

POPULAR COMMUNICATIONS

FEBRUARY 2010

Shortwave Listening • Scanning • AM & FM • Radio History

Extreme Shortwave! Are You Up To The Ultimate DX Challenge?

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FlexRadio's FLEX-3000
Software-Defined Radio, p. 12

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C. Crane's CCRadio-2, p. 46

**PLUS: Getting The
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Info Via HF FAX •
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The Yaesu VR-5000 provides sophisticated wideband reception. Coverage is from 100 kHz to 2600 MHz (2.6 GHz) less cellular, in AM, FM-N, FM-W, LSB, USB and CW. This radio features a real-time bandscope and you get 2000 alphanumeric memories grouped into 100 banks. Optional aids such as a DSP unit, voice synthesizer and digital voice recorder are available. Jacks on the back panel include: Mute, 13.8 VDC input, External Speaker, 10.7 MHz IF Output, Antenna Input A (SO-239 50 ohm) & B (Hi Z 450 ohm), CAT Interface Jack (4800/9600/57600 bps). The VR-5000 comes with the PA28B 117 VAC adapter and a DC power cord. This radio is only 7.1 x 2.75 x 8 inches 4.2 Lbs. Please visit our website for full specifications, color photos and current price.

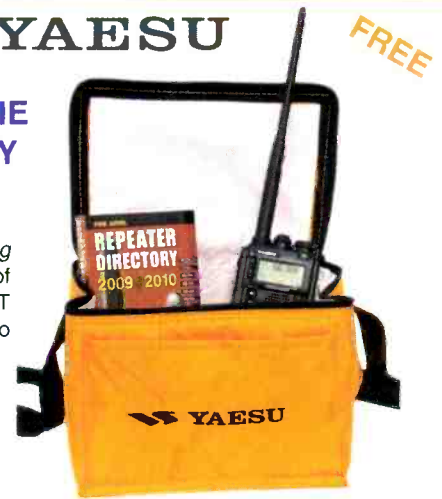
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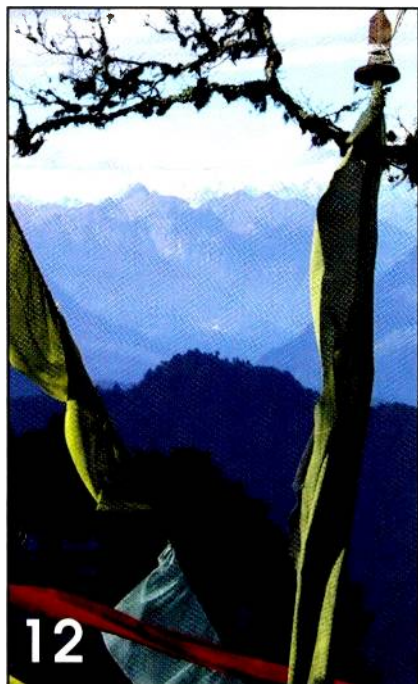
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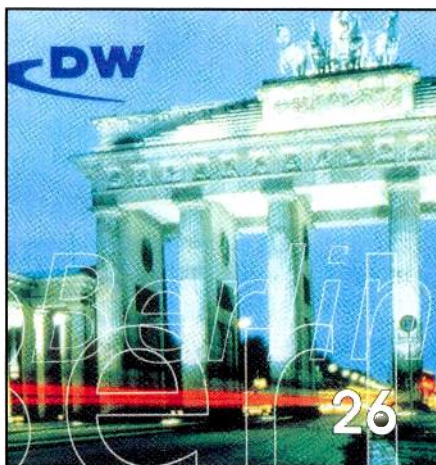
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ON THE COVER

For many of us, a huge part of the obsession with shortwave radio is the sheer difficulty involved in snagging the near-impossible. If you're game for the ultimate test of your monitoring abilities, take up Gerry Dexter's dare, outlined in "X-DX: Extreme DX For The Shortwave Masochist In You," starting on page 12. Climber taking the final few steps onto the 20,305-foot summit of Imja Tse <http://en.wikipedia.org/wiki/Imja_Tse> (*Island Peak*) in Nepal. (Cover photo via Creative Commons; cover design by Larry Mulvehill, WB2ZPI)

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MFJ Triple Trunking Handheld Scanner

Your best value . . . 1000 Channel, 25-1300 MHz Analog Police/Fire Scanner

Hear the inner secrets of your community!

MFJ-8322 Analog Trunking Scanner tunes 800 MHz public service bands and trunks analog Motorola (type I, II and hybrid), EDACS Wide and LTR systems. Most city and county Police/Fire/Emergency services have moved from conventional VHF and UHF frequencies to 800 MHz multi-frequency trunked systems. Monitoring them today requires a scanner that can change the receive frequency with each transmission -- just like the police radios!

Monitoring trunked radio communications is easy. Each service on a trunked system is assigned a "talkgroup ID" or TID. Simply program in the trunked system frequencies and enter the TID's you want to monitor.

A backlit LCD makes it easy to program the name of the TID and tells you exactly what you are monitoring.

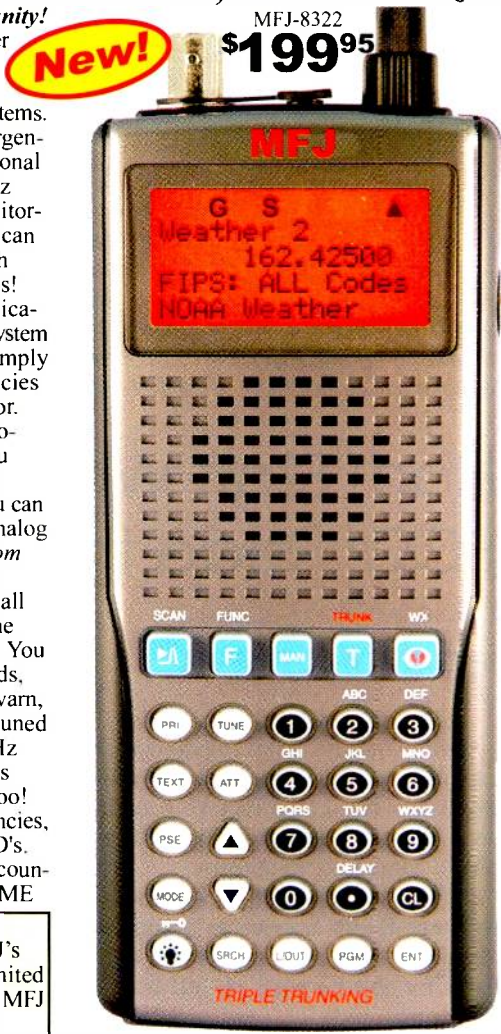
Most trunked systems are analog. You can confirm your local trunked system is analog (not digital) at www.RadioReference.com and compatible with the MFJ-8322.

The MFJ-8322 handheld also tunes all the VHF and UHF bands and has all the features of MFJ-8310 desktop scanner. You can monitor Police/Fire, Business Bands, Aircraft, Marine, NOAA Weather, Skywarn, favorite repeaters - all the frequencies tuned by the MFJ-8310 plus the 222-225 MHz ham band, Military Aircraft frequencies and the 1240 - 1300 MHz ham band, too!

MFJ-8322 stores up to 1,000 frequencies, 10 trunked systems and 1,500 total TID's. Decodes CTCSS and DCS. Enter your county FIPS code and hear *only* NOAA SAME

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severe weather alerts for your county.

An extremely sensitive *Spectrum Sweeper* mode lets you rapidly search, find, monitor and store nearby transmissions of unknown frequencies in *less than a second*. If that's *not* the signal you were looking for, lock out the undesired frequency and search again -- this *cannot* be done by other scanners. You can sweep the scanner's entire frequency range or specify and exclude frequency ranges.

www.RadioReference.com gives you frequencies for both conventional and trunked systems. There may be hundreds of interesting frequencies for your local area. They are all organized complete with descriptions. It couldn't be easier to select what you want to listen to.

It's free to print lists for your city, county or state and it's easy to manually program the MFJ-8322.

Most people prefer to program a scanner this powerful using a computer and readily available third party software. By upgrading your *RadioReference.com* membership to premium the programming software can access and download the *Radio Reference* database directly to your MFJ-8322! MFJ-5432, \$29.95, USB Cable lets you connect your scanner to your computer.

MFJ-8322 Frequency coverage:

25-54; 108-137; 137-174; 216-225; 225-512; 764-960; 1240-1300 MHz.

Includes flex antenna, AC adapter/charger. Uses 4 AA Alkaline or NiMH (charges in scanner) batteries. On/off/volume, squelch controls, 3.5mm phone jack. 5³/₁₆"Hx2⁷/₁₆"Wx1¹/₈"D in. 8.5 oz.

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Set a *Priority Frequency* and MFJ-8310



will switch there whenever it goes active so you'll never miss an important transmission.

Scan Delay delays scanning for 2 seconds before moving to another channel so you can hear more replies that are transmitted on the same channel.

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Patented Zeromatic Tuning continuously adjusts for best signal clarity.

Includes telescoping antenna, 120VAC to 9 VDC adapter. Has bright backlit LCD display, large 3 inch *HighClarity™* speaker, on/off switch, volume and squelch controls, 3.5mm headphone jack, BNC antenna connector. 8¹/₄"Wx6⁷/₈"x2⁷/₈" inches. 1¹/₂ lb.

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MFJ-7708, \$3.95. Adaptor lets you use coax with PL-259 connector on your BNC MFJ-8310/8322.

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EDITORIAL

Tuning In

by Edith Lennon, N2ZRW

editor@popular-communications.com

The radio amateurs among our readers are most likely already aware of the FCC's October 20, 2009, Public Notice and its possible ramifications for hams involved in anything that can be remotely construed as tinged with "pecuniary interest," possibly including, as you'll see below, even emergency communications. If you're not sure what we're talking about, you owe it to yourself—and the hobby—to find out (that goes for non-hams, too). With that, I turn this page over to Pop'Comm columnist Gordon West, WB6NOA.—ed.

Ham Staff With EmComms FCC: Read the Rules!

by Gordon West, WB6NOA

Better muzzle your emergency drill ham radio traffic if you're employed by any entity that could receive benefit in your disaster preparation networks with fellow ham radio volunteers.

FCC Rule 97.1(a)(4) describes the Amateur Radio Service as a non-commercial communication service authorized for the purpose of self-training, intercommunication, and technical investigations carried out by licensed persons interested in radio technique solely with a personal aim and without pecuniary interest.

The Commission's Rules specifically prohibit amateur stations from transmitting communications in which the station licensee or control operator has a pecuniary interest, "including communications on behalf of an employer," added the FCC in its October 20, 2009, Public Notice. With that, ham radio emergency communication operators received a sharp warning about EmComm staff members participating in routine ham radio emergency weekly nets and drills.

In speaking about violations of section 97.113(a)(3), FCC Attorney Laura Smith said: "...it does not matter if the amateur is off duty, or on their lunch hour; it does not matter if their job description does not include the so-called operation of amateur radio; it does not matter if they are not getting paid specifically for the drill; it does not matter if they sign a statement indicating they are doing this strictly as a

volunteer...there is no loophole to the rule...they may not use the radio on behalf of their employer—period." Smith was specifically referring to a hypothetical hospital emergency preparedness drill conducted by a hospital employee, an avid ham radio emergency communications operator, making contact with outside ham volunteers.

Years ago, this rule kept our ham radio service clean of commercial encroachment. An ambulance company could not allow its all-ham dispatchers and drivers to receive dispatches on the 2-meter ham band. This rule kept marine hardware stores from setting up a ham station so its ham employees could take orders from sailing ham friends over the 40-meter maritime nets. This rule would also forbid a rural fire department using 6-meter ham frequencies between its paid-call ham fire personnel to step up their calls to Code 3 while operating a 52-MHz ham repeater.

But this rule interpretation has been a blow to that avid ham fire captain who recently set up a disaster preparedness neighborhood CERT team of volunteers, some of whom were hams, to help pass received flea-powered FRS (simulated) disaster reports. Not only could this fire captain not participate in the actual drill, but would also be prohibited from checking in to any type of emergency pre-

(Continued on page 66)

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Bearcat® 796DGV Trunk Tracker IV with free scanner headset

Manufacturers suggested list price \$799.95
CEI Special Price \$519.95

1,000 Channels • 10 banks • CTCSS/DCS • S Meter
Size: 6"15/16" Wide x 6"9/16" Deep x 2"3/8" High

Frequency Coverage: 25,000-512,000 MHz., 806,000-956,000 MHz. (excluding the cellular & UHF TV band), 1,240,000-1,300,000 MHz.

When you buy your Bearcat 796DGV TrunkTracker package deal from Communications Electronics, you get more. The GV means "Great Value." With your BC796DGV scanner purchase, you also get a **free deluxe scanner headphone** designed for home or race track use. Headset features independent volume controls and 3.5 mm gold right angle plug. The 1,000 channel Bearcat 796DGV is packed with features to track Motorola Type I/II/III Hybrid, EDACS, LTR Analog Trunk Systems and Motorola APCO 25 Phase I digital scanner including 9,600 Baud C4FM and CQPSK. Also features control channel only mode to allow you to automatically trunk many systems by simply programming the control channel. S.A.M.E. weather alert, full-frequency display and backlit controls, built-in CTCSS/DCS to assign analog and digital subaudible tone codes to a specific frequency in memory, PC Control and programming with RS232C 9 pin port (cable not supplied), Beep Alert, Record function, VFO control, menu-driven design, total channel control and much more. Our CEI package deal includes telescopic antenna, AC adapter, cigarette lighter cord, DC cord, mobile mounting bracket with screws, owner's manual, trunking frequency guide and one-year limited Uniden factory warranty. For maximum scanning enjoyment, order magnetic mount antenna part number ANTMMBNC for \$29.95. For complete details, download the owners manual from the www.usascan.com web site. For fastest delivery, order on-line at www.usascan.com.

Bearcat® BCT8 Trunk Tracker III

Manufacturer suggested list price \$299.95
CEI Special Price \$169.95

250 Channels • 5 banks • PC Programmable

Size: 7.06" Wide x 6.10" Deep x 2.44" High

Frequency Coverage: 25,000-54,000 MHz., 108,000-174,000 MHz., 400,000-512,000 MHz., 806,000-823,985 MHz., 849,012-868,985 MHz., 894,012-956,000 MHz.

The Bearcat BCT8 scanner, licensed by NASCAR, is a superb preprogrammed 800 MHz trunked highway patrol system scanner. Featuring TrunkTracker III, PC Programming, 250 Channels with unique BearTracker warning system to alert you to activity on highway patrol link frequencies. Preprogrammed service searches makes finding interesting active frequencies even easier and include preprogrammed police, fire and emergency medical, news agency, weather, CB band, air band, railroad, marine band and department of transportation service searches. The BCT8 also has preprogrammed highway patrol alert frequencies by state to help you quickly find frequencies likely to be active when you are driving. The BCT8 includes AC adapter, DC power cable, cigarette lighter adapter plug, telescopic antenna, window mount antenna, owner's manual, one year limited Uniden warranty, frequency guide and free mobile mounting bracket. For maximum scanning enjoyment, also order the following optional accessories: External speaker ESP20 with mounting bracket & 10 feet of cable with plug attached \$19.95. Magnetic Mount mobile antenna ANTMMBNC for \$29.95.



Bearcat® BCD396T Trunk Tracker IV

Suggested list price \$799.95/CEI price \$519.95

APCO 25 9,600 baud compact digital ready handheld TrunkTracker IV scanner featuring Fire Tone Out Paging, Close Call and Dynamically Allocated Channel Memory (up to 2,500 channels), SAME Weather Alert, CTCSS/DCS, Alpha Tagging.
Size: 2.40" Wide x 1.22" Deep x 5.35" High

Frequency Coverage:

25,000-512,000 MHz., 764,000-775,985 MHz., 794,000-823,985 MHz., 849,012-868,985 MHz., 894,012-956,000 MHz., 1,240,000 MHz.-1,300,000 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 memory 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 birds. **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.

Bearcat® BC246T Trunk Tracker III

Suggested list price \$399.95/CEI price \$214.95
Compact professional handheld TrunkTracker III scanner featuring Close Call and Dynamically Allocated Channel Memory (up to 2,500 channels), SAME Weather Alert, CTCSS/DCS, Alpha Tagging.
Size: 2.72" Wide x 1.26" Deep x 4.6" High

Frequency Coverage:

25,000-54,000 MHz., 108,000-174,000 MHz., 216,000-224,980 MHz., 400,000-512,000 MHz., 806,000-823,985 MHz., 849,012-868,985 MHz., 894,012-956,000 MHz., 1,240,000 MHz.-1,300,000 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 you have 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 birds. **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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The Weirder Side Of Wireless

by Staff

Free News Is Good News

Why go looking for bad news when you can let it come to you? According to an article in the *Patriot-News*, residents in Lower Paxton Township (Pennsylvania) have the option of signing up to receive crime updates. Township police have started using Nixle, a free service that lets them send text messages and emails about criminal incidents to residents who sign up for it. Updates might cover a rash of car break-ins or suspects on the loose. The difference between Nixle and social networking sites such as Facebook and Twitter is that Nixle is more secure and more geographic, says Nixle founder and CEO Craig Mitnick. “It gives them the ability to push unfiltered information to the exact residents it’s relevant to,” say Mitnick as quoted in the article. Nixle is free to government agencies, but text-messaging rates apply to anyone who signs up for the service. The borough’s mayor, Tom Acri, said feedback from residents has been positive. “It’s been a good experience and a free experience. If more communities use it, it may stay a free site,” says Acri as quoted as saying.

A Radio Restitution

It’s the kind of story more suited to the pages of “Shannon’s Broadcast Classics” than a police blotter. Associated Press writer Nigel Duara reports that a handwritten letter with a phony return address arrived at a Catholic college in Iowa last November and opened a door into a long-forgotten mystery. The author was seeking forgiveness for a crime so minor, no one could recall it. But the thief didn’t forget, and slipped five \$100 bills into the envelope as repayment for a portable radio that must have cost only a few dollars when it was stolen in 1955 from a teacher’s lounge at Clarke College in Dubuque, Duara reported.

The penitent purloiner penned, “I have regretted this foolish act ever since and have resolved many times in these past years to make restitution,” he or she wrote. “I’m ashamed that it has taken this long to turn resolve into action.”

The letter writer requested that the money go toward “the comfort of your current faculty members and ask them to forgive me, and join me in praying for God’s forgiveness as well.”

The letter offers few clues to the thief’s identity. The person was on campus in the mid-1950s,

and the letter carried a Chicago postmark. Perhaps Shannon can solve the mystery.

More X-DX, Navy Style

We humans are a social bunch and, as the SETI (Search for Extraterrestrial Intelligence) Institute demonstrates, we’re willing to look far and wide for company. In fact, if a telegram published on the blog Letters of Note (www.letter-sofnote.com) is authentic, the government itself was seeking companionship from our nearest planetary neighbor as early as 1924. According to the blog, the telegram, from then Chief of U.S. Naval Operations, Edward W. Eberle, instructs all Naval stations to monitor the airwaves for any unusual transmissions “due to anticipated contact from Martians.” It continues: “August 22nd of that year was witness to the closest Mars opposition since 1804 (a mere 55,777,566 km), and as such provided desirable conditions in which to receive radio signals from the Red Planet. The man tasked with clearing the airwaves—a Professor David Todd—somehow managed to persuade both the Army and Navy to report any findings for a three-day period, but failed to silence the country’s private radio broadcasters for even two days.”

The telegram reads:

7021 ALNAVSTA EIGHT NAVY DESIRES COOPERATE ASTRONOMERS WHO BELIEVE POSSIBLE THAT MARS MAY ATTEMPT COMMUNICATION BY RADIO WAVES WITH THIS PLANET WHILE THEY ARE NEAR TOGETHER THIS END ALL SHORE RADIO STATIONS WILL ESPECIALLY NOTE AND REPORT ANY ELECTRICAL PHENOMENON UNUSUAL CHARACTER AND WILL COVER AS WIDE BAND FREQUENCIES AS POSSIBLE FROM 2400 AUGUST TWENTY FIRST TO 2400 AUGUST TWENTY FOURTH WITHOUT INTERFERING WITH TRAFFIC 1800

Around the same time, *Popular Radio* magazine ran an ad about the close opposition, querying, “Is Mars Signaling to Us by Radio?” The ad copy stated “All over the world scientists are preparing to communicate with our distant neighbor by radio.”

Unfortunately, no Martian signals were logged during that three-day period, nor since.

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MFJ-462B
\$199⁹⁵

Plug this self-contained MFJ Multi-Reader™ into your shortwave receiver's earphone jack.

Then watch mysterious chirps, whistles and buzzing sounds of RTTY, ASCII, CW and AMTOR (FEC) turn into exciting text messages as they scroll across an easy-to-read LCD display.

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Eavesdrop on the world's press agencies transmitting *unedited* late breaking news in English -- China News in Taiwan, Tanjung Press in Serbia, Iraqi News in Iraq -- all on RTTY.

Copy RTTY weather stations from Antarctica, Mali, Congo and many others. Listen to military RTTY passing traffic from Panama, Cyprus, Peru, Capetown, London and others. Listen to hams, diplomatic, research, commercial and maritime RTTY.

Super Active Antenna

"World Radio TV Handbook" says MFJ-1024 is a "first-rate easy-to-operate active antenna . . . quiet... excellent dynamic range... good gain... low noise... broad frequency coverage."

Mount it outdoors away from electrical noise for maximum signal, minimum noise. Covers 50 KHz-30 MHz. Receives strong, clear signals from all over the world. 20 dB attenuator, gain control, ON LED. Switch two receivers and auxiliary or active antenna. 6x3x5 in. Remote has 54" whip, 50 feet coax. 3x2x4 inches. 12 VDC or 110 VAC with MFJ-1312, \$15.95.



MFJ-1024
\$159⁹⁵

Indoor Active Antenna

Rival outside long wires with this tuned indoor active antenna. "World Radio TV Handbook" says MFJ-1020C is a "fine value... fair price... best offering to date... performs very well indeed."

Tuned circuitry minimizes intermod, improves selectivity, reduces noise outside tuned band. Use as a preselector with external antenna. Covers 0.3-30 MHz. Tune, Band, Gain, On/Off/Bypass Controls. Detachable telescoping whip. 5x2x6 in. Use 9 volt battery, 9-18 VDC or 110 VAC with MFJ-1312, \$15.95.



MFJ-1020C
\$99⁹⁵

Compact Active Antenna

Plug this compact MFJ all band active antenna into your receiver and you'll hear strong, clear signals from all over the world, 300 KHz to 200 MHz including low, medium, shortwave and VHF bands. Detachable 20" telescoping antenna. 9V battery or 110 VAC MFJ-1312B, \$15.95. 3 1/4x1 1/4x4 in.



MFJ-1022
\$69⁹⁵

Eliminate power line noise!

Completely eliminate power line noise, lightning crashes and interference before they get into your receiver! Works on all modes -- SSB, AM, CW, FM, data -- and on all shortwave bands. Plugs between main external antenna and receiver. Built-in active antenna picks up power line noise and cancels undesirable noise from main antenna. Also makes excellent active antenna.

MFJ Antenna Matcher

Matches your antenna to your receiver so you get maximum signal and minimum loss. MFJ-959C

Preamp with gain control boosts weak stations 10 times. 20 dB attenuator prevents overload. Select 2 antennas and 2 receivers. 1.6-30 MHz. 9x2x6 in. Use 9-18 VDC or 110 VAC with MFJ-1312, \$15.95.

High-Gain Preselector

High-gain, high-Q receiver preselector covers 1.8-54 MHz. Boost weak signals 10 times with low noise dual gate MOSFET. Reject out-of-band signals and images with high-Q tuned circuits. Push buttons let you select 2 antennas and 2 receivers. Dual coax and phono connectors. Use 9-18 VDC or 110 VAC with MFJ-1312, \$15.95.

