Monitoring Times

A Publication of Grove Enterprises

WBCQ

Free Speech Radio On Shortwave

Also in this issue:
- Can MW Listening Still be Fun?
- BCB Antennas for the Suburban DXer
- The 7" Accurian Portable HDTV

AR-ALPHA
Communications Receiver

Welcome to the future!

AOR proudly introduces the AR-ALPHA, the first in a new class of professional monitoring receivers! Designed to cover 10KHz to 3.3GHz, with no interruptions,* this receiver features a 6-inch color TFT display, five VFOs, 2000 alphanumeric memories that can be computer programmed as 40 banks of 50 channels, 40 search banks, a "select memory" bank of 100 frequencies, and a user designated priority channel. It includes APCO-25 digital and a DVR with six channels that can record up to a total of 52 minutes audio. Monitoring professionals will appreciate the world class engineering and attention to detail that makes the AR-ALPHA such an amazing instrument.

- Multi-mode unit capable of receiving AM (synchronous), ISB, RZ-SSB, USB, LSB, CW, WFM including FM stereo, NFM, APCO-25 digital, and TV in both NTSC and PAL formats

- 6-inch TFT color panel can display received video signals or depict spectrum activity over a wide choice of bandwidths including a "waterfall" function to show signal activity over a specified time period

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- Resolution bandwidth is also user-selectable in increments of 1 KHz, 4 KHz, 32 KHz, 64 KHz, and 128 KHz.

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- Rear panel connections include 12 VDC power, RS-232C, USB 2.0, I/Q output with 1 MHz bandwidth, two antenna ports (one SO-239 and one Type N) and up to four antennas may be selected through the receiver's controls with the optional AS5000 antenna relay selector.

- Use desktop or with 19" rack mount

The AR-ALPHA redefines excellence in professional monitoring receivers. No wonder so many monitoring professionals including government, newsrooms, laboratories, military users and more, rely on AOR.

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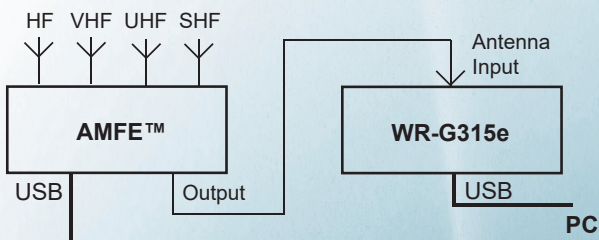
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Now that's one very powerful brick!
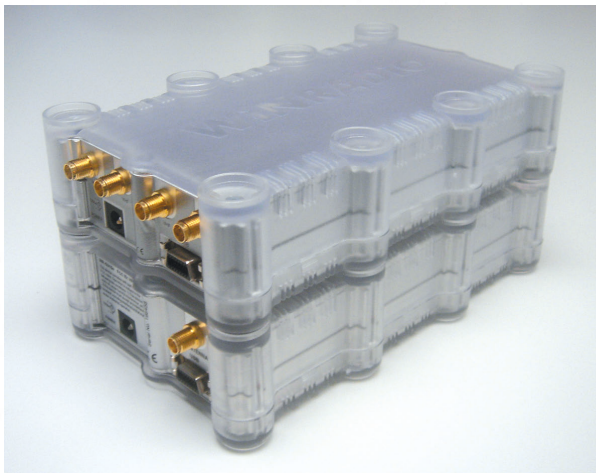
WiNRADiO WR-G315e receiver enhanced with WR-AMFE-3500

The WR-AMFE™ adds additional antenna inputs - and more.

Our latest add-on for the popular WR-G315 series of WiNRADiO receivers redefines the idea of "DC to daylight", yet again.

The frequency range of the WR-G315 can now be expanded up to 8.6 GHz using the AMFE™ option (Antenna Multiplexer and Frequency Extender). This is the first time a receiver of such affordable price range can go that high in frequency.

And you also get an antenna multiplexer thrown in, making it possible to connect four antennas for different frequency bands directly to your expanded WR-G315: No more hassle with antenna switching!

- Input frequency range DC to 3500 (or 8600) MHz
- Output frequency range 96 to 1800 MHz
- High temperature stability
- High input insulation
- High dynamic range
- Low noise figure
- Simple installation
- Integrates with WR-G315e and WR-G315i receivers
- Suitable for any third-party receivers (AMFE-8600 only)
- Low-noise linear power supply included
- Application software included
- Programmers' API included to support third-party development

The AMFE™ unit interfaces neatly with the WiNRADiO WR-G315e or WR-G315i receiver. The receiver's application software is able to recognize the AMFE™ unit and expand the ranges of the frequency input and display automatically. Switching between the antennas and tuning the local oscillator for the downconversion is accomplished fully transparently to the user. The AMFE™ enclosure is similar to that of the WR-G315e receiver and stacks neatly on top or under it.

There are two models: WR-AMFE-3500 and WR-AMFE-8600 which extend the WR-G315 receiver's frequency range to 3.5 or 8.6 GHz, respectively. The AMFE™ units are USB controlled, supplied with application software and a linear AC/DC power adapter. The WR-AMFE-8600 model can be also used with third-party receivers, and can be optionally fitted with an OCXO for enhanced stability of 0.01 ppm, to suit the most demanding monitoring and surveillance applications.

Visit **www.winradio.com/amfe** for more information.

WBCQ. The Planet.

By Dan Brown

By virtue of its history, its uncensored programming, and, above all, its owner Allan Weiner, the author considers WBCQ the most interesting shortwave station in the US. Since you can't separate the man from the station, the story of WBCQ is also Allan Weiner's story, as well as that of his previous broadcasting attempts.

Touted as "the only free speech shortwave station on the planet," almost anything goes when it comes to programming on WBCQ; if you've got the money, they'll sell you the time at a rate you can afford.

To the credit of Weiner and Chief Engineer Tim Smith, WBCQ's technical solutions to the exacting requirements of short-wave broadcasting are nearly as creative as the station's programming. Turn to page 10 for more!

On our cover: The WBCQ antenna farm at Monticello, Maine, includes a dipole curtain array for their new 15420 frequency and the log periodic antenna for 7415. Photos by Larry Will.

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Ron Bailey enjoys reminiscing about the "good old days" of broadcasting band listening (see his feature in April's issue), but don't let anyone think that those good DXing days are over! Since 1992 Ron has logged 1582 domestic stations and 81 foreign stations from 13 countries. Here are some of the tricks he uses, and how he does it. Pay attention, apply the principles to your local conditions, and you can do it, too!

Another hobbyist whose interest in DXing has been revitalized is National Radio Club chairman Wayne Heinen. But, he was limited by not having an outdoor antenna on his small suburban lot. Without the space to erect Beverage antennas, Wayne improvised and adapted two flag antennas which compensated very nicely.

Reviews

Things move fast in digital technology. No sooner did we declare there were no portable digital TV sets to fill the gap when over the air analog goes dead in 2009, than Radio Shack proved us wrong. The new Accurian portable HDTV provides great performance and surprisingly good reception. (See page 66.)

Anyone who is responsible for co-ordinating communications in a crowded RF setting will make good use of Kaltman Creations' RF Spectrum Analyzer. Especially when you really need your system to work. Or, do you need to record a show while you're asleep, at work, or out of town? Regardless of the audio source, the versatile little Olympus VN-4100PC Digital Recorder may be just what you need. (For either of these reviews, check out page 68.)

If your computer isn't running right and you're about to beat it with a baseball bat, STOP! Before you consign it to the trash bin, shell out a few shekels for PC Tune-Up. If you're like John Catalano, you'll be glad you did! (See page 72.)

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AM/FM/Shortwave with SSB | $100.00

- AM, FM, Aircraft Band (117-137 MHz) and Shortwave (1711-30000 KHz)
- Dual conversion
- Three types of automatic scan tuning
- 700 memories with 4 character page naming
- 3 programmable alarm timers (volume and frequency can be preset)

Receives AM Band

Receives FM Band

Receives Shortwave Band

Alarm Clock

Headphone Jack

Satellit 750

AM/FM/Shortwave Radio with SSB | $300.00

- AM, FM, Aircraft Band (118-137 MHz) and Shortwave (1711-30000 KHz)
- Set 9/10 KHz AM tuning; set FM tuning range
- Single Side Band (SSB)
- Auto/Manual/Direct frequency key-in and station memory tuning
- 1000 station memories (each band 100 memories, 500 customizable)

GS350DL FIELD RADIO
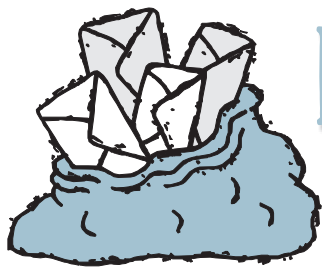
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- AM (530-1710 KHz), FM (88-108 MHz) and Shortwave – continuous coverage
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LETTERS
TO THE EDITOR

Welcome to AM DX Season

Each change of season brings with it new propagation conditions that usher in better conditions for some DX targets and a different set of obstacles. For AM DXers, though, fall and winter are the favored seasons, with fewer static crashes and better chances for long-distance reception.

Our September issue traditionally features the shortwave side of AM – hence the profile of shortwave broadcaster WBCQ. But, this September we also bring you two articles on how to get better reception on the AM broadcast band. We hope you will find them all useful.

Here are a couple of comments about the broadcast band

"I enjoyed the article on MW DXing in the April issue, and I plan to drop Ron Bailey a line of appreciation. [*Ron's September article is a follow-on to that April reminiscence-ed.*] In many ways, it paralleled my experiences in listening during the early 1970s. Why is it, after getting all of the high end digital gear we couldn't afford as kids (or didn't exist), our favorite memories are of the simple gear that was pressed into service to do the job? I suppose there's a lesson there."

Kevin Carey

Talking about AM DXing, "I think that the AM IBOC/iBiquity sideband noise interference thing deserves an article. I think it is awful technology and there are many out there who agree, even AM broadcasters. The sideband noise is broadcast without guilt or conscience.

"I am solidly against it and want it to go away as soon as possible.

"I don't think there are any compelling arguments in favor of this IBOC, sometimes called 'IBUZ.'

"Um, let's see ..... do I have strong feeing on this?!"

Iden Rogers

Foul Play: Unnecessary Interference

Summertime interference comes largely from lightning. In the August edition of "Below 500 kHz" Kevin Carey passed along a website which displays lightning strikes. Jim Falls sent Kevin another source for lightning information.

"Kevin - try this: **www.strikestarus. com/**

"Great graphics. I used it tonight before I called a HF ARES net because of the QRN racket. Didn't help w/the QRN, but at least I knew where the noise was coming from."

Jim Falls KG6FWT, Eureka, CA

When Mother Nature cooperates with quieter conditions for shortwave DXing, it's doubly annoying when manmade interference makes its presence known everywhere you tune. Many communities in the U.S. have been battling broadband over power lines (BPL), but fellow hobbyists in the U.K. are also suffering from a poorly-made broadband device. The following is from a notice posted on the Enigma2000 yahoo group.

A new yahoo group UKQRM has "been set up to deal with the huge threat of power line adaptors like the type BT provide. These adaptors pump RF into the mains wires of a house to form a network within that house.

"Of course these same mains wires act as transmitting antennas. The QRM can extend many hundreds of feet away from the property. See this example.

www.youtube.com/watch?v=S__UBDaL-aE

"We have 115 members in UKQRM and would like to welcome other users of the short wave spectrum to the group be they hobby or professional users. This terrible interference which is 24/7 never letting up makes no distinction between the short wave listener or pro user!"

"If you have the QRM now you should join us to help fight back, if you are concerned about it for the future (and you should be) you should join as you can help fight!"

http://tech.groups.yahoo.com/group/UKQRM/

UKQRM Owner

See this month's Utility World for more background on power line communications plus some encouraging news.

Special Event Station

The Southeast Louisiana Amateur Radio Club (SELARC) will be operating special event station K5R on Saturday, September 13, 2008. The club will be commemorating the landfalls of Hurricanes Katrina and Rita along the Gulf Coast in 2005.

Operations will be on the frequencies of 7.250 and 14.250 (+/- QRM) beginning at 1400 UTC and ending at 2000 UTC.

A QSL card will be available by mailing a S.A.S.E. to: Scott Hernandez, K5R, 957 Nancy St., Mandeville, LA 70448.

http://groups.yahoo.com/group/K5R

Thank you very much for whatever help you can give us in publicizing our event.

Scott Hernandez, KD5PCK

HDTV and Correction

"Congrats [to Ken Reitz, *Getting Started* June 32008] on making crystal clear the upcoming transfer to digital TV. I noticed you emphasized that Digital TV and HDTV are not

necessarily the same thing. Very well done.

"What I also got from your story is that there will be more UHF Digital / HDTV signals and therefore more emphasis should be on improving reception in the UHF band(s). Is that also to say that there will be no further activity on Channel 2-13 ?? Or at least a general trend away from the Low Band?

"I live in Tombstone, Arizona at 4500 feet elevation and receive most local (Tucson and environs) HDTV / Digital signals with a Tru-Tech HDTV receiver I bought at Target in February. I am using an old Radio Shack fringe antenna which has a smaller UHF set of elements and a Radio Shack mast mounted preamp. The only HDTV signals I have trouble copying are Channel 13 KOLD whose transmitters are on Mt. Bigelow at 8500 feet North-East of Tucson. I also have a rotator but the signal is precariously dependent on exact direction to Mt. Bigelow. I feel after reading your article that a better UHF antenna and UHF amp. should clear that up.

"Thanks for the advice"

Chris Townsend, NU7V

Hi Chris-

"Thanks for your comments! Yes, with very few exceptions, all digital terrestrial TV stations are moving to UHF (all channels will continue to call themselves by their original channel assignments to avoid a totally hysterical public reaction). Yes, get the biggest UHF array you can put up, the one I mention in the article will help. You might consider raising the antenna as well, if that's possible, but only if you can get a significant increase: going up a few feet won't make much difference, but doubling the height of an antenna doubles the gain (to a point, of course).

"Don't replace your pre-amp until you've swapped out the antenna. Most pre-amplifiers have nearly the same specs and won't make
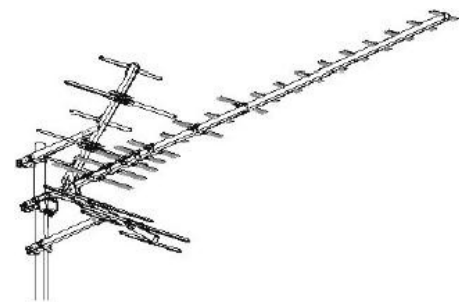
Here's the Winegard HD9095P (around $80 plus $10 shipping) from Stark Electronics (444 Franklin St. Worcester, MA, Call 508-756-7136 Fax 508-756-5752 Mon-Fri 8:30-5pm Eastern Time)

as much difference as having a better antenna. Also, make sure you're using RG/6 coax because it has less loss per hundred feet at UHF frequencies. Please let me know how you fare with your reception and thanks for writing!

Ken Reitz

In the August *Communications*, Ken recommended the HDTV Antenna Lab website to help make a decision about your antenna purchase. T Martin corrected the spelling of that web site link: it should have been **www. antennalab.com.**

Antenna Principles

"I enjoyed *Antenna Topics* in the May 2008 *Monitoring Times* very much and you brought out some good points concerning signal to noise ratio (s/n).

"I have been SWL DXing for over 50 years and have a total of 204 countries *confirmed*. I am going to start manufacturing some antennas in the near future for DXing that have worked for me over the years.

"OK, the reason I mentioned this is because on 160 meters I used four antennas. They were known as 'snakes' because you simply laid them on the ground, but I modified my snakes a little. I made them a quarter wavelength long and shorted the outer ends of the RG 58 together, and at the shack end of the antenna I cut the braid on the coax.

"I ran this into an antenna switch 'cause these babies are directional. I had the antennas broadside to the direction I wanted to hear; thus four of them gave me directions of N, S, E, W, Ne, Sw, Se, Nw. This was the reason for the shield being shorted at the end. I simply connected them to the switch, from that I ran the switch into an MFJ tuner, and the tuner then connected to a receive preamp. I connected the ground of my tuner into a ground rod and a chain link fence which surrounded the property I owned.

"In one winter season on 160 meters I achieved the first 160 meter WAS award in Mississippi. One night I was operating a contest and the band was terrible with noise due to an approaching storm from the North. I switched to the W antenna and worked stations in California with ease; not much signal strength, but because of the good s/n ratio it was easy copy. A friend of mine in northern Mississippi ran Beverages and could not even hear the stations I was working with ease.

"These are NOT transmit antennas. Another thing about these antennas is that they do not interact with each other. When it came time to cut the grass I simply rolled them up.

"I love shortwave listening and picked up a new country last night and, yes, I am a ham but my first love is LISTENING. You are doing a very job with the column. Keep up the good work.

"Again, thank you for your comments on s/n ratio; it is a fact often overlooked by DXers. GAIN is not the key factor in hearing weak stations; it also takes low noise, and noise is getting to be a major factor in the society we now live in. Gain simply sells antennas."

73 and good DX

Larry Jones, K5ZRK

Thanks, Larry. Readers will be interested in a three-part series Clem is starting this month which will address more about the basic principles behind how antennas really work and why this concept of signal to noise ratio is so important.

SHAREing Wisdom

"I saw a reference to SHARES frequencies and the reference seems to imply that these are frequencies allocated for use by the U. S. government. Can you tell me whether there are frequencies known as SHARES and, if so, where can they be found in the radio frequency spectrum? Thank you."

James D. Diggs

"SHARES is a classified government program to provide contingency communications to participating government agencies in time of emergency. All SHARES material is classified including their station list and frequencies. Their official website is at **www. ncs.gov/shares/**

"Of course, radio hobbyists never let a little classification stop them from finding a few freqs.

"The primary frequencies for this HF network are well known and have been published in my various columns in MT for many years. Here is that list:

Channel 1: Voice 5236.0
Channel 2: Voice 14396.5
Channel 3: ALE 4490.0
Channel 4: ALE 5711.0
Channel 5: ALE 9106.0
Channel 6: ALE 11217.0
Channel 7: ALE 15094.0
Channel 8: ALE/STI 17487.0
Channel 9: BBS 6800.0
Channel 10: BBS 13242.0

"Various government agencies have pooled additional freqs in the SHARES freq pool for use by all. These lists are not available in the public domain, but a few have been published from time to time in MT. If you need more on these freqs you should consult our online indexes on the MT website and order copies of those articles from Grove Enterprises.

"You will find a few more SHARES freqs on my personal radio blog at **http:// monitor-post.blogspot.com/2007/06/n5fpw-hurcomm-monitoring-list-2007.html**

"I would recommend you go to both of my blogs below and type in SHARES in the search box in the upper left hand corner. That should get you a few more freqs.

"Hope this helps answer your question."

Larry Van Horn
Assistant Editor, Monitoring Times
Btown Monitoring Post:
http://monitor-post.blogspot.com/
Milcom Monitoring Post:
http://mt-milcom.blogspot.com/

COMMUNICATIONS

by Ken Reitz

AM/FM/TV BROADCASTING

NPR Studies HD Radio Coverage

To determine the range of coverage HD Radio signals put out (at currently reduced power levels) over analog signals, National Public Radio (NPR) commissioned their own lab to record reception details at various locations around the country. They were also looking for levels of interference analog stations suffered from nearby digital signals with an eye to trying to determine what will happen when the FCC OKs a power increase.

According to an article in *Radio World Online*, the Corporation for Public Broadcasting, NPR's parent organization, was studying the results of the more than 260 page report in June. Among the findings were that best HD Radio coverage was found in cars and that there was "a dramatic drop-off in digital coverage for home receivers." The problem appears that, while an increase in digital power would help home-based receivers, it would cause an increase in interference with analog signals, according to the article.

UGA Buys TV Station

While universities have long owned non-commercial TV stations for training and broadcasting public TV fare, in a switch from tradition, the University of Georgia is buying a commercial TV station. According to a school press release, the university will use the station, WNEG-TV in Toccoa, Georgia, to train students in commercial broadcasting and the commercials broadcast will help pay for the station's upkeep.

KFTT-FM Going Green

According to the Leslie Report in *Radio World On-line*, KFTT-FM, Bagdad, Arizona, plans to expand its solar power plant which currently powers its 900 watt transmitter. The report says that 180 additional solar panels will be added to power studio operations. Apparently, the remote transmitter is in a particularly hard to get to location, which made refueling its propane-fired generator difficult. That generator will now see duty as a stand-by power system in case the sun fails.

iBiquity Fee: $25k/channel

One of the reasons the radio industry is not rushing to add auxiliary HD channels is that to do so, broadcasters must pay iBiquity a licensing fee for channels that, as yet, may not be producing any revenue. According to a fact sheet from iBiquity headquarters, the fee for a station's main channel has just gone from $15,000 to $25,000. Fees for transmitting multicast channels in addition to the main channel are charged based on a "revenue sharing model…with a minimum annual fee of $1,000 per audio channel." iBiquity also charges fees for transmitting data using iBiquity-developed technology that shows up on receiver screens as song, artist, and iTune tagging. This fee is also revenue-based.

DTV CONVERSION/CONVULSION

Congress to Fund LPTV DTV Switch

Congress is to make $65 million available to help Low Power TV (LPTV) stations across the country make the switch to the DTV era. Funds could be available as early as February 17, 2009, the date after which analog TV transmissions for full power TV stations will cease. According to a report in *TV Technology.com* Congress will give $10 million to add translators to the DTV conversion.

In related congressional action, John Dingell, chairman of the Committee on Energy and Commerce, as well as Ed Markey, chairman of the Telecommunications and the Internet Committee, skewered representatives of the National Telecommunications and Information Administration (NTIA) which is charged with overseeing the implementation of the DTV conversion.

Problems have piled up at the NTIA, not the least of which is that fifty percent of coupons issued have expired without being redeemed. The 90-day expiration date is said to be a main cause as the clock starts running the moment the coupon is issued. Congress urged the Post Office to do its bit by speeding up delivery of the coupons. It turns out that NTIA was sending them out Standard Class instead of First Class. Still, unavailability of eligible models that have the features consumers are looking for has not helped. The NTIA had not devised a plan to deal with re-issuing expired cards.

FCC/EPA: Make Your DTV Switch Green

In an apparent effort to combat critics who say the DTV switch is overloading already strained landfills, a joint web-page effort from both the FCC and the Environmental Protection Agency (EPA) suggests those planning to dump their analog set for new digital ones should consider recycling the old sets. The web page points out that doing so can reclaim valuable materials such as circuit boards, metal wiring, leaded glass and plastics that would otherwise end up in the landfill. The government bureaus refer consumers to three web sites that serve as resources for electronics recycling: **www.earth911.com/electronics**; **www.nrc-recycle.org/localresources.aspx** and **www.mygreenelectronics.org**.

FCC ENFORCEMENT

2 Meter Pirates Down in the Mines

Gateway Coal Mine of Coulterville, Illinois, received a warning notice from the FCC for operating on 146.400 MHz as a business radio service. Riley Hollingsworth, FCC Special Counsel, wrote the company that the frequency was granted to the amateur radio service and that they faced seizure of the equipment and a fine of up to $10,000 if they continued the practice.

FCC in Nationwide Sweep of FM Pirates

Over a 30 day period from mid-June through mid-July, the FCC sent out 24 Notices of Unlicensed Operations to businesses and individuals in California, Florida, Kansas, New Jersey, New York, Oklahoma, Pennsylvania and Texas. All were cited as transmitting unlicensed FM stations and were given 10 days to prove they had licenses or face a different kind of music: seizure of their equipment and up to $10,000 in fines.

FCC Upholds $10k Fine for Boston Pirate

So, what does the future hold for the above snagged FM pirates? A case involving a man from Boston, who was found last August to be operating an unlicensed transmitter on 101.3 MHz, and who ignored a similar notice but kept operating through March of this year, ended in a Notice of Apparent Liability for Forfeiture was that was issued April 8. The individual was fined $10,000. Again, no response was received by the FCC. The fine was upheld June 26 and now the Commission waits to see if they get paid or an attempt to reduce the fine is made by the pirate.

County Sheriff Busts GA Pirate, FCC Watches

The FCC's customary time-consuming,

man-power eating, methodical process of finding and pursuing radio pirates may be coming to an end. Several media outlets reported the closing of an Augusta (Richmond County), Georgia, FM hip-hop pirate known as "99.9 FM." According to one report, unlike the radio busts described above, apparently the FCC's role here was simply to tell the local sheriff's office where the unlicensed broadcaster was situated so the police could move in.

SATELLITE/COMPUTER RADIO

Chrysler: Web-based Car Radios by 2009

Imagine cruisin' down the highway and selecting from thousands of radio stations world-wide. Word from numerous auto industry sources say that time may be coming, as Chrysler announced it's making in-car Internet available for 2009 models. Though no prices were quoted for this new option, dubbed Uconnect, the Bluetooth-enabled device claims it will turn your Chrysler product into a WiFi hotspot. An after-market add-on will be made available for Chrysler-related model lines. A preview of this product can be found in the on-line *Automobile* magazine: **www.automobilemag.com/features/news/0806_2009_chrysler_uconnect_web_in-car_internet_wifi/index.html**

U.S. Broadband Coverage Poor

An article in *Christian Science Monitor* from June 3 questions the pervasive notion that most Americans enjoy high-speed Internet service. The article quotes a 2007 report from the Organization for Economic Cooperation and Development (OECD), that finds the U.S. ranked just 15th out of 30 developed nations in broadband penetration. And that was a drop of 3 ranks from 2006.

As explained in the article, Americans pay more on average than 21 other OECD countries for broadband service that runs at slower speeds than 13 other OECD countries. Despite having the greatest number of broadband subscribers in the world (according to the article about 70 million), that's only 23 percent of Americans subscribing to broadband.

CONSUMER'S CORNER

Radio Shack Recalls Power Supply

The U.S. Consumer Product Safety Commission on July 2 issued a recall on two RadioShack power supplies. Named in the recall were RS catalog #22-507 (13.8 v D.C. 3-amp power supply) and RS catalog #22-508 (13.8 v D.C. 15 amp power supply).
In the release, these units were said to have been "wired incorrectly, posing electrocution and fire
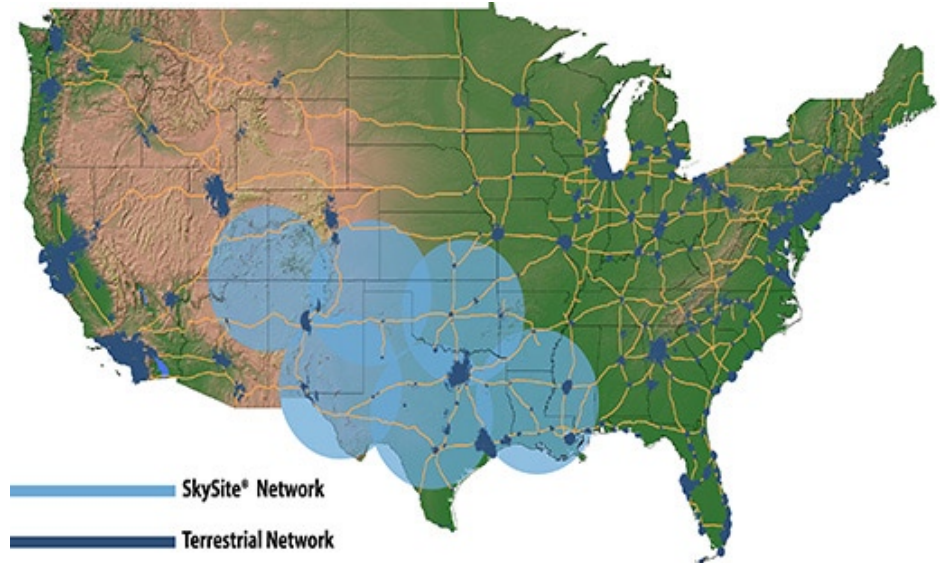
hazards," though no incidents or injuries as a result of using these products had been reported. According to the USPSC release, 160,000 units, which were manufactured in China, were sold in Radio Shack stores nationwide from October, 2004 through January, 2008. Prices ranged between $50 and $85.

Consumers are urged to unplug the recalled power supplies immediately and take it to any RadioShack store for a free repair. Registered owners of the recalled power supplies will be mailed a notice. For additional information contact RadioShack at 800-843-7422 anytime, or visit their website at **www.radioshack.com/recall**.

RFID could be Hazardous

An article appearing in the June 25, 2008 *Journal of the American Medical Association* (JAMA) concludes that "in a controlled nonclinical setting, RFID (Radio Frequency Identification) induced potentially hazardous incidents in medical devices." It warned that such devices in a "critical care environment should require on-site EMI (ElectroMagnetic Interference) tests and updates of international standards." That's after investigators tested two RFID systems, one a 125 kHz active system and the other an 868 MHz passive system, under what it called controlled conditions last year.

According to the article, they tested 41 medical devices in 17 categories from 22 manufacturers at the Academic Medical Centre, University of Amsterdam, in the Netherlands. The report said that "in 123 EMI tests…RFID induced 34 EMI incidents" of which, 22 were classified as hazardous, with the 868 MHz signal inducing a greater number of such incidents (26 in 41 EMI test). These tests were significant because hospitals and other medical institutions use RFID devices to track inventory and keep track of patients, among other things.

BALLOON-BASED COMMUNICATIONS

Balloon-based 700 MHz Service

An Arizona company, Space Data Corp., wants to use balloons to launch mobile networks operating at 700 MHz to provide service

to urban and rural areas alike. According to an article in *TV Technology.com*, the company will use balloons similar to weather balloon it dubs "SkySite" with RF packages on the balloons that will fly at 65,000 feet or higher. The company says it currently provides similar data to oil industry customers and has a multi-million dollar contract with the Air Force for similar systems.

More Balloons in the News

What to do if you can't get a signal through to your target audience? According to a report in the Association of International Broadcasters, a group of North Korean defectors, now living in South Korea, plans to send printed news to their relatives back in North Korea via giant balloons. The group isn't concerned about the papers getting wet because copies of "Free North Korea Shinmun" will be printed on plastic.

HAPPY BIRTHDAY, NASA

"Driven by the competition of the Cold War, on July 29, 1958, President Dwight D. Eisenhower signed the National Aeronautics and Space Act, providing for research into the problems of flight within Earth's atmosphere and in space. After a protracted debate over military versus civilian control of space, the act inaugurated a new civilian agency designated the National Aeronautics and Space Administration (NASA). The agency began operations on Oct. 1, 1958."

http://www.nasa.gov/50th/50th_magazine/historyLetter.html

SkySite® Network

Terrestrial Network

WBCQ. The Planet.

By Dan Brown W1DAN

Who?
Allan H. Weiner. 2 employees...he and wife Jennifer. Many volunteers.

What?
A free speech shortwave radio station.

Where?
274 Britton Road, Monticello Maine, USA 04760-3110.
Shortwave: 5110kHz, 7415 kHz, 9330 kHz, 15420 kHz (summer) and 17495 kHz (for now)
Internet: **www.wbcq.com**

How?
Any way he can. Inventive answers to technical problems.

Why?
Allan believes in free speech radio.

WBCQ is perhaps the most interesting shortwave radio station in the United States. Privately owned and managed by Allan H. Weiner, the station has a very interesting history. A self described outsider, Allan truly believes in "Free Speech Radio." He says his life follows the idea.

Shortwave is still fun to Allan as he loves broadcasting and everyone working at the sta-

Allan Weiner has broadcasting in his blood (Photo by the author)

tion is very proud of the results. Included in the venture are his wife Jennifer and a handful of volunteers keeping free speech alive at an inexpensive rate.

From the listener letters and emails he receives, it seems that many listeners like the programming. Allan says that medium is exciting and the Internet cannot replace the analog feeling of the crackles and fades.

From the WBCQ web site (**www.wbcq. com/**): "Allan H. Weiner is the owner, founder and station manager of WBCQ 'The Planet.' Allan has been involved in the radio broadcasting field of over thirty years, and is dedicated to WBCQ's free speech mission and to providing all with affordable access to the airwaves. Allan's book, *Access to the Airwaves*, documents his lifelong fight for free radio and free speech."

We'll tell you of the unusual path Allan took to this station and give some interesting details as well.

Free-Radio History

During the 1960s and early '70s, a new counter-culture style of radio programming was developed by Tom Donahue and his wife Rachael in Northern California at KMPX-FM. It became very popular. This was at a time when the relatively new and not yet popular FM band had radio stations in every city with a classical or easy listening music. The FM dial was boring and un-tapped.

With this new format, station owners allowed young inexperienced local DJs to experiment. This evolved into a free form underground or "free speech" radio format staffed by hippies and other young and enthusiastic people who chose to not follow the ubiquitous Top-40 crowd. Their shows were often interesting and thought provoking and usually somewhat out of control.

The music often consisted of a combination of protest songs and album cuts with drug-induced lyrics and novel melodies. The DJ's of the time were usually given totally free reign to choose their music sets and what they wanted to say on the air. Often these music sets were

created around a theme or to comment on a current event, such as the Viet-Nam conflict, Watergate or segregation.

For my part, I started listening to FM radio around this time and remember WWOM, "Mother Radio" in New Orleans (the actor John Laroquette was an early DJ at this station). I also volunteered for many years at Tulane University's college FM station WTUL, which even today is proud to be a "progressive" radio station that allows all DJs to play what they enjoy.

At WTUL in the mid 1970s to early 1980s, I was part of a small group of DJs who pioneered the playing of electronic music such as Tangerine Dream, Kraftwerk and Brian Eno before the MIDI electronic music revolution in the 1980s. Our show was called "Bizzarre Radio (with two ZZs)" and we even had the phrase trademarked.

After the electronic portion of the show I also enjoyed making sets of music with folk and non-popular album cuts that either had a theme or created a good "vibe." I never had a political interest, though.

Such people as Bob Fass of WBAI in NYC used free-form radio to push the envelope of what is today called "Political Correctness." Well, the "free speech" format spread like wildfire over the FM band and Allan noticed.

After many listeners abandoned old and predictable AM top-40 radio and found this exciting new experiment happening on FM, larger corporations soon learned how to cash in on the audience. They purchased the small mom and pop radio stations inexpensively and worked hard to increase the audience share and income. However, once this started to happen, these corporations also wanted to "control" their DJ's free speech and reduce the number of songs played to a small, familiar set in order to appeal to the largest audiences possible. Consultants and formats became popular and DJs who didn't play along soon were out of a job.

The listening experience started a long slide down in quality. Some DJs and listeners decided to continue this new tradition on their own pirate radio stations. By this time, the only free speech radio happening on the shortwave bands at the time was created by Radio Caroline and other small part time and seasonal pirates, providing some very sporadic, but interesting listening even today.

Free Allan

Well, in the early 1970s, a young Allan heard what was happening in the New York radio dial and decided to add his voice, but with the shortcut of not obtaining the required FCC license. As a teenager living in Yonkers, New York, Allan enjoyed electronics and radio. He really wanted to have a legal radio station, but did not have the startup money to get a "real" radio station going. So, he built a pirate radio station ("WKOV"), so he could "serve the area." He and friend Joe Ferraro shared the frequency. But he got busted by the FCC in August of 1971.

After high school, Allan moved far north to the town of Monticello, Maine. He attended Ricker college in Holton, Maine (the college went bankrupt in the late '70s). There he honed his technical skills by building legal local radio stations and a TV station in the area. He then graduated and worked for some commercial stations and soon bought a radio station in Presque Isle, Maine (WOZI).

Allan then built a 5kW AM station (WOZW) in Monticello. In the early 1970s he purchased land in Monticello, but he still had a dream of serving the NYC area with a free speech radio station where people could get on the air, play "their" music and express personal views that would not be affected by corporate ownership limitations or bias. At this time, there were exciting events in the pirate radio arena in Europe. He was fascinated by the offshore pirate stations like Radio Caroline broadcasting off the coast of England in the 1960s to 1980s, and saw that these stations were not limited by the government at that time. Allan decided to avoid radio station regulation in the U.S. by running an offshore radio station.

In 1986 Allan and friend Randall Ripley (Randi Steele on the air), along with some friends and investors, purchased a beat up Japanese fishing trawler ship for about $50,000 and equipped it with radio gear. This work took about two years and the ship was renamed the *MV Sarah*.

A little over 20 years ago, in July of 1987, they took the converted 150 foot fishing trawler 3.5 miles off the coast of Long Beach Long Island, NY. This distance from the shore was to get into international waters where he could not be regulated or get arrested. Allan and his gang of almost sea sick friends proceeded to transmit as "Radio Newyork International" (RNI) on four frequencies covering much of the RF spectrum with his free speech message of music and New York style banter.

Allan and the crew signed on Wednesday, July 22, 1987. Their format was a mix of interesting DJs who played the music they liked, spiced up with parody commercials and interesting IDs. They stayed on the air until they were raided by the FCC, Coast Guard, and Customs the next Tuesday morning. That one weekend, while tuning around with my Yaesu FRG-7700 receiver, I discovered the 1620 kHz AM signal near Boston with a very strong signal indeed!

Today, as a tribute to that time, Allan airs a program called "RadioNewyork International" on the legal WBCQ hosted by Johnny Lightning (see **www.johnlightning.com** for further information).

According to Allan, the short-lived success of the station was due to the large amount of publicity the station received when they were on the air. There were stories about the ship on the TV networks and newspapers, as well as much word of mouth publicity. He was proud of his achievements and was well known for the station.

After the station was shut down, the downside was the vicious attack he received from the government that silenced his potent signal. The authorities took over the ship and wrecked the gear. The government then threw large amounts of paperwork at him and got restraining orders against him personally. They kept him in the courts for years, and it became too expensive for him to pursue the matter. The government was afraid he would establish a precedent that others would soon follow. Allan says if he had unlimited funds, he would still be broadcasting offshore. He still has many recordings of the event, but does not plan to release them.

Later, in the early 1990s, they purchased air time and had an RNI radio show on WWCR Shortwave for a while. He gave up the plan of offshore pirate broadcasting up, as he knew the government would never leave him alone. His next step... get a license.

Legal Radio

It took years for Allan to get a construction permit. He knew the FCC would not license an illegal operator; however, he was never really charged or convicted with a crime for the *MV Sarah* operation. The FCC

Allan with the modified "pole pig" (Photo by the author)

did have documentation of his Yonkers pirate radio operations in the early 1970s, but Allan's lawyer successfully argued that after 10 years, they cannot revisit the old event and could not deny a license to him.

So, on December 22, 1997, the FCC issued a construction permit to build WBCQ. He legally signed on the air September 8, 1998, from his land in Monticello, which Allan says is a very good shortwave transmitting site.

Programming

From the WBCQ web site: "WBCQ strongly supports the United States of America's constitutional right to free speech. Programs aired by WBCQ's clients are not censored in any way. WBCQ believes that its programmers have the right to express themselves on the airwaves in any way they seemfit. This is why you will find a diverse mix of music, talk, commentary, spiritual, religious, and commercial programming on WBCQ. WBCQ only restricts programming content if the programmer directly advocates harming other human beings based on their race, creed, or national origin."

Well, WBCQ programming is indeed a diverse mix. During the week, they mainly air religious programs (which help pay the huge electric bill). Weekends are more free form. Some programs to listen for are: *This Week in Amateur Radio, Jean Shepard, Voice of the M/S Katie, Shortwave Overnight - Free Speech Rock 'n' Roll, 867-5309, Area 51, Marions Attic, Behavior Night, Glenn Hauser's World of Radio*, and finally *Allan Weiner Worldwide*. There are also people who create political programming, comedy or variety. Their newest show is *Antenna 4*.

Chief Engineer Tim Smith WA1HLR has a show on the weekends (*Radio Timtron Worldwide*). And hams have shows, too. Mal Fuller has *Antique Radio News. Allan Weiner Worldwide* talks about the state of shortwave, technical items, rants and pretty much anything. (On a funny note: When he speaks of big high powered transformers and RF components, he says he gets emails from women who are interested in the technical details of the station. Something that he never thought would happen!) There are sometimes open slots during the week, but mostly the station is sold out.

Mal Fuller (courtesy WBCQ)

In my opinion, the most exciting programming on The Planet is *Area 51*. Mondays through Saturdays 5pm-7pm eastern on 5110 kHz SSB, they turn the transmitter over to the free radio community. From pirate programs to the way out and strange, *Area 51* has the most alternative programming on the shortwave dial.

As many government stations close their transmitting facilities, Allan would like to relay the VOA or BBC, but this is not happening much at this time.

Audience

As far as national advertising is concerned, shortwave has no ratings system to measure an audience size. The national advertisers do not know how to take advantage of the medium of shortwave, anyway. For Allan, it is a pay as you go medium.

Client's responses, email or postal mail allows Allan to estimate the audience size. Allan thinks there is anywhere between 5,000 to 50,000 listeners at any time. One day on the air he gave a web site address out and asked listeners to log into the web site. The web counter went to 25,000 hits.

They also stream the audio of the 7415 service on their web site.

Program Rates

WBCQ's mission is to provide access to the airwaves for the greatest number of people, so they keep their operating costs low and can charge very inexpensive rates. Their biggest single operating cost is electric power, and this largely drives the programming rates.

WBCQ negotiates programming rates individually with each broadcaster. Discounts are provided based on the amount of programming purchased. Anyone who wants to broadcast an opinion to large areas and potentially millions of radios can air their programs on WBCQ. They have free speech access that is unavailable from any other SW station. This free speech can be music, religious, or political.

The operation breaks even and occasionally Allan can put some money aside for upkeep. He is proud to have no mortgages and he does not owe anyone money. The business does have ups and downs, though. WBCQ's rates are about $60-70.00/hr, but should be $150.00/hr because of electrical costs.

Some discounts are offered, depending on the time of programming, the frequency of the buy, and its content. Some poor clients will receive a discount. Pirates can and often do buy time. Dr. Benway of Undercover Radio has purchased time. He sends a money order with a CD and the show is aired. Allan does not know where the mailings come from, nor the identity of this talent, but he is proud to further the cause.

Producing Programs

The person who buys time can deliver a cassette, CD, or reel-to-reel tape to the station. For example, Goddess Irene lives in an apartment in Bristol, Rhode Island. She sings her music and messages of peace into a tape recorder. The cassette is then mailed and is played on WBCQ's transmitters. Goddess Irena has a web site where she can interact with her listeners.

Some religious clients buy blocks of time

Goddess Irena is one of the many characters who find a home on WBCQ (courtesy WBCQ)

or even whole transmitters to talk about their religious beliefs. They can just call the station on their phone and be put on the air for an hour or more. To Allan, it is their free speech right, too! Other people use their PC and the Internet to stream audio via Voice Over Internet Protocol (VOIP) to the studio, FTP or email an MP3 file. One of these days, even I'd like to produce a program on WBCQ.

I attended the SWL Winterfest in 2007 (**http://swlfest.com/**) and joined Timtron at the hotel where the convention was held. Tim was on the air live on WBCQ with his show using old cart machines and an old audio console feeding a laptop that was streaming his audio to WBCQ's master control and over the 50 kW transmitter. Very cool!

Chief Engineer Tim Smith (Timtron) on the air from Winterfest (courtesy WBCQ)

The Future of Shortwave

According to Allan, he sees a growing listenership on shortwave. It does not matter what the medium is: if there is something to listen to, people will find it. Each time his transmitters are on, he gets new listeners. In 10 years from now, Allan feels shortwave will still be primarily analog AM. His station will be on the air as he feels private industry can be more efficient than government efforts. Maybe there is some retro flavor to the medium (like the muscle cars of the 60s).

When a disaster occurs, he usually sees an up-tick in SW receiver sales. Allan and Tim attend the NASWA SW Winterfest in Kulpsville, Pennsylvania, to get a glimpse of the industry from a listener perspective.

Allan is not a member of the National Association of Shortwave Broadcasters (NASB), as he likes to be on the "fringe" of the main SW group.

Could the FCC not renew his license? They could challenge it, but he sees no reason for them to do so. The FCC has been very good to WBCQ with all the operational changes. Check **www.wbcq.com** for the latest schedule and frequencies.

Final thoughts

WBCQ is an interesting station to listen to. It has a very wide range of programming that is not available anywhere else. The relatively low power signals get out very well. With the demise of many major shortwave broadcasters, WBCQ is shining brighter on The Planet.

The Technical Side of WBCQ

Transmitters

There are four shortwave transmitters:

7415 kHz has a modified Harris MW-50 50kW transmitter

9330 kHz uses a TMC FRT-40 linear amp that creates compatible SSB. The lower side-band has audio with 20% carrier

5110 kHz uses a modified Collins military FRT-22 transmitter

15420 kHz uses another modified Collins FRT22 compatible SSB transmitter.

The audio for his transmissions is processed using Texar Audio Prisms into Inovonics 222 limiters. He'd like to get an Optimod 9000.

The main 7415 transmitter

Allan bought a used Harris MW50 AM pulse duration modulated (PDM) broadcast band transmitter. Allan's friend, Chief Engineer and radio ham Tim Smith (ham radio call WA1HLR) converted the MW-50 from the AM broadcast band to the 41 meter (7 megahertz) band shortwave. To do this, Tim rebuilt the driver stage, tank circuit and re-tuned the final neutralization, among many other items – a pretty easy conversion for Tim, as Tim spent his entire life building and modifying ham transmitters.

Goddess Irena is one of the many characters who find a home on WBCQ (courtesy WBCQ)

This is the only known MW50 that has been converted to SW use and it has been very reliable. Allan submitted the proof of performance test data to the FCC for approval, but did not need any new type acceptance testing. Tim spends much time on the air operating from his home base at "Henry Yellar Mountain" in Skowhegan, Maine. I occasionally chat with him on his ham set at around 3885 kHz.

What is PDM?

Pulse Duration Modulation is a method of modulating the transmitter's carrier. Instead of using a very large, bulky and expensive modulation transformer, a high speed switching tube is used. This switch is turned on and off like a light switch at a very high rate (about 70 kHz). The dura-tion of the on time is related to the audio waveform at that moment.

When this signal is then filtered and sent to the transmitter's RF output tube, the audio waveform is superimposed or modulated onto the RF carrier. The advantage of this system is that the switch tube is very efficient. The modulator wastes much less power than a traditional class B plate modulator that had been used before in the past.

Power

The Harris transmitter required a new power supply. Again, Allan and Tim created a new power supply that is rather unconventional. While local WBCQ power from the electric supplier is supplemented by a wind turbine, the main feed is a "single phase" line from the street.

Most transmitter sites have power provided by the electric company in what is called "three phase," having three heavy individual lines. This allows the power to be distributed over these three lines and provides the added benefit of much easier hum filtering in the transmitter's power supply.

As the WBCQ transmitter site only has single phase power and the local power company wanted two hundred thousand dollars for a three-phase feed, Allan and Tim made a very large, single phase power supply. Allan had a company that makes telephone pole "pole pig" transformers build a very large, oil filled plate transformer for very low cost (about two thousand dollars and they even paid shipping!).

Timtron had to put a lot of extra capaci-tance and reactance in the power supply to filter the ripple. He also installed new high voltage relay contactors. This uncon-ventional supply raises eyebrows among many transmitter engineers, but it works very well.

The WBCQ Shortwave Antenna

To launch the radio signal into the aether, Allan thought of a curtain array (too expensive) or a rhombic (not the best performance). So someone told him to call a guy named Al Sommer of Sommer Anten-nas in Florida (**www.sommerantennas. com/wbcq.html**). He built a 14dbi Log Periodic beam antenna out of aircraft grade aluminum.

To ship the antenna, Sommer broke the antenna down in parts and provided assembly instructions. Allan assembled the antenna and put the Log Periodic antenna on a Glen Martin 66 foot tower with an el-evated platform in December of 1998. The antenna is currently fixed at 245 degrees (aimed toward Mexico City) and has worked flawlessly since then.

The WBCQ official coverage area also reaches most of the U.S. very well and can reach Western Europe off the back of the beam. Overall, this simple antenna pro-vides a good North American signal.

Why 7415?

When Allan was searching for a fre-quency for his main transmitter, consultant George Jacobs stated that 7415 was available. 7415 in the 41 meter band used to be a popular "free radio" channel. But because of the VOA near that frequency, the pirate broadcasters eventually vacated it. Allan applied for this frequency and the FCC assigned it to him.

Allan wanted to get a frequency a little out of the normal 41 meter band, so his 50kW would stand out against the tall signals.

Studio

Since he was in radio for a long time, Allan had most of the studio gear by the time he received the construction permit. The main audio console is an old Harris Executive from the late 1960s. This board is reliable and simple. It has survived nearby lightning strikes and is easy to repair, as it is made of discrete transis-tors and other components. The newer consoles of today often have hard to find parts.

Other equipment include CD play-ers, turntables, audio cartridge ("cart") machines, telephone interfaces, and computers that play audio.

Local Radio

For the local town of Houlton, Maine, Allan runs WBCQ-am (WCXH) on 780 kHz using a 1939 RCA BTA-5F with one vertical stick as the antenna. This station is leased out with a religious format. In March he won an auction for 94.7 and has a construction permit for it. Allan expects to be on the air this spring with the new FM signal. Auctions were incorporated because comparative hearings take a lot of time and the FCC can make extra money with an auction.

LPFM?

Allan had a 10W educational station at his farm in Monticello. He has no interest in recent LPFM as he likes higher power and there is room for it.

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Medium Wave Listening – Can It Still Be Fun?

By Ron Bailey, AA4S

In a previous article (April, 2008) I described what medium wave listening (MWLing) was like for me in the 1950s. I told how it relieved the boredom of long New Jersey winters.

By contrast, technology has now mushroomed to the extent that the word "boredom" is rarely heard. The Internet, personal computers, TVs with 100+ channels, cell phones with text messaging, MP3 players, and video games now exist to occupy the waking hours of children and grown-ups alike. Add to that the activities associated with daily living, and it seems there would be little time left for a hobby such as this.

Nevertheless, hundreds of folks are still doing many hours of MWLing. Furthermore, they seem to be just as enthusiastic as in years past. For example, the National Radio Club (NRC) founded in 1933, has over 700 members. Other clubs such as the International Radio Club of America (IRCA) and the Ontario DX Association (ODXA) are still very active.

One of the reasons is that the same technology mentioned above is being used to greatly enhance every facet of our radio hobby. Let me address those areas where I feel we have benefited the most.

Radios

My $50 Hallicrafters S38C provided many satisfying hours of listening for me in the 1950s, even though it was by no means "top of the line." These days you can add two zeros to that dollar value, then double it depending on how many filters, memories, and other features you feel you need!

At the low end of the spectrum you can still spend under $25 to get a Sony SRF-59 Walkman, which is among a group of radios now being classified as "Ultralights." A growing number of DXers are trying to log as many stations, as far away as they can, using these highly sensitive, but relatively inexpensive radios, using only the "come-with" antenna. Sony's SRF series and Sangean's DT series are among the most popular of these, providing us with a new-found challenge.

Considerably higher in the spectrum are the software Defined Radios (SDRs), which provide a real-time look at a range of frequencies. For example, with FlexRadio Systems® FLEX-5000™ you can observe as much as 192 kHz of spectrum at one time, then click on the desired frequency. Not only that, you can go to bed and record the entire range overnight. The next morning you can listen to all the frequencies you want and fill up your log!

Between these extremes are countless radios designed to satisfy most every need. My main MWLing radio is a Drake R8A. It is equipped with an RS-232C interface, which allows complete control and programming of all but the analog features (such as volume and RF gain), using a computer with software specifically tailored to the radio. I also have a Sony 2010 which I bought used for $250 years ago. It goes with me on trips if I intend to do medium wave listening.

Antennas

Advances in antenna modeling software now allow us to determine which antenna may best suit a particular need. A wealth of information can be found in handbooks, in magazine articles, and on the Internet. Presently, some of the most popular limited-space antennas include K9AY terminated wire loops, flag antennas developed by K6SE and others (*see page 16-ed.*), and loops designed by Neil Kazaross (referred to as the "KAZ" and "Super Kaz").

Some DXers use what they call a BOG ("Beverage On Ground"), which is just a long, insulated wire lying on the ground, pointed toward a specific direction.

Since 1992, I have been DXing from North Carolina, where I am fortunate enough to have room for seven 560 foot-long terminated Beverages. Despite the fact that I have been told these are too short to be effective on medium wave frequencies, I have logged 1582 "domestics" (U.S. and Canada) and 81 foreign stations in 13 countries. I've also logged several longwave stations such as Atlantic 252, even though my location is more than 430 miles from the East Coast. It helps that my ground conductivity is extremely poor, which is a benefit to Beverage antennas.

The Internet and More

I've already mentioned radio control using a computer, but today's technology has taken us way beyond that. Page 23 of April's issue contains a list of over 200 countries which stream their program audio over the Internet. This provides a nearly real-time means of verifying a station you might be attempting to log. Just be careful that you don't confuse what you are hearing on the Internet with what you are actually hearing over the air!
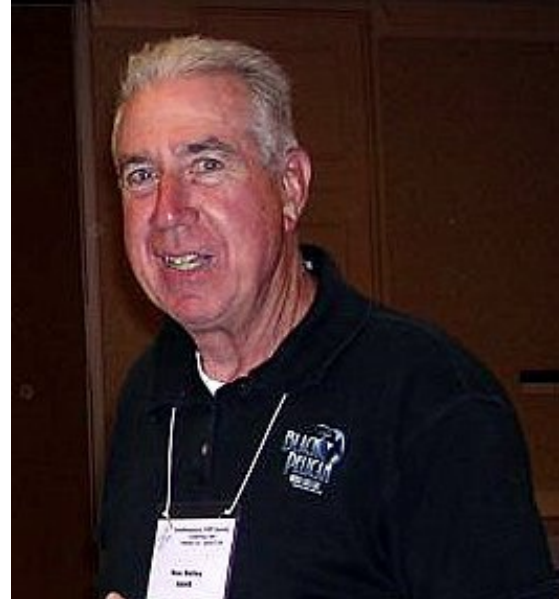
Searching the Internet will reveal many other tools which can be useful in your efforts to hear target stations. One example is a software program which shows day, night, and critical hour antenna patterns for North American medium wave stations. This is a handy tool for determining your chances of hearing a station. Another allows you to track the real-time progress of the Sun as the Earth turns. This lets you see if either you or your target area is entering or exiting a "grayline" period.

Let's Do Some Listening

My operating position is designed for efficiency and convenience. The radio is directly in front of me; a laptop computer to my left is running with the GeoClock (**http://geoclock.home.att.net**) map showing the North American daylight/darkness features.

I put on a pair of comfortable, but inexpensive headphones and set the counter on my old Radio Shack CTR-100 cassette recorder on my right to zero with a fresh cassette in place.

Next, I make sure my clock is set to exactly the correct time. I have one which is controlled by the U.S. Atomic Clock; you can also use WWV. Many stations wait until just 4 or 5 seconds before the top of the hour to identify. You don't want to miss these. ESPN and Radio Disney are especially prone to doing this – if they ID at all!

Operating Aids

My desktop has a clear Plexiglas sheet under which I have several operating aids. One shows the favored directions of my antennas. Another shows the keys to WWV's propagation forecasts given at 18 minutes after each hour. Checking these forecasts alerts me to possible auroral conditions which may attenuate signals from stations in the northern latitudes and allow me to hear some of the more distant Latin and South American stations.

Another aid is a list (which I compiled) of all the telephone area codes in the U.S. and Canada. Local businesses often give phone numbers which can help you identify a station's location.

My most important operating aid is the National Radio Club's *AM Radio Log©*. It lists all U.S. and Canadian AM broadcasting stations by frequency, including call letters, city of license, and state/province. This log is updated continuously by club members, then is re-printed each September. It also includes useful information, such as transmitter powers, general hours of operation, and programming formats. (*See page 74 for ordering info - ed*)

Three other operating aids are a list of United States counties sorted alphabetically and by state, an atlas of FM stations, and a detailed listing of Mexican broadcasting stations.

