responsibility for misrepresented merchandise.

LINE ADS

NON-COMMERCIAL SUBSCRIBER RATES: $.25 per word — *Subscribers only!* All merchandise must be personal and radio-related.

COMMERCIAL, NON-SUBSCRIBER, AND MULTIPLE SALES RATES: $1.00 per word. Commercial line ads printed in bold type.

NOTICE: It is unlawful to buy cellular-capable scanners in the United States made after 1993, or modified for cellular coverage, unless you are an authorized government agency, cellular service provider, or engineering/service company engaged in cellular technology.

TEKTRONICS 7704A 200 MHz dual-trace oscilloscope with probes and manual, very good condition; $395 includes shipping. Contact Bob at 828-837-9200 or bgrove@grove-ent.com.

WANTED: Any auto shortwave radio. Philips 777, Becker, Hallicrafters SX88, etc. any condition. (516) 223-4638. Ask for Earl.

Make sure to check often at **http://www.grove-ent.com/hmpgbbb.html** for the greatest deals on used and refurbished equipment! Prices and items are updated constantly!

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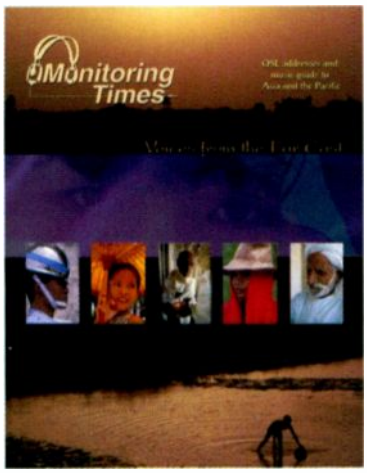

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Closing Comments

By Bob Grove, Publisher

HAPPY ANNIVERSARY!

It's really hard to believe that we are starting our 20th year publishing the monitoring industry's leading full-coverage magazine. I still remember talking with fellow publisher Dick Ross two decades ago at a local hamfest. We surprised each other by revealing the news that we both were about to launch a full-spectrum magazine! We saw *MT* born January 1982, and a month later we enjoyed reading the inaugural issue of our competitor, *Popular Communications*.

The readers of our respective publications presumed that there was a vicious rivalry between *MT* and *PopCom* when, in fact, our parallel paths have been most cordial. There is always room for contrasting perspectives in any field, and readers have rarely been disappointed.

It is especially compelling to reflect on the changes we have seen in communications over the last two decades; there have been many, both troubling and encouraging. We've heard the Communist jamming transmitters and spy-numbers transmissions, the Russian Woodpecker over-the-horizon radar system, baby monitors and cordless phones, AM stereo, international broadcasters on single-sideband, and watched many of these broadcasters struggle for financial survival, not all successfully.

Let's travel back and have a look at how our field has evolved over the last 20 years.

Computers and the Internet - While many of us (yes, I'm included!) swore we'd never allow a computer within sight of our monitoring posts, most of us now have computers and use them regularly. Whether we send e-mail, keep records and notes, surf the Internet, play games, do research, read informative sites, or order our equipment, there's no question that information gathering and dissemination as well as commerce has changed forever.

A few short years ago, who would have predicted that massive frequency databases would be stored on a small piece of plastic? That powerful computers could be carried in one hand? That we'd be corresponding, talking, researching, watching full-length movies, listening to a concert, maintaining exhaustive data files, controlling our equipment and our homes, entertaining ourselves, bidding at auction, and buying anything we wanted – from anywhere in the world – on that same book-size accessory?

Small Dish Satellite TV - The "big ugly dish" (BUD) has been relegated to history by the emergence of small dish satellite systems. Hundreds of channels cover every imaginable topic, from historical fact to future fantasy, and from Disney to Desiree!

And now we watch the Internet move toward that realm; beginning as "Web TV," the 'net is merging into our household entertainment system as a powerful, exploratory tool for global intercommunication.

Cellular Telephones - Yes, the same device that brought you the disgraceful anti-scanner hearings of 1997 has provided unexcelled availability for emergencies and for convenience. Small enough to get lost in the palm of your hand, the world is literally at your fingertips. Married to a notebook computer, the cell phone makes telecommuting a reality.

With the wide proliferation of readily-receivable cellular telephone calls by scanners, Congress passed the 1986 Electronic Communications Privacy Act, prohibiting the intentional monitoring of radio telephones and a few other services like pagers and studio-to-transmitter links as well. It also banned decoders which would restore readability and intelligibility to scrambled transmissions.

But folks are curious, and reports continued of uninvited eavesdropping. So in 1994 Congress made it unlawful to manufacturer, import, or market cellular-capable scanners. Even so, many of these scanners were easily altered to restore cellular frequency coverage, and the Newt Gingrich follies of 1996 brought the wrath of Congress down on scanners which could be modified to receive such calls.