Dual Tunable Audio Filter

Two separately tunable filters let you peak desired signals and notch out interference at the same time. You can peak, notch, low or high pass signals to eliminate heterodynes and interference. Plugs between radio and speaker or phones. 10x2x6 inches.



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MFJ-959C
\$119⁹⁵



MFJ-1045C
\$89⁹⁵



MFJ-752C
\$119⁹⁵

Listen to maritime users, diplomats and amateurs send and receive *error-free* messages using various forms of TOR (Telex-Over-Radio).

Monitor Morse code from hams, military, commercial, aeronautical, diplomatic, maritime -- all over the world -- Australia, Russia, Japan, etc.

Monitor any station 24 hours a day by printing transmissions. Printer cable, MFJ-5412, \$11.95.

Save several pages of text in memory for later reading or review.

High Performance Modem

MFJ's high performance *PhaseLockLoop*™ modem consistently gives you solid copy -- even with weak signals buried in noise. New threshold control minimizes noise interference -- greatly improves copy on CW and other modes.

Easy to use, tune and read

It's easy to use -- just push a button to select modes and features from a menu.

It's easy to tune -- a precision tuning indicator makes tuning your receiver easy for best copy.

It's easy to read -- front-mounted 2 line 16 character LCD display has contrast adjustment.

Copies most standard shifts and speeds. Has

MFJ *AutoTrak*™ Morse code speed tracking.

Use 12 VDC or use 110 VAC with MFJ-1312D AC adapter, \$15.95. 5 1/4x2 1/2xHx5 1/4D inches.

WiFi Yagi Antenna -- 15 dBi 16-elements extends range



16-element, 15 dBi WiFi Yagi antenna greatly extends range of 802.11b/g, 2.4 GHz WiFi signals. 32 times stronger than isotropic radiator. Turns slow/no connection WiFi into fast, solid connection. Highly directional -- minimizes interference.

N-female connector. Tripod screw-mount. Wall and desk/shelf mounts. Use vertically/horizontally. 18Wx2 1/4xHx1 1/4D inches. 2.9 ounces.

MFJ-5606SR, \$24.95. Cable connects MFJ-1800/WiFi antennas to computer.

Reverse-SMA male to N-male, 6 ft. RG-174.

MFJ-5606TR, \$24.95. Same as MFJ-5606SR but Reverse-TNC male to N-male.



MFJ Shortwave Headphones



MFJ-392B
\$24⁹⁵

Perfect for shortwave radio listening for all modes -- SSB, FM, AM, data and CW. Superb padded headband and ear cushioned design makes listening extremely comfortable as you listen to stations all over the world! High-performance driver unit reproduces enhanced communication sound. Weighs 8 ounces, 9 ft. cord. Handles 450 mW. Frequency response is 100-24,000 Hz.

High-Q Passive Preselector

High-Q passive LC preselector boosts your favorite stations while rejecting images, intermod and phantom signals. 1.5-30 MHz. Preselector bypass and receiver grounded positions. Tiny 2x3x4 in.

Super Passive Preselector

Improves any receiver! Suppresses strong out-of-band signals that cause intermod, blocking, cross modulation and phantom signals. Unique Hi-Q series tuned circuit adds super sharp front-end selectivity with excellent stopband attenuation and very low passband loss. Air variable capacitor with vernier. 1.6-33 MHz.

MFJ Shortwave Speaker

This MFJ *ClearTone*™ restores the broadcast quality sound of shortwave listening. Makes copying easier, enhances speech, improves intelligibility, reduces noise, static, hum. 3 in. speaker handles 8 Watts. 8 Ohm impedance. 6 foot cord.



MFJ-281
\$12⁹⁵

MFJ All Band Doublet

102 ft. all band doublet covers .5 to 60 MHz. Super strong custom fiberglass center insulator provides stress relief for ladder line (100 ft.). Authentic glazed ceramic end insulators and heavy duty 14 gauge 7-strand copper wire.



MFJ-1774
\$59⁹⁵

MFJ Antenna Switches

MFJ-1704 \$79⁹⁵ MFJ-1702C \$39⁹⁵



MFJ-1704 heavy duty antenna switch lets you select 4 antennas or ground them for static and lightning protection. Unused antennas automatically grounded. Replaceable lightning surge protection. Good to 500 MHz. 60 dB isolation at 30 MHz. MFJ-1702C for 2 antennas.

Morse Code Reader

Place this pocket-sized MFJ Morse Code Reader near your receiver's speaker. Then watch CW turn into solid text messages on LCD. Eavesdrop on Morse Code QSOs from hams all over the world!



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\$89⁹⁵

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MFJ-108B, \$21.95. Dual 24/12 hour clock. Read UTC/local time at-a-glance. High-contrast 5/8" LCD, brushed aluminum frame. Batteries included. 4 1/2xWx1Dx2H inches.



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News, Trends, And Short Takes

by D. Prabakaran

BBG Says Its Broadcasts Still Attract Large Audiences

U.S. international broadcasting attracted wide audiences worldwide in 2009, particularly in key countries including Iraq, Afghanistan, and Iran, despite declines in press freedom and the targeting of journalists in some countries, the Broadcasting Board of Governors (BBG) announced. More than 171 million people worldwide turn to U.S. international broadcasts across media platforms every week for news and information, according to the BBG's independent research. This figure is statistically unchanged from the BBG's global audience estimate of 175 million reported in June 2008 and represents an increase of more than 70 percent over the 100 million listeners and viewers in 2002.

Countries with the highest percentage of audience reached include Iraq (72 percent), Rwanda (72 percent), Kosovo (64 percent), Afghanistan (56 percent), and Haiti (50 percent). Audiences increased to a record 43 percent in Armenia and to 16 percent in Zimbabwe.

The largest audiences for U.S. international broadcasting include Nigeria (22 million), Indonesia (16 million), Iran (14.5 million), and Iraq (11.7 million). The BBG's first-ever survey of Niger found an audience of nearly 3 million in that country, while the first nationwide survey of Haiti found 1.4 million listeners. The audience also increased by 1.4 million in Egypt.

In many countries, audience samples are extremely limited and require audience members to acknowledge illegal listening and/or viewing, activities that result in severe penalties. Numbers for these hard to reach countries and regions, such as Somalia, North Korea, Tibet, and the Xinjiang Uyghur Autonomous Region, are not included in the overall estimate. Such restrictive environments may make survey participants reluctant to reveal media habits that include banned international broadcasts.

(Source: BBG)

Press Now Opens First Mobile Radio Station In Afghanistan

Afghanistan has its first mobile radio station, a joint project of the Bamiyan University located

northwest of the capital Kabul and the Hilversum-based Press Now Foundation. It will cater to the communities in rural areas not covered by other stations. Dean of the University of Bamiyan, dr Yusufi Ali opened the station with a welcome to all the people living in the valley. His voice was heard up to a distance of nearly 20 kilometers. The project is funded by Cordaid, a Dutch-based international development agency specializing in emergency aid and reconstruction support. The mobile studio is fixed in an overhauled Swiss truck with a mounted transmitter, a small built-in recording set up, and an editing unit. The Dean of the Bamiyan University explained that the mobile station would park at a certain location in the province while the producers start collecting information, produce radio programs and make field-recordings.

(Source: www.pressnow.nl/)

Financial Crisis Threatens BBC Ascension Island Relay

The BBC relay station on Ascension Island could become victim of a financial crisis on the island caused by the UK Ministry of Defence (MoD). According to The Times, the threat comes because the MoD is determined to cut costs to pay for Afghanistan. Its refusal to pay back-taxes on the airbase that Britain shares with the U.S. has left Ascension with a £900,000 (approximately \$1,484,000) deficit on its £6 million (approximately \$9,898,500) budget. The island's small council and government, responsible for all services to the 900 inhabitants, have cut spending to the bone. The Times says that the 50 specialist engineers who maintain the power station and vast array of transmitters, antennas, and satellite dishes at the BBC relay station would leave overnight if they were forced to send their families off the island. Without the BBC relay there would be no power generation or desalination plant. There would be no water for anyone on the island except the Americans, who operate their own power and desalination plants.

(Source: The Times)

(Continued on page 68)

Capitol Hill And FCC Actions Affecting Communications

by Richard Fisher, KI6SN

Updated Amateur Radio Technician Class Question Pool Released

A new pool of test questions for the Technician class of FCC-issued amateur radio license has been released to the public and goes into effect with examinations beginning July 1. The Question Pool Committee (QPC) of the National Conference of Volunteer Examiner Coordinators (NCVEC) had released the new questions to the 14 Volunteer Exam Coordinators (VECs) in December 2009. The pool was made available to the public in January 2010. Each pool of questions for the Technician, General, and Amateur Extra classes of licenses is “reviewed on a four-year rotation,” according to a report from the American Radio Relay League. “This new Technician class pool will become effective on July 1, 2010.” The pool will remain in effect until June 30, 2014.

FCC Withdraws Station Fine Following “Botched” Emergency Alert System Test

A \$5,000 FCC Notice of Apparent Liability against a Southern California church-affiliated FM station that prompted protests from broadcasters who alleged the Emergency Alert System “is prone to errors, and that the station did not intentionally improperly transmit the botched test” has been rescinded by the Commission, according to published reports. Calvary Chapel of Costa Mesa, California, the licensee of KWVE-FM, was cited for “transmitting an incomplete required monthly test,” a story on Radio Magazine Online reported. “The station also tried to remedy the error without success.” Although the NAL was withdrawn, KWVE-FM was “admonished for transmitting an unauthorized RMT (required monthly test) of the EAS and failing to transmit

the End of Message code as well as the message advising that the test had been concluded.”

Oregon Newlywed Shuts Down Radio Station After FCC Investigates

A newlywed Oregon man, faced with the possibility of a \$10,000 FCC fine and forfeiture of his transmitting equipment, has shut down his non-profit, low-power community radio station after the Commission alleged it was operating illegally. According to a report on OregonLive.com, the FCC said Ken Cartwright’s radio operation—KENC, based in Stayton, Oregon—violated community radio regulations because “the station’s transmission line, antenna and ground lead exceeded the 3-meter height allowed. Plus, KENC can be heard over three transmitters, each of which covers 10 to 12 blocks in Stayton and neighboring Sublimity. That’s too far,” the story reported. “The FCC says the station is allowed a signal strength that carries just over 98 feet. In other words, unless a listener stands just outside the century-old building that houses the station, they won’t hear it.”

On the day before his wedding to fiancée Jan Castillo, Cartwright sent out news releases inviting listeners to “be part of the wedding online.” KENC streams its broadcasts at kencradio.com. The FCC learned of KENC’s operation after newspaper stories about the wedding appeared. “Three days later, Binh Nguyen, the FCC resident agent based in Vancouver, showed up at the newlywed Cartwright’s door,” OregonLive reported. People who operate unlicensed, low-power radio stations must abide by FCC regulations that fill more than 30 single-spaced pages, according to OregonLive. Cartwright said he was aware of the rules and believed his operation was within regulations. “KENC will continue to stream its broadcasts online, said Cartwright, who is so steaming mad that he wrote to his congressmen, Rep. Kurt Schraeder, and Sen. Ron Wyden,” the story said.

Sorting The TV Sources

by Rob de Santos
commhorizons@gmail.com

“...if you have the money and the time, you can use a PC or network hard drive to stream video to your TV (that’s getting easier with the newer computer operating systems).”

As a friend often reminds me, her rural community had one TV station and no cable service until well into the 1990s. Of course, that was the exception. By the middle of the last decade, most of us had access to dozens of channels via cable or satellite. Now, it’s hundreds. Add to that the myriad other sources of video and the TV landscape is changing rapidly.

The transformation of the video business is accelerating and we’re entering the “second phase” of the technology. It’s been less than one human lifetime since the transmission of moving pictures and sound by electromagnetic waves was invented. It was 20 years before a convenient means was available for recording programs off the air and another 10 years before that technology was a readily available consumer product in the form of the VCR. In the ensuing several decades, we’ve seen the development of the DVD, HD television, DVR, PVR, YouTube, and more.

Where are we today and what’s available now? Following is just a small sampling of the products and technologies currently emerging. There’s 3-D television, which I discussed in a prior column. There’s the Internet as a delivery medium (you can subscribe to a few Internet-delivered “cable lineups” now). TiVo and dedicated interface boxes like the Roku Digital Video Player and the Apple TV provide another delivery method. And if you have the money and the time, you can use a PC or network hard drive to stream video to your TV (that’s getting easier with the newer computer operating systems). Fiber optic is slowly replacing coax cable and most television delivered to a home travels over both before it gets to your TV. Of course, there’s HD TV sending electromagnetic waves to your TV. I’m sure many of you have “smartphones” and can watch TV on your telephone or PDA. And I haven’t touched on the personal computer applications.

Where is video delivery going? What will it be like in five or 10 years? It’s safe to say that in the next few years we’ll continue to see growth in the variety of delivery methods with almost all the new entrants using the Internet in one way or another. The use of wireless delivery (wait, isn’t that radio?) will also be a major factor in the near term as 4G cellular networks begin to roll out widely. Not all of these options will prove to be cost effective or good business, and it’s like that

we’ll see considerable differences from one country to the next.

What about the longer term? I’d like to tell you that you can confidently bet on the following predictions and make money, but alas, past experience of unexpected turns in history suggests you shouldn’t use my crystal ball as your investment advisor! Disclaimers aside, here goes:

Handheld devices will continue to be more powerful and both serve as sources of video and as delivery mechanisms. There’s a convergence going on in the handheld space. The devices can function as telephone, GPS, music player, etc. Where it ends and how much the public wants in one device isn’t clear. Complexity and screen size put some restrictions on how far we can go. For example, we can build watches small enough for an ant but they’d be useless to humans. The more functions the device performs the greater the complexity in its operation and the greater opportunity for points of failure.

Televisions will be linked to the Internet and many will lose their ties to the “cable.” The features in boxes like Roku and SlingPlayer will gradually be integrated into the TV itself or the provider’s set top box. The remaining question is how many add-on features will actually prove to be “value added” for the manufacturer, provider, or consumer.

Screen size (both large and small) will plateau but picture resolution and quality will continue to improve on TVs and other display devices. The display technology will continue to evolve and become more lifelike; 3-D will become easier and more widespread.

We’ll stop seeing “TV” as something you watch on a big screen in your living room, and video will become a product available on any screen, anywhere, and increasingly at anytime.

The video industry will continue to face tension between those who want to control the pipes and those who want to control content. The public is not likely to be comfortable with single entities that control both. The strongest players will have their hands in mobile devices, content creation, and signal delivery.

What do you think? Next month we’ll look at the direction of radio. Send some electrons or ink particles in my direction and let me know your thoughts.

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BHUTAN BROADCASTING SERVICE
The Bhutanese Expression



The stark beauty of the Himalayan country of Bhutan is home to a station everyone wants but few can log, Bhutan Broadcasting Service. Pass view on way to Phunaka, Bhutan. (Photo by Ray Novak)

X-DX: Extreme DX For The Shortwave Masochist In You

***Here's The Ultimate Monitoring Challenge, Plus Operating Tips
Should You Choose To Accept It***

by Gerry Dexter

Mr. Webster's dictionary offers one definition of the word "masochist" as someone with "a taste for suffering." The more serious SWLs among us will qualify, at least a little. The very serious ones, the extremists, or X-DXers, are hardcore. We relentlessly tune around the bands, check our want lists, and read club bulletins, magazine columns (it had better be you-know-what!), and hope against hope for improvement—if not today, then certainly tomorrow or the next day! Our lives are practically ruled by the propagation reports on WWV and what they can do for us, or to us. In the end we have to agree that we're all a bit masochistic, whether we care to admit it or not.

The real certifiable X-DXer isn't troubled at all by a lack of signals from juicy DX targets. For him a complete absence of sunspots is a shot of adrenaline. He may have an affliction, but you gotta hand it to him—he's the one holding the line and making tackles when there's only a minute left in the game and his team is down by seven touchdowns, the one still trudging toward the highest peak after everyone else has collapsed!

So let's hear it for that masochist, the X-DXer. He'll likely be the first to notice the turn around when (if?) it comes. To encourage a continuation of his battle—to keep him pounding away, here are a couple of dozen of what would be "impossible dream" catches, designed to keep our suffering hero happy. He can flail and claw at them from now until conditions either get very much better or Brother Stair leaves the air—whichever comes first.

If you don't feel you're in good enough shape for X-DXing, or don't have your certificate framed and on your shack wall, then please put the magazine down and step away; we wouldn't want you to get hurt. But you're up to a challenge, this is one for the record books.

Now, let the frustrations begin!

Meet Your Opponents...

We start with Radio Municipal, 3172, in Pano, Peru. Some authoritative listings aren't even sure what power this station uses; I think it's about 1 kW, probably less. Being a domestic Peruvian you can be sure its programming is all in Spanish. It has a fairly full broadcast day, 0830–0400. Any reception at all is totally dependent upon openings that reach deep into South America, which are few and far between. Pano is in Pachitea Province, in Huanuco State.

Same name, different country: Radio Municipal, Sao Gabriel, Brazil, uses 3375 with Portuguese programming from 0900–0100 (Monday–Saturday) and all week from 1000–1300 and 2100–0300. Sao Gabriel de Cachoeira is in Amazonas State. It is rated at a whopping 5 kW, so that increases your chances by about the width of a Wahoo whisker.

The Voice of Iranian Kurdistan is one of those clandestine or opposition or target broadcasters—place it in whatever pigeonhole you choose. This involves entering the treacherous 75-meter ham band at 0300–0400, a high-traffic time when the hams are busy exchanging 5/9s. This station, using 3970, is thought to operate from the Kurdish portion of Iraq and has a contact office in Paris.

You think that one was tough? Then this one will really raise the gooseflesh. The Voice of Jammu-Kashmir Freedom, operating on 3975—that's just 5 kHz up from the previous one you

Gerry Dexter is *Pop'Comm's* "Global Information Guide" columnist.

"Now here's a target even the semi-sane folk will gladly go for broke on: Radio Bahrain. It's one of the few countries still operating that haunt all our dreams."

couldn't hear. It's another clandestine type, based in Pakistan and broadcasting for some hours in English (so they say). The station is active from 0245–0715, 0745–0845, and 1300–1430. It's also listed for operation on 3995, 5990, and 7230, but these don't appear to be at all active. Other languages in use are Urdu, Hindi, and a couple of others none of us has ever heard of.

Still in the geo-political vein, Radio Komala-The Voice of the Iranian Revolution, another favor from Iraq, broadcasts political content in Farsi to Iran on 4336 kHz. This clandestine outfit is programmed by the Representatives of Komala Abroad. They have an office in Cologne, Germany, as well as an email address—even a website with on-demand audio, very uptown! The shortwave frequency is in operation from 0425–0600, but on Fridays only.

Back to South America, Radio Centinela del Norte, in Cortegana, Celendin Province, Cajamarca, Peru, isn't indicated with any power at all. Does that mean that you really can't hear it? (That would make for an ideal masochist's target!) But the bitter truth is that there have been one or two loggings some

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The VL8K broadcast tower in Katherine, Australia.

years back but none since. It operates in Spanish from 1000–0200 on 4655, assuming the station is really active.

There may be better times and frequencies to hear Armenian National Radio, but why take the easy way when you can search for it on 4810 and confront CODAR, and even occasional RTTY QRM as you make your effort? This state radio operates from Yerevan with daily broadcasts in Farsi from 0330–0400. It's also on from 1315–45 in Yezidish and 1345–1400 in Azeri, and continues on past that hour for another 60 minutes in Turkish and Kurdish, but its signal would have long faded by then, assuming it had ever been "in."

We have to add good ol' All India Radio to the list since there are so many elusive sites from which to choose. It's hard to decide which one would cause more pain and frustration, but let's go with AIR-Gangtok in Sikkim State. Sikkim counts as a separate country on the NASWA Country list (www.naswa.net), since it was an independent kingdom when the NASWA list was compiled thousands of years ago. This AIR outlet is actually heard on the West Coast although extremely rarely, on 4835. It operates from 0100–0400 and 1030–1600 with broadcasts in Hindi.

The country of Bolivia fairly reeks with near-unattainable DX targets. Among the many there is Radio Estambul on 4875, which operates from 2000 to 0315, all in Spanish. This is located in Guayaramerin, in Beni Province. It's another one that

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Time: 20:40 UTC

Frequency: 9965 KHz.

The Voice of Armenia is no easy log on its 4810 frequency.

doesn't release information as to what amount of power it uses, but it has to be less than 1,000 watts—probably lots less. There's even a fair chance the station is inactive which, if you're a glut-ton for punishment, makes for a real bonus!

You can start your day on a low note and tune 2310 every morning for the Australian Broadcasting Corporation's Northern Territories Shortwave Service outlet, station VL8T from Tennant Creek—real Crocodile Dundee country. This is operational from 0830–2130. You may not even enjoy going after this one all that much, as it does get logged now and then, if the clouds are flowing in the right direction. Sorry to hand you some disappointment here; something like this could really spoil the seam of your X-DX dreams!

To make up for it here's a Korean shortwave time station no one has ever reported (could you be the first?). Maybe that's because it sits somewhere under WWV on 5000. HLA operates Monday through Friday from 0100–0800. One must presume the announcements are in Korean. You have to wonder if the Voice of Korea or KCBS tunes this one in to keep their hour-glasses running correctly.

There seems to be an endless supply of Peruvians ready and able to engage in bedevilment at a moment's notice. La Voz de los Huraingas from Huancabamba in Piura State certainly makes the list. It uses 6819.5, stuck out in the middle of nowhere—actually that's a helpful thing since it will be alone on the fre-

quency and thus more easily spotted. It's on in Spanish from 1000–0215. When the winds are right this one is juusst possible, providing you give it a thousand or so tries per month.

Back to Bolivia and Radio Panamericana, operating—when it feels like it—on variable 6105. It runs a significant 5 kW from the capitol city of La Paz, with Spanish programming from 1030–0400, Monday–Saturday. But it's only on until 0000 on Sundays, so you'll need to take that shorter broadcast day into account. Or, you could try the other hours anyway...you never know.

The shortwave broadcast scene in Mexico isn't what one could call a smoothly operating machine. If the university-run stations XEXQ and XEYU have trouble keeping it together, then what of the troublemakers out in Chiapas State, attempting rabble-rousing radio? Radio Insurgente is on the air (or not!) on a "sometimes" basis. On 6000! Maybe it picked 6000 figuring most of the workers already had their radios set on Havana's frequency anyway. It doesn't operate when Havana is doing its thing. Radio Insurgente cleverly chooses to operate in the middle of the day (1945–2045), which makes the station an impossible catch outside its immediate listening area.

Now here's a target even the semi-sane folk will gladly go for broke on: Radio Bahrain. It's one of the few countries still operating that haunt all our dreams. It uses 6010 with English for the Middle East 24 hours per day. Why don't we hear it more often? Explanations are hard to come by, guesses are plentiful. Lots of QRM potential on 6010, Mid East signals don't do well on 49 meters, maybe the station isn't even operating, and of course there's the old faithful "poor conditions" theory. Whatever, success here obviously requires a combination of factors. The planets (*sans* Pluto) have to be precisely and magically aligned with respect to Willie Nelson. Radio Bahrain also operates on 9745, which seems somewhat more favorable from a propagation standpoint. And, with HCJB having vacated the frequency, who knows? 9745 is used for Bahrain's domestic service with broadcasts in Arabic, also 24 hours per day.