Logging and Record Keeping

I've created my own Microsoft Excel® spreadsheet for keeping track of stations heard. I'm sure everyone either has, or will develop his own method of record keeping. Some folks electronically record and save everything. I tape everything, but don't save it after I'm satisfied with the accuracy of what I've logged. I use Coordinated Universal Time (UTC) which is a practice I started when I became a licensed ham in 1963.

An example of my spreadsheet is shown below. "Ant" indicates Beverage antenna direction. Daytime and nighttime powers are shown in kilowatts. A "p" means the station has a pre-sunrise operating authority; these vary but can't exceed 500 watts. "SS" indicates Spanish language format.

710 kHz

Call	Location	Ant	Power Day/Night	UTC	Date	Format/Other
WAQI	FL MIAMI	S	50 /50	2233	12Dec93	SS:Nws Tlk "R. Mambi La Grande"
WUFF	GA EASTMAN	SW	2.5 /-	1057	23Jul93	C&W "Big Wuff Radio"
WROM	GA ROME	SW	1/-	2234	12Dec93	C&W
WEKC	KY WILLIAMSBURG	NW	4.2/-	1059	3Aug93	Rel Gos
WOR	NY NEW YORK	NE	50 / 50	0916	24Apr93	Nws Tlk
WZOO	NC ASHEBORO	NE	1/-	2058	3May92	Gospel
WPOG	SC St. MATTHEWS	S	1/-	2200	25Dec05	UC:Rel "Joy 710" "Rejoice"
WPTR	TN PARIS	W	.8/p	1158	8Dec00	Oldies // "Oldies 101.5"
WFCM	TN SMYRNA	W	.25/-	1133	2Dec95	Rel // FM 88.9
WFNR	VA BLACKSBURG	W!	10 /p	1100	4May99	"New River Valley's Best Talk"
CMW	CUB La JULIA, LH	S	150	1104	23Aug93	SS// 5025 R. Rebelde

Using the Receiver

Receivers come in all flavors, so you may have either more or fewer options than I. My procedure using the R8A is as follows.

I start by turning off the AGC and using the AF and RF gain controls to adjust the volume. This minimizes the amount of "pumping" due to rapid fading of a signal. Radios equipped with synchronous detection can be effective in doing this by "locking on" to a signal. I normally operate with the radio in either the upper or lower sideband position, depending upon the source of any adjacent channel splatter (either below or above a frequency).

I then adjust the tunable passband for best audio quality. I use the 2.3 kHz filter unless there is heavy interference, in which case I switch to the 1.8 kHz filter. In some cases, use of the CW mode in either of these filter positions works better.

The need for either a pre-amp or an attenuator will be determined by your particular situation. Remember to turn on your audio recorder.

When to Listen

The best thing about the medium wave band is that it is nearly always "open," because there are so many stations available (~6500). This is unlike some amateur bands, which can be devoid of activity for hours, days, or even months, depending upon time of day or lack of solar activity.

There are those who imply there is a DXing "season" roughly from September through April each year. This is not really true, as good DX can be heard any time of year. In fact, the seasonal variations in local sunrises and sunsets dictate changes in sign-on and sign-off times for many stations. This often creates a set of conditions which makes it possible to log a station in July which could never be heard, for example, in December.

Naturally, it is unsafe to be listening during a raging summer thunderstorm when you should be taking all of your lightning and static discharge protection measures. (You do have a plan, don't you?) Static crashes, even from great distances, make summer DXing more difficult, but directional antennas such as Beverages have the additional advantage of being able to null interferences coming from their rear and sides.

Remember, too, that ice storms, hurricanes and events such as equipment or antenna failures can cause stations to go dark periodically. If one of these represents a local "pest," it may give you a chance to log normally-unheard stations on that frequency.

Target Stations

If you are just beginning, start by doing your "Daytime Bandscan." Tune the band from one end to the other around mid-day, logging all stations you hear. These should be ones you are able to hear on an everyday basis.

Next, you may want to DX from midnight to 4 a.m. or so. This will allow you to log the all-night powerhouses (running 50 kilowatts) on what used to be the clear-channel frequencies. These are: 640 – 860 (except 790), 940, 990 – 1220 (except 1150), and 1500 – 1580 kHz. This is not as easy as it once was, as many more stations are staying on all night, even though most reduce their power.

Your first real challenge comes in trying to DX the expanded AM band from 1610 to 1700 kHz. These stations use 10 kilowatts during the day, but drop their power to 1 kW at night.

Depending upon where you live, you may have to wait for a nearby station to power down in the evening so you can log a target station further west before it powers down. Conversely, you may have to catch one east of you after it powers up in the morning before a closer station does.

Even more challenging are the six local channels called "graveyard" frequencies: 1230, 1240, 1340, 1400, 1450, and 1490 kHz. These each have in excess of 175 stations, all running 1 kW both day and night with omni-directional antenna patterns. Most of the time these frequencies sound like a total mess unless you have a dominant local station.

DXing these frequencies requires a combination of lots of patience and luck; it's hard to predict just when a station will fade up, identify, then fade back into the jumble, perhaps never to be heard again! For instance, I have been "lucky enough" to log 39 stations in 14 states on 1490 kHz since 1992.

Most of the frequencies not yet mentioned are called "Regional" channels, which present their own unique challenge. Each station is saddled with a specific set of operating conditions regarding hours of operation, transmitter power, and antenna pattern. It helps to have these details (many of which can be found in the NRC's *AM Radio Log*) at your fingertips to DX these frequencies.

How to Have Fun

I enjoy tuning to one particular frequency roughly an hour or so before sunset and listening over a several hour period. Let's pick 1200 kHz, a "Clear Channel" frequency, where I've logged 18 of the 22 listed domestics in 14 states, plus Sancti Spiritus, Cuba.

At high noon my "daytimer" on 1200 kHz is WXIT in Blowing Rock, NC, to the north. But under it I also hear WJES in Saluda, SC, playing oldies parallel with WCRS-1450 on my south antenna. By mid-afternoon I can hear WSML in Graham, NC, parallel WSJS-600 on my east antenna. Each of these three stations is running 10 kilowatts. Next, I begin to hear the gospel music of 6500-watt WMIR in Atlantic Beach, SC, as their local sunset approaches. But at night WXIT signs off and the other three (supposedly) reduce power to 4, 1000, and 11 watts, respectively.

As these stations either disappear or become weak, I now am able to log 10 kW WAMB in Nashville, TN, playing their style of oldies. When their nighttime power drops to 500 watts, I often catch an ID from 1kW KYOO in Bolivar, MO, with sports programming just before they go dark for the evening. Coincidentally, I can sometimes hear the Spanish-speaking WRTO in Chicago, IL, with their "La Tremenda" slogan. But every night, WOAI, San Antonio's 50kW "blowtorch" eventually dominates the frequency until sunrise in the east brings the others back to life!

I hope this overview of my medium wave DXing experience provides some helpful information. I will be glad to provide more specific details and answer any questions you may have. Contact me at (704) 487-0337 or write to 420 Community Road, Shelby, NC 28152.

Broadcast Band Antennas For the Suburban DXer

By Wayne Heinen NØPOH

Today's suburban environment can complicate the search for distant radio signals (DX) in many ways. Many of us live on small lots that are, in some areas of the country, actually smaller than lots in older urban areas. The advent of anti-recreational antenna covenants in many areas has limited DXers to "stealth" outdoor antennas and a variety of indoor antennas. Unfortunately, shortwave listeners (SWLs), broadcast band (BCB) DXers, and ham radio operators don't have the clout of the satellite TV industry to override these various rules like they did!

In the last few years, I have had my interest in more serious DXing rekindled. For many years I have been using a variation on the National Radio Club (NRC) field-effect transistor (FET) Altazimuth loop[1], though the frame is slightly smaller and I did not use an amplifier with mine. Loop antennas have been the mainstay of BCB DXers and they still are an important part of a BCB DXer's antenna arsenal.

One thing that I wanted to accomplish was to get some form of outdoor antenna away from my house and reasonably far away from my neighbors, so that I could avoid some of the noise that is generated by today's modern electronics. The loop worked well, but by being inside it was very susceptible to the electronic noise in the house. What I was looking for was a way of improving my monitoring station that resides on a postage stamp lot in a 25 year old suburban subdivision.

- Ground System
- 35' Tower
- X The Shack

Outdoor options

I am fortunate in that I live in an area where the original covenants restricting antennas to one mounted on the house and no towers have expired. Wire antennas can be erected, but the question became what to erect, where to erect it, and how?

Improvisation was the key to adding antennas to my DX location. If you notice the diagrams that accompany many of the antennas shown in manuals, antenna articles, and other publications, you'll see that everyone has one or more convenient trees that are high and strong. Not so at my listening post! My subdivision is on the plains east of Denver, Colorado. Aurora has a rather descriptive nickname – "Saudi Aurora" – which reflects the lack of trees. What trees I have are not very tall and are subject to lots of movement and sway in the winds here on the plains.

I spent quite a bit of time searching the Internet and reading various articles and books, looking for a small space antenna that I could fit on my lot[2]. I decided that a flag[3] would fit very nicely on the back fence. These antennas are rectangular and have two vertical legs approximately 10 feet high, and the center horizontal arms are approximately 20 feet in length. The ideal ratio of legs to arms is 2.07: 10ft X 20ft works just fine.

The back fence was not quite a perfect East/West configuration. I could also run a flag antenna on the fence on the west side of the house; it would give me close to North/South configuration. I used some 1" X 2" furring strips to extend the height of the 4" X 4" fence posts. This worked fine on the North/South flag, but I had to beef up the East/West run with cedar 2" X 4" extenders because the wind from the north was bending my original furring strips much more than I liked. The flag also allowed me to have a lower antenna secured to the cedar fence, thus keeping it out of the way of Buddy, the family dog.

The east leg of the East/West flag in the picture shows the upright support, and you can make out the wire across the top; in summer the tree leaves hide most of the antenna from view.
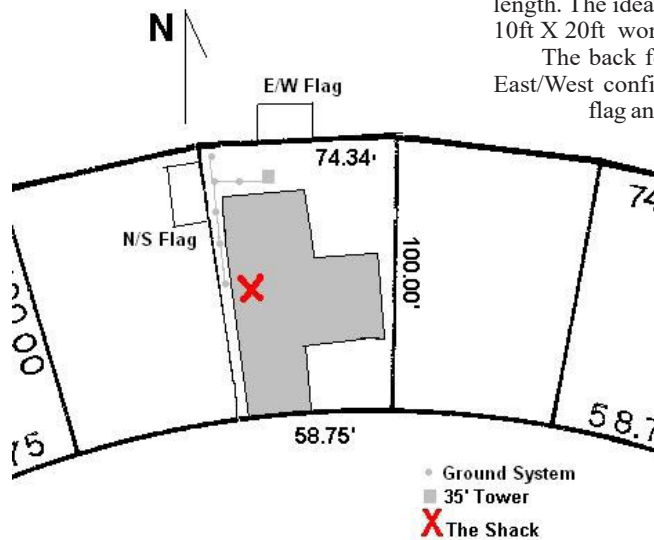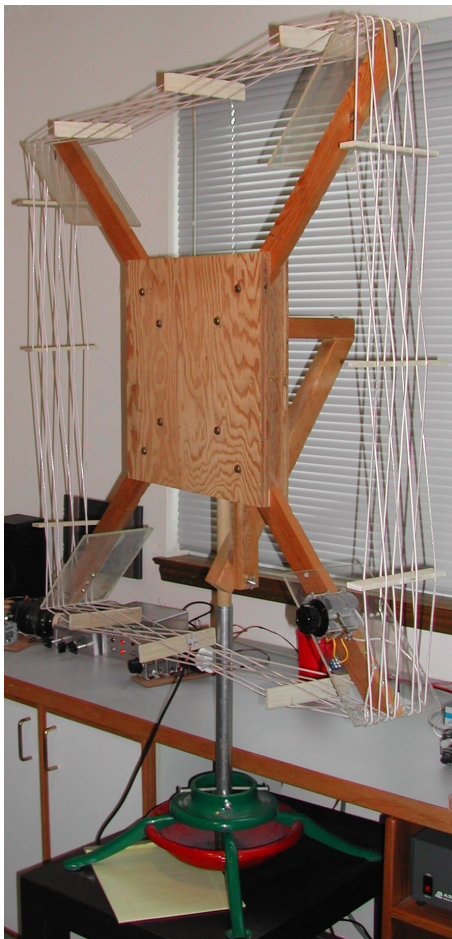
The wire for the antenna is not critical. I happened to have a roll of 12-gauge AWG in the house and that's what I used. The normal flag configuration calls for a feed line half way up one of the vertical legs: This in effect creates a cardioid pattern towards the leg that contains the termination resistance between the two halves of the flag.

My initial termination was a potentiometer mounted in a waterproof enclosure. I adjusted it at the antenna while listening to the frequency of interest using a baby monitor which broadcast my Drake R8B's audio that I listened to on a scanner. It was a little cumbersome, but it worked.

I used these antennas for a season and was impressed by the fact that I could leave my taping set-up parked on one frequency and, by using the East/West flag one evening, log a variety of stations from those directions. They mostly favored the East, as the feedline was on the west leg. The next night, I could change to the North/South antenna and get a different variety of stations, favoring the North more than the South, since my feedline was on the south end.

Boosting the signal

By virtue of their size, the signal delivered by the flag antenna is not very great. I use a variety of different homebrew and commercially produced broadband amplifiers to increase the signal from the flag to the receiver. There are a variety of plans available in various magazines and publications of DX clubs[2] for those who might like to try a building project. A quick search of the internet will lead you to more plans and many commercial suppliers[4].

Depending on the number of stations in proximity to your DX location, you will need to adjust the amount of gain (amplification) of the different amplifiers to prevent overloading from strong local stations. It is always a good idea to use only the amount of gain required to present a readable signal to your receiver.

The original feedlines for these antennas were whatever coax I happened to have around the shack. I used a lot of smaller diameter coax; the losses that are experienced in receive-only antennas when using smaller gauge coax like RG-58/U are negligible at BCB and HF frequencies.

If you keep your eyes open you may be able to get some used coax that is still in good shape at many hamfests (amateur radio flea markets). I acquired some nice 100-ft. runs of RG-8/U and RG-58/U that were actually free for the taking at several local ham fests. If the exterior insulation is in good shape and the resistance between the center conductor and the outside shield is infinity, while you have continuity from one end to the other, it should do fine for feed line leading to your shack.

Balun or baloney?

Other articles that I have seen talk about maximum signal transfer and impedance matching. They recommend using a balun to match the balanced (BALanced) flag antenna to the unbalanced (UNbalanced) coax feed line, hence the name balun. I started out using some Mini-Circuits[4] transformers, mounting them in my own weatherproof enclosures for my baluns. The Mini Circuits units use very fine wire for their transformers and are en-

cased in plastic, looking a little like integrated circuits (ICs). I am fairly sure that one of the Mini-Circuits transformers was fried by a static charge that probably accumulated on the antennas. Colorado is very arid and close lightning strikes are not all that rare on top of my ridge.

After reading an article on impedance matching and baluns by John Bryant, Bill Bowers and Nick Hall-Patch[5], I decided to wind some of my own balun transformers. I ordered my toroids direct from Amidon[4] and got the #30 wire at my local Radio Shack. I found that winding the transformers was not all that difficult and I made both overlapping coils and some opposed winding coils. The tests and conclusions in their article led me to use the opposed winding coils.

I suggest using the wound toroid baluns in areas of high RF and thunderstorms. My enclosures were "homebrew" with my wound balun in a pill bottle enclosure.

The sun has bleached the pill bottle clear and it will soon be replaced with a watertight electrical box. These boxes are about $5 at most hardware stores and are easily adapted to house the balun. I secured the balun on the inside of the box with small dabs of hot melt glue. These boxes seal very well and showed no sign of moisture inside during this spring's inspection.

The BNC connector and the 10-32 brass hardware are sealed both inside and out with hot melt glue, also.

Grounding

A good ground is something that I find important. I also have a large ham radio tower with a lot of yagis. The ground system for the tower is designed to take static away from the shack and tower and dissipate it in the ground if I should be unfortunate as to have lightning hit. My ground system is six 8-foot long rods that are placed between and away from the tower and the shack; the entry panel is a piece of 1/4-inch thick brass plate mounted in the outside wall of the shack, with UHF (SO-239) feed-throughs for the coax.

Playing with phasers

Over the years I have built a variety of project boxes based on the designs of Mark Connelly WA1ION, a longtime BCB DXer and contributor to both the National Radio Club and the International Radio Club of America[2]. Mark's many innovations in antennas, tuners, phasers and associated accessories have been at the forefront of the technical aspects of the BCB DXing hobby.

One of Mark's articles featured a box that he called the Terminator Gizmo[6]. The principle behind this box and the associated antennas was to have a feedline leading to each leg of the flag antennas and switch between the two feedlines with a toggle switch. The feedline that was not feeding the receiver was then terminated with a 500Ω potentiometer that in affect allowed you to vary the resistance for the best termination to create a cardioid pattern. By switching from one side to the other, you change the orientation of the pattern 180 degrees. I modified both of my flags to match the design of this Gizmo and use these flags to feed a phasing box.

I have used Mark's phaser designs, both active (amplified) and passive, with great success. I am currently using a Mini DXP-5A phaser[7], a relatively easy construction project that allows me to phase two antennas together to eliminate an unwanted signal in order to hear whatever may be lurking underneath.

In addition to building phasing units, there are commercially produced units that are either designed for BCB or are adaptable to BCB DX. Radio Plus+, MFJ Enterprises, and DX Engineering offer a variety in a wide range of prices (see footnotes).

The principle is rather simple: once one equalizes the signal coming from each of the antennas, the signals are combined and the phase changed with a simple Resistance/Capacitance or Inductance/Capacitance circuit. The results vary by location, reradiation from nearby objects, and many other factors.

A happy suburban DXer

The bottom line is that I now have an antenna farm on a lot that is approximately 70' X 100'! The flags also proved reasonable reception on the International SW bands. Even with all the coax switching, project boxes, and the Drake R8B, the small built-in corner desk in the shack holds the entire listening set-up.

If you would like to hear some of the results of my BCB DXploits, you can listen to more than 900 MP3 recordings of BCB DXing from the shack here in Aurora. Just visit my web site **www.wayneheinen.com** !

Footnotes:
1: "The NRC FET Altazimuth Antenna"ARM1 - The National Radio Club **www.nrcdxas. org/**
2. Suggested Reading Resources:
Monitoring Times **www.monitoringtimes. com/**
The National Radio Club **www.nrcdxas. org/**
International Radio Club of America **www. ircaonline.org/**
3: "Flag Antenna Construction and Test Results" ARM3
4: Commercial Sources:
Mini Circuits: **www.minicircuits.com/** 718-934-4500
Amidon **www.amidoncorp.com/** 800-898-1883
Radio Plus+ **www.dxtools.com/**
DX Engineering **www.dxengineering.com/** 800-777-0703
MFJ Enterprises **www.mfjenterprises.com/** 800-647-1800
Grove Enterprises **www.grove-ent.com/** 800-438-8155
5: "A Second Look at Fabricating Impedance Transformers for Receiving Antennas" ARM3
6: "New Termination Control Method for Flag, Pennant, and Similar Antennas" ARM3 - 7: "Passive Broadband Phasing" ARM3

Q. *Can I connect either an oscilloscope or a digital multi-meter to the oscillator circuitry in an analog-dial radio in order to read the tuned frequency? (Dave Carter, Centralia, IL)*

A. An oscilloscope can show frequency by letting you count the number of cycles in a time period, but that's rather awkward since it would have to count the number of visible cycles on screen, multiply that by the time base you have selected (assuming that the 'scope is properly calibrated), and then you would need to decide how much of that last cycle you are actually seeing so that you can visually calculate a close frequency.

A DMM can show only a magnitude (voltage, current, resistance), not a frequency. And all of those levels remain relatively constant while the frequency is changing. You would need a frequency counter connected to the oscillator to know the setting, but even then you would have to do some math because the oscillator injects a frequency (usually higher) different from the received signal to produce a conversion frequency called the intermediate frequency (I.F.).

For example, to hear WWV time signals on 10 MHz, many receivers would inject 10.455 MHz (10,455 kHz), thus producing two other frequencies, the sum and the difference of the two mixing signals: 20,455 kHz and 455 kHz. Tuned IF stages select the lowest of these three frequencies (oscillator and two I.F.s) which is then amplified and filtered, and finally the audio is detected (extracted).

In this typical case, if you had a frequency counter connected to the oscillator, you would read 10.455 MHz when you were actually receiving 10.000 MHz.

Frequency counters typically cost over $100, so you might as well buy an inexpensive receiver that already has a digital frequency display!

Q. *My family and I enjoy snow-mobiling and I am concerned about how I can communicate with someone if we get lost or have engine trouble. I have a Personal Locator Beacon (PLB) with GPS capability in case of an extreme emergency. (Tom Bovard, NY)*

A. There are several low-power services, most license-free, which provide limited distance coverage – a few miles at best in open terrain with a hand-held radio:

Multi-Use Radio Service (MURS) with five channels in the 150 MHz range;
Family Radio Service (FRS) with 14 channels in the 462/467 MHz range;
Citizens band (CB) with 40 channels in the 26.965-27.405 MHz band;
Marine Radio Service (MRS) with dozens of channels in the 157 MHz range;
General Mobile Radio Service (GMRS) with 15 462/467 MHz channels;
Itinerant/low power radio service with over a dozen channels in the 150/460 MHz range.

As a general rule, the lower-frequency (150 MHz VHF) units have greater range than the higher-frequency (460 MHz UHF). Yes, they are primarily line of sight, but the VHF have better range than the UHF. This is due to less signal absorption by humidity and foliage, longer antennas, generally higher power, and greater refraction (bending) over uneven terrain.

The wild card is whether or not someone nearby is actually listening on one of those channels. You should always check with local rescue or emergency squads, or hotels/resorts, to see what channels they monitor for such activity, then advise them of your plans so you know you have a listener.

Another possibility is to get your amateur radio license so that you can reach a local, two-meter ham repeater in case of difficulty. Most ham walkie-talkies can be readily modified to enable them to transmit on adjacent frequencies for other services as well, such as indicated above. Although using such a modified radio is against FCC regulations, in the case of threat-to-life conditions, communicating with a licensee of another service is lawful.

Q. *I have a customer who has very poor CB communications performance; he has three CB radios attached to one common antenna through a 3-way TV splitter. (John Fairlie, email)*

A. I'm not surprised that this CBer is experiencing problems! Here's why:

(1) TV splitters have very fine wire since they are intended for reception, not transmission, so some of the transmit power is being dissipated as heat.
(2) Depending upon the port-to-port isolation capability of the splitter, each of the other two lines is feeding some transmit power from the third line back to the other CB radios, where it is being dissipated as heat.
(3) If any of the CB radios is suffering from poor reception, it might have its front-end RF transistor burned out from the transmitter.

There is no way that three CB radios that close in frequency can be connected to the same CB antenna without compromise.

Q. *Are you familiar with the "carpet loop" antenna for AM broadcast band listening? What are your thoughts about this? (John Bishop, email)*

A. The carpet loop is a holdover from the early days of radio when large antennas were necessary due to the poorer sensitivity of the radios, and continues to this day (although rarely) where folks don't want to use outdoor antennas.

Keep in mind that the antenna is still indoors and will be susceptible to electrical interference pickup from wiring and appliances. No indoor antenna will work as well as an outdoor antenna.

Most folks using an indoor loop with modern AM band receivers simply choose a vertical loop roughly a foot or two in diameter, and they make enormous improvements in reception over the little ferrite bar inside the radio.

A commercial version of this is the "Select-A-Tenna" that you simply set alongside a portable radio, and when you turn the dial, you'd be amazed at the sudden improvement in signal strength. It is a very popular selection by radio hobby customers.

Q. *I'm hearing data bursts on 154.470 MHz; what are these, and can I decode them? (Brad Andrews, KE7ABX)*

A. You are hearing transmissions from remote monitors of line-load management on your electrical power grid. It's an automated system that actually operates on any of four FCC-allocated frequencies: 154.45625, 154.46375, 154.47125, and 154.47875 MHz. It's probably standard ASCII, but the actual format is likely to be whatever the particular manufacturer builds into it, just so long as it meets the bandwidth, power and modulation requirements of the FCC.

Coping with DXCC Fever

The term DXCC is kind of a loose one. It basically refers to the award hams may apply for once they've worked and confirmed 100 "countries," better known as *entities,* using any mode.

In this case, the letters "DX" signify countries other than your own, though working your own entity gives you number one for the list. The "CC" means "Century Club." The "century" is 100 entities confirmed and the "club" includes all those amateur radio operators who have the award. It's a point of prestige among hams who value working DX. The award is issued by the American Radio Relay League (ARRL) and details are found here: **www.arrl.org/awards/dxcc**.

But, not everyone is interested in working DX. I have one ham friend who has received virtually every award possible in this hobby, including Dayton Ham of the Year, yet he has no interest in working DX; has no idea how many countries he's actually worked. He says one of his sons is an avid DX "chaser," the term given to those who are bitten by the DX bug, but he has never pursued that particular aspect of the hobby himself.

Logbook of the World (Courtesy: ARRL)

The key here is "bitten by the DX bug." The bug is well known to cause a fever that forces the afflicted to make bizarre choices: pay the electric bill with that last stamp or send off the QSL; skip your daily coffee shop latte in order to send that $3 direct to the DX manager for that rare QSL; or skip work on the last day of the Spratly Island DXpedition. These are tough choices indeed.

❖ Who gets to be an Entity?

The master DXCC list is fluid. Over the years many entities have been added and deleted, mostly because of political changes. For instance, during the cold war years there were separate calls issued to East Germany that no longer apply. Yemen had several calls granted and taken away. Manchuria, Portuguese Timor, French Indo-China, French West Africa, French India, Swan Island, Canal Zone and many more have been taken off the list. According to the ARRL, there are currently 338 active DXCC entities and 58 deleted entities.

But, if you check with the United Nations you may find that there are far fewer countries that belong to the UN than comprise the DXCC list. What gives? Well, the U.S. and its territories, for example, cover a lot of Earth mass over a wide region of the planet. The 48 contiguous states count as one DXCC entity; Alaska and Hawaii each count as a DXCC entity; Puerto Rico and the other U.S. possessions, territories and protectorates each get their own DXCC list position. You can rack up 19 DXCC entities just working U.S.-related calls!

Following the colonial pursuits of the former great powers shows where all the DXCC entities came from. For example, French call signs start with the letter "F." You can tell the former French colonies by their French "F" prefixes: FG (Guadeloupe), FH (Mayotte), FK (New Caledonia), FO (French Polynesia) and so on for a total of 20 entities.

DXCC QRP Award. Yes, there's no end to the DX awards once you start. (Courtesy: ARRL)

Similarly, for what's left of the British Empire: G (England), GD (Isle of Man), GI (Northern Ireland), GJ (Jersey Island) and so forth. And, what used to be British colonies typically start with the letter V. India (VU), Australia (VK), Canada (VE) and so on.

Nearly every island or independent group of islands can become a DXCC entity even if they can't find membership in the UN. A small pile of rocks known as Scarborough Reef must surely be the limit to what one can call an entity: The "reef" was so small that a photo of all members of the DXpedition standing shoulder to shoulder could just barely be taken (**www.scarboroughreef.com**) by virtue of a 2 x 4 platform constructed over the rocks and the photographer in a nearby boat.

Hams who can confirm within 9 entities of the total 338 may apply for an even more exclusive list called DXCC Honor Roll. For a fee ($40 plus postage) these DXers are given a wooden plaque for their shack wall commemorating the achievement. The most exclusive list is the #1 DXCC Honor Roll, worked all 338, for which another plaque is available ($55 plus postage).

❖ Joining the Chase

If you do succumb, there is a way to chase DX and not lose your mind. Monitoring some rare DXpeditions, you can hear the panic in the voices amid the pile-ups of those who live in fear that they'll not be able to work the DX.

The greatest thing you need to work your way up the DXCC charts is patience. Everyone knows you can't work 'em if you can't hear 'em, but you also can't work 'em if they're not there. DXpeditions to certain highly sought-after DXCC prefixes happen rarely. So, you'll just have to wait and hope that band conditions will support a contact for you.

DXpeditions are announced typically six months to a year in advance. Keep track of those and make sure you're up to date. Changes are made often that could set the expected operating date back or forward depending on weather, funding, availability of air travel to those destinations, chartering boats to the final destination, and rounding up sponsors.
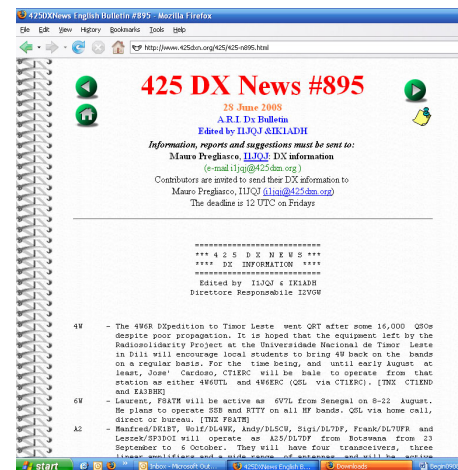
Typical front page of the 425 DXNews in English (Courtesy: 425dxn.org)

One way to keep track is by weekly monitoring of the 425 DX News home page **www.425dxn.org**. This is an Italian site that is free and updated weekly, usually on Sunday.
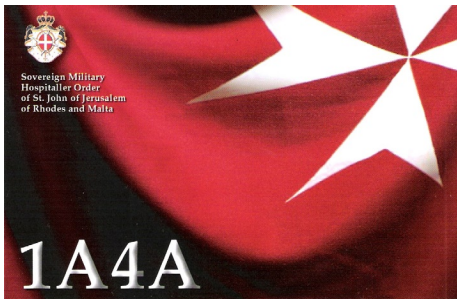
1A4A QSL card from Sovereign Military Hospitalier Order of St. John of Jerusalem of Rhodes and Malta. It's a DXCC entity that's actually a compound in Rome. (Courtesy: Author)

Here you'll find what operations are planned for the week, month or year. Announcements from DX societies such as Northern California DX club are posted here, as well as announcements from individuals or smaller clubs as to where in the world they plan to operate and when.

Another plus from this site is the DX manager list in which the call sign of the person who has agreed to handle QSL requests is listed. Simply looking up that call on QRZ.com will give you the correct address. Address corrections are also listed if there has been earlier confusion about a DXpeditions manager.

❖ The Curse of the Lid

Clustered around the frequency on which any DX station operates are two annoying types of hams. One is the lid operator, a term for a clueless ham whose operating skills are atrocious. They're the ones hollering "Who's the DX?" or "Where's he listening" or "What's the call?" If the lid listened for a short amount of time all of those questions would be answered. Lids also tune up on frequency in a vain attempt to squeeze one more dB out of their mismatched station making it impossible for anyone to hear the DX.

Second is the "Frequency Police." These are self-appointed hams who occupy the DX frequency and comment on the goings on. They believe they're being helpful by answering the lid operators announcing, "He's working split!" or "He's listening up!" or sometimes just "Up, up, up!" But, more times than not they interfere with hams trying to work the DX by covering up signal reports. Neither type of interferers ever gives out their call signs. To avoid being a lid all you have to do is have the patience of a considerate operator.

❖ Where's the DX?

If you're retired and have nothing else to do all day, you can cruise up and down the bands looking for DX stations. But, if you're like the rest of us and still working (or you're one of those retirees who are busier than they were when a job held them down), you've got to plan your time carefully. You're looking to take advantage of when the DX is likely to be on the air during times when you're likely to be able to operate.

Use of an on-line DX cluster report is vital. By examining the activity surrounding the DX station, you can see at a glance if you

have a reasonable chance of working the DX right now. There are several such sites, and my favorite is called Ham Radio Deluxe Cluster Analysis. The site is **www.ham-radio.ch/dxc**, maintained by Simon Brown, HB9DRV. The top 50 DX spottings on 10 bands are posted here every 30 seconds. It's a snap to find out where the propagation is best and who's on the bands.

❖ Who's the Manager?

If you decide to embark on DXCC, you might sift through your log for stations you haven't QSLed before. In order to avoid spending a lot of money sending QSL requests direct, you may find that the station is represented by a stateside manager who handles the QSL chores. Simply going to the DX station's page on **QRZ.com** could tell you who the station's QSL manager is, but sometimes it won't say. One place to try is IK3QAR's wonderful QSL manager search engine **www.ik3qar.it/manager**. Just type in the DX station's call and, if there is a manager, the address will pop up.

HV5PUL QSL card from Pontificia Universita Lateranense Vatican City State. It's also a DXCC entity that's also actually a compound in Rome, the only city in the world to contain three DXCC entities. (Courtesy: Author)

❖ Is DXCC Really Necessary?

Applying for and receiving your DXCC certificate and pursuing recognition of your accomplishment is a quest tens of thousands of hams have made. But, it's not really necessary. For many hams, just logging the contacts and knowing how many countries they've worked is enough.

One concern that new hams are facing is the reality of how much getting to DXCC Honor Roll could cost. Twenty years ago I routinely sent $1 for QSL cards direct to hams in Europe, for instance. Many times the QSL came and the ham would return the dollar, choosing instead to pay the first class postage himself. It was the tradition then that, if you QSL a DX contact direct, then the other ham would do likewise.

But, times have changed and the dollar is so worthless overseas that few, if any, will send a QSL direct without at least $2 U.S. being paid in advance. Many DX hams are now requiring $3 for a return QSL by first class mail. Some warn on their QRZ.com page that if they receive QSL cards direct without

the required money they will send the return QSL via the bureau, a painfully slow process that could hold up your DXCC certificate for years. Others, for which the bureau is not an option, warn that your QSL will simply not be sent without the correct amount of money.

Two alternatives to DXCC via direct contact or through the bureau, are to use *e-QSLs* and to use what's called *Logbook of The World (LOTW)*. There are several problems with e-QSLs: The ARRL does not recognize e-QSLs as legitimate for DXCC awards and most hams don't use e-QSLs anyway. The best alternative is *LOTW*, which is promoted by the ARRL and recognized for DXCC credit. Even so, many hams do not use LOTW, so to verify them you'll still have to use the mail and the bureau. For information about LOTW go to **www.arrl.org/lotw**.

But, if you're old school and you'd like to actually hold the QSL card in your hands or display it in a binder or on the wall, you'll just have to cough up the money. Judicious use of the bureau and stateside managers will greatly reduce the overall cost of getting to DXCC.

But, once you start down the DXCC road, you'll find there's no end. Do you have the DXCC 5 Bands award? DXCC 5 Bands QRP? DXCC via AMSAT? DXCC via Earth-Moon-Earth? DXCC via digital modes? How about DXCC 5 Bands, QRP, digital? You can see the problem...

GLOBALNET
Exploring the World of Internet Radio and Television
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Powerhouse AM News Broadcasters

One of my most vivid memories growing up as a radio hobbyist was turning on my five tube Hallicrafters S-120 at night and tuning in some of the most powerful broadcasters in the country – the clear channel AM radio stations.

It was really neat to listen to weather conditions on the waterfront in Chicago or from Time Square in New York with little or no interference. And I really enjoyed listening to local news coverage from outside of my normal radio market. At one point, I actually had logged more than half of these 10/50 kilowatt broadcasters that were available on the AM radio dial.

Today these AM clear channel frequencies are not as clear as they used to be. The FCC is allowing formerly daytime-only AM radio stations on these clear channel assignments to now broadcast unlimited hours at greatly reduced power. While you may not hear many of these lower powered stations, their cumulative signals on a frequency can interfere with many of the clear channel powerhouses.

So what AM frequencies are considered clear channel frequencies? Just in case you would like to tune around with your AM radio, here is a list of clear channel frequencies in the area of North America (frequencies in kHz):

Bahamian Clear   1540
Canadian Clear
  530 540 690 740 860 940 990 1010
  1070 1130 1580
Cuban Clear   1010 1560
Mexican Clear
  730 800 900 940 1000 1050 1060 1090
  1140 1190 1220 1550 1570
US Clear
  640 650 660 670 680 700 710 720 750
  760 770 780 810 820 830 840 850 870
  880 890 1000 1020 1030 1040 1060
  1070 1080 1090 1100 1110 1120 1130
  1140 1160 1170 1180 1190 1200 1210
  1500 1510 1520 1530

I still haven't lost my taste for a distant newscasts or weather forecasts from these giants of the AM broadcast band, but I have changed my tactics. I have now compiled a list of some of these radio giants and their audio streams that can be monitored via the Internet.

Most of the 10/50 kW AM radio stations using a "news" or "news/talk" format in the U.S. and Canada have live audio streams on the Internet that you can listen to. You will find my list of these stations in this month's GlobalNet Resource Guide.

In addition to streaming live audio broadcasts from the stations in our list, you will also find most have news-on-demand (their latest local newscast), podcasts of local shows, traffic reports, weather and, in some cases, high definition live feeds of their audio streaming services.

Looking over our list, I am sure you will find a few familiar favorites that you may have listened to before on your AM radio. Thanks to the Internet, you can enjoy your favorite station 24/7 with local, static free reception.

❖ Public Safety Scanning via Reciva

For those of you who have an Internet WiFi radio or a computer with a broadband Internet connection, you can now hear some public safety services that are streaming live audio via the Reciva.com Internet portal.

I have included a list of streaming audio links, valid at presstime, in our Resources Guide. Quite a few of these links were posted to the Live Scanner Audio newsgroup by Edmonton Fire Radio. So, yes, you can now monitor scanner services on your WiFi Internet receiver.

❖ New Public Safety Online

The Topeka, Kansas, Police Fire and EMS services are now being streamed online live 24/7 on the IBN TeamSpeak server. In addition to the Topeka PS services, this feed also has additional coverage of fire communications from Shawnee County.

You can listen to this service on the Incident Broadcast Network Team Speak Server **www.incidentbroadcastcom:8768** or 207.150.179.84:8768.

The Lafayette Parish in Louisiana has a new streaming fire audio feed online at **http://lfdlivescannerfeed.spaces.live.com/default.aspx**. This feed is being used and dedicated to the Broussard Fire Department. Other Lafayette Parish departments are expected to be active on this audio feed by the time this issue goes to press.

Thanks to Live Scanner Audio newsgroup for these new public service links. And that will do it for this month. Until next time, 73 and good hunting on the GlobalNet.

GLOBALNET RESOURCE GUIDE

Printed Reference
The National Radio Club's AM Radio Log

Portal
Reciva   **www.reciva.com**

AM Clear Channel News/Talk Audio Streams
KENI 650   Anchorage, AK News Talk Radio
    www.650keni.com/main.html
    (Selected live audio/webcam programming)
CKOM 650 Saskatoon, SK News Talk 650
    www.rawlco.com/listenlive/ckomam.html
CFFR 660   Calgary, AB   660 News
    www.660news.com/mediaplayer/mediaPlayer2.jsp
KBOI 670   Boise, ID   News Talk 670
    http://gateway.andohs.net/player/?sid=2990&nid=2920
CFTR 680   Toronto, ON   680 All News Radio
    www.680news.com/mediaplayer/mediaplayer2.jsp
WOR 710   New York, NY   News Talk Radio 710
    www.jetcast.com/em-popup-esplayer.phtml?feedlink=1054&noad=1
    (High Def via a Jetcast Media Player)
    www.jetcast.com/em-popup-esplayer.phtml?feedlink=1054&exfeed=1
    (Broadband feed normal player)
KGNC 710 Amarillo, TX   News Talk 710
    www.kgncam.com/
KIRO 710   Seattle, WA   News Radio 710
    http://webclust1.liquidcompass.cc/sos4stnrd/audio_player.php?id=KIRO
WGN   720 Chicago, IL   The Voice of Chicago
    http://player.streamtheworld.com/liveplayer.php?callsign=WGNAM#Main
KDWN 720 Las Vegas, NV AM 720 Talk
    http://tuner1.dc1.sonixtream.com/solon/media/tuner/Tuner?aff=kdwn&useSame=True&type=IE
KFQD   750 Anchorage, AK AM 750 News Radio
    www.streamaudio.com/stations/player/pages/newplayer/index_win.asp?Owner=&public

=&headertext=&Station=KFQD_AM&Mac=No&OptIn=&Streamt
ype=&filename= (Local programming only)
WSB 750   Atlanta, GA   News Talk 750
www.streamaudio.com/Player/Player.aspx?station=WSB_AM
KXL 750   Portland, OR   Rose City Radio
www.kxl.com/Multimedia/ListenLive/tabid/63/Default.aspx
(requires Abacast Media Player)
KFMB 760   San Diego, CA   News Talk 760
**http://webclust1.liquidcompass.cc/sos4cust/KFMBAM/audio_play
er.php?id=KFMBAM**
WJR 760   Detroit, MI   Great Voice of the Great Lakes
http://gateway.andohs.net/player/?sid=1352&nid=2920
KKOB 770   Albuquerque, NM   News Radio 770
http://gateway.andohs.net/player/?sid=3416&nid=2920
WABC 770   New York, NY   77 WABC
http://gateway.andohs.net/player/?sid=826&nid=2920
CHQR 770   Calgary, AB   QR-77 News Talk radio
**http://chqram.corusradionetwork.com/shared/
player/?id=chqram**
WBBM 780   Chicago, IL   News Radio 78
**http://player.play.it/player/player.
html?id=93&onestat=wbbm-am**
KKOH 780   Reno, NV   News Talk 780 KOH
http://gateway.andohs.net/player/?sid=3034&nid=2920
CKLW 800   Windsor, ON   CKLW - The Information Station
http://streaming3.wecreate.com/800am/wmp/index.php
WGY 810   Schenectady, NY News Talk 810 WGY
www.wgy.com/cc-common/ondemand/player.html?world=st
WBAP 820   Fort Worth, TX   News Talk 820
http://gateway.andohs.net/player/?sid=1083&nid=2920
WCCO 830   Minneapolis, MNNews Talk 830
**http://player.play.it/player/player.html?v=3.11.85&id=82&ones
tat=wcco**
KOA 850   Denver, CO   News Radio 850
www.850koa.com/cc-common/ondemand/player.html?world=st
WTAR 850   Norfolk, VA   AM850
**http://webclust1.liquidcompass.cc/sos4stnrd/audio_player.
php?id=WTARAM**
KRLA 870   Glendale, CA
**www.streamaudio.com/stations/player/pages/newplay
er/index_win.asp?Owner=&public=&headertext=KRLA_
AM&Station=KRLA_AM&Mac=No&OptIn=no&Streamtype=&file
name=**
WWL 870   New Orleans, LAThe Big 870
www.wwl.com/ (Must be a member of the WWL Fan Club to stream audio
- free sign up)
WCBS 880   New York, NY   News Radio Eighty Eight
http://player.play.it/player/player.html?id=91&onestat=wcbs
WLS 890   Chicago, IL   News Talk 890
http://gateway.andohs.net/player/?sid=1044&nid=2920
KOMO 1000 Seattle, WA   KOMO 1000 news
www.komonews.com/news/4532371.html?t=a&video=pop (Win-
dows Media Player)
www.komonews.com/news/4531461.html?t=a&video=pop (Quick-
Time Player)
WINS 1010 New York, NY   WINS All News, All the time
**http://player.play.it/player/player.html?v=3.11.85&id=90&ones
tat=wins**
CFRB 1010   Toronto, ON   News Talk 1010
www.cfrb.com/player/player
KDKA 1020 Pittsburgh, PA   News Radio 1020
**http://player.play.it/player/player.html?v=3.11.85&id=88&ones
tat=KDKA-AM**
WBZ 1030   Boston, MA   News Radio 1030
**http://player.play.it/player/player.
html?id=92&onestat=wbz-am**
WHO 1040   Des Moines, IA   News Radio 1040
**www.whoradio.com/cc-common/ondemand/player.
html?world=st**
KYW 1060   Philadelphia, PA News Radio 1060
http://player.play.it/player/player.html?id=94
KNX 1070   Los Angeles, CA 10-70 News Radio
http://player.play.it/player/player.html?id=95&onestat=knx
KUDO 1080 Anchorage, AK News Talk 1080 Alaska's Progressive Voice
www.kudo1080.com/wimpy/player.php
WTIC 1080   Hartford, CT   News Talk 1080
**http://player.play.it/player/player.html?v=3.11.85&id=80&ones
tat=wtic**
KRLD 1080   Dallas, TX   News Talk 1080
**http://player.play.it/player/player.html?v=3.11.85&id=85&ones
tat=krld-am**
WBAL 1090 Baltimore, MD   AM 1090
www.wbal.com/listen/player.asp
KNZZ 1100 Grand Junction, CO   News Radio 1100

**http://tuner1.dc1.sonixtream.com/SOLON/media/tuner/Tuner?a
ff=1100knzz&useSame=True&type=IE**
WTAM 1100 Cleveland, OH   The Big One News Radio 1100
www.wtam.com/cc-common/ondemand/player.html?world=st
KFAB 1110   Omaha, NE   News Radio 1110
www.kfab.com/cc-common/ondemand/player.html?world=st
WBT 1110   Charlotte, NC   News Talk 1110
**http://den-a.plr.liquidcompass.cc/standard_plr/audio_player.ph
p?id=WBT&playerType=silverlight**
KMOX 1120 Saint Louis, MO New Talk 1120 - The Voice of Saint Louis
http://player.play.it/player/player.html?id=87&onestat=kmox
WBBR 1130 New York, NY   Bloomberg Radio (also Nationwide feed)
**www.bloomberg.com/audioplayers/playr_owm.
html?clipName=Bloomberg%20Live%20Radio&clip=www.
bloomberg.com/streams/audio/radio_live.asx**
WISN 1130 Milwaukee, WI   News Talk 1130
**www.newstalk1130.com/cc-common/ondemand/player.
html?world=st**
CKWX 1130 Vancouver, BC   News 1130
www.news1130.com/mediaplayer/
WRVA 1140 Richmond, VA   News Radio 1140
www.wrva.com/cc-common/streaming_new/index.html
KSL 1160   Salt Lake City, UTKSL News Radio 1160
**http://webclust1.liquidcompass.cc/sos4stnrd/audio_player.
php?id=KSLAM** (Windows Media Player)
www.ksl.com/index.php?nid=21 (Windows Media Player)
(additional links for a Real Audio Player and an MP3 audio stream)
WHAM 1180 Rochester, NY   WHAM News Radio 1180
**www.wham1180.com/cc-common/ondemand/player.
html?world=st**
KEX 1190   Portland, OR   1190 KEX News Radio
www.1190kex.com/cc-common/ondemand/player.html?world=st
WOAI 1200 San Antonio, TX 1200 News radio WOAI
**http://radio.woai.com/cc-common/ondemand/player.
html?world=st**
WPHT 1210 Philadelphia, PA The Big Talker 1210
**http://player.play.it/player/player.
html?id=81&onestat=wpht-am**
WTWP 1500 Washington, DCWashington Post Radio
http://audio.washingtonpostradio.com/stream/real/wtwp.smil
KSTP 1500   Saint Paul, MN   The Radio Home of the Twins
**http://webclust1.liquidcompass.cc/sos4stnrd/audio_player.
php?id=KSTPAM**
WLAC 1510 Nashville, TN   News Radio 1510 WLAC
www.wlac.com/cc-common/ondemand/player.html?world=st
KGA 1510   Spokane, WA   1510 KGA The Big Talker
(Streaming unavailable at presstime)
KFBK 1530   Sacramento, CANews Talk 1530
www.kfbk.com/cc-common/ondemand/player.html?world=st

Reciva Public Safety Radio Streams
For those of you who have a Reciva based WiFi internet radio, here are links to the Reciva
database for some Icecast scanner feeds:

All addresses begin with:
https://www.reciva.com/index.php?option=com_cloud&action=station&stationid=
i.e. Alamance Live Scanner: **20326** would be:
https://www.reciva.com/index.php?option=com_cloud&action=station&stationid=**20326**

Alamance Live Scanner: **20326**
Big Bear: **17720**
Big Bear (Police and Fire): **20354**
Cache Valley: **20327**
Chester County: **20328**
Chicago Fire: **20329**
Clay County IL: **20338**
Edmonton Fire Department: **19317**
Flagstaff Police: **20331**
Guilford: **20330**
Las Vegas Police and Fire: **18324**
Los Angeles: **20333**
Lycoming County PA: **19403**
Northampton County PA Fire: **20334**
Northampton County Police: **20335**
Ottawa Valley: **20337**
Quincy IL: **20336**
Rochester Metro Fire: **20020**
Scan Cape Cod Live PD/Fire/EMS: **20353**
Snohimish County WA: **20339**
Stone & Taney County, Missouri: **19402**
W3AHS Repeater: **20340**
Williamsport & Lycoming County: **20332**

SCANNING REPORT

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Is it Time for a Change?

As municipalities and agencies upgrade and expand their public safety radio networks, many hobbyists are left wondering if their existing scanner will still be useful when the upgrades are complete. This month we take a look at how well some common scanners fit the changing needs of their owners.

❖ Bearcat BC-92XLT

Salutations! I have a Bearcat handheld 92XLT scanner and I would like to monitor our local university police frequencies. They are Type II SmartNet. Do I need a handheld that is trunk-type monitoring scanner or can my 92XLT cover the Motorola frequencies? Silly question, I know, but it's all foreign to me.

Thanks,
Milton in Columbia

The Bearcat BC-92XLT is a 200-channel handheld scanner made by Uniden and introduced in late 2004. It was intended to be a low-cost, entry level scanner that was easy to operate and carry around, and it was marketed as a "race scanner" for NASCAR fans at the track. It has "Close Call" signal capture capability, giving it the ability to immediately tune to transmissions originating nearby without having to program the frequency beforehand. This is handy for sports spectators, who might not know what frequencies might be active at an event but don't want to miss anything.

The BC-92XLT covers four major frequency bands:

Range	Description
25 to 54 MHz	VHF Low Band
108 to 174 MHz	VHF High Band
406 to 512 MHz	UHF
806 to 956 MHz	800 MHz

These four bands contain a good deal of the public safety, commercial aviation, marine and weather activity in the United States. The 92XLT can scan for activity in these bands, either from factory-programmed ranges or specific frequencies entered by the user. Note that there are gaps in the 800 MHz band due to legal restrictions on the reception of cellular telephone signals.

In order to make the scanner inexpensive and accessible to first-time listeners, certain features of more advanced scanners were not included in the BC-92XLT. One such feature is *trunk tracking*, leaving the 92XLT unable to automatically follow conversations occurring on trunked radio systems.

Trunked radio systems operate by sharing a small number of frequencies among a larger number of users. These users are members of one or more *talkgroups*, which are identified by a number. When a member of a talkgroup wishes to speak, a computer-based *controller* in the trunked radio system assigns an idle radio frequency to that talkgroup. When the person is done speaking, the controller releases the radio frequency and makes it available for the next person who might want to use the system.

In a Motorola trunked radio system, a *control channel* carries a continuous stream of information regarding the conversations currently underway, including talkgroup identifiers and frequency assignments. Participants in a conversation must be able to receive and understand the control channel information in order to know exactly which frequency is being used for their conversation.

In the same way, a scanner must be able to receive and understand control channel information in order to tune to the right frequency at the right time.

Although the 92XLT can monitor analog transmissions and is also able to tune to a control channel frequency, it does not have the ability to understand the control channel messages and will not be able to determine which frequency is carrying a particular talkgroup.

Despite this limitation, there are some circumstances where a non trunk-tracking scanner might be useful even on a trunked radio system. Remember that a talkgroup conversation is typically a series of transmissions between two users (often a dispatcher and one mobile radio operator). If the active conversation is the only one taking place on the system and you have all of the voice channels programmed into your scanner, it won't matter what frequency the controller may assign to each transmission – your scanner will skip the idle channels and stop on the active one, effectively following the conversation. I've used a Bearcat 200XLT (a much older conventional scanner) in just such a manner to monitor small trunked radio systems during late evening hours.

So, the 92XLT might work on the Mizzou system if there is a time when there is relatively little happening. Saturday afternoons during a home football game would not a be a good time to try this, since the system would probably be very busy, but late on a quiet Sunday evening might be a worth a try. Program in the frequencies and see what happens.

If you try this a few times and all you get are snippets of many conversations, leading to much confusion, you'll need to bite the bullet and get a trunk-tracking scanner.

❖ University of Missouri

Columbia, Missouri is a city of almost 100,000 located near the center of the state. It is home to the University of Missouri-Columbia, known as "Mizzou," as well as Stephens College and Columbia College. Columbia was ranked second in *Money Magazine*'s best places to live, in part due to the cultural amenities available on these campuses.

The University of Missouri at Columbia operates Motorola Type II trunked radio system carrying purely analog voice traffic. It uses the following frequencies: 855.2125, 856.2125, 857.2125, 858.2125, 859.2125, 859.9375 and 860.2125 MHz.

Some example talkgroups are listed below; however, additions are always welcome! Please report back with new talkgroups that you hear during your monitoring sessions, assuming that you've upgraded to a trunk-tracking scanner.

Decimal	Hex	Description
1616	065	Event Concessions
1632	066	Event Concessions
1680	069	Event Concessions
1712	06B	Vending Machine Service
3360	0D2	Telecommunications Technicians
3520	0DC	Telecommunications Technicians
3680	0E6	Telecommunications Technicians

6400	190	University Hospital
11216	2BD	Police (Channel 2)
11232	2BE	Police (Channel 3)
14400	384	Police (Dispatch, Channel 1)
14576	38F	Police (Emergency)
19456	4C0	Fire School Operations
20816	515	University Parking & Transportation Services
28864	70C	Event Parking
28848	70B	Athletic Department
28976	713	Athletic Department
32048	7D3	Student Recreational Services
32064	7D4	Student Recreational Services
33316	822	College of Education Technical Support 1
33632	836	College of Education Technical Support 2
40000	9C4	Security
41616	A29	Student Union
43216	A8D	Catering
44800	AF0	Emergency Medical Services

❖ Columbia, Missouri

The City of Columbia operates a number of conventional analog frequencies that your PRO-92XLT should have no problem receiving.

Frequency	Description
153.815	Power & Light (Water)
153.830	Fire (Tactical 3)
154.115	Fire (Tactical 4)
154.145	Fire (Tactical 5)
154.190	Fire (Dispatch)
154.385	Fire (Tactical 2)
154.755	Police (Tactical 2)
155.310	Police (Main)
155.475	Nationwide Police Emergency
155.730	Law Enforcement Network (Statewide)
155.745	Police (Joint Communications Repeater)
156.150	Police (Car-to-Car)
158.820	Transit System Buses
159.090	Court House (Local Repeater)
453.875	Power & Light (Water)

❖ Alabama

Hi Dan,

I'm doing a lot of scanning in Lee County, Alabama. Auburn PD, fire and other local services are still regular analog, no trunking. County sheriff and other services are the same so I can keep up with them using scanners I already have. Problem is that Alabama State troopers and the city of Opelika are all trunked digital systems and I need something new to listen in. I thought a Radio Shack 528 would be the answer, but apparently not. I don't mind spending the money up to a point but don't want to throw any away. I'd prefer a handheld that I can use with different antennas on foot, in the car or in the house. Suggestions? Thanks.

Rick in Auburn, Alabama

Lee County is located on the eastern edge of Alabama, about 100 miles southwest of Atlanta. It is home to about 130,000 residents, nearly a third of whom live in Auburn.

The county has a fair amount of conventional activity in VHF Low Band:

Frequency	Description
151.115	County Public Works
152.405	Sheriff Tactical West
154.400	Auburn Fire (Dispatch)
154.710	Sheriff (Car-to-Car)
154.740	Sheriff (Dispatch)
155.010	Sheriff Statewide Mutual Aid
155.025	Auburn Public Works
155.145	County Fire (East Dispatch)
155.610	Auburn Police (Dispatch)
155.715	Sheriff Tactical East
155.745	Auburn Police
155.895	Emergency Medical Services
156.000	Auburn Public Works
159.165	County Fire (West Dispatch)

These frequencies can be easily monitored by the PRO-528, a handheld scanner made by Uniden and sold by Radio Shack. It is also capable of tracking the three most common types of trunked radio systems in the U.S.: Motorola (Type I and II), Enhanced Digital Access Communications System (EDACS) and Logic Trunked Radio (LTR). It can store up to 1,000 frequencies and can be programmed via a personal computer. It is also relatively inexpensive, typically selling these days for less than $150.