Wide-Frequency-Coverage Scanners - In spite of the restrictions against cellular frequency inclusion in scanning receivers, lawful frequency extension grew so that a listener could get comprehensive long, medium, and short wave coverage in the same receiver that would include, low, high VHF and UHF as well! 100 kHz-2000 MHz+ scanning receivers are now quite common.

Most astounding is the low cost. Such frequency coverage was previously available only in high-end government and military receivers costing tens of thousands of dollars, yet excellent performance is now available to the consumer for less than $2000.

Computer-Hosted Radios - Leading-edge technology has allowed the introduction of a limited number of receivers and scanners designed to be controlled by, or even fitted into, host computers. Some brands like WiNRADiO are configured in such a way that they remain current for years, allowing upgrades by downloading software.

Communications Privacy - But the tradeoff for such monitoring power is the need for communications security, and new methods of privacy are invading the airwaves. Amplitude Compandored Sideband (ACSB), spread spectrum, frequency hopping, digitized speech and data, speech inversion, tone masking, bandsplitting, and many other schemes have risen to the fore in a combined effort to make the spectrum more efficient while protecting the confidentiality of its users.

The Crowded Spectrum - As more and more users fill the already-crowded spectrum the FCC has redesignated allocations and narrowed channel spacing through their vigorous refarming program. The Family Radio Service (FRS) and Multi Use Radio Service (MURS) guarantee even more signals in the air. TV and military bands have been reduced, allowing more commercial licensees. International broadcasters have loaded many of their programs on satellites, assuring interference-free delivery.

Trunking radio systems redistribute transmissions over a pool of shared frequencies, creating special problems for scanner designers, as will the ramifications of the emerging APCO Project 25 law enforcement communications protocol.

We have seen enormous changes through the past 20 years, with more to come. But as communications requirements continue to change, technology rises to the occasion, and *Monitoring Times* will continue to bring you the most accurate and comprehensive coverage available, with our progressive electronic edition, *MT Express*, leading the publishing industry at the speed of light (or darned near it)!

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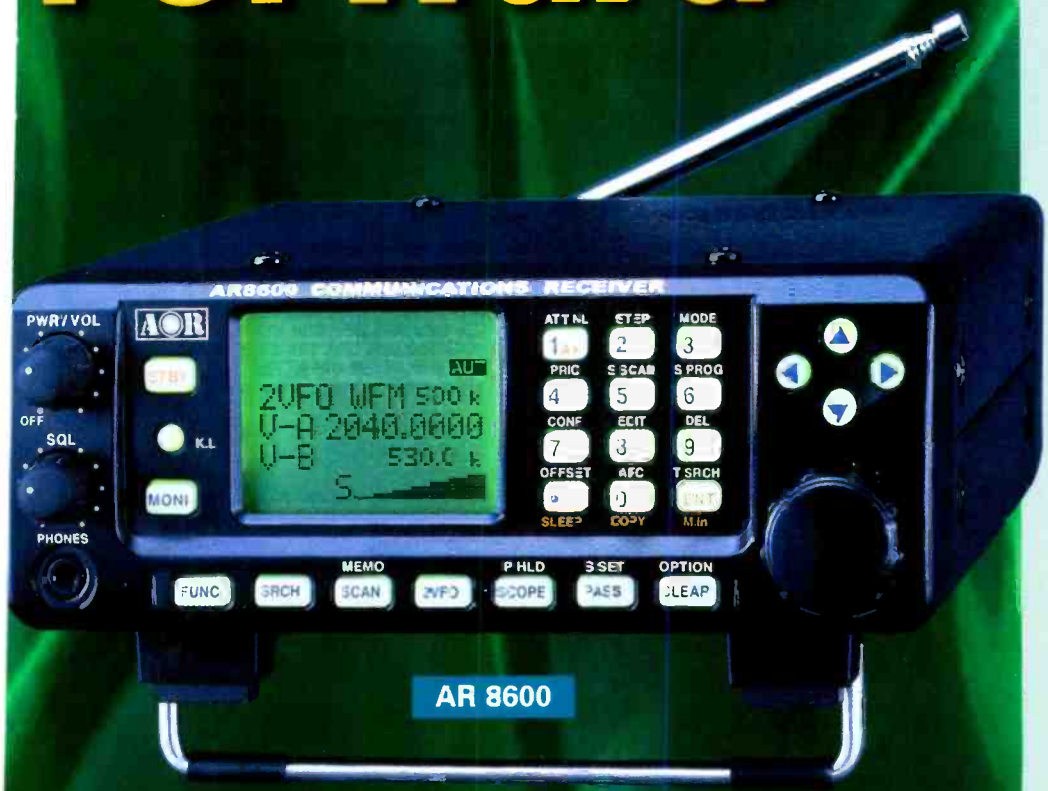

From monitoring aircraft to public safety, broadcast, shortwave and beyond, the AR 8600 sets new standards in performance. It's no wonder that many monitoring professionals, including government, newsrooms, laboratories, military users and more rely upon AOR.

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