Don't touch that dial! 6010 is also the home of another one of the impossibles: Radio Parinacota, from Putre, Chile. Aside from CVC-La Voz, this is Chile's only other currently active shortwave broadcaster. This is supposedly active 24



One of the announcers at Wantok Radio Light, 7325.

hours a day, not one of which will be favorable for you! Buried under QRM—some 16 sites use 6010 at one time or other—the little Chilean is also hobbled by just 1 kW. That's like putting a 98-pound Roosevelt High sophomore up against the Packers' Johnny Jolly at defensive end!

Here's one of those do-gooder stations out to save whomever: Radio ICDI (how do you pronounce that?). It's run by an organization called Integrated Community Development International, based in Indiana. Purely local in focus, the station uses just 1 kW on 6030 and is on the air Monday to Friday from 0500–0800 and 1600–1900 in French and local languages. No one I'm aware of has turned attempts into logs yet, so this is a good one to tear your hair out over. A festival of frustration!

Another station almost everyone wants for a new country is Radio Bhutan, more correctly the Bhutan Broadcasting Service, from Thimphu (*see the cover story on BBS in January 2008 PopComm—ed.*). It hangs out on 6035, which a number of other stations call home at one time or another. Don't let its listed 100 kW scare you off. If it's using that much power you can't tell it by its signal, or lack of same. Some West Coast DXers may have a shot now and again, but the rest of us unfortunates are left out in the

cold. The station broadcasts from 0000–0700 and 0800–1500, with a UN Radio program highlighted for Thursdays at 0930. It airs some English, but the rest of its broadcast hours are given over to programs in local languages.

No matter which one you pick, the Republic of (capital Brazzaville) or the other one, the Democratic Republic of (Kinshasa), they're both way tougher than they have any right to be. The Congo (Brazzaville) is at least active (apparently civil unrest is currently at a minimum). Radio Congo has been reported as having been heard in Europe on its 6115 frequency. The station normally would be active in French from 0600–0830 and 1730–2030. If you insist on taking a chance, the optimum time to check for it would be at its supposed 0600 sign on.

Across the Congo River, in the Democratic Republic of the Congo, sits another major trial in the form of Radio Kahuzi, a U.S.-based religious station, broadcasting from Bukavu. I know of no loggings of this one, at least not from the U.S., but there's no law that says you can't try Brazzaville. The station uses 6210 from 0700–1100 and 1600 Monday and Friday. On the other days of the week they operate from 0700–1600. All broadcasts are in French or local dialects.

We go back to South America now for another challenge in Uruguay: SODRE

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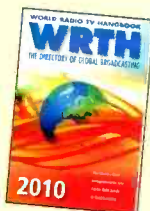
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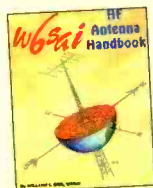
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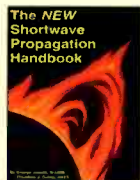
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(Servicio Oficial de Difusion Radio-television Espectaculos), the government's station. This barely operating, long-time station used to use several frequencies, and once had a major presence on the 25-meter band. It was frequently and easily logged, even with the equipment at our disposal half a century ago. Things are a bit different today (boy, are they!). SODRE is supposedly active in Spanish on 6125 24 hours a day. But it is intermittent, at best, and the power output isn't enough to reach as far as the next *estancia*. By the way, the full name behind that acronym has been changed from what it was originally; in ancient days the "E" stood for "Electrica" or something like that.

The Pacific Isles should be represented on the suffer list, while we're at it. A fine prospect is Wantok Radio Light, 7325, from Papua New Guinea—the only PNG outlet that's not part of the government's broadcast system. WTK is operated by the Papua New Guinea Christian Broadcasting Network, which also owns FM stations in the country. The shortwave runs very low power and is just designed to cover a domestic audience in and around Port Moresby. They're on the air from 2000 to 1300, so at least there's an early morning shot at them, required for reception of any of the PNG stations.

Our final stop on this punishing globe-trot is the Horn of Africa, specifically Eritrea and Radio Bana from Asmara. This has actually been heard—approximately once—on 5100. No known power, but you can be sure it's quite low. And the schedule is tricky: It's on Fridays from 0400-0500 and 0500-0530 in English. The rest of the week it uses domestic languages from 0500-0530. Obviously the program director there isn't overworked!

Think You Can Take It?

Well, we've reached the end of the list. You've probably noticed that a few of our "impossible" targets appear to be just barely possible. That was deliberate, because even the dedicated masochist, the X-DXer, needs a little encouragement to keep him going.

If you think you can take the punches any band throws at you, if you can swim the roughest propagation seas, then just try to have your way with the bad guys on this list. You'll stand about as much chance as I, a nerd-in-training, did with Mary Ellen Port, the blond queen of Kingsley Grade School! Ah, but what fun the pursuit!

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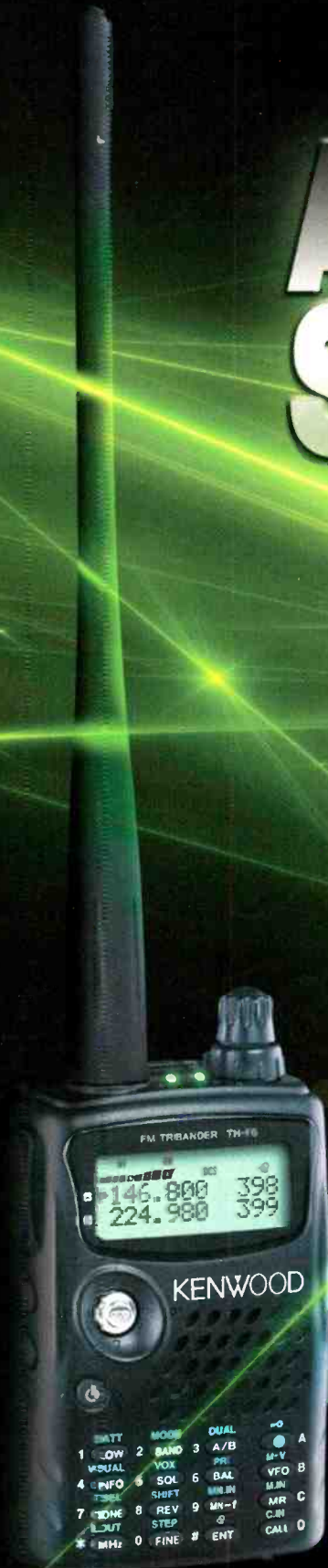
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In-Depth: The FlexRadio FLEX-3000 Software-Defined Radio

by Dan Srebnick, K2DLS
k2dls@arrl.net

Software-defined radios (SDRs) are all the rage. Last year, I had the opportunity to evaluate the Perseus SDR from Italy, and took so much of a liking to it that it replaced the Drake R8B as my general coverage receiver in the shack. The next logical step on this technological journey seemed to be a software-defined *transceiver*.

The HF transceiver in my shack is the mid-class Kenwood TS-2000. The design is beginning to show its age, especially with limited capabilities of the early 16-bit digital signal processing (DSP) filters. Moving the demodulation and processing of signals from hardware to software is an excellent way to adapt to new algorithms and techniques in audio processing and filtering, without hardware modification. Flex Radio Systems (www.flex-radio.com) is the leader in manufacturing low- to high-end amateur radio transceivers that do most of their work on your personal computer. I recently was able to spend a few weeks with the FLEX-3000, a middle-of-the-line SDR transceiver.

FLEX-3000 Features

The transceiver itself is very low profile, as seen in **Figure 1**. It is 12 1/4 inches square and only 1 3/4 inches tall, so it will easily fit on your radio desk. You could even put a laptop that will run the software on top of the box, although that might not result in the most comfortable operating position. A flat panel monitor fits on top of the FLEX-3000 box with no difficulty.

Dan Srebnick, K2DLS, is *Pop'Comm's* "RF Bits" columnist.

"[With FlexRadio's FLEX-3000] You can configure characteristics of the noise blanker, noise reduction, filters, and, again, just about anything else."

Power output is 100 watts PEP and the 3000 is rated for full duty cycle at that power, making this radio a good candidate for digital modes like PSK31 and RTTY. Transmit coverage is from 160 to 6 meters, and the 3000 includes an internal antenna tuner. Receive range is from 10 kHz to 60 MHz. The panadapter display (**Figure 2**), a visual spectrum representation used in SDR software, is capable of displaying up to 96 kHz of spectrum concurrently and in real time. Transmit and receive filters are continuously variable through software and can be tailored to the operator's requirements.

The FLEX-3000 does not have some of the advanced features of its big brother, the 5000. It lacks things like a second independent receiver, VHF/UHF capability, and transverter support. If you need any of these advanced features, the 3000 may not meet your requirements and perhaps you should take a look at the FLEX-5000.

Getting Started

In addition to the radio you'll need a microphone, which you'll connect via a front panel RJ45 connector. The radio I evaluated was a loaner provided by FlexRadio and they graciously included a Heil microphone with the appropriate RJ45 connector already attached.

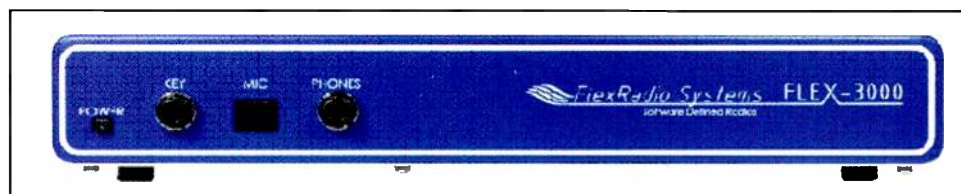


Figure 1. The FlexRadio FLEX-3000 features a low-profile design that will easily fit into any shack.

You'll also need a computer. In fact, you'll need a *fast, multiprocessor* computer, with a supported Firewire card and minimal software latency that manifests as delayed procedure calls. What does this mean? The available computer in my shack was an HP dv6000 laptop with a dual core 1.6-GHz processor and 3 gig of RAM running Vista SP1. It was not quite up to the task when I started the evaluation. Only through a lot of performance tuning (to reduce the software latency) was I able to get the FLEX-3000 to operate satisfactorily.

If you're a hacker and don't mind a lot of effort to use an SDR with your similar computer, you can make it work. Frankly, I recommend a fast quad-core machine with lots of memory, but another ham I spoke to says that his FLEX-3000 runs just fine on a laptop similar to mine. FlexRadio had some suggestions about what type of computer to run in their online Knowledge Center, but I don't think it is specific enough. Be ready to reconfigure or upgrade your computer if you run into problems like I did.

Not A Plug-And-Play Radio

This is definitely not a plug-and-play radio, but one designed for the hobbyist



Figure 2. PowerSDR 1.18.1 main screen with receiver tuned to 3.775 MHz LSB, 2.7k bandwidth. The graphical display in the center of the screen is the panadapter.

who enjoys tinkering. Inside the box is a quick start guide. I recommend following this guide to the letter. It is clear and to the point, but if you're running Vista, be sure to read the insert. Driver installation works a bit differently with Vista than with XP.

A computer challenge arose when I realized that my shack's laptop had a 4-

pin Firewire adapter, rather than a 6-pin adapter, and I had to order a 6-pin. Ultimately, when the onboard Firewire port on the laptop would not perform acceptably, I also had to order a PC Expresscard Firewire port with a chipset recommended by the folks at FlexRadio.

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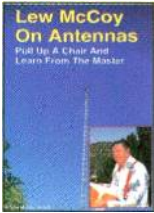
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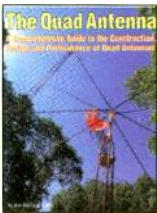


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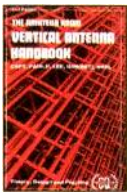


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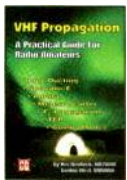


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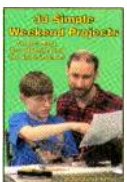
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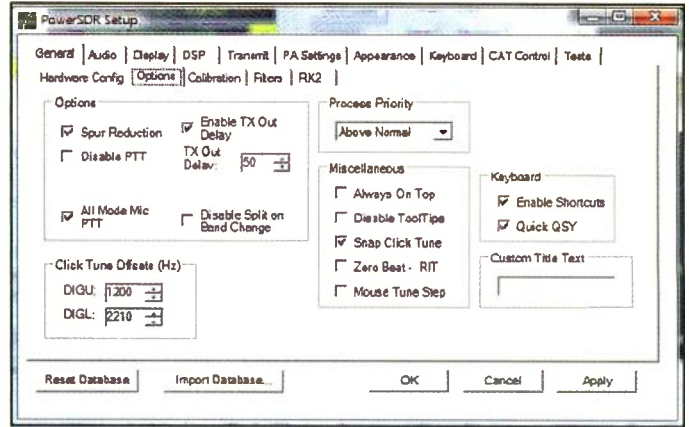


Figure 3. You can set the process priority and a whole lot more with the various PowerSDR setup tabs.

puter. This may or may not be the version that came with your operating system; in my case it was present, but not registered with the OS. I used the FlexRadio website to download and install the company's recommended version. The first attempt at running the PowerSDR software failed, hanging at the "Loading main form" screen. I rebooted and the second attempt worked fine. I later learned that the FlexRadio software did not like the USB hub connected to the computer.

On The Air

Power on the FLEX-3000 for the first time and up comes WWV on 10 MHz. I started listening with headphones and also tried the USB soundcard that I use with the Perseus. I began to experience software lockups that required me to click the stop and start buttons in the PowerSDR window. The lockups did not appear to be CPU-related; CPU load was at about 30 percent.

I first plugged in a cheap Gigaware USB headset that I bought at RadioShack. Instead of plugging it into the USB hub, I plugged it directly into a port on the computer. My first QSO was with DF2BO, who gave me a 57 report and said that I had good audio. The antenna was an Alpha Delta DX-CC, a multi-band multiwire dipole, and my power was 100 watts. Not a bad

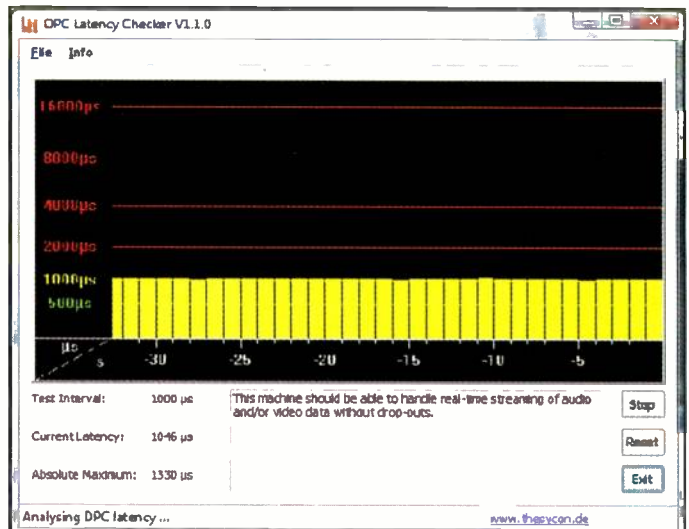


Figure 4. DPC Latency Checker output after much optimization. Prior to disabling my WLAN driver and installing Vista SP2, there was a lot of red and a message that my PC was not up to snuff.

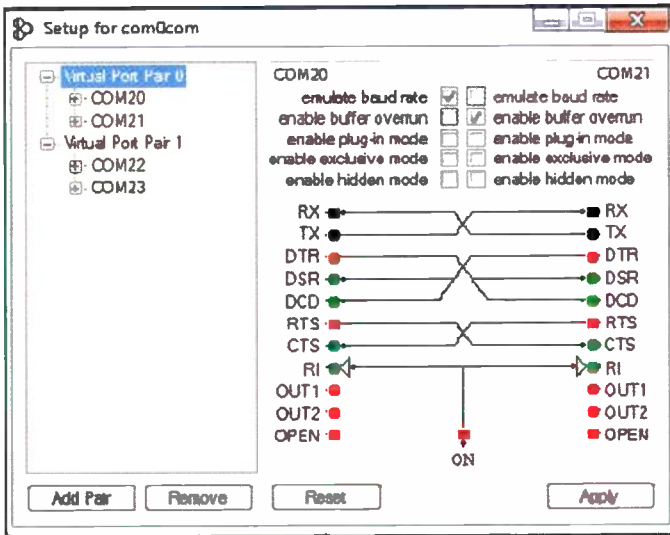


Figure 5. com0com, released under the GNU Public License, provides the hook from Ham Radio Deluxe to serial based CAT control software. While this works great with my Perseus, it did not prove to be compatible with the FLEX-3000.

contact for 20 meters during a solar minimum. GM4YSN also gave a good audio report during our QSO.

After a bit of operating, I was able to confirm that the FlexRadio software works much better when I disconnect my D-Link USB hub. I spent the next couple of weeks mostly listening, going through the setting and capabilities of the PowerSDR software, and waiting for the software to lockup. Over this period, I slowly narrowed down the various issues contributing to the instability of the FlexRadio software environment on my particular PC. While I was doing this, I spent a lot of time reading the articles on FlexRadio's excellent website and started searching through the Knowledge Base, the Troubleshooter, and the FAQs (see "FlexRadio Related Links" table).

I focused on information about Firewire, drivers and audio lockups, and I learned a lot. For instance, I learned that the Firewire chip in my laptop, a Ricoh, was not recommended hardware. The Knowledge Base recommends several different alternatives, and I found an inexpensive Expresscard Firewire adapter using the recommended Texas Instrument Firewire XIO2200 chipset from Best Connectivity. Another article recommended that I increase the process priority of the PowerSDR software (Figure 3). These two steps helped, but the radio software was still not entirely stable.

Delayed Procedure Calls

As I read on, I came to realize that the stability problem was being created by delayed procedure calls in software and was, perhaps, caused by software driver latency. Another article I read advised me to use the Windows Device Manager to turn off certain devices in software, one by one, and then check the software latency.

I downloaded a very useful piece of software from the Internet called "DPC Latency Checker" (Figure 4). It helped me to determine that my wireless LAN drivers in the laptop were significantly slowing down the FLEX-3000's ability to operate properly. I had to disable the wireless LAN driver as part of my computer speed-up regimen, but this left me without Internet connectivity. I ended up running Category 5

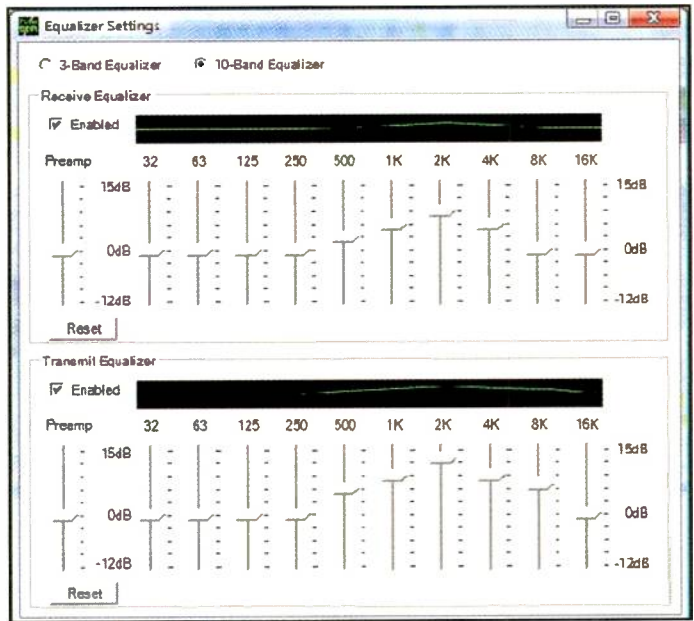


Figure 6. These equalizer settings on my transmit audio garnered compliments from DX stations.

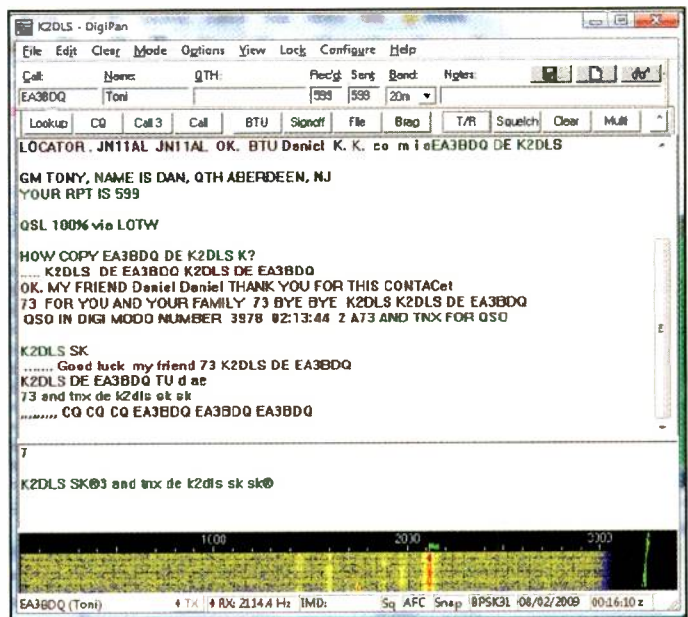


Figure 7. FLEX-3000 and DigiPan QSO with EA3BDQ. No additional cables from the radio to the computer are required.

Ethernet to the laptop from a switch in the next room; this connection did not slow down the computer.

I still had the issues with my USB bus causing lockups and tried upgrading my copy of Vista to SP2. Amazingly, this solved the USB problem and made the computer even faster. (Vista has been criticized for being slow and Windows 7 is supposed to fix many of the causes of this slowness. I have a theory that many of the speed improvements slated for Windows 7 have been back ported into Vista SP2. If you run Vista, I strongly recommend that you apply this service pack.)

It's worth noting that I run the Perseus on the same computer and have not experienced any latency, lockup, or performance problems. It may be that the Perseus software is better optimized for performance, but it's also possible that as a receiver only,

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By Ian Poole, G3YWX



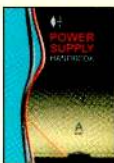
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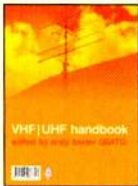
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FlexRadio Related Links

Flex Radio Website

www.flex-radio.com

Knowledge Base

<http://kc.flex-radio.com/Knowledgebase.aspx>

Troubleshooter

<http://kc.flex-radio.com/Troubleshooter.aspx>

FAQs

www.flex-radio.com/Products.aspx?topic=faq

DPC Latency Checker

www.thesycon.de/deu/latency_check.shtml

Virtual Audio Cable

<http://software.muzychenko.net/eng/vac.html>

the Perseus software is doing less than PowerSDR.

Ham Radio Deluxe

Ham Radio Deluxe (HRD) is supposed to be compatible with the PowerSDR software, and when it does not crash, it is. Communication between the two pieces of software requires a virtual com port driver. This driver simulates in software the serial cable that would normally be required between two hardware devices, such as a computer and radio. I'm using the HRD 5.0 beta series, but the problem seems to lie with the com0com virtual com port interface used by HRD to communicate with the CAT capabilities of the PowerSDR software. **Figure 5** shows the configuration screen of com0com. It links together a virtual com port connected to HRD with a virtual com port connected to the CAT port of PowerSDR. It will usually work for a few minutes and then crash. Some online forum articles suggested success with a different virtual com port driver, but I did not have an opportunity to try this. The main downside of the crash is that PowerSDR was inaccessible until I used the Windows Task Manager to kill the hung process and reload it.

I also upgraded PowerSDR from version 1.18.1 to 1.18.2 during my testing cycle. It also seems to contribute to the overall stability of the system but the com0com problem was never resolved.

More Operating

After several weeks of optimizing my computer, PowerSDR and the FLEX-3000 were mostly operating stably and reliably, and I started to operate in earnest. The receiver seems to be a bit more sensitive than the receiver in my Kenwood TS-2000. As an example, I heard WO4DX on 50.135 MHz at about an S1 on the 3000. He was definitely more audible at that low signal level than on the Kenwood with the preamp turned on.