In Lee County, however, the PRO-528 has some limitations, as Rick notes. The biggest drawback is the lack of digital voice capability.

❖ Opelika, Alabama

The City of Opelika, Alabama is home to about 25,000 residents living in a 50 square-mile area. A Motorola Type II trunked radio system serves the city and carries voice traffic in both analog and digital formats. The Police Department operates digital radios, as does the Fire Department, although Fire dispatches are in analog format. Some city services are digital, while the rest are analog.

The digital voice format follows the APCO (Association of Public-Safety Communication Officials) Project 25 standard called the *Common Air Interface* (CAI). The standard specifies exactly how the sound from a speaker's voice is converted into digital bits (binary digits) and delivered across the radio link.

There are several digital-capable handheld scanners on the market, including the following models:

Model	Manufacturer	Type
BC296D	Uniden	Handheld
BCD396T	Uniden	Handheld
PRO-96	GRE/Radio Shack	Handheld
PSR-500	GRE	Handheld

Any of these models will allow you to track and monitor APCO Project 25 digital voice activity on Motorola trunked radio systems.

The transmitter site for Opelika's system is located on the East side of town near Interstate 85 and operates on the following frequencies:

855.4625, 855.7375, 855.9625, 856.2125, 856.4875, 856.7375, 857.2125, 857.4875, 857.9625, 858.2125, 858.4875, 858.7375, 858.9375, 859.2125, 859.4625, 859.7375, 859.9375, 860.2125, 860.4875, 860.76250 MHz

Decimal	Hex	Description
592	025	Police Operations
816	033	Fire (Dispatch)
8400	20D	City Hall (Dispatch)
8432	20F	City Hall (Administration)
9648	25B	Light/Power (Dispatch)
9680	25D	Light and Power (Administration)
11216	2BD	Public Works
11248	2BF	Public Works (Dispatch)
11280	2C1	Public Works (Administration)
11312	2C3	Groundskeeping Division
11344	2C5	Solid Waste (Dispatch)
11376	2C7	Street Division
11408	2C9	City Engineering
11440	2CB	Inspections
11472	2CD	Maintenance
12848	323	City Engineering (Dispatch)
12880	325	Public Works (Waste Water)
14512	38B	Water Department (Administration)
14480	389	Fire (Administration)
14544	38D	Police (Administration)
14576	38F	Citywide
16016	3E9	Storm Tactical 1
16048	3EB	Storm Tactical 2
16080	3ED	Storm Tactical 3
25648	643	Police Dispatch
25744	649	Police Investigations
25776	64B	Vice Operations
25808	64D	K-9 Unit
25840	64F	Special Weapons and Tactics (SWAT)
25872	651	Police Tactical 1
25904	653	Police Tactical 2
25936	655	Police Tactical 3
25968	657	Police Event Management
26000	659	Police Command
27312	6AB	Fire Training
27344	6AD	Hazardous Materials (Hazmat)
27376	6AF	Fireground
28848	70B	Water Department (Dispatch)

The Alabama State Police operate a statewide EDACS trunked radio network, but I was not immediately able to locate a tower within easy reception range of Auburn. Perhaps a reader in the area might have a set of frequencies for Rick to try?

❖ Lawton, Oklahoma

I read your article on the web about Trunking Frequencies and I was hoping that you could help me.

Is there anyway you can provide me the Trunking Frequencies for Lawton, Oklahoma? We have Police, Fire, EMS, Sheriff, and Oklahoma Highway Patrol (Troop G).

Any help would be greatly appreciated. I have a Radio Shack Pro-528 if that would help any.
   Thank You and God Bless,
   Ray in Oklahoma

Lawton Police have moved off the old 450 MHz frequencies onto the Oklahoma Department of Public Safety (DPS) trunked radio system. The State of Oklahoma DPS and the City of Tulsa operate an interconnected Motorola Type II trunked radio network in 20 counties, including Comanche County. The network carries voice traffic in both analog and Project 25 digital form, although your analog-only PRO-528 should monitor most of what you want to hear. It appears the digital voice traffic is limited to a few law enforcement talkgroups, leaving most everything else in analog format.

Three repeater sites cover the Comanche County area. The Lawton site transmits on:
856.7125, 857.7125, 858.7125, 859.7125, 860.7125, 866.4875, 868.2875, 868.5125 MHz

The Elgin site, just to the northeast of Fort Sill, operates on:
866.1750, 867.0875, 867.5875, 868.2375, 868.7500 MHz

Further to the northwest, a site in Cooperton transmits on:
856.2625, 857.2625, 858.2625, 859.2625, 860.2625 MHz

Talkgroups of interest in your area include:

Decimal	Hex	Description
31760	7C1	State Mutual Aid 1-A
31792	7C3	State Mutual Aid 1-B
31824	7C5	State Mutual Aid 1-C
31856	7C7	State Mutual Aid 1-D
31888	7C9	State Mutual Aid 1-E
31920	7CB	State Mutual Aid 1-F
31952	7CD	State Mutual Aid 1-G
31984	7CF	State Mutual Aid 1-H
32016	7D1	State Mutual Aid 1-I
32048	7D3	State Mutual Aid 1-J
32080	7D5	State Mutual Aid 1-K
32112	7D7	State Mutual Aid 1-L
32144	7D9	State Mutual Aid 1-M
32176	7DB	State Mutual Aid 1-N
32208	7DD	State Mutual Aid 1-O
32240	7DF	State Mutual Aid Announce
41968	A3F	State Department of Public Safety 1
42000	A41	State Department of Public Safety 2
42032	A43	Oklahoma Highway Patrol (Supervisors)
42832	A75	Oklahoma Emergency Management 1
42864	A77	Oklahoma Emergency Management 2
42896	A79	Oklahoma Emergency Management 3 (linked to 155.235 MHz)
42928	A7B	Oklahoma Emergency Management 4
42960	A7D	Oklahoma Emergency Management 5 (Civil Support Team)
43056	A83	Oklahoma Emergency Management
43088	A85	State Health Department
44176	AC9	Oklahoma Highway Patrol Troop G (Channel 1)
44208	ACB	Oklahoma Highway Patrol Troop G (Channel 2)
44848	AF3	Oklahoma Highway Patrol (Turnpike 1)
44880	AF5	Oklahoma Highway Patrol (Turnpike 2)
58640	E51	Lawton Police A (Dispatch)
58672	E53	Lawton Police B
58704	E55	Lawton Police C (Information)
59056	E6B	County Sheriff (Dispatch)
59088	E6D	County Sheriff
59248	E77	Cameron University
59440	E83	Comanche Tribal Police
61360	EFB	Lawton Fire (Dispatch, simulcast on 453.400 MHz)
61808	F17	County Fire (Dispatch, simulcast on 153.770 MHz)
61840	F19	County Fire (Fireground 1)
61872	F1B	County Fire (Fireground 2)
61904	F1D	County Fire (Fireground 3)
64784	FD1	Memorial Ambulance
64816	FD3	Kirk's Ambulance
64880	FD7	Lawton Police (School Security)

While most of the traffic has moved to the trunked system, there is still a fair amount of activity on conventional analog frequencies.

Frequency	Description
151.550	Lawton Public Schools
153.770	County Fire (simulcast on talkgroup 61808)
153.785	Lawton Street Department
154.085	County Emergency Management
154.980	Lawton City Services
155.490	Law Enforcment and Mutual Aid
155.670	State Intercity Net
155.745	Lawton Water Department (Lake Lawtonka)
155.880	County Highway Maintenance
156.225	County Highway Maintenance
159.585	Lawton School Buses
159.690	Medical Helicopters via County Hospital
453.375	Lawton Garbage Trucks
453.400	Lawton Fire (Paging only)
453.450	Lawton Water Department
453.500	Lawton Animal Control
453.975	County Fairgrounds
460.550	County Juvenile Detention Facility
461.025	Lawton Housing Authority

Also, the Oklahoma Highway Patrol continues to operate conventional analog channels in areas where there is not good coverage from the trunked system. You might catch some activity on the following frequencies:

Frequency	Description
44.70	Lawton (Base-to-Car and Car-to-Car)
44.90	Lawton (Car-to-Base)
154.905	Mobile Relay (Velma)
155.310	Relay Link (Chickasha)
155.445	Mobile Relay (Chickasha)
452.675	Mobile Relay (Binger)
457.675	Relay Link (Binger)
855.9875	Talkaround (Car-to-Car)

If you're close enough to Fort Sill, you might be able to catch some transmissions from their APCO Project 25 digital trunked radio system. You'll need a digital-capable scanner and a good antenna to be successful.

Fort Sill is a U.S. Army Base located just north of Lawton whose primary focus is field artillery. Several live fire ranges on the base provide training and development for soldiers and Marines.

The base operates a fully digital Project 25 trunked radio system in the 380 MHz range. You will need to program a custom frequency table into your scanner with the following values:

Base	Spacing	Offset
380	12.5 kHz	0 - 4096

Three towers provide coverage for the base on the following frequencies:

Bald Ridge:
385.0250, 385.0875, 385.3250, 385.6750, 385.9750, 386.2750, 386.5750, 386.6750, 387.1750, 387.4750, 387.7750, 388.0750, 388.0875, 388.3875, 388.7000, 389.0000, 389.0250, 389.4375 MHz

Medicine Park:
380.0750, 380.3750, 380.6750, 380.9750, 381.3250, 381.6250 MHz

Hill 471:
380.4125, 380.7125, 381.0125, 381.2875, 381.6750, 381.9750 MHz

As you might expect, some talkgroups on the system are encrypted, so you won't be able to hear everything that is going on.

Decimal	Hex	Description
61011	EE53	Fort Sill Military Police (Tactical 1, Encrypted)
61012	EE54	Fort Sill Military Police (Tactical 2, Encrypted)
61013	EE55	Fort Sill Military Police (Tactical 3, Encrypted)
61014	EE56	Fort Sill Military Police
61015	EE57	Fort Sill Military Police
61016	EE58	Fort Sill Military Police (Gate Guards)
61040	EE70	Fort Sill Range Control
61043	EE73	Fort Sill Range Control
61044	EE74	Fort Sill Range Control
61350	EFA6	Okie Range Control
61376	EFC0	Fort Sill Air Field
61380	EFC4	Fort Sill Air Field (Maintenance)

That's all for this month. Please continue to send your questions, comments, frequency listings and scanner information to me via electronic mail at *danveeneman@monitoringtimes.com*. You can find more radio-related information on my website at **www.signalharbor.com**, including scanner capability comparison charts. Until next month, happy scanning!

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SCANNERS

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Frequency Coverage:
25.0000-512.0000 MHz., 764.0000-775.9875 MHz., 794.0000-823.9875 MHz., 849.0125-868.8765 MHz., 894.0125-956.000 MHz., 1240.0000 MHz.-1300.0000 MHz.

The handheld BCD396T scanner was designed for National Security/Emergency Preparedness (NS/EP) and homeland security use with new features such as **Fire Tone Out Decoder**. This feature lets you set the BCD396T to alert if your selected two-tone sequential paging tones are received. Ideal for on-call firefighters, emergency response staff and for activating individual scanners used for incident management and population attack warning. **Close Call Radio Frequency Capture** – Bearcat exclusive technology locks onto nearby radio transmissions, even if you haven't programmed anything into your scanner. Useful for intelligence agencies for use at events where you don't have advance notice or knowledge of the radio communications systems and assets you need to intercept. The BCD396T scanner is designed to track Motorola Type I, Type II, Hybrid, SMARTNET, PRIVACY PLUS, LTR and EDACS® analog trunking systems on any band. Now, follow UHF High Band, UHF 800/900 MHz trunked public safety and public service systems just as if conventional two-way communications were used. **Dynamically Allocated Channel Memory** - The BCD396T scanner's memory is organized so that it more closely matches how radio systems actually work. Organize channels any way you want, using Uniden's exclusive dynamic memory management system. 3,000 channels are typical but **over 6,000 channels are possible** depending on the scanner features used. You can also easily determine how much memory you have used and how much you have left. **Preprogrammed Systems** - The BCD396T is preprogrammed with over 400 channels covering police, fire and ambulance operations in the 25 most populated counties in the United States, plus the most popular digital systems. **3 AA NiMH or Alkaline battery operation and Charger** – 3 AA battery operation - The BCD396T includes 3 premium 2,300 mAH Nickel Metal Hydride AA batteries to give you the most economical power option available. You may also operate the BCD396D using 3 AA alkaline batteries. Unique Data Skip - Allows your scanner to skip unwanted data transmissions and reduces unwanted birdies. Memory Backup - If the battery completely discharges or if power is disconnected, the frequencies programmed in the BCD396T scanner are retained in memory. Manual Channel Access - Go directly to any channel. LCD Back Light - A blue LCD light remains on when the back light key is pressed. Autolight - Automatically turns the blue LCD backlight on when your scanner stops on a transmission. Battery Save - In manual mode, the BCD396T automatically reduces its power requirements to extend the battery's charge. Attenuator - Reduces the signal strength to help prevent signal overload. The BCD396T also works as a conventional scanner to continuously monitor many radio conversations even though the message is switching frequencies. The BCD396T comes with AC adapter, 3 AA nickel metal hydride batteries, belt clip, flexible rubber antenna, wrist strap, SMA/BNC adapter, RS232C cable, Trunk Tracker frequency guide, owner's manual and one year limited Uniden warranty. Not compatible with AGEIS, ASTRO or ESAS systems. Order on-line at www.usascan.com or call 1-800-USA-SCAN.

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Bearcat 246T up to 2,500 ch. Trunktracker III handheld scanner	$214.95
Bearcat Sportcat 230 alpha display handheld sports scanner	$184.95
Bearcat 278CLT 100 channel AM/FM/SAME WX alert scanner	$129.95
Bearcat 248CLT 50 channel base AM/FM/weather alert scanner	$104.95
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AOR AR8200 Mark IIIB Wide Band handheld scanner	$594.95
AOR AR8600 Mark II Wide Band receiver	$899.95
AOR AR-ONE Goverment/Export sales only 10 KHz-3 GHz	$4,489.95
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Frequency Coverage:
25.0000-54.0000 MHz., 108.0000-174.0000 MHz., 216.0000-224.9800 MHz., 400.0000-512.0000 MHz., 806.0000-823.9875 MHz., 849.0125-868.9875 MHz., 894.0125-956.000 MHz., 1240.0000 MHz.-1300.0000 MHz.

The handheld BC246T TrunkTracker scanner has so many features, we recommend you visit our web site at www.usascan.com and download the free owner's manual. Popular features include **Close Call Radio Frequency Capture** – Bearcat exclusive technology locks onto nearby radio transmissions, even if you haven't programmed anything into your scanner. **Dynamically Allocated Channel Memory** - Organize channels any way you want, using Uniden's exclusive dynamic memory management system. 1,600 channels are typical but **over 2,500 channels are possible** depending on the scanner features used. You can also easily determine how much memory is used. **Preprogrammed Service Search (10)** - Makes it easy to find interesting frequencies used by public safety, news media TV broadcast audio, Amateur (ham) radio, CB radio, Family Radio Service, special low power, railroad, aircraft, marine, racing and weather frequencies. **Quick Keys** - allow you to select systems and groups by pressing a single key. **Text Tagging** - Name each system, group, channel, talk group ID, custom search range, and S.A.M.E. group using 16 characters per name. **Memory Backup** - When power is lost or disconnected, your BC246T retains the frequencies that were programmed in memory. **Unique Data Skip** - Allows the BC246T to skip over unwanted data transmissions and birdies. **Attenuator** - You can set the BC246T attenuator to reduce the input strength of strong signals by about 18 dB. **Duplicate Frequency Alert** - Alerts you if you try to enter a duplicate name or frequency already stored in the scanner. **22 Bands** - with aircraft and 800 MHz. The BC246T comes with AC adapter, 2 AA 1,800 mAH nickel metal hydride batteries, belt clip, flexible rubber antenna, wrist strap, RS232C cable, Trunk Tracker frequency guide, owner's manual and one year limited Uniden warranty. For more fun, order our optional deluxe racing headset part **#HF24RS** for $29.95. Order now at www.usascan.com or call 1-800-USA-SCAN.

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E10: Spooky Letters from Israel

Along with the infamous Cuban stations, one other "numbers" operation has seeped into much of our popular culture. This is the Israeli Phonetic Alphabet Station.

Wilco, a rather dark and moody band that is well worth the listen, even named a whole album "Yankee Hotel Foxtrot" after one of this station's callsigns. The European Numbers Information Gathering and Monitoring Association (ENIGMA 2000), keepers of all such designators, has given it "E10" - the tenth English-language station on the list.

We're going to hit the high points with E10. It's the world's most active numbers operation, and doing it justice would require three columns. It makes the Cuban effort look simple, and that is no small feat. E10 schedules can start on the hour, quarter hour, or half hour. There are more of them, and they repeat more often. Like Cuba, however, different time slots seem to be aimed at different targets.

Like the Cubans, E10 uses computers to splice together the appropriate clips of a female voice. This time, though, the station sends letters along with the numbers and procedural signals. These are in standard NATO (North Atlantic Treaty Organization) phonetics, but with a weird accent. Here, "Oscar" (for "O") rhymes with "NASCAR." "November" ("N") sounds French, like "Novembair." This plus the low and generally creepy voice makes the station impossible to mistake, even when signals are weak.

Signals, though, are often surprisingly strong, in AM or reduced-carrier upper sideband modulation. It is obvious that several very high-powered transmitters are used. Supposedly, all of them are in Israel, but this is unlikely. Propagation conditions would seem to indicate otherwise. Israel just isn't that big a country.

While it's pretty well agreed that the broadcasts are intended for spies, the exact agencies involved remain uncertain. The well-known Mossad is most often cited, but this is guessing, at best.

The Phonetic Alphabet Station uses three major formats. All three begin with repetitions of a three-letter phonetic callsign.

The first format uses the callsign alone. The initial callup is followed by some procedural signals, a group count, and a message in 5-letter phonetic groups. The message is repeated, then the station signs off with, "End of message, end of transmission."

The second format postpends the figure "1" to the callsign, as in "Charlie, India, Oscar, One." This is a test mode.

The third format postpends a figure "2." This means that there is no message. It's called the null-message format, since the callup is the message, as in "nothing for you today, you're all done." On very rare occasion there can also be a "3." Its purpose is unknown.

One more format exists. It's rare enough that it's called E10a. Here, the callsign is followed by an alphanumeric string that can get rather long. This whole thing is then repeated, some times for hours. Occasionally, a time or serial number is embedded in the string.

It's often speculated that the appearance of these means that something big is up in the Middle East. The problem is that there is almost always something big happening in the Middle East, and it's way too easy to make connections that don't exist.

The purpose of the abnormal strings remains unknown. Once there was even a greeting, possibly aimed at the "numbers" listening community, which at the time had been generating a huge amount of Internet speculation about all this. This string was, "KPA G1O2O3D4N5I6G7H8T." Take out the sequential numbers and you are left with "GOODNIGHT." Spies have weird senses of humor.

The KPA callsign has not been heard in quite some time. However, JSR was also given up for dead, and it reappeared last March.

Recent E10 Callsigns and Frequencies (kHz)

ART	2456, 3415, 5426, 5435, 6986, 6840
EZI	3840, 6840, 7690, 9130, 11565, 13533, 15980, 17410
FTJ	2626, 3360, 4461
HNC	4114, 6575
JSR	5091
PCD	3150, 3360, 4270, 5170, 8805, 14000
ULX	3270, 4270, 4880, 6270
YHF	2844, 3840, 4560, 5820, 9202, 10648

❖ PLC Trouble Ahead?

PLC stands for Power Line Communication. In some places, it's being touted as the answer to all Internet connectivity problems. Right now, though, it's causing a different problem for short wave listeners in the United Kingdom.

It started in June, when Mike in West Sussex, a long-time contributor to the *Utility Logs*, suddenly reported that he could no longer use his radios. He submitted a sound file of a continuous, high-pitched beeping which he said covered up nearly everything from three to 30 megahertz. Soon after, another UK listener reported that he, too, was completely out of business. He too had a nearly complete blockage of high-frequency (HF) radio.

In these and other cases, I learned that the problem has been traced to a certain type of PLC adapter in a popular video system offered by British Telecom (BT). This is not the Broadband over Power Lines (BPL) that you may have heard of. This one sends computer network data through your own house wiring.

The situation in the UK is changing rapidly, and the facts are not all known. According to Ed Hare, W1RFI, at the American Radio Relay League, there are several ways to do this technology. The one causing Mike's problem is the only one that transmits continuously into a perfect wire antenna.

UK e-mailers report that BT is aware there's a problem, and they will update these older units upon customer request. Also, just as I send this column off to Brasstown, another ham has sent e-mail about an apparent government investigation of interference to HF aeronautical radio in Sussex.

Here in the United States, we have some time. It is strongly suggested that readers who like the pastime of weak-signal utility listening create a united voice to tell our side while we can still make a difference. The alternative is that, at some future time, we might have to switch to stamp collecting.

I hate stamp collecting. See you next month.

U TILITY WORLD

UTILITY LOGS

Hugh Stegman
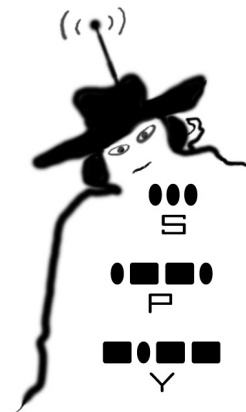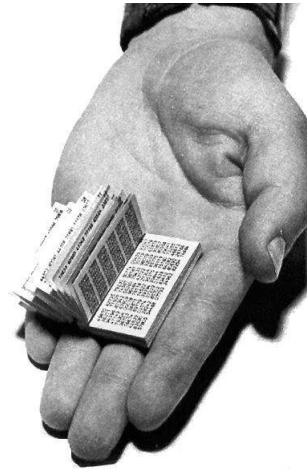
ABBREVIATIONS USED IN THIS COLUMN

AFB .... Air Force Base
ALE .... Automatic Link Establishment
AM .... Amplitude Modulation
CAMSPAC ..... Communications Area Master Station, Pacific
CW .... On-off keyed "Continuous Wave" Morse telegraphy
DSC .... Digital Selective Calling
E03 .... British MI6/SIS, "Poacher" tune and "female" voice
E11b .... Unknown "Strich" family numbers, repeat variant
EAM.............. Emergency Action Message
FAX .... Radiofacsimile
HFDL .... High-Frequency Data Link
HF-GCS .... High-Frequency Global Communication System
ITA2 .... International Telegraph Alphabet #2 (used in RTTY)
LSB .... Lower Sideband
M08a............ Cuban 3-msg CW/MCW, ANDUWRIGMT = 1-0
M40.............. N. Korean CW, sends "VVV CQ," ends "SK SK"
MARS .... Military Affiliate Radio System
MCW .... Modulated CW, alone or as audio tones
Meteo .... Meteorological (weather office)
NATO .... North Atlantic Treaty Organization
Pactor .... Packet Teleprinting Over Radio, modes I through III
PSK .... Phase-Shift Keying
RDFT............ Redundant Digital File Transfer; 8-tone PSK
RTTY .... Radio Teletype
Selcal........... Selective Calling
SITOR-A .... Simplex Telex Over Radio, Mode A
SITOR-B .... Simplex Telex Over Radio, Mode B
SK01 .... Generic for Cuban numbers in ham digital modes
STANAG........ Standardization Agreement (NATO)
TASCOMM .... Terrestrial Air Sea Communications
UK .... United Kingdom
Unid .... Unidentified
US .... United States
USAF .... US Air Force
V02a............. Cuban "Atencion" Spanish numbers, 3-msg format
VOLMET........ Formatted aviation weather broadcast
XSL .... Japanese PSK crypto sync idler and hissy messages

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 have their ENIGMA (European Numbers Information Gathering and Monitoring Association) designators in (xx).

61.8   Unid-Possible UK Royal Navy, encrypted RTTY at 1849. (PPA-Netherlands)

2523.0   Coast Radio Hobart-Tasmanian Small Craft Marine, Australia, also on 4146, weather at 0918. (Eddy Waters-Australia)

2618.4   GYA-UK Royal Navy, Northwood, FAX weather chart at 0550. (PPA-Netherlands)

3370.5   AFA4CY-USAF MARS, net control at 0141. (Tom Sevart-KS)

4031.0   IARM-Italian Navy vessel *San Marco*, working IDR, Rome, in exercise Baltops 2008, at 1942. (ALF-Germany)

4149.0   WPE, Jacksonville-Crowley Marine, FL, taking formatted positions and ops reports from tugs including *Sentinel* (WBN 6510), at 0508. (Sevart-KS)

4152.0   Unid-Japanese military "slot machine" station (XSL), encrypted traffic sounding like a broken gambling machine, also on 4231, PSK at 0925. (Waters-Australia)

4214.0   IDR2-Italian Navy, Rome, RTTY test loop at 1714. (PPA-Netherlands)

4295.0   FUE-French Navy, Brest, ITA2 test loop in STANAG 4285, at 0524. (PPA-Netherlands)

4396.0   Bravo Whiskey-Unknown navy unit, working Bravo Bravo in exercise Baltops 2008, at 1818. (PPA-Netherlands)

4616.0   BMF-Taipei Meteo, Taiwan, FAX weather chart at 1055. (Waters-Australia)

4681.0   "008"-Aeronautical Radio, Inc ground station, Johannesburg, South Africa, sending a HFDL double slot uplink to aircraft OK-LEF (Czech Airlines Airbus A320) and G-VEIL (Virgin Atlantic A340), at 0250. (PPA-Netherlands)

4700.0   Tango Whiskey-US Navy, tracking net with various units using single-letter callsigns, at 0530. (Sevart-KS)

4724.0   Unknown USAF, EAM at 0142. (Jim-GA)

5100.0   "Z-0-O"-German military, passing position in NATO numerical code to an unknown station, at 1030 (ALF-Germany)

5101.0   T2Z211-Probable US Army National Guard 2-221 General Support Aviation Battalion; ALE sounding at 0010. (ALF-Germany)

5101.5   Biskra-Unknown Algerian net control station, calling Djellal, Khaled, and Djamora in Pactor-I, at 2005. (PPA-Netherlands) Biskra, calling Ziribet, Pactor-I at 2130. (ALF-Germany)

5102.5   BAY-German Navy frigate *Bayern*, working Bravo Sierra in Baltops 2008, at 0350. (ALF-Germany) NEU-Unknown navy unit, calling Bravo Bravo in Baltops 2008, at 1715. (PPA-Netherlands)

5268.0   2016-Possible Turkish Red Crescent, calling 201, 2011, and 2013 in ALE, then voice comm, at 2047. (PPA-Netherlands)

5343.0   RIT-Russian Navy Northern Fleet Headquarters, Severomorsk, CW operator chatter with RMX62, at 0117. (ALF-Germany)

5450.0   MVU-UK Royal Air Force VOLMET, weather at 0625. (Waters-Australia)

5574.0   San Francisco-East Pacific air route control, selcal check and position from United 78, giving 3413.0 as secondary, at 0928. (Sevart-KS)

5598.0   EI-DEC-Aer Lingus 896, an Airbus A320, working Shanwick at 0651. (PPA-Netherlands)

5730.1   WQDT 278-XNet Yacht Association, FL, Pactor marker and CW identifier "XNET," listed frequency is 5728.6, at 0327. (DL8AAM-Germany)

5732.0   PAC-USCG CAMSPAC, Pt Reyes, CA, working 718 (Coast Guard 1718), ALE at 2005. (Hugh Stegman-CA)

5743.0   RUY-Polish military, working PGX, 2AD, and ADP in Polish, at 0945. (ALF-Germany)

5755.0   VMW-Wiluna Meteo, Australia, FAX weather chart for the Indian Ocean, at 1922. (PPA-Netherlands)

05788.5   WQDT 278-XNet Yacht Association, Dover, NC, Pactor marker and CW "XNET," listed frequency is 5787.0, at 0104. (DL8AAM-Germany)

6348.0   FUE-French Navy, Brest, ITA2 test loop in STANAG 4285, at 1954. (PPA-Netherlands)

6367.0   HEB26-Bern Radio, Switzerland, with Global Link Network Pactor-III markers and a CW identifier every 3 minutes, at 2007. (PPA-Netherlands)

6586.0   New York-North Atlantic air route control, working American 1870, at 2220. (Sevart-KS)

6715.0   PLASPR-USAF SIPRNET (Secure Internet Protocol Routing Network) entry point, Lajes Air Base, Azores, ALE sounding at 0612. (Michel Lacroix-France)

6765.1   HSW69-Bangkok Meteo, Thailand, also on 8743, weather at 1910. (DL8AAM-Germany)

6768.0   Cuban Spanish AM female "numbers" voice (V02a), in progress with distorted audio and weak upper sideband, sounded better tuned in LSB, at 0130. (Jim-GA)

6786.0   Cuban Spanish AM female "numbers" voice (V02a), in progress at 0721. (Sevart-KS)

6800.0   BO11-Venezuelan Navy Oceanographic Survey Ship *Punta Brava*, working F21 (Frigate *Mariscal Sucre*), at 0202. (ALF-Germany)

6834.0   GYA-UK Royal Navy, Northwood, plain text Middle East weather forecasts by FAX, at 0500. (PPA-Netherlands)

6855.0   Cuban AM "numbers" (V02a), callup 07141 07863 86421 and messages, at 2100. V02a, callup 78531 26131 08863, also at 2100. (Cam Castillo-Panama)

6915.1   VCO-Canadian Coast Guard, Sydney, NS, FAX ice chart at 0115. (DL8AAM-Germany)

7696.0   RJF94-Russian Navy air transport headquarters, Moscow, working RCH84, possibly Vladivostok, at 0134. (ALF-Germany)

7703.0   Unknown-US military, possibly Navy, with EAM at 0149. (Jim-GA)

7887.0   V02a, callup 07283 57871 52342, AM at 2000. V02a, callup 07141 07863 86421, AM at 2001. V02a, callup

54071 78551 01873, also in AM at 2001. V02a, callup 60711 52852 88382, AM at 2002. V02a, callup 18873 10543 36703, also in AM at 2002. V02a, AM in progress at 2005. (Castillo-Panama)

7942.0 REA4-Russian Air Force headquarters, Moscow, CW message in 5-figure groups, at 1141. (ALF-Germany)

7957.0 M60-Israeli Air Force EC-707, ALE sounding at 0800. (ALF-Germany)

8009.4 WPUC 469-SailMail, FL, Pactor traffic ending with CW identifier, at 0059. (ALF-Germany)

8045.1 WQDT 278-XNet, Dover, NC, Pactor marker and CW "XNET," listed frequency is 8043.6, at 2328. (DL8AAM-Germany)

8097.0 Cuban MCW "cut numbers" (M08a) letter-substituted callup 22603 61432 15043 and messages, at 1800. M08a, MCW callup 95381 42351 75472, at 1801. M08a, MCW callup 30612 85662 41373, at 1801 and 1900. M08a, MCW callup 64111 77083 1630, at 1900. M08a, MCW callup 06571 27861 01031, at 1901, and in progress at 1908. (Castillo-Panama) M08a, MCW callup 88941 36173 64243, at 1800, repeated at 1900. (Jim-GA)

8109.0 RGT77-Russian military, coded CW flash priority broadcast at 0853. (ALF-Germany)

8180.0 Cuban RDFT digital file transfer (SK01), repeating file 8541237895.txt, at 0808. (Sevart-KS)

8292.5 Foxtrot Tango-Unknown multinational operation, tactical link coordination and orderwire with Foxtrot Delta, Foxtrot Lima, and Alpha Whiskey, at 0015 and 1935. (ALF-Germany)

8414.5 235485000-Maritime Mobile Service Identity of ZINK4, UK tanker *Happy Falcon*, DSC safety test with Lyngby Radio, Denmark, at 0718. (PPA-Netherlands)

8421.5 LZW-Varna Radio, Bulgaria, SITOR-A markers at 1717, then SITOR-B weather at 1900. (PPA-Netherlands)

8508.0 Unid-Russian military, frequency-shifted Morse in 5-figure groups, T cut to 0, at 1318. (ALF-Germany)

8600.0 XSV-Tianjin Radio, China, working a vessel in CW with traffic in Chinese, at 1701. (PPA-Netherlands)

8665.0 XSG-Shanghai Radio, China, CW identifier and 4-figure group messages at 1900. (PPA-Netherlands) *[Possible Chinese plaintext encoded for Morse transmission. -Hugh]*

8715.0 IDR-Italian Navy, Rome, working Tango Alpha in Italian, at 1210. (ALF-Germany)

8912.0 OPB-US Drug Enforcement Administration OPBAT (Operations, Bahamas and Tortugas), calling J19 in ALE, at 1951. (Stegman-CA)

8968.0 ICZSPR-USAF SIPRNET, Sigonella Naval Air Station, Sicily, ALE sounding at 1805. (PPA-Netherlands)

8992.0 Unknown-USAF HF-GCS, with a very long EAM simulcast on 11175, at 0112. (Jim-GA) *[Apparent exercise; caused another Internet war scare just like the one last year. -Hugh]*

9025.0 J08-USCG helicopter Coast Guard 6008; passing a text message to ADW (USAF, Andrews AFB, MD) ALE at 0000. (ALF-Germany)

9060.0 "Oblique" English numbers station, callup "559 oblique 37," 5-figure group message beginning and ending "77777 77777" (E11b), at 0815. (Mike-West Sussex, UK)

9115.1 WQDT 278-XNet, Puerto Rico, Pactor marker and CW "XNET," listed frequency is 91133.6, at 2328. (DL8AAM-Germany)

9200.0 1118-Morocco Civil Protection net, ALE sounding at 0523. (Lacroix-France)

10081.0 N419MC-Polar Air Cargo/ Atlas Air Boeing 747 freighter, flight PAC 168, HFDL position for San Francisco at 2219. (Stegman-CA)

10201.0 RCV-Ukraine Navy, Sevastopol, CW messages for RBE86 and RIP90, at 0741. (PPA-Netherlands)

10346.0 Unid-North Korean CW numbers (M40), callup "VVV CQ 886,913," then 5-figure groups, at 1700. (PPA-Netherlands)

11002.7 "LC" Lost Creek hobby beacon, CO, CW identifier copied at 2345. (Tom Sevart-KS)

11138.0 RFI-Saudi Arabian military, working JCI in ALE, orderwire for 7-channel RTTY-like Voice Frequency Telegraphy on 11134.6, at 1720. (ALF-Germany)

11175.0 Authorize-US military, suspected airborne command post, broadcasting a 28-character EAM simulcast on 8992 at 0133 and 0200. (Jeff Haverlah-TX) Skull 25-USAF B-52H, morale patch via Andrews HF-GCS to a commercial number, at 1553. Offutt-USAF HF-GCS, Offutt AFB, NE, radio check with Hunter 21, at 1556. Andrews, patch to OK com-

mercial number for Thunder 21, at 1603. (Allan Stern-FL) Abundant-US military, suspected Nightwatch net, went to 8992 and back, finally completing a patch via Andrews at 1810. (Stegman-CA)

11232.0 Peach 33-USAF E-8C, patch via Canadian Forces Trenton Military to Peachtree (Robins AFB, GA), at 1702. (Stern-FL)

12390.0 GYA-UK Royal Navy, Northwood, special FAX for the Persian Gulf region, at 1612. (PPA-Netherlands)

12587.0 LZW-Varna Radio, Bulgaria, CW traffic list at 1445 and 1845, then Bulgarian news at 1900. (PPA-Netherlands)

12593.1 ITSA-Probable Russian or Chinese military, working 9BLZ in CW, using military net discipline and non-standard "Z" signals. at 0428. 47W6, same agency and procedures, CW at 0440. (Richard Dillman-CA)

12969.0 XSV-Tianjin Radio, China, listening on 8363 and 12443, CW marker at 1721. (PPA-Netherlands)

13149.0 XSQ-Guangzhou Radio, China, phone patch at 1729. (PPA-Netherlands)

13315.0 "013"-HFDL ground station, Santa Cruz, Bolivia, uplink for aircraft CC-CXE (LAN Chile Boeing 767, not heard), at 2107. (Stegman-CA)

13342.0 N522MC-Atlas Air Boeing 747 freighter, selcal MR-EJ, calling Stockholm Long-Distance Operational Control, at 0508. (Lacroix-France)

13375.0 Lincolnshire Poacher-UK Intelligence, Cyprus (E03), also uses 12603 and 14487, in progress at 1641. (PPA-Netherlands)

13506.7 Unid-Egyptian Ministry of Foreign Affairs, Cairo, selcalling XBVM in SITOR-A, at 1650. (PPA-Netherlands)

13927.0 Drago 51-USAF B-52H enroute to Andrews AFB for a fly-by at Arlington National Cemetery, patch to a commercial number via AFN2AC (USAF MARS, FL), at 1620. Anvil 57-WV Air National Guard C-130H, attempting contact with AFA6PF (USAF MARS, CA), also tried 14389, no joy, at 1800. Anvil 57, attempting contact with AFA1QW (USAF MARS, IN), also not successful, at 1801. (Stern-FL)

13988.5 JMH4-Tokyo Meteo, Japan, FAX weather chart at 1644. (PPA-Netherlands)

14384.0 Unid-Likely Russian military, 5-letter CW groups in Cyrillic Morse, at 0623. (PPA-Netherlands)

14467.3 DDH8-Pinneberg Meteo, Germany, RTTY weather and identifier giving other frequencies as 147.3 and 11039, at 1710. (PPA-Netherlands)

14485.5 XSS-UK Military TASCOMM, Forest Moor, also on 14818.5, ALE sounding at 1730. (PPA-Netherlands)

14556.0 RIW-Russian Navy, Moscow, working RAL36 in duplex CW, at 1850. (PPA-Netherlands)

14842.0 Unid-Russian military, coded 5-letter message in Cyrillic Morse CW, at 1210. (PPA-Netherlands)

14996.0 RWM-Russian standard time, Moscow, CW pips at 1814. (PPA-Netherlands)

15016.0 Andrews-USAF, MD, 22-character EAM at 1630. (PPA-Netherlands)

15025.0 VP-BDK-Aeroflot SU 0297, an Airbus A320, HFDL log-in with Reykjavik, at 1827. (PPA-Netherlands)

15043.0 PLA-USAF, Lajes, Azores, ALE sound at 1242. HAW-USAF, Ascension Island, ALE sound at 1750. (PPA-Netherlands)

16574.2 CFH-Canadian Forces, Halifax, NS, STANAG 4285 traffic at 1758. (PPA-Netherlands)

16820.0 IAR-Rome Radio, Italy, CW identifier in SITOR-A marker, at 1805. (PPA-Netherlands)

16822.5 UDK2-Murmansk Radio, Russia, CW identifier in SITOR-A selcal to KSKS, at 1805. (PPA-Netherlands)

17435.0 V02a, AM callup 10573 88402 38053, at 1701. V02a, AM callup 89361 37173 11322, also at 1701. (Castillo-Panama)

17435.0 V02a, scheduled AM carrier up with voice at 1705, replaced by RDFT (SK01) and bad audio, at 1710. SK01, back up with RDFT and better audio, at 1730. (Sevart-KS)

17436.0 SK01, carrier at 1600, then RDFT with bad and echoey audio preventing decode, at 1606. (Sevart-KS)

17515.0 V02a, callup 02413 80847 57672 and messages, at 1600. (Sevart-KS)

20325.0 20MFUJ-French Navy FUJ, New Caledonia, calling OMFUX in ALE, at 0830. (Waters-Australia)

27503.0 30DX401-Spanish Citizen's Band Station, Tarragona, hello-all-stations "skip" call, at 1342. (ALF-Germany)

DIGITAL DIGEST

DIGITAL MODES ON HF

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Digital Activity from Germany

This month we take a look at some recently active German ALE networks, remind ourselves about a rare example of a once very active occupant of the HF bands in the form of weather RTTY, and look at the coding schemes used to send weather reports efficiently.

❖ German Water Protection Networks

As we've often mentioned in this column, old habits die hard for many utility users of the shortwave spectrum. Keeping thorough logbook records can pay dividends when "new" users appear, using new equipment. Just such a case exists in Germany where some old MOI (Ministry of the Interior) channels – last used many years ago for intra-country police links between major cities using 96bd ARQ-E equipment – suddenly became active with some new signals.

Some detective work by the members of the UDXF Internet group soon pointed to some interesting units of the German Police as the origin of these new signals, using our old friend MIL-188-141A ALE.

There are two main pools of channels with a few examples of channel sharing. The first network is operated by the Federal Police (Bundespolizei) from its HQ in the northern port of Cuxhaven. Traffic and ALE-sounding activity occurs between the HQ and two patrol boats as follows:

LEZSEE   Bundespolizei Lage- und Einsatzzentrum, Cuxhaven
BP24   Bundespolizei Vessel "Bad Bremstedt"
BP26   Bundespolizei Vessel "Eschwege"

Network 1 Frequencies (USB):
1904, 2070.5, 2151.5, 2199, 2219,0, 2243, 2505, 2559, 2767.5, 3850, 4537.5, 5208, 6905, 8038 kHz

The second network is operated by the Wasserschuetzpolizei (Water Safety Police) of the state of Lower Saxony from its HQ in the northern town of Oldenburg. This (state, not federal) police agency is responsible for safety on rivers, large

lakes, inland waterways and inshore waters (inside the 12km zone). The two players on this network use the following identifiers:

WSPAN   Wasserschutzpolizei Amt Niedersachsen, Oldenburg
W3   German Police Patrol boat 3 (Registration DJ3238)
W03 German Police Patrol boat 3 (Registration DJ3238)

We show a picture of the patrol boat "W3", based at the port of Emden.

Network 2 Frequencies (USB):
3206, 3845, 4537.5, 4618, 4879.5 kHz

❖ German Weather Service and SYNOP Codes

Continuing on the German theme for a moment, there have been some transmitter problems with the long-standing, and now almost solitary example of the once busy shortwave-based RTTY networks devoted to weather – that of Pinneberg (often, though inaccurately known as Hamburg) Meteo. The broken transmitter has been heard with poor quality, spurious signals on many odd frequencies, but no matter: this was a good reminder to draw your attention to one remaining example of once common signal on the HF bands.

The regular frequencies (center of data) are as follows:
4583 (DDK2), 7646 (DDH7), 10100.8 (DDK9), 11039 (DDH9), 14467.3 (DDH8), 15988 kHz

For those of you with VLF (Very Low Frequency) receivers, try 147.3 kHz to hear DDH47.

RTTY is sent using 50bd and 425Hz shift (80Hz shift on the VLF channel).

The station also transmits weather pictures via fax on 7880, 13882.5 (DDK6) and 15988 kHz (center of data) with 120 lines per minute, 576 IOC and 800Hz shift.

❖ SYNOP Codes

Much of the RTTY weather reports are sent from Pinneberg using synoptic (sometimes shortened to SYNOP) or METAR coding. Both these schemes are internationally recognized methods of sending all kinds of atmospheric or sea conditions in a very concise way. METARs are usually used to report hourly conditions at major airports around the world.

Here is an example of a METAR for the airport at Monterey, California, which is almost human-readable:
KMRY 091354Z 11003KT 8SM BKN004 10/09

A3006 RMK AO2 CIG 003V008 SLP193 T01000094=

Here is an example of an AAXX-type SYNOP report from Haboro, Japan (station 47402) and Fushiki, Japan (station 47606):
AAXX 16124
47402 16/// /0225 10134 20118 39950 49959 56023 60692 333 10150=
47606 1//59 /2009 10207 20197 39985 40000 53042 60072 78180 333 10274=

Each group of figures can be decoded by hand to reveal the underlying weather report. Fortunately, many decoders have an inbuilt database of weather stations and are able to decode the reports in real time in a way that is understandable to you and me.

Tune in and listen to the weather before this one disappears.

That's it for this month. Enjoy your binary on the shortwave bands.

RESOURCES

Lower Saxony Water Safety Police
www.polizei.niedersachsen.de/dst/zpd/wsp/wspan/
SYNOP Codes - http://weather.unisys.com/wxp/Appendices/Formats/SYNOP.html

DIGITAL BANDSCAN: 4000 TO 5000 KHZ

Freq kHz	ID	User	Signal Type
4000.0U	ANGSPRINGFIELD	US National Guard	ALE
4001.8	AAA4KF	US Army MARS	SITOR-B
4005.0	???	French Navy	50bd/850 RTTY
4013.5U	???	US Navy	Link-11
4015.0	NNN0YTR	US Navy MARS	SITOR-B
4022.0	FDI22	French Air Force	50bd/85 RTTY
4045.0	NNN0ASR	US Navy MARS	PacTOR
4116.0U	???	Russian Mil	12 Tone Modem
4156.2U	???	???	STANAG4285
4173.0	???	PETROBRAS	SITOR-A
4214.0	IDR	Italian Navy	75bd/850 RTTY
4232.0U	FUF	French Navy	STANAG4285
4262.0	HEC	Globe Wireless	Globedata
4280.0	PBC	Dutch Navy	75bd/850 RTTY
4382.5	KPH	Globe Wireless	Globedata
4477.0U	043SERCAP	US CAP	ALE
4491.0U	KNY82	US SHARES	ALE
4520.0	4XZ	Israeli Navy	CW
4562.0U	PRT	Virginia Guard	ALE
4655.0L	FREDGAS	Washington Gas	ALE
4721.0U	OFF	US Air Force	ALE
4732.0	MKL	UK Mil	75bd/850 RTTY
4751.5	0A	Irish Mil	SITOR-A
4780.0U	STPOPS	US National Guard	ALE
4855.0U	2512	Moroccan MOI	ALE
4865.0	FDG	French Air Force	CW
4918.5U	CIP76	Canadian Mil	ALE
4960.0	???	Mexican Mil	Tadiran Autocall

U/L denotes USB/LSB frequency, rather than center of data.

GLOBAL FORUM
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What's Happening with DRM in the US?

We're still waiting for any U.S. shortwave station to broadcast in Digital Radio Mondiale. Last month, WYFR was mentioned as planning to do it eventually. Another remote possibility is WMLK in Pennsylvania, which has been off the air for many months. In the drmna yahoogroup, Mark Phillips says.

"I've been to WMLK, inside their new transmitter which is still not on the air. They have established a set of fairly easy mods to make it DRM compatible; they were contemplating selling access to their airtime to help offset electrical costs."

Then there is WE2XRH, mentioned briefly on page 8 of July *MT*, Digital Aurora Radio Technologies in Delta Junction, Alaska. On the **http://26MHz.us** site, Benn Kobb reported that on July 15, the FCC issued a 2-year experimental license for these government surplus OTH radar transmitters, at 0.66 megawatts ERP in 7.1-7.6 MHz and 0.11 MW ERP in 9.25-9.95 MHz. The license also covers a 1.09 MW ERP transmitter at 4.4-5.1 MHz and another 1.09 MW transmitter at 4.5-5.1 MHz, all conditioned on a non-interference basis.

We point out that there are countless AM SW broadcasters this would interfere with on the 4, 7 and 9 MHz bands, so why in the world assign such frequencies? Kai Ludwig adds that operating below 7.3 MHz is also out of the question, in the 40m hamband.

DART's president, Whit Hicks, Ph.D., is Executive Director of Delta Mine Training Center, a nonprofit organization that offers educational programs in mining and mineral exploration.

An earlier report at *26mhz.us*, via Ben Dawson, said, "Thanks to Sen. Stevens of AK, there is a $4 million federal grant earmarked to fund this."

Harry Helms suggests that the tests are pointless, as there is absolutely no interest among the general public in SW, let alone DRM on 26 MHz or these bands, especially in sparsely-populated Alaska.

In a GTalk chat with Andrea Lawendel, Benn Kobb said the antennas would have to be built before it gets too cold, so could be on the air by September. Don Messer, who left the DRM Consortium in March, is consulting engineer. In another interview, Hicks said it would take a year to get some results.

Kobb referred to a 66-page pdf with lots of info about it, graphs of antenna and coverage calculations, based on 5050, 7350, 9623 kHz – watch out, WWRB, KNLS, CBCNQ. Or these may only be random spots for theoretical purposes, rather than definite frequency-usage plans. Strangely, the next time we tried to look at that file, it wasn't accessible.

Maybe this is the way to go, suggested by Jay Heyl, ABDX: "IF they could get domestic SW broadcasting okay'd and IF someone built the facilities to blanket the continental US with solid, reliable coverage, the key to selling it would be as a completely terrestrial version of satellite radio.

"I wouldn't even mention the SW aspect. Put it in a radio numbered channels 1 through 50 and refer to them that way. Who knows or cares what frequency TV channel 2 broadcasts on? It could be SW, MW, UHF, VHF, whatever. The key would be nationwide coverage and good quality digital sound. Having decent programming would help, too."

ALASKA The 1200-1300 outsending is the single English broadcast on both KNLS transmitters [non-DRM!] Reception is spotty in CNAm especially in summer, but on a good day 7355 was weak but clear, and 9780, not synchronized, about one second ahead to even out power consumption, was atop rather than underneath Taiwan in Chinese and of course, Firedrake jamming as a result. This could only be much worse in the target area. Halfway through the A-08 season, KNLS had not caught on that they needed to get off 9780 pronto. KNLS English is almost Special, slow and clear for the ESL masses in Asia (gh, OK)

ANGOLA R. Nacional, usually right on 4950, was on 4949.77, at 0032-0050 July 11, nondescript and hilife music, Portuguese comments (Chuck Bolland, FL, *DX LISTENING DIGEST*) 4949.7 at 2238-2251 the day before, music dedications from RNA-Canal "A", Mulenvos (Carlos Gonçalves, Portugal, *ibid.*)

AUSTRALIA The new Greek station, Radio Symban, NSW, 2368.5, which started in mid-May as in last month's column, was off the air by mid-June with an antenna problem, still not reported again from Australia or NZ by mid-July. Keith Ashton, another 120m entrepreneur, died unexpectedly June 21, so his Double V project may have passed away too. Read about him at **www.isonliveradio.com/iarba/lifemembers/keith_ashton.html** (via *Australian DX News*)

AUSTRIA ORF expects a loss of 10 megaEuro in 2008. A strategy until 2015 stipulates to "check" the services on mediumwave and shortwave (*Der Standard* via Herbert Meixner via Kai Ludwig, *WORLD OF RADIO*) The question is what "check" means! Stop? or try out, verify? (gh) I think *"überprüfen"* means that they will discuss whether or not to close down the SW and/or MW services. This not necessarily implies any closer examination of their usefulness. But a later interview in *Die Presse* with Chairman Alexander Wrabetz said "We want to transfer shortwave step-by-step into the internet definitely." What is the meaning of that? Putting the few special programs still produced for shortwave into the Ö1 podcasting service as well? (Kai Ludwig, Germany, *DXLD*)

BIAFRA [non] V. of Biafra International shifted July 11, more than a month later than scheduled, from 17650 to 15280 via WHRI, for the Friday-only 20-21 UT broadcast. The orator mentioned 19 meter-band, but no specific frequency. This supposedly goes back to 17650 in September (gh)

BRAZIL On July 1, a loud and clear stable

signal away from the tumult on 49m appeared on 5870, Rádio Missionária do Brasil (Sistema Gideões), from Florianópolis mentioning 31 and 25m frequencies of Marumby but not this one, testing? Sounded like a relay (Luiz Chaine Neto, Limeira SP, *dxclubepr yg*) It's still called R. Marumby and forms part of the *Gideões Missionários da Ultima Hora* project as in **www.gmuh.com.br/radio/radioma.htm** (Antônio Schuler, *ibid.*)

Religious station but program at 0800-0930 [local time?] was news, *Frente Ampla de Notícias…* (Neto, *ibid.*) Also heard at 2045-2055, 2145-2205, with different religious shows (Arnaldo Slaen, Argentina, *DXLD*) So far no reports from outside South America; is it on overnight? Too close to WHRI 5875 evenings (gh)

See **www.gmuh.com.br/radio/vozm.htm** (Wolfgang Büschel, *BC-DX*) No mention on their *sintonia* page about 5870, just 9665 and 11750. Hmmm, 5870 is almost one half of 11750; could it be a semi-harmonic of mistuned 11740? (gh)

6104.8, R. Filadélfia, 0559-0647+, time pips, ID, definitely not Canção Nova, lively Brazilian music past 0647, best in LSB to separate from weak BBC Ascension 6105. Schedules do not show it on at this time (Mark Taylor, WI, *NASWA Flashsheet*) BBC in French was dominant here (gh, OK) 6104.71, Radio Filadélfia, (presumed) 1037-1045, in Portuguese so not México (Chuck Bolland, FL, *DXLD*)

9669.6, varying to 9666.9, R. Cultura, São Paulo, 2004, news (Rogildo Fontenelle Aragão, Bolivia, *@tividade DX*) 9660 at 2218 overmodulated and heavily distorted, very difficult to copy; still on at 0915 and 1400 (Carlos Gonçalves, Portugal, *DXLD*) Nominal 9615, but has been jumping/varying all over the place, previously below 9615 (gh)

BURKINA FASO RTV Burkina reactivated 5030 July 1 after several weeks, heard between 1900 and 1950 but not at 2145, maybe still testing (Thorsten Hallmann, *DXLD*)

CAMEROON R. Cameroon, 6005, news in English at 1400 May 20, SIO 333 (Dzever Ishenge, Benue State, Nigeria, World DX Club *Contact*) An intriguing logging, as no Cameroon stations are believed to be active on SW. British DX Club's *Africa on Shortwave*, updated May 2008 says: "Official shortwave broadcasting from Cameroon Radio and Television has ceased."

Thorsten Hallmann's *Africalist*, updated 26 June 2008: "Cameroon: inactive on SW, last frequencies heard in 2000/2001: 4850 Yaoundé, 5009 Garoua, 6005 Buea." 6005 was the last active Cameroonian SW, confirmed in

October 2000 (Dave Kenny, DXLD) If 6005 is really back from Buea, hope it is running the previous full schedule 0430-2315 for anyone beyond Nigeria to have a chance of hearing it (gh)

CRTV reported last February that the Japanese government was donating eight 10 kW transmitters (*Media Network* blog) Any of them SW? (Ron Howard, CA, *DXLD*)

CANADA WHRI covets CHU frequency 7335 again in B-08, at least at 12-13 UT (gh) We have plans to move to a new frequency, already in the works, 7850 kHz. Changeover will take place when we upgrade our transmitters this summer (Raymond Pelletier, Frequency and Time, Institute for National Measurement Standards, National Research Council Canada, Ottawa, *DXLD*)

CHAD As reported by Jari Savolainen, Afro-pops at 0640 past 0700 on 7120 was probably Chad, vernacular, fair at best in local noise (Noel R. Green, NW England, *WORLD OF RADIO*) Got a definite ID for Chad on 7120 at 0507. Signal was good and clear but pretty well gone at 0555 (Bryan Clark, NZ, *ibid.*) So no more 4905 in the mornings (gh)

CUBA Handy official ICRT site with summary of call signs by Cuban province, city and radio network: **www.radiocubana.cu/directorio_radio_cubana.asp**

I've never seen the calls for Radio Havana Cuba shortwave (CMRH) listed before (William R. Hepburn, Ont., WTFDA) And CMRH has 12 SW transmitters; R. Rebelde, CMBA, three (gh)

[non] New Cuban shows added in June to WRMI 9955: The punto guajiro music program *A Favor de la Justicia* Saturdays at 2315-2330; and *Cruzada Cubana* Sundays 2215-2230.

Radio Nueva Nación returned, Sundays at 1100-1130. RNN is the official organ of the Partido Nacionalista Democrático de Cuba, see and listen via

🔊 **www.pndcuba.org** Also at a different time on WWFE 670, says press release signed by Alfredo M. Cepero, Secretario General; Frank Resillez, Secretario de Información. Produced in the WRMI studio (Jeff White, WRMI)

In early July, R. República vanished from 6135 at 2200-2400 and 6155 at 0000-0200, believed to be UK sites, but remained on 6100 at 0200-0300 (gh) Heard at 2215 on 9515 (Antonio Madrid, Spain, *noticiasdx yg*) So we monitored the frequency change announcement just before 2400 and found the other replacement, 9640 at 0000-0200. Jammers were already there.

Jammers from inside Cuba go crazy, jamming frequencies during hours far beyond when they are really in use by the victims. Jamming against nothing was noted on 5890, 5940, 5980, 6100, 7365, 9490, 9515, 9565, 9640, 9840, 11775 among others. Fair warning to any other station which tries to use these frequencies (gh)

ECUADOR HCJB's Spanish DX program announced that the 1 kW USB frequency 21455 had been closed down after almost two sesquidecades on the air (José Bueno, Spain, *DXLD*) That did not keep Vozandes from continuing to mention it on automated IDs; how many years before this is fixed? (gh)

EQUATORIAL GUINEA RNGE's sporadically active 6250 fairly well heard in mid-July at 0600 with music, finally timesignal at 0606:30 and news in Spanish with several different sounders; suffers from utility QRM which is what you get for broadcasting in a marine band. Two nights later it was missing (gh, OK)

ETHIOPIA [non] 21585, *Addis Dimts Radio*, clandestine, weak at 1610-1620 in mid-June, ex-17875. Webpage **www.addisdimts.com/** shows 21585 (José Miguel Romero, Spain, *WORLD OF RADIO*) 1600-1700 Sundays only via Samara, Russia, says Aoki list. Unusual to go to 13m during solar cycle trough. Website indicates they originate in Washington DC area and have a local broadcast there (gh, *ibid.*) Also heard on 21585 a week later, but e-mail reply from *abelewd@yahoo.com* said they were going back on 17875 (Patrick Robic, Austria, *DXLD*) And heard there in July from *1603 in Amharic (Anker Petersen, Denmark, *playdx yg*; John Herkimer, NY, NASWA *Flashsheet*)

GABON Perhaps a year ago you led me to the great *Kilimandjaro* music show on 15475 at 17 UT, on Radio Africaine, and I'm an avid listener every weekday, although the programing seems to take a turn for the worse every time I recommend it to somebody else. Did you know that Radio Africaine [slogan of Africa No. Un] has a show at 21 UT on 9580 called *Flash Black* that plays vintage US soul music? It's fantastic, and color blind, because I've also heard soulful sounds of Joe Cocker and Blood, Sweat and Tears, and even a very soulful live version of *Whiter Shade of Pale* by Procol Harem. And as I write this, they are playing a soulful version of *I fall to Pieces* by Trisha Yearwood (Kent D. Murphy, WV, *WORLD OF RADIO*)

GERMANY In reply to e-mail from Don Rhodes, Heidi Lucas of DW Customer Service said, "DW's objective is to do without shortwave, wherever possible, some day. But as far as I know, there are not yet plans to cease the German broadcasts for Australia. The future belongs to FM (via partner stations), satellite and above all to audio and video via the internet. Please do not forget: As long as DW has shortwave transmissions, we need reception reports" (BDXC-UK *Communication*)

INDONESIA I had been advocating for months, years, that VOI should put their English hour on at 1300 UT when reception is most reliable and convenient in C&W NAm on 9526, so I could hardly believe my ears starting in July that they actually did it! Signal varies widely from day to day, perhaps due to something beyond propagation, but should improve in fall and winter if they stay with it. This hour had been in Korean, so other languages were also retimed (gh, OK) One date English did not start until 1330 (Ron Howard, CA)

Aoki says this 250 kW Cimanggis transmitter on 9526 is aimed 30 degrees, which is just right for us in CNAm. The great circle route crosses

the entire island chain of Japan, tangentially attains about 58 degrees north latitude in SW Alaska, and carries on southeastward to Enid some 9500 miles away. In English they always announce 9525, 11785 and 15150, but use only one, rarely two of them. After 1600 in Europe heard sometimes on 9526, sometimes on 11785 (gh, OK)

Revised tentative VOI schedule, on 9526 or alternate 11785: 0900 Korean, 1000 English, 1100 Chinese, 1130 Japanese, 1200 Indonesian, 1300 English, 1400 Malay; 1600 Indonesian, 1700 Arabic, 1800 Spanish, 1830 German, 1900 French, 2000 English. Also 0200 English, 0300 Indonesian (*WRTH* July update) So Thai discontinued? (gh) Add Hindi, heard at 1630-1700 (Wolfgang Büschel, Germany, *DXLD*) English confirmed at other new time 1000 (John Herkimer, NY, NASWA *Flashsheet*)

IRAN IRIB Tehran heard daily 1700-1800 on 14350 = 2 x 7175 (DK2OM (Wolf) / DJ9KR (Uli), *DARC Intruder Watch* via Wolfgang Büschel) Zahedan site in Russian (gh)

IRELAND Wednesday evening mass and background church noises heard on strong clear FM, Wireless Public Address Systems, but no IDs, in Irish-accented English, 1842-1900 fade on 27065, 27285, 27395, 27595, 27725 (Carlos Gonçalves, Portugal, DXLD) Conceivably could make it to NAm by summer sporadic E, certainly not F2 propagation now (gh)

ISRAEL Galei Zahal, IDF station on 6973, 15785, also has webcam with audio via

🔊 **www.imvite.com/video/Galei-Zahal-Radio–-Studio-Cam/t/5c9a78357083375b** (José Miguel Romero, Spain, *DXLD*) Empty table when I checked, but well-lit! (gh)

ITALY R. Maria, Andrate, heard on 26000 AM, as early as 0930, as late as 2245 by sporadic E in June and July (Carlos Gonçalves, Portugal, *DXLD*) Simulcast in DRM on 26010 since June 11 (Roberto Scagione, Sicily, *ibid.*) Hearing both at 1830 (Harald Kuhl, Germany, *HCDX*) And both at 0935 (Mike Barraclough, England, *BDXC-UK yg*) I have volunteered to manage QSLing. Send reports, audio clips welcome, to *qsl@radiomaria.org* or with r.p. to (Giampiero Bernardini - via Tertulliano 35 - 20137 Milano - Italy; *WORLD OF RADIO*) See VATICAN

KOREA NORTH Three different types of jammers were observed on 3912, 6518 and 6600 at 1955-2000 *vs.* Voice of the People from Republic of Korea (Rumen Pankov, Bulgaria, *BC-DX*)

When VOK, 11710, English to NAm at 1300 is strong enough, spur becomes audible on 11644.1, more distorted than fundamental; and a matching spur carrier on 11776, hetting Anguilla, Firedrake, and Firedrake victim. KCBS domestic service with choral music on 11679.8 and 9665.3 at same time (gh, OK)

[non] *Furusato no Kaze* added new transmission in mid-July, 1333-1400 9585 via Tainan, Taiwan, M/W/F/Su in Japanese, Tu/Th/Sa in Korean. Already was in Japanese, 1430-1500 11775 Darwin, 1600-1630 9780 Tainan; as *Ilbon e Baram* in Korean, 1500-1530 11690 Darwin, 1700-1730 9820 Tainan (S. Hasegawa, NDXC)

MALI R. Mali back on 7284.5 // 9635 at 1513-1750 in French, vernacular. In evening only on 5995, nothing on 60 m (Carlos Gonçalves, Portugal, *DXLD*)

MÉXICO 6104.89, XEQM, Mérida, Yucatán, 2057-2122; also 1236-1240, measured to 6104.985 (they're getting closer) and great modulation, no ID or slogan; 1704-1715 around 6104.92 (Terry L Krueger, Clearwater, FL, *WORLD OF RADIO*) 6104.9, *1100, variety of sound effects, "*Candela*" ID at 1130; amazing signal strength; does anyone know the power? (Bob Wilkner, Pómpano Beach, FL, *ibid.*) How can this be "blasting in" to S Florida, while it is just barely audible in OK and CO? Directional antenna? (gh, *ibid.*) Good question! The 6104.8v signal is excellent here (Wilkner, **DXLD**) Just 250 watts, believe it or not, using a very old "hand made" transmitter. Seems it carries "Candela FM" programming and perhaps MW 970 (Julián Santiago Díez de Bonilla, DF, *condiglist yg*)

Can't get a decent signal from XEQM 6105v, so I just pick up their FM – tnx to sporadic-E opening June 29 at 1654-1701+ on 95.3, XHMH; other Mérida stations on 89.3, 92.9 were better (gh, OK)

MONGOLIA V. of Mongolia, Khonkhor, 12085 very fluttery with English at 1030; something peculiar with their audio (Carlos Gonçalves, Portugal, *DXLD*) New time since June 1, the other still at 1530 (Christer Brunström, Sweden, *SW Bulletin*) 178 and 126 degrees, respectively (gh)

MYANMAR Myanma Radio scheduling was in flux June and July; notably 9730.76v usage expanded to 0330 (S/S 0230)-1500v (Alan Davies, Thailand, *BC-DX*) With minorities and educational program, usually to 1512* but sometimes to 1536* (Ron Howard, CA, *DXLD*) No luck here, not even a carrier; obscured by Taiwan in Japanese 9735 until 1359* (gh, OK) Some of the SW frequencies may now be emanating from new capital Nay Pyi Taw rather than Yangon (Wolfgang Büschel, *DXLD*) Separate programs from 9731v on 5985.00 at 0930-1600, English at 1530. But at 2300-0130 on 5985.76, different transmitter/site? 7185.16 separate programs at 0030-0230. Not heard any more on 5915 or 5040 (Alan Davies, Thailand, *BC-DX*)

NIGERIA Usually hear nothing in summer mornings on 9690, though on a good winter day India's sesquihour in English to SE Asia at 1330 sometimes makes it. So surprised to find fair signal one day in mid-June at 1348 with *Time for Hilife* music show on Monday from 1330, ID as V. of Nigeria, 1351 increased to good S9+20 level. Modulation at good level, but somewhat distorted; 1400 news and fading down, but still audible at 1434; longpath? (Glenn Hauser, OK, *WORLD OF RADIO*)

PERÚ R. Altura, Chaupimarca, 5014.37, 0450 and 0458 "Happy Birthday," pretty nice signal (Dave Valko, visiting Netherlands or Luxembourg, *Cumbre DX*) 5014.3, another day at 0430 with birthday greetings, 0500* (John Durham, New Zealand, *NZ DX Times*) Good and clear from 0343; closes at 0459 with Vangelis' *Chariots of Fire* theme (Bryan Clark, *ibid.*)

ROMANIA [non] BBCWS announced they would close Romanian language service on August 1 after 69 years, due to expanding media market in Romania (Chris Lewis, England, *DXLD*) The only language service to close during term of current World Service budget until April 2011, retaining all other 31 remaining languages, says Nigel Chapman, BBCWS Director.

National Union of Journalists' organizer, Paul McLaughlin, said the closure was shocking, "a devastating blow for a service that is renowned for providing exemplary journalism, covering the area and the region. It seems that, bit by bit, the BBC is intent on dismantling the World Service." (BBC News via Lewis, Alokesh Gupta)

Broadcasts in Romanian for the Republic of Moldova will also cease, as the Moldovan side of the operation "cannot be sustained without the infrastructure of BBC Romanian" (Tara Conlan, Guardian, via Dale Park, HI)

After nearly 60 years of providing uncensored news and information to the people of Romania, Radio Free Europe/Radio Liberty's Romanian-language service will cease broadcasting to Romania on August 1, 2008. However, Romanian-language broadcasts to Moldova and the Transdniester region will continue (RFE/RL)

Double whammy (gh) RFE/RL wanted to close down Romanian already five years ago. Any ideas what it means in practice that the service will be meant only for Moldova as of August? (Kai Ludwig, Germany, *DXLD*)

RUSSIA Sodruzhestvo service heard on 14285 in hamband at 2000, why? (Wolf DK2OM, via Wolfgang Büschel, *DXLD*) Also something in Turkish at 1945 (Uli Bihlmayer, *ibid.*) It's a mixture at the Krasnodar/Tblisskaya site, 15455 minus MW 1170, the latter with CRI relay. After 2000 it's VOR Russian on 1170, French on 15455 mixing (Mauno Ritola, *ibid.*)

VOR's motorboating transmitter, 7300, at 2330, unintelligible audio, just putt-putting with rapidly fluctuating frequency. Portuguese scheduled during this hour. This has been going on for years, and in B-seasons on 5900 instead. Such incompetence! (gh) Site is Lesnoy, two 250 kW transmitters, about forty years old, run as a single 500 kW, with the combining process suspected to be the culprit (Kai Ludwig, Germany, *DXLD*)

Handy online VOR QSL report form: **www.vor.ru/dxreport/report. html** (RusDX)

Re July, about closing Samara site: Mikhail Timofeyev from Saint-Petersburg says Samara will remain on shortwave, but in a new, contemporary capacity. Acting director of Samara Centre, Sergey Neudahim, says it will take at least two years to clear the site for residential needs. Some equipment will be moved to Saint Petersburg, Khabarovsk, Krasnodar and other towns (Olexandr Yegorov, *Whole World on the Radio Dial*, RUI)

SPAIN As part of reorganization and downsizing of RTVE, Radio Exterior will remain, but continue abandoning shortwave (*ABC* via José Miguel Romero, DXLD)

REE English to Europe, M-F at 2000-2100 which had been on 9690 for a while, moved back to originally scheduled 9665, along with 11620 ex-11625 (Edwin Southwell, UK, *World DX Club*)

TAIWAN [and non] RTI dropped 17 [frequency] hours [a day] via Okeechobee as of July 1, keeping 13 hours – may drop some more at start of B-2008 season. All existing [YFR] shortwave transmissions via RTI continue (Evelyn Marcy, WYFR, *DXLD*)

WYFR is contractually forbidden to provide details of RTI relays, and RTI gave no specific info about the extent of the reductions so we had to piece them together (gh) RTI French service announced WYFR relays ceased, remained via UK and France (via Dan Say, BC, *DXLD*) Likewise German (Kai Ludwig, *ibid.*) Fortunately, RTI English via WYFR was not cut despite previous hints that it would be. Most of the reductions were in Chinese dialects, primarily replaced by more WYFR English on 15440, 9680, 5950, per *WRTH* Update. More under USA (gh)

TATARSTAN [non] 15110, Voice of Tatarstan/GTRK Tatarstan via Samara, 15110, open carrier from 0346, programming from 0410 with ID in English, then news in presumed Tatar, portions in Russian, folk song to 0433 (Ron Howard, CA, *DXLD*)

UKRAINE One of the two Brovary SW sites faces the same problem as Samara [see RUSSIA], closely surrounded now by civil buildings. So there is a plan to remove it to another site near Brovary, depending on political and financial support to continue SWBC (Olexandr Yegorov, *Whole World on the Radio Dial*, RUI) Brovary has not been listed as an active site for some seasons, just Kharkiv, Lviv and Mikolaev, so are there really plans to use it? (Eike Bierwirth, Germany, *DXLD*)

U K See ROMANIA [non]

U S A QSL for R. Solh, 15265, received from VOA in Washington (Sergey Kolesov, Russia? via Dario Monferini, *playdx yg*) !! Solh is not a VOA service! Unless very covertly, and they should be ashamed of playing the same tapes day after day, month after month. Someone at VOA was ignorant enough to issue an automatic QSL for such a report, proving that such QSLs are worthless – and all VOA QSLs? Now we should see what other unrelated stations VOA will QSL. 15265 is the B-season frequency, instead of 17700 via UK currently (gh) A better way to QSL R. Solh is via RFE/RL; will try that (Dan Henderson, MD, *DXLD*)

The BBG is still looking to make the same cuts as proposed in their FY 2008 budget request. Even though Congress made clear that it did not agree with the cuts, BBG is attempting through the FY 2008 Program Plan to implement the very same cuts.

In an apparent attempt to disguise their desire to eliminate the VOA *News Now* global English radio broadcasts, BBG has asked for permission to reorganize the English Services.

The BBG is requesting permission to make these cuts by September 30, 2008 and desires that the targeted employees be off the rolls during the first quarter of FY 2009. Part of the Program Plan makes clear the BBG's antipathy to shortwave radio broadcasts: "Expansion of the BBG Internet capability will continue the technological evolution of program delivery from shortwave to Internet". (AFGE Local 1812)

VOA plans to eliminate seven radio language services this year, reflecting the Bush administration's emphasis on outreach to the Muslim world. Among the cuts are radio and TV in Russian, radio in Ukrainian, Serbian, Hindi, Macedonian, Bosnian and Georgian.

Critics blame the cuts on the hundreds of megadollars absorbed by Alhurra, the U.S. government-funded Arabic television news channel. *ProPublica* has published two reports on turmoil and waste at the network.

Proposed reductions in Tibetan by VOA and RFA were prevented, thanks to lobbying by monks visiting Capitol Hill (Paul Kiel, **www.propublica. org** via Alokesh Gupta) The mentioned VOA services, except Georgian, will continue with internet and/or television (Kim Andrew Elliott, **kimandrewelliott.com**) See also ROMANIA [non]

One of the very annoying things about World Harvest Radio online schedules is that they do not explicitly state language of each listing, given in English when they are not really in English! That explains why we heard Arabic on WHRA 17690 at 1830-1835. It's *Bible Pathway*, which buried in their own site **www.biblepathway.org/** acknowledges Arabic M-F and others. (gh, WORLD OF RADIO)

Overnight AM, the much-hyped talkshow from Oklahoma City mentioned last month as starting on WRMI in mid-May, only lasted a couple of weeks before it crashed and burned. So WRMI expanded WRN relays to 8 hours a day M-F at 1600-2400 on 9955 (gh) See also CUBA [non]

WYFR filled most of the time vacated by Taiwan [q.v.] with its own programming. Revised July schedule showed some new languages from Florida: Polish at 0700-0745 on 7780, 2000-2100 on 18930; Romanian at 0600-0700 on 7780, 2000-2100 on 15600 (gh)

What is the status of the KTMI shortwave CP in Oregon? It expires October 3, 2008. They have been examining the upcoming seasonal schedule for additional suitable frequencies. We are waiting to hear from them by October 3 concerning the completion of the construction (Tom Lucey, FCC, WORLD OF RADIO) KTMI is trying to get on the air this summer in Oregon. They are looking for transmitters, baluns, antenna hardware, studio equipment, wire, transformers, etc. If you should have any such surplus equipment, please email *bob@lund.com* (*NASB Newsletter*) Anyway, KTMI has registered 6025, 9445 and 11615 for B-08 season (gh)

July 18 at 1938-1950 we heard intermittent carriers and tone tests on registered 15590 (really 15590.4), the first signs of WRNO actually reactivated after years and years of delays under new ownership (gh, OK) Janet Mawire confirms they were performing preliminary transmitter tests, audio to follow a week later (Dan Brown, DXLD) Pleased to confirm they are on after seven years, and programming from August 1 on limited schedule, with 7505 at night (George Jacobs, *ibid.*)

VATICAN Besides R. Maria from ITALY *[q.v.]* there's another 11-meter DRM test from Vatican City, 26050-26070, 20 kHz wide carrying three audio services at once, RaiWay Roma, Vatican Radio, and R. Vatican Worldservice. Power less than 200 watts to 3-element yagi (Andrea Borgnino, *DRM Software Radio Forums* via *Media Network* blog) Label as "RAI Radiodue." But audio only decoded for a few seconds at a time, so can't say if it was really RAI 2 (Patrick Robic, Austria, *DXLD*)

Causing confusion with Bolivia's Catholic station, R. Virgen de Remedios, also on 4005, Vatican Radio kept its transmitter on this frequency all night, contrary to schedule (gh) Going from German to English at 2230, faint signal and low modulation (Kai Ludwig, *DXLD*) 2300-2330 Italian, then an hour of open carrier, 0030 Portuguese (Anker Petersen, Denmark, *DSWCI DX Window*) Same as schedule on MW 1260, from same transmitter building within VC (Ludwig, WORLD OF RADIO) They said there is no schedule change but temporary problem in frequency managing system (Mauno Ritola, Finland, *DXLD*) IOW, no human being paying attention to what's going on the air (gh) VR IS heard at 0146 under Bolivia on 4005.4 in Spanish from 0140 (Renato Uliana, Brasil, *@tividade DX*)

ZIMBABWE [non] In mid-June, VOA Studio 7 doubled airtime, in run-up to ill-fated run-off election which the opposition to Mugabe boycotted. As usual the VOA press release about this gave no time or frequency details, so we had to search for them elsewhere. Had been M-F 1700-1830, Sat/Sun 1700-1800 in equal portions of Shona, English, Ndebele. Added repeats at 1830-2000 M-F, 1800-1900 Sat/Sun. As further modified, and who knows whether still in effect in September, 15775 throughout via São Tomé, but the other frequency, ex-13755, jumps around:

Daily 1700-1800 11605 Madagascar
Daily 1800-1830 11605 Sri Lanka
Sa/Su 1830-1900 11605 Sri Lanka
M - F 1830-2000 11605 Botswana (gh)

V. of the People at 04-05, 250 kW at 265 degrees via Madagascar, moved from 11610 to 9895 in July, initially unjammed (gh)

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

BROADCAST LOGS

NOTEWORTHY LOGS FROM OUR READERS

Gayle Van Horn, W4GVH
gaylevanhorn@monitoringtimes.com
http://mt-shortwave.blogspot.com

0000 UTC on 6190
SERBIA: International Radio Serbia. Regional newscast and announcements. SIO 454. Frequency is adjustment from former 6185 kHz (Bob Fraser, Belfast, ME).

0001 UTC on 11690
LITHUANIA: Sign-on with Lithuanian programming, into English at 0029 with music and opening ID announcements. Signal poor to fair in noisy conditions. Signal lost by 0045, no sign of Chinese music jammer (Brian Alexander, PA). Audible 9875, 2337-2359.* ID and report on private vs. state-run health care plus item from *Baltic Times* newspaper. (Scott Barbour, Intervale, NH) Website **www.lrt.lt/**

0130 UTC on 9665
RUSSIA: Voice of Russia. *Kaleidoscope* program. SIO 554. Audible on // 7250 (SIO 454). Music and news 11675 at 1740 (Fraser). Russia's **Radio Rossii** 5920, 1000-1031. Russian news and features to canned ID and music from Neil Young (Chuck Bolland, Clewiston, FL). 🔊 Streaming and on-demand audio, podcast **www.ruvr.ru/index.php?lng=eng**

0145 UTC on 9360
EGYPT: Radio Cairo. Five time signal ticks to Spanish service from previous Arabic. Station identification in English, resuming in Spanish // 7270. Noted to 0200 ID continuing Spanish programming (Bolland). 9280, 2300 program intros and program review (Fraser). Egypt's **Radio Wadi el Nile** 9250, 2135 in Arabic to 2200* (Alexander). 7270, 0320-0327. (Stewart Mackenzie, CA).

0259 UTC on 7110
ETHIOPIA: Radio Ethiopia. Brief interval signal on electronic keyboard, followed by opening station identification announcements. Chimes at 0300 into Amharic announcements. Horn of Africa style music at 0303. Fair signal despite co-channel splatter. Signal weak on // 9704.19 with very low modulation. Listed // 5990 not heard (Alexander). 7110, 0407-0410, // 9704 weak, but clearer frequency/ (Jim Evans, Germantown, TN)

0300 UTC on 4780
DJIBOUTI: Radio Djibouti. Program sign-on with national anthem, followed by opening announcements. Qu'ran at 0303 to Arabic text. Horn of Africa style music to 0346. Good signal despite co-channel interference from Guatemala's Radio Coatan (Alexander; Barbour). 🔊 Audio on-demand **www.rtd.dj/**

0345 UTC on 6140
CUBA: Radio Habana Cuba. Mix of Spanish tunes and political commentary on r   revolucion and socialista. "Radio Habana Cuba" ID at 0359 to continued Spanish service at 0400. SIO 422. Audible 9505, 2045 *Weekly Review* program // 11760 (SIO 454). Harold Frodge, Midland, MI) 🔊 Streaming audio **www.radiohc.cu/**

0430 UTC on 4930
BOTSWANA: Voice of America relay. Political news update to continued U.S. news topics. Signal quality fair. VOA's São Tomé relay 4960, 0440-0450. (Tom Banks, Dallas, TX)
🔊 Streaming and on-demand audio, podcast, and webcast **www.voanews.com/**

0448 UTC on 4774.94
SWAZILAND: Trans World Radio. Very weak signal with interference present during announcer's talk and religious text to music tune (Bolland). Website **www.twr.org/**

1100 UTC on 6040
CANADA: China Radio International relay. World newscast of fair signal quality (SIO 353). Update on continued earthquake aid // 11840 (Fraser). **Voice of Vietnam relay** 6175, 0338-0344. News to "Voice of Vietnam" identification. SIO 333 // 6000. (Frodge) 🔊 Streaming and on-demand audio, podcast and webcast **www.cri.cn/**

1220 UTC on 4925
INDONESIA: RRI-Jambi. Bahasa Indonesian. Phone conservation/interview // 3325 **RRI-Palangkaraya** and 4790.03 **RRI-Fak Fak** to 1230. Indonesian national anthem to pop music via **RRI Jambi. RRI-Manokwari** 3987.03, 1347-1425. Easy-listening music to interval signal tune *Song of the Coconut Islands.* Five minutes of news to national anthem, back to music. Recheck at 1400 and found //

to RRI-Fak Fak. **Voice of Indonesia** 9524.96, 1324-1357. (Ron Howard, Asilomar, CA)

1230 UTC on 3385
PAPUA NEW GUINEA: Radio East New Britain. Tok Pisin. Commercial for auto dealership interspersed with bits of English. DJ presents pop music songs for fair signal quality. Subsequent log 1218-1237 on 3385 with DJ's music dedication program including names from Solomon Islands. PNG;s **Radio Manus** (tentative) 3315. Exotic bird calls and no national anthem observed. Noted on // **Radio East Sepik** 3335. News and weather to ads with jingles. Easy-listening pops and island music to 1312. East Sepik sign-off at 1308 while Manus heard past 1312. (Howard).

1300 UTC on 7270
CHINA: Nei Menggu PBS. Time pips signal, mixing with Wai's two time pips, then talk to 1306. Regional music followed, observing // to 9750 which had a good signal but was mixing as usual with Japan (John Wilkins, Wheat Ridge, CO).

1302 UTC on 6200
TIBET: PBS-XZDT, Lhasa. Station continues to relay China National Radio-1. Is this frequency ever going to air their own programming? (Howard).

1445 UTC on 11785
USA: WHRI. Tune-in to *DXing with Cumbre* program (Alexander). 9930, 1405-1415. "Joining Pulse FM already in progress." Contemporary Christian rock from studios in South Bend, Indiana (Howard).
🔊 Streaming audio **www.whr.org/**

1504 UTC on 17690
PORTUGAL: Sudan Radio Service relay (tentative). Arabic commentary with mentions of Khartoum to 1514, followed by series of promos and bumper tunes. Remote features including children crying to Afro tune at 1727. Echo effect for additional announcements, though English has been reported at this time. SIO 242 during tough signal copy and muffled audio (Frodge).

1632 UTC on 17775
USA: KVOH. Spanish religious sermon to vocal hymns. Station ID and frequency to Los Angeles address, resuming sermon at 1646. Programming audible at 1725 recheck, observing steady S8 signal quality. (Gayle Van Horn, NC)

1742 UTC on 9460
TURKEY: Voice of Turkey. Turkish service including ID, features, news. and Turkish folk music. (Stewart MacKenzie, Huntington Beach, CA). 6195, 2230 feature on Turkish folk music. SIO 454 (Fraser).
🔊 Live streaming audio **www.trt,net.tr**

2120 UTC on 9700
BULGARIA: Radio Bulgaria. News and features covering Bulgaria to music program. Alternate freqs 13800 and 7400 though neither had faded in yet (Bolland). *Art and Artist* on 11700 at 2330 (Fraser). Website **www.bnr.bg/**

2125 UTC on 11775
ANGUILLA: World University Network. Archived religious teachings from Dr. Gene Scott. Gospel vocals at 2130, resuming with Melissa Scott's text at 2132. Left 11775, shifting to 6090 at 2202 (Van Horn). Website **www.worldwideuniversitynetwork.com/**

2215 UTC on 15190
EQUATORIAL GUINEA: Radio Africa. Religious programming to closing station ID and email address at 2249.* Fair-good audio from former poor, distorted programming. Observed earlier 1900-2200, slowly improving in signal quality. Radio Nacional-Bata on 5005, 2245-2258.* Noted next day at 2257 with national anthem at sign-off (Alexander).

Additional loggings excluded for space constraints are posted as **Blog Logs** on the **Shortwave Central Blog** at the above web address**.**

Thanks to our contributors – Have you sent in YOUR logs?
Send to Gayle Van Horn, c/o Monitoring Times
English broadcast unless otherwise noted.
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PROGRAMMING SPOTLIGHT
WHAT'S ON WHEN AND WHERE?

Fred Waterer
fredwaterer@monitoringtimes.com
www.doghousecharlie.com/radio

Vote Early, Vote Often!

"Many forms of Government have been tried, and will be tried in this world of sin and woe. No one pretends that democracy is perfect or all-wise. Indeed, it has been said that democracy is the worst form of government except all those other forms that have been tried from time to time." (Sir Winston Churchill, House of Commons, November 11, 1947)

This month, we shine the *Programming Spotlight* on elections, election coverage and politics around the world. It's that time again when politicians run about "kissing hands and shaking babies." The United States is not the only country choosing a leader; elections may be imminent in the United Kingdom and Canada. In North America, where this publication is based, we are fortunate to live in countries that elect our leaders, not without controversy sometimes, but certainly without violence and bloodshed.

As a young Canadian, I became involved in the electoral process at an early age and over the years have done a little bit of everything from banging in lawn signs, to door knocking; from being a partisan observer to a neutral worker on election day. I even managed to be elected a delegate to three national political conventions. They were fascinating experiences indeed.

Of course, being a news junkie also led me to seek out broadcasts from around the world, especially during election campaigns. Here in Canada we can't help but notice when an election is going on in the United States. American politics is a sort of a spectator sport. We have no say in the decision, yet it will have a profound impact on Canada and Canadians, no matter what the result. This is true for many countries around the world. Broadcasters and pundits worldwide will take a keen interest in the election campaign in November.

It is also prudent to keep an eye on elections in other parts of the world, too. Shortwave radio and international broadcasters help keep one informed during elections abroad, in a way domestic media can't – or won't.

❖ The United States

My experience with the Voice of America goes back to 1984. If I listened in 1980 I really don't recall. In 1984 I was impressed with Voice of America's election coverage and have continued to be impressed in successive

elections as well. As the television networks have scaled back their coverage of the conventions, I found VOA to be a good place to go to actually hear the speeches and such, rather than relying on some network talking head to interpret what the candidates and other speakers said.
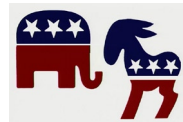
In 1988, Voice of America's listener's magazine even provided a chart so that listeners could keep track of which states went Republican or Democrat on election night. All in all, Voice of America is a good source of news and information, during the election and on election night.

🔊 This year, Voice of America has a website called **The Road to the 2008 US Elections** at **www.voanews.com/english/US-Elections-2008.cfm** This website has lots of links to audio in many categories. These include "The Candidates", "The Iraq Challenge", "The Voting Process", "Other Issues in the Spotlight" and links to many outside resources.

Voice of America is very useful for following the campaign and the results. There is also a **VOA Election Blog.** It features a "discussion of the U.S. elections and political process from editors with the Voice of America." Neal Lavon who has reported for VOA on US presidential election campaigns dating back to 1984 maintains the blog. Check it out at **http://voaelectionblog.blogspot.com/**

In 2000, I listened to election night coverage via **WWCR**. As coverage goes it was fairly well balanced – perhaps a little more favorable to the Republican side, but not much. I believe it originated with the "USA Radio Network News," which is often carried on WWCR. WWCR is certainly an option on election night. The rest of the US private shortwave stations will more than likely carry on as if no election was happening.

Some of the more paranoid programs on WWCR and other radio stations will no doubt offer up various conspiracy theories. In both 1992 and 2000, various programs predicted that the incumbents would refuse to leave office and declare martial law. These predictions turned out to be about as accurate as the Y2K prognostications. But they can be mildly amusing. Take them with a grain of salt; in fact, several grains.

❖ Canada and the UK

Canadian and UK elections are similar in structure. Canada and the United Kingdom are parliamentary democracies. Unlike the United States where election dates are set, Canadian and British governments serve as long as they enjoy the confidence of the House of Commons. Should the government lose a vote of confidence in the House, the Prime Minister must resign and an election is called (or in rare circumstances, another party could be called upon to form a government). The Prime Minister can also go to the Governor-General (in Canada) or the Queen (in the UK) and advise her to call an election.

Canadian and UK elections are rather quick affairs. The last Canadian election in 2006 was called just before Christmas when the government lost a vote, and voting day was January 23. So elections last a little over a month. Both Canada and the UK could be facing an election in the near future.

BBC coverage of election results is traditionally continuous, until a result is apparent. Your best bet on election night is to listen to the World Service or Radio 4. 1979 and 1997 were sea change elections. It's much "sexier" when a government changes hands. In 1979, Mrs Thatcher swept to power, knocking Labour to the sidelines for 18 years. In 1997, turnabout was fair play, when Labour returned the favor. In 1992, Labour was expected to win, but to the consternation of some, including the BBC, they didn't. It was mildly amusing to listen to the commentators on the BBC World Service, who had clearly prepared for a Labour victory try to explain away John Major's unexpected win. And in 1983, I was in Ottawa at the aforemen-

tioned national convention. I brought my shortwave radio and listened to some of the British election results. At the time I thought it was interesting to be listening to one election and participating in the selection of (as it turned out) the next Prime Minister of Canada at the same time.

In the past, Radio Canada International used to inadvertently break Canadian election laws. In Canada, election results are embargoed until the polls close in a region. Until recently, the polls would close at 8pm in each time zone. When the polls closed in the Atlantic provinces, it was only 7pm in Ontario and Quebec. So radio and television stations in Central Canada were forbidden to broadcast the results from Nova Scotia. RCI, on the other hand, began announcing results in Newfoundland and the Atlantic as soon as the polls closed there. So RCI, a government run station, broke the embargo on information imposed by the government!

CBC Radio One and the CBC Northern Quebec service on shortwave will broadcast important events, such as a Leaders Debate or two, and of course the results on election night. In addition, the CBC website traditionally posts an election website. This one from 2006 is still up: **www.cbc.ca/canadavotes/**

❖ Other Nations

If you are curious about who in the world is holding elections, when they may take place, and what type of government structure or elections they use, a useful tool is the map at **www.electionguide.org**

Deutsche Welle is a good source of results for German elections. Tune in on Election Day to either the German or English broadcasts. The most recent election featured continuous coverage in German and extensive coverage in English.

Radio Australia is another good listen on election night in that country, although I tend to listen to domestic broadcasters online instead, such as 3AW in Melbourne or 6PR in Perth. Australian elections are lively affairs. Interestingly, it is also a nation where voting is mandatory. The ABC also maintains an election site. The most recent one is here: **www.abc.net.au/elections/federal/2007/**

New Zealand is also due for parliamentary elections this fall. Keep your ear on their developments by listening to Radio New Zealand International; see *SWG* on page 52 for schedules

or visit **www.rnzi.com.**

Back in the days of the Cold War, the Soviet Union and other nations held regular elections, too, which were covered by their media. As they were one-party elections, there was very little excitement, with a foregone, virtually unanimous conclusion. Times began to change in the 1980s and early 1990s. In Poland, multiparty elections were allowed, and while the results were virtually unanimous again, they were a unanimous *repudiation* of the "official" party line. Solidarity won an astonishing 99 of 100 seats contested.

Nowadays, throughout Eastern Europe, multiparty elections are the norm. In some cases, the former socialist parties have re-invented themselves as democratic parties, sometimes being elected to government again, in their own right or as part of a coalition.

And then there are occasionally election campaigns that become the focus of attention, such as the recent "elections" in Zimbabwe. Marked by bloodshed, intimidation and thuggery, Robert Mugabe was elected to another term. The world largely condemned this sham election. Yet the silence of some nations was deafening. South African media talked about the Zimbabwe elections, but the government didn't exactly condemn them, either. VOA BBC, and others dedicated extra broadcasting time to covering this election and transmitted news to Zimbabweans about what was going on in their nation. We probably haven't heard the last of the fallout from this mess.

❖ Political Programs

There are a few programs that discuss the activities of elected governments around the world. For an old politics junkie such as myself, they are must-hears.

The House can be heard on Saturdays at 9:00 a.m. (9:30 NT) on CBC Radio One domestically. It can also be heard on shortwave via the CBC Northern Quebec Service on UTC Saturdays at 1300 on 9625 kHz.

"Parliament is more than procedure – it is the custodian of the nation's freedom." - September 22, 1949, John Diefenbaker, Canadian House of Commons.

"Every Saturday morning CBC Radio takes you

behind the scenes in the world of Canadian politics. "This is where listeners go to find out what is really happening in the world of policy. Where is the health care system going? What kind of role is this country playing on the world stage?

"The program gets regular reports and frequent contributions from CBC reporters in the Parliamentary Bureau and across the country.

"There are original programs year round. Parliament may take a summer recess but the business of national politics never stops; nor does The House." **www.cbc.ca/thehouse/**

BBC Radio 4 features many programs covering the activities of Parliament and government in the United Kingdom. These include:

Today in Parliament, which airs weekdays from 1130-1200pm UK time. It looks at "all the day's events in the Houses of Parliament and behind the scenes in committees."

🔊 **http://news.bbc.co.uk/1/hi/programmes/bbc_parliament/**

The **Week in Westminster** goes out on Saturdays from 11:00-11:30am UK time. The program is a weekly review of developments in government circles.

🔊 **www.bbc.co.uk/radio4/news/weekin-west.shtml**

On Sundays, one can hear **The Westminster Hour** from 10:00-11:00pm UK time. The program takes "a look at the politics of the next week."

🔊 **http://news.bbc.co.uk/1/hi/programmes/the_westminster_hour/**

Finally, **Yesterday in Parliament** offers a more informal view of the preceding day's activities. All of these programs are available on demand via the BBC website for those outside the UK.

🔊 **http://news.bbc.co.uk/1/hi/programmes/breakfast/**

ABC NewsRadio in Australia offers extensive coverage of parliament. I listened to the parliamentary debate a few years ago as the Australian House of Representatives debated participation in Iraq. It was fascinating to listen to the cut and thrust of debate. NewsRadio has a parliament website here: **www.abc.net.au/newsradio/parliament/** There is a link to coverage of the US election as well.

Finally, to see and hear the Canadian Parliament and the US Congress in action, one can check **www.cpac.ca** in Canada (in both official languages) and **www.c-span.org** in the United States. There is even a C-Span radio channel (**www.c-span.org/Sites/C-SPAN-Radio.aspx**). They both often cover other events in the public interest.

❖ Don't Just Listen: Vote

Elections are important. Go to your radio and get informed about the candidates and issues and make an informed choice. It is a rare opportunity to be savored. Just ask any Zimbabwean.

THE QSL REPORT

VERIFICATIONS RECEIVED BY OUR READERS

Gayle Van Horn, W4GVH
gaylevanhorn@monitoringtimes.com

Twenty Years and Counting

It certainly doesn't feel like twenty years since the premier column of *QSL Report*, but here it is – and if you're counting, that's 240 columns of news, tips and trends of QSL collecting.

Designed originally to be a "swap-shop" of verification information, it has evolved into one of *MT*'s favorite columns, one I remain very proud of. I am grateful to our readers and regular contributors who share their reports..

A few shortwave broadcasters from the first column have signed off, including Costa Rica's Radio for Peace International, Voice of Kenya, New Caledonia, Qatar and KUSW from Salt Lake City, Utah.

Favorites that remain are Burkina Faso, Radio Habana Cuba, Radio Prague, Trans World Radio and the Voice of Greece.

While trends in QSLing and broadcasting have changed, my email and postal replies indicate many hobbyists still enjoy collecting QSLs and memorabilia. Remember your first card or letter? Each one has its own tale of a rare catch on a cold winter night or perhaps the last broadcast from an old favorite.

Thank you, readers, for twenty years – now let's keep this ball rolling!

AMATEUR RADIO

France-TM2Y, 15/20 meters SSB. Full data two color photo card. Received in 100 days via ARRL bureau. (Larry Van Horn, NC)

CZECH REPUBLIC

Radio Prague, 7345, 9870 kHz. 85th Anniversary card, unsigned, plus stickers and schedule. Received in 26 days for an email report posted at station's website link.
🔊 Streaming and on-demand audio at www. radio.cz (Rod Pearson, St. Augustine, FL).

FRANCE

Radio Netherlands relay via Issoudon 11660 kHz. Full data card *A Canal in Diemen*, with site notation. Received in 21 days for a CD mp3 report and return postage (returned). Station address: P.O. Box 222, 1200 JG Hilversum, Netherlands (Edward Kusalik, Alberta, Canada).
🔊 Streaming and on-demand audio, podcast www.radionetherlands.nl/

LATVIA

Radio SWH 9290 kHz via Riga-Ulbroka. Frequency notation for program *Latvia Today*. Received in 13 months for $2.00US and CD recording. Station address: Latvia Today Creative Team, c/o Radio SWH, Skanstes iela 13, LV-1013, Iga, Latvia (Jim Pogue, Memphis, TN).

MEDIUM WAVE

CBC Radio One, 1070 kHz AM. Full data verification letter, signed by Jean Babineau-Supervisor, Transmission Operations. Received in 30 days for an English follow-up report (Eric Hopkins, Ayer, MA).

CFFX, Kingston, Ontario 960 kHz AM. Full data Ontario map card signed by Saul Chernos for Roger Cole-Chief Engineer. Received in 119 days for a taped report, mint stamps (used on reply), and self-addressed envelope. QSL address: Saul Chernos, 57 Berkeley Street, Toronto, Ontario M5A 2W5, Canada (Bill Wilkins, Springfield, MO).

KCJJ 1630 kHz AM. Full data red station logo card, signed by Tom Suter-General Manager. Received in 30 days for an AM report and SASE. Station address: KCJJ Radio, P.O. Box 2118, Iowa City, Iowa 52244 USA (Hopkins).
🔊 Streaming audio www.1630kcjj.com/

KVKK 1070 kHz AM. Friendly letter signed by Adam Vanconant-Morning Show personality, plus day coverage map. Received in seven days for a CD report. Station address: 11 S.E. Bryant Avenue, Wadena, MN 56482 USA (Patrick Martin, Oceanside, CA).

KSLG, 1380 kHz AM. Full data prepared card, signed with illegible signature as Director of Operations. Received in one week for an AM report and SASE. Station address: 22 Morgan Street, St. Louis, MO 63102-2558 USA (Wilkins).

WLOL, 1330 kHz AM Minneapolis, MN. Received second QSL card of *Relevant Radio WLOL* card, signed by Paul Sadek. Details include the transmitter location. Station has three towers, two patterns and 9700 daytime watts/5200 watts night. Station address: 919 Lilac Drive, North Golden Valley, MN 55422 USA (Martin).

WTDY 1670 kHz AM. Verification statement on station letterhead that includes coverage map, unsigned. Received in 13 days for an AM report and SASE. Station address: Mid-West Family Broadcasting, 730 Rayovac Dr., Madison, WI 53711 (or) P.O. Box 44408, Madison, WI 53744 USA (Hopkins).
🔊 Streaming audio www.wtdy.com/

MOROCCO

Radio Farda relay via Briech, 9805, 9865, 7295 kHz Full data RFE/Radio Liberty black/white card of Czech Rep scenery. Received in ten months for an English report and $1.00US. QSL address: Vinohradská 1, 110 00 Prague 1, Czech Republic (Gayle Van Horn, NC).
🔊 Streaming and on demand audio www.rferl.org

UNITED KINGDOM

Family Radio Worldwide 15760 kHz via Woofferton. Full data with site notation, *Three Decades of Faithful Service* card unsigned, plus decals, religious material and pocket calender. Received in 16 days for an email report to *intl@familyradio.org*. (Kusalik)
🔊 Streaming audio www.familyradio.com/

USA

WBOH, 5920 kHz. Full data card signed by A. Robinson, plus program guide and bumper sticker. Received in 28 days for an English report. Station address: 520 Roberts Road, Newport, NC 28570 USA (Harold Woering N1FTP, Easthampton, MA).

WRMI, 9955 kHz. Full data color *World Cricket*

Today card, signed by Jeff White, plus WRMI color map card and frig magnet. Received in five days for an English report and two mint stamps. Station address: 175 Fontainebleau Blvd., Suite 1N4, Miami, FL 33172 USA. (Van Horn).
🔊 Streaming audio www.wrmi.net/

UTILITY
Non Directional Beacons

AEA Jones NDB, 373 kHz South Hill, Virginia. Full data prepared QSL card returned as verified and unsigned. Power is listed on card as 5 watts, although doubtful that is correct. Received in nine days for SASE. QSL address: c/o Dan Middleton, Airport Manager, Mecklenburg-Brunswick Regional Airport, 1495 Regional Airport Dr., Broadnax, VA 23920-3520 (Pogue).

AMT West Union, Ohio NDB, 359 kHz. Full data prepared QSL card returned as verified with illegible signature. Received in 17 days for SASE. QSL address: A.M.T., Airport, 3399 Cross Road, Winchester, OH 45697 USA (Pogue).

SIR Sinclair, Wyoming NDB, 368 kHz. Full data prepared QSL card returned as verified, signed by Dwight France-Airport Manager. Received in nine days for SASE. QSL address: France Flying Service Inc., P.O. Box 606, Rawlins, WY 82301 USA (Pogue).

YEMEN

Republic of Yemen Radio 9780 kHz. Partial data scenery card, signed by Ahmed Altashy-Technical Director. Received in 164 days for an English report, $1.00US, one IRC, souvenir postcard and applause card, plus an email follow-up query. Station address: Radio San'a, P.O. Box 2371, Sana'a, Republic of Yemen. Email *ali_tashy@yahoo.com* (Joe Wood, Greenback, TN).

HOW TO USE THE SHORTWAVE GUIDE

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0000-0100 twhfa    USA, Voice of America    5995am   6130ca   7405am   9455af
    ①      ②    ⑤      ③              ④              ⑥  ⑦
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Convert your time to UTC.

Broadcast <u>time on</u> ① and <u>time off</u> ② 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 Daylight Saving Time) 4, 5, 6 or 7 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 hour.

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, 8:30 pm Eastern, 7:30 pm Central, etc.).

Find the station you want to hear.

Look at the page which corresponds to the time you will be listening. English broadcasts are listed by UTC <u>time on</u> ① , then alphabetically by <u>country</u> ③, followed by the <u>station name</u> ④. (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 <u>days of broadcast</u> ⑤ will appear in the column following the time of broadcast, using the following codes:

Codes
s/Sun	Sunday
m/Mon	Monday
t	Tuesday
w	Wednesday
h	Thursday
f	Friday
a/Sat	Saturday
occ:	occasional
DRM:	Digital Radio Mondiale
irreg	Irregular broadcasts
vl	Various languages
USB:	Upper Sideband

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

The <u>frequencies</u> ⑥ 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 print deadline.

To help you find the most promising signal for your location, immediately following each frequency we've included information on the <u>target area</u> ⑦ 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
ca:	Central America
do:	domestic broadcast
eu:	Europe
me:	Middle East
na:	North America
pa:	Pacific
sa:	South America
va:	various

MT MONITORING TEAM

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Thank You …

Additional Contributors to This Month's Shortwave Guide:

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Shortwave Broadcast Bands

kHz	Meters
2300-2495	120 meters (Note 1)
3200-3400	90 meters (Note 1)
3900-3950	75 meters (Regional band, used for broadcasting in Asia only)
3950-4000	75 meters (Regional band, used for broadcasting in Asia and Europe)
4750-4995	60 meters (Note 1)
5005-5060	60 meters (Note 1)
5730-5900	49 meter NIB (Note 2)
5900-5950	49 meter WARC-92 band (Note 3)
5950-6200	49 meters
6200-6295	49 meter NIB (Note 2)
6890-6990	41 meter NIB (Note 2)
7100-7300	41 meters (Regional band, not allocated for broadcasting in the western hemisphere) (Note 4)
7300-7350	41 meter WARC-92 band (Note 3)
7350-7600	41 meter NIB (Note 2)
9250-9400	31 meter NIB (Note 2)
9400-9500	31 meter WARC-92 band (Note 3)
9500-9900	31 meters
11500-11600	25 meter NIB (Note 2)
11600-11650	25 meter WARC-92 band (Note 3)
11650-12050	25 meters
12050-12100	25 meter WARC-92 band (Note 3)
12100-12600	25 meter NIB (Note 2)
13570-13600	22 meter WARC-92 band (Note 3)
13600-13800	22 meters
13800-13870	22 meter WARC-92 band (Note 3)
15030-15100	19 meter NIB (Note 2)
15100-15600	19 meters
15600-15800	19 meter WARC-92 band (Note 3)
17480-17550	17 meter WARC-92 band (Note 3)
17550-17900	17 meters
18900-19020	15 meter WARC-92 band (Note 3)
21450-21850	13 meters
25670-26100	11 meters

Notes
Note 1   Tropical bands, 120/90/60 meters are for broadcast use only in designated tropical areas of the world.

Note 2   Broadcasters can use this frequency range on a (NIB) non-interference basis only.