I received more positive audio reports, this time with the Heil mic plugged into

the front panel RJ45. I used the 10-band equalizer to set my audio curve. Look at **Figure 6**, and you'll see that the screen is a software representation of the hardware sliders on a physical equalizer. Tom, S57RTH, in Slovenia, had some nice comments during our QSO with the 3000, with 100 watts and a dipole on my end.

I worked VE3OWO, who was using an SDR-1000 with 5 watts on 7.165 LSB at 1845 on a Saturday afternoon. I received him at about S5 and the digital noise reduction (NR) really helped, as the local noise level was also about S5.

Digital Operating

I tried some PSK31 operating by using the Virtual Audio Cable (VAC) drivers to pipe the sound card output into a couple of programs. DM780 worked but was subject to the HRD lockup and crash issue mentioned earlier, so it was not too useful. Digipan worked just fine and I was easily able to make a few QSOs. The nice thing is that instead of running physical patch cables from the sound card to a transceiver, VAC does it all in software—this is the power of SDR. **Figure 7** shows my QSO with EA3DBQ.

Operating Observations

There are several types of graphical displays that can be used for tuning, including the panadapter display and a digital-style waterfall. Click on the signal you want to listen to and you're tuned. I found that I used the ClickTune method along with a keyboard key tuning method to get where I needed to be. The keyboard method allows use of specific keys to go up or down in each of the ones, tens, hundreds, and thousands of kHz, or fractions thereof. There are also quick buttons for band changes.

You can configure the meters to show SWR, peak power, average power, modulation levels, or just about anything you'd want to meter. There are transmit and receive equalizer functions that work very nicely. You can configure characteristics of the noise blanker, noise reduc-

tion, filters, and, again, just about anything else. Transmit and receive parameters for DX (Figure 8), ragchewing, or any other use can be saved to memory for reuse. If you screw things up too badly, you can restore a previous configuration or reset to factory defaults easily.

The hardware features preselection for the ham bands as well as the standard broadcast band. However, longwave receive performance is not very good. It was diminished by many images from overload. The internal antenna tuner is even narrower than the internal tuner in the TS-2000 and would not tune my Alpha Delta DX-CC at all on segments of 80 or 10 meters where the TS-2000 tunes easily.

I am not entirely taken with the look and feel of the graphical user interface provided by the PowerSDR software. My reservations may be best explained if you think of a comparison between the look of Windows 3.1 and Mac OS Snow Leopard. PowerSDR leans more toward the Windows 3.1 paradigm in look and feel. I'm sure that it will improve over time and it really does not affect the operation of the radio, but it's just not as smooth as it could be from an ergonomic perspective. As an example, the Perseus software interface is much smoother and responsive. However, the Perseus is not a transceiver, so PowerSDR needs to pack much more into the same display real estate.

It was disconcerting to monitor my phone signal in headphones, and the audio was about half a second behind my voice. I am certain that this is because of latency in the software that can either be improved upon or is a problem that might not exist on a faster machine.

A nice software feature is that the current band, segment, and mode are displayed along with the operating frequency. On 60 meters, the fixed channels are even displayed. Shortwave broadcast bands are also displayed, making this a nice receiver for SWLs, too. There is a box in the setup screens to disable transmitting capabilities.

Final Analysis

I was a bit put off by the difficulty that I had getting this radio up and running to my satisfaction. Unless you consider yourself to be a computer hacker or a software expert, buy the fastest multi-core computer that you can afford. Read the fine documentation and help available on the FlexRadio website. Make sure that your Firewire port is on the "approved"

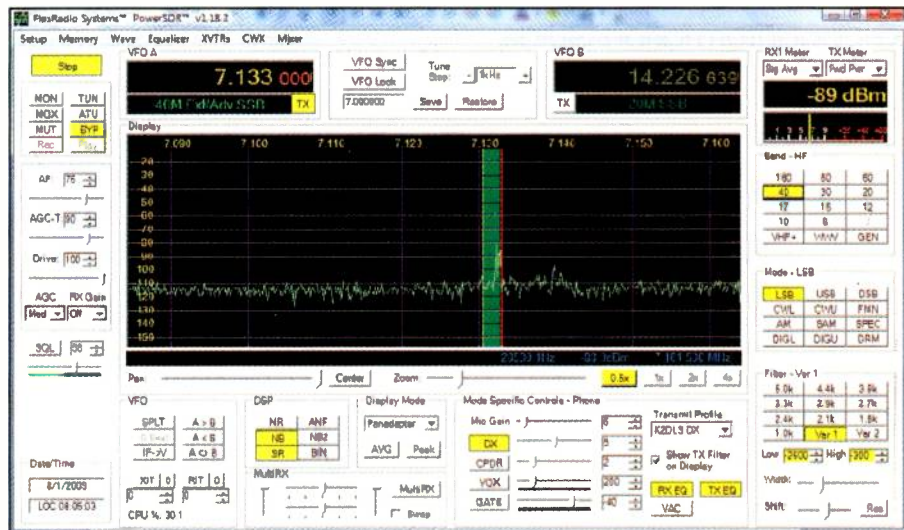


Figure 8. PowerSDR is configured with a custom bandwidth filter on receive and a custom transmit profile tailored for DX.

list. Understand the computer hardware and software requirements and you will hopefully not find this to be as challenging as I did.

The receiver performs very well on the ham bands and reports on the transmitted audio are good, even with a cheap microphone. All WARC bands and 60 meters are covered. If you're a digital mode op you can virtualize the connecting cables and number of devices in your shack using VAC instead of physical cables. The trans-

ceiver is more capable and more configurable than some other mid-priced transceivers, such as my TS-2000, but factor in the cost of an appropriate computer when making price comparisons. If HRD is a requirement, remember that com0com is not stable in this environment and seek out an alternative solution. You may also need an external antenna tuner.

If you're ready to take the SDR plunge, the FLEX-3000 sells for \$1,599 directly from Flex Radio Systems.

An Update From The Manufacturer:

FLEX-3000 Preamplifier Improvement

FlexRadio Systems recently incorporated an engineering change to the FLEX-3000 receiver preamplifier that improves IP2 and IP3 performance when the preamplifier is engaged. This change was incorporated into all new production or repaired FLEX-3000s beginning September 1, 2009.

To determine if your radio has the updated preamplifier ECO, start the PowerSDR software. From the main screen click on SETUP/GENERAL/Hardware Options and look at the last character of the TRX board serial number. Version "G" or higher indicates the IP2 improvement has been installed. Go to <http://kc.flex-radio.com/KnowledgebaseArticle50430.aspx> for a screenshot showing the revision number location.

If you would like to have your FLEX-3000 updated, please email us at RMA@flex-radio.com to receive an RMA and schedule your return to your closest FlexRadio Systems service center for modification. Why the word "Schedule"? We plan to do upgrades in batch-mode. You will be responsible for the shipping charges to the closest FlexRadio service center... a nominal \$50 bench fee plus return shipping costs will be assessed for the modification.

NOTE: You must contact FlexRadio Systems to request a Return Material Authorization (RMA) number before you return your radio. Please email RMA@flex-radio.com to schedule your upgrade.

—FlexRadio

Contact Information: FlexRadio Systems, 13091 Pond Springs Rd. #250, Austin, TX 78729; Phone: 512-535-4713; Web: www.flex-radio.com; Email: support@flex-radio.com.

Radio Prague And Other Shortwave Comings, Goings, And Uncertainties

by Gerry L. Dexter
gdex@wi.rr.com

Perhaps *Pop'Comm's* production department should start making occasional use of black borders! Radio Prague was scheduled to end all of its shortwave broadcasting at the close of last year. If that has indeed happened, you have already found the station missing from its usual frequencies. There were serious pressures on its budget as 2009 edged to a close, and the broadcaster had to absorb a 20-percent cut in its budget for 2010. The Czech government has gotten itself caught up in the "shortwave is old fashioned" mentality that is such an "in" thing in Europe these days, so word came down from the Foreign Ministry "suggesting" that Radio Prague end its international service at the end of 2009.

At this writing (November) there's just a very slim chance of retaining Radio Prague on shortwave, but the station need your letters and emails of support, just in case. Incidentally, the loss of Radio Prague would also mean the closing of the Litomysl transmitting site! Here's the contact information: Email: cr@radio.cz; Postal address:

"The Czech government has gotten itself caught up in the 'shortwave is old fashioned' mentality...so word came down from the Foreign Ministry 'suggesting' that Radio Prague end its international service at the end of 2009."

Radio Prague, Vinohradská 12, 120 99 Prague 2, Czech Republic. Do your part!

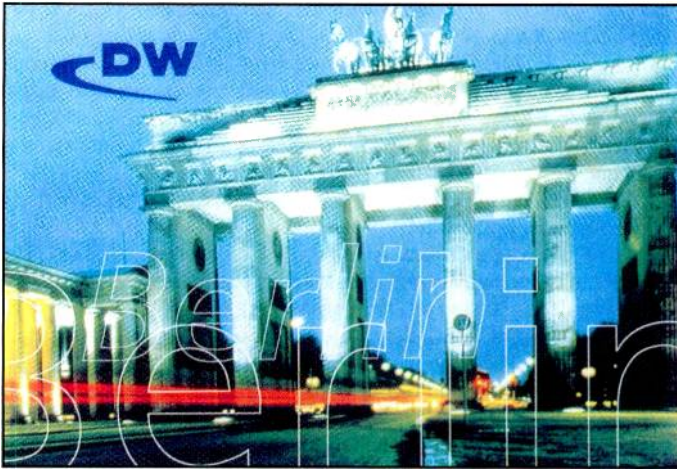
Down the tubes goes another shortwave station. The Fundamental Broadcasting Network's WBOH in Newport, North Carolina, has called it quits. There's been no explanation for the closure; however, just a month or two ago they were warning of impending problems due to a lack of financial support. So, what happened wasn't exactly a surprise. You have to wonder whether such negative news doesn't give pause to those folks who are about to try the same thing!

The Europeans continue to perform their dance of doom. The latest is Radio Sweden, which is emitting signs that the downhill slide must be gaining speed there. Radio Sweden is discontinuing the practice of mailing out schedules, but will make it schedule available on its website (so it's OK!). This is part of what the station terms "simplifying our marketing and audience services." It also notes that it has stopped broadcasting its own programs in Swedish, which we already knew. Oh, and by the way, they've also ceased that "old fashioned" practice of issuing QSLs!

Bad news of a lesser sort: Radio Vlaanderen International (RVI) has left shortwave. Due to previous cutbacks, it wasn't often reported in the U.S.—largely due to its unhappy schedule, which was primed for a European audience. Even if you were up in the middle of the night or could get away from work or school on an afternoon, its frequency choices were not at all amenable for us in America.



Little known and fairly new, Cheetah Radio, based in Nevada, and aired via Julich, Germany, QSLed for Rich D'Angelo.



Deutsche Welle verified Rich D'Angelo's reception of its broadcast via Rampisham, England.

SIBC, the Solomon Islands Broadcasting Corporation, has re-energized 5020, which had been silent for many months but is now being heard by some well into the early morning hours. Keep in mind that there are numerous breaks in its schedule. Its 31-meter band frequency, which returned a year or so ago, appears to have gone quiet again. Listed for 9545, more often than not, it was found to be hovering around 9541. Could it be fixing its frequency?

In China the Guangxi Foreign Broadcasting Station, based in Nanning, now calls itself Beibu Bay Radio—another name for the place we've known as the Gulf of Tonkin. Beibu Bay Radio operates on 5050 and 9820 with broadcasts for Vietnam in Cantonese and Vietnamese.

Here's yet another incentive to run out and buy a cell phone. The Voice of Russia now makes itself available via this "platform." About the same time China Radio International announced that it was making a similar service available. Two more reasons why the Energizer Bunny has more hop in his hop!

Finally, loggings reporter Fotios Padazopoulos wonders if there's trouble ahead for the Voice of Greece. He can't find any pattern to its frequency usage, and he notes that labor troubles there cause the service to be shut down "quite often." So it may be worth keeping an ear on this one.

Reader Logs

Remember, your shortwave broadcast station logs are always welcome. But *please* be sure to double or triple space between the items, list each logging according to home country and include your last name and state abbreviation after each. Also needed are spare QSLs or good copies you don't need returned, station schedules, brochures, pennants, station photos, and anything else you think would be of interest. And how about sending a photo of you at your listening post? Be the first on your block! Astound your friends! It's your turn to grace these pages!

Here are this month's logs. As always, all times are in UTC. Double capital letters are language abbreviations (SS = Spanish, RR = Russian, AA = Arabic, etc.). If no language is mentioned English (EE) is assumed.

ALBANIA—Radio Tirana, 7425-Shijak monitored at 0341 on Albanian royalty. Off at 0400. (Wood, TN) 13625 at 1430 on the electric power grid there. (Maxant, WV)

ALGERIA—RT Algerienne, 5865 via Issoudun at 0445 with Koran and AA talk. (Parker, PA)

ANGOLA—Radio Nacional, 4949.7 at 0222 with M/W in PP, piano music bridges, M crooner. (Parker, PA)

ANGUILLA—Caribbean Beacon/ University Network, 6090 at 0345 with Dr. Scott and 11775 with Melissa Scott at 1450. (Maxant, WV) 6090 at 2332. (MacKenzie, CA)

ANTARCTICA—Radio Nacional Arcangel/LRA36, 15476 at 1914 with W in SS and some tangos. (D'Angelo, PA)

ASCENSION IS.—BBC South Atlantic Relay, 6005 at 0448 to West Africa. (Parker, PA) 7255 at 0338 with news. (MacKenzie, CA) 11810 at 1931 with ID, *Story of Africa*. (D'Angelo, PA) 12095 at 2135 with *One World* on recycling garbage. (Fraser, ME) 15400 with *Focus on Africa* at 1700. (Ng, Malaysia)

AUSTRALIA—Radio Australia, 9580-Shepparton at 0926 with pgm *Australia Talks*. (Wood, TN) News at 1100. (Gay, KY) 1109. (Padazopoulos, NJ) 9590-Shepparton with financial news at 1155. (Fraser, ME) 11660 on their stock exchange, 15230 with an interview at 2335, 15240 at 0010 on Afghanistan and 15560 at 2235 on prostate cancer. (Maxant, WV) 11840-Darwin at 2310 on an earthquake in Sumatra. (Ng, Malaysia) 13690-Shepparton with news items at 2343 and 15560-Shepparton with sports news at 2257. (MacKenzie, CA)

ABC Northern Territories Service, 4835, Alice Springs at poor level at 0700, //4910-Tennant Creek. (Wilkner, FL)

HCJB Australia, 15400 at 0005 with Bible reading in II. (Ng, Malaysia)

AUSTRIA—Austrian Radio Intl, 9820 at 0015 with news items and 13775 via Canada at 1525 on the world aircraft industry. (Maxant, WV)

BOLIVIA—Radio Eco, Reyes, 4409.8 at 0235–0329* with CP music, SS ballads. (Alexander, PA)

Radio San Miguel, Riberalta, 4700 at 0934 sign on with SS talk, ballads. (Alexander, PA) 0940. (Wilkner, FL)

Radio Yura, Yura, 4716 at 0956 with flute and W in SS. (Wilkner, FL) 0117 in presumed Quechua with pgm of campesino music, M/W talk. (Parker, PA)

Radio Fides, La Paz, 6155.3 monitored at 0950 with SS talk, CP music, ID. (Alexander, PA)

BOINAIRE—Radio Nederland, 17605 in DD opening at 2200 and into news. (Barton, AZ)

BOTSWANA—VOA Relay, 4930 with news at 0333. (Parker, PA) 17895 at 2027 with pop vocals. (MacKenzie, CA)

BRAZIL—(*All in PP—gld*) Radio Educadora, Limeira, 2379.9 at 0940. (Wilkner, FL)

Radio Municipal, Sao Gabriel, 3375.4 at 0930. (Wilkner, FL)

Radio Imaculada Conceicao, 4754.9 at 0239 leading callers in prayer. (Parker, PA) 0404. (Ronda, OK)

Radio Difusora, Londrina, 4814.9 at 0233 with pops. (Parker, PA)

Radio Cancao Nova, Cachoeira, 4825 at 0258 with slow vocal, QRMed by CODAR. (Parker, PA)

Radio Cultura Ondas Tropicais, Manaus, 4845.2 at 0123 with fast-talking M and occasional cheering audience, similar to a TV game show. (Parker, PA)



China Radio International can now be heard on your mobile phone, as can the Voice of Russia.



The TDP transmitter operator in Belgium has resumed sending QSLs but without specific sites. This one was for Rich D'Angelo's reception of Denge Mesopotamia.

Radio Alvorada, Londrina, 4865 with M and religious talk at 0950. (Wilkner, FL) 0117 with M preacher. (Parker, PA) 0224 with religious pgm. (D'Angelo, PA)

Radio Clube do Para, Belem, 4885 at 0112 with fast talk, M/W talk with heavy reverb. (Parker, PA) 0422 with M and several IDs, reverb, polka-type music. (Wood, TN)

Radio Novo Tempo, Campo Grande, 4895 at 0221 with slow inspirational music. (Parker, PA)

Radio Anhanguera, Araguaia, 4905 at 0237 with W ancr and slow music. (Parker, PA)

Radio Difusora, Macapa, 4915 at 0100 with two M talk and reverb, later with pops. (Parker, PA)

Radio Educacao Rural, Tefe, 4925 at 0054 with M/W talks and music bridges. (Parker, PA)

Radio Brazil Central, Goiania, 4985 at 0048 with M ancr, pops, ID and jingle. (Parker, PA) 0313 with religious vocals and a preacher. (D'Angelo, PA) 0325 with a talk. (Ronda, OK) 0437 with canned jingles, M with ID and a variety of music. (Wood, TN)

Radio Aparecida, Aparecida, 5035 at 0417 with M talk and bits of religious pops. (Parker, PA)

Radio Globo Santos, Guaruja Paulista, 5045 with M talk at 0329. (Parker, PA)

Radio Senado, Rio, 5990 at *0928 sign on with light jazz, opening ID, rooster crow and talk. (D'Angelo, PA)

Radio Inconfidencia, Belo Horizonte, 6010 with abrupt sign on at 0702 after Cuba signed off at 0658. Talk, local music and ID. (Alexander, PA)

Radio Bandeirantes, Sao Paulo, 6090 at 0235 with promos, comls, jingles and talk. Anguilla was off. Also, 9645.3 at 0630 with talk and QRM from Vatican Radio. (Alexander, PA)

Super Radio Deus e Amor, Curitiba, 9565 at 0625 with religious talk, promos and jingles. (Alexander, PA)

Radio Gaucha, Puerto Alegre, 11915 at 2311 with talk, promos and sports highlights. (D'Angelo, PA)

BULGARIA—5900 closing at 2200. (Gay, KY) 7400 at 0346 in BB and 9700 at 0026 in BB with folk songs. (MacKenzie, CA) 2335 with commentary and folk songs. (Padazopulos, NJ) 2300 with *The Way We Live*. //11700. (Fraser, ME) 11700 opening at 2359 with IDs, trumpet fanfare and news. (Barton, AZ) 11800 in BB at 1915. (Brossell, WI)

CANADA—Radio Canada Intl, 9515 at 1510 on a Toronto film festival. (Maxant, WV) 15180 via England at 1933 in AA. (Brossell, WI) 15455 in SS heard at 2230 and 17680 in PP/EE at 2224. (MacKenzie, CA)

CFRX, Toronto, 6070 relay CFRB at 1445 on transportation in

Canada. (Maxant, WV) 2030 with the *Two Bald Guys* political talk show. (Gay, KY)

CKZN, St. Johns (Newfoundland), 6160 at 0410 on the international space station. (Maxant, WV) 1900 with talk and classical music. (Alexander, PA)

CHU, Ottawa, 3330 at 0605 and 7850 at 2313 with time signals. (Maxant, WV)

CHAD—Radio Nationale Tchadienne, 4905 at *0428 sign on with balafon IS, anthem at 0429 and opening FF anmts and Afro-pops. Also to 2231 close with local Afro-pops, FF talk anthem to close. 7120 must be off the air as it has not been heard in several checks. (Alexander, PA) 4905 at *0430 sign on. (D'Angelo, PA)

CHILE—CVC/Christian Voice, 17680 at 1510 with songs and SS comments. (Padazopulos, NJ)

CHINA—China Radio Intl, 6080 via Canada at 0440, 6190 via Canada in SS at 0350, 7325 in Cantonese at 2340, //9460, 9790 via Cuba at 0305, 11840 via Canada at 2316 with *People in the Know*, 11900 in CC at 0015, 11930 via Canada in CC at 0022, 13700 in CC at 2243, 9430-Urumqui in FF at 2150 and 9685-Urumqui in (I) Russian service with apparent CC language lessons at 1246. (Strawman, IA) 9745 via Bonaire in SS at 0024. (MacKenzie, CA) 9880-Kunming heard at 1315 in (I) Burmese. (Ronda, OK) 11610-Xi'an in (I) Mongolian at 1151 and 11935 at 1204 in RR. (Brossell, WI) 11650-Xi'an in SS at 1725. (Ng, Malaysia)

China National Radio/CPBS, 4800-Geermu with a revolutionary song at 1715. (Ng, Malaysia) CNR-5, 7620 in Mandarin at 1057, ID and news in Mandarin. (D'Angelo, PA) 9630 in CC at 0038 and 9830 in CC at 0015. Also 11960 in CC at 0024. (MacKenzie, CA)

COLOMBIA—La Voz de su Concencia, Puerto Lleras, 6010 at 0307 with two W in religious discussion in SS f/by pgm of continuous vocals. (D'Angelo, PA)

Marfil Estereo, Puerto Lleras, 5910 at 0420 with romantic and pop-style ballads in SS. (Strawman, IA) 0450 with M SS ancr and highlife music. (Parker, PA)

CONGO (Dem. Rep.)—Radio Okapi, 11690 via South Africa at 0406 with news, features, interviews and jingle IDs, all in FF. Formal ID at 0431, f/by more of the same. (D'Angelo, PA)

CROATIA—Voice of Croatia/ Hrvatski Radio, Deanovec, 3985 in Croatian at 0337 with a lounge act crooner. (Parker, PA) 2345 with music, EE ID. Also, 7375 in CC at 2340. (Maxant, WV)

CUBA—Radio Havana Cuba, 5965 in SS at 2307, 5990 at 2314, 9600 in SS at 0246, 11680 in SS at 0003, 11690 in SS at 0006, 13760 in SS at 2332, 13790 in SS/EE at 2257 and 17705 in PP at 2248. (MacKenzie, CA) 6000 at 0355 and 6060 at 0845. (Maxant, WV) 6060 in SS at 0325 and 6140 in SS at 0924. (Padazopulos, NJ)

Radio Rebelde, 5025 in SS heard at 0409 with cover versions of U.S. pops. (Wood, TN)

CYPRUS—Cyprus Broadcasting Corp., 9760 with a radio play in Greek at 2220. (Padazopulos, NJ) (*Weekends only—gld*)

Help Wanted

We believe the "Global Information Guide" offers more logs than any other monthly SW publication (584* shortwave broadcast station logs were processed this month!). Why not join the fun and add your name to the list of "GIG" reporters? Send your logs to "Global Information Guide," 213 Forest St., Lake Geneva, WI 53147. Or you can email them to gdex@wi.rr.com. Please note that attachment files do not always go through. See the column text for formatting tips.

**Not all logs get used. There are usually a few which are obviously inaccurate, unclear, or lack a time or frequency. Also discounted are unidentifieds, duplicate items (same broadcaster, same frequency, same site), and questionable logs.*



Goodbye...