Note 3   WARC-92 bands are allocated officially for use by HF broadcasting stations in 2007

Note 4   WRC-03 update. After March 29, 2009, the spectrum from 7100-7200 kHz will no longer be available for broadcast purposes and will be turned over to amateur radio operations worldwide

0000 UTC - 8PM EDT / 7PM CDT / 5PM PDT

Start	Stop	Days	Country, Station	Freq 1	Freq 2
0000	0000		UK, BBC World Service	5970as	6195as
			7105as	9410as	9740as	11955as
			15335as	15360as	17615as	
0000	0005		Canada, R Canada International		6100na
0000	0020		Japan, NHK World/Radio Japan		5920eu
			6145na	13650as	17810as
0000	0027		Czech Rep, Radio Prague	7345na	9440na
0000	0030		Australia, HCJB Global		15525as
0000	0030	mtwhfa	Serbia, Voice of Serbia	6190va	
0000	0030		Thailand, Radio Thailand	9680af	
0000	0030		USA, Voice of America	7555na	
0000	0045		Egypt, Radio Cairo	9280eu	
0000	0045		India, All India Radio	9705as	9950as
			11620as	11645as	13605as	
0000	0045		USA, WYFR/Family Radio Worldwide		17805sa
0000	0056		Romania, R Romania International		9775na
0000	0057		Canada, R Canada International		11700as
0000	0057		Netherlands, R Netherlands Worldwide		9845na
0000	0100		Anguilla, Worldwide Univ Network		6090am
0000	0100		Australia, ABC NT Alice Springs		2310do
			4835do		
0000	0100		Australia, ABC NT Katherine	5025do	
0000	0100		Australia, ABC NT Tennant Creek	4910do	
0000	0100		Australia, Radio Australia	9660as	12080as
			13690as	15240pa	17715as	17750va
			17775va	17795va		
0000	0100		Canada, CFVP Calgary AB	6030na	
0000	0100		Canada, CKZN St John's NF	6160na	
0000	0100		Canada, CKZU Vancouver BC		6160na
0000	0100		China, China Radio International		6020na
			6075as	6180as	7130eu	9570na
			11885as	13750as	15125as	
0000	0100		Costa Rica, Worldwide Univ Network		5030va
			6150va	7375va	9725va	
0000	0100		Germany, Deutsche Welle	9885as	15595as
			17525as		
0000	0100		Guyana, Voice of Guyana	3291do	
0000	0100		Malaysia, RTM/Traxx FM	7295as	
0000	0100	DRM	New Zealand, Radio NZ International		13730pa
0000	0100		New Zealand, Radio NZ International		15720pa
0000	0100	vl	Papua New Guinea, Wantok R. Light	7325va	
0000	0100		Spain, Radio Exterior Espana	6055na	
0000	0100		Ukraine, R Ukraine International		7440na
0000	0100		USA, Armed Forces Radio Network		4319usb
			5446usb	5765usb	6350usb	7811usb
			10320usb	12132usb	13362usb	
0000	0100		USA, WBCQ Monticello ME	7415am	9330am
0000	0100		USA, WBOH Newport NC	5920am	
0000	0100		USA, WEWN Vandiver AL	11520me	
0000	0100		USA, WHRA Greenbush ME	5850eu	
0000	0100		USA, WHRI Cypress Creek SC		5875na
			7385na		
0000	0100		USA, WINB Red Lion PA	9265am	
0000	0100		USA, WRMI Miami FL	9955am	
0000	0100		USA, WTJC Newport NC	9370na	
0000	0100		USA, WWCR Nashville TN	5070na	5935na
			7465na	9980na		
0000	0100		USA, WWRB Manchester TN	3185va	5050na
			5745va	6180va		
0000	0100		USA, WYFR/Family Radio Worldwide		5950na
			6985na	9505na	11835ca	15440na
0000	0100		Zambia CVC Intl/Christian Voice		4965af
0005	0057	twhfa	Canada, R Canada International		6100na
0030	0045	twhfas	Albania, Radio Tirana	9390na	
0030	0045	Sun	Germany, Pan American BC	9640as	
0030	0100		Australia, Radio Australia	15415as	
0030	0100		China, China Radio International		11730as
0030	0100		Lithuania, Radio Vilnius		11690na
0030	0100		Thailand, Radio Thailand		12120na
0030	0100	fas	UK, Bible Voice BC	9490as	
0030	0100		USA, Voice of America	9715va	9780va
			11725va	15185va	15205va	15290va
			15560va	17820va		

0100 UTC - 9PM EDT / 8PM CDT / 6PM PDT

Start	Stop	Days	Country, Station	Freq 1	Freq 2
0100	0105	twhfa	Canada, R Canada International		6100na
0100	0127		China, China Radio International		11730as
0100	0127		Czech Rep, Radio Prague	6200na	7345na
0100	0127		Slovakia, R Slovakia International		5930na
			9440sa		
0100	0128		Vietnam, Voice of Vietnam	6175na	
0100	0130		Australia, Radio Australia	17775as	
0100	0130		Serbia, Voice of Serbia	6190va	
0100	0155		Turkey, Voice of Turkey	9620am	

Start	Stop	Days	Country, Station	Freq 1	Freq 2
0100	0157		China, China Radio International		6020na
			6175as	9470eu	9535as	9570na
			9580na	9790na	11870as	
0100	0157		Netherlands, R Netherlands Worldwide		9845na
0100	0158	DRM	New Zealand, Radio NZ International		13730pa
0100	0159		Canada, R Canada International		9620as
0100	0200		Anguilla, Worldwide Univ Network		6090am
0100	0200		Australia, ABC NT Katherine	5025do	
0100	0200		Australia, ABC NT Tennant Creek	4910do	
0100	0200		Australia, Radio Australia	9660as	12080as
			13690as	15240pa	15415as	17715as
			17795va			
0100	0200		Canada, CFVP Calgary AB	6030na	
0100	0200		Canada, CKZN St John's NF	6160na	
0100	0200		Canada, CKZU Vancouver BC		6160na
0100	0200		Costa Rica, Worldwide Univ Network		5030va
			6150va	7375va	9725va	
0100	0200		Cuba, Radio Havana Cuba	6000na	6180na
0100	0200		Guyana, Voice of Guyana	3291do	
0100	0200		Malaysia, RTM/Traxx FM	7295as	
0100	0200		New Zealand, Radio NZ International		15720pa
0100	0200		North Korea, Voice of Korea	4405as	7140as
			9345as	9730as	11735am	12760am
			15180am			
0100	0200	vl	Papua New Guinea, Wantok R. Light	7325va	
0100	0200		Russia, Voice of Russia	7250na	9665na
			13755na	15425na		
0100	0200		Sri Lanka, SLBC	6005as	9770as	15745as
0100	0200		Taiwan, R Taiwan International		11875as
0100	0200		UK, BBC World Service	7320as	9410as
			9740as	11750as	11955as	15310as
			15335as	15360as	17615as	
0100	0200		USA, Armed Forces Radio Network		4319usb
			5446usb	5765usb	6350usb	7811usb
			10320usb	12133usb	13362usb	
0100	0200		USA, KWHR Naalehu HI	17800as	
0100	0200		USA, Voice of America	7430va	9780va
			11705as			
0100	0200		USA, WBCQ Monticello ME	5110am	7415am
0100	0200		USA, WBOH Newport NC	5920am	
0100	0200		USA, WEWN Vandiver AL	11520me	
0100	0200		USA, WHRA Greenbush ME	5850eu	
0100	0200		USA, WHRI Cypress Creek SC		7385na
0100	0200		USA, WINB Red Lion PA	9265am	
0100	0200		USA, WRMI Miami FL	9955am	
0100	0200		USA, WTJC Newport NC	9370na	
0100	0200		USA, WWCR Nashville TN	5070na	5935na
			7465na	9980na		
0100	0200		USA, WWRB Manchester TN	3185va	5050na
			5745va			
0100	0200		USA, WYFR/Family Radio Worldwide		5950na
			6986na	9505na	15195as	15440na
0100	0200		Uzbekistan, CVC International		11790as
0100	0200		Zambia, CVC Intl/Christian Voice		4965af
0130	0200		Iran, Voice of the Islamic Rep of Iran		7235na
			9495na		
0130	0200		Sweden, Radio Sweden	6010na	
0130	0200	twhfa	USA, Voice of America	6040va	9820va
0140	0200		Vatican City, Vatican Radio	9650na	
0145	0200	twhfas	Albania, Radio Tirana	9390na	

0200 UTC - 10PM EDT / 9PM CDT / 7PM PDT

Start	Stop	Days	Country, Station	Freq 1	Freq 2
0200	0227		Iran, Voice of the Islamic Rep of Iran		7235na
			9495na		
0200	0230		South Korea, KBS World Radio		9580sa
0200	0230		Thailand, Radio Thailand	15275na	
0200	0245		USA, WYFR/Family Radio Worldwide		11835ca
0200	0257		China, China Radio International		11770as
			13640as		
0200	0258	DRM	New Zealand, Radio NZ International		13730pa
0200	0259	Sun	Lithuania, Mighty KBC Radio	6055na	
0200	0300		Anguilla, Worldwide Univ Network		6090am
0200	0300	mtwhf	Argentina, RAE	11710am	
0200	0300		Australia, ABC NT Alice Springs		2310do
			4835do		
0200	0300		Australia, ABC NT Katherine	5025do	
0200	0300		Australia, ABC NT Tennant Creek	4910do	
0200	0300		Australia, Radio Australia	9660as	12080as
			13690as	15240pa	15415as	15515as
			17750va	21725va		
0200	0300		Bulgaria, Radio Bulgaria	9700na	11700na
0200	0300		Canada, CFVP Calgary AB	6030na	
0200	0300		Canada, CKZN St John's NF	6160na	
0200	0300		Canada, CKZU Vancouver BC		6160na
0200	0300		Costa Rica, Worldwide Univ Network		5030va
			6150va	7375va	9725va	
0200	0300		Cuba, Radio Havana Cuba	6000na	6180na

Start	End	Days	Station	Frequencies
0200	0300		Egypt, Radio Cairo	7270na
0200	0300		Guyana, Voice of Guyana	3291do
0200	0300		Indonesia, Voice of Indonesia	9526va 11785al
0200	0300		Malaysia, RTM/Traxx FM	7295as
0200	0300		New Zealand, Radio NZ International	15720pa
0200	0300		North Korea, Voice of Korea	3560as 13650as 15100as
0200	0300	vl	Papua New Guinea, Wantok R. Light	7325va
0200	0300		Philippines, Radio Pilipinas	12025va 15285va 17770va
0200	0300		Russia, Voice of Russia	9480na 9665na 9860na 13635na 15425na
0200	0300		Sri Lanka, SLBC	6005as 9770as 15745as
0200	0300		Taiwan, R Taiwan International	5950na 9680na
0200	0300		UK, BBC World Service	6035af 6195as 9410va 11955as 15310as
0200	0300		USA, Armed Forces Radio Network	4319usb 5446usb 5765usb 6350usb 7811usb 10320usb 12133usb 13362usb
0200	0300		USA, KJES Vado NM	7555na
0200	0300		USA, KJES Vado NM	7555na
0200	0300		USA, KWHR Naalehu HI	17800as
0200	0300		USA, Voice of America	9780as
0200	0300		USA, WBCQ Monticello ME	5110am 7415am
0200	0300		USA, WBOH Newport NC	5920am
0200	0300		USA, WEWN Vandiver AL	11520me
0200	0300		USA, WHRA Greenbush ME	5850eu
0200	0300		USA, WHRI Cypress Creek SC	5875na 7385na
0200	0300		USA, WINB Red Lion PA	9265am
0200	0300		USA, WRMI Miami FL	9955am
0200	0300		USA, WTJC Newport NC	9370na
0200	0300		USA, WWCR Nashville TN	3215na 5070na 5890na 5935na
0200	0300		USA, WWRB Manchester TN	3185va 5050na 5745va
0200	0300		USA, WYFR/Family Radio Worldwide	5950na 5985am 6985na 9505na 11855am
0200	0300		Uzbekistan, CVC International	11790as
0200	0300		Zambia, CVC Intl/Christian Voice	4965af
0215	0230		Nepal, Radio Nepal	5005as
0230	0257		China, China Radio International	15435me
0230	0258		Vietnam, Voice of Vietnam	6175ca
0230	0300	twhfas	Albania, Radio Tirana	7425na
0230	0300		Netherlands, R Netherlands Worldwide	11550as
0230	0300		South Korea, KBS World Radio	9560na
0230	0300		Sweden, Radio Sweden	6010na 11550va
0245	0300		Myanmar, Myanma Radio	9731do
0250	0300		Vatican City, Vatican Radio	6040na 7305na
0255	0300	vl	Rwanda, Radio Rwanda	6055do
0259	0300	DRM	New Zealand, Radio NZ International	11675pa

0300 UTC - 11PM EDT / 10PM CDT / 8PM PDT

Start	End	Days	Station	Frequencies
0300	0315	vl	Croatia, Croatian Radio	9925na
0300	0319		Vatican City, Vatican Radio	6040na 7305na
0300	0327		Czech Rep, Radio Prague	7345na 9870na
0300	0327		Vatican City, Vatican Radio	7360af 9660af
0300	0330		Egypt, Radio Cairo	7270na
0300	0330		Myanmar, Myanma Radio	9731do
0300	0330		Philippines, Radio Pilipinas	12025va 15285va 17770va
0300	0330		Sri Lanka, SLBC	6005as 9770as 15745as
0300	0330	Sun	Swaziland, Trans World Radio	3200af
0300	0330	mtwhf	UK, Sudan Radio Service	5975af
0300	0330		USA, KJES Vado NM	7555na
0300	0355		South Africa, Channel Africa	3345af 6135af
0300	0355		Turkey, Voice of Turkey	5975am 7265va 7325na
0300	0356		Romania, R Romania International	6150na 9645na 9735as 11895as
0300	0357		China, China Radio International	9690na 9790na 15110as 11770na 13750as 15120as 15785as
0300	0400		Anguilla, Worldwide Univ Network	6090am
0300	0400		Australia, ABC NT Alice Springs	2310do 4835do
0300	0400		Australia, ABC NT Katherine	5025do
0300	0400		Australia, ABC NT Tennant Creek	4910do
0300	0400		Australia, Radio Australia	9660as 12080as 13690as 15240pa 15415as 15515as 17750va 21725va
0300	0400	twhfas	Canada, CBC NQ SW Service	9625na
0300	0400		Canada, CFVP Calgary AB	6030na
0300	0400		Canada, CKZN St John's NF	6160na
0300	0400		Canada, CKZU Vancouver BC	6160na
0300	0400		Costa Rica, Worldwide Univ Network	5030va 6150va 7375va 9725va
0300	0400		Cuba, Radio Havana Cuba	6000na 6180na
0300	0400		Germany, Deutsche Welle	13770as 15595as
0300	0400		Guyana, Voice of Guyana	3291do
0300	0400		Malaysia, RTM/Traxx FM	7295as
0300	0400		Malaysia, RTM/Voice of Malaysia	6175as 9750as 15295as
0300	0400		Netherlands, R Netherlands Worldwide	6165na
0300	0400		New Zealand, Radio NZ International	15720pa
0300	0400	DRM	New Zealand, Radio NZ International	11675pa
0300	0400		North Korea, Voice of Korea	4405as 7140as 9345as 9730as
0300	0400		Oman, Radio Oman	15355as
0300	0400	vl	Papua New Guinea, Wantok R. Light	7325va
0300	0400		Russia, Voice of Russia	5900na 9800na 9435na 9480na 9665na 9860na 12065na 15735as
0300	0400	vl	Rwanda, Radio Rwanda	6055do
0300	0400		Taiwan, R Taiwan International	5950na 15215sa 15320as
0300	0400		UK, BBC World Service	3255af 6005af 6145af 6190af 6195as 7160af 9410va 9750af 12035af 15360as 15310as 17790as
0300	0400		Ukraine, R Ukraine International	7440na
0300	0400		USA, Armed Forces Radio Network	4319usb 5446usb 5765usb 6350usb 7811usb 10320usb 12133usb 13362usb
0300	0400		USA, KWHR Naalehu HI	17800as
0300	0400		USA, Voice of America	4930af 6080af 9885af 12085af 15580af
0300	0400		USA, WBCQ Monticello ME	5110am 7415am
0300	0400		USA, WBOH Newport NC	5920am
0300	0400		USA, WEWN Vandiver AL	11520me
0300	0400		USA, WHRA Greenbush ME	5850eu
0300	0400	mtwhf	USA, WHRI Cypress Creek SC	6110na
0300	0400	Sat/Sun	USA, WHRI Cypress Creek SC	7385na
0300	0400		USA, WHRI Cypress Creek SC	5875na
0300	0400		USA, WRMI Miami FL	9955am
0300	0400		USA, WTJC Newport NC	9370na
0300	0400		USA, WWCR Nashville TN	3215na 5070na 5890na 5935na
0300	0400		USA, WWRB Manchester TN	3185va 5050na 5745va
0300	0400		USA, WYFR/Family Radio Worldwide	5950na 6085na 9505na 11740sa 15255sa
0300	0400		Uzbekistan, CVC International	13680as 15515as
0300	0400		Zambia, CVC Intl/Christian Voice	4965af
0330	0357		Czech Rep, Radio Prague	6080na 9445as 11600as
0330	0358		Vietnam, Voice of Vietnam	6175ca
0330	0400	twhfas	Albania, Radio Tirana	7425na
0330	0400		UK, BBC World Service	11945af

0400 UTC - 12AM EDT / 11PM CDT / 9PM PDT

Start	End	Days	Station	Frequencies
0400	0430	mtwhf	France, Radio France International	9805af 11995af
0400	0430		Netherlands, R Netherlands Worldwide	9575af
0400	0430		USA, KWHR Naalehu HI	17800as
0400	0430		USA, Voice of America	4930af 4960af 6080af 9575af 11835af 12080af 15580af
0400	0430		USA, WWRB Manchester TN	3185va
0400	0445		USA, WYFR/Family Radio Worldwide	6985na 9505na
0400	0457		China, China Radio International	6020na 6080as 13750as 15120as 15785as 17730as 17855as
0400	0457		Netherlands, R Netherlands Worldwide	6165na
0400	0458		New Zealand, Radio NZ International	15720pa
0400	0458	DRM	New Zealand, Radio NZ International	11675pa
0400	0459		South Africa, Channel Africa	3345af
0400	0500		Anguilla, Worldwide Univ Network	6090am
0400	0500		Australia, ABC NT Alice Springs	2310do 4835do
0400	0500		Australia, ABC NT Katherine	5025do
0400	0500		Australia, ABC NT Tennant Creek	4910do
0400	0500		Australia, Radio Australia	9660as 12080as 13690as 15240pa 15415as 17750va 21725va
0400	0500	twhfas	Canada, CBC NQ SW Service	9625na
0400	0500		Canada, CKZN St John's NF	6160na
0400	0500		Canada, CKZU Vancouver BC	6160na
0400	0500		Costa Rica, Worldwide Univ Network	5030va 6150va 7375va 9725va
0400	0500		Cuba, Radio Havana Cuba	6000na 6180na

Start	Stop	Days	Station	Freq	Freq	Freq	Freq
0400	0500		Germany, Deutsche Welle	7225af	7245af		
				12045af	15445af		
0400	0500		Guyana, Voice of Guyana	3291do			
0400	0500		Malaysia, RTM/Traxx FM	7295as			
0400	0500		Malaysia, RTM/Voice of Malaysia	6175as			
				9750as	15295as		
0400	0500		Netherlands, R Netherlands Worldwide	12080af			
0400	0500	vl	Papua New Guinea, Wantok R. Light	7325va			
0400	0500		Russia, Voice of Russia	5900na	9800na		
				9665na	9860na	13635na	15735as
0400	0500	vl	Rwanda, Radio Rwanda	6055do			
0400	0500	vl	Uganda, UBC Radio	4976do	5026do		
0400	0500	DRM	UK, BBC World Service	5875eu			
0400	0500		UK, BBC World Service	3255af	6005af		
				6190af	6195va	7120af	7160af
				11945af	12035va	12095as	15360as
				15565va	17790as		
0400	0500		USA, Armed Forces Radio Network	4319usb			
				5446usb	5765usb	6350usb	7811usb
				10320usb	12133usb	13362usb	
0400	0500		USA, WBCQ Monticello ME	5110am			
0400	0500		USA, WBOH Newport NC	5920am			
0400	0500		USA, WEWN Vandiver AL	11520me			
0400	0500		USA, WHRA Greenbush ME	5850eu			
0400	0500		USA, WHRI Cypress Creek SC	5875am			
				7365am			
0400	0500		USA, WRMI Miami FL	9955am			
0400	0500		USA, WTJC Newport NC	9370na			
0400	0500		USA, WWCR Nashville TN	3215na	5070na		
				5890na	5935na		
0400	0500		USA, WWRB Manchester TN	3185va			
0400	0500		USA, WYFR/Family Radio Worldwide	5950na			
				6915na	7780va	9680na	9715ca
0400	0500		Uzbekistan, CVC International	13680as			
				15515as			
0400	0500		Zambia, CVC Intl/Christian Voice	4965af			
0430	0500		Australia, Radio Australia	15415as			
0430	0500	mtwhf	Italy, IRRS	5990va			
0430	0500		Nigeria, Radio Nigeria/Kaduna	6090do			
0430	0500	mtwhf	Swaziland, Trans World Radio	3200af			
				4775af			
0459	0500		New Zealand, Radio NZ International	9615pa			
0459	0500	DRM	New Zealand, Radio NZ International	9890pa			

0500 UTC - 1AM EDT / 12AM CDT / 10PM PDT

Start	Stop	Days	Station	Freq	Freq	Freq	Freq
0500	0507	twhfas	Canada, CBC NQ SW Service	9625na			
0500	0527		Vatican City, Vatican Radio	9660af	11625af		
				13765af			
0500	0529	`	Vatican City, Vatican Radio	5965eu	7250eu		
0500	0530	mtwhf	France, Radio France International	13680af			
				15160af			
0500	0530		Germany, Deutsche Welle	9700af	9825me		
0500	0530	mtwhf	Italy, IRRS	5990va			
0500	0530		Japan, NHK World/Radio Japan	5975eu			
				6110na	11970af	15325as	17810as
0500	0555		South Africa, Channel Africa	7230af	9735va		
0500	0557		China, China Radio International	6020na			
				6190na	11880as	15350as	15465as
				17505me	17730as	17855as	
0500	0600		Anguilla, Worldwide Univ Network	6090am			
0500	0600		Australia, ABC NT Alice Springs	2310do			
				4835do			
0500	0600		Australia, ABC NT Katherine	5025do			
0500	0600		Australia, ABC NT Tennant Creek	4910do			
0500	0600		Australia, Radio Australia	9660as	12080as		
				13630as	13690pa	15160as	15240pa
				17750va			
0500	0600		Bhutan, Bhutan Broadcasting Svc	6035as			
0500	0600		Canada, CKZN St John's NF	6160na			
0500	0600		Canada, CKZU Vancouver BC	6160na			
0500	0600		Costa Rica, Worldwide Univ Network	5030va			
				6150va	7375va	9725va	
0500	0600		Cuba, Radio Havana Cuba	6000na	6060na		
				6180na	9550na	11760am	
0500	0600		Guyana, Voice of Guyana	3291do			
0500	0600		Kuwait, Radio Kuwait	15110me			
0500	0600		Malaysia, RTM/Traxx FM	7295as			
0500	0600		Malaysia, RTM/Voice of Malaysia	6175as			
				9750as	15295as		
0500	0600		New Zealand, Radio NZ International	9615pa			
0500	0600	DRM	New Zealand, Radio NZ International	9890pa			
0500	0600		Nigeria, Radio Nigeria/Kaduna	4770do			
0500	0600	vl	Papua New Guinea, Wantok R. Light	7325va			
0500	0600		Russia, Voice of Russia	17635pa	21790pa		
0500	0600		Swaziland, Trans World Radio	3200af			
0500	0600		Swaziland, Trans World Radio	4775af			
				6120af	9500af		
0500	0600	vl	Uganda, UBC Radio	4976do	5026do		
0500	0600		UK, BBC World Service	3255af	6005af		
				6190af	6195va	7120af	7160af
				9410va	11945af	12095as	15310as
				15360as	15420af	15565va	17640af
				17790as			
0500	0600	DRM	UK, BBC World Service	6195af			
0500	0600		Ukraine, R Ukraine International	9945eu			
0500	0600		USA, Armed Forces Radio Network	4319usb			
				5446usb	5765usb	6350usb	7811usb
				10320usb	12133usb	13362usb	
0500	0600		USA, KWHR Naalehu HI	11565as	13650as		
0500	0600		USA, Voice of America	4930af	6080af		
				6180af	12080af	15580af	
0500	0600		USA, WBCQ Monticello ME	5110am			
0500	0600		USA, WBOH Newport NC	5920am			
0500	0600		USA, WEWN Vandiver AL	11520me			
0500	0600	Sat/Sun	USA, WHRA Greenbush ME	7490va			
0500	0600		USA, WHRI Cypress Creek SC	5875am			
				7365am			
0500	0600		USA, WRMI Miami FL	9955am			
0500	0600		USA, WTJC Newport NC	9370na			
0500	0600		USA, WWCR Nashville TN	3215na	5070na		
				5890na	5935na		
0500	0600		USA, WWRB Manchester TN	3185va			
0500	0600		USA, WYFR/Family Radio Worldwide	5950na			
				6915na	9355va	9680na	
0500	0600		Uzbekistan, CVC International	13680as			
				15515as			
0500	0600		Zambia, CVC Intl/Christian Voice	4965af			
				9430af			
0515	0530	vl	Rwanda, Radio Rwanda	6055do			
0530	0556		Romania, R Romania International	9655eu			
				11830eu	15435pa	17770pa	
0530	0600		Australia, Radio Australia	15415as			
0530	0600	vl	Rwanda, Radio Rwanda	6055do			
0530	0600		Thailand, Radio Thailand	17655va			
0530	0600	mtwhf	UK, Sudan Radio Service	9525af	13720af		

0600 UTC - 2AM EDT / 1AM CDT / 11PM PDT

Start	Stop	Days	Station	Freq	Freq	Freq	Freq
0600	0615	Sat/Sun	South Africa, Trans World Radio	11640af			
0600	0630	mtwhf	France, Radio France International	11725af			
				15160af	17800af	17800af	
0600	0630		Germany, Deutsche Welle	7310af	15275af		
0600	0630		Nigeria, Radio, National Svc/Abuja	7275do			
0600	0645	mtwhf	South Africa, Trans World Radio	11640af			
0600	0655		South Africa, Channel Africa	7230af	15255af		
0600	0657		China, China Radio International	11710af			
				11870me	11880as	13660as	15140me
				15350as	15465as	17505va	17540as
				17710as			
0600	0658		New Zealand, Radio NZ International	9615pa			
0600	0658	DRM	New Zealand, Radio NZ International	9890pa			
0600	0700		Anguilla, Worldwide Univ Network	6090am			
0600	0700		Australia, ABC NT Alice Springs	2310do			
				4835do			
0600	0700		Australia, ABC NT Katherine	5025do			
0600	0700		Australia, ABC NT Tennant Creek	4910do			
0600	0700		Australia, CVC International	15335as			
0600	0700	Sat/Sun	Australia, Radio Australia	15415as			
0600	0700		Australia, Radio Australia	9660as	12080as		
				13630as	13690as	15160as	15240pa
				15415as	15515pa	17750va	
0600	0700		Canada, CFVP Calgary AB	6030na			
0600	0700		Canada, CKZN St John's NF	6160na			
0600	0700		Canada, CKZU Vancouver BC	6160na			
0600	0700		Costa Rica, Worldwide Univ Network	5030va			
				6150va	7375va	9725va	11870va
0600	0700		Cuba, Radio Havana Cuba	6000na	6060va		
				6180na	9550na	11760na	
0600	0700		Guyana, Voice of Guyana	3291do			
0600	0700		Kuwait, Radio Kuwait	15110me			
0600	0700		Malaysia, RTM/Traxx FM	7295as			
0600	0700		Malaysia, RTM/Voice of Malaysia	6175as			
				9750as	15295as		
0600	0700		Nigeria, Radio Nigeria/Kaduna	4770do			
0600	0700	vl	Papua New Guinea, Wantok R. Light	7325va			
0600	0700		Russia, Voice of Russia	17635pa	21790pa		
0600	0700		Swaziland, Trans World Radio	4775af			
				6120af	9500af		
0600	0700		UK, BBC World Service	6005af	6190af		
				6195va	9860af	11765af	12095as
				13820af	15310as	15400af	17640af
				17790as			
0600	0700	Sat/Sun	UK, BBC World Service	15420af			
0600	0700	DRM	UK, BBC World Service	6195af			
0600	0700		USA, Armed Forces Radio Network	4319usb			

Start	End	Days	Station	Frequencies
				5446usb 5765usb 6350usb 7811usb
				10320usb 12133usb 13362usb
0600	0700		USA, KWHR Naalehu HI	11565as 13650as
0600	0700		USA, Voice of America	6080af 12080af 15580af
0600	0700		USA, WBCQ Monticello ME	5110am
0600	0700		USA, WBOH Newport NC	5920am
0600	0700		USA, WEWN Vandiver AL	7570eu
0600	0700	Sat/Sun	USA, WHRA Greenbush ME	7490va
0600	0700		USA, WHRI Cypress Creek SC	5875am 7365am
0600	0700		USA, WRMI Miami FL	9955am
0600	0700		USA, WTJC Newport NC	9370na
0600	0700		USA, WWCR Nashville TN	3215na 5070na 5890na 5935na
0600	0700		USA, WWRB Manchester TN	3185va
0600	0700		USA, WYFR/Family Radio Worldwide	5850na 7520va 9680na 11530af 11580va
0600	0700		Uzbekistan, CVC International	15515as
0600	0700	vl	Vanuatu, Radio Vanatu	7260do
0600	0700		Zambia, CVC Intl/Christian Voice	6065af 13590af
0630	0644	mtwhfa	Vatican City, Vatican Radio	5965eu 7250eu 9645eu 11740eu 15595af
0630	0700		Bulgaria, Radio Bulgaria	7200na 9400eu
0630	0700		Vatican City, Vatican Radio	11625af 13765af 15570af
0645	0700	Sun	Germany, Trans World Radio Europe	6105eu
0645	0700	Sun	Monaco, Trans World Radio Europe	9800eu
0659	0700		New Zealand, Radio NZ International	7145pa
0659	0700	DRM	New Zealand, Radio NZ International	6170pa

0700 UTC - 3AM EDT / 2AM CDT / 12AM PDT

Start	End	Days	Station	Frequencies
0700	0703	vl	Croatia, Croatian Radio	11690pa
0700	0706		UK, BBC World Service	6005af
0700	0727		Czech Rep, Radio Prague	9880eu 11600eu
0700	0727		Slovakia, R Slovakia International	9440pa 11650pa
0700	0730		France, Radio France International	13675af
0700	0730	mtwhf	UK, BBC World Service	15575as
0700	0745		USA, WYFR/Family Radio Worldwide	7520va
0700	0750	mtwhf	Germany, Trans World Radio Europe	6105eu
0700	0750	mtwhf	Monaco, Trans World Radio Europe	9800eu
0700	0757		China, China Radio International	11880as 13660as 13710eu 15350as 15465as 17490eu 17540as 17710as
0700	0800		Anguilla, Worldwide Univ Network	6090am
0700	0800		Australia, ABC NT Alice Springs	2310do 4835do
0700	0800		Australia, ABC NT Katherine	5025do
0700	0800		Australia, ABC NT Tennant Creek	4910do
0700	0800		Australia, CVC International	15335as
0700	0800		Australia, Radio Australia	9475as 9660as 9710as 13630pa 15160as 15240pa 15415as 17750va
0700	0800		Bhutan, Bhutan Broadcasting Svc	6035as
0700	0800		Canada, CFVP Calgary AB	6030na
0700	0800		Canada, CKZN St John's NF	6160na
0700	0800		Canada, CKZU Vancouver BC	6160na
0700	0800		Costa Rica, Worldwide Univ Network	5030va 6150va 7375va 9725va 11870va
0700	0800	DRM	Germany, Deutsche Welle	7310eu
0700	0800	Sun	Germany, Trans World Radio Europe	6105eu
0700	0800		Guyana, Voice of Guyana	3291do 5950do
0700	0800		Kuwait, Radio Kuwait	15110me
0700	0800	Sat	Latvia, Radio SWH	9290eu
0700	0800		Liberia, Star Radio	9525af
0700	0800		Malaysia, RTM/Traxx FM	7295as
0700	0800		Malaysia, RTM/Voice of Malaysia	6175as 9750as 15295as
0700	0800	Sun	Monaco, Trans World Radio Europe	9800eu
0700	0800		Myanmar, Myanma Radio	9731do
0700	0800		New Zealand, Radio NZ International	7145pa
0700	0800	DRM	New Zealand, Radio NZ International	6170pa
0700	0800		Nigeria, Radio Nigeria/Kaduna	4770do
0700	0800	vl	Papua New Guinea, R East New Britain	3385do
0700	0800	vl	Papua New Guinea, Wantok R. Light	7325va
0700	0800		Russia, Voice of Russia	17495af 17635af
0700	0800	vl	Solomon Islands, SIBC	5020do
0700	0800		South Africa, Channel Africa	7230af
0700	0800		Swaziland, Trans World Radio	4775af 6120af 9500af
0700	0800		Taiwan, R Taiwan International	5950na
0700	0800	Sat/Sun	UK, BBC World Service	15400af 15420af 15575as
0700	0800		UK, BBC World Service	6190af 9860af 11760me 13820af 15310as 17790as
				17830af
0700	0800	mtwhf	UK, BBC World Service	15400af
0700	0800	Sat/Sun	UK, Bible Voice BC	5945eu
0700	0800		USA, Armed Forces Radio Network	4319usb 5446usb 5765usb 6350usb 7811usb 10320usb 12133usb 13362usb
0700	0800		USA, KWHR Naalehu HI	11565as 13650as
0700	0800		USA, WBCQ Monticello ME	5110am
0700	0800		USA, WBOH Newport NC	5920am
0700	0800		USA, WEWN Vandiver AL	7570eu
0700	0800	mtwhf	USA, WHRI Cypress Creek SC	11565am
0700	0800		USA, WHRI Cypress Creek SC	7385na
0700	0800	Sat/Sun	USA, WHRI Cypress Creek SC	5875va
0700	0800		USA, WRMI Miami FL	9955am
0700	0800		USA, WTJC Newport NC	9370na
0700	0800		USA, WWCR Nashville TN	3215na 5070na 5890na 5935na
0700	0800		USA, WWRB Manchester TN	3185va
0700	0800		USA, WYFR/Family Radio Worldwide	5985na 6915na 9505na 9715as 9930af
0700	0800		Uzbekistan, CVC International	15515as
0700	0800	vl	Vanuatu, Radio Vanatu	7260do
0700	0800		Zambia, CVC Intl/Christian Voice	6065af 13590af
0715	0750	Sat	Germany, Trans World Radio Europe	6105eu
0715	0750	Sat	Monaco, Trans World Radio Europe	9800eu
0745	0800	f	UK, Bible Voice BC	5945eu

0800 UTC - 4AM EDT / 3AM CDT / 1AM PDT

Start	End	Days	Station	Frequencies
0800	0815	Sat	Guam, KTWR/Trans World Radio	11840pa
0800	0815	Sat/Sun	UK, Bible Voice BC	5945eu
0800	0820	Sun	Germany, Trans World Radio Europe	6105eu
0800	0820	Sun	Monaco, Trans World Radio Europe	9800eu
0800	0825		Malaysia, RTM/Voice of Malaysia	6175as 9750as 15295as
0800	0830		Australia, ABC NT Katherine	5025do
0800	0830		Australia, ABC NT Tennant Creek	4910do
0800	0830		Myanmar, Myanma Radio	9731do
0800	0835	mtwhf	Guam, KTWR/Trans World Radio	11840pa
0800	0845		USA, WYFR/Family Radio Worldwide	5950ca 9930af
0800	0857		China, China Radio International	11620as 11880as 13710eu 15350as 15465as 17490eu 17540as
0800	0900		Anguilla, Worldwide Univ Network	6090am
0800	0900		Australia, ABC NT Alice Springs	2310do 4835do
0800	0900		Australia, CVC International	15335as
0800	0900		Australia, Radio Australia	9475as 9580va 9590va 9710as 12080pa 13630as 15415as 17750va
0800	0900		Bhutan, Bhutan Broadcasting Svc	6035as
0800	0900		Canada, CFVP Calgary AB	6030na
0800	0900		Canada, CKZN St John's NF	6160na
0800	0900		Canada, CKZU Vancouver BC	6160na
0800	0900		Costa Rica, Worldwide Univ Network	5030va 6150va 7375va 9725va 11870va
0800	0900		Guyana, Voice of Guyana	3291do 5950do
0800	0900		Malaysia, RTM/Traxx FM	7295as
0800	0900		New Zealand, Radio NZ International	7145pa
0800	0900	DRM	New Zealand, Radio NZ International	6170pa
0800	0900		Nigeria, Radio Nigeria/Kaduna	4770do
0800	0900		Nigeria, Voice of Nigeria/Lagos	9690af
0800	0900	vl	Papua New Guinea, R East New Britain	3385do
0800	0900	vl	Papua New Guinea, Wantok R. Light	7325va
0800	0900		Russia, Voice of Russia	17495af 17635af
0800	0900	DRM	Russia, Voice of Russia	12060eu 15545eu
0800	0900	vl	Solomon Islands, SIBC	5020do
0800	0900		South Africa, Channel Africa	9625af
0800	0900	Sun	South Africa, SA Radio League	7205af 17570af
0800	0900		South Korea, KBS World Radio	9570as
0800	0900		Swaziland, Trans World Radio	4775af 6120af 9500af
0800	0900		UK, BBC World Service	6190af 9860af 11760me 15310as 15400af 17640as 17790af 17830af 21470af
0800	0900	Sat/Sun	UK, BBC World Service	15575as
0800	0900		USA, Armed Forces Radio Network	4319usb 5446usb 5765usb 6350usb 7811usb 10320usb 12133usb 13362usb
0800	0900		USA, KNLS Anchor Point AK	7355as
0800	0900		USA, KWHR Naalehu HI	9930as 11565as
0800	0900		USA, WBCQ Monticello ME	5110am
0800	0900		USA, WBOH Newport NC	5920am
0800	0900		USA, WEWN Vandiver AL	9355as
0800	0900		USA, WHRI Cypress Creek SC	7385am

0800	0900	mtwhf	USA, WHRI Cypress Creek SC	11565va	
0800	0900	Sat/Sun	USA, WHRI Cypress Creek SC	5875va	
0800	0900		USA, WRMI Miami FL	9955am	
0800	0900		USA, WTJC Newport NC	9370na	
0800	0900		USA, WWCR Nashville TN	3215na	5070na
			5890na	5935na	
0800	0900		USA, WWRB Manchester TN	3185va	
0800	0900		USA, WYFR/Family Radio Worldwide	5985na	
			6915na		
0800	0900		Uzbekistan, CVC International	15515as	
0800	0900	vl	Vanuatu, Radio Vanatu	7260do	
0800	0900		Zambia, CVC Intl/Christian Voice	6065af	
			13590af		
0805	0900	tf	Guam, KTWR/Trans World Radio	15170as	
0820	0900	w	Guam, KTWR/Trans World Radio	15170as	
0830	0900		Australia, ABC NT Katherine	2485do	
0830	0900		Australia, ABC NT Tennant Creek	2325do	
0830	0900	m	Guam, KTWR/Trans World Radio	15170as	
0830	0900		Lithuania, Radio Vilnius	9710na	

0900 UTC - 5AM EDT / 4AM CDT / 2AM PDT

0900	0926		Czech Rep, Radio Prague	9880eu	9955am
			21745as		
0900	0930		Japan, NHK World/Radio Japan	9625as	
			9825pa	11815as	15590as
0900	0957		China, China Radio International	11620as	
			15210pa	15270eu	15350as	17490eu
			17570eu	17690pa	17750as
0900	1000		Anguilla, Worldwide Univ Network	6090am	
0900	1000		Australia, ABC NT Alice Springs	2310do	
			4835do		
0900	1000		Australia, ABC NT Katherine	2485do	
0900	1000		Australia, ABC NT Tennant Creek	2325do	
0900	1000		Australia, CVC International	15230as	
0900	1000		Australia, Radio Australia	9475va	9580va
			9590va	9710as	11880as	11945pa
			12080as	15415as	
0900	1000		Bhutan, Bhutan Broadcasting Svc	6035as	
0900	1000		Canada, CFVP Calgary AB	6030na	
0900	1000		Canada, CKZN St John's NF	6160na	
0900	1000		Canada, CKZU Vancouver BC	6160na	
0900	1000		Costa Rica, Worldwide Univ Network	5030va	
			6150va	7375va	9725va	11870va
			13750va		
0900	1000		Germany, Deutsche Welle	15340as	17705as
0900	1000		Guyana, Voice of Guyana	3291do	5950do
0900	1000		Malaysia, RTM/Traxx FM	7295as	
0900	1000		New Zealand, Radio NZ International	7145pa	
0900	1000	DRM	New Zealand, Radio NZ International	6170pa	
0900	1000		Nigeria, Radio Nigeria/Kaduna	4770do	
0900	1000		Nigeria, Voice of Nigeria/Lagos	9690af	
0900	1000	vl	Papua New Guinea, R East New Britain	3385do	
0900	1000	vl	Papua New Guinea, Wantok R. Light	7325va	
0900	1000		Saudi Arabia, BSKSA	15250af	
0900	1000	vl	Solomon Islands, SIBC	5020do	
0900	1000		South Africa, Channel Africa	9625af	
0900	1000		UK, BBC World Service	6190af	6195as
			9740as	9860af	11760me	15310as
			15400af	15575as	17640af	17760as
			17790as	17830af	21470af	21660as
0900	1000		Ukraine, R Ukraine International	11550eu	
0900	1000		USA, Armed Forces Radio Network	4319usb	
			5446usb	5765usb	6350usb	7811usb
			10320usb	12133usb	13362usb
0900	1000		USA, KWHR Naalehu HI	9930as	11565as
0900	1000		USA, WBCQ Monticello ME	5110am	
0900	1000		USA, WBOH Newport NC	5920am	
0900	1000		USA, WEWN Vandiver AL	9355as	
0900	1000		USA, WHRI Cypress Creek SC	5875na	
			7385am		
0900	1000		USA, WRMI Miami FL	9955am	
0900	1000		USA, WTJC Newport NC	9370na	
0900	1000		USA, WWCR Nashville TN	5070na	5890na
			5935na	9985na	
0900	1000		USA, WWRB Manchester TN	3185va	
0900	1000		USA, WYFR/Family Radio Worldwide	5985na	
			6915na	9465as	9755ca
0900	1000	vl	Vanuatu, Radio Vanatu	7260do	
0900	1000		Zambia, CVC Intl/Christian Voice	6065af	
			13590af		
0905	1000	Sun	Greece, Voice of Greece	9420eu	15605eu
0930	1000	Sun	Italy, IRRS	9510va	

1000 UTC - 6AM EDT / 5AM CDT / 3AM PDT

1000	1030		Vietnam, Voice of Vietnam	9840as	12020as

1000	1057		China, China Radio International	6040na	
			11610as	11635as	13590as	13620as
			13720as	15190as	15210as	15350as
			15390as	17490eu	17690pa
1000	1057		Netherlands, R Netherlands Worldwide	5955eu	
			11895as	12065as	13820as	15110as
1000	1058		New Zealand, Radio NZ International	7145pa	
1000	1100		Anguilla, Worldwide Univ Network	11775am	
1000	1100		Australia, ABC NT Alice Springs	2310do	
			4835do		
1000	1100		Australia, ABC NT Katherine	2485do	
1000	1100		Australia, ABC NT Tennant Creek	2325do	
1000	1100		Australia, CVC International	15230as	
1000	1100		Australia, Radio Australia	9580as	9590va
			9710as	11880as	11945pa	12080pa
			15415as		
1000	1100		Canada, CFVP Calgary AB	6030na	
1000	1100		Canada, CKZN St John's NF	6160na	
1000	1100		Canada, CKZU Vancouver BC	6160na	
1000	1100		Costa Rica, Worldwide Univ Network	5030va	
			6150va	7375va	9725va	11870va
			13750va		
1000	1100		Guyana, Voice of Guyana	3291do	5950do
1000	1100		India, All India Radio	7270as	13695as
			15020as	15260as	15410as	17510pa
			17800as	17895pa	
1000	1100		Indonesia, Voice of Indonesia	9526va	11785al
1000	1100	Sun	Italy, IRRS	9510va	
1000	1100		Malaysia, RTM/Traxx FM	7295as	
1000	1100	DRM	New Zealand, Radio NZ International	6170pa	
1000	1100		Nigeria, Radio Nigeria/Kaduna	4770do	
1000	1100		Nigeria, Voice of Nigeria/Lagos	9690af	
1000	1100		North Korea, Voice of Korea	11710am	11735as
			13650as	15180am	
1000	1100	vl	Papua New Guinea, R East New Britain	3385do	
1000	1100	vl	Papua New Guinea, Wantok R. Light	7325va	
1000	1100		Saudi Arabia, BSKSA	15250af	
1000	1100	vl	Solomon Islands, SIBC	5020do	
1000	1100		South Africa, Channel Africa	9625af	
1000	1100		UK, BBC World Service	6195as	9740as
			11760me	15575as	17640af	17760as
			17790as	21470af	21660as
1000	1100	Sat/Sun	UK, BBC World Service	15400af	17830af
1000	1100		USA, Armed Forces Radio Network	4319usb	
			5446usb	5765usb	6350usb	7811usb
			10320usb	12133usb	13362usb
1000	1100		USA, KNLS Anchor Point AK	6890as	
1000	1100		USA, KWHR Naalehu HI	9930as	11565as
1000	1100		USA, WBCQ Monticello ME	5110am	
1000	1100		USA, WBOH Newport NC	5920am	
1000	1100		USA, WEWN Vandiver AL	9355as	
1000	1100		USA, WHRI Cypress Creek SC	7385am	
			9425am		
1000	1100		USA, WINB Red Lion PA	9265am	
1000	1100		USA, WRMI Miami FL	9955am	
1000	1100		USA, WTJC Newport NC	9370na	
1000	1100		USA, WWCR Nashville TN	5070na	5890na
			5935na	15825na	
1000	1100		USA, WWRB Manchester TN	3185va	
1000	1100		USA, WYFR/Family Radio Worldwide	5940na	
			5985na	6915na	9465as	9755ca
1000	1100		Zambia, CVC Intl/Christian Voice	6065af	
			13590af		
1015	1045	Sun	UK, Bible Voice BC	5985as	
1030	1057		Czech Rep, Radio Prague	9880eu	11665eu
1030	1100		Guam, KSDA/ Adventist World Radio	11780as	
1030	1100		Iran, Voice of the Islamic Rep of Iran	15600as	
			17600as		
1030	1100		Mongolia, Voice of Mongolia	12085as	
1059	1100		New Zealand, Radio NZ International	9655pa	

1100 UTC - 7AM EDT / 6AM CDT / 4AM PDT

1100	1105		Pakistan, Radio Pakistan	15100as	17835as
1100	1127		Iran, Voice of the Islamic Rep of Iran	15600as	
			17600as		
1100	1130		UK, BBC World Service	15400af	
1100	1130		Vietnam, Voice of Vietnam	7285as	
1100	1145		USA, WYFR/Family Radio Worldwide	9550sa	
			9755ca		
1100	1157		China, China Radio International	5955as	
			6040as	11650as	11660as	11750as
			11795as	13590as	13620eu	13720as
			13645as	17490eu	
1100	1158	DRM	New Zealand, Radio NZ International	6170pa	
1100	1200		Anguilla, Worldwide Univ Network	11775am	
1100	1200		Australia, ABC NT Alice Springs	2310do	
			4835do		

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1100	1200		Australia, ABC NT Katherine	2485do	
1100	1200		Australia, ABC NT Tennant Creek	2325do	
1100	1200		Australia, CVC International	15635as	
1100	1200	DRM	Australia, Radio Australia	5995pa	
1100	1200		Australia, Radio Australia	5995va	6020va
			9475as	9560as	9590va	11880as
			11945pa	12080as	
1100	1200	Sat/Sun	Canada, CBC NQ SW Service	9625na	
1100	1200		Canada, CFVP Calgary AB	6030na	
1100	1200		Canada, CKZN St John's NF	6160na	
1100	1200		Canada, CKZU Vancouver BC	6160na	
1100	1200		Costa Rica, Worldwide Univ Network	5030va	
			6150va	7375va	9725va	11870va
			13750va		
1100	1200	Sun	Italy, IRRS	9510va	
1100	1200		Malaysia, RTM/Traxx FM	7295as	
1100	1200		New Zealand, Radio NZ International	9655pa	
1100	1200		Nigeria, Radio Nigeria/Kaduna	4770do	
1100	1200		Nigeria, Voice of Nigeria/Lagos	9690af	
1100	1200	vl	Papua New Guinea, R East New Britain	3385do	
1100	1200	vl	Papua New Guinea, Wantok R. Light	7325va	
1100	1200		Saudi Arabia, BSKSA	15250af	
1100	1200	vl	Solomon Islands, SIBC	5020do	9545al
1100	1200		South Africa, Channel Africa	9625af	
1100	1200		Taiwan, R Taiwan International	7445as	
1100	1200		UK, BBC World Service	6190af	6195as
			9740as	9860af	11760me	15310as
			15340as	15575as	17640af	17760as
			17790as	17830af	21470af	
1100	1200		Ukraine, R Ukraine International	11550eu	
1100	1200		USA, Armed Forces Radio Network	4319usb	
			5446usb	5765usb	6350usb	7811usb
			10320usb	12133usb	13362usb	
1100	1200		USA, KWHR Naalehu HI	9930as	
1100	1200		USA, WBCQ Monticello ME	5110am	
1100	1200		USA, WBOH Newport NC	5920am	
1100	1200		USA, WEWN Vandiver AL	11560as	
1100	1200		USA, WHRI Cypress Creek SC		7385am
			9425am		
1100	1200		USA, WINB Red Lion PA	9265am	
1100	1200		USA, WRMI Miami FL	9955am	
1100	1200		USA, WTJC Newport NC	9370na	
1100	1200		USA, WWCR Nashville TN	5935na	7490na
			9980na	15825na	
1100	1200		USA, WWRB Manchester TN	3185va	
1100	1200		USA, WYFR/Family Radio Worldwide	5950na	
			5985na	7780sa	9625sa	
1100	1200		Zambia, CVC Intl/Christian Voice	6065af	
			13590af		
1115	1130		UK, Bible Voice BC	5950as	
1130	1200		Bulgaria, Radio Bulgaria	11700eu	15700eu
1130	1200		Guam, KSDA/ Adventist World Radio	15460as	
1130	1200		Vatican City, Vatican Radio	15595eu	17765eu
1157	1200		Netherlands, R Netherlands Worldwide	5955eu	

1200 UTC - 8AM EDT / 7AM CDT / 5AM PDT

1200	1230		Australia, HCJB Global	15400as	
1200	1230		France, Radio France International	17800af	
1200	1230		Germany, Adventist World Radio Europe	15435as	
1200	1230		Japan, NHK World/Radio Japan	6120na	
			9625as	9695as	17585eu	
1200	1230		Saudi Arabia, BSKSA	15250af	
1200	1245		USA, WYFR/Family Radio Worldwide	5950na	
			5985na		
1200	1256		Romania, R Romania International	15220eu	
1200	1257		China, China Radio International	5955as	
			9460as	9600as	9645as	9730as
			9760pa	11650as	11660as	11760pa
			11980as	13645as	13650eu	13790eu
			17490eu		
1200	1258		New Zealand, Radio NZ International	9655pa	
1200	1259		Netherlands, R Netherlands Worldwide	5955eu	
1200	1259		Poland, Polish Radio	7330eu	9525eu
1200	1300		Anguilla, Worldwide Univ Network	11775am	
1200	1300		Australia, ABC NT Alice Springs	2310do	
			4835do		
1200	1300		Australia, ABC NT Katherine	2485do	
1200	1300		Australia, ABC NT Tennant Creek	2325do	
1200	1300		Australia, CVC International	13635as	
1200	1300		Australia, Radio Australia	6020va	9475as
			9560va	9580va	9590va	11880as
			11945pa		
1200	1300	DRM	Australia, Radio Australia	5995va	12080pa
1200	1300	Sat/Sun	Canada, CBC NQ SW Service	9625na	
1200	1300		Canada, CFVP Calgary AB	6030na	
1200	1300		Canada, CKZN St John's NF	6160na	
1200	1300		Canada, CKZU Vancouver BC	6160na	

1200	1300		Costa Rica, Worldwide Univ Network	9725va	
			11870va	13750va	
1200	1300	Sun	Latvia, Radio SWH	9290eu	
1200	1300		Malaysia, RTM/Traxx FM	7295as	
1200	1300		Nigeria, Radio Nigeria/Kaduna	4770do	
1200	1300		Nigeria, Voice of Nigeria/Lagos	9690af	
1200	1300	vl	Papua New Guinea, Wantok R. Light	7325as	
1200	1300	vl	Solomon Islands, SIBC	5020do	9545al
1200	1300		South Korea, KBS World Radio	9650na	
1200	1300	f/ DRM	Taiwan, R Taiwan International	9850eu	
1200	1300		UK, BBC World Service	6190af	6195as
			9740as	9860af	11750as	11760me
			15310as	15575as	17640af	17790as
			17830af	21470af	
1200	1300		USA, Armed Forces Radio Network	4319usb	
			5446usb	5765usb	6350usb	7811usb
			10320usb	12133usb	13362usb	
1200	1300		USA, KNLS Anchor Point AK	7355as	9780as
1200	1300		USA, KWHR Naalehu HI	12130as	
1200	1300		USA, Voice of America	6140va	9360va
			9645va	9760va	12075va	
1200	1300		USA, WBCQ Monticello ME	9330am	
1200	1300		USA, WBOH Newport NC	5920am	
1200	1300		USA, WEWN Vandiver AL	11560as	
1200	1300	Sat/Sun	USA, WHRA Greenbush ME	15710va	
1200	1300	mtwhf	USA, WHRI Cypress Creek SC	9410na	
1200	1300		USA, WHRI Cypress Creek SC	7385am	
1200	1300		USA, WINB Red Lion PA	13570am	
1200	1300		USA, WRMI Miami FL	9955am	
1200	1300		USA, WTJC Newport NC	9370na	
1200	1300		USA, WWCR Nashville TN	7490na	9980na
			13845na	15825na	
1200	1300		USA, WWRB Manchester TN	3185va	
1200	1300		USA, WYFR/Family Radio Worldwide	11520as	
			11560as	17555sa	17795ca	
1200	1300		Zambia, CVC Intl/Christian Voice	6065af	
			13590af		
1215	1300		Egypt, Radio Cairo	17835as	
1228	1300	vl	Vatican City, Vatican Radio	11850as	
1230	1300	mtwhfa	Australia, HCJB Global	15540as	
1230	1300		Bangladesh, Bangla Betar	7250as	
1230	1300		Sweden, Radio Sweden	15240na	
1230	1300		Thailand, Radio Thailand	9835va	
1230	1300		Turkey, Voice of Turkey	13685va	15450eu
1230	1300		Vietnam, Voice of Vietnam	9840as	12020as
1245	1300	Sat	UK, Bible Voice BC	5950as	

1300 UTC - 9AM EDT / 8AM CDT / 6AM PDT

1300	1325		Turkey, Voice of Turkey	13685pa	15450eu
1300	1329		Czech Rep, Radio Prague	13580eu	17540as
1300	1330	mtwhfa	Australia, HCJB Global	15540as	
1300	1330		Egypt, Radio Cairo	17835af	
1300	1330	Sun	Slovakia, Universal Life	15750as	
1300	1357		China, China Radio International	5955as	
			9570na	9650na	9730as	9760pa
			9765as	9870as	11660as	11760pa
			11980as	13610eu	13755as	13790eu
			15260na	15440as	
1300	1400		Anguilla, Worldwide Univ Network	11775am	
1300	1400		Australia, CVC International	13635as	
1300	1400		Australia, Radio Australia	6020va	9560as
			9580va	9590va	
1300	1400	DRM	Australia, Radio Australia	5995va	12080pa
1300	1400	Sat/Sun	Canada, CBC NQ SW Service	9625na	
1300	1400		Canada, CFVP Calgary AB	6030na	
1300	1400		Canada, CKZN St John's NF	6160na	
1300	1400		Canada, CKZU Vancouver BC	6160na	
1300	1400		Costa Rica, Worldwide Univ Network	9725va	
			11870va	13750va	
1300	1400		Indonesia, Voice of Indonesia	9526va	11785al
1300	1400		Malaysia, RTM/Traxx FM	7295as	
1300	1400		New Zealand, Radio NZ International	6170pa	
1300	1400		Nigeria, Radio Nigeria/Kaduna	4770do	
1300	1400		Nigeria, Voice of Nigeria/Lagos	9690af	
1300	1400		North Korea, Voice of Korea	3560eu	9335am
			11710eu	13760eu	15245eu	
1300	1400	vl	Papua New Guinea, Wantok R. Light	7325va	
1300	1400	vl	Solomon Islands, SIBC	5020do	9545al
1300	1400		South Korea, KBS World Radio	9570na	
			9770as		
1300	1400		UK, BBC World Service	6190af	6195as
			9740as	9860af	11750as	11760me
			15310as	15420af	15575as	17640af
			17790as	21470af	
1300	1400		USA, Armed Forces Radio Network	4319usb	
			5446usb	5765usb	6350usb	7811usb
			10320usb	12133usb	13362usb	

SHORTWAVE GUIDE

Start	Stop	Days	Station	Frequencies
1300	1400	mtwhf	USA, KWHR Naalehu HI	9930as
1300	1400	Sat/Sun	USA, KWHR Naalehu HI	12130as
1300	1400		USA, Voice of America	9645va 9760va
1300	1400		USA, WBCQ Monticello ME	9330am
1300	1400		USA, WBOH Newport NC	5920am
1300	1400		USA, WEWN Vandiver AL	11560as
1300	1400	Sat/Sun	USA, WHRA Greenbush ME	15710va
1300	1400		USA, WHRI Cypress Creek SC	9840na 11785am
1300	1400		USA, WINB Red Lion PA	13570am
1300	1400		USA, WRMI Miami FL	9955am
1300	1400		USA, WTJC Newport NC	9370na
1300	1400		USA, WWCR Nashville TN	7490na 9980na 13845na 15825na
1300	1400		USA, WWRB Manchester TN	9285va
1300	1400		USA, WYFR/Family Radio Worldwide	11560as 11820na 11865na 11910na 17630af 17715af 17795ca
1300	1400	vl	Vatican City, Vatican Radio	11850as
1300	1400		Zambia, CVC Intl/Christian Voice	6065af 13590af
1305	1320	m	Austria, Radio Austria International	13730eu
1305	1330	Sat/Sun	Austria, Radio Austria International	13730eu
1310	1340		Japan, NHK World/Radio Japan	11985as
1330	1357	fa/ DRM	Czech Rep, Radio Prague	9850eu
1330	1400	mthfa	Guam, KSDA/ Adventist World Radio	15275as
1330	1400		India, All India Radio	9690as 11620as 13710as
1330	1400		Laos, National Radio	7145as
1330	1400		Sweden, Radio Sweden	15735va
1330	1400		USA, Voice of America	9465va 11725va 15130va 15565va
1330	1400		Vietnam, Voice of Vietnam	9840as 12020as
1335	1400	Sat/Sun	Austria, Radio Austria International	13730eu
1345	1400	hf	Austria, Radio Austria International	13730eu
1355	1400		Guam, KTWR/Trans World Radio	9975as