DJIBOUTI—Radio Djibouti, Arta, 4780 at 0307 with Koran. (Ronda, OK) 0354 in vernacular with local pops. (Parker, PA)

DOMINICAN REPUBLIC—Radio Amanecer, Santo Domingo, 6025 at 0250–0334 close with SS religious talk and music. Sign off time seems to vary. Also at 1006. (Alexander, PA) 1233 to 1410 in SS. An easy log in Florida. (Wilkner, FL) 2253 with soft religious vocals, formal ID at 2301, several anmts and then another religious talk. (D'Angelo, PA)

EGYPT—Radio Cairo, 6290-Abis in AA with AA music at 0332. (Wood, TN) 0346 in AA. (MacKenzie, CA) 7540 on Egyptian theater at 0255. (Brossell, WI) 11590 at 2340 on a conference there. (Maxant, WV)

ENGLAND—BBC, 3255 South Africa Relay with news monitored at 0400 and 6145 South Africa with an interview at 0440. (Ronda, OK) 5905 Cyprus Relay in AA at 0406. (Parker, PA) 6005 at 0258, 6145 at 0301, 6195 at 0254, 9915 at 2150, 13675 at 0050 and 1300, 17640 at 1200 with sports, 17795 at 1741. (Padazopoulos, NJ) 7310 South Africa Relay at 0530, 11845 Cyprus Relay in RR at 0301 and 11855 Oman Relay in (I) Farsi at 0242. (Brossell, WI) 9740 Singapore Relay with world service at 1130. (D'Angelo, PA) 11945 to Africa at 0330. (Maxant, WV)

ETHIOPIA—Radio Ethiopia, 7110-Gedja, at 0311 with HOA music and talk in (p) Tigrinya. (Brossell, WI) Weak with local music at 0343. (Strawman, IA) 0345 in (p) Amharic. (Parker, PA)

Radio Fana, 6110 at 0341. (Strawman, IA) 0335 with soft jazz. Also, 6890 with HOA music and occ. anmts at 0335. (Ronda, OK) 6890 at *0258 sign on with IS, opening ID at 0300 and vernacular talk, HOA music. (Alexander, PA)

Amhara State Radio, 6090 at *0256 with IS and anmts, f/by HOA music, local vocals and talk. Anguilla was off. (Alexander, PA) 0350 heard through Caribbean Beacon. (Strawman, IA)

Radio Oromira (p), 6030 monitored at 0353 with W and HOA vocals, 0400 with W in (p) Oromo with possible news. (D'Angelo, PA)

Voice of the Tigray Revolution, 5980 monitored at *0255 with IS, vernacular talk at

0300 and HOA music. //5950 was weak and mixing with Okeechobee. (Alexander, PA)

Voice of Peace and Democracy, 7165 at *0400 abrupt sign on with opening ID, anmts and talk in (I) Tigrinya, local drums, HOA music. (Alexander, PA)

ERITREA—Voice of the Broad Masses, Asmara, 7165 at *0356 with IS, f/by opening at 0400, Mancr in local language, news, music at 0411. Jammed. (D'Angelo, PA) 0405 with M and (p) ID at TOH. (Parker, PA)

FRANCE—Radio France Intl, 5935-Issoudun at 0507 in FF to Africa. (Parker, PA) 7265 in FF at 0345, 9750 with sports in SS at 0120 and 17610 at 1747 with FF news. (Padazopoulos, NJ)

GERMANY—Deutsche Welle, 5915 via Rampisham to Russia in RR at 0450. (Parker, PA) 7245 at 0405 with news. (Maxant, WV) 9565 Sri Lanka Relay in GG at 1238. (Strawman, IA) 11795 via Rampisham at 1913 with *Newslink* and various features. (D'Angelo, PA; Brossell, WI) 15510 via England in RR at 1524. (Brossell, WI) 15445 Rwanda Relay in AA at 2000 and 17860 Rwanda in FF at 1722. (MacKenzie, CA)

GREECE—Voice of Greece, 7475 in GG with folk songs heard at 0236 and 15630 in GG at 1747. (MacKenzie, CA) 9420 in GG with soccer at 2120 and 15630 in GG at 1710. (Padazopoulos, NJ) 7475 in GG at 0330 and 9420 in GG at 1505. (Maxant, WV)

RS Makedonias, 7450 in GG with music at 2205. (Padazopoulos, NJ)

GUINEA—Radio Conakry, 7125 at 2000 in FF and vernaculars and some local African music. They went off abruptly at 2127. (Alexander, PA)

GUAM—Adventist World Radio/KSDA, 15320-Agat at 2230 with organ music and ID at bottom of the hour. (Barton, AZ) 15495 in (I) Mandarin at 1245. (Brossell, WI)

HONDURAS—Radio Luz y Vida, San Luis, 3249 at 0331 in SS with pgm of ballads and remarks. (Wood, TN) 0350 with an EE religious pgm. (Ronda, OK) 1108 with M/W and gospel pgm. (Wilkner, FL)

Radio Misiones Intl, Comayagua, 3340 in SS at 0512 with SS hymns. (Parker, PA)

INDIA—All India Radio, 9445 with vocals and flood news at 2055. (Maxant, WV)

11985-Bengaluru in (p) Hindi at 0224. (Brossell, WI)

INDONESIA—Voice of Indonesia, 9525.9 at 1103 sign on with EE news in progress and ID. Modulation was generally weak. (Alexander, PA)

IRAN—Islamic Republic of Iran Broadcasting, 7315 in AA at 0330 and 7375 in AA at 0245. (MacKenzie, CA) 9670 in JJ at 2100. (Ng, Malaysia) 11665 in AA with Koran at 0239. (Brossell, WI)

ISRAEL—Galei Zahal, 6973 at 0454 with M in HH. (Parker, PA) 15785.9 at 1845 with talk in HH. (Alexander, PA)

JAPAN—NHK World Radio Japan, 5975 via England at 0503 with EE news, several IDs. (D'Angelo, PA) 5960 via Canada in JJ at 0437, 6010 in JJ at 1150 to close at 1157, 6120 via Canada at 1225 with pop, 13650 in CC at 2248, 13680 in JJ at 2218 and 15265 via Bonaire in JJ at 2310. (MacKenzie, CA)

Radio Nikkei, 3925 at 1158 with two W and continuous laughing and chatter. A single tone at 1200 f/by anmts and jazz. (Strawman, IA) 9595 in JJ at 1256 with piano music, ID at 1300. (Ronda, OK)

KUWAIT—Radio Kuwait, 11990 at 1923. (Brossell, WI)

LIBYA—Libyan Jamahiriya Broadcasting/Voice of Africa, 17725 at 1440 in Kurdistan. (Maxant, WV) 21695 in EE at 1402 with local drums, schedule, IDs and news. (Alexander, PA)

MADAGASCAR—Radio Madagaskara, 5010 heard at 0246 on early with soft vocals until 0259 when M/W with Malagasy ID and anmts and more music. (D'Angelo, PA) 0309 in (p) Malagasy. (Brossell, WI) 0312 in Malagasy with M/W talk over music, slow talk. (Parker, PA)

MALI—RTV Malienne, 5995 in FF heard at 2323. (MacKenzie, CA) 7285.9 at 0745 with vernacular talk and rustic vocals. (Alexander, PA)

MEXICO—Radio Transcontinental, Mexico City 4800 in SS weak at 0935. (Wilkner, FL)

Radio Mil, Mexico City, 6010 at 0810 with local pops and SS anmts. (Alexander, PA) 0855 in SS with IDs at TOH and insipid pops. (Wood, TN)

This Month's Winner

To show our appreciation for your loggings and support of this column, each month we select one "GIG" contributor to receive a free book. Readers are also invited to send in loggings, photos, copies of QSL cards, and monitoring room photos to me at *Popular Communications*, "Global Information Guide," 25 Newbridge Rd., Hicksville, NY 11801, or by email to gdex@wi.rr.com. The email's subject line should indicate that it's for the "GIG" column. So, come on, send your contribution in today!

This month's prizewinner is **Brian Alexander** of **Mechanicsburg, Pennsylvania**, who is now enjoying a 2010 edition of the *World Radio TV Handbook*. This essential volume is out now and available through shortwave dealers, better bookstores, as well as online book sources. The *WRTH* is the one source for frequencies, schedules, powers, transmitter sites, personnel, addresses, languages—all the info you need for shortwave success!

SLOPER ANTENNAS

By Juergen A. Weigl, OE5CWL

Single- and Multi-Element Directive Antennas for the Low Bands

With calculations and practical experience, this book shows which basic concepts have to be considered for sloper antennas for the low bands. These fundamentals are supplemented by construction guidelines for directive antennas using a single element or several elements. Previously, gathering all the necessary information to construct an effective sloper for a particular application was tedious and time consuming. You'll find all the information needed for successful home building of the antennas.

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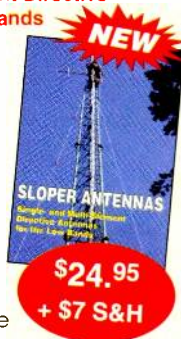
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RADIO PRAGUE



So long...(maybe!).

Candela FM/XEQM, Merida, 6104.7v at 1030 with local music, SS talk, phone calls. (Alexander, PA)

MOROCCO—RTV Marocaine, 15345 in AA at 1800 with ID. (p) news. (Brossell, WI)

NETHERLANDS—Radio Nederland, 6165 in DD at 0331 and 6190 in DD at 0320. (Padazopolus, NJ) (*Sites?—gld*) 11660 via France at 1937 with *Newslines* pgm. ID and sign off at 1956. (D'Angelo, PA)

NEW ZEALAND—Radio New Zealand Intl, 6170 at 0912 with local news from National Radio. (Wood, TN) 0845 on the tsunami hitting Guam and 7285 at 0705 with news about Fiji. (Maxant, WV) 15720 at 0137 on worldwide human rights abuses. (Brossell, WI)

NIGERIA—Voice of Nigeria, 9690 at 0905 with news. (Maxant, WV) 15120 at 1945 with pgm on air travel. (Gay, KY)

Radio Nigeria, Kaduna, 4770 at 0446 with vocals and barely audible M anc. ID and news at 0500. (D'Angelo, PA) 6089.8 at 2105 in (I) Hausa with promos, jingles, some tribal chants. ID at 2202 and several mentions of Koran. Covered by Anguilla at *2211. (Alexander, PA)

NORTH KOREA—Voice of Korea, 9335 with talks by M/W in FF at 1410. (Ng, Malaysia) 11710 in FF at 1154. (Brossell, WI) 13650 in CC at 0035. (MacKenzie, CA)

Korean Central Broadcasting Station, 2850 at 1154 with usual patriotic opera-style vocals. (Strawman, IA) 11710// 11735 in KK at 1222. (Brossell, WI)

NORTHERN MARIANAS—Far East Broadcasting/KFBS, 12050 in EE at 2259 and off at 2300. (MacKenzie, CA) 15580 in II at 1050. (Ng, Malaysia)

OMAN—Radio Sultanate of Oman, 15140 at 1428 with instl. chimes/gongs at 1430, usual theme at 1431 and EE news at 1432. (Alexander, PA)

OPPOSITION—Radio Biafra (to Nigeria), 12050 via Rampisham heard at 1904 with talks by two men, numerous IDs, phone calls and text messages from listeners. (D'Angelo, PA)

Voice of Tibet (to China), 15430-via (?) with M/W in TT talk monitored at 1340. (Ng, Malaysia)

Radio Free Chosun (to North Korea), 11560 (site?) with W and KK talk at 1245. (Ng, Malaysia)

Radio Nacional de la R.A.S.D. (to Morocco), 6297-Rabouni, at 2346 with non-stop pops, M anc with ID and closedown at 0002. (D'Angelo, PA)

Radio Payam-e Dost (to Iran), 7460 in Farsi at 0245. (Brossell, WI)

Voice of Biafra (to Nigeria), 17520 via WHRI at 1901 opening, EE religious music and talks on local politics. This is Fridays only. (Alexander, PA)

Fursuato no Kaze (to North Korea), 9585-Taiwan in JJ heard at 1345. (Strawman, IA)

PAPUA NEW GUINEA—Radio Southern Highlands, Mendi, (Papua), 3275, heard on most mornings around 1000. (Wilkner, FL)

Radio East Sepik, Wewak (New Guinea), 3335 at 1250 with reggae-style music and chatter between selections, into (p) news at 1300. (Strawman, IA)

PERU—(*All in SS—gld*) Radio Huanta 2000, Huanta, 4746.9 at 1023 with OA vocals. (Wilkner, FL)

Radio Tarma, Tarma, 4774.9 at 1015 with OA music, W with ID. (Wilkner, FL)

Radio Vision, Chiclayo, 4790, 0343 with M talk and guitar bridges. (Parker, PA) 0345 with religious talk under CODAR pulser. (Strawman, IA)

La Voz de la Selva, Iquitos, 4824.9 strong lately after 1020 with music and occasional IDs. (Wilkner, FL)

Radio Maranon, Jaen, 4835.5 with M anc, romantic ballads heard at 0152. (Parker, PA)

Radio Bolivar, Ciudad Bolivar, 5460 at 0020 with music. (Wilkner, FL)

Radio Tawantinsuyo, Cusco, 6173.9 with M anc heard at 0010 and vocals. (Wilkner, FL)

Radio Victoria, Lima, 9720 at 0530 with religious preaching by W, //6019.3 which was poor. (Alexander, PA)

PHILIPPINES—Far East Broadcasting Co., 9400 at 1144 with talk in (I) Mandarin. (Brossell, WI) 9430 at 1335 with Mandarin talks. (Strawman, IA) 9730 heard at 2325 in Hmong. (MacKenzie, CA)

PIRATES—Radio Station XXP, 6925u at 0032 with classic rock, many frequent IDs and radiostationxxp@gmail.com for reports. Lots of old fashioned pirate-like talk. (D'Angelo, PA)

WTCR, 6925u at 0155 with rock, pop, country, mention of "Twentieth Century Radio" and "Box 1, Belfast," off at 0226. (Hassig, IL)

Radio Gaga, 6925u heard at 2305 with marijuana parody songs, ID by M. (Hullender, TN)

MAC Radio, 6851 at 0010 with "Ultraman" show and heavy metal, off with anthem and laughter at 0032. (Hassig, IL) 6935 at 2309 with various rock, macshortwave@yahoo.com and macshortwaveradio@gmail.com given by "Ultraman." (Hullender, TN)

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WMLK's antennas in Bethel, Pennsylvania. (Thanks Charles Maxant)

The Crystal Ship, 5385.4 at 2238 with Bugs Bunny sound clip about Martians, parodies, movie sound clips, "official voice of the blue states republic," Rush Limbaugh spoof, German patriotic song, etc. (Hassig, IL) 6385.3 at 2154 with pirate tunes and USSR national anthem, rock items, a few Tarzan yells and slogan. (Zeller, OH)

WEAK Radio, 6935u at 2220 with pop/rock, W with "W-E-A-K, WEAK Radio," more rock. (D'Angelo, PA)

Northwoods Radio, 9625u at 1340, 1450 and 1451 with novelty tunes and sketches. Several M/W IDs and loon call IS at close. (Zeller, OH)

Captain Morgan, 6925.7 at 0200 poor and unstable with rock/pop. (Hassig, IL) 6926 at 2221 and 2234 with classic rock. Multiple IDs after 2240 and captainmorganshortwave@gmail.com for reports. (Zeller, OH)

Outhouse Radio, 6925 at 0309 with rock, M with several IDs and talk. (D'Angelo, PA)

Shay Man, 6925u at 0248 with brief transmission of a robot vox saying "Testing 1-2-3—This is Shay Man" delivered twice and then off. (Zeller, OH)

Voice of the Robots, 6925u at *0052 with trumpet fanfare sign on and anmt by the robots that they are invading and will take over the Earth. voiceoftherobots@gmail.com for reports. (Zeller, OH)

WHJR—Hey Joe Radio, 6925 at 2102 with numerous covers of "Hey Joe" and slogan "Hey Joe all the time"; ancd address as heyjoe6925@gmail.com and asked for reports promising QSL card. (Hullender, TN)

The Voice of Revenge, 6925u at 0046 with mostly heavy metal, maniacal laughter, ID. (Hullender, TN)

Wolverine Radio, 6925u heard at 0125 with 60s songs, xxx-rated porn story. (Hassig, IL)

KUSA, 6925u monitored at 0050 with Monty Python things, pop/rock. Said kusanorthamerica@gmail.com. (Hassig, IL)

Cupid Radio (Euro), 15070.5, 1500–1700 with pops, acknowledged reports, gave an address in the Netherlands. Very weak, with occasional peaks to fair levels. (Alexander, PA)

POLAND—Polskie Radio, 9525 (via Germany—gld) at 1215 on Romanian university grads. (Maxant, WV) 1240 with news and news features in EE, closing anmts at 1258 and off. (Strawman, IA)

PORTUGAL—RDP Intl, 7240 at 0525 with M with rock/pop. (Parker, PA) 9725 in PP at 2336 with W and pop vocals, M with ID. (MacKenzie, CA) 21655 heard at 1930 with PP commentary. (Padazopulos, NJ)

ROMANIA—Radio Romania Intl, 6115 with news at 0305, 9755 with news in SS at 2100, 9790 with news at 2200, //9940 and 9790 in SS at 2130. (Padazopulos, NJ) 7215—Galbeni in FF to Europe at 0410. (Parker, PA) 7305 at 0530. (Brossell, WI) 11735 at 1442 with

Romanian folk music, IDs, *The Cooking Show* and into sports before 1800 sign off. (Wood, TN) 1730 with a cultural pgm. (Barton, AZ)

RUSSIA—Voice of Russia, 7330 in RR at 0249 and 9665 at 0034 with *This is Russia* pgm. (MacKenzie, CA) 9665 with an interview at 0001 and 12040 at 1524 with classical music. (Maxant, WV) 13870—St.Petersburg in RR at 1210. (Brossell, WI) 15560 in RR at 1300. (Padazopulos, NJ)

Yakutsk Radio (As. Russia) 7345 in RR at 0248. (Mackenzie, CA) Radio Rossii, 5940—Magadan (As. Russia) in RR monitored at 0515. (Parker, PA) 13665—Moscow in RR at 1205. (Brossell, WI)

SAO TOME—VOA Relay, Pinheira, 4960 with news at 0430. (Parker, PA) 0434, //4930—Botswana. (Wood, TN) 0320. (Ronda, OK) 0515. (Brossell, WI)

SAUDI ARABIA—Broadcasting Service of the Kingdom, 15225 at 1511 with Koran. (Brossell, WI)

SERBIA—International Radio of Serbia, 9675 at 0015 with talks in Serbian, EE news starts at 0030. (Brossell, WI)

SOLOMON ISLANDS—SIBC, 5020 heard at 1010. (Wilkner, FL) (p) at 1215, but very weak with W talk. (Strawman, IA)

SOUTH AFRICA—Channel Africa, 3345 at 0356 with tribal vocals, 5+1 time pips at 0400 f/by ID and EE news. (D'Angelo, PA) 9625 at 1125 under CBC Northern service with news on Africa. Also 15235 with *Africa Today* pgm at 1735. (Maxant, WV) 17770 at 1516 with Afro-pops. (Brossell, WI)

Radio Sondergrense, 3320 at 0337 in Afrikaans and M with pops. (Wood, TN) 0348. (Strawman, IA; Ronda, OK)

SOUTH KOREA—KBS World Radio, 9770 at 1249 in (l) Mandarin. (Strawman, IA)

SPAIN—Radio Exterior de Espana, 6055 in FF at 2256, 9630 Costa Rica Relay in SS at 0244, 9765 Costa Rica at 0031, 17715 in SS at 1725 and 17850 in SS at 2235. (MacKenzie, CA) 12015 in FF at 1927. (Brossell, WI) 17595 at 1300 and 17850 at 2135. (Padazopulos, NJ)

SUDAN—Sudan RTV, 7200 at 0313 in AA. (Brossell, WI) 0320 with AA talk, wide variety of local pops and instls, many mentions of Sudan, "Huna Omdurman" IDs. Abrupt off at 0430. (Alexander, PA)

Radio Dabanga, 11500 via Madagascar monitored at 1657 with AA talks, news and news features, remote feeds, jingle IDs, //13730 via Wertachtal. (D'Angelo, PA)

Miraya 101 FM, 15560 via Slovakia at 1501 with news about Sudan, IDs and mirayafm.org website. Into AA at 1510. (Alexander, PA)

SWAZILAND—Trans World Radio, 4775 at 0352 with contemporary Christian and gospel in GG with W ancr. (Wood, TN) 0400 with GG religious pgm. (Ronda, OK) 0401 in GG with inspirational music. (Parker, PA) 0412 in GG. (Strawman, IA)

SWEDEN—Radio Sweden, 6010 (via Canada—gld) at 0120 and 0230 with EE news. (Padazopulos, NJ) 13600 at 1535 in EE. (Fraser, ME; Maxant, WV) 13820 at 1430. (Maxant, WV)

SYRIA—Radio Damascus, 12085 in FF at 1929. (Brossell, WI)

TAIWAN—Voice of Kuanghua, 9745 at 1350 in (l) Mandarin to the mainland. (Strawman, IA)

Radio Taiwan Intl, 11875 via France in FF at 1922. (Brossell, WI)

TANZANIA—Radio Tanzania, Zanzibar, 11735 at 1800 with EE news, ID, into Swahili at 1809. (Alexander, PA) 1830 with African vocals. (Maxant, WV)

THAILAND—Radio Thailand, 9455 at 1322 in (l) Thai with W anmts. (Strawman, IA) 1410 with *News Magazine*. (Ng, Malaysia) 9680 at 0055. (Maxant, WV) 15275 at 0000 with EE pgm opening, ID, headlines and national news f/by coml and anmts. (D'Angelo, PA) 0005 with news in EE, local time and ID at 0015. (Strawman, IA)

Bangkok Meteorological Station, 8743u at 1252 with weak signal but in the clear. A mix of EE/TT talk and semi-classical music. (Strawman, IA)

TURKEY—Voice of Turkey, 7325 via Canada in TT at 0333, //5965. Also, 7385 via Canada at 0335. (MacKenzie, CA) 9785 at 1907 with news features in EE, multi-lingual IDs at 1915, W ancr with headlines prior to close at 1919. (D'Angelo, PA) 9830—Emirler at 2225 on Turkish car manufacturing. (Fraser, ME) 11835 in GG at 1803. (Brossell, WI)

TUNISIA—RT Tunisienne, 7275 in AA at 0521. (Brossell, WI)

UKRAINE—Radio Ukraine Intl. 7440 at 0240 in UU. (MacKenzie, CA) Folk songs and EE comments at 0337. (Ronda, OK) 0245 in UU. (Brossell, WI) 0340. (Maxant, WV) 11550 at 1153. (Gay, KY)

USA—Voice of America, 6045 via Ascension to West Africa in Hausa at 0509 and 7230 via Lampertheim in AA at 0517. (Parker, PA) 7225 via Northern Marianas in (I) KK at 1215, 11775 in CC at 1226 and 11785 Thailand Relay in CC at 1227. (Brossell, WI) VOA/Radio Deewa, 9390 Thailand Relay in Pashto at 1339 and 9780 Sri Lanka Relay at 0104. (Strawman, IA) 13755 Thailand Relay at 2340. (MacKenzie, CA) 15580 at 1730. (Maxant, WV) 1937 with news. (Padazopulos, NJ)

Radio Free Asia, 9335 Northern Marianas Relay in (I) Laotian at 1145, 11590 Kuwait Relay in (I) Pashto at 1227, 12025 Northern Marianas in CC at 1528, 12140 Northern Marianas in (I) Khmer at 1243 and 12830 via Tajikistan in (I) Tibetan at 1237. (Brossell, WI) 13740 Northern Marianas in CC at 2240, 13775 Thailand in CC at 2327 and 15430 Northern Marianas in CC at 2307. (MacKenzie, CA)

Radio Liberty, 5925 via Lampertheim in RR at 0423. (Parker, PA) 11840 via England at 1920 in RR. (Brossell, WI)

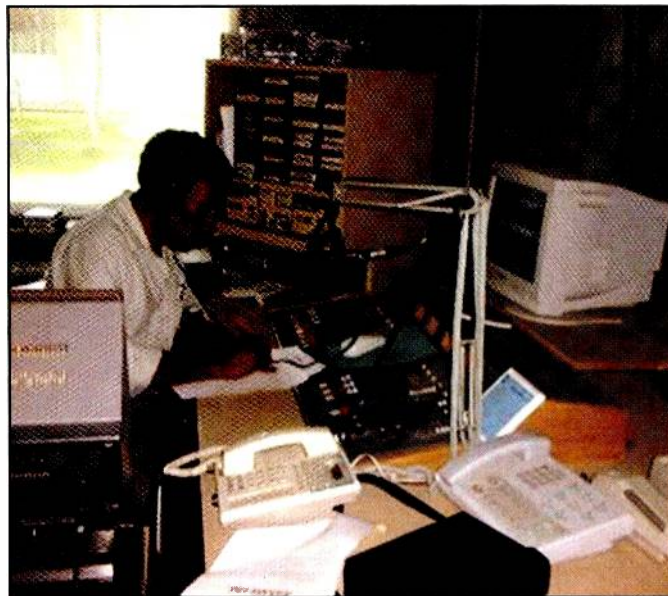
AFRTS, 5446.5u-Key West with *AFN Sports Page* (Parker, PA) 5765u-Guam with talk on NASCAR heard at 0955. (Wilkner, FL)

Trans World Radio, 9800-Monaco (*actually, Fontbonne, France—gl'd*) with Bible reading at 0705. (Maxant, WV)

KJES, 11715 at 1435. (Maxant, WV)

WYFR/Family Radio, 7730 in PP at 0313, 17845 in AA at 2240, 21455 at 1735, 21525 in AA at 2018 and 21670 in SS at 1730. (MacKenzie, CA) 11520 via Sri Lanka in vernacular at 1510. (Maxant, WV) 11630 via Taiwan in VV at 0050. (Ng, Malaysia) 11640 via Tajikistan in CC at 1220 and 15370 via Germany in (I) Tamil at 1514. (Brossell, WI)

WEWN, 5810 in SS at 2302. (MacKenzie, CA) 11520 at 0415 and 11640 at *0900. (Maxant, WV)



An operator at the control board at the Solomon Islands Broadcasting Corporation, active again on 5020.