1400 UTC - 10AM EDT / 9AM CDT / 7AM PDT

Start	Stop	Days	Station	Frequencies
1400	1415	Sat	Germany, Pan American BC	15205me
1400	1430	Sun	Australia, HCJB Global	15425as
1400	1430	mtwhfa	Australia, HCJB Global	15400as
1400	1430	sw	Germany, Pan American BC	15205as
1400	1430	mhf	Guam, KTWR/Trans World Radio	9975as
1400	1430	Sun	Italy, IRRS	15725va
1400	1430	`	Japan, NHK World/Radio Japan	11705va 11985as 13630eu 21560eu
1400	1430		Thailand, Radio Thailand	9805va
1400	1430	Sun	United Arab Emirates, FEBA	12025as
1400	1457		China, China Radio International	5995as 9765as 9870as 11675as 11765as 13685as 13710eu 13740na 13790eu 17630af
1400	1457		Czech Rep, Radio Prague	9955am
1400	1500		Anguilla, Worldwide Univ Network	11775am
1400	1500		Australia, CVC International	13635as
1400	1500		Australia, Radio Australia	5995va 6080va 7240va 9590va
1400	1500		Bhutan, Bhutan Broadcasting Svc	6035as
1400	1500	Sat/Sun	Canada, CBC NQ SW Service	9625va
1400	1500		Canada, CFVP Calgary AB	6030na
1400	1500		Canada, CKZN St John's NF	6160na
1400	1500		Canada, CKZU Vancouver BC	6160na
1400	1500		Costa Rica, Worldwide Univ Network	9725va 11870va 13750va
1400	1500	DRM	Germany, CVC Intl/Voice Africa	7270eu
1400	1500		Germany, The Overcomer Ministries	6110eu 13810va
1400	1500	tw	Guam, KTWR/Trans World Radio	9975as
1400	1500		India, All India Radio	9690as 11620as 13710as
1400	1500		Jordan, Radio Jordan	11690na
1400	1500		Libya, Voice of Africa	17725af 21695af
1400	1500		Malaysia, RTM/Traxx FM	7295as
1400	1500		Netherlands, R Netherlands Worldwide	5830as 9885as 11835as
1400	1500		New Zealand, Radio NZ International	6170pa
1400	1500		Nigeria, Radio Nigeria/Kaduna	4770do
1400	1500		Nigeria, Voice of Nigeria/Lagos	9690af
1400	1500		Oman, Radio Oman	15140as
1400	1500	vl	Papua New Guinea, Wantok R. Light	7325va
1400	1500	DRM	Russia, Voice of Russia	9750eu
1400	1500		Russia, Voice of Russia	7165as 7255as 9625as 9660as 9745as 11755as 15605as 15660as
1400	1500	vl	Solomon Islands, SIBC	5020do 9545al
1400	1500		UK, BBC World Service	5980as 6190af 6195as 9740as 11920as 12095as 15310as 17640af 17830af 21470af
1400	1500	Sat/Sun	UK, Bible Voice BC	15680as
1400	1500		USA, Armed Forces Radio Network	4319usb 5446usb 5765usb 6350usb 7811usb 10320usb 12133usb 13362usb
1400	1500		USA, KJES Vado NM	11715na
1400	1500		USA, KNLS Anchor Point AK	7355as
1400	1500		USA, KWHR Naalehu HI	9930as
1400	1500		USA, Voice of America	4930af 6080af 7430va 9345as 9760va 13750af 15530va 15580af 17530af 17740va
1400	1500		USA, WBCQ Monticello ME	9930as
1400	1500		USA, WBOH Newport NC	5920am
1400	1500		USA, WEWN Vandiver AL	15855as
1400	1500	Sat/Sun	USA, WHRA Greenbush ME	15195va
1400	1500		USA, WHRI Cypress Creek SC	9495na 9840na 11785am
1400	1500		USA, WINB Red Lion PA	13570am
1400	1500		USA, WRMI Miami FL	9955na
1400	1500		USA, WTJC Newport NC	9370na
1400	1500		USA, WWCR Nashville TN	7490na 9980na 13845na 15825na
1400	1500		USA, WWRB Manchester TN	9385va
1400	1500		USA, WYFR/Family Radio Worldwide	11560na 11830na 11910na 13695na 17630af 17715af 17795ca
1400	1500	vl	Vatican City, Vatican Radio	11850as
1400	1500		Zambia, CVC Intl/Christian Voice	6065af 13590af
1415	1430	mtwhfa	Germany, Pan American BC	15205as
1415	1430		Nepal, Radio Nepal	5005as
1430	1445	Sun	Germany, Pan American BC	15205as
1430	1459		Vatican City, Vatican Radio	4885eu 7250eu 9645eu
1430	1500	mtwhfa	Albania, Radio Tirana	13640na
1430	1500		Australia, Radio Australia	9475va 11660pa
1430	1500		Ethiopia, Radio Ethiopia	5990af 7110af 9704af
1430	1500	Sat	Italy, IRRS	15725va
1430	1500	f/ DRM	South Korea, KBS World Radio	9460eu
1430	1500		Sweden, Radio Sweden	13820va 13840va 15240na

1500 UTC - 11AM EDT / 10AM CDT / 8AM PDT

Start	Stop	Days	Station	Frequencies
1500	1510	mtwhfa	Turkmenistan, Turkmen Radio	5015eu
1500	1528		Vietnam, Voice of Vietnam	7285va 9840va 12020va
1500	1530		Guam, KSDA/ Adventist World Radio	11985as
1500	1530		Nigeria, Radio, National Svc/Abuja	7275do
1500	1530		UK, BBC World Service	7380af 11860af 15420af
1500	1530	Sat/Sun	UK, Sudan Radio Service	9840af
1500	1530	vl	Venezuela, R Nacional de Venezuela	11680sa
1500	1545		USA, WYFR/Family Radio Worldwide	15770sa
1500	1550		New Zealand, Radio NZ International	6170pa
1500	1550	vl	Vatican City, Vatican Radio	11850as
1500	1555		South Africa, Channel Africa	15215af
1500	1557		Canada, R Canada International	11675as 17720as
1500	1557		China, China Radio International	5955as 6100af 7160as 7325as 9800as 9870as 11965eu 13640eu 13685af 13740as 17630af
1500	1557		Netherlands, R Netherlands Worldwide	5830af 9885as 11835as
1500	1600		Anguilla, Worldwide Univ Network	11775am
1500	1600		Australia, CVC International	13635as
1500	1600		Australia, Radio Australia	5995va 6080va 7240as 9475va 9590as 11660pa
1500	1600	Sat/Sun	Canada, CBC NQ SW Service	9625na
1500	1600		Canada, CFVP Calgary AB	6030na
1500	1600		Canada, CKZN St John's NF	6160na
1500	1600		Canada, CKZU Vancouver BC	6160na
1500	1600		Costa Rica, Worldwide Univ Network	9725va 11870va 13750va
1500	1600		Finland, Overcomer Ministries	9595me
1500	1600	DRM	Germany, CVC Intl/Voice Africa	7270eu
1500	1600		Germany, The Overcomer Ministries	6110eu 17485af
1500	1600		Italy, IRRS	9825af
1500	1600		Jordan, Radio Jordan	11690na
1500	1600		Libya, Voice of Africa	17725af 21695af
1500	1600		Malaysia, RTM/Traxx FM	7295as
1500	1600		Myanmar, Myanma Radio	5985as
1500	1600		Nigeria, Radio Nigeria/Kaduna	4770do
1500	1600		Nigeria, Voice of Nigeria/Lagos	9690af
1500	1600		North Korea, Voice of Korea	3560eu 9335na

			11710eu	13760eu	15245eu	
1500	1600	vl	Papua New Guinea, Wantok R. Light	7325va		
1500	1600		Russia, Voice of Russia	4965va	9810eu	
1500	1600	vl	Slovakia, Miraya FM Radio	15650af		
1500	1600	vl	Solomon Islands, SIBC	5020do	9545al	
1500	1600		Uganda, Dunamis Shortwave	4750af		
1500	1600		UK, BBC World Service	5975va	5980as	
			6190af	6195as	9740as	9860af
			11920as	12095va	15310as	15400af
			17640af	17830af	21470af	
1500	1600	Sat/Sun	UK, BBC World Service	7380af	15420af	
1500	1600		USA, Armed Forces Radio Network	4319usb		
			5446usb	5765usb	6350usb	7811usb
			10320usb	12133usb	13362usb	
1500	1600		USA, KJES Vado NM	11715na		
1500	1600		USA, KWHR Naalehu HI	9930as		
1500	1600		USA, Voice of America	6160va	7125va	
			7430va	9345as	9695va	9760va
			12150va	13570af	15310va	15530va
			15550va	15580va	17895af	
1500	1600		USA, WBCQ Monticello ME	9930am		
1500	1600		USA, WBOH Newport NC	5920am		
1500	1600		USA, WEWN Vandiver AL	15855as		
1500	1600	Sat/Sun	USA, WHRA Greenbush ME	15195va		
1500	1600		USA, WHRI Cypress Creek SC	9495na		
			9840na	11785am		
1500	1600		USA, WINB Red Lion PA	13570am		
1500	1600		USA, WRMI Miami FL	9955va		
1500	1600		USA, WTJC Newport NC	9370na		
1500	1600		USA, WWCR Nashville TN	7490na	9980na	
			13845na	15825na		
1500	1600		USA, WWRB Manchester TN	9385va		
1500	1600		USA, WYFR/Family Radio Worldwide	6280as		
			11830na	11910na	17795ca	
1500	1600		Zambia, CVC Intl/Christian Voice	6065af		
			13590af			
1505	1520	m	Austria, Radio Austria International	13775na		
1505	1530	Sat/Sun	Austria, Radio Austria International	13775na		
1505	1557		Canada, R Canada International	9515as		
			17720as	11675as		
1515	1530	twhf	Austria, Radio Austria International	13775na		
1515	1545	smtwhf	Swaziland, Trans World Radio	4760af		
			6065af			
1530	1558		Vatican City, Vatican Radio	13765eu	15235eu	
1530	1600		Germany, Adventist World Radio Europe	15225as		
1530	1600		Iran, Voice of the Islamic Rep of Iran	7375as		
			9600as			
1530	1600		Mongolia, Voice of Mongolia	12085as		
1530	1600		Sweden, Radio Sweden	11590va		
1530	1600	Sun	UK, Bible Voice BC	13590me		
1530	1600	ha	UK, Bible Voice BC	15680as		
1530	1600	mtwhf	UK, Sudan Radio Service	9840af		
1535	1600	Sat/Sun	Austria, Radio Austria International	13775na		
1540	1600	mtwhf	UK, Bible Voice BC	13590me		
1545	1600	mtwhf	Austria, Radio Austria International	13775na		
1545	1600	Sat	UK, Bible Voice BC	13590me		
1551	1600	DRM	New Zealand, Radio NZ International	6170pa		
1551	1600		New Zealand, Radio NZ International	7145pa		

1600 UTC - 12PM EDT / 11AM CDT / 9AM PDT

1600	1615		Pakistan, Radio Pakistan	9385va	11565va	
			15625af			
1600	1615	twha	UK, Bible Voice BC	13590me		
1600	1627		Czech Rep, Radio Prague	5930eu	17485af	
1600	1627		Iran, Voice of the Islamic Rep of Iran	7375as		
			9600as			
1600	1628		Vietnam, Voice of Vietnam	7220va	7280va	
			9550va	9730va		
1600	1630		Guam, KSDA/ Adventist World Radio	11805as		
			11985as			
1600	1630		Myanmar, Myanma Radio	9730do		
1600	1630		Nigeria, Voice of Nigeria/Lagos	9690af		
1600	1630	Sat/Sun	Swaziland, Trans World Radio	6065af		
1600	1630		Yemen, Rep of Yemen Radio	9780me		
1600	1645	Sun	Germany, Pan American BC	13830me		
1600	1645		USA, WYFR/Family Radio Worldwide	11830na		
			11865na			
1600	1657		Canada, R Canada International	9515as		
1600	1657		China, China Radio International	6100af		
			6180me	9570af	9760va	11900af
			11940eu	11965eu	13760eu	
1600	1658		Germany, Deutsche Welle	6170as	9540as	
			15640as			
1600	1659		Finland, Overcomer Ministries	9595me		
1600	1700		Anguilla, Worldwide Univ Network	11775am		
1600	1700		Australia, CVC International	13635as		
1600	1700		Australia, Radio Australia	5995va	6080va	

			7240as	9475va	9710pa	11660pa
1600	1700	Sat	Canada, CBC NQ SW Service	9625na		
1600	1700		Canada, CFVP Calgary AB	6030na		
1600	1700		Canada, CKZN St John's NF	6160na		
1600	1700		Canada, CKZU Vancouver BC	6160na		
1600	1700	DRM	Canada, R Canada International	9800na		
1600	1700		Costa Rica, Worldwide Univ Network	11870va		
			13750va			
1600	1700		Egypt, Radio Cairo	12170af		
1600	1700		Ethiopia, Radio Ethiopia	7165af	9560af	
1600	1700		France, Radio France International	15605af		
			17605af			
1600	1700		Italy, IRRS	9825af		
1600	1700		Malaysia, RTM/Traxx FM	7295as		
1600	1700	DRM	New Zealand, Radio NZ International	6170pa		
1600	1700		New Zealand, Radio NZ International	7145pa		
1600	1700		Nigeria, Radio Nigeria/Kaduna	4770do		
1600	1700		North Korea, Voice of Korea	9990va	11545va	
1600	1700	vl	Papua New Guinea, Wantok R. Light	7325va		
1600	1700		Russia, Voice of Russia	4975me	6070as	
			7350as	9405as	9890eu	11985va
			12055as	13855va		
1600	1700	vl	Rwanda, Radio Rwanda	6055do		
1600	1700	vl	Slovakia, Miraya FM Radio	15650af		
1600	1700	vl	Solomon Islands, SIBC	5020do	9545al	
1600	1700		South Korea, KBS World Radio	9515eu		
1600	1700		Taiwan, R Taiwan International	11550as		
			15515as			
1600	1700		Uganda, Dunamis Shortwave	4750af		
1600	1700		UK, BBC World Service	3255af	5975as	
			6190af	9625as	11920as	12095va
			15400af	15420af	17640af	17795af
			17830af	21470af		
1600	1700	Sat/Sun	UK, BBC World Service	7380af		
1600	1700	fs	UK, Bible Voice BC	13590me		
1600	1700		USA, Armed Forces Radio Network	4319usb		
			5446usb	5765usb	6350usb	7811usb
			10320usb	12133usb	13362usb	
1600	1700		USA, KWHR Naalehu HI	9930as		
1600	1700		USA, Voice of America	4930af	6080af	
			12080va	13600va	13615va	15455va
			15580af	17895va		
1600	1700		USA, WBCQ Monticello ME	9930am		
1600	1700		USA, WBOH Newport NC	5920am		
1600	1700		USA, WEWN Vandiver AL	15855as		
1600	1700		USA, WHRA Greenbush ME	17520af		
1600	1700		USA, WHRI Cypress Creek SC	9495am		
			9840na	11785am		
1600	1700		USA, WINB Red Lion PA	13570am		
1600	1700		USA, WRMI Miami FL	9955am		
1600	1700		USA, WTJC Newport NC	9370na		
1600	1700		USA, WWCR Nashville TN	9980na	12160na	
			13845na			
1600	1700		USA, WWRB Manchester TN	9385va	12180va	
1600	1700	Sun	USA, WWRB Manchester TN	11920af		
1600	1700		USA, WYFR/Family Radio Worldwide	6085ca		
			13695na	17795ca	18980va	21525af
			21455va			
1600	1700		Zambia, CVC Intl/Christian Voice	4965af		
			13590af			
1615	1629		Vatican City, Vatican Radio	5885eu	7250eu	
			9645eu	15595eu		
1615	1630	h	UK, Bible Voice BC	13590me		
1615	1645	mtwhf	Swaziland, Trans World Radio	6130af		
1615	1700	Sun	UK, BBC World Service	11860af		
1615	1700	ta	UK, Bible Voice BC	13590me		
1630	1645	h	UK, Bible Voice BC	13590me		
1630	1657		Slovakia, R Slovakia International	5920eu		
			6055eu			
1630	1700	vl	Guam, KSDA/ Adventist World Radio	11650as		
1630	1700		Nigeria, Voice of Nigeria/Lagos	15120af		
1630	1700	Sat/Sun	Swaziland, Trans World Radio	6130af		
1630	1700	Sat	UK, BBC World Service	11860af		
1640	1650	mtwhfa	Turkmenistan, Turkmen Radio	4930eu		
1645	1700		Tajikistan, Tajik Radio	7245as		

1700 UTC - 1PM EDT / 12PM CDT / 10AM PDT

1700	1705		Canada, R Canada International	9515as		
1700	1705	DRM	Canada, R Canada International	9800na		
1700	1715	t/ vl	UK, Bible Voice BC	13590me		
1700	1720	twhfa	Moldova, Radio PMR/Pridnestrovie	6235eu		
1700	1727		Czech Rep, Radio Prague	5930eu	17485af	
1700	1730		Jordan, Radio Jordan	11690na		
1700	1730	DRM	Romania, R Romania International	7460eu		
1700	1730	Sat	UK, Bible Voice BC	13590me		
1700	1730		USA, Voice of America	6080af	11835af	
			15580af			

Left Column

Start	Stop	Days	Station	Freq	Freq	Freq	Freq
1700	1730	Sat	USA, WRMI Miami FL	15650af			
1700	1740	f	Moldova, Radio PMR/Pridnestrovie	6235eu			
1700	1745		UK, BBC World Service	6005af	9410af		
1700	1755		South Africa, Channel Africa	15235af			
1700	1756		Romania, R Romania International	11735eu			
1700	1757		China, China Radio International	6100af			
				6145eu	7130as	7265me	7315me
				7335eu	9570af	9595eu	11900af
				11940eu	13760eu		
1700	1757		Netherlands, R Netherlands Worldwide	5955eu			
1700	1759		Poland, Polish Radio	7140eu	7265eu		
1700	1800		Anguilla, Worldwide Univ Network	11775am			
1700	1800		Australia, CVC International	13635as			
1700	1800		Australia, Radio Australia	5995va	6080va		
				9475as	9580va	9710as	11880as
1700	1800	Sat	Canada, CBC NQ SW Service	9625af			
1700	1800		Canada, CFVP Calgary AB	6030na			
1700	1800		Canada, CKZN St John's NF	6160na			
1700	1800		Canada, CKZU Vancouver BC	6160na			
1700	1800		Costa Rica, Worldwide Univ Network	11870va			
				13750va			
1700	1800		Egypt, Radio Cairo	12170af			
1700	1800		Equatorial Guinea, Radio Africa	15190af			
1700	1800		Italy, IRRS	9825af			
1700	1800		Malaysia, RTM/Traxx FM	7295as			
1700	1800	DRM	New Zealand, Radio NZ International	6170pa			
1700	1800		New Zealand, Radio NZ International	7145pa			
1700	1800		Nigeria, Radio Nigeria/Kaduna	4770do			
1700	1800		Nigeria, Voice of Nigeria/Lagos	15120af			
1700	1800	vl	Papua New Guinea, Wantok R. Light	7325va			
1700	1800	Sat	Russia, Voice of Russia	9820eu	9890eu		
1700	1800		Russia, Voice of Russia	4975me	7350as		
				9405as	11510af	11985af	
1700	1800	Sat/Sun	Russia, Voice of Russia	6000eu	7320eu		
				7340eu			
1700	1800	vl	Rwanda, Radio Rwanda	6055do			
1700	1800	vl	Slovakia, Miraya FM Radio	15650af			
1700	1800	vl	Solomon Islands, SIBC	5020eu	9545al		
1700	1800		Swaziland, Trans World Radio	3200af			
				9500af			
1700	1800		Taiwan, R Taiwan International	11705af			
				15690af			
1700	1800		Uganda, Dunamis Shortwave	4750af			
1700	1800		UK, BBC World Service	3255af	5975as		
				6190af	6195va	7380af	9625as
				12095af	13675af	15400af	17795af
				17830af			
1700	1800	fas	UK, Bible Voice BC	9430me	13590me		
1700	1800		USA, Armed Forces Radio Network	4319usb			
				5446usb	5765usb	6350usb	7811usb
				10320usb	12133usb	13362usb	
1700	1800		USA, KWHR Naalehu HI	9930as			
1700	1800	Sat/Sun	USA, Voice of America	15675af			
1700	1800		USA, WBCQ Monticello ME	9330am	15420am		
1700	1800		USA, WBOH Newport NC	5920am			
1700	1800		USA, WEWN Vandiver AL	15855as			
1700	1800		USA, WHRA Greenbush ME	17520af			
1700	1800		USA, WHRI Cypress Creek SC	9495am			
				9840na	11785am		
1700	1800		USA, WINB Red Lion PA	13570am			
1700	1800		USA, WRMI Miami FL	9955am			
1700	1800		USA, WTJC Newport NC	9370na			
1700	1800		USA, WWCR Nashville TN	9980na	12160na		
				13845na	15825na		
1700	1800	Sun	USA, WWRB Manchester TN	11920af			
1700	1800		USA, WWRB Manchester TN	9385va	12180va		
1700	1800		USA, WYFR/Family Radio Worldwide	13690na			
				17795ca	18980ca	21455va	
1700	1800		Zambia, CVC Intl/Christian Voice	4965af			
				13590af			
1720	1740	Sat/Sun	USA, Voice of America	4930af	11605af		
				13755af	15775af		
1730	1757		Vatican City, Vatican Radio	11625af	12765af		
				15570af			
1730	1800		Bulgaria, Radio Bulgaria	7200eu	9400eu		
1730	1800		Guam, KSDA/ Adventist World Radio	9980as			
1730	1800		Swaziland, Trans World Radio	9500af			
1730	1800	whf	Sweden, Radio Sweden	6065va			
1730	1800	mtwhf	UK, Sudan Radio Service	9840va			
1730	1800		USA, Voice of America	5980va	5995va		
				6080af	9570va	11805va	15410af
				15580af			
1730	1800	mtwhf	USA, Voice of America	4930af	11605af		
				15775af			
1745	1800		Bangladesh, Bangla Betar	7250as			
1745	1800		India, All India Radio	7410eu	9445af		
				9950eu	11620eu	11935af	13605af
				15075af	15155af	17670af	

Right Column

1800 UTC - 2PM EDT / 1PM CDT / 11AM PDT

Start	Stop	Days	Station	Freq	Freq	Freq	Freq
1800	1809		Tanzania, Tanzania Broadcasting Corp	11735af			
1800	1815	Sun	UK, Bible Voice BC	13590me			
1800	1815	Sat	UK, Bible Voice BC	11875me			
1800	1828		Vietnam, Voice of Vietnam	9765eu			
1800	1830	w	Austria, Adventist World Radio Europe	15315af			
1800	1830		Nigeria, Radio, National Svc/Abuja	7275do			
1800	1830		South Africa, AWR Africa	3215af	3345af		
				9610af			
1800	1830		UK, BBC World Service	5975as			
1800	1830	Sat	UK, Bible Voice BC	9430me	13590me		
1800	1830	Sun	UK, Bible Voice BC	6130me			
1800	1830		USA, Voice of America	6080af	15410af		
				15580af	17865af		
1800	1845	Sat	UK, Bible Voice BC	6130eu			
1800	1850	DRM	New Zealand, Radio NZ International	6170pa			
1800	1850		New Zealand, Radio NZ International	7145pa			
1800	1857		China, China Radio International	7120eu			
				9600eu	13760eu		
1800	1857		Netherlands, R Netherlands Worldwide	6020af			
				11660af	15535af		
1800	1859		Canada, R Canada International	9530af			
				11765af	17735af	17810af	
1800	1900		Anguilla, Worldwide Univ Network	11775am			
1800	1900	mtwhf	Argentina, RAE	9690am	15345am		
1800	1900		Australia, Radio Australia	6080va	7240as		
				9475va	9580as	9710as	11880as
1800	1900		Bangladesh, Bangla Betar	7250eu			
1800	1900		Canada, CFVP Calgary AB	6030na			
1800	1900		Canada, CKZN St John's NF	6160na			
1800	1900		Canada, CKZU Vancouver BC	6160na			
1800	1900		Costa Rica, Worldwide Univ Network	11870va			
				13750va			
1800	1900		Equatorial Guinea, Radio Africa	15190af			
1800	1900		India, All India Radio	7410eu	9445af		
				9950eu	11620eu	11935af	13605af
				15075af	15155af	17670af	
1800	1900	fas	Italy, IRRS	7290va			
1800	1900		Kuwait, Radio Kuwait	11990va			
1800	1900		Malaysia, RTM/Traxx FM	7295as			
1800	1900		Netherlands, R Netherlands Worldwide	7395af			
1800	1900		Nigeria, Radio Nigeria/Kaduna	4770do			
1800	1900		Nigeria, Voice of Nigeria/Lagos	15120af			
1800	1900		North Korea, Voice of Korea	3560eu	13760eu		
1800	1900	vl	Papua New Guinea, Wantok R. Light	7325va			
1800	1900		Russia, Voice of Russia	9480eu	9745af		
				9850af	9890eu		
1800	1900	vl	Rwanda, Radio Rwanda	6055do			
1800	1900	vl	Solomon Islands, SIBC	5020do	9545al		
1800	1900		South Korea, KBS World Radio	7275eu			
1800	1900		Swaziland, Trans World Radio	3200af			
				9500af			
1800	1900		Taiwan, R Taiwan International	3965eu			
1800	1900		Uganda, Dunamis Shortwave	4750af			
1800	1900		UK, BBC World Service	3255af	5895va		
				5995as	6190af	6195va	7380af
				9485as	12095af	13675va	15400af
				17795af	17830af		
1800	1900	DRM	UK, BBC World Service	5875eu			
1800	1900	Sun	UK, Bible Voice BC	9430me			
1800	1900		USA, Armed Forces Radio Network	4319usb			
				5446usb	5765usb	6350usb	7811usb
				10320usb	12133usb	13362usb	
1800	1900		USA, WBCQ Monticello ME	7415am	9330am		
				15420am			
1800	1900		USA, WBOH Newport NC	5920am			
1800	1900		USA, WEWN Vandiver AL	15855as			
1800	1900		USA, WHRA Greenbush ME	17690af			
1800	1900	mtwhf	USA, WHRI Cypress Creek SC	17520af			
1800	1900	Sat/Sun	USA, WHRI Cypress Creek SC	9495am			
1800	1900		USA, WHRI Cypress Creek SC	9840na			
				11785am			
1800	1900		USA, WINB Red Lion PA	13570am			
1800	1900		USA, WRMI Miami FL	9955am			
1800	1900		USA, WTJC Newport NC	9370na			
1800	1900		USA, WWCR Nashville TN	9980na	12160na		
				13845na	15825na		
1800	1900	Sun	USA, WWRB Manchester TN	11920af			
1800	1900		USA, WWRB Manchester TN	9385va	12180va		
1800	1900		USA, WYFR/Family Radio Worldwide	6180va			
				11775eu	13615na	13690na	13790af
				17795ca	17845af	18980va	
1800	1900		Yemen, Rep of Yemen Radio	9780me			
1800	1900		Zambia, CVC Intl/Christian Voice	4965af			
				13590af			
1820	1840	Sat/Sun	USA, Voice of America	4930af	11605af		
				15775af			

1830	1857	Slovakia, R Slovakia International	5920eu	
		6055eu		
1830	1900	Turkey, Voice of Turkey	9785eu	
1830	1900	UK, BBC World Service	6005af	9410af
1830	1900 f	UK, Bible Voice BC	9430me	
1830	1900 Sun	UK, Bible Voice BC	6130eu	
1830	1900	USA, Voice of America	4930af	6080af
		9820va	9520va	9885af	11755va
		11805va	15410af	15580af	17895af
1845	1900 mtwhfa	Albania, Radio Tirana	7430eu	13640eu
1845	1900 Sun	UK, Bible Voice BC	11830af	
1851	1900 DRM	New Zealand, Radio NZ International	9890pa	
1851	1900	New Zealand, Radio NZ International	9615pa	

1900 UTC - 3PM EDT / 2PM CDT / 12PM PDT

1900	1925	Turkey, Voice of Turkey	9785eu	
1900	1928	Vietnam, Voice of Vietnam	7280va	9730va
1900	1930	Germany, Deutsche Welle	9565va	11795af
		17860af		
1900	1930 Sun	UK, Bible Voice BC	6130eu	13710af
1900	1930 mtwhf	USA, Voice of America	11605af	15775af
1900	1935 DRM	New Zealand, Radio NZ International	9890pa	
1900	1945	India, All India Radio	7410eu	9445af
		9950eu	11620eu	11935af	13605af
		15075af	15155af	17670af	
1900	1945	USA, WYFR/Family Radio Worldwide	6085ca	
1900	1950	New Zealand, Radio NZ International	9615pa	
1900	1957	China, China Radio International	7295va	
		9435va		
1900	1957	Netherlands, R Netherlands Worldwide	5905af	
		7425af	11660af	15335af	15535af
1900	2000	Anguilla, Worldwide Univ Network	11775am	
1900	2000	Australia, Radio Australia	6080va	7240as
		9500va	9580va	9710as	11880as
1900	2000	Canada, CFVP Calgary AB	6030na	
1900	2000	Canada, CKZN St John's NF	6160na	
1900	2000	Canada, CKZU Vancouver BC		6160na
1900	2000	Costa Rica, Worldwide Univ Network	11870va	
		13750va		
1900	2000	Egypt, Radio Cairo	9300af	
1900	2000	Equatorial Guinea, Radio Africa	15190af	
1900	2000	Finland, Overcomer Ministries	6060eu	
1900	2000	Germany, The Overcomer Ministries	6175eu	
1900	2000 fas	Italy, IRRS	7290va	
1900	2000	Kuwait, Radio Kuwait	11990va	
1900	2000	Malaysia, RTM/Traxx FM	7295as	
1900	2000	Netherlands, R Netherlands Worldwide	7395af	
1900	2000	Nigeria, Radio Nigeria/Kaduna	4770do	
1900	2000	Nigeria, Voice of Nigeria/Lagos	15120af	
1900	2000	North Korea, Voice of Korea	7100af	9975va
		11535va	11910af	
1900	2000 vl	Papua New Guinea, Wantok R. Light	7325va	
1900	2000	Russia, Voice of Russia	7310eu	7195eu
		7310eu		
1900	2000 vl	Rwanda, Radio Rwanda	6055do	
1900	2000 vl	Solomon Islands, SIBC	5020do	
1900	2000	South Africa, SA Radio League	3215af	
1900	2000 mtwhf	Spain, Radio Exterior Espana	9665eu	11620af
1900	2000	Swaziland, Trans World Radio	3200af	
		9500af		
1900	2000	Thailand, Radio Thailand	7155eu	
1900	2000 vl	Uganda, UBC Radio	4976do	5026do
1900	2000	UK, BBC World Service	3255af	5875va
		5995af	6005af	6190af	9410af
		9485as	12095af	15400af	17795af
		17830af		
1900	2000 DRM	UK, BBC World Service	5875eu	
1900	2000	Ukraine, R Ukraine International	7490eu	
1900	2000	USA, Armed Forces Radio Network	4319usb	
		5446usb	5765usb	6350usb	7811usb
		10320usb	12133usb	13362usb	
1900	2000	USA, KJES Vado NM	15385na	
1900	2000	USA, Voice of America	4930af	6080af
		7480va	9670va	9885af	15410af
		15580af	17895af	
1900	2000	USA, WBCQ Monticello ME	7415am	9330am
		15420am		
1900	2000	USA, WBOH Newport NC	5920am	
1900	2000	USA, WEWN Vandiver AL	17595af	
1900	2000	USA, WHRA Greenbush ME	17690af	
1900	2000 Sat	USA, WHRI Cypress Creek SC		9495am
1900	2000	USA, WHRI Cypress Creek SC		11785am
1900	2000	USA, WINB Red Lion PA	13570am	
1900	2000	USA, WRMI Miami FL	9955am	
1900	2000	USA, WTJC Newport NC	9370am	
1900	2000	USA, WWCR Nashville TN	9980na	12160na
		13845na	15825na	

1900	2000	USA, WWRB Manchester TN	9385va	12180va
1900	2000	USA, WYFR/Family Radio Worldwide	3230af	
		6100af	9685af	9775af	11775eu
		11865af	13615na	13690ca	17795af
		17845eu	18930va	18980va	
1900	2000	Zambia, CVC Intl/Christian Voice	4965af	
		13590af		
1930	2000 fas	Germany, Pan American BC	9515va	
1930	2000	Iran, Voice of the Islamic Rep of Iran	6205eu	
		7205eu	7260af	9800af	9925af
1936	2000 DRM	New Zealand, Radio NZ International	11675pa	
1945	2000 DRM	Vatican City, Vatican Radio	9800af	
1950	2000	Vatican City, Vatican Radio	5885eu	7250eu
		9645eu		
1951	2000	New Zealand, Radio NZ International	11725pa	

2000 UTC - 4PM EDT / 3PM CDT / 1PM PDT

2000	2015 Sun	Germany, Pan American BC	9515va	
2000	2019	Vatican City, Vatican Radio	5885eu	7250eu
		9645eu		
2000	2019 DRM	Vatican City, Vatican Radio	9800na	
2000	2027	Czech Rep, Radio Prague	5930eu	11600pa
2000	2027	Iran, Voice of the Islamic Rep of Iran	6205eu	
		7205eu	7260af	9800af	9925af
2000	2027	Vatican City, Vatican Radio	7365af	9755af
		11625af		
2000	2030 mtwhfa	Albania, Radio Tirana	7465eu	13600na
2000	2030	China, China Radio International	7160eu	
2000	2030	Egypt, Radio Cairo	9300af	
2000	2030 fa	Germany, Pan American BC	9515va	
2000	2030	South Africa, AWR Africa	9655va	
2000	2030	USA, Voice of America	4930af	4940af
		6080af	15580af	17895af	
2000	2045	Swaziland, Trans World Radio	3200af	
2000	2045	USA, WYFR/Family Radio Worldwide	17750eu	
2000	2050	New Zealand, Radio NZ International	11725pa	
2000	2050 DRM	New Zealand, Radio NZ International	11675pa	
2000	2057	China, China Radio International	5960eu	
		5985af	7190eu	7285eu	7295va
		9440va	9660eu	
2000	2057	Germany, Deutsche Welle	6150af	11795af
		11865af	15205af	
2000	2057	Netherlands, R Netherlands Worldwide	5905af	
		7425af	17810af	
2000	2059	Canada, R Canada International	11765af	
		13650af	15235af	17735af	
2000	2059	Finland, Overcomer Ministries	6060eu	
2000	2100	Anguilla, Worldwide Univ Network	11775am	
2000	2100	Australia, ABC NT Alice Springs	2310do	
		4835do		
2000	2100	Australia, ABC NT Katherine	2485do	
2000	2100	Australia, ABC NT Tennant Creek	2325do	
2000	2100 Sat/Sun	Australia, Radio Australia	6080va	7240as
		12080as		
2000	2100	Australia, Radio Australia	9500va	11650as
		11660pa	11880as	
2000	2100	Belarus, Radio Minsk	7105eu	7360eu
		7390eu		
2000	2100	Canada, CFVP Calgary AB	6030na	
2000	2100	Canada, CKZN St John's NF	6160na	
2000	2100	Canada, CKZU Vancouver BC		6160na
2000	2100	Costa Rica, Worldwide Univ Network	13750va	
2000	2100	Equatorial Guinea, Radio Africa	15190af	
2000	2100	Germany, The Overcomer Ministries	5995eu	
		6175eu		
2000	2100	Kuwait, Radio Kuwait	11990va	
2000	2100 vl	Liberia, ELWA	4760do	
2000	2100	Malaysia, RTM/Traxx FM	7295as	
2000	2100	Netherlands, R Netherlands Worldwide	6020af	
2000	2100	Nigeria, Radio Nigeria/Kaduna	4770do	
2000	2100	Nigeria, Voice of Nigeria/Lagos	15120af	
2000	2100 vl	Papua New Guinea, R East New Britain	3385do	
2000	2100 vl	Papua New Guinea, Wantok R. Light	7325va	
2000	2100	Russia, Voice of Russia	7195eu	9890eu
2000	2100 vl	Rwanda, Radio Rwanda	6055do	
2000	2100	South Africa, Channel Africa	3345af	
2000	2100 mtwhf	Spain, Radio Exterior Espana	9665eu	11620af
2000	2100 vl	Uganda, UBC Radio	4976do	5026do
2000	2100	UK, BBC World Service	3255af	5875va
		6005af	6190af	9410af	12095af
		13820af	15400af	17830af	
2000	2100 DRM	UK, BBC World Service	5875eu	
2000	2100	USA, Armed Forces Radio Network	4319usb	
		5446usb	5765usb	6350usb	7811usb
		10320usb	12133usb	13362usb	
2000	2100	USA, WBCQ Monticello ME	7415am	9330am
		15420am		

2000	2100		USA, WBOH Newport NC	5920am
2000	2100		USA, WEWN Vandiver AL	17595af
2000	2100	mtwhf	USA, WHRA Greenbush ME	7520va
2000	2100	Sat/Sun	USA, WHRA Greenbush ME	11885va
2000	2100	f	USA, WHRI Cypress Creek SC	17650am
2000	2100asmtwh		USA, WHRI Cypress Creek SC	9495am
2000	2100		USA, WINB Red Lion PA	13570am
2000	2100		USA, WRMI Miami FL	9955am
2000	2100		USA, WTJC Newport NC	9370na
2000	2100		USA, WWCR Nashville TN	9980na 12160na
			13845na 15825na	
2000	2100	Sun	USA, WWRB Manchester TN	11920af
2000	2100		USA, WWRB Manchester TN	9385va 12180va
2000	2100		USA, WYFR/Family Radio Worldwide	7430eu
			9485af 9625af 9635af 11970eu	
			13625af 17725sa 17795ca 17845af	
			18910va	
2000	2100		Zambia, CVC Intl/Christian Voice	4965af
			13590af	
2005	2100		Syria, Radio Damascus	9330eu
2030	2045		Thailand, Radio Thailand	9680eu
2030	2056		Romania, R Romania International	9515eu
			11940na 15465na	
2030	2058		Vietnam, Voice of Vietnam	7220va 7280va
			9550va 9730va	
2030	2100		Cuba, Radio Havana Cuba	9505va 11760va
2030	2100		Netherlands, R Netherlands Worldwide	7395af
2030	2100		Sweden, Radio Sweden	7395va
2030	2100		Turkey, Voice of Turkey	7170va
2030	2100		USA, Voice of America	4930af 6080af
			7555as 15580af 17895af	
2030	2100	Sat/Sun	USA, Voice of America	11720af
2045	2100		India, All India Radio	7410eu 9445eu
			9910pa 9950eu 11620va 11715pa	
2051	2100		New Zealand, Radio NZ International	15720pa
2051	2100	DRM	New Zealand, Radio NZ International	13730pa

2100 UTC - 5PM EDT / 4PM CDT / 2PM PDT

2100	2125		Turkey, Voice of Turkey	7170pa
2100	2127		China, China Radio International	11640af
			13630af	
2100	2130		Australia, ABC NT Katherine 2485do	
2100	2130		Australia, ABC NT Tennant Creek	2325do
2100	2130		Austria, Adventist World Radio Europe	11955af
2100	2130	Sat	Canada, CBC NQ SW Service	9625na
2100	2130		Cuba, Radio Havana Cuba	9505va 11760va
2100	2130		Nigeria, Radio, National Svc/Abuja	7275do
2100	2130		South Africa, AWR Africa	11955af
2100	2130		South Korea, KBS World Radio	3955eu
2100	2145		USA, WYFR/Family Radio Worldwide	13615na
			13690na 17795ca 18980va	
2100	2157		China, China Radio International	5960eu
			6135eu 7190eu 7285eu 7325af	
			9600eu	
2100	2200		Angola, Radio Nacional de Angola	7217do
2100	2200		Anguilla, Worldwide Univ Network	11775am
2100	2200		Australia, ABC NT Alice Springs	2310do
			4835do	
2100	2200		Australia, Radio Australia	9500as 9660as
			11650pa 11660pa 11695as 12080as	
			13630as 15515as	
2100	2200		Belarus, Radio Minsk	7105eu 7390eu
2100	2200		Bulgaria, Radio Bulgaria	5900eu 9700eu
2100	2200		Canada, CFVP Calgary AB	6030na
2100	2200		Canada, CKZN St John's NF	6160na
2100	2200		Canada, CKZU Vancouver BC	6160na
2100	2200		Costa Rica, Worldwide Univ Network	13750va
2100	2200		Equatorial Guinea, Radio Africa	15190af
2100	2200		Germany, Deutsche Welle	9735af 11865af
			15205af	
2100	2200		Germany, The Overcomer Ministries	5995eu
2100	2200		Guyana, Voice of Guyana	3291do 5950do
2100	2200		India, All India Radio	7410eu 9445eu
			9950pa 11620eu	
2100	2200	vl	Liberia, ELWA	4760do
2100	2200		Malaysia, RTM/Traxx FM	7295as
2100	2200		New Zealand, Radio NZ International	15720pa
2100	2200	DRM	New Zealand, Radio NZ International	13730pa
2100	2200		Nigeria, Radio Nigeria/Kaduna	4770do
2100	2200		Nigeria, Voice of Nigeria/Lagos	7255af
2100	2200		North Korea, Voice of Korea	7560eu 13760eu
			15245eu	
2100	2200	vl	Papua New Guinea, Wantok R. Light	7325va
2100	2200		South Africa, Channel Africa 3345af	
2100	2200	Sat/Sun	Spain, Radio Exterior Espana	9840va
2100	2200		Syria, Radio Damascus	9330eu
2100	2200		UK, BBC World Service	3255af 3915as

			5875va 5905as 6005af 6190af	
			6195as 7120af 15400af	
2100	2200	DRM	UK, BBC World Service	5875eu
2100	2200		Ukraine, R Ukraine International	7510eu
2100	2200		USA, Armed Forces Radio Network	4319usb
			5446usb 5765usb 6350usb 7811usb	
			10320usb 12133usb 13362usb	
2100	2200		USA, Voice of America	6080af 7555as
			15580af	
2100	2200		USA, WBCQ Monticello ME	7415am 9330am
			15420am	
2100	2200		USA, WBOH Newport NC	5920am
2100	2200		USA, WEWN Vandiver AL	17595af
2100	2200		USA, WHRA Greenbush ME	11885va
2100	2200		USA, WHRI Cypress Creek SC	11785am
			15665na	
2100	2200		USA, WINB Red Lion PA	13570am
2100	2200		USA, WRMI Miami FL	9955am
2100	2200		USA, WTJC Newport NC	9370na
2100	2200		USA, WWCR Nashville TN	7465na 9980na
			12160na 13845na	
2100	2200	Sun	USA, WWRB Manchester TN	11920af
2100	2200		USA, WWRB Manchester TN	9385va 12180va
2100	2200		USA, WYFR/Family Radio Worldwide	3230af
			7430eu 11565eu 17845af	
2100	2200		Zambia, CVC Intl/Christian Voice	4965af
2115	2200		Egypt, Radio Cairo	11550eu
2130	2157		Czech Rep, Radio Prague	9410af 11600na
2130	2200		Australia, ABC NT Katherine 5025do	
2130	2200		Australia, ABC NT Tennant Creek	4910do
2130	2200	mtwhfa	Canada, CBC NQ SW Service	9625na
2130	2200		Guam, KSDA/ Adventist World Radio	11850as
2130	2200		Lithuania, Mighty KBC Radio 6055eu	
2130	2200		Netherlands, R Netherlands Worldwide	7420pa
2130	2200		Sweden, Radio Sweden	6065va 7420pa

2200 UTC - 6PM EDT / 5PM CDT / 3PM PDT

2200	2210		Syria, Radio Damascus	9330eu
2200	2220		Japan, NHK World/Radio Japan	13640as
2200	2229		Lithuania, Mighty KBC Radio 6055eu	
2200	2230		India, All India Radio	9910pa 11620pa
			11715pa	
2200	2235		New Zealand, Radio NZ International	15720pa
2200	2245		Egypt, Radio Cairo	11550eu
2200	2245		USA, WYFR/Family Radio Worldwide	15770af
2200	2255		Turkey, Voice of Turkey	6195va
2200	2256		Romania, R Romania International	7185eu
			9675eu 9790na	
2200	2257		China, China Radio International	7175eu
2200	2300		Anguilla, Worldwide Univ Network	6090am
2200	2300		Australia, ABC NT Alice Springs	2310do
			4835do	
2200	2300		Australia, ABC NT Katherine 5025do	
2200	2300		Australia, ABC NT Tennant Creek	4910do
2200	2300		Australia, Radio Australia	11840va 12010va
			13630pa 15230va 15240pa 15515as	
			17785pa	
2200	2300	smtwhf	Canada, CBC NQ SW Service	9625na
2200	2300		Canada, CFVP Calgary AB	6030na
2200	2300		Canada, CKZN St John's NF	6160na
2200	2300		Canada, CKZU Vancouver BC	6160na
2200	2300		China, China Radio International	9590as
2200	2300		Costa Rica, Worldwide Univ Network	13750va
2200	2300		Equatorial Guinea, Radio Africa	15190af
2200	2300		Guyana, Voice of Guyana	3291do
2200	2300	vl	Liberia, ELWA	4760do
2200	2300		Malaysia, RTM/Traxx FM	7295as
2200	2300	DRM	New Zealand, Radio NZ International	13730pa
2200	2300		Nigeria, Radio Nigeria/Kaduna	4770do
2200	2300		Nigeria, Voice of Nigeria/Lagos	7255af
2200	2300	vl	Papua New Guinea, Wantok R. Light	7325va
2200	2300		Taiwan, R Taiwan International	9355eu
2200	2300		UK, BBC World Service	5905as 5975as
			6005af 6195as 9740as 12095af	
			15400af	
2200	2300		USA, Armed Forces Radio Network	4319usb
			5446usb 5765usb 6350usb 7811usb	
			10320usb 12133usb 13362usb	
2200	2300		USA, Voice of America	5895va 7120va
			7460va 7555as 9415va 11725va	
			15185va	
2200	2300		USA, WBCQ Monticello ME	7415am 9330am
2200	2300		USA, WBOH Newport NC	5920am
2200	2300		USA, WEWN Vandiver AL	15665af
2200	2300		USA, WHRA Greenbush ME	11855va
2200	2300		USA, WHRI Cypress Creek SC	7385na
			9615na 11785am	

2200	2300		USA, WINB Red Lion PA	9265am	
2200	2300		USA, WRMI Miami FL	9955am	
2200	2300		USA, WTJC Newport NC	9370na	
2200	2300		USA, WWCR Nashville TN	5070na	7465na
			9980na	13845na	
2200	2300		USA, WWRB Manchester TN	5050va	6890va
			9385va	12180va	
2200	2300		USA, WYFR/Family Radio Worldwide	5950na	
			11740na	15440na	
2200	2300		Zambia, CVC Intl/Christian Voice	4965af	
2230	2257		Czech Rep, Radio Prague	7345na	9415na
2230	2300		Guam, KSDA/ Adventist World Radio	15320as	
2230	2300	DRM	Sweden, Radio Sweden	9800na	
2230	2300		USA, Voice of America	9570va	11705va
			15145va		
2236	2300		New Zealand, Radio NZ International	15720pa	
2245	2300		India, All India Radio	9705eu	9950as
			11620as	11645as	13605as

2300 UTC - 7PM EDT / 6PM CDT / 4PM PDT

2300	0000		Anguilla, Worldwide Univ Network	6090am	
2300	0000		Australia, ABC NT Alice Springs	2310do	
			4835do		
2300	0000		Australia, ABC NT Katherine	5025do	
2300	0000		Australia, ABC NT Tennant Creek	4910do	
2300	0000		Australia, Radio Australia	9660as	11840va
			12010pa	12080pa	13690va	15230va
			15240pa	15560va	17785pa	17795va
2300	0000		Bulgaria, Radio Bulgaria	9700na	11700na
2300	0000	smtwhf	Canada, CBC NQ SW Service	9625na	
2300	0000		Canada, CFVP Calgary AB	6030na	
2300	0000		Canada, CKZN St John's NF	6160na	
2300	0000		Canada, CKZU Vancouver BC	6160na	
2300	0000		China, China Radio International	5915as	
			5990am	6145na	7180as	9460as
			11690as	11970ca		
2300	0000	DRM	China, China Radio International	9800ca	
2300	0000		Costa Rica, Worldwide Univ Network	13750va	
2300	0000		Cuba, Radio Havana Cuba	9505am	9550am
2300	0000		Egypt, Radio Cairo	9280na	
2300	0000		Guyana, Voice of Guyana	3291do	
2300	0000		India, All India Radio	9950as	11645as
			13605as		
2300	0000		Malaysia, RTM/Traxx FM	7295as	
2300	0000	DRM	New Zealand, Radio NZ International	13730pa	
2300	0000		New Zealand, Radio NZ International	15720pa	
2300	0000	vl	Papua New Guinea, Wantok R. Light	7325va	
2300	0000		UK, BBC World Service	3915as	5965as
			6195as	9740as	9885as	11850as
			12010as			
2300	0000		USA, Armed Forces Radio Network	4319usb	
			5446usb	5765usb	6350usb	7811usb
			10320usb	12133usb	13362usb	
2300	0000		USA, Voice of America	5895va	7120va
			7555as	9415va	9570va	11725va
			13755va	15145va	15185va	
2300	0000		USA, WBCQ Monticello ME	7415am	9330am
2300	0000		USA, WBOH Newport NC	5920am	
2300	0000		USA, WEWN Vandiver AL	15665af	
2300	0000		USA, WHRA Greenbush ME	5850eu	
2300	0000		USA, WHRI Cypress Creek SC	7315na	
			9615na	11785am	
2300	0000	mtwhfa	USA, WHRI Cypress Creek SC	11785na	
2300	0000		USA, WHRI Cypress Creek SC	7315am	
2300	0000		USA, WRMI Miami FL	9955am	
2300	0000		USA, WTJC Newport NC	9370na	
2300	0000		USA, WWCR Nashville TN	5070na	7465na
			9980na	13845na	
2300	0000		USA, WWRB Manchester TN	5050na	6890va
			9385va	12180va	
2300	0000		USA, WYFR/Family Radio Worldwide	5950na	
			15255sa	17750sa	
2300	0000		Zambia, CVC Intl/Christian Voice	4965af	
2300	2305	vl	Liberia, ELWA	4760do	
2300	2315		Nigeria, Radio Nigeria/Kaduna	4770do	
2300	2327		Vatican City, Vatican Radio	9600va	12035va
2300	2330		Australia, Radio Australia	15240pa	
2300	2345		USA, WYFR/Family Radio Worldwide	11740na	
2305	0000	twhfa	Canada, R Canada International	6100na	
2305	0000	Sun	Greece, Voice of Greece	7475eu	9420eu
2315	2330	vl	Croatia, Croatian Radio	9925na	
2330	0000		Australia, Radio Australia	15415as	17750va
2330	0000		Lithuania, Radio Vilnius	9875na	
2330	0000		UK, BBC World Service	9580as	
2330	0000		USA, Voice of America	7350va	9570va
			13755va	15145va	15340va
2330	2358		Vietnam, Voice of Vietnam	9840as	12020as

USAF Trunk System Goes Online

A new USAF Space Command trunk radio system has been activated at bases in the western U.S. in the last few months. Bases in both Colorado and California have been observed to be part of this new 380-400 MHz trunk radio system.

The first part of this system began operations in Colorado in May 2007. According to Air Force Space Command (AFSPC) officials in Colorado, this new LMR System is critical to ensuring local Air Force bases meet their Department of Defense mission. The system will eliminate current communication gaps in the Colorado Springs area.

"This system is important to both the military and civilian communities," said Col. Fred Mooney, AFSPC chief, Network and Information Services Division. "Not only will it improve communications on and between the bases, it will also facilitate interoperability with first responders, such as medical, fire and police with whom we have mutual aid agreements."

AFSPC began testing the new system in late November 2006, which made the news when many garage door openers in the local area were affected.

U.S. Air Force Space Command LMR Trunk System
System ID: 157
P25 WACN: BEE00 NAC: 150
Base Frequency: 382.5625
Step: 12.5 kHz   Offset: 8192

Frequencies:
101   406.1500/415.1500
      407.5625/416.5625
      408.0875/417.0875
      408.1625/417.1625
      408.5625/417.5625
      409.3125/418.3125c
      409.3500/418.3500
      409.5125/418.5125c [Peterson AFB CO]
104   406.5625/415.5625
      407.8875/416.8875c
      408.3625/417.3625
      409.2750/418.2750
      409.9625/418.9625 [Peterson AFB area]
105   386.2750/396.2750c
      387.4750/397.4750
      387.5750/397.5750
      387.7000/397.7000 [Peterson AFB area]
106   385.2125/395.2125c
      386.0125/396.0125
      386.1250/396.1250
      386.2250/396.2250
      386.3750/396.3750
      386.4500/396.4500
      386.4875/396.4875

      386.5875/396.5875
      386.6500/396.8500
      386.7000/396.7000
      386.8125/396.8125
      386.8500/396.8500 [Vandenberg AFB Air Terminal]
107   386.0750/396.07750
      386.1375/396.1375c
      386.2250/396.2250
      386.2875/396.2875 [Los Angeles AFB]
160   385.0625/395.0625c Vandenberg AFB area]
161   386.0375/396.0375c
      386.2500/396.2500c
      386.4500/396.4500
      386.6500/396.6500
      386.8500/396.8500 [Vandenberg AFB area]
162   386.0500/396.0500c
      386.2625/396.2625c
      386.4625/396.4625
      386.6625/396.6625 [Vandenberg AFB area]
170   385.0875/395.0875c
      385.3250/395.3250
      385.7250/395.7250
      385.8750/395.8750 [Fort MacArthur]

Talkgroups:
1	Peterson AFB Security Forces
89	Peterson AFB 302AMS
92	Peterson AFB 302AW Command Post
40001	Peterson AFB Security Forces (Encrypted) <Channel 1>
40002	Peterson AFB Security Forces (Encrypted) <Channel 2>
40016	Peterson AFB Fire Department
40017	Peterson AFB Fire Tactical
40134	Peterson AFB Fuels Branch
40150	Peterson AFB Alarm Maintenance
45002	Vandenberg AFB Military Police Dispatch
45014	Vandenberg AFB Military Police Operations
45016	Vandenberg AFB Military Police Tactical
45017	Vandenberg AFB/Unknown usage
45019	Vandenberg AFB/Unknown usage
45027	Vandenberg AFB Fire Department Operations
45028	Vandenberg AFB Fire Department Operations
45029	Vandenberg AFB Rescue
45030	Vandenberg AFB Rescue
45033	Vandenberg AFB Radio Technicians
45034	Vandenberg AFB Radio Technicians
45038	Vandenberg AFB/Unknown usage
45050	Vandenberg AFB Utility
45051	Vandenberg AFB Electrical Systems
45054	Vandenberg AFB/Unknown usage
45096	Vandenberg AFB Transportation Operations
45115	Vandenberg AFB Ranch
45122	Vandenberg AFB Aircraft Maintenance
45124	Vandenberg AFB Aircraft Maintenance

45165	Vandenberg AFB Transportation Dispatch
45209	Vandenberg AFB/Unknown usage
45226	Vandenberg AFB/Unknown usage
45227	Vandenberg AFB/Unknown usage
45228	Vandenberg AFB/Unknown usage
45229	Vandenberg AFB/Unknown usage
45527	Vandenberg AFB Maintenance (tentative)
46000	Los Angeles AFB/Fort MacArthur Security Forces
46001	Los Angeles AFB/Fort MacArthur Security Forces Primary
46016	Los Angeles AFB/Fort MacArthur Maintenance
46017	Los Angeles AFB/Fort MacArthur Maintenance

Many thanks to the AFSPC Public Affairs and Brian Bills in San Diego for passing along the particulars and keeping us updated on this new military trunk radio system.

❖ Monitoring the Military Command Post

It is the heart of all operations on a military base; on most bases it is the place where people go for information; and it is an entity that can be monitored via radio. It is the base command post.

"We are the eyes and ears of the base," said Airman 1st Class Kevin Preston Jr., an emergency action controller at Cannon Air Force Base, NM. "Anything that happens on the base, we are the central focal point for – attacks, (in-flight emergencies and) ground emergencies."

The command post has several functions, including tracking and reporting on incoming and outgoing flights. The first contact an inbound aircraft makes is to call the command post and report fuel loads, plus any changes in flight schedule or load. The command post controllers will then pass this information along to people at the air terminal operations center and the aircraft maintainers on the parking ramp. This helps everyone prepare for the aircraft's arrival.

Command post controllers are also responsible for compiling the daily situation report as well as operational reports, in the case of a serious incident such as a death or aircraft accident. These reports keep senior leaders at all levels informed of events.

While the U.S. Air Force is the primary user of the command post concept, the other military services have their own equivalents to the Air Force command post. In addition to the individual unit air-to-ground frequencies, the U.S. Navy uses base operations frequencies at

most of their bases. The U.S. Army equivalent is usually identified as an "operations" frequency for the major unit(s) hosted on their airfields.

So, where can you monitor military command post communications? Here is our latest list of command posts and callsigns (Command and Control or C2) compiled from official government publications/listings. (All frequencies are MHz unless otherwise indicated). Our exclusive listings of these command and control frequencies and callsigns will be continued in the next *Milcom* column. Until then, 73 and good hunting.