WRMI, 9955 at 1420. (Maxant, WV)
 WRNO, 7505 monitored at *0105. (Maxant, WV)
 WBCQ, 7415 monitored at 0243. (MacKenzie, CA)
 WWCR, 3215 at 0148, 5070 at 0425, 5890 at 0432, 5935 at 0428 and 7465 at 2347. (MacKenzie, CA)

WHRI, 17520 monitored at 1740. (MacKenzie, CA)
 WINB, 13570 monitored at 1756. (MacKenzie, CA)
 Sudan Radio Service, 17745 via Portugal at *1500 with opening ID, contact info, *Let's Talk* pgm, into AA at 1528. (Alexander, PA) 1505 in AA. (Ng, Malaysia) 1544 in AA, past 1600. (D'Angelo, PA)
VATICAN—Vatican Radio, 7335 at 0241 in RR. (Brossell, WI) 15570 with an interview at 1750. (MacKenzie, CA)

VENEZUELA—Radio Nacional, 11665 via Cuba in SS at 2340 and 13680 via Cuba in EE at 2345 mixing with Radio Japan. (MacKenzie, CA) 11680 in SS/EE at 1540 and 13680 at 2350 with "This is Caracas" ID and items about Chavez. (Maxant, WV)

YVTO time station, 10000 in SS at 0415 with "Observatorio Nacional" anmts every 10 seconds. No trace of WWV. (Parker, PA)

VIETNAM—Voice of Vietnam, 6175 via Canada at 0342 with EE comments. (MacKenzie, CA)

ZAMBIA—CVC-The Voice, 4965 with gospel singing at 2345, 9430 with preaching at 0410 and 13590 with African vocals at 1445. (Maxant, WV) 9430 at 0418. (Ronda, OK)

ZIMBABWE—Radio Zimbabwe, 4828 at 0418 with lively vocal group, but after the song the modulation fell apart. (D'Angelo, PA)

And, once again, order is restored! Back slaps and high fives to all who pitched in again this month: Peter Ng, Johor Bahru, Malaysia; Robert Wilkner, Pompano Beach, FL; William Hassig, Mt. Prospect, IL; Chris Gay, Lexington, KY; Robert Brossell, Pewaukee, WI; Joe Wood, Greenback, TN; Rich D'Angelo, Wyomissing, PA; Rick Barton, Phoenix, AZ; Jerry Strawman, Des Moines, IA; Brian Alexander, Mechanicsburg, TN; Stewart MacKenzie, Huntington Beach, CA; George Zeller, Cleveland, OH; Jim Ronda, Tulsa, OK; Charles Maxant, Hinton, WV; Fotios Padazopulos, NJ; Robert Fraser, Belfast, ME; Richard Parker, Pennsburg, PA; and Clinton Hullender, Cleveland, TN. Thanks to each of you!

Until next month—good listening!

Pop'Comm February 2010 Reader Survey Questions

This month we'd like to ask about your winter hobby habits. Please use the Reader Survey Card and circle all appropriate numbers. We'll pick one respondent at random for a free one-year subscription, or extension, to *Pop'Comm*, so don't forget your address. As always, thanks for participating.

How active in the radio hobby are you during the winter?

- Extremely active, it's the busiest time for me 1
- Very active 2
- Not too active 3
- Rarely touch a radio 4
- I completely shut down in winter 5

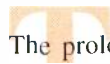
What's your main winter hobby focus?

- Scanning 6
- Shortwave 7
- AM/FM Broadcast Band 8
- Amateur Radio 9
- CB 10
- Digital Modes 11
- Computers/Internet 12
- Restoration/Building 13
- Other 14

We're out of room for highlights from our October survey, but we do have a winner of the free subscription or extension for answering that month's questions. The lucky recipient this time is **Tom Belusko** of **Granite City, Illinois**. Congratulations Tom!

Getting Maximum Mileage Out Of The Solar Minimum On The AM Band

by Bruce A. Conti
BAConti@aol.com



The prolonged solar minimum has resulted in unprecedented conditions for reception over long distances on the AM broadcast band. Japan has become a regular visitor to the East Coast of North America, while Europe is being received in the west. Conditions aren't everything though. Knowing when to listen can be just as important.

Watching The Sunrise/Sunset With GeoClock

The critical time periods to monitor are the transition zones of dusk and dawn for both the receiver site and transmitter site. Reception is enhanced when the receiver and/or transmitter sites are within the dusk/dawn transition zones.

Further enhancement is possible when a signal follows the path along the transition zone from the transmitter site to the receiver, referred to as gray-line reception. GeoClock, distributed as shareware via www.geoclock.com, is an indispensable tool to help identify potential DX target areas in the sunrise/sunset transition zones. It provides a map of the Earth overlaid with areas of sunlight and darkness along with sun and moon positions, continuously updated in real time. The map can be customized with target transmitter sites and locations, as in the examples shown here. An optional "Ham" function provides a Great Circle map centered on your receiver location.

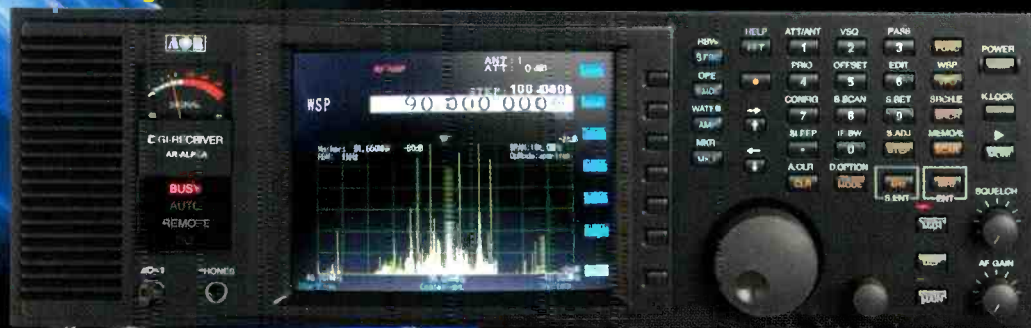
This month we're going to show you a couple of examples of how sunrise and sunset times can



With Japan now in total darkness, sunset approaches Australia, China, and Korea, as sunrise approaches the East Coast of North America in this GeoClock example for February 13, 2010.

AR-ALPHA

Professional Grade Communications Receiver



- 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
- Up to 1MHz of bandwidth can be recorded for later playback and review
- 6-inch TFT color panel can display received video signals or depict spectrum activity over a wide choice of bandwidths including a

With New I/Q Control Software!

AOR proudly presents the AR-ALPHA, the first in a new class of professional monitoring receivers. Designed to cover 10KHz to 3.3GHz continuous, with no interruptions*, this receiver features sophisticated I/Q control software that enables it to perform unattended data logging for extended periods. It boasts 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 also includes APCO-25 digital capability and a DVR with six channels that can record up to a total of 52 minutes of audio. Monitoring professionals will appreciate the world class engineering and attention to detail that makes the AR-ALPHA such an amazing instrument.

"waterfall" function to show signal activity over a specified time period

- Composite video output on the rear panel of the unit
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- Built-in voice-inversion descrambling**
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- 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.



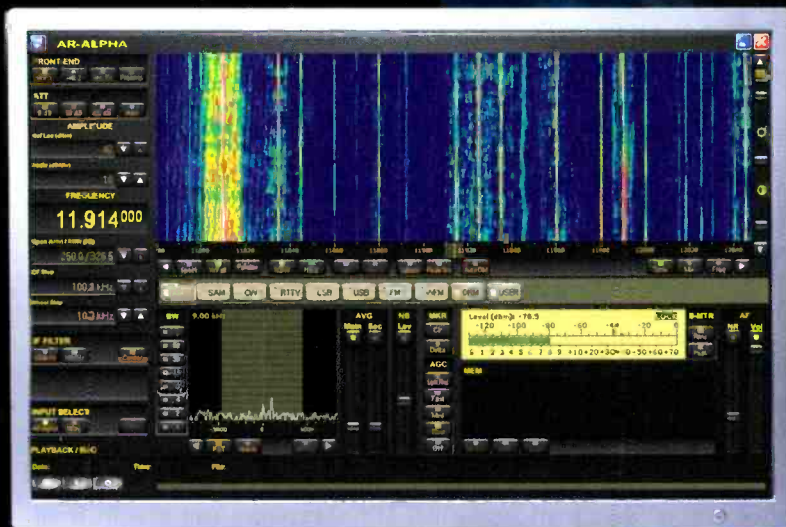
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Advanced AR-IQ Software Allows High Speed I/Q Recording Up to 1MHz Bandwidth!



Signal searching is easy with playback capabilities through a PC



PC screen displays waterfall function to capture signal bursts

- Up to 1MHz bandwidth can be recorded for later evaluation
- High recovered audio quality with no deterioration of recorded data
- Can be used to perform unattended datalogging
- Spectrum display, full color waterfall and averaging functions support signal evaluation and analysis
- Easy to use. No training required.

can even listen repeatedly to a loop in time to decode a transmission received in difficult conditions.

AR-IQ software can be uploaded to multiple PCs so that you can transfer data from a PC connected to the AR-ALPHA over to another PC for playback and review.

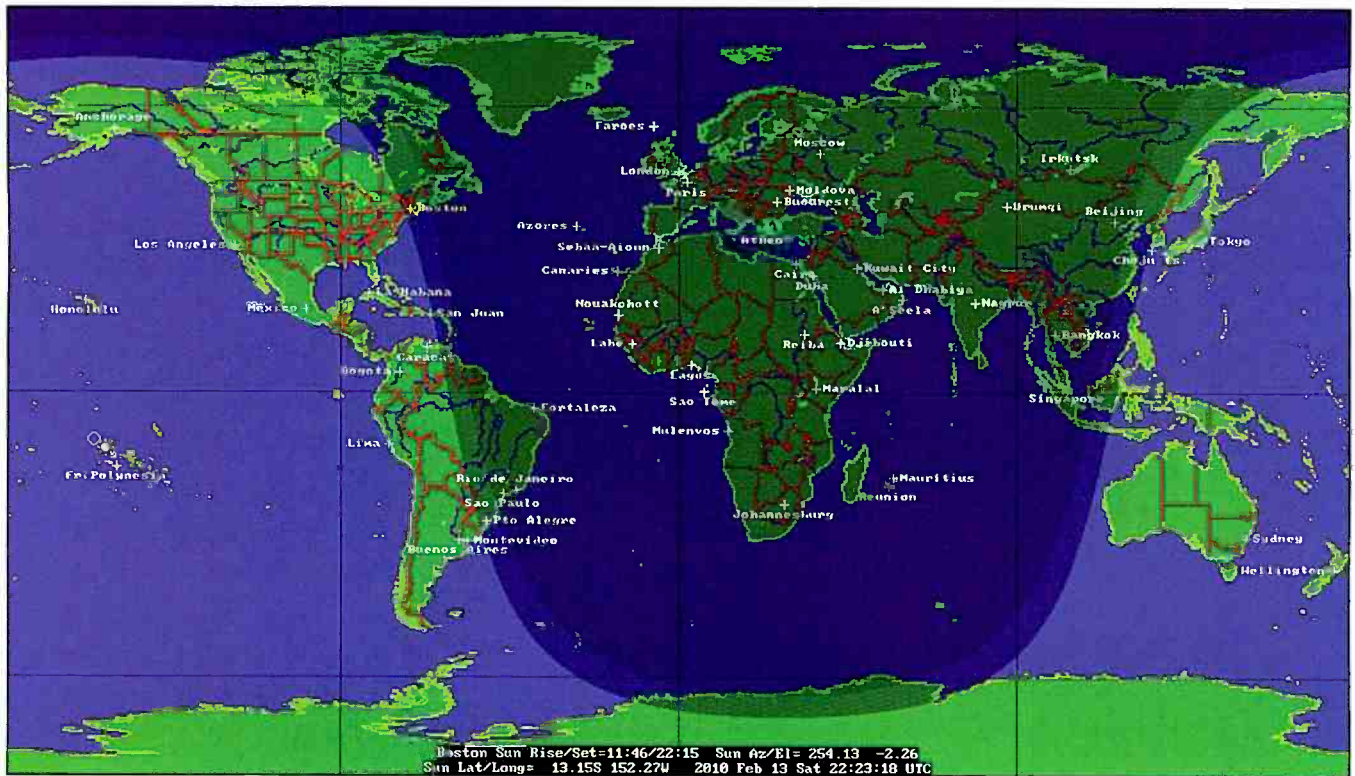
The AR-ALPHA with AR-IQ software sets a new standard for professional grade multimode monitoring receivers! To order, contact your AOR dealer today.

AOR has brought a new level of receiver control to the AR-ALPHA with the addition of AR-IQ software. This free software enables the AR-ALPHA to store and playback a full 1MHz of bandwidth activity without any loss of quality. Raw data can be easily transferred from the AR-ALPHA to the hard drive of almost any computer*** for later analysis and review. It is even possible to listen to a frequency off-line by recording

data and storing it on a PC. Operators can also create loops to cover a particular time frame so that no signal is missed. Signal bursts are easily seen with the full color waterfall display function.

Using the control panel of the AR-ALPHA through a PC monitor, operators are able to enjoy added capabilities. You can perform unattended datalogging for extended periods of time depending on storage capacity. So, for hours, days or even weeks you can capture up to 1MHz bandwidth between 10kHz and 3.3 GHz for later playback and analysis. You

***AR-IQ software can be used with any dual core class PC operating Windows® XP or Vista with 2.0GHz CPU and 1GB RAM.



The eastern Caribbean, Brazil, and Venezuela line up with Boston at sunset on February 13 for grayline enhancement.

be used to identify good DX target areas. Here Saturday, February 13, sunrise and sunset for Boston and Seattle are compared.

On the weekend of February 13, sunset in Tokyo, Japan, is at 0820 UTC, while in Boston, Massachusetts, sunrise is 1145 UTC; therefore, reception of Japan is possible anytime within the 0820–1145 UTC window. However the best signals are often received during transmitter site dusk and receiver site dawn, so look for the strongest signals around 0820 and 1145 UTC, typically with readable signal peaks not lasting more than 10 to 20 minutes. South Korea sunset is later, at 0911 UTC in Dangjin, leaving a smaller window of opportunity for East Coast North America DXers, with perhaps the best chance during transmitter site dusk after the Japan sunset enhancement has passed. VOA Thailand is a favorite target on 1575 kHz, but the window of opportunity is narrow with transmitter site sunset at 1121 UTC, leaving only a few minutes to try to catch this signal before Boston sunrise.

For West Coast North America DXers, reception of signals from Europe is more dependent upon transmitter site sunrise. Though some of the more powerful signals can be received during West Coast sunset enhancement, often European signals are strongest during transmitter site dawn enhancement. DXers in Seattle, Washington, can begin checking for signals as early as local sunset at 0130 UTC on February 13, but peak signals likely won't show up for a few hours. High power signals from Croatia and Kaliningrad may not be received until transmitter site sunrise around 0600 UTC. Reception of western European stations like France Info on 1206 kHz or Absolute Radio from the United Kingdom on 1215 kHz, may not peak until transmitter site dawn or after 0700 UTC, shortly after which transpacific signals from Japan will begin to appear. Similar to reception of Japan in Boston, readable peaks of European signals on

the West Coast may only last 10 to 20 minutes before fading out with transmitter site sunrise.

Specific sunrise and sunset times can be obtained through the U.S. Naval Observatory website at www.usno.navy.mil/USNO. Once at the website, select "Astronomical Applications" where complete sun and moon data for one day or a sunrise/sunset table for one year can be obtained for a particular location identified by coordinates. A link is provided for the GEOnet Names Server to determine coordinates if unknown.

Transcontinental Sunrise/Sunset DX

Sunrise and sunset DXing isn't just for transoceanic reception. Your transcontinental DX experience can benefit from monitoring sunrise/sunset times as well. Most AM radio stations in the U.S. must change to a directional antenna pattern and/or reduce power at night to prevent interference with other stations due to nighttime skywave propagation. DXers in the east often catch stations to the west at sunset prior to switching to nighttime parameters. Meanwhile as sunrise crosses North America, western DXers may find signals from the east popping up upon switching to daytime full power.

The FCC Media Bureau website at www.fcc.gov/mb is a useful resource for obtaining sunrise/sunset data relating to specific radio stations. In the shortcut box on the left at that site, select "AM Sunrise/Sunset" to go to the FCC local sunrise/sunset calculator. Unknown coordinates can be obtained via links on the calculator page to "AM Query" for a specific AM radio station and "Community Coordinates" for a general location. AM Query data also identifies radio station day and night parameters including post-sunset and pre-sunrise authorizations that allow for modified operating parameters during the dusk/dawn



Australia, China, Japan, and Korea are dark as the sun rises on the East Coast of North America on February 13, while the West Coast still has a few hours of darkness in which to catch transpacific DX.

transition periods. The National Radio Club (www.nredxas.org) "AM Radio Log" is another good reference for U.S. and Canada radio station parameters.

Broadcast Loggings

Welcome to Chris Gay, KU4A, a regular reporter to the "Utility Communications Digest" and "Global Information Guide," who now joins the Broadcast DX gang. This month's selected loggings include reception of Scotland in Oregon and numerous reports of Japan heard in New England. All times are UTC.

540.18 YNOW Radio Corporación, Managua, Nicaragua, at 0300 Spanish talk through the hour by President Zelaya, saying towards the end that he misses Nicaragua. MWOFFsets list shows this frequency for YNOW. (Black-MA)

600 CMKV Radio Rebelde, Urbano Noris, Cuba, at 0214 relaying FM, "Música Viva 96.7 Potencia FM," with requests from listeners including a song by Ricardo Arjona of Guatemala, one of the most popular Central American rockers (outside Mexico). Huge, over/under WICC and CKAT on the Sony XR-A33 car radio. Parallel 670 and 710 kHz. (Chiochiu-QC)

630 NRK Vigma, Norway, at 2238 a woman in Norwegian wishing listeners a

good night, then "I Gotta Feeling" by the Black Eyed Peas; over/under WPRO. (Connelly-MA)

639 Cesk? rozhlas, Liblice and Svinov, Czech Republic, at 2210 over/under RNE1 Spain and 638 Nigeria het; deep-voiced man in presumed Czech. 2300 sign-off with instrumental national anthem. (Conti-NH)

639 RNE1 La Coruña, Spain, at 2313 good with het on low side from 638 Nigeria; promo, "...en Radio Nacional" and "Informativos Fin de Semana." (Conti-NH)

693 JOAB Tokyo, Japan, at 1102 over/under 690 CINF; woman in

Japanese parallel 747 JOIB. New log. (Conti-NH)

702 RMC Col de la Madone, France, at 2258 good; Chinese vocal, then sign-off announcement in French with "Radio Chine International" mentions, carrier off at 2301. (Conti-NH)

747 Radio Bulgaria, multiple locations, at 2200 interval signal per Interval Signals online, then woman in East-European language. EMWG shows program in Serbian 2200-2300. Recorded; poor, mixing with Spain. (Black-MA)

747 JOIB Sapporo, Japan, at 1058 fair; woman in Japanese parallel 693 and 774 kHz. Signals also noted on 837 and

This Month In Broadcast History

75 Years Ago (1935)—In a radio address to the nation, Secretary of Labor Frances Perkins explained the Roosevelt administration draft of the Economic Security Bill, which led to the Social Security of today. Meanwhile overseas Sir Robert Watson-Watt, using a BBC short-wave transmitter, conducted the first trial run of radar detection of aircraft.

50 Years Ago (1960)—The Theme from "A Summer Place" by Percy Faith and His Orchestra topped the 1050 WMGM Fabulous Forty in New York City.

25 Years Ago (1985)—AM Stereo broadcasting using the Motorola C-QUAM system was officially announced by the Department of Communications as the standard in Australia.

WMGM



Transmitter site dawn enhancement of western Europe and West Africa while all of North America is in darkness on February 13.

864 kHz but no audio. 747 JOIB continued fair to good beyond 1150 UTC, while 693 JOAB was buried under 690 CINF and 774 JOUB was clobbered by 770 WABC analog. At 1100 woman in Japanese, three pips followed by a softer tone, fanfare into presumed news. Audio clip uploaded to jBAMLog! in the 2009 Logbook. (Conti-NH) At 1114 parallel 774 JOUB Akita and 693 JOAB Tokyo. Man in Japanese. Good to very good signal. (Black-MA)

756 Deutschlandfunk, Braunschweig & Ravensburg, Germany, at 0416 fair; male DJ in German, pop tunes by Melanie and Meatloaf. (DeLorenzo-MA)

774 JOUB Akita, Japan, at 1106 presumed; poor with man talking and then musical interlude at 1108. (Taylor-PE) At 1108 parallel 747 JOIB Sapporo and 693 JOAB Tokyo. Man in Japanese, mellow musical interlude, then woman in Japanese. Good-very good. (Black-MA)

774 RNE1 Spain, at 0359 fair; light acoustic guitar music, 0400 time pips, "Radio Nacional de España, Informativos," into news in Spanish. (DeLorenzo-MA)

780 WBBM Chicago, Illinois, at 0229 caught weather and temperatures at O'Hare and Midway. Then heard correspondent report conclude with "...on News Radio WBBM." Through slopover from 770 KKOZ Albuquerque. (Barton-AZ)

780 YVMN Radio Coro, Coro,

Venezuela, at 0421 an old-fashioned cumbia song ended, then promo for "La Bailanta Siete Ochenta" followed by a commercial merengue track. Very good, in WBBM Chicago null. (Chiochiu-QC)

783 Radio Syria 1, Tartus, Syria, monitored at 0047 parallel 828 kHz with female Arabic vocal, flutes, strings; over co-channel Spain. At 0104, "Al arabiya al souriya" mention, news/talk; dominant. (Connelly-MA)

810 BBC Glasgow, Scotland, at 2357 BBC news talk/documentary; briefly over WGY. (Connelly-MA) QSL letter received in 22 days for a CD report. Basically they thanked me for the report and were pleased I heard their broadcast. Signed Jacqui MacDonald, BBC Information, Scotland. Address: BBC, PO Box 1922, Glasgow G2 3WT Scotland. A new country QSLed, and MW QSL 3007. (Martin-OR)

828 JOBB Osaka, Japan, at 1058 fair; discussion in Japanese parallel 747 kHz. New log. (Conti-NH)

855 România Actualitati, Bucuresti, Romania, at 0011 parallel 909, 1179, 1314, 1332, 1530, and 1593 kHz with Beatles "Hey Jude"; under co-channel Spain. (Connelly-MA)

880 XEEM Río Verde, San Luis Potosí, Mexico, at 1204 with ID, mixing with an unidentified station in the null of KRVN Nebraska. (Barton-AZ)

909 VOA Sebele Pikwe, Botswana, at 2100 end of English transmission and sign-off, "This is the Voice of America, Washington D.C., signing off," and "Yankee Doodle," then carrier cut at 2100. Poor under co-channel BBC Radio 5 UK. (Black-MA)

909 BBC Radio 5, United Kingdom, at 2300 talk about energy, then ID, "On digital and online, this is BBC Radio Five Live"; loud. (Connelly-MA)

972 HLCA Dangjin, South Korea, at 1109 presumed; poor with woman talking in what sounded like an east Asian language. (Taylor-PE)

1060 KDUS Tempe, Arizona, at 0250 high school sports coverage, Maryvale vs. Trevor Browne. (Barton-AZ)

1062 Danmarks Radio, Kalundborg, Denmark, at 0500 good; theme from TV sitcom *Friends* "I'll Be There for You" followed by news in Danish. (DeLorenzo-MA)

1070 WNCT Greenville, North Carolina, at 0014 heard with oldies music. (Gay-KY)

1070 WFLI Lookout Mountain, Tennessee, at 2300 gospel music and clear top of the hour ID. (Gay-KY)

1089 TalkSport, United Kingdom, at 0000 promo for DAB Digital Radio, then *TalkSport News*, good over 1088 Angola het. (Connelly-MA)

1116 Australia, at 1103 a man talking

quietly and deliberately in what sounded like an interview in English. Audio lost and carrier faded down quickly after 1105. (Taylor-PE)

1134 Glas Hrvatske, Zadar, Croatia, at 2218 parallel 7375 kHz with English-language news about Bosnian representatives consulting with European Union officials; good. (Connelly-MA)

1150 KSAL Salina, Kansas, at 0100 with Dave Ramsey Show and clear ID. Doing quite well under my near-local WMST. (Gay-KY)

1179 Radio Sweden International, Sölvesborg, Sweden, at 2229 good; interval signal, "To the Wide, Wide World" theme, "You're listening to Radio Sweden broadcasting to Europe on mediumwave 1179 kilohertz. Stay tuned for half-hour programs in English." Then *Inside Sweden*. (Conti-NH)

1210 KGYN Guyman, Oklahoma, at 0020 with the sun still high in the sky (40 minutes before local sunset), a very strong and clear signal with ID and country music. (Barton-AZ)

1215 VOR Bolshakovo, Kaliningrad, at 2300 under co-channel Absolute Radio UK; "You're tuned to the World Service of the Voice of Russia," and news in English. (Conti-NH)

1280 KZNS Salt Lake City, Utah, at 0308 signal mixing with a Mexican station; ID, "Sports Radio 1280. The Zone," and local high school scores including Alta and Hillcrest. (Barton-AZ)

1290 WIRL Peoria, Illinois, at 2208 with country music and clear ID, "Classic Country WIRL." (Gay-KY)

1290 CFRW Winnipeg, Manitoba, at 0030 with oldies music. (Gay-KY)

1320 KFNZ Salt Lake City, Utah, at 0300 Skyline vs. Wolverines sports coverage. (Barton-AZ)

1341 BBC Radio Ulster, Lisnagarvey, Northern Ireland, at 2300 five short pips, one longer pip, "On 92 and 95 FM and 1341 mediumwave, this is BBC Radio Ulster." (Connelly-MA)

1370 XEJE Dolores Hidalgo, Guanajuato, Mexico, at 1100 with anthem into music and slogan, "Radio Reyna." (Barton-AZ)

1431 Radio Sawa, Arta, Djibouti, at 2317 Arabic talk mentioning Medinah, Ankara; peaking stronger than local 1430 WXKS. (Connelly-MA)

1440 RTL Marnach, Luxembourg, at 2200 French heard earlier, then ID and English, relaying CRI. In above the mix for a time. New log and new country. (Barstow-MA)

1440 BSKSA Damman, Saudi Arabia, at 2355 parallel 1521 kHz with a woman in Arabic, then electronic synthesizer music; briefly over WRED. (Connelly-MA)

1457.81 CRI Fillakë, Albania, at 2250 a loud het against 1458 Sunrise Radio. Off at 2330 leaving Sunrise Radio in clear. (Conti-NH)

1467 TWR Roumoules, France, at 2259 one cycle of TWR interval signal, then carrier was off momentarily, returning with *Rendezvous* program in English. 2345 sign-off with TWR address info, "Good night," one cycle of interval signal, and off. (Conti-NH)

1512 ERA Chania, Greece, at 0340 weak to fair at times with slop; parallel 7475 kHz. (Barstow-MA)

1530 Radio Vaticana, Vatican City, heard at 2200 interval signal chimes just before the top of the hour; mixed with VOA São Tome, WVBF, and others. (Connelly-MA)

Thanks to Roy Barstow; Rick Barton; Chris Black, N1CP; Bogdan Chiochiu; Mark Connelly, W110N; Marc DeLorenzo; Chris Gay KU4A; Patrick Martin; and Brent Taylor, VY2HF.

Until next time, 73 and Good DX!

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This listing is designed to help you hear more shortwave broadcasting stations. The list covers a variety of stations, including international broadcasters beaming programs to North America, others to different parts of the world, as well as local and regional shortwave stations. Many of the transmissions listed here are not in English. Your ability to receive these stations will depend on time of day, time of year, your geographic location, highly variable propagation conditions, and the receiving equipment used.

AA, FF, SS, GG, etc. are abbreviations for languages (Arabic, French, Spanish, German). Times given are in UTC, which is five hours ahead of EST, i.e. 0000 UTC equals 7 p.m. EST, 6 p.m. CST, 4 p.m. PST.

UTC	Freq.	Station/Country	Notes	UTC	Freq.	Station/Country	Notes
0000	15400	HCJB Australia	II	0300	6175	Voice of Vietnam, via Canada	
0000	9820	Radio Austria International		0300	7440	Radio Ukraine International	
0000	15240	Radio Australia		0300	5915	Radio Zambia	
0000	9700	Radio Bulgaria	BB	0330	7425	Radio Tirana, Albania	
0000	9745	China Radio International, via Bonaire	SS	0330	3985	Hravatski Radio, Croatia	Croatian
0000	11930	China Radio International, via Canada	CC	0330	3320	Radio Sondergrense, South Africa	Afrikaans
0000	13650	Voice of Korea, North Korea	CC	0330	7325	Voice of Turkey, via Canada	TT
0000	9675	International Radio of Serbia		0400	5865	Radio Algerienne, Algeria	AA
0100	4915	Radio Difusora Macapa, Brazil	PP	0400	5910	Marfil Stereo, Colombia	SS
0100	4717	Radio Yura, Bolivia	SS, Quechua	0400	6160	CKZN, Canada	
0100	6025	Radio Amanecer, Dominican Republic	SS	0400	5035	Radio Aparecida, Brazil	PP
0100	9750	Radio France International	SS	0400	11690	Radio Okapi, Congo, via South Africa	EE/FF
0100	7505	WRNO, Louisiana		0400	5905	BBC, Cyprus Relay	AA
0100	5900	Voice of Russia		0400	7175	Voice of the Broad Masses, Eritrea	Amharic
0100	9425	CVC International, via Uzbekistan		0400	7165	Voice of Peace and Democracy, Ethiopia	Tigrinya
0130	6010	Radio Sweden, via Canada		0400	5960	NHK World Radio Japan, via Canada	JJ
0200	4985	Radio Brazil Central	PP	0400	7245	Deutsche Welle, Germany, via Rwanda	
0200	4905	Radio Anhuanguera, Brazil	PP	0400	6973	Galei Zahal, Israel	HH
0200	4755	Radio Imaculada Conceicao, Brazil	PP	0400	4775	Trans World Radio, Swaziland	GG
0200	5025	Radio Rebelde, Cuba	SS	0400	3345	Channel Africa, South Africa	
0200	11855	BBC, Oman Relay	Farsi	0400	5446.5	AFN/AFRTS, Florida	usb
0200	11985	All India Radio	Hindi	0400	9430	CVC, Zambia	
0200	3250	Radio Luz y Vda, Honduras	SS	0400	4828	Radio Zimbabwe	
0200	7415	WBCQ, Maine		0400	9895	Radio Voice of the People, via South Africa	EE/vern
0200	4965	CVC-The Voice, Zambia		0430	5915	Deutsche Welle, Germany, via England	RR
0230	7330	Voice of Russia	RR	0430	4770	Radio Nigeria	
0230	7335	Vatican Radio	RR	0500	4905	Radio Nacional Tchadienne, Chad	FF
0230	7200	Radio Slovakia International		0500	9820	Radio 9 de Julho, Brazil	PP
0300	4885	Radio Clube do Para, Brazil	PP	0500	3340	Radio Misiones International, Honduras	SS
0300	4930	Voice of America, Botswana Relay		0500	7310	BBC, South Africa Relay	
0300	4780	Radio Djibouti	AA	0500	5940	Radio Rossii, Russia	RR
0300	6010	La Voz de su Concencia, Colombia	SS	0500	7240	RDP International, Portugal	PP
0300	7400	Radio Bulgaria	BB	0500	7275	RT Tunisienne, Tunisia	AA
0300	7475	Voice of Greece	Greek	0500	5005	Radio Nacional, Equatorial Guinea	SS
0300	6290	Radio Cairo, Egypt	AA	0500	9840	Radio Rossii, Russia	RR
0300	7110	Radio Ethiopia	Ahmaric	0530	7255	Voice of Nigeria	
0300	6090	Amhara State Radio, Ethiopia	Amharic	0600	9645	Radio Bandeirantes, Brazil	PP
0300	7375	Islamic Republic of Iran Broadcasting	AA	0600	4800	Radio Transcontinental, Mexico	SS
0300	6150	Radio Romania International		0700	6010	Radio Inconfidencia, Brazil	PP
0300	5010	Radio Madagasikara, Madagascar	Malagasy	0700	7125	Radio Conakry, Guinea	FF
0300	6190	Radio Nederland, Bonaire Relay	DD	0700	7285	Radio New Zealand International	
0300	9720	Radio Victoria, Peru	SS				
0300	7200	Republic of Sudan Radio	AA				

UTC	Freq.	Station/Country	Notes	UTC	Freq.	Station/Country	Notes
0800	6010	Radio Mil, Mexico	SS	1500	17770	Channel Africa, South Africa	
0800	6185	Radio Educacion, Mexico	SS	1500	11680	Radio Nacional, Venezuela, via Cuba	SS
0800	7285	RTV du Mali	FF	1500	17745	Sudan Radio Service, via Portugal	EE/AA
0900	4700	Radio San Miguel, Bolivia	SS	1500	9450	Sound of Hope, Taiwan	CC
0900	5765	AFN/AFRTS, Guam		1500	9965	World Harvest Radio, via Palau	
1000	6155	Radio Fides, Bolivia	SS	1700	15400	BBC Relay, Ascension Island	
1000	4747	Radio Huanta 2000, Peru	SS	1700	15630	Voice of Greece	Greek
1100	11610	China Radio International	Mongolian	1700	17610	Radio France International	FF
1100	9740	BBC, Singapore Relay		1700	11500	Radio Dabanga, Sudan, via Madagascar	AA
1100	11550	Radio Ukraine International		1700	15235	Channel Africa	
1130	5020	Solomon Islands Broadcasting Corp.		1730	15570	Vatican Radio	
1130	9400	Far East Broadcasting Co., Philippines	CC	1800	15345	RTV Marocaine, Morocco	AA
1130	11710	Voice of Korea, North Korea	FF	1830	11735	Radio Tanzania, Zanzibar	Swahili
1200	17680	CVC International, Chile	SS	1900	15180	Radio Canada International, via England	AA
1200	11935	China Radio International	RR	1900	11990	Radio Kuwait	
1200	6120	NHK World Radio Japan		1900	9785	Voice of Turkey	
1200	9595	Radio Nikkei, Japan	JJ	1900	11840	Radio Liberty, via England	RR
1200	9525	Voice of Indonesia	various	1900	11875	Radio Taiwan International, via France	FF
1200	3335	Radio East Sepik, Papua New Guinea	Tok pisin	1900	17520	Voice of Biafra, via WHRI	Fridays
1200	3275	Radio Southern Highlands, Papua New Guinea	Tok Pisin	1900	11660	Radio Nederland, via France	
1200	11590	Radio Free Asia, via Kuwait	Pashto/Dari	1900	9415	Radio Bulgaria	
1200	11640	Family Radio, Florida, via Tajikistan		1930	15120	Voice of Nigeria	
1200	7225	Voice of America, Northern Marianas Relay	KK	1930	12085	Radio Damascus, Syria	FF
1200	11875	Voice of America, Thailand Relay	CC	1930	12015	Radio Exterior de Espana, Spain	FF
1200	5985	Myanmar Radio	Burmese	2000	17895	Voice of America, Botswana Relay	
1200	7355	KNLS, Alaska		2000	15190	Radio Africa, Equatorial Guinea	
1200	3925	Radio Nikkei, Japan	JJ	2030	11630	Radio Kuwait	
1200	9635	CVC-Voz Cristiana, Chile		2100	9670	Islamic Rep. of Iran Broadcasting	various
1230	15495	Adventist World Radio, Guam	CC	2100	9445	All India Radio	
1230	9565	Deutsche Welle, Sri Lanka Relay	GG	2100	9790	Radio Romania International	SS
1230	9770	KBS World Radio, South Korea	CC	2100	11750	Adventist World Radio, Guam	CC
1230	9525	Polski Radio, Poland, via Germany		2100	11820	Broadcasting Service of the Kingdom, Saudi Arabia	AA
1230	10320	AFN/AFRTS, Hawaii	usb	2100	9345	Radio Tirana, Albania	unid
1300	9580	Radio Australia		2100	7550	China Radio International	
1300	6070	CFRX, Canada		2200	17705	Radio Havana Cuba	PP
1300	15660	Voice of Russia	RR	2200	9760	Cyprus Broadcasting Corp.	weekends, Greek
1300	17595	Radio Exterior de Espana, Spain	SS	2200	17605	Radio Nederland, via Bonaire	DD
1300	9455	Radio Thailand	TT	2200	13700	China Radio International, via Canada	SS
1300	9780	Voice of America (Deewa Radio), Sri Lanka Relay	Pashto	2200	17860	Radio Canada International	PP
1300	9840	Voice of Vietnam		2200	15455	Radio Canada International	SS
1300	11925	CVC International, Australia	II	2200	7450	RS Makedonias, Greece	Greek
1400	11660	Radio Australia		2200	15320	Adventist World Radio, Guam	
1400	17725	Libyan Jamahiriya Broadcasting		2200	6300v	Radio Nacional de la RASD, Algeria to Morocco	SS/AA
1400	21695	Libyan Jamahiriya Broadcasting		2200	9830	Voice of Turkey	
1400	11735	Radio Romania International		2230	13650	NHK World Radio Japan	CC
1400	11715	KJES, New Mexico		2230	9490	Democratic Voice of Burma, via Germany	BB
1400	9955	WRMI, Florida		2300	13790	Radio Havana Cuba	
1400	9480	China National Radio	Tibetan	2300	6090	Caribbean Beacon/University Network, Anguilla	
1430	13625	Radio Tirana, Albania		2300	5990	China Radio International, via Cuba	
1430	15140	Radio Sultanate of Oman	EE/AA	2300	15265	NHK World Radio Japan	JJ
1500	13775	Radio Austria International	GG	2300	13650	NHK World Radio Japan	Thai
1500	9515	Radio Canada International		2300	5995	Radio TV du Mali	FF
1500	9420	Voice of Greece	Greek	2300	11665	Radio Nacional, Venezuela, via Cuba	SS
1500	15785	Galei Zahal, Israel	HH	2300	6060	Radio Nacional, Argentina	SS
1500	15650	Miraya FM, Sudan, via Slovakia		2330	7375	Voice of Croatia	
1500	12040	Voice of Russia		2330	11590	Radio Cairo, Egypt	
1500	15225	Broadcasting Service of the Kingdom, Saudi Arabia	AA	2330	7240	HCJB Global, via Germany	various
1500	13600	Radio Sweden					

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Cutting Edge Enterprises offers a line of ready-to-go communications boxes to help emergency communicators, amateur radio operators, and other radio equipment users be ready to go when they need to be. With the addition of a 5-watt handheld radio (or mobile), the Emergency Communications Box lets the radio operator maximize the TX and RX capabilities of his or her radio in field operations. The kits are designed to provide all the parts and pieces in one compact, waterproof box that serves as a stand-alone station for vital communications, and overcome the two main limitations of a handheld: limited power and limited antenna range.

Six models offer a broad range of power, amplification and charging options, from a fully equipped "First Response" kit (with a 12A AMG sealed battery, two outlets for 400-watt AC, three-port DC cigar outlet, Anderson PowerPole connectors, 35-watt RF amplifier, 2-meter halfwave antenna with magmount and coax cable for extended range, and both 6-amp three-

stage fast charger and 25-watt solar recharging options), to the "Bare Bones" basics (with an 8-AH AMG battery, automatic charger, 30A PowerPole connectors, and three-port DC outlets). All kits are housed in waterproof, high-impact resistant boxes with an easy-carry handle. Every Emergency Communications Box comes with a complimentary support kit that includes a notebook, pen, LED Flashlight, amateur radio message forms, nylon cord, laminated ITU Phonetic Alphabet card, suction-cup mic hook, Velcro wire ties and rain poncho.

For further information and pricing, contact Cutting Edge Enterprises, 1717 7th Street, Los Osos, California 93402; Phone: 831-427-8197; Web: www.powerportstore.com.

DSPKR 10-Watt DSP Noise Canceling Speaker From bhi

The new bhi DSPKR DSP noise canceling speaker comprises a wide frequency range 4-inch speaker and an audio amplifier capable of producing up to 10-watts RMS audio power, with built-in bhi



Cutting Edge Enterprises' PowerPort Emergency Communications Boxes provide all the parts and pieces radio operators require in one compact, waterproof box that serves as a stand-alone station for vital communications needs.



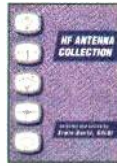
bhi's DSPKR DSP noise canceling speaker offers a wide frequency range 4-inch speaker, an audio amplifier capable of producing up to 10-watts RMS audio power, and built-in bhi DSP noise canceling filter.

DSP noise canceling filter. Suitable for both mobile and base station use, the DSPKR has up to seven DSP filter levels, allowing the user to optimize the unit for his or her level of noise and interference. The speaker simply connects into the extension speaker socket or headphone socket of the radio, with all the controls on the top of the speaker for ease of use. There's a separate "VOLUME" control, an "AUDIO LEVEL" indicator, and the speaker requires a signal of between 80 and 500 mV for optimum performance. The "STATUS" LED indicates whether the noise canceling is on or off, and when the "ON/FUNCTION" button is pressed momentarily, the unit steps through the seven noise canceling levels until the desired level is reached. This level can then be stored by pressing the FUNCTION button for a few seconds. The DSPKR can be preset for four or seven filter levels and has a sleep mode to save on power when not in use. It requires a DC supply of between 10 and 18 volts (2A). A 3.5mm mono auxiliary output socket is also provided to allow the speaker to be used with headphones or to drive another loudspeaker. The unit is supplied with an integral 3.5mm mono jack plug audio lead (2 meters long), a 2.1mm fused DC power lead with bare ends, and full instructions.

The DSPKR 10-Watt DSP Noise Canceling Speaker is available in the U.S. from W4RT Electronics at www.w4rt.com, email: info@w4rt.com, fax: 256-880-3866; and GAP Antenna Products: www.gapantenna.com, Phone: 772571922. Contact distributors for more information and pricing.

RSGB Books from

HF Antenna Collection



RSGB, 1st Ed., 1992. 233 pages. A collection of outstanding articles and short pieces which were published in Radio Communication magazine during the period 1968-89. Includes ingenious designs for single element, beam and miniature antennas, as well providing comprehensive information about feeders, tuners, baluns, testing, modeling, and how to erect your antenna safely.

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Packet Radio Primer

By Dave Coomber, G8UYZ & Martin Croft, G8NZU

RSGB, 2nd Ed., 1995, 266 pages. Detailed practical advice for beginners. Completely revised and greatly expanded to cover developments in this field and beyond bare basics into advanced areas such as satellite operations.

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HF Amateur Radio

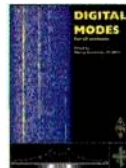
RSGB, 2002 Ed. HF or short wave bands are one of the most interesting areas of amateur radio. This book discusses setting up an efficient station, which equipment to choose, installation, and the best antenna for your location and more.

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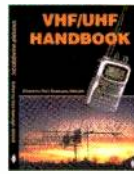
By Murray Greenman, ZL1PBPU
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VHF/UHF Handbook

Edited by Dick Biddulph, M0CGN



RSGB, printed 2002., 317 pages. One of the most complete guides on the theory and practice of reception and transmission on VHF/UHF band. Hundreds of illustrations and photos.

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The Antenna File

RSGB. ©2001. 288 pages. 50 HF antennas, 14 VHF/UHF/SHF antennas, 3 receiving antennas, 6 articles on masts and supports, 9 articles on tuning and measuring, 4 on antenna construction, 5 on design and theory, and 9 Peter Hart antenna reviews. Every band from 73kHz to 2.3GHz!

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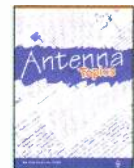
Practical Antennas for Novices



By John Heys, G3BDQ

RSGB, 1st Ed., 1994, 52 pages. How to build simple but efficient antennas for each of the Noivce bands up to 434MHz plus ancillary equipment to ensure they're working!

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C. Crane CCRadio-2 AM-FM/Weather Band/ 2-Meter Ham Radio

by Jeffrey Reed

“...I began to decipher the functions of this attractive AM-FM radio with Weather and 2-meter Ham Bands, it found a permanent spot on my nightstand. And Coast To Coast AM with George Noory never sounded better.”

I have a confession to make: I’m a late-night AM radio talk show junkie—always have been, even as a child. It started with AM 1100 WWWE Cleveland and jock talk with Pete Franklin. That station is now News Radio WTAM, and it still powers its way across Lake Erie and into my hometown of London, Ontario, Canada (sitting halfway between Detroit, Michigan, and Toronto, Ontario).