Military Command and Control Frequencies/Callsigns

Abraham Lincoln Capital Airport, IL	ANG Operations 272.175
Abrams Muni, MI	NG Operations 41.850 122.700 241.000
Akron-Canton Regional, OH	NG Operations 40.100 138.550 226.900
Albany Intl, NY	NG Operations 41.000 122.775 255.800
Albuquerque Intl Sunport, NM	AMC Command Post 349.400
Altus AFB, OK	ACC Command Post 311.000 321.000
	AMC Command Post 6761.0 kHz (USB) 349.400 (Geronimo)
	Airfield Management Operations 372.200 (AM Ops)
Andrews AFB, MD	Command Post 141.550 349.400 378.100
	89AW/1HS Command Post 141.700 292.200 (Mussel Ops)
	ANG Operations 314.250 (201st) 234.800 (113th)
	AF Reserve Operations 143.800 351.200
Arcata, CA	CG Air Operations 3120.0 kHz (USB) 5696.0 kHz (USB) 345.000 (Humbolt Air)
Arnold AFB, TN	Operations 127.450 (Arnold Ops)
Atlantic City, NJ	ANG Operations 138.125 261.000 (Devil Ops)
Augusta Regional, GA	Army Operations 49.900 149.700
Austin Bergstrom Intl, TX	NG Operations 36.800 241.800
Bangor Intl, ME	ANG Operations 6761.0 kHz (USB) 311.000
	NG Operations 41.200
Barksdale AFB, LA	ACC Command Post 311.000 321.000 (Raymond 6)
Barnes Muni, MA	NG Operations 46.750 123.050 356.300 (Minutemen)
	ANG Operations 303.000 (Hawk Ops)
Beale AFB, CA	Wing Command Post 311.000 321.000
	940th Command Post 256.025 (Tahoe Control)
Beaufort MCAS, SC	Base Operations 281.800
Biggs AAF (Fort Bliss), TX	NG Operations 49.950 143.125
Birmingham Intl, AL	ANG Operations 11217.0 kHz (USB) 287.300 (Dixie Control)
	NG Operations 38.700 125.525
Bismarck Muni, ND	NG Operations 49.800 134.100 340.100
Boise Air Terminal, ID	ANG Operations 6751.0 kHz (USB) 298.700 308.800
	NG Operations 41.500 142.200 266.200
Boone Muni, IA	ANG Operations 36.700 123.450 280.800
Bradley Intl, CT	NG Operations 41.900 139.200 139.400 243.900 265.600 (Fury Ops)
	ANG Operations 138.550 349.700 (Shark Ops)
Brunswick NAS, ME	Operations (Navy Universal A/G) 6723.0 kHz (USB)
Base Operations 257.500	
Buckley AFB, CO	NG Operations 46.900 149.100 308.100 (Blackjack Xray/Ops)
Burlington Intl, VT	ANG Operations 125.125 293.700 (Maple Ops)
	NG Operations 41.200 123.050
Butts AAF (Fort Carson), CO	Operations/PTD 141.150
Cairns AAF (Fort Rucker), AL	Operations 126.200 371.350
Camp Pendleton MCAS, CA	Base Operations 265.000
Cannon AFB, NM	Command Post 11175.0 kHz (USB) 311.000 (Raymond 07)
Capitol City Airport, IL	NG Operations 41.150 122.800 139.350 226.600
Cecil Field, FL	NG Operations 40.900 139.300 248.200
	Boeing Operations 123.475 264.650 (Boeing Air Ops)
Central Nebraska Regional, NE	NG Operations 38.000 123.075 242.400
Charleston AFB, SC	Base Operations 134.100 255.500 (Have Quick Timing) 349.400 (Palmetto Ops)
Charlotte Douglas Intl, NC	Base Operations/ANG Command Post 292.000 (Newsreel)
Cherry Point MCAS, NC	Base Operations 126.200 305.700
	NADEP Base 383.400 (Camel Base)
Cheyenne Regional, WY	ANG Command Post/Operations 225.525 383.300 (Cowboy Ops)
	NG Operations 126.200 (Steamboat)
Chicago Midway Intl, IL	NG Operations 47.000 123.050 242.400
City of Colorado Springs Muni, CO	Command Post 318.050 328.025 (Knight Ops)
	AF Reserve Operations 298.400 (High Country Control)
Columbia Owens Downtown, SC	Army Operations 32.900 122.800
Concord Muni, NH	NG Operations 32.100 123.050 255.800
Corpus Christi NAS, TX	Army Operations 49.700 139.200 386.600 (Xray Charlie)
	Base Operations 7965.0 kHz (USB) 346.650
	CG Operations 3123.0 5696.0 8984.0 11201.0 kHz (USB) 345.000 (Corpus Air)
Dahlgren Surface Warfare Center, VA	Operations 120.150 126.200 340.200 (Dahlgren Ops)
Dane Co Regional, WI	ANG Operations 138.250 392.200 (Badger Ops)
	NG Operations 40.800 123.400 299.900
Davenport Muni, IA	NG Operations 36.700 142.600 143.250 231.550
Davis Monthan AFB, AZ	Command Post 381.300 (Raymond 08)
Davison AAF (Fort Belvoir), VA	Base Operations 34.100 139.400
	NG Operations 52.750
Des Moines Intl, IA	ANG Operations 138.150 252.900 (Hawki Ops)
Dobbins ARB, GA	94AW Command Post 379.525 (Dapper Dan)
	NG Operations 47.000
	Navy Base Operations 340.200
Dover AFB, DE	Command Post 134.100 349.400
Duke Field, FL	Command Post 150.600 225.750 (Sandcastle)
Duluth Intl, MN	ANG Command Post 6735.0 kHz (LSB) 288.900
Dyess AFB, TX	ACC Command Post 311.000 321.000 (Raymond 37)
	AMC Command Post 349.400
Eagle Co Regional, CO	NG Command Post 41.750 118.800 169.275 172.8750 230.800 (Eagle Nest)
Eastern Oregon Regional, OR	NG Operations 40.900 241.600
Eastern WV Regional, WV	ANG Command Post 297.000 (Pikeside Control)
Edwards AFB, CA	AFFTC Command Post 304.000 (Conform)
	NASA Flight Operations 135.825 373.150
Eglin AFB, FL	Command Post 318.050 328.025 (Raymond 11)
Elizabeth City CGAS, NC	CG Air Operations 345.000 (Elizabeth City Air)
Ellington Field, TX	Command Post 142.200 261.800 (Lone Star)
	NG Operations 41.000
	ANG Operations 142.200 288.500 (Texan Ops)
	CG Air Operations 345.000 (Ellington Air)
Ellsworth AFB, SD	Command Post 287.700 (Have Quick Timing) 311.000 321.000 (Raymond 33)
Esler Regional, LA	NG Operations 40.900 141.450 304.400
Fairchild AFB, WA	ANG Operations 293.700 (Expo Ops)
	Command Post 311.000 321.000 (Strikehawk)
Fallon NAS, NV	Base Operations 238.000
Felker AAF (Fort Eustis), VA	Base Operations 134.100
Forbes Field, KS	NG Operations 41.700 304.600
	ANG Operations 286.500 (Wylie Ops)
Fort Smith Regional, AR	ANG Operations 268.100
Fort Wayne Intl, IN	ANG Command Post/Operations 138.400 289.300 (Snake Pit)
Fort Worth NAS/JRB, TX	Base Operations 291.775
	ANG Operations 291.775
Lockheed Operations	284.100 292.500
Francis S. Gabreski, NY	ANG Operations 287.500 (Rescue Ops)
Fresno Yosemite Intl, CA	NG Operations 40.950 132.000 255.800 (Shark Ops)
	ANG Operations 138.150 298.300 (Griffin Ops)
General Mitchell Intl, WI	ANG Command Post 6761.0 kHz (USB) 311.000 321.000 (Upset Control)
Godman AAF, KY	Base Operations 126.200 234.400
Grand Forks AFB, ND	Command Post 311.000 321.000
Gray AAF (Fort Lewis), WA	Army Operations 32.300 36.100 37.700
	NG Operations 32.600
Greater Peoria Regional, IL	ANG Operations 141.550 286.500 (Torch Ops)
	NG Operations 32.300 141.150 280.900
Greater Rochester Intl, NY	NG Operations 41.000 242.400
Great Falls Intl, MT	ANG Operations/Maintenance 288.900
Grissom ARB, IN	AF Reserve Command Post 252.100 311.000 321.000 (Brickyard)
Groton New London, CT	NG Operations 126.200 304.600
Gulfport-Biloxi Intl, MS	ANG Operations 377.800
	NG Operations 41.600 241.000
Hagerstown Regional, MD	Army Operations 32.300
Hammond Northshore Regional, LA	NG Operations 32.900 141.350 228.600
Harrisburg Intl, PA	ANG Operations 395.100 (Baton Ops)
Hawkins Field, MS	NG Operations 139.050
Hector Intl, ND	ANG Operations 262.000
Helena Regional, MT	NG Operations 40.650 126.200 321.450
Hernando County, FL	NG Operations 40.900 241.000
Hill AFB, UT	ACC Command Post 381.3 (Raymond 23/Convoy)
Holloman AFB, NM	ACC Command Post 381.300 (Raymond 14)
Homestead ARB, FL	AF Reserve Command Post 252.100 (Reef Control)
Hunter AAF, GA	NG Operations 38.150 139.400
	CG Air Operations 345.000 (Savannah Air)
Hurlburt Field, FL	Command Post 143.000 251.250 (Chindit Ops)

Continued next month

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www

The US Coast Guard Auxiliary

In the May 2008 *Fed Files* column, we listed the new narrowband Coast Guard VHF land mobile channel plan. This month we will explore the channels used by the Coast Guard Auxiliary.

The Coast Guard Auxiliary is the uniformed civilian arm of the United States Coast Guard. The Coast Guard Auxiliary was created in 1939 and supports the Coast Guard in missions not involving law enforcement. It is primarily involved with marine safety and training for everyone who works or plays on the water. More information can be found at the Coast Guard Auxiliary web page, **http://nws.cgaux.org/index.html**.

The CG Auxiliary has five VHF channels that are allocated to their exclusive use. These are in use everywhere in the US and are, or should be, narrow-band FM. All frequencies listed are in Megahertz (MHz):

138.4750
142.8250
143.4750
149.2000
150.7000

Here are some older Coast Guard Auxiliary allocations that may or may not still be in use:

143.2875
143.8000
148.3000
149.9500

As with all Coast Guard operations, keep an ear on the regular VHF marine channels, especially those allocated for Coast Guard use:

157.0500 – Marine 21A
157.0750 – Marine 81A - CG Auxiliary
157.1000 – Marine 22A
157.1250 – Marine 82A
57.1500 – Marine 23A
157.1750 – Marine 83A

We have received some information on confirmed repeaters in use by the Coast Guard Auxiliary in various areas of the country. Here are some of the locations:

150.7000, 167.9 pl Albany, NY
150.7000, 103.5 pl Boston-North Amesbury, MA
150.7000, 114.8 pl Lake Norman, NC
150.7000, 127.3 pl Lake George, NY
150.7000, 186.2 pl Ossining Area, NY
150.7000, 118.8 pl New Haven Area, CT
150.7000, 151.4 pl Montauk, NY
150.7000, 136.5 pl Farmingdale, NY
150.7000, 131.8 pl NYC Area, NY
150.7000, 88.5 pl   Manasquan Area, NJ
150.7000, 100.0 pl Manasquan, DE
150.7000   Lake Shasta, CA
150.7000, 136.5 pl Santiago Peak, CA
150.7000, 186.2 pl Southern California

If you have any information on Coast Guard Auxiliary radio systems that you listen to in your area and want to pass along, feel free to send it to *Monitoring Times* and *The Fed Files*.

❖ New Coast Guard UHF Channels?

There is a document available on the Internet that lists some specific requirements for the electronics and communications systems on a US Coast Guard Response Boat Medium (RB-M). The document can be found here: **http://project-test.net/sections/Section_J/J2_Specification_sec4.doc**

On page 16, there is a table listing the technical requirements for the HF, VHF and UHF radios on board. The specifications for the VHF and UHF radios state that they should be capable of OTAR (Over-The-Air Re-Keying) and AES-OFB and DES-OFB encryption capable, as well as APCO-25 compliant. The document also lists three UHF FM channels that are requested be programmed in the radio upon delivery. They are listed as:

USCG Channel 1   412.9750 MHz
USCG Channel 2   411.7875 MHz
USCG Channel 3   413.0250 MHz

These three frequencies have not been previously noted as being used by the Coast Guard. Even though the Coast Guard has a large number of federal UHF channels allocated to them, not many listeners have reported activity on any of these channels. Here is a listing of previously known UHF assignments to the Coast Guard:

406.5000	406.5625	406.5750	406.6000
406.8000	406.8125	406.9750	407.6250
407.9250	407.9750	408.4000	409.0000
409.1875	409.2000	409.3500	409.8250
410.0250	410.3750	411.3750	413.0375
414.7625	415.6250	415.7750	415.8250
415.9250	416.2250	416.3875	416.4750
416.5500	416.5750	416.5875	416.6000
416.6375	416.7000	416.7125	416.8500
416.9250	416.9375	417.0000	418.3500
418.4375	418.4500	419.1250	419.6000
419.6500	419.8000	419.8250	419.8500
419.9750			

Some Coast Guard fixed base facilities are known to use 406-420 MHz channels for base operations or alerting. But use of any of these UHF frequencies by aircraft or boats and ships has not been reported in the past. So pop these frequencies in to your scanner if you are near any Coast Guard activity and let us know if you hear anything.

❖ Coast Guard VHF "NET" Numbers

I recently had a chance to make a visit to the Portsmouth Naval Yards in Portsmouth, NH. During my scanning visit, I caught quite a bit of radio traffic on some of the new USCG narrowband channels that were published in the May 2008 *Fed Files* column. The traffic was between the Coast Guard Cutter *Thunder Bay* (WTGB108), the Cutter *Shackle* (WYTL 65609) and some Marine Safety and Security Teams (MSST) that were providing security to the Portsmouth yards.

The two cutters were communicating with each other on 164.3125 MHz, P-25 digital, which appears on the new CG channel list as CG-15. However, the users of this frequency often referred to it as "CG NET 115," which may indicate that this channel may be programmed as Zone 1, Channel 15 in the CG radios. I have heard from listeners in other areas of the country and they have indicated that other Coast Guard users are referring to these new channels as "Net 112" or "Net 105," etc. It appears that the old "LANT" reference to these frequencies has been officially eliminated.

And as a side note, there were a lot of busy radio frequencies to monitor in the Portsmouth area. One very active entity was the "Unified Command Post" that did radio net check-ins on several frequencies, including 162.2500 MHz, 167.1000 MHz and possibly others.

❖ Federal Frequency Sources

In several previous *Fed Files* columns we have talked about some possible sources for federal frequency listings. Unfortunately, there are very few published lists or books that contain current federal frequency lists for everywhere in the country. Many web sites contain lists that are old or of questionable origin, but there are some that try to keep things up to date. In many cases, you are still going to have to search the airwaves yourself to find out what federal frequencies are being used in your area. But it helps to get a baseline of what might be out there, so here are a few places to look.

First off, check out the frequency informa-tion available from Grove Enterprises at **www. grove-ent.com**. The *Grove Master Frequency File* CD-ROM (item SFT-35) offers both military and federal frequency listings. The federal frequency allocation listing is a great roadmap for figuring out where to look for an agency or to help identify an unknown frequency.

Of course, the Radio Reference web site (**www.radioreference.com**) is a good place to have a look when searching for new federal activity in your area. Check not only the frequency database, but also look into the state and federal monitoring forums. The down side of the Radio Reference site is that the database is only as up to date as the information that is submitted by listeners.

A long time contributor to *Monitoring Times* and *Satellite Times* magazines, John Wilson is offering his *W4UVV Virginia Frequency Guide* on CD-ROM. The frequency guide contains over 90,000 listings and covers all services, including aviation, business, marine, military, public safety and federal frequencies for the state of Virginia. John Wilson's CD-ROM is a wealth of information for the Washington DC area as well. He can be contacted at **W4UVV@ AMSAT.COM** for ordering information.

Another vendor that has some great regional frequency books is Scanner Stuff, **www.scannerstuff.com/**. Scanner Stuff offers regional frequency directories for the western areas of the United States as well as the state of Georgia. These directories feature local government, public safety and some federal listings. Again, these listings are as accurate as the information that is provided by listeners in these areas.

And don't forget to check out this column in *Monitoring Times* as well as the Fed Files Blog - **http://mt-fedfiles.blogspot.com/** for federal frequencies and updates!

❖ New Secret Service channels?

Recently I received reports of some "new" Secret Service frequencies being used in the Indianapolis area during campaign visits by both Barack Obama and Hillary Clinton. It was theorized that all the travels and political activities in the area were taxing the number of radio channels available for the protective details. Now that the dust has settled, it appears that those reports were premature.

The frequency of 165.4250 MHz was reported back during the campaign visits as a P-25 frequency that seemed to be used by some of the Secret Service details. However, this frequency continues to be used on a daily basis long after the Secret Service details have left. Although I haven't confirmed the specific agency, the frequency is used by some Veterans Affairs Medical Centers in Indiana and I suspect that may be who the user is.

The apparent need for additional radio channels for the Secret Service also raised questions. As reported in a previous *Fed Files* column, the Secret Service has quite a few radio frequencies that it has access to as needed. You can check them out here, **http://mt-fedfiles. blogspot.com/2008/02/secret-service-fre-quency-list.html**.

These are certainly NOT all the frequencies the Secret Service will ever use, but they have a pattern of using many of the same frequencies for several years now. New frequencies are certainly possible, and if reports come in of new frequencies in use, we'll pass them along.

This can be used as another lesson in successful federal monitoring. Although logging active frequencies is a big part of the hobby, actually listening and identifying the users can sometimes be difficult. But keep searching and keep trying!

❖ Political Convention Previews

When you are reading this column in *Monitoring Times*, we should be ramping up to the political conventions in Denver, Colorado, and Saint Paul, Minnesota. I have attended a media "Walk Through" of the convention facilities that will be used by the news media for coverage of the events. Both conventions should provide a wealth of monitoring targets: not only federal activity but news media and local public safety and security.

As with past conventions, news media use of the radio spectrum will be at an all time high with all sorts of wireless devices used for coverage. There should be a lot to listen to and I will pass along what I can in a follow-up column and on the *Fed Files* blog. So we will see you in November!

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Rail Transit New Target for Listeners

Rail transit is booming in North America. Many factors have come together to bring this about, but no segment of rail transit is growing faster than urban light rail, which we will focus on in this month's text and photos.

Highways are increasingly congested, and government officials at all levels are aware that they cannot build their way out of this situation by continuously adding more and more lanes. Meanwhile, the price of fuel has forced commuters to look at alternative modes of public transportation, including transit where it is available.

An increasing awareness of air quality and global warming issues has focused on the fact that rail transit is more environmentally friendly, particularly where the rail equipment is electrically powered.

And, most of all, as I pointed out in a recent article for a transit trade magazine, cities with any kind of interest in new rail transit can now look at a variety of successful rail transit operations around the country. While a few cities have long had rail transit, such as New York's subways, many other cities that had streetcars at the beginning of the 20th century, had dismantled and abandoned them by mid century.

On the other hand, anyone who traveled to Europe in the second half of the 20th century came back with one major impression: how easy it is to get around by public transportation.

Charlotte, NC's Lynx light rail system is one of the newest in the country, having opened in November of 2007. Here a single-car train is headed toward the city center. The Lynx system uses Charlotte's municipal trunked system for communications.

Europe's streetcar systems remained in place and were substantially modernized and expanded after WW II.

❖ Passenger Rail Modes

So, this is a good point at which to look at the major subcategories of passenger rail transport. Keep in mind that what follows are general characteristics of each mode for the sake of discussion. There are no hard boundaries, and some newer types of rail operations straddle the boundaries between modes.

Light rail:

The modern successor to the streetcar, typically operates at street level, though some route segments may be in tunnels or elevated. Equipment is electrically powered from overhead wires. The rail system may have some street running (where tracks are set into streets and equipment operates in mixed traffic with road vehicles) or it may operate on its own right of way – or a combination of both.

Heavy rail:

This sector includes subways and elevated lines (such as in Chicago). Equipment is typically powered from a third rail. Subway equipment is often low profile to minimize the cost of tunnel construction. Though normally standard gauge – San Francisco's BART is an exception – the systems are not suited for the operation of freight or intercity rail equipment, primarily because of clearance issues.

Commuter rail:

This is regional rail transportation, operating primarily on existing freight rail and intercity passenger rail lines for morning and evening rush hour travel. Equipment has dense seating where capacity is more important than passenger comfort. Chicago's Metra and Washington, D.C.'s Virginia Railway Express are examples of this service.

Intercity rail:

These are long-distance passenger trains that operate between major cities and across long distances. Compared to commuter rail, seating is much more spacious and other amenities may be offered, such as food services and sleeping cabins.

High-speed passenger rail:

Here we are talking about passenger trains operating (or capable of operating) at speeds above 150 miles per hour. To achieve these speeds the trains need dedicated rights of way not shared by other types of rail traffic. However, these trains are still capable of operating in and out of cities on existing rail lines and serving existing stations. In the U.S., the Acela service on the Northeast Corridor between Washington, D.C., and Boston just barely qualifies. European examples include the French TGV and German ICE trains.

For a more detailed look at the characteristics and differences of the various modes, see the following page on my Web site: **www.robl.w1.com/Transport/modes.htm**

❖ Does the Mode Matter?

If, as a scanner listener, you have mainly concerned yourself with monitoring railroad operations in North America, things have been fairly simple. By and large, railroads will always use one of the Association of American Railroads (AAR)-assigned frequencies.

There are a few exceptions, primarily tourist lines not connected with or normally interchanging equipment with the national rail system. But, when a major railroad buys a new locomotive, it has to be equipped with an "all-channel" radio, so that it can operate on any of the major railroads in the country.

Intercity passenger trains use the same rails as freight trains, so these trains, too – Amtrak in the U.S. and VIA in Canada – also have to have radios with all AAR frequencies. And the same is true of commuter train operations.

But when you get to light or heavy rail, all bets are off.

These systems may use the AAR frequencies (rare), or they may use UHF or VHF municipal government frequencies. In the latter categories, you can have both simple systems and trunked systems that share frequencies with other urban agencies.

❖ Time Separation

For safety reasons, federal regulations prohibit operation of light rail equipment on lines with freight or intercity passenger equipment. Transit equipment that is sturdy enough to meet the specifications of the Federal Railway Administration (FRA) is described as FRA compliant. (Most European countries have had no problems with operating lighter equipment on standard railroad lines.)

But, what's worth noting is that some light rail transit systems were built in corridors that

The San Diego Trolley was a pioneer in modern American light rail – and the system has continued to grow over the years. Here a three-car train (seen from the upper levels of a hotel near the route) is inbound to downtown San Diego from San Ysidro at the border with Mexico. This is the San Diego's original light rail line which opened in 1981. The system uses standard AAR railroad frequencies for communications. A few miles of San Diego Trolley tracks are used to reach railroad freight customers late at night.

were former freight lines – and where one or two customers are still dependent on railroad service. The solution is time separation.

The freight equipment only comes onto the line after the transit system has shut down for the night. So, on some transit systems, such as the San Diego Trolley, you will find a diesel pulling freight cars in the very early hours of the morning.

This may also be the reason why the San Diego Trolley system, a pioneer in modern American light rail and now one of the largest light rail operations in the country, chose to go with AAR radio channels. This is in contrast to the Charlotte, N.C., Lynx light rail system, which opened in November of 2007 and opted to tie into the city's existing trunked communications system.

When *Monitoring Times* reports on frequencies in use in a particular urban area, the reports usually include the local rail transit system, if there is one. And, of course, you can check **RadioReference.com** for frequencies in use on transit systems in various regions.

The growing number of new and expanding light rail systems in major metropolitan areas provides new opportunities for scanner listeners. Though light rail trains operate on set routes on fixed patterns, operations don't always come off as planned – and that's where radio communications are not only vital but also make fascinating monitoring.

❖ Code Circuits

A reader asked why so-called code circuits which operated railroad signals in the past (now primarily operated by digital radio) usually consisted of at least three wires. Once, poles with a multitude of wires were a common sight alongside most major rail lines.

The reason you need at least three wires to a given location is that you had a line for outbound signals that told the signal what aspect to display or to remotely set a switch, an inbound line for the remote location to report back status, and a common ground. Contrary to phone lines, you needed one circuit for communication in each direction.

The many wires alongside railroad lines were a nightmare to maintain, being vulnerable to storm damage and other problems. The ability to multiplex many phone lines onto one circuit and other technical advances did away with the need for these wires.

Many railroads have granted easements to telecommunication companies to run fiber optic cables on the railroad right of way. In some cases, the railroads tie into these communication cables for their own communication needs.

❖ Bi-Directions and Fail Safe

The creators of the very first railroad centralized traffic control (CTC) systems realized that these systems needed to communicate bi-directionally. Not only did dispatchers need to set signals and throw switches, but they also needed to be able to see track occupancy and to be able to verify that a switch had actually thrown to the position designated – and that a signal now displayed the proper indication.

Railroads pioneered the concept of "fail safe." That term is often misused or misunderstood. On its simplest level, fail safe means that if something goes wrong, the system will fail to the safest mode.

Here's a simple illustration: Crossing gates work off track circuits. A train occupying the tracks closes the circuit and activates the gates and crossing signals. But, if the logic circuits in the field encounter problems or if the electric power to the field location fails, the backup batteries will close the gates. In the aftermath of a storm that cut the power supply, you will find unhappy motorists encountering closed gates at railroad crossings – but that's better than motorists encountering a train at a crossing where the grade crossing protection is not working.

Similarly, if a remote signal location loses power or communication with the dispatcher, the signals will go to red (stop). If radio communications are still available, a dispatcher can authorize a train to pass a red signal – at reduced speed. But, again that's better than an inappropriate green signal authorizing movement into an occupied section of track.

When a dispatcher sets up a route that involves both lining switches and setting signals, the CTC system first moves the switches and waits for confirmation that the switches are now in the correct position – then it sets the signals authorizing the train to proceed through the route.

Field logic circuits also override the instructions from the dispatch center. A broken rail or occupied track will set the signal authorizing movement into that segment of track to red – even if the dispatcher had authorized movement.

Although today most dispatchers work with displays on computer screens, you will still hear them talk to signal maintainers in the field, telling them "I have a track light at [location]." That means that the dispatcher is getting an unanticipated track occupancy indication at that location – which on older dispatching systems would have been indicated by an actual bulb lit on a display panel.

This sign, photographed in 1992 in Baltimore, is also highly symbolic, as light rail transit has been on an upsurge in the U.S. in the last two decades.

Any number of factors, including a loose connection, broken rail, or something fouling the track (and closing the circuit) could cause the "track light." Again, if the system encounters problems, it fails in a safe mode, assuming that the track is occupied or broken and not allowing movements.

Next time

Next time, we'll look at radio use at railroad museums, railroad related historic sites, and on tourist lines.

Salt Lake City is also home to one of the fastest growing light rail systems in the U.S. This system uses UHF frequencies in a non-trunked system.

BELOW 500 kHz

DXING THE BASEMENT BAND

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New England Update

This month we have an updated list of New England beacons compiled by frequent contributor Bob Fraser (ME), who used the FAA *Airport Facility Directory* as his main resource. This is intended as a follow-up to the listings presented in the March issue of this column. In many cases, the name of the air facility served by the beacon is listed along with the city of operation.

How many of these stations can you hear?

CONNECTICUT
244	HF	Hartford
257	TBY	Waterbury
362	OX	Oxford/Waterbury
388	BD	Windsor Locks

DELAWARE
248	IL	Wilmington

MAINE
216	LRG	Lincoln
221	RQM	Rangeley
227	BG	Bangor
227	SZO	Sebago/Fryburg
236	XQA	Squaw/Greenville
240	LE	Lewiston
257	FVE	Frenchville
260	EPM	Eastport
272	OLD	Old Town
278	BST	Belfast
278	PQ	Presque Isle
330	BH	Bar Harbor
334	RM	Rockland
344	LNT	Milnot/Millinocket
348	BUP	Burnham/Pittsfield
349	SF	Sanford
356	SUH	Spruce Head/Rockland
366	AU	Augusta
394	PW	Portland
399	PL	Bracey/Waterville
407	ISS	Wiscasset

MARYLAND
212	ESN	Easton
232	MX	Zoote/Andrews AFB
260	BUH	Anne Arundel
278	SB	Colbe/Salisbury
317	CBE	Cumberland
342	MTN	Martin State/Baltimore
349	APG	Aberdeen
355	CGE	Cambridge
360	RW	Kirbe/Andrews AFB
371	FND	Baltimore
385	GAI	Gaithersburg
400	NHR	Patuxent NAS
407	OX	Ocean City

DIST. OF COLUMBIA
323	GTN	Georgetown
332	DC	Oxonn/Ronald Reagan
346	IA	Tille/Dulles

MASSACHUSETTS
205	ORE	Orange
220	IHM	Mansfield
227	TAN	Taunton
230	BA	Westfield
248	AC	Nantucket
251	SKR	Shaker Hill/Bedford
257	FFF	Plymouth
269	TOF	Topsfield
274	EW	New Bedford
279	CQX	Chatham
279	RS	Dunca/Worcester
332	BE	Bedds/Stow
342	HY	Hyannis
346	LI	Hull/Logan
362	FMH	Otis ANG
365	FIT	Fitchburg
368	IMR	Marshfield
370	DXT	Dalton/Pittsfield
375	BO	Milton/Logan
382	LQ	Lynn/Logan
389	PVC	Provincetown
395	GBR	Great Barrington
397	OW	Norwood
402	LW	Lawrence
417	EK	Gozzr/Worcester

NEW HAMPSHIRE
209	MJ	Manchester
216	CO	Concord
233	CNH	Claremont
260	ESG	Rollins/Rochester
276	LAH	Lebanon
281	HXK	Berlin
328	LC	Laconia
349	SF	Sanfo/Rochester
359	AS	Nashua
379	IVY	White River
389	GMA	Whitefield

RHODE ISLAND
341	SFZ	Pawtucket
335	PV	Rench/Providence
356	AR	Armin/Providence

VERMONT
221	DYO	Rutland
224	VWD	West River
242	EFK	Newport
265	SXD	Springfield
268	VKN	Mt. Mansfield/Barre
353	LLX	Lyndonville
375	JRV	Morrisville
382	BT	Burlington

Bob notes that when 216/BID (Block Island, RI) was still on the air, he heard it almost daily at a range of about 130 miles – mostly over land! BID is gone now, but with almost 100 beacons still active in the New England region, there's a good chance you can hear at least a few of these stations, even with modest receiving equipment.

❖ Mapping Out Your DX

Often, Federal Aviation Administration beacons will be identified with only a "name," not the actual town or city of the station. A case in point is OGY/414 kHz. It is listed in some publications as "Bridge NDB, NY, NY." The name "Bridge" does not give you much useful information, but the listing also includes geographic coordinates, which are useful if you know how to apply them.

In the old days (*i.e.*, pre-Internet/pre-GPS) you'd need to obtain a U.S. Geologic Survey map of the area and cross-reference the coordinates to get an exact fix for the station. Now, several online tools can do the job for you.

One especially useful site may be found at: **www.artscipub.com/repeaters/maplatlong. asp**. After entering the coordinates, a detailed map appears, and it allows you to zoom in on the image to pinpoint the location. You can even get a "bird's eye" aerial view of the location in many cases. The information on the site is primarily geared toward U.S. and Canadian locations, and can be a very useful tool for serious DXers.

Figure 1. SXD/265 kHz is a well maintained site in Springfield, VT

Figure 2. Aquameter 705 DFing Receiver

❖ Homing In

Whether you're interested in tracking down local beacons, avoiding interference, or just appreciate using gear that is designed for use on the high seas, a DFing receiver is a good way to go. These units, once a mainstay of modern marine navigation, have been turning up at hamfests for very reasonable prices. The photo in Figure 2 shows a model I was able to find at a local hamfest. The price? Just $30, and mine is in better shape than ones I typically see on the used market.

Want to know more about DF receivers, or what models are available? An excellent place to start is the Radio Direction Finder page at **www. angelfire.com/space/proto57/rdf.html**. This site shows an amazing variety of receivers, some quite rare. How many of these beauties have you seen at your local hamfests?

❖ Elmira (NY) Hamfest

Next to the Rochester Hamfest, one of my favorite radio events in Upstate NY is the Elmira Hamfest held each September. The event is sponsored by ARAST – Amateur Radio Association of the Southern Tier, and will be held this year on September 27th from 8 a.m. to 2 p.m. at the Chemung County Fairgrounds in Horseheads, NY. There is a good-sized flea market, a large indoor area, plenty of food, good door prizes, and many other activities to enjoy. If you live within reasonable driving range of Elmira, I highly recommend checking it out. More information can be found on the group's website at **www.arast.org/index. php?pr=Home_Page**.

See you next month!

Commentary on Pirate Flame War

Certainly the biggest pirate radio news of 2008 has been a flame war that has broken out among some of the pirate broadcasters. A tiny handful of individuals have taken it upon themselves to publicize alleged names and addresses of pirate radio operators. Sometimes they have done this during pirate broadcasts on the shortwave bands. Other tactics in use have been the posting on internet web sites and Usenet message threads of names and addresses of individuals who allegedly operate pirate stations.

The unprecedented public campaign to accuse individuals of operating pirate radio stations has spread widely among the pirate radio community during 2008. Once one station or one individual attempts to "out" a pirate operator, other stations and individuals have counterattacked by broadcasting obscene programming directed personally at the offending individual.

This odd behavior has continued at a mild level throughout 2008. But, it reached a fever pitch during the summer. Some of the pirate stations logged by *Monitoring Times* readers this month were primarily programs that were produced to attack individuals who have been involved in the newfound flame war within the pirate radio subculture in North America.

This situation has not only lowered the general standard of quality in pirate radio program production, but it has also inflamed emotions among many individuals who have been involved in this unhealthy situation.

Monitoring Times cannot confirm that any of the individuals mentioned in the public flame war are actually individuals who operate pirate radio stations. Some individuals probably are pirate operators, while others are probably not. The practice of public accusations that other individuals are violating federal laws by operating an unlicensed broadcasting station is clearly a harmful behavior on the part of *every* radio hobbyist who has been involved in the snowballing flame war.

As usual, neither *Monitoring Times* nor Grove Enterprises endorses or advocates for behavior that is in violation of any law. But, issues such as this one are far outside the normal bounds of human decency that should motivate all of us in the fascinating hobby of monitoring radio communications. *All* of the individuals involved in the pirate radio flame war have chosen tactics that go beyond generally accepted behavior in the United States of America.

There is nothing wrong with humor programming on the radio. Indeed, many pirates have repeatedly made fun of your columnist George Zeller, sometimes by airing his public speeches with some clever editing to change the content of the speech. Broadcasts of this nature were clever, funny, and highly original. But, there is definitely something wrong when the hottest new pirate programming format is malicious attacks on other DXers. Several individuals in the radio monitoring hobby need to take a look in the mirror to ensure that they are not exceeding the normal bounds of human decency that is expected of all citizens in the United States of America and in Canada. Such behavior should cease.

❖ A Better Way

As we see here this month, Bram Stoker at **Radio Azteca** has shown that even tasteless humor about DXers and DXing can be entertaining. He's been doing it properly for decades, and over 800 DXers have his QSL as proof.
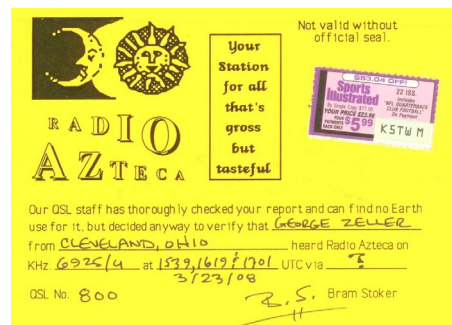
❖ What We Are Hearing

Monitoring Times readers heard more than thirty different pirate radio stations this month. You can hear them, too, if you use some simple techniques. Pirate radio stations never use regularly announced schedules, but shortwave pirate broadcasting increases noticeably on weekends and major holidays. You sometimes have to tune your dial up and down through the pirate radio band to find the stations, but more than 95% of all North American shortwave pirate broadcasts are heard on **6925 kHz**, plus or minus 30 or 40 kHz.

Captain Morgan- Classic rock music mixed with audio from the old Outer Limits television show is their well-established format. (None, send loggings to the Free Radio Network web site)

Channel Z Radio- Their free form progressive rock uses a slogan of "The Only Channel that You'll Ever Need." (Blue Ridge Summit and *channelzradio@gmail.com*)

Chris the Pirate Radio Critic- This new station apparently has no purpose other than to make profane remarks and scurrilous charges against Dxers. (None)

Conelrad Radio- Their air raid sirens recreate the old civil defense radio system in the United States. (None)

Hey Joe Radio WHJR- Both their slogan and their programming format are "Hey Joe All the Time." (*heyjoe6925@gmail.com*)

Hobart Radio International Relay- This obscure internet station has a podcast that has received pirate relays lately. The podcast has a web site at **www.dx.hriradio.org/** but, other than that, little is known about them. (None)

International Shortwave- Little is known about this apparently new station. They feature rock music. (None)

Liquid Radio- Their contemporary rock music now comes complete with an address. (*wwrbfm@gmail.com*)

MAC Radio- Their oldies rock format has expanded into classic rock, using various frequencies such as 3275, 6850, 6925 and 6950 kHz. (*macshortwave@yahoo.com*)

Maple Leaf Radio- With the Canadian National Anthem as their interval signal, most of their shows feature music by Canadian artists. (*radio.mapleleaf@gmail.com*)

Mash Up Radio- They now supplement their rock music with ads promoting the Commander Bunny for President campaign. (None announced)

Northwoods Radio- Their classic rock music "from the Great Lakes" involves a loon call interval signal. (*northwoodsradio@yahoo.com*)

Not the BBC- They use the same instrumental theme song that the **BBC** uses, but other than that their ID makes it clear that they are not the **BBC**. (None)

Radio Appalachia- They combine country and Appalachian music, as the Voice of the Ohio Valley from Moundsville, WV. (None)

Radio First Termer- This entertaining documentary about radio stations that broadcast to USA troops during the Vietnam War continues to generate occasional pirate relays. (None announced)

Radio Jamba International- Their rock music and comedy is a good example of the classic pirate radio format. They occasionally appear via a **WBCQ** relay. (Belfast)

Radio Free Speech- Bill O. Rights mixes rock music and comedy with his advocacy for freedom and the USA constitution. (Belfast)

Radio Pigmeat International- Most of their shows are rock music productions that have nothing to do with pork. (None announced)

Relaxation Radio- Ancient pop tunes such as Mr. Sandman are a fixture here. (None)

Real Pirate Radio- They have been mixing rock music with endorsements for Commander Bunny, but we know little about them. (None)

Robot Radio- The robots generate the programming here including a computer voice that sings "A Bicycle Built for Two." (None)

Sycko Radio- Normally this now-veteran pirate produces rock music broadcasts. (*syckoradio@yahoo.com*)

The Crystal Ship- The "Voice of the Blue States Republic" with The Poet is still on variable frequencies such as 5385 and 6700 kHz with classic rock music and left wing political commentary. (Belfast and *tcsshortwave@yahoo.com*)

The Hole- This new pirate programs a wide mix of rock, folk, and novelty music. (*kahn@whoever.com*)

The Wave- Relatively brief classic rock music shows are their usual format. (Belfast)

Voice of Prozac- This rock music station tries to calm you down. (*voiceofprozac@yahoo.com*)

WBNY- Commander Bunny combines a clandestine parody Rodent Revolution format with his ongoing campaign for President. (Belfast and *rodentrevolutionhq@yahoo.com*)

Wolverine Radio- Classic rock and comedy productions

Communications? or Technology?

If you ever want to get a good round of discussion going at your next ham club meeting, start off by asking people to decide if amateur radio is a communications hobby or a technology hobby. This should get quite a few people stirred up and lead to some further discussion about the direction our hobby has taken in recent years.

While all of this exchange is backing and forthing, be prepared to throw in one more zinger from the sidelines. Regardless of which position you take on the above, all should agree that amateur radio is also an information gathering and management hobby. No matter why you enjoy amateur radio, no matter how you think ham radio should be promoted to the general public with respect to growth, a big part of the hobby is keeping track of the fun along the way.

I have been in this hobby long enough to remember the days when amateur (and of course, commercial) radio stations were required to keep detailed log books. At any time, the FCC could ask for a gander at your logs, and it was well worth your while (and your license) to have things up to date and in good order. Deregulation relaxed this expectation, but most serious hams still keep good records for tracking contacts and QSLs for various awards, as well as for general bragging rights. This process has evolved, for many of us, from simple paper logs to, in some cases, very sophisticated computer-based logging tools.

If your ham radio tendencies lean toward operating mobile or portable, keeping all this log information sorted out demands compact, easy to use, and most importantly, easy to carry systems. As I began to think this through, I realized that my own experience in portable data management has evolved over the years. The rise of information technology has done many things to help the ham radio effort. Let me walk you through a few of my personal experiences to help you see that we are living in the greatest age to be a ham ever!

❖ The ARRL Mini Logbook

Any ham "of a certain age" can remember filling these little log books up as they drove around during the early years of ham radio repeater systems. You will still find the mini log book available for one simple reason: It works! We have a lot of great technology and you can bet I will be touting the advantages of same as I work through this column. That said, a Mini Log Book and a couple of pens fit in a back pack and you would be hard pressed to find anything lighter or easier to use. The only power required to keep it operating would be the muscles in your fingers that generate the writing.

While I have moved on to more technologically advanced ways of keeping track of stuff on the road or in the woods, I still carry a *Mini Log Book* and pencils (pens leak) as a back up system.

❖ The Poqet PC

The Poqet PC was ahead of its time. First sold in 1989 for $2000, the units were eventually selling on the surplus market for around $50 after Fujitsu Ltd. acquired the parent company and discontinued the unit. Measuring a mere 8.8" x 4.3" x 1" and weighing in at only 1.2 lbs with its two AA batteries installed, this "sub notebook" had a 7 MHz 80C88 CPU and 640 KB of RAM. Not a lot to go on by today's standards, but more than enough to run DOS 3 (remember DOS?) and many of the tightly written programs of that text based era.

What really made this unit revolutionary was that it stored information on two PCMCIA SRAM Cards, still a viable data medium that can be read by many modern PC card readers. As the Poqet began to sell at discount prices, it became the darling of the QRP portable set. I picked up a pair of them from a surplus electronics dealer in my area and they both still work great after years of hard use in the field.

Many full featured DOS based logging programs run on the Poqet with room to spare. I ran a DOS version of LOGEQF (**http://eqf-software.com/**) with great results. Hams have also used the Poqet for control applications. I even wrote a number of my *MT* columns in years past on my Poquet when I was traveling. If you want a basic tool for electronic logging in the field with minimal power consumption and lots of potential, do some searching on the Web. Poqets can still be found at reasonable prices and there are even user groups, many made up of hams, to help you along the way.

If you have an interest in this minimalist, ultraportable PC you may want to check out the Poquet PC support site at **www.bmason.com/PoqetPC/** Also, the NJQRP Club has a great Poquet page at **www.njqrp.org/poqetpc/index.html**

❖ The Palm PDA

Always looking for something smaller and more versatile for field operations, many hams turned to the Palm "Personal Digital Assistant." Designed mainly for business use as a personal information manager (PIM), hams found dozens of ways to use these shirt-pocket-sized personal computers.

In addition to making a great platform for basic logging and information management (with programs such as HamPilot), folks wrote dozens of programs to practice Morse code, calculate RCL Circuits, propagation analysis, grid square and great circle calculations. People even developed radio control applications and terminal emulators for this device. I have used a Palm when playing radio on long distance bicycling trips. Its small size and light weight makes it a great accessory for cyclists or light weight backpacking.

Early generation Palms can be found for less than $20 on the used market, making them a desirable tool for hams on a budget. A great list of the many programs available for hams on the

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Palm platform can be found at Pete VA3PKH's Web site at **www.qsl.net/va3pkh/palm-ham.html**

❖ The ASUS EEEPC

Which brings us to the next generation, and something I see as being the immediate future of portable personal computing. I just added an ASUS EEEPC to my portable/mobile equipment compliment. The ASUS EEEPC systems hit the market right at the end of 2007. I like to think of it as my old Poqet on steroids.

It is a full-featured PC measuring 8.9" × 6.5" × 1.4" and weighing in at touch under 2 lbs. It has a 900 MHz Intel Celeron processor. (Quite a power jump from the 7 MHz Poqet, huh?) The version I own has 2 GB SSD of local storage, three USB ports, a VGA display port, and SD Card slot. The unit comes preloaded with Linux (Xandros distribution) and popular browser, document management, and other applications (Firefox, Open Office, etc.). It also has 10/100 MB Ethernet connectivity as well as 802.11b&g wireless connectivity.

So what makes this so special and revolutionary? Wireless connective sub notebooks may reflect the future practical use of personal computers for the majority of users, especially ham radio operators. You may have heard of the term "Cloud Computing." This is a developing notion in the PC/Internet world, but on a practical level, it simply means that you no longer store the bulk of your information on your PC. Rather, you place it in secured storage out on the Internet, either through a purchased service or a free-to-use system such as Googledocs. You free up your computer from primary storage tasks, instead reaching out to the Web as needed. Grant it, 2 Gigs of primary storage is nothing to sneeze at and the option of more storage in the form of SD cards and USB Flash drives means you can still carry a lot of information with you if you so desire.

Let me give you a practical example of how I use this new toy to play ham radio. As I have mentioned in past columns, I do my logging by way of a database/spreadsheet system of my own devising, written originally in Microsoft Access, but recently converted to a Microsoft Excel spreadsheet. I have uploaded my log files to a server I maintain, and I can reach out and download them as needed, work on them in Open Office, and then put them back out in "The Cloud" for future use. All I need to find is a wireless "hot spot" to work with my files.

Okay, so what happens when I am out in the woods and away from the internet? I simply work locally and then merge my logs when I get back to civilization.

I can carry around an enormous amount of computing power that I can apply to any number of amateur radio applications and support and maintain off-site storage from anywhere on the planet.

Hams have only just begun to plumb the depths of the EEEPC waters. If the tenacious development cycle that gave birth to ham use of the Poqet and the Palm are any indication, my Asus is going to be quite the ham radio tool in very short order.

Other computer companies (most notably Dell) are developing advanced subnotebooks to compete with the ASUS EEEPC's popularity. These are exciting times to be a ham. It's always an exciting time to be a ham!

❖ Book of the Month

HANDS-ON RADIO EXPERIMENTS
H. WARD SILVER N0AX
ARRL Order # 1255
$19.95
The American Radio Relay League
225 Main Street
Newington, CT 06111-1494
www.arrl.org/shop
1-888-277-5289

Over the years, it seems, all too many hams have entered our ranks with a very limited understanding of the basic electronic principals behind the radios they talk into. It would seem that we have moved away from the learning and experimenting that I always found to be the most fun part of amateur radio. Over the years a few greats in the hobby tried to keep the building and experimenting aspects of the hobby in the forefront. Few were better at this than the late great Doug DeMaw W1FB, Bill Orr W6SAI, and Wes Hayward W7ZOI.

Beginning in 2003, in *QST Magazine*, I was glad to see another ham trying to bring a sound basic understanding of radio electronics to the general amateur radio populace. It was then that H. Ward Silver N0AX began his "Hands On Radio" column. Each month readers would be presented with a short parts list and a suggested list of test gear that could be brought together to conduct a series of experiments in various basic radio principals.

For those of us who like to play with radio, it was a great excuse to break out the junk box and the breadboard and review some of the systems and circuits that make radio work. We also got to wrap our mind around some math we may not have played with since high school or college. Each month's experiment laid out terms to learn, background material, and then you got to get your hands dirty playing with parts and ideas. The column would also include further recommended reading and always ended with the parts list for next month's experiments.

Well, if you have not had the pleasure of following along with the "Hands-On Radio" column to date, here is your chance to catch up and have a lot of fun. The ARRL has compiled the first 61 columns into a book that belongs on any radio experimenter's workbench. The experiments do not appear in their original order. Rather, they are grouped together in logical subsections that make for a better overall learning experience.

Trust me on this one: you will get way more than the cover price back in basic knowledge of the radio art.

Have fun! I will see you on the bottom end of 40 meters.

Outer Limits continued from page 59

are heard on this one. (None announced)

WHYP- James Brownyard recreates the old ma and pop MW station from North East, PA. He does it with considerable pirate comedy material. (*whypradio@gmail.com*)

WKLH Relay- Somebody has occasionally been relaying programming from this Milwaukee FM rock music station. (None)

WTCR- With a slogan of "Twentieth Century Radio," they play mainly rock music from the 1900s. Sometimes they feature other musical styles from the same era. (Belfast)

❖ QSLing Pirates

Reception reports to pirate stations require three first class stamps for USA maildrops or $2 US to foreign locations. The cash defrays postage for mail forwarding and a souvenir QSL to your mailbox. Letters go to these addresses, identified above in parentheses: PO Box 1, Belfast, NY 14711; PO Box 109, Blue Ridge Summit, PA 17214; PO Box 146, Stoneham, MA 02180; and PO Box 293, Merlin, Ontario N0P 1W0. PO Box 69, Elkhorn, NE 68022 is no longer a valid address, although a few pirates announce it, and some claim to still be getting replies through it.

Some pirates prefer e-mail, bulletin logs or internet web site reports instead of snail mail correspondence. The best bulletin for submitting pirate loggings with a hope that pirates might QSL is now the e-mailed *Free Radio Weekly* newsletter, still free to contributors via freeradioweekly@gmail.com. A few pirates will sometimes QSL reports left on the outstanding Free Radio Network web site, at **www.frn.net** on the internet. *The ACE,* a formerly widely read print bulletin, now has a good loggings section and a valuable archive of *Free Radio Weekly* issues on its **www.theaceonline.com/ web site.**

❖ Thanks

Your loggings and news about unlicensed broadcasting stations are always welcome via 7540 Highway 64 W, Brasstown, NC 28902, or via the e-mail address atop the column. We thank this month's valuable contributors: Brian Alexander, Mechanicsburg, PA; Kirk Allen, Ponca City, OK; John T. Arthur, Belfast, NY; Kirk Baxter, North Canton, OH; Artie Bigley, Columbus, OH; Rich D'Angelo, Wyomissing, PA; Gerry Dexter, Lake Geneva, WI; Bill Finn, Philadelphia, PA; Harold Frodge, Midland, MI; Captain Ganja, Belfast, NY; William T. Hassig, Mt. Prospect, IL; Harry Helms, Corpus Christi, TX; Bill Hensel, Englewood, CO; Ed Insinger, Summit, NJ; Don Jensen, Kenosha, WI; Ed Kusalik, Camrose, Alberta; Chris Lobdell, Tewksbury, MA; Greg Majewski, Oakdale, CT; Larry Magne, Penns Park, PA; A. J. Michaels, Blue Ridge Summit, PA; Joe Miller, Troy, MI; Don Moore, Davenport, IA; John Poet, Belfast, NY; Mike Rhode, Columbus, OH; Martin Schoech, Eisenach, Germany; Bram Stoker, Wepassem, Ontario; Joe Wood, Greenback, TN and Larry Yamron, Pittsburgh, PA.

Let's Talk About Antennas
Part One of Three

❖ What is an Antenna?

They were once known as "aerials," some folks call them "sky wires," they've even been called "antlers," or "signal grabbers," but we all know what we mean when we say "antennas."

Or do we? To be sure, let's begin with a definition of the term "antenna." Basically, an antenna is a device for launching or capturing electromagnetic (EM) waves. EM waves are also called "radio waves," and they are the waves which carry radio broadcasting, television signals, shortwave broadcasting, ham radio signals, radar, radio-teletype, and all other kinds of communications that utilize EM waves for communication.

A radio transmitter, connected to an antenna and then energized, will cause radio-frequency (RF) current to flow in that antenna. When RF current flows in an antenna, this causes EM waves to travel (propagate) outward from the antenna. And, if communication is to be had, somewhere in their travel away from the antenna some of the waves must encounter another antenna.

These incoming waves induce radio-frequency current into any antenna which they encounter. This current is then routed to a receiver and the modulation (music, voice, telegraphy, etc) that was contained in the EM waves is detected by the receiver and made available for our use.

If you are concerned with reliable communication, communicating even when there is interfering noise or signals, or working with weak signals, then it is quite important to select an antenna that will support your communications application. Let's look now at some of the characteristics of antennas that are useful in selecting an antenna.

As you read the following discussions, keep in mind an important characteristic of antennas that is called "reciprocity." Reciprocity means that characteristics of an antenna remain the same whether the antenna is transmitting or receiving. Thus, factors which we will discuss in this series – such as gain and radiation patterns – are the same for an antenna, whether it is transmitting or receiving.

Gain not the most important criterion

Probably the antenna characteristic that many antenna users first think of as important in choosing an antenna is the antenna's gain. A simple definition of gain is an antenna's relative output of radio-frequency current when energized by a passing wave. The higher the gain, the more current the antenna will produce from the wave.

Actually, for most applications, securing a high value of antenna gain is not only unnecessary, it adds to the complexity and cost of an antenna, and in some cases may even cause receiver overload and signal degradation. As we'll discuss later, a large portion of today's radio communication is reliably supported by antennas with modest or even low values of gain.

It's all relative...

To understand the relative value of antenna gain, we must first discuss the effect of electrical noise on reception. Consider that there are electrical noise signals (static, electrical noise incidentally generated by various electrical devices, interfering radio signals) received by the antenna in the same way that it receives the desired signal. In addition, a different kind of electrical noise is produced within the circuitry of your receiver. This is the hissing or rushing sound you hear when the antenna is disconnected and the RF and audio gain are set high, with the squelch control turned off.

A major concern for reception is that any electrical noise, received or produced by the receiver, needs to not be so strong as to mask the reception of the desired signal. When the strength of the desired signal is considerably above the strength of overall noise, reception is usually good.

A measure of the relationship of the strength of the desired-signal strength to the electrical-noise strength is called the "signal-to-noise-ratio," or "S/N." As you can guess, a high S/N leads to good reception and a small value of S/N leads to poor or no useful reception (figs. 1A, 1B& 1C).

What Has That to Do with Antennas?

Obviously, an antenna must have enough gain to produce sufficient signal strength from the desired signal that the receiver output can drive the speaker, video display, or whatever device is used to present that output. Note, however, that many antennas with low or even very-low gain characteristics are capable of producing satisfactory levels of signal strength, and are very useful for a wide variety of applications.

For example, the Beverage antenna and the small table-top loop antennas have much less gain than a half-wave dipole antenna, and yet these antennas can produce good reception of some signals that would be unintelligible due to being buried in noise and/or interference if a dipole antenna were used. We'll see next month what part radiation patterns play in this.

Still, in terms of gain levels the quarter-wavelength ground plane antenna is a relatively-low gain antenna, and yet it is one of the most useful antennas designs that we have. The fact is, *the major factor determining quality of reception is not the received strength or transmitted*
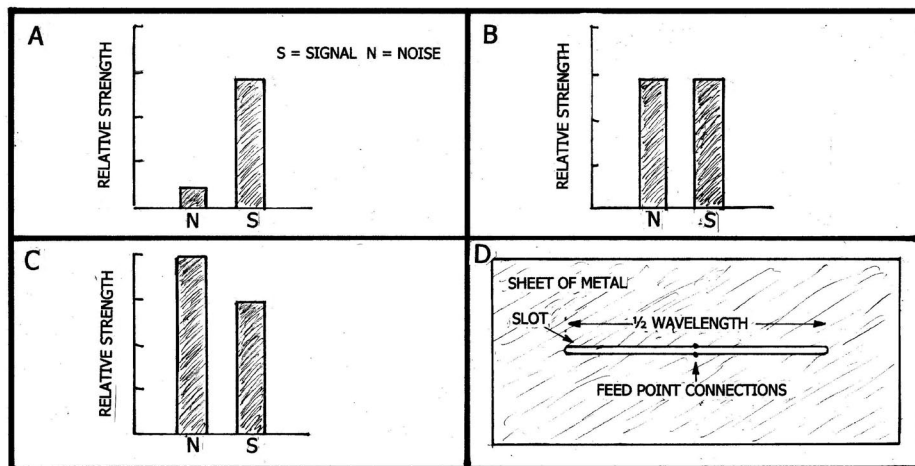
Fig. 1. (A) A low noise level with significantly-higher signal level. This produces good reception. (b) The same signal level as in A, but the noise level is as high as the signal level. Reception is difficult to impossible, depending on the technology used. (c) The signal level is still the same as in A; however, the noise level is now significantly higher than the signal level. This produces no useful reception. (d) A slot antenna.

RADIO RIDDLES

Last Month:

I asked: "Let's say that we have cut a narrow strip a half wavelength long from the center of a large sheet of metal. We could use that metal strip as a half-wavelength antenna. But how about the hole (slot) left in the metal where the strip was removed? A hole is full of nothing, right? Still, it's a half-wavelength long like the strip we removed, so can we then also use the slot as an antenna?"

Well, the answer is "yes." By connecting a feed line to the sides of the slot, we make a half-wavelength slot antenna (fig. 1D). Because they offer no wind resistance, dielectric-filled slot antennas are often employed in the metal skin of aircraft. The slot antenna is said to be "complementary" to an ordinary, half-wavelength dipole made of a metal strip, tube, or wire. One "complementary" factor is that polarization is reversed between the two antennas: a horizontal wire dipole yields horizontal polarization, while a horizontal slot yields vertical polarization.

This Month:

Once there was a very poor train conductor. He seldom had even one dollar in his pocket because he gambled away most of the salary the railway line paid him for collecting tickets from their passengers. He was so poor, hungry, and unhappy that he saw no reason to go on living, and so he decided to kill himself. He thought electrocution would be a good way to leave this world, so he broke into a powerful radio station and placed his hands directly across the high-voltage, output terminals in the radio-frequency power-amplifier stage of the station's 500,000 watt transmitter. However, he was not hurt at all: he received only a tiny shock. Why?

You'll find an answer to this month's riddle, another riddle, another antenna-related web site or so, and much more, in next month's issue of *Monitoring Times*. 'Til then, Peace, DX, and 73.

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strength of the desired signal. Rather it is the *relative strength* of that desired signal as compared to the strength of any other electrical noise or interfering signals present at the receiver's early stages (RF amplifier, mixer).

When selecting and installing an antenna system where noise level is a problem, there is much we can do to reduce the amount of noise and interference with which the desired signal must compete.

Next Month:

Next month we'll talk about noise reduction, noise-level variation across the different frequency bands, useful antenna gain, ways to improve poor reception by improving the S/N, and some other important antenna characteristics.

MT READERS ONLY

To access the restricted website for the month of September, go to www.monitoring-times.com, click on the key, and when prompted, enter "mtreader" under the user name. Your password for September is "grayline" – Check in each month for new material!

The BC-221 Project: It's a Wrap

❖ WWII Radio Display

Jim Falls, who previously e-mailed us about his BC-348 restoration, writes that he's going to try our BC-221 power supply idea on a '221 of his own that needs firing up. Jim – when you finish, send a picture and tell us about your adventures!

Jim also mentioned that he had the '348 and other World War II radio equipment on display at the Arcata (CA) airport during a fly-in by the Collings Foundation – an organization that operates and maintains vintage World War II aircraft. So folks who came to see the B-25 Mitchell, B-17 Flying Fortress, and B-24 Liberator bombers and the P-51 fighter had the additional treat of looking at radio equipment contemporary with those warbirds.

❖ Where We Left Off

Last month, we fired up the BC-221-AL for the first time and found that it seemed to be working normally – at least until I began to look at the action of the corrector control at each of the specified check points. The corrector control, you'll recall, varies the frequency of the '221's internal VFO.

The output of the VFO is combined (heterodyned) with that of the internal 1,000 kHz crystal oscillator, producing a tone, or beat note, when the VFO is set at one of the check points. The two signals become identical in frequency when the corrector is adjusted for "zero beat" (no tone). Before the VFO can be set accurately for any given frequency, it must first be adjusted for zero beat at the check point nearest to that frequency.

I first tried the check points for the '221's high band (2,000-20,000 kHz). For the most

Sitting atop the Navy LM and its power supply at left is the Hallicrafters receiver with which I had tried to receive WWV. At extreme right is the BC-221-AL, removed from its case for this calibration exercise. Sorry about the workbench clutter!

part they worked out okay, although in some cases I wasn't able to cancel out all the tone to get a complete zero beat. In others there were extra zero beat positions on the corrector. One is then supposed to use the signal that is definitely stronger, but these were of about the same strength.

The low band (125-2,000 kHz) check points were a disaster. At some points the heterodynes were either too weak to be convincing or were missing entirely. At others, there might be three or four heterodynes so strong that it was impossible to choose between them.

As mentioned last time, I had begun to suspect that the crystal frequency had shifted – a problem, I had heard, that was common with the non-hermetically sealed units of the type installed in my instrument.

❖ Checking out the Crystal

I began this month's work session by checking out the crystal frequency. It was my intention to compare it to the signal from Bureau of Standards station WWV to see if I could get a zero beat or close to one. If not, I could tweak the crystal frequency by adjusting the variable capacitor provided for the purpose (a small trimmer connected across the crystal).

To accomplish this, I planned to tune in WWV on a communications receiver and loosely couple the antenna of the '221 to that of the receiver with the '221's crystal turned on. But this plan was doomed by poor signal propagation and the fact that I have only a short antenna in my basement workshop. I could hear WWV at 10 MHz, but only just barely.

Plan B was to use my Navy LM frequency meter, whose calibration I trust, to check the crystal frequency. (The LM is almost identical physically and electronically to the BC-221 – with minor differences in packaging.) All I had to do was connect short wires to the antenna posts of the BC-221 and the LM and capacity-couple them by twisting the ends together for a short distance.

After allowing both units to warm up for a half hour or so, I set the LM's VFO for 1000 kHz, turned on the BC-221's crystal, and put on the LM's headset. I was gratified to hear a beat note very close to zero. Adjusting the LM for zero beat, I ended up within a few kHz of 1000 – just fine for my purposes.

❖ Foiled by a Frozen Trimmer

With the crystal frequency no longer under
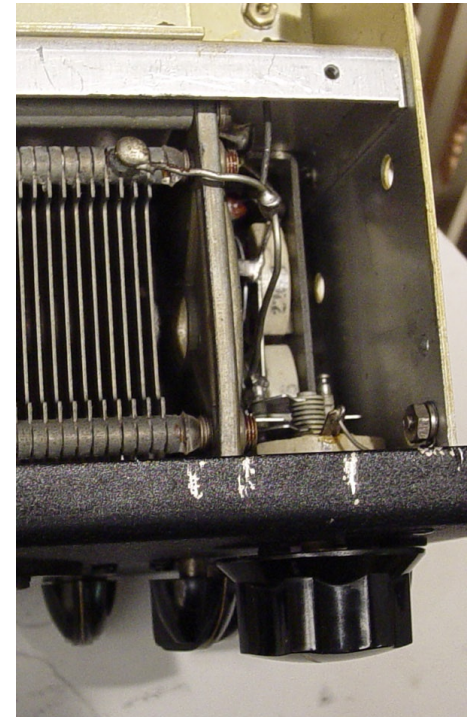
A look into the top section of the '221 with access plate removed. At left is a portion of the VFO tuning capacitor. Large corrector tuning knob is at lower right. At middle right, you can see the low range trimmer behind its adjustment access hole. Part of the high range adjustment trimmer is visible beneath it.

suspicion, I began to think about the trimmers provided for tweaking the calibration of the VFO's high and low ranges. You'll recall from last month that the BC-221 manual contains a stern warning against touching these trimmers. To do so, it says, would likely destroy the calibration – a problem that could not be corrected in the field.

The LM manual, however, was a lot more tolerant of interventions by screwdriver mechanics in the field (or at sea as the case may be). That is probably because ship's radio operators were likely to have a more sophisticated electronic background than army field radio personnel. Be that as it may, the LM manual encourages tweaking the trimmers to correct calibration problems caused by such things as a high humidity environment.

The suggested method was so simple that I was encouraged to try it on my problem BC-221. For low band recalibration, one sets the corrector at midscale and the VFO dial at 250

Variable frequency oscillator fundamental frequency	X	Lowest variable frequency oscillator harmonic	=	Crystal oscillator fundamental frequency	X	Lowest crystal oscillator harmonic
125.00 kc	X	8	=	1,000 kc	X	1
133.33 kc	X	15	=	1,000 kc	X	2
142.86 kc	X	7	=	1,000 kc	X	1
153.85 kc	X	13	=	1,000 kc	X	2
167.67 kc	X	6	=	1,000 kc	X	1
181.82 kc	X	11	=	1,000 kc	X	2
200.00 kc	X	5	=	1,000 kc	X	1
214.29 kc	X	14	=	1,000 kc	X	3
222.22 kc	X	9	=	1,000 kc	X	2
230.77 kc	X	13	=	1,000 kc	X	3
250.00 kc	X	4	=	1,000 kc	X	1
2,000.00 kc	X	1	=	1,000 kc	X	2
2,166.7 kc	X	6	=	1,000 kc	X	13
2,250.0 kc	X	4	=	1,000 kc	X	9
2,333.3 kc	X	3	=	1,000 kc	X	7
2,500.0 kc	X	2	=	1,000 kc	X	5
2,666.7 kc	X	3	=	1,000 kc	X	8
2,750.0 kc	X	4	=	1,000 kc	X	11
3,000.0 kc	X	1	=	1,000 kc	X	3
3,250.0 kc	X	4	=	1,000 kc	X	13
3,333.3 kc	X	3	=	1,000 kc	X	10
3,500.0 kc	X	2	=	1,000 kc	X	7
3,666.7 kc	X	3	=	1,000 kc	X	11
3,750.0 kc	X	4	=	1,000 kc	X	15
4,000.0 kc	X	1	=	1,000 kc	X	4

Chart of the formal crystal check points from the BC-221 manual (see text).

kHz, then turns on the crystal. Presumably a beat note would now be heard if the instrument were not too far out of adjustment. Now one turns the trimmer to the right until zero beat is achieved. For high band recalibration, the procedure is the same, except that the VFO is set at 2000 kHz.

The first things one thinks of when invited to move a 60-some-odd year old trimmer are "Do I have the right wrench or screwdriver to get a snug fit on the control shaft?" and "Will I be able to turn the doggone thing even with the right tool?" I would soon find out that at least one of these fears was justified.

It turned out that these were slotted control shafts and I had a screwdriver that was a reasonably good fit. Applying some experimental torque to the high band trimmer, I met resistance. But I was able to break the control loose by applying firm, careful pressure in alternate directions.

The low-band trimmer was a different story. It wasn't going to budge under any circumstances. Finally, I squirted some WD-40 on the shaft bearing points and let the unit sit overnight to give the chemical a chance to work. The next morning, my luck was no better.

Examining the trimmer (which is partially buried in the depths of the instrument) with a flashlight, it seemed to me that the rotor and stator plates were quite close together – and might even be fused together with corrosion. That would account for the messed up low-band check points. So I gave the plates a squirt of WD-40 (ignoring the manual's caveat about avoiding even the use of air jets that might contain oil) and waited for several more hours. Still no go – even after using pliers on the screwdriver to gain more torque.

I'd like all of our projects to have a happy ending, but it was time to face the sad truth that this instrument is never going to have a usable 125-2000 kHz range. The construction of this particular version of the BC-221 (BC-221-AL) is such that we'd have to half dismantle the instrument in order to remove the trimmer for repair or replacement. And, in any case, the manual contains a serious warning about

making even minor changes in the positioning of wires.

❖ The Navy Recalibration Method

I did want to try the Navy method of recalibrating one of these frequency meters and I figured that – with the low band inoperable – I'd have little to lose if I compromised the calibration of the high band beyond my ability to retrieve it. Before beginning, I sprayed the trimmers liberally with electronic contact cleaner to flush out the oily residue of the failed WD-40 treatment, following up with a gentle puff of computer "Dust Off" to dry the contact cleaner.

The first step in recalibration was to set the corrector at midscale. But what was midscale? The corrector knob on my unit had been replaced with a much bigger one to allow finer manipulation. It completely covered the scale markings and, in any case, I had no guarantee that the knob had been replaced so that its pointer was in the same relative position as the original one.

The corrector trimmer does not have stops at the maximum and minimum capacity positions but rotates freely through 360 degrees, so it was important to properly position the pointer. Removing the knob, I could see that the corrector shaft did not have a flattened area to ensure a specific pointer orientation. Perhaps the LM's corrector shaft does have such a flat.

But the cover plate I had removed to inspect the high and low band trimmers was still off, giving me a view of the corrector trimmer. Before replacing it, I rotated the trimmer to the half-capacity position and installed the knob so that the pointer was straight up.

After trying the recalibration "Navy style," I concluded that the method works best if the calibration is only a little bit off so that one can still hear a strong beat note at the specified check point. Then it becomes a matter of a tiny tweak to reach zero beat. If the note isn't there, and turning the trimmer to the right, as suggested, doesn't bring it in, then it's easy to get lost.

Take a look at the crystal check point chart I've reproduced from the BC-221 manual. It shows each of the points to use to align the frequency of the VFO with that of the crystal oscillator throughout the meter's operating range. For each check point, the VFO fundamental frequency is multiplied by the specified harmonic to obtain a frequency equal to that of the crystal oscillator multiplied by its specified harmonic.

As the manual warns, besides these several points are many other undocumented points where VFO and crystal oscillator harmonics can match to generate beat notes. These notes are usually not as strong as the ones at the formal check points, but it's easy to get lost when looking for the right beat note while tweaking a trimmer. To make a long story short, I did get

lost, thereby totally destroying the calibration as warned.

❖ The Ellis Method

Since I did have a reliable LM frequency meter still coupled to my BC-221, I was able to quickly back out of the problem I had caused. I tuned the LM exactly to 2000 kHz, the low end of the BC-221's high range and moved the '221's VFO dial to the extreme low frequency end of the range. Listening in the LM's headset, I slowly raised the frequency of the '221's VFO until I heard a strong beat note in the LM.

At this point, the '221's VFO dial was at a reading well above the correct one for 2000 kHz. Now, very slowly and carefully, I moved the high band trimmer in the correct direction so that the signal, as heard in the LM, was appearing at lower and readings on the '221's dial. When I reached the point where the '221's signal was zero beat with that of the LM at the correct reading of the '221's VFO dial, I figured I had arrived at the proper position of the trimmer.

To verify this, I set the '221's frequency at several of the standard check points throughout the high band tuning range – each time checking the generated signal using the LM. And each time the signal was spot on.

This concludes our BC-221-AK restoration (or partial restoration). And while the end result was not an unqualified success, I think we covered a number of issues that you should find helpful if you decide to rehab one of these very interesting and amazingly useful instruments.

FIRST LOOK

Radio Shack's Accurian 7" Portable HDTV Set

By Ken Reitz

One of the surprise realizations of the digital TV conversion taking place over the next six months is that all of our cheap, portable, analog TV sets will no longer be functioning after February 17, 2009, the day analog TV in America is scheduled to disappear. That means that portable TV sets we planned to use during power outages would just give us snowy screens after that date.

Low-power TV (LPTV) stations, translators and boosters are exempt from the "drop-dead" date, though they too will eventually have to make the switch. Still, it has left many, particularly those in hurricane-prone states, wondering what they'll use during next year's hurricane season. They can give up on tuning in on radios and scanners previously capable of tuning TV audio, because that's now part of the digital signal as well.

❖ The Shack's Little Video Jewel

Radio Shack is one of the first to hit the market with a portable digital TV that not only gives you a miniature HDTV picture, but passes analog signals, making it useful for tuning in LPTV stations as well. This small set is packed with great video features, but it has a couple of drawbacks, too. First, let's take a look at the features.

This TV has a large screen compared to its overall size. The screen is 7" (measured diagonally), yet the whole set is only 7.3 inches wide and 5.8 inches high, and only 1.3 inches thick. It's also very light weight: just 1.3 lbs (including built-in battery pack).

When tuned to an HDTV channel that uses the full 16:9 aspect ratio, the picture is stunningly clear. Watching a standard definition signal is a little less clear, but quite easy viewing. Small print at the bottom of the screen, for instance, is easily readable. Even while watching standard definition digital weather channels, the small type-faces for temperatures were easily discernable. The worst video pictures were from LPTV analog stations – which serve to show us, if nothing else, how far picture quality has come in digital portable TV sets.

The Accurian features an automatic scan that searches and stores NTSC (analog) as well as ATSC (digital) off-air signals. All secondary digital channels, in addition to the main HDTV channels, are added. There's an editing mode in the menu that lets you delete channels you don't want to watch. An on-screen guide lets you see what coming up for hours ahead. It also has closed-captioning, a sleep timer and zoom mode to select screen size: auto, wide, zoom and cinema.

The TV comes with a credit card-sized remote control that does everything except control the audio. That's done with a thumb wheel on the left side of the set. There's also has a brightness thumbwheel just below the volume control. All the other controls are push-buttons mounted on the front panel, including power, menu, input selection, wide/zoom mode, and channel up/down button. The front panel also houses the two 1-inch speakers for the kind of audio you'd expect from 1-inch speakers.

❖ Now, the Drawbacks

The built-in 29-inch telescoping antenna does a fine job tuning in local channels when you're within 10 miles of the transmitters. Twenty miles away, it took some serious

hunting for a place to put the set and adjust the antenna to get even an analog picture from a very strong station. But, with the TV on my desk and attached to an amplified UHF antenna at 25 feet, it picked up 25 stations in the first scan. I was watching HD channels from better than 60 miles away. The tuner is great, but like all HDTV tuners, it needs a lot of help from a good antenna system.

The non-replaceable, built-in battery pack is good for only 100 minutes, according to the manual, on a four hour charge. That means you'll have to be frugal in your viewing during a power outage. And, you can forget about taking it to the stadium to watch the game; it'll poop out before half-time. But, you could take it with you tailgating; just plug it into the cigarette lighter.

In power outages, hooked up to a car battery, you should get many hours worth of viewing. In long term emergencies (several days or a week), you might be able to charge the internal batteries during the day with a solar panel such as used for charging car batteries. Radio Shack engineers said that under laboratory conditions they might get

400-500 charge cycles out of the battery pack, but consumers should expect less.

❖ Final Word

Those of us who were used to seeing ever cheaper portable TV sets will be shocked to see the $199.99 price tag on the Accurian. Call it digital inflation. But the trade-off here is a more versatile portable TV with a far better picture and access to additional channels. This would be a fun little TV to take on vacation. Small, lightweight and versatile, it's everything you need ... except cheap.

Kaltman's Creations' RF Spectrum Analyzer

An Affordable Solution to Frequency Management

By Ken Freeman, Technical Sales Manager with Meeting Services Inc.

In our increasingly crowded radio frequency environment, we are hard pressed to deliver functional wireless systems and often are pressed into sub-rentals and additional purchases to solve problems with spectrum and frequency availability. Last year, at the 2007 Infocomm show, I discovered a new product that makes it affordable to access the RF spectrum information by running real time frequency analysis.

We have often relied upon a very unscientific process by which we hunt and guess for wireless frequencies. Last year, looking ahead to our large industrial shows, I realized that we were in for difficult times trying get all of our wireless solutions to work as planned, especially for an upcoming show in Boston.

We decided to push forward with a scanning system, as we packed in progressively more and more wireless channels into our limited spectrum. The weekly rentals for scanners, as typically used in New York on Broadway, are upwards of $1,000 plus a tech to operate. We needed a more affordable solution to manage monumental amounts of wireless.

Bottom line? The Kaltman Spectran HF4060 made it possible for us to take 140 wireless Mic, Com, and IFB channels to the AARP National Convention in Boston, Massachusetts, and they worked flawlessly.

Features:

The Spectran HF4060 covers the frequency range of 10MHz to 6GHz, making it possible to view all RF activity from down around 70MHz - 80MHz for assisted listening devices, through VHF & UHF, all the way up to 6GHz. On the higher frequencies, you can view RF activity for remote AMX and Crestron wireless control, Wi-Fi, intercom, etc.

Just like its counterparts – models HF4040, HF6060 and HF6080 – the Spectran HF4060 features 10 user-assignable Hot Keys for instant access to frequently used RF bands, plus you can manually input any frequency start and stop point.

There is a jog dial on the side of the unit which positions a cursor on the LCD screen and the cursor position is read out in both frequency and level in dbm. Clicking this jog dial allows you to zoom in to a high resolution, close-up view of the RF activity, find offending interference, available RF space, etc.

There is a whole suite of menu items such as resolution, sweep time, antenna types, etc., but the defaults, which were set by Kaltman Creations (the US distributor), seem to cover all of our Pro Audio, AV related needs. All of these functions, and more, are also available via the included PC software.

"The bottom line, the Spectran HF4060 made it possible for us to take 140 wireless Mic, Com, and IFB channels to the AARP National Convention in Boston, Massachusetts, and they worked flawlessly."

What I Like About It:

Looking ahead to the Feb 2009 analog TV cutoff time and the pending RF auction to the larger wireless providers, it's apparent that the RF congestion problem will only be more complex as we move forward. Tools like the HF4060 RF spectrum analyzer will be critical to our ability to use our current arsenal of wireless equipment and to make informed decisions about what to buy in the future.

I have suggested that the growing installation department of my company should also host this device, as their needs may well exceed the rental and staging department's need.

Aside from handheld operation, the Spectran HF4060's USB computer interface and included software means that you can scan a frequency range in advance of firing up your first wireless device. I set the unit up on the day of our technical installations and found nice spectrum holes for our equipment to work in, which confirmed a lot of the pre-production work we had done. But, I also found that a local station in the Boston area had switched on their DTV transmitter, and that none of the usual frequency allocation places had this information documented.

What I Would Change:

I would like the system to have a BNC antenna connector, or at least an included SMA to BNC adapter, so that I could plug the unit into an output of a typical wireless microphone receiver antenna distribution system. This would permit me to use the analyzer to set up the antenna systems to maximize what I need and minimize background signals.

I would like to be able to create some markers in the software interface so I could track a challenging area over time.

I would also like to be able to home into an area for a detailed look while still sweeping the wider band.

Summary:

The Kaltman Creations Spectran HF4060 RF spectrum analyzer has earned a place in my workbox. One of the key challenges for these events was working around the RF interference while still providing a flexible presentation solution to our high profile presenters. I strongly suggest the HF4060 system for any dynamic and uncontrolled RF environment where you really need your systems to work.

Product Reviewer:

Ken Freeman, Technical Sales Manager with Meeting Services Inc. MSI is a full service Audio Visual Staging rental supplier and systems integrator with over 50 years in the business. MSI is located in Southern California at 9220 Activity Road, San Diego, CA, 92126. Ken can be reached at 858-348-0100, faxed at 858-348-0076 and on the web at **www.msiprod.com.** Kaltman Creations LLC can be reached at: 651 Amberton Crossing, Suwanee, Georgia 30024 USA; Tel 678-714-2000 and on the web at **www.rfanalyzer.net**
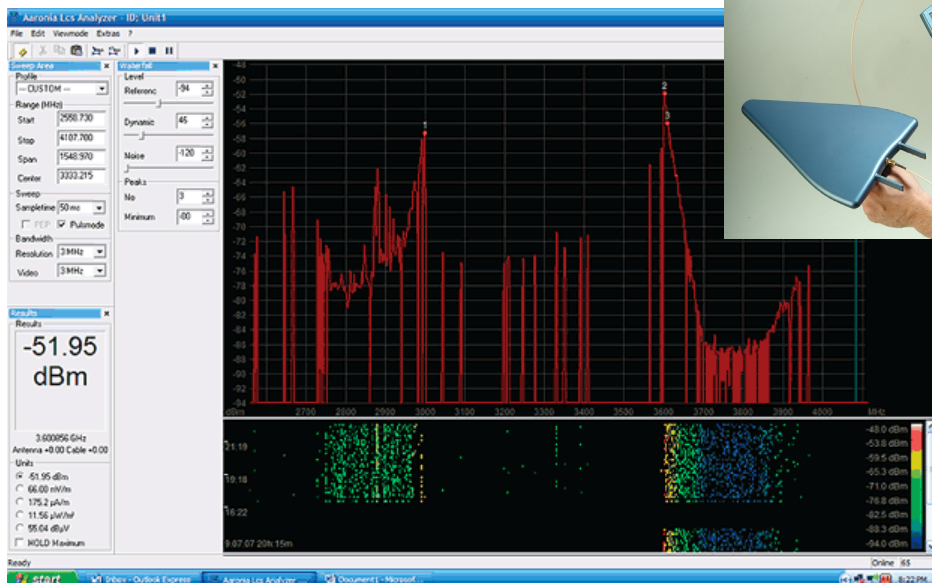
Priced at around $1770, the HF4060 is a very cost-effective frequency manager and consultant!

Versatile Olympus
VN-4100PC Digital Recorder

By Ken Reitz KS4ZR

Do you ever wish that late night TV chat shows were on during a time of the day when you aren't asleep? How about those shortwave radio shows that you always seem to miss when they air? Or what about trying to stay up all night to catch those shows on the AM band with guests who seem like they're from other planets? What's happening in your town on the scanner while you sleep?

I've heard from many monitoring enthusiasts over the years who have concocted different schemes to record the things that happen in the RF spectrum while they are asleep or are at work, but the Olympus VN-4100PC digital recorder could be the best answer to what they've been missing.

❖ Feature Rich Recorder

Here's a super lightweight (just 2.5 ounces with batteries) digital recorder that you can use to record off-air radio or TV; your favorite programs off your computer – or from any other source, for that matter. An easy to use, built-in timer makes sure you catch the radio shows you've been missing. You can play back through external speakers on your stereo, through your computer's sound card, through your car stereo, or any other radio that has a mini phone jack input.

With up to 144 hours recording time, you can accumulate a lot of old time radio shows, BBC World News, or anything you can find on the web for future playback.

This recorder comes with software that lets you manage what you've recorded via .wav files. But, you don't even have to have a computer to record and listen to shows. Use it the way you used to use a small cassette recorder, but without the hassle, weight and mechanical crankiness of cassette recording.

This recorder also has a built-in microphone that lets you record interviews; use it as a personal note-taker (up to 144 hours of your private thoughts!), or to record business meetings. I've used this unit to record interviews using a homebrew lapel microphone I made

Olympus VN-4100PC digital recorder stores up to 144 hours on batteries that seem to last forever. (Photo courtesy Radio Shack)

for less than $5 from an electret mic element, a length of RG/176 coax and a mini-plug. The person interviewed simply slips the recorder into a shirt pocket and attaches the mic to his shirt. The audio is perfect.

On playback, an index button lets you tag parts of the broadcast or interview of interest so that, playing it back again, you can skip over the fluff and get to the parts you want to hear. A "goof-proof" erase button is easy to use, but not so easy that you can accidentally erase what you've recorded. A bright red LED indicates that the unit is recording, and a bright green LED indicates playback.

The 4100PC has a built-in microphone jack that can be used as I described above or for input from your radio's speaker, computer sound card, or any other device that has the same type output. A very small, built-in pezio-electric speaker is useful but makes listening a strain. I found that earbuds (not included) are more useful, as they give better audio fidelity and listening privacy.

Most functions are done through an easy-to-understand menu, which is displayed on a 1" square LCD screen. Playback volume level, fast forward, and reverse are done using a four-way rocker button.

There are three levels of playback: slow (to facilitate dictation), regular, and fast (to get quickly past parts you're not interested in, but still maintain intelligible audio). Separate buttons for record and stop help you set up to record quickly.

❖ Last Word

Other more expensive Olympus models include rechargeable batteries and use a recharge circuit through the USB port to charge the batteries when hooked up to your computer. The more expensive models also feature volume level controls and stereo input and playback. Those features may be worth the extra money, but if you're primarily listening to shortwave, scanner or old time radio programming, you won't have much need for stereo.

As for battery consump-

tion, I've found that with moderate use throughout the year, I've only had to change the batteries once. And, for recording level control, adjusting the output level at the audio source keeps the unit from over-driving the audio when recording off-air.

There are also cheaper Olympus models available but, they have less record time, no PC connection and no external microphone connection. If those features aren't important for your recording needs you could save money by buying the cheaper models.

But, for my purposes, the VN-4100PC was just right. This recorder is available from Radio Shack and numerous other storefront and online outlets, retailing anywhere from $45 to $62. It comes with a full year warranty on parts and labor.

SPECIFICATIONS:

Recording length: 144 hours
Batteries: 2 AAA (not included)
Dimensions: 4" long, 1.5" wide, ¾" thick
Weight:
    2.22 oz. w/o batteries,
    2.5 oz. w/batteries
Features:
    Built-in microphone,
    External microphone jack,
    Earphone jack,
    USB port w/cable

Builders' Templates

By Carl Herbert AA2JZ

As an avid builder of communications equipment, I've found that sometimes the most difficult portion of the project is creating the mounting holes needed for the various plugs and jacks required.

❖ The troublesome DB-9 connector

One of my projects called for a DB-9 connector on the rear panel of the device. I attempted to measure the required form, but found that the shape of the corners, etc, made the process difficult. There had to be a better way.

Searching through my accumulation of "junk," I came upon an old desktop CPU that was waiting for the trash pickup. All of the boards and drives had been removed previously; all that remained was the metal housing. On the rear of the unit was a stamped metal plate, used to identify the mouse connector, keyboard, USB ports, etc., and decorated with colorful connection identifiers, with the proper hole configuration punched out! What more could a builder ask for? A ready-made template!

Photo A. CPU facing in color, stainless video card mount strip, and completed rear of project.

A few minutes of easy labor and the strip was removed. Now I have a metal template I can use to scribe the necessary hole in my project, without resorting to measuring. (See Photo A) Just tape or clamp the metal template in the required location and scribe the pattern using a sharp awl.

If the plate on your old CPU isn't like mine, look to see if you have a defunct video output board in your junk – the one with the metal strip used to attach the board to the frame of the computer. The metal strip has the proper outline of the DB-9 punched in it. The moni-

tor connector is actually a DB-25, but uses the same outline dimensions as the DB-9.

❖ Drilling for the UHF SO-239 connector

Another such find was a rotary coaxial cable switch – the kind used for switching antenna cables with UHF connectors. (See Photo B) This unit was from an assembly destroyed by corrosion of the switch, etc. and was also headed for the trash. It was included in a hamfest purchase. I assume that the previous owner was clearing his workshop of useless items and included it in the pile.
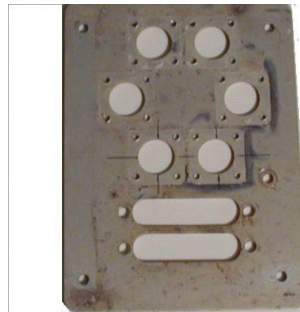

Photo B, a much used SO-239 drilling template

Attempting to accurately measure the four mounting screw holes needed to install a connector on any device I am working on often results in one or more holes being placed wrong. After removing all the corroded and broken connectors from the cable switch, what remained was an aluminum plate with accurately punched holes for mounting the UHF (SO-239) connectors. I use a small sharp scribe to trace the pattern on my project, and thus far haven't experienced trouble with "wandering mounting holes."

Lacking the switch assembly I found, another source for this "template" is on the rear panel of a defunct CB transceiver. A few minutes of "destructive removal," yields a metal plate with the UHF connector outline stamped in the rear plate.

❖ Accurately spaced LEDs

Photo C shows two versions of "Vectorboard©." As the photo shows, this material is predrilled fiberglass. Holes are evenly spaced and are intended for hand wiring circuit proj-
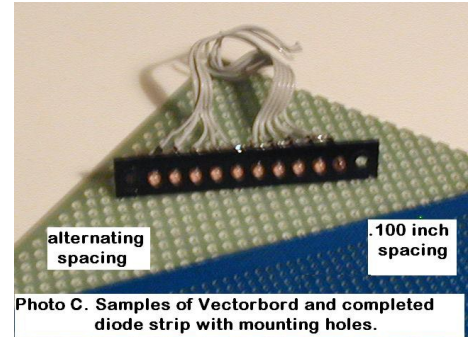

Photo C. Samples of Vectorbord and completed diode strip with mounting holes.

ects. What I wanted was a way to accurately space light emitting diodes on the front panel of my project. Measuring and drilling the metal face plate often led to misaligned holes, giving the project an unprofessional appearance. To cure this problem, I used "Vectorboard" as a template to locate the proper hole spacing. This method proved to be very accurate.

❖ Speaker Holes

Photo D shows the result of using "Vectorboard" to accurately locate drill holes for mounting a speaker on the faceplate of your project. Holding the front of the selected speaker against the board, the appropriate holes can be selected to provide a pleasing open-hole pattern for drilling. Mounting holes for the speaker can also be identified and marked with either pencil or felt tipped marker.

Photo D

I can't imagine building projects now without these "templates" to accurately place these odd shaped units on it. Of course, there's still the drilling, nibbling, and filing process to remove the excess metal, but now it's much less time consuming, and the end results are more acceptable.

Happy building !

WBCQ SCHEDULE 7415 TRANSMITTER

Sunday

1800 1900 UTC	The Jean Shepherd Show
1900 2000 UTC	The Last Roundup
2000 2100 UTC	This Week In Amateur Radio International
2100 2200 UTC	Trailer Trash Radio
2200 2300 UTC	Fred Flintstone's Music Show
2300 0000 UTC	Le Show with Harry Shearer
0000 0300 UTC	Radio New York International
0300 0400 UTC	Church of the Subgenius Hour of Slack

Monday

0400 0415 UTC	Amos and Andy
0415 0445 UTC	Glenn Hauser's World of Radio
1800 1900 UTC	Money Talk
1900 2000 UTC	The Overcomer Ministry
2000 2100 UTC	Financial Survival 2000
2100 2200 UTC	The Overcomer Ministry
2230 2300 UTC	Faith Holiness Church
2300 0000 UTC	The Overcomer Ministry
0000 0100 UTC	The Overcomer Ministry
0100 0200 UTC	The Secular Bible Study
0200 0300 UTC	The Overcomer Ministry
0300 0400 UTC	Financial Survival 2000

Tuesday

0400 0415 UTC	Amos and Andy
0415 0430 UTC	Herald of Truth
1800 1900 UTC	Money Talk
1900 2000 UTC	The Overcomer Ministry
2000 2100 UTC	Financial Survival 2000
2100 2200 UTC	The Overcomer Ministry

2200 2300 UTC	The Overcomer Ministry
2300 0000 UTC	The Overcomer Ministry
0000 0100 UTC	The Overcomer Ministry
0100 0200 UTC	The Overcomer Ministry
0200 0300 UTC	The Overcomer Ministry
0300 0400 UTC	Financial Survival 2000

Wednesday

0400 0415 UTC	Amos and Andy
0415 0430 UTC	Herald of Truth
1800 1900 UTC	Money Talk
1900 2000 UTC	The Overcomer Ministry
2000 2100 UTC	Financial Survival 2000
2100 2200 UTC	The Overcomer Ministry
2200 2300 UTC	The Overcomer Ministry
2300 0000 UTC	Off The Hook
0000 0100 UTC	The Overcomer Ministry
0100 0200 UTC	The Overcomer Ministry
0200 0300 UTC	The Overcomer Ministry
0300 0400 UTC	Financial Survival 2000

Thursday

0400 0415 UTC	Amos and Andy
0415 0430 UTC	Herald of Truth

1800 1900 UTC	Money Talk
1900 2000 UTC	The Overcomer Ministry
2000 2100 UTC	Financial Survival 2000
2200 2300 UTC	The Overcomer Ministry
2300 2330 UTC	Goddess Irena 1 music show
2330 0000 UTC	Glenn Hauser's World of Radio
0000 0100 UTC	The Overcomer Ministry
0100 0200 UTC	The Overcomer Ministry
0200 0300 UTC	The Overcomer Ministry
0300 0400 UTC	Financial Survival 2000

Friday

0400 0415 UTC	Amos and Andy
0415 0430 UTC	Herald of Truth
1800 1900 UTC	Money Talk
1900 2000 UTC	The Overcomer Ministry
2000 2100 UTC	Financial Survival 2000
2100 2200 UTC	Behavior Night
2200 2300 UTC	Bluegrass State of Mind
2300 0000 UTC	867-5309
0000 0100 UTC	Allan Weiner Worldwide
0100 0300 UTC	The Overcomer Ministry
0300 0400 UTC	Financial Survival 2000

Saturday

0400 0415 UTC	Amos and Andy
0415 0430 UTC	Herald of Truth
1800 1900 UTC	WGOD Presents
1900 2200 UTC	Antenna4
2200 2300 UTC	The Lumpy Gravy Radio Show
2300 0000 UTC	Radio Timtron Worldwide
0000 0100 UTC	Cut The Crap with A.J.
0100 0200 UTC	Marion's Attic
0200 0300 UTC	The Lost Discs Radio Show

COMPUTERS & RADIO

"Peeling the Onion" with the help of PC Tune-up

I love the PC vs MAC TV ads. They're very creative, entertaining and in some cases quite true.

Now anyone who has read this column over the past decades knows that I have no love for Microsoft products. In my opinion many are released before they are free of major bugs, forcing customers to pay to be beta testers! However, in most cases, but not all (Remember Windows ME? Ugh!) the software or operating system is finally refined to a real "product level" and does a very good job.

What really gets up my nose about these TV ads is the attempt to make the MAC out as simple and uncomplicated as compared to the PC. I don't care how many "spokes-dudes" wearing soft casual clothes and having a relaxed hands-in-pockets manner say it. Personal computers are NOT simple devices! Come with me this month as I describe an insidious problem I had with my PC and what program I found to fix the problem. Perhaps you will re-live some of your own computer-generated frustrations.

❖ How It All Started

Last week, when I tried to archive a month's worth of work to a write-able data DVD things started going bad quickly.

The PC started writing the fifty or so files to the DVD normally. The time to completion was winding down from 27 minutes, the hard drive was sounding normal, the busy light on the optical drive was blinking with regularity and its motor was spinning with a constant hum. Then it happened.
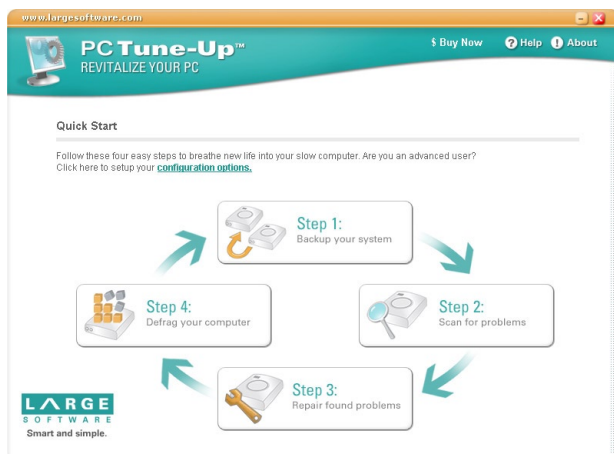

Figure 1 - PC Tune-up™ simple four-step process to a healthy PC

The first indication was that the "time to completion" started going up, not down. "Odd", I thought. Then after a few minutes the "time to completion" shot up to three hours and just stayed there! "Oh boy, not good," was my out loud exclamation (minus the expletives).

I knew I was really in trouble when the screen froze and the keyboard was totally un-responsive. It was time for the dreaded three-fingered salute, control-alt-delete, to re-boot the PC. SOL, still no response. Now what?!

❖ Peeling the Onion

A computer is like an onion, which appears as a simple sphere. However, it is actually composed of many intricate, ever more complicated layers.

Was the problem a virus or malware attack? Or was it the result of the last operating system update? It could also be the fact that my protection programs were not playing nice with each other. Could I have run a program that corrupted the optical drive drivers?

And then I thought, "What about a hardware problem?" Could the laser lens just need cleaning? Or was the laser's output dropping, a sure sign of imminent total laser failure? Another possibility was even too terrifying to consider: was the laptop's motherboard giving up the ghost?! So costly I could not bear to consider it. Nah, it was probably just a bad fifty cent DVD …I hoped.

Having spent a year working exclusively on a Mac, I can tell you that if we had the same symptoms on a Mac the possible failure mechanisms would be just as complex and difficult to diagnose. To be fair, the number of possible failure mechanisms would be reduced by one since the MAC X operating system has had
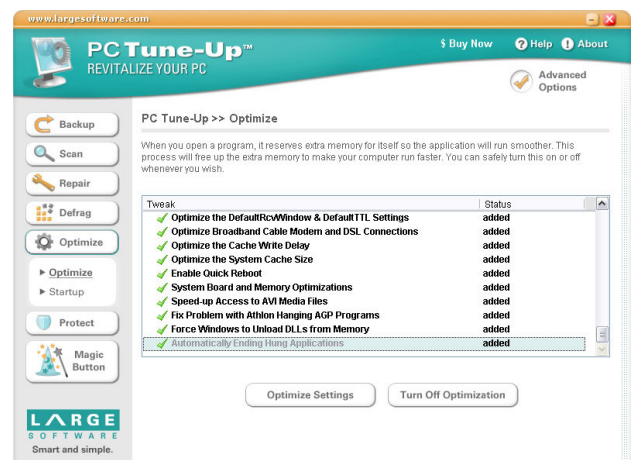
Figure 2 - PC Tune-up™ displaying pc problems it has found and can repair

very few updates. But, with the exception of a bad DVD, solving the problem(s) are usually not within the capability of a non-technical dude or dude-ette, no matter how casual and laid-backed their demeanor.

❖ How Did This Happen?!

I really don't use my PC to download, rip or copy movies or music to CD or DVD. But I do rely on my optical drive to save the multitude of downloads, documents and programs that I access each month.

To protect my PC I *always* have anti-spyware, anti-virus programs and a firewall running and each is updated daily. Daily updates of Vista and my web browser are performed first thing each morning at turn-on.

And, if that's not enough, McAfee SiteAdvisor and my browser's security is always on guard when I'm looking around the web. After all this, I was sure it could not be a malware problem…right?

The only way I was able to force the PC to shut down was by holding down the power button for about 8 seconds. Surprisingly, the PC started normally. Thank goodness! My first task was running an optical drive lens-cleaning disk. Then the copying effort was again begun, but with a DVD from a different manufacturer. But the exact same lock-up problem occurred.

After re-starting the computer a second time, I decided to un-install the copying program I was using and instead use the Windows' copying routine. Result… the same lock-up.

What followed were five frustrating hours of ... registry scanning and repair, optical drive driver uninstalling and re-installation, running Microsoft's Windows Integrity and repair utility, Vista and browser updating (even though it had just been done that morning), deep virus and spyware scanning, and even hard drive surface scan and health check.

Although no major problem was uncovered after performing all the tests, with a prayer I tried to copy the files to the DVD once again…with the same disastrous lock-up result.

Next, one by one, each malware protection program was deactivated or uninstalled. After each removal the copying was tried with the same lock-up each time. This was really getting old.

Since all other functions of the computer seemed to work fine, I came to the conclusion that after seventeen years of using CD/DVD drives I had finally had my first optical drive hardware failure. What a momentous occasion.

❖ Last Ditch Effort

But, before I sprang for the $100+ to replace the laptop's optical drive, I decide to try PC Tune-Up™ – a "fix-it-all" program that I had on hand for possible reviewing. After all, what I had been through matched the program's website byline, "Computer Running Slow, Freezing or Crashing?" (**www. largesoftware.com**) I thought they were looking over my shoulder when I read in the second paragraph, "A freezing and crashing computer can be enough to drive a person mad." You bet!

PC Tune-Up™ detects and repairs quite a number of computer problems including: invalid application paths, uninstall information, COM/ActiveX objects, help files, file extensions, font files, most recently used files list, shared DLLs and folders, startup applications and Windows/MS-DOS shortcuts and more.

The website indicates that this program, among a number of operations, really gives the Windows' registry a very through going over with a "complete registry defrag" after an erroneous entry is detected and removed. Remember, I had already tried using two free registry repair programs with little success.

After PC Tune-Up™ tests and repairs all these problems (and more), the program goes on to optimize specific programs on your PC.

OK, we could read marketing verbiage forever. How does PC Tune-Up perform and will it cure our elusive file copying to DVD lock-up problem? With my $100+ for a new optical drive at the ready, I installed PC Tune-Up™.

❖ Hardware Needed

PC Tune-Up™ has very modest hardware needs. It runs on any Pentium system running Windows 2000, XP or Vista. 32 MB of RAM is needed and some hard drive space for the 2.03 MB file.

Running the program is a four-step af-

fair: Backup system, Scan for problems, Repair problems and Defrag computer. See Figure 1. The program can be run in an automatic mode or the user can choose which problems to repair manually. With the mess I was in, I chose the automatic hands-off mode and just watched what happened.

❖ In Action

To insure that there would be not detrimental interactions, I deactivated or uninstalled all other Registry repair and anti-virus/spyware programs. Then I quickly and simply downloaded and installed PC Tune-Up™. Next I started the program and the four steps.

The whole process took about 35 minutes. To my surprise, at the end of step two, 37 problems were detected on my system, some of them "High Priority" at the dangerous level. Even more surprising was that a number of serious registry problems were found, this after I had previously run two registry repair programs.

Although I neglected to capture a copy of my actual screen display showing the discovered problem, Figure 2, from the program's website, is the type of information that was displayed. It shows exactly what problems were found and in which categories. For example, in Figure 2, seventeen "Windows Registry Application Path Sections" problems were found. Also the severity of the problem is displayed via a "Danger Level" bar. Greater detail of each problem can be displayed by clicking on a category.

My results screen showed over 72 problems, with 11 of them as "High Priority" or "High Danger Level." And yet none of my other protection/repair programs indicated any problems. Clearly, someone was not right.

Of the three options available at the bottom of Figure 2, I chose "Repair All Categories" then sat back and waited, quite frankly not expecting much joy.

❖ Optimize and Finish

As an added feature, PC Tune-Up™ can set memory limits and conditions for your applications and operating system processes. See Figure 3. The program claims that this "makes your computer run faster." One of the "tweaks" that this feature provides is "Automatically Ending Hung Applications." I thought it might be applicable to our lock-up problem. Since this feature can be easily turned on and off, I gave it a try.

And, finally, a Protect feature can be selected to guard against installation of malicious ActiveX programs known to cause chaos with computers. Sure, let's have it all!

All well and good, but will PC Tune-Up™ solve our lock-up problem?
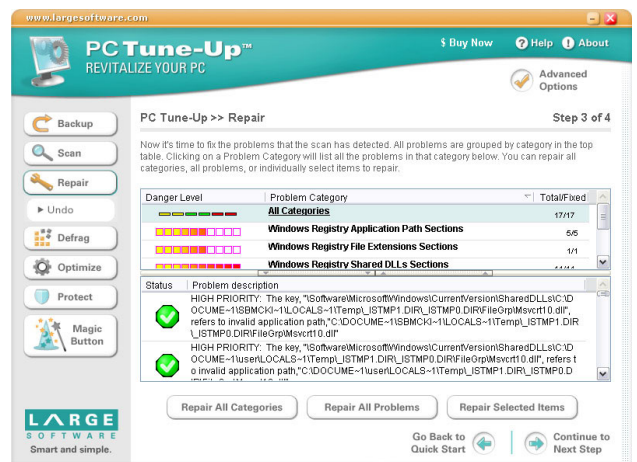
Figure 3 - The "optimize" screen displays some of the problems it can automatically "cure"

❖ Did It Work?

In a word ….YES!!!

After PC Tune-Up™ did all of its "things" in automatic mode and the computer was re-started I tried the to copy my fifty files to a DVD and it worked perfectly! I could have kissed the author of PC Tune-Up™ (hope it's a woman). Three more copies were successfully burned without any issues. After two weeks, the PC has not experienced any further problems.

What can I say? I'm a believer. For my problem PC Tune-Up™ did exactly what it advertised; the lock-up problem was gone and it did it very quickly and easily.

When I first accessed the Internet via my browser it was noticeably much faster, indicating that the program's "Optimize" had also done its job. But after five or so times of starting the browser, it seemed that the speed had been reduced. Perhaps another shot of Optimizer will re-vitalize it again.

If PC Tune-Up™ provided a log of the problems found and the resulting actions, that might be very helpful to understanding the causes. There's a suggested feature for its next version...

PC Tune-Up™ costs $29.95 and can be downloaded at **www.largesoftware.com** (619-990-3830). A free trial version of PC Tune-Up™ limited to cleaning only 25% of the problems it finds is also available. All I can say is, nothing succeeds like success and PC Tune-Up™ did the job!

❖ Cause and Effect

Being trained as a scientist, a nagging question still remains, "What was the cause of the lock-up problem?" It probably was not one single problem, but a number of them. Although I cannot confirm it, I have a feeling that malware was part of the problem. I would have loved to have manually repaired each problem and then tested to see if the lock-up still existed, but by the time I ran PC Tune-Up™, after six hours of frustrating effort, my patience was wearing very thin. In fact, it's lucky I just didn't smash the laptop with a hammer.

Patience is a virtue and can save you money, too! Till next time …

What's NEW
Tell them you saw it in Monitoring Times

New Internet Radio from Sangean

Sangean has just introduced its second entry into the Internet WiFi radio market – the WFR-1. Released on the heels of their first entry into this marketplace (WFR-20), the WFR-1 looks like it will compete favorably with other Internet radios in its price category.

In addition to its Internet Radio capability, you can tune into any of your local standard FM broadcasts using the built in FM tuner with RDS (Radio Data Service). You can also upload your favorite or any internet station to your Sangean WFR-1's "My Station," allowing quick and easy future access. You no longer need to be glued to your computer to access your favorite Internet station, nor do you even have to have your computer on. All you need is a broadband internet connection and a wired or wireless router. You can add to your listening pleasure by creating your own Digital Music Library with the WFR-1.

Load your favorite stations into memory; play your MP3 music files through its high-quality stereo system; listen to virtually every music mode from around the globe; monitor police communications, fire emergencies, even aircraft communications as more and more become available – all in clear, static-free sound!

Some of the basic specifications (subject to change without notice):
- Wired or wireless connection
- Large easy to read four line display
- 20 Internet radio station presets
- Search by country, genre and my favorite radio folder (via the Reciva Internet portal)
- Fully upgradable software through USB port
- Plug and play
- 12 or 24 hour clock format
- Two alarm timers (radio or buzzer)
- Play your music collection from your computer via your wireless connection and the WFR-1 sound system.

- High quality full range 3-inch stereo speakers in acoustically designed wooden cabinet
- Large clock display
- FM tuner with RDS display
- Stereo headphone jack
- Aux in/Line out jacks
- Remote control
- Sleep timer
- 12.7-inches wide x 4.2-inches high x 8.2-inches deep and weighs 6.4 lbs.

Grove Enterprises is selling the Sangean WFR-1 (RCV40) for $349.94 plus shipping, and this new Internet radio should be available for purchase at presstime. We hope to have a full review in *MT* shortly. Grove also carries the Sangean WFR-20 (see the review of this unit in the July 2008 issue of *MT*) for $299.95 plus shipping. With Christmas right around the corner, either of these two radios would be a nice present and addition in the shack for the radio hobbyist on your shopping list.

NRC AM Radio Log 2008-2009

We are a little over a month away from the start of autumn and you know what that means: the start of a new medium wave band DX season. It also means that one of my favorite annual radio publications is again available for purchase – *The NRC AM Radio Log*.

Formerly known as the *National Radio Club Domestic Log*, the first edition of this annual favorite was published by mimeograph and the stencils were hand-typed in Boston by the legendary AM radio hobbyist John Callarman. Since that first edition (which I still have, by the way), the *Log* has moved to a sleek professional publication produced by Wayne and Joan Heinen.

This 2008-2009 29th annual edition of the National Radio Club's *AM Radio Log* contains approximately 290 pages in 8-1/2-inch by 11-inch size, 3-hole punched, loose leaf format, so you can put it neatly into a 1-inch three ring notebook.

AM band radio station by-frequency listings from the United States and Canada include the expanded (X-band) stations from 1610-1700 kHz. Each station listing consists of its operating frequency, callsign, location (city and state of license), time zone, antenna and transmission power, mailing address and daytime telephone number, hours of operation, broadcast format/networks, and much more.

There are also cross reference listings by city and callsign, as well as a list of stations conducting AM stereo operations.

Recent additions to the log lists call letters of FM simulcasts, listings of regional groups of stations in the groups section (separate section of the log book) and a cross reference of those stations that are licensed to use IBOC (In Band On Channel) digital audio. There are nearly 8,000 updates that are new to this edition since the 28th edition was released in the fall of 2008.

The *NRC AM Radio Log* is available from several radio dealers and directly from the club website at **www.nrcdxas.org/**. This publication lists for $25.95 (non-NRC members) and $19.95 (for members). New York residents will have to add sales tax. Orders are shipped postpaid Media Rate. USA and Canada add $3.00 for Priority Shipping. Canadian and overseas rates are as follows:

Canada: Member $24.00
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    $28.95
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    $32.00

You can also get additional information or send orders via mail to: National Radio Club Publications, P.O. Box 473251, Aurora, CO 80047-3251

The *AM Radio Log* is the most accurate source on AM radio stations in the United States and Canada. If you tune the AM broadcast band, you need the *AM Radio Log*. Quite frankly, no self respecting AM DXer or listener should be without this superb publication on their radio room bookshelf.

HAMCALC

HAMCALC "Painless Math for Radio Amateurs" Version 101 was released 15 JUL 2008, containing over 350 programs – a far cry from version 1, released in 1993, which contained 12 programs!

HAMCALC is free R.F. engineering software by George Murphy, VE3ERP, used worldwide as a design, reference and teaching tool by radio amateurs, professionals and educators since its introduction in 1993.

For a FREE download of Version 101 (1.5 Mb), go to <www.cq-amateur-radio.com>, scroll down to the bottom of the home page, and click on HAMCALC.

Next Month …

Word on the street as this column goes to press is that there is a new shareware amateur radio software product that has the Morse code (CW) contest community abuzz. Evidently it is one of the most sophisticated sound card CW decoding packages available anywhere. I hope to have more information on this software package called the CW Skimmer in next month's *What News* column.

Watch What Happens!

The SR2000A is an ultra-fast spectrum display monitor that lets you SEE received signals in FULL COLOR

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- 1000 memory settings (100ch x 10 memory banks)
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- Video display function (NTSC/PAL/SECAM auto select)***
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Scans 10MHz in as little as 0.2 seconds! Instantly detects, captures and displays transmitted signals.

*Government version. Cellular blocked for US consumer version.

**No audio is available when the frequency span is set to 20MHz or 40MHz.

***No audio available while displaying video signal on the LCD. If both video and audio need to be monitored simultaneously, an optional (external) TV2000 is required.

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Attention all those wanting to know what's going on with ham radio in the New Orleans area, check out: **http://groups.yahoo.com/group/GNOAmateurRadio/**

MT BLOGS

Blogs offer an opportunity for columnists to share information that does not make their columns. The news might be too timely for deadline, too short, confined to a small geographical area, too far away to be heard in North America, or even off the columnist's regular "beat." Bookmark these blogs for frequent visits!

MT: AMERICAN BANDSCAN
http://americanbandscan.blogspot.com/ - by Doug Smith

MT: EDITOR'S DESK
(Corrections posted here as well as on MT website)
http://mt-editor.blogspot.com/ - by Rachel Baughn

MT: FED FILES
http://mt-fedfiles.blogspot.com/ - by Chris Parris

MT: MILCOM
http://mt-milcom.blogspot.com/ - by Larry Van Horn

Larry's Monitoring Post
http://monitor-post.blogspot.com/ - by Larry Van Horn

MT: SHORTWAVE
http://mt-shortwave.blogspot.com/- by Gayle Van Horn

MT: UTILITY WORLD
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Weather Alert

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PCR Software Included

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P25 (Option UT-122)

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