My insatiable appetite for AM radio is a major reason why I entered the field of broadcast journalism, and later freelance writing. As a kid, I wish I’d been armed with the new C. Crane CCRadio-2, the newest addition to my ever-growing shack. In fact, as soon as I began to decipher the functions of this attractive AM-FM radio with Weather

and 2-meter Ham Bands, it found a permanent spot on my nightstand. And *Coast To Coast AM with George Noory* never sounded better.

My shack includes a handful of C. Crane gear, including the CCRadio SW, which offers outstanding DX listening and superb voice clarity. I now make room for the CCRadio-2; it picks up right where the CCRadio SW and the legendary CCRadio leave off.

Loud, Clear, And Oh-So-Sweet

If you’re like me, the first things you look for in a quality AM-FM radio are signal power and voice clarity. The C. Crane CCRadio-2 boasts both in spades. Add the Weather Band and 2-meter ham functions, and you have one heck of a radio, perfect for any room in the house.

Weighing in at just less than 4 pounds without four “D” batteries, and measuring 6.5 x 11 x

Jeffrey Reed is a leading Canadian freelance journalist and a life-long communications hobbyist.



The CCRadio-2 is a refined and improved version of the legendary CCRadio from C. Crane Company. The TV Band is gone, and in its place is the 2-meter Ham Band. Weather and weather alert also help make this radio a top-notch AM/FM-Plus radio.

CCRradio-2 Specifications

Price: \$159.95
 Dimensions: 6.5 x 11 x 4 inches (HWD) at base
 Weight: 3.8 lbs without batteries
 FM Band: 87.5–108 MHz stereo
 AM Band: 520–1710 kHz
 Ham (VHF): 144–148 MHz
 Weather Band: 7 channels, 162.4, 162.425, 162.45, 162.475, 162.5, 162.525, 162.55 MHz
 Rotary Tuning Knob Resolution: AM 1 kHz, FM 50 kHz, Ham (VHF) 5 kHz, WX 1 channel
 Power Source: AC 120 Volts 60 Hz, Batteries 4 “D” size
 Power Consumption: AC Power 8 Watts, Battery 40–50 mA DC
 Audio: 10% THD at outpower @ 1.8 Watt AC typical, @ 0.9 Watt battery
 Speaker: 5 inches, 4 Ohms, 6 Watts
 Antenna: FM, Ham (VHF) and Weather Band, telescopic whip. AM Band, built-in ferrite bar 7/16-inch dia. x 8-inch long (200 mm); external AM antenna directly wired through filter network into RF front end
 Aux In Jack: 300–1000mV RMS (line level) input from external audio source (do not overload)
 Line Out Jack: 300–1000mV RMS (line output)
 Timer Activation Switch: Low impedance, transistor driven switch, used for operation of external recording devices

4 inches (HWD) at its base, the CCRadio-2 is available in both black mica and titanium models. The design aesthetics are gorgeous, making this radio perfect for the home office, living room, or anywhere else you wish to listen to crystal-clear radio transmissions.

The first test I put to the CCRadio-2 was late-night DX on the AM side. WRVA 1140 in Richmond, Virginia, WJR 760 Detroit, and WCBS 880 New York, all came in crystal clear on an early-August evening. C. Crane really has something in their patented Twin-Coil Ferrite AM antenna. A quick flip to the FM side and one of my favorite local sta-

tions, 92.7 FM BX-93 in London, Ontario, revealed some of the sweetest sounding FM stereo I’ve ever heard from a portable radio. The 5-inch speaker made the vocals of Country Music artist Taylor Swift sound even sweeter than usual, thanks to audio which is optimized for voice clarity. In fact, when you select a station, the CCRadio-2 evaluates the signal for several seconds and then locks in for the highest signal possible.

Extra, Extra!

I have another confession: I am a “Ham Hopeful” (note to self—get my ham ticket). I do, however, enjoy listen-



The top panel of the CCRadio-2 includes five memory stations, a band selector, weather alert plus a sleep mode option.

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The side panel of the CCRadio-2 features a frequency tuning knob that doubles as a squelch control for 2-meter ham frequencies.

ing to the local amateur radio gang conversing on 2-meter hotspots, including 145.45 MHz and 147.18 MHz. In the past, my nightstand included a scanner specifically programmed with 2-meter ham frequencies. No more, thanks to the CCRadio-2.

C. Crane has pre-programmed five 2-meter frequencies into the five memories of the CCRadio-2. Note you can program any five frequencies from any of the bands covered by the CCRadio-2.

When scanning the 144–148 MHz band, simply press the Up or Down tuning button on the front panel of the CCRadio-2 and hold it momentarily. You can also start scanning by pressing and releasing the main tuning knob on the radio's right-side panel. To adjust the squelch on this radio, press and hold the main tuning knob for one second until the display changes, then turn the tuning knob slowly clockwise until the squelch maxes to silence.

Finding any frequency from any band of the CCRadio-2 can be done in three ways: manually with rotary tuning; manually by pressing the Tuning Up or Down button; or by scanning with those buttons.



The CCRadio-2 is powered by AC or by four “D” cell batteries. Note the back panel external antenna option, plus auxiliary in jack, line out jack, and timer activation switch.

The Weather Band inclusion with the CCRadio-2 is a simple yet much appreciated addition as I like to listen to the local weather forecast before catching some Zs and during my first cup of morning java. Just as you should do when listening to the Ham Band with this radio, fully extend the telescopic whip antenna before getting the latest weather forecast. You can connect an external AM antenna, too, to the back of the radio.

To listen to weather transmissions, just select WX from the top panel Band button and your local forecast is at your fingertips. The CCRadio-2 also has a Weather Alert System. You can choose a Weather Alert mode: flashing light only (no alarm); alert with NOAA Audio; or alert with flashing light and siren. You can also turn off the weather alert if desired.

The CCRadio-2 includes an alarm and a sleep timer feature with selectable times of 15, 30, 45, 60, 90, and 120 minutes, which is a favorite feature of mine. Back panel Audio and Recording jacks are included, too—C. Crane thinks of everything. This allows you to record your favorite radio shows for convenient listening pleasure. A front panel Timer button will activate your radio each day, if required, so you won't miss your favorite program.

C. Crane has removed the TV Band from this radio, obviously because digital TV is now king. But with all of the features with this radio, will you really miss listening to reruns of Jerry Seinfeld?

What You See...

The display panel of the CCRadio-2 deserves special recognition. It's fully functional and visibly appealing, thanks in part to a brighter, clearer LCD display with a full backlight and three levels of adjustable brightness, plus an Off setting. I like the bar graph, too, which indicates signal strength.

This pleasant display—as well as the radio's other great features—is powered with AC or four “D” batteries. When the batteries are installed (which also offers timer, clock, and memory settings if the power cord is removed for more than three minutes), you can still power the radio via AC, which will automatically disconnect the batteries.

...And What You Get

Priced at \$159.95, the CCRadio-2 is, in my book, simply the best radio in its category, and a terrific addition to the C. Crane family of audio. You can learn more about this terrific radio at www.ccrane.com.

Scanning Oregon

by Ken Reiss
radioken@earthlink.net

This month "ScanTech" looks westward with a focus on the Beaver State's statewide police system and agencies serving its largest city, Portland, and its environs.

The Oregon State Police, officially called the OSP, was formed in 1931, making it a relative latecomer to state police agencies. By contrast, the Portland Metropolitan police were up and running in 1870, so the state agency is quite young by comparison.

A commission appointed by then Governor Julius Meier conducted a survey of leading law enforcement agencies across North America, including the Royal Canadian Mounted Police, New Jersey State Police, and the Texas Rangers, with the goal of building on their successes.



A fleet of motorcycles ready to patrol the streets of Portland. (Photo by Marsha/Scott at Flickr; Creative Commons License)

“...the OWIN, or Oregon Wireless Interoperability Network, is an initiative of the state legislature to combine the state’s four major radio networks into a statewide system of communications.”

Based on the findings, the OSP was established to combine the law enforcement responsibilities of the State Highway Commission, Fish and Game Commission, Secretary of State, the Fire Marshall, and the Prohibition Commissioner. Its primary mission in the early days was to serve as rural police and to assist the larger cities with already well-established police departments.

Today, the OSP is divided into three divisions. The first, Public Safety Services, includes State Fire Marshall and Gaming, Forensics, Dispatch, and the Medical Examiner’s office. The Police Services Division includes Patrol and Criminal investigative units and Fish and Wildlife. The third, the OWIN, or Oregon Wireless Interoperability Network, is an initiative of the state legislature to combine the state’s four major radio networks into a statewide system of communications.

Frequency Of The Month

Each month we ask our readers to let us know what they’re hearing on our “Frequency Of The Month.” Give it a listen and report your findings to me here at “ScanTech.” We’ll pick a name at random from the entries we receive and give that lucky winner a free one-year subscription, or extension, to *Pop’Comm*. Remember to include your address in case it’s your name that’s drawn. Good luck!

Let’s give 158.895 a listen this month and see what we come up with. Send your loggings (or lack thereof) to radioken@earthlink.net, or via snail mail to Ken Reiss, 9051 Watson Rd. #329, St. Louis, MO 63126. Don’t forget to include your address and to mark the frequency in the subject of the email or on the outside of the envelope for correct routing. And don’t forget that address!

The most recent winner of our drawing is **Phil Karras, KE3FL**, of **Mount Airy, Maryland**. Congratulations, Phil!



An early Oregon State Police patrol car. Except for the spotlight, it’s pretty much unmarked, and a lot of cars had spotlights in those days because the street lighting was so sparse. (Photo from Oregon State Police website)

At just under 600,000, Portland is the largest city in the state, and the 30th largest metropolitan area in the U.S. Like any major city, there’s a very busy police and public safety network to keep things moving. Portland’s primary communications system is a Motorola Type II trunked system. Lots of agencies share the system, so you’ll need a trunktracker to keep up.

If you live, work, or visit in the area,

you’ll want to check out some of the frequencies listed in the accompanying tables. A special thanks goes to RadioReference.com for info, which in turn, credits the Northwest Frequency Directory also). Even if you’re not in the vicinity, you can tune into the action thanks to www.oregonlive.com/policescanner/.

Until next month, Good Listening!



A recent patrol car for the city of Portland. (Photo by Squid Vicious at Flickr; Creative Commons License)

Oregon State Police			154.84500	131.8 PL	District 4 Lakeview Station (Round Pass)	
2007 Channel Plan			154.84500	131.8 PL	District 4 Lakeview Station (Fish Rim)	
Frequency	Tone	Description	154.84500	131.8 PL	District 4 Lakeview Station (Grizzly Peak)	
156.03000	156.7 PL	Tactical (TAC 1)	154.90500	167.9 PL	District 4 John Day Station (Fall Mt)	
156.03000	156.7 PL	Tactical (TAC 2)	154.86000	151.4 PL	District 4 Burns Station (Mahogany)	
154.93500	179.9 PL	District 1 Portland Station (Council Crest)	154.86000	151.4 PL	District 4 Burns Station (Blue Mt.)	
154.93500	179.9 PL	District 1 Portland Station (Goat)	154.86000	151.4 PL	District 4 Burns Station (Glass Butte)	
154.93500	179.9 PL	District 1 Portland Station (Mt. Hood)	154.86000	151.4 PL	District 4 Burns Station (King Mt.)	
154.93500	179.9 PL	District 1 Portland Station (Skamania)	155.91000	151.4 PL	District 4 Baker Station (Summit)	
156.22500	179.9 PL	District 1 McMinnville (Banks) Station (Buxton)	154.93500	151.4 PL	District 4 Ontario Station (Lime)	
156.22500	179.9 PL	District 1 McMinnville (Banks) Station (High Heaven)	154.86000	151.4 PL	District 4 Burns Station (Black Butte)	
154.90500	179.9 PL	District 1 St. Helens Station (St. Helens)	154.65000	192.8 PL	District 5 Milton-Freewater Station (Milton-Freewater)	
156.22500	179.9 PL	District 1 McMinnville (Banks) Station (Chehalem)	154.90500	131.8 PL	District 5 LaGrande Station (Fanny)	
156.22500	179.9 PL	District 1 McMinnville (Banks) Station (Hebo)	154.90500	131.8 PL	District 5 LaGrande Station (Emily)	
156.15000	179.9 PL	District 1 Astoria Station (Astoria)	154.90500	151.4 PL	District 5 Pendleton Station (Cabbage Hill)	
154.86000	156.7 PL	District 2 Mill City Station (Halls Ridge)	154.65000	167.9 PL	District 5 Umatilla Station (Umatilla)	
155.91000	156.7 PL	District 2 Salem Station (Salem)	154.78500	192.8 PL	District 5 Bend Station (Bend)	
154.78500	179.9 PL	District 2 Exec Security Station (Capitol Mall)	155.91000	192.8 PL	District 5 The Dalles Station (The Dalles)	
154.66500	156.7 PL	District 2 Albany Station (Albany)	155.91000	192.8 PL	District 5 Arlington Station (Roosevelt)	
154.86000	156.7 PL	District 2 Mill City Station (Green Peter)	155.91000	192.8 PL	District 5 Arlington Station (Condon)	
155.74500	156.7 PL	District 2 Corvallis Station (OSU Patrol)	154.90500	123.0 PL	District 5 Enterprise Station (Mt Howard)	
154.84500	156.7 PL	District 2 Springfield Station (Buck Mt.)	154.90500	123.0 PL	District 5 Enterprise Station (Howard Butte)	
154.77000	156.7 PL	District 2 Blue River Station (Mt Hagen)	154.90500	151.4 PL	District 5 Pendleton Station (Black Mt.)	
154.81500	131.8 PL	District 2 Roseburg Station (Roseburg)	154.90500	151.4 PL	District 5 Enterprise Station (Spout Springs)	
154.84500	156.7 PL	District 2 Springfield Station (Walker Pt.)	154.93500	192.8 PL	District 5 Fossil Station (Rancheria)	
154.84500	156.7 PL	District 2 Springfield Station (Bear Mt.)	154.93500	192.8 PL	District 5 Fossil Station (Tamerack)	
154.90500	156.7 PL	District 2 Cottage Grove (Oakridge) Station (Wolf)	154.93500	192.8 PL	District 5 Fossil Station (Key Summit)	
154.86000	156.7 PL	District 2 Mill City Station (Hoodoo)	154.93500	156.7 PL	District 6 Newport Station (Euchre)	
154.90500	156.7 PL	District 2 Cottage Grove Station (Table Mt.)	154.93500	156.7 PL	District 6 Newport Station (Saddle Bag)	
154.90500	156.7 PL	District 2 Cottage Grove Station (Wallace)	154.78500	156.7 PL	District 6 Florence Station (Glenada)	
154.90500	156.7 PL	District 2 Cottage Grove Station (Yellow)	154.78500	156.7 PL	District 6 Florence Station (Walker Point)	
154.68000	131.8 PL	District 3 Medford Station (Ashland)	154.93500	156.7 PL	District 6 Newport Station (Table Mt.)	
154.68000	131.8 PL	District 3 Medford Station (Isabelle)	154.86000	131.8 PL	District 6 Coos Bay Station (Baldy)	
154.68000	131.8 PL	District 3 Medford Station (Crater Lake)	154.86000	131.8 PL	District 6 Coos Bay Station (Signal Tree)	
154.78500	131.8 PL	District 3 Grants Pass Station (Fiddler)	154.78500	156.7 PL	District 6 Florence Station (Cape Perpetua)	
154.78500	131.8 PL	District 3 Grants Pass Station (Isabelle)	154.86000	131.8 PL	District 6 Coos Bay Station (Bennett)	
154.78500	131.8 PL	District 3 Grants Pass Station (Sexton)	154.86000	131.8 PL	District 6 Coos Bay Station (Roman Nose)	
154.78500	131.8 PL	District 3 Grants Pass Station (Onion)	154.86000	179.9 PL	District 6 Tillamook Station (Cape Lookout)	
154.92000	131.8 PL	District 3 Chilkoot Station (Chilkoot)	154.86000	179.9 PL	District 6 Tillamook Station (Wilson River)	
154.69500	131.8 PL	District 3 Klamath Falls Station (Medicine)	154.86000	179.9 PL	District 6 Tillamook Station (Hebo)	
154.69500	131.8 PL	District 3 Klamath Falls Station (Hogback)	155.91000	131.8 PL	District 6 Gold Beach Station (Bosley)	
154.69500	131.8 PL	District 3 Klamath Falls Station (Pelican Butte)	155.91000	131.8 PL	District 6 Gold Beach Station (Grizzly)	
154.69500	131.8 PL	District 3 Klamath Falls Station (Moore Mt.)	155.91000	131.8 PL	District 6 Gold Beach Station (Iron Mt.)	
154.93500	127.3 PL	District 3 Gilchrist Station (Walker)	155.91000	131.8 PL	District 6 Gold Beach Station (Edson Butte)	
154.93500	127.3 PL	District 3 Gilchrist Station (Dead Indian)				
155.25000		District 3 Diamond Lake	Mutual Aid	Frequency	Tone	Description
154.02500	123.0 PL	new District 3 repeater serving Hwy 39 (Hatfield Hwy) to California border	155.34000	CSQ	CSQ	FIRENET / HEAR
155.91000	151.4 PL	District 4 Baker Station (Lime)	155.37000	CSQ	CSQ	Washington State Patrol - LERN (Law Enforcement Radio Network)
155.91000	151.4 PL	District 4 Baker Station (Beaver)	155.47500	CSQ	CSQ	OPEN - Oregon Police Emergency Net
154.90500	167.9 PL	District 4 John Day Station (Dixie Butte)	156.07500	CSQ	CSQ	California Hwy Patrol - CALCOORD
154.90500	167.9 PL	District 4 John Day Station (Aldrich)	158.89500	CSQ	CSQ	ODFW - Fish & Game
154.93500	151.4 PL	District 4 Ontario Station (Cottonwood)	158.90500	CSQ	CSQ	Search and Rescue

City of Portland Common Talkgroups

ID	Description
3248	Citywide Emergency Calling
3280	Citywide Emergency Tactical

Multnomah County Common Talkgroups

18992	MC CALL
19024	MC COMM
19056	MC TAC

Portland Police Bureau Common Talkgroups

3344	BOEC
3504	TAGNET
11248	PPB Service Desk/Records Net
12080	PPB Services Training 1
12112	PPB Services Training 2
12144	PPB Services Training 3
12208	Metrowide Law Enforcement Training Net

Portland Police Bureau North Precinct Talkgroups

10704	PPB North Precinct Dispatch (formerly PPB N-NE Dispatch)
30576	North Precinct Dispatch (formerly NE Precinct Dispatch) (formerly Auto Records)
10800	PPB North Precinct Tac 1 (Alternate Dispatch)
30640	Northeast Precinct Tac 1 (Alternate Dispatch)
10864	PPB North Precinct Tac 2 (Response Coordination)
30672	Northeast Precinct Tac 2 (Response Coordination)
10832	PPB North Precinct Tac 3 (Tactical/Undercover)
30704	Northeast Precinct Tac 3 (Tactical/Undercover)
10896	PPB North Precinct Tac 4 (Tactical/Undercover)
30736	Northeast Precinct Tac 4 (Tactical/Undercover)
10544	PPB North Precinct Administration
30608	Northeast Precinct Administration

Portland Police Bureau Central Precinct Talkgroups

7472	PPB Central Precinct Dispatch
9456	PPB SE Precinct Dispatch
7536	PPB Central Precinct Tac 1 (Alternate Dispatch)
7600	PPB Central Precinct Tac 2 (Response Coordination)
7568	PPB Central Precinct Tac 3 (Tactical/Undercover)

Portland Trunked System

Name	Freqs	Freqs	Freqs	Freqs	Freqs	Freqs	Freqs	Freqs
Simulcast Backbone	856.2625	856.4625	856.7375	857.2625	857.4375	857.4625	857.7375	858.2625
	858.4375	858.4625	858.71250a	858.73750c	859.26250a	859.4375	859.46250a	859.7125
	860.2625	860.4375	860.4625	860.7125	867.3125	867.6625	868.3125	868.6375
Biddle Butte	854.31250c	854.5875	858.6625	859.0875	859.6125			
Goat Mt	854.28750c	854.73750a	856.5375	858.5375	859.5375			
Timberline Lodge	855.7875	857.9125	859.8375	860.81250c	860.86250a			
Walters Hill	866.35	866.6875	866.9	867.8	868.1625	868.175	868.57500c	868.90000a
Forest Heights	866.4625	866.9875	867.9125	868.46250c	868.71250a			
Cornelius Pass	866.275	866.7125	867.75	868.35000c	868.85000a			
Arrowood	867.775	867.875	868.1875	868.27500c	868.60000a			
PDX Airport	866.275	866.7125	867.75	868.35000a	868.85000c			
Headworks	866.3375	866.375	866.725	867.28750c	868.82500a			

Systemwide Talk Groups

Name	Freqs	Freqs	Freqs	Freqs	Freqs	Freqs	Freqs	Freqs
Simulcast Backbone	856.2625	856.4625	856.7375	857.2625	857.4375	857.4625	857.7375	858.2625
	858.4375	858.4625	858.71250a	858.73750c	859.26250a	859.4375	859.46250a	859.7125
	860.2625	860.4375	860.4625	860.7125	867.3125	867.6625	868.3125	868.6375
Biddle Butte	854.31250c	854.5875	858.6625	859.0875	859.6125			
Goat Mt	854.28750c	854.73750a	856.5375	858.5375	859.5375			
Timberline Lodge	855.7875	857.9125	859.8375	860.81250c	860.86250a			
Walters Hill	866.35	866.6875	866.9	867.8	868.1625	868.175	868.57500c	868.90000a
Forest Heights	866.4625	866.9875	867.9125	868.46250c	868.71250a			
Cornelius Pass	866.275	866.7125	867.75	868.35000c	868.85000a			
Arrowood	867.775	867.875	868.1875	868.27500c	868.60000a			
PDX Airport	866.275	866.7125	867.75	868.35000a	868.85000c			
Headworks	866.3375	866.375	866.725	867.28750c	868.82500a			

7632	PPB Central Precinct Tac 4 (Tactical/Undercover)
9520	PPB SE Precinct Tac 1 (Alternate Dispatch)
9584	PPB SE Precinct Tac 2 (Response Coordination)
9552	PPB SE Precinct Tac 3 (Tactical/Undercover)
9616	PPB SE Precinct Tac 4 (Tactical/Undercover)
7216	PPB Southeast Precinct Administration
7504	PPB Central Precinct Administration
9488	PPB SE Precinct Supervisors/Managers

Portland Police Bureau East Precinct Talkgroups

12592	PPB East Precinct Administration
12752	PPB East Precinct Dispatch
12848	PPB East Precinct Tac 1 (Alternate Dispatch)
12880	PPB East Precinct Tac 3 (Tactical/Undercover)
12912	PPB East Precinct Tac 2 (Response Coordination)
12944	PPB East Precinct Tac 4 (Tactical/Undercover)

Portland Police Bureau Special Events Talkgroups

11600	PPB Special Events Tac 1
11632	PPB Special Events Tac 2
11664	PPB Special Events Tac 3

Multnomah County Sheriff Talkgroups

11960	MCSO Training
20016	MCSO DUII Task Force
20048	MCSO Civil Operations
20112	MCSO Courthouse Security
20208	Multnomah County ICS Tac 1
20240	Multnomah County ICS Tac 2
20272	Multnomah County ICS Tac 3
20528	MCSO Administration
20560	MCSO SIU Tac 1
20592	MCSO SIU Tac 2
20624	MCSO Tac 2
20688	MCSO East County Special Events
20752	MCSO Common 1
20784	MCSO Corrections
20816	County Dispatch; Multnomah County Sheriff, Gresham PD, Troutdale PD, Fairview PD Dispatch
20848	MCSO Records

Multnomah County Emergency Operations Center Talkgroups

35792 MC ICS 1
 35824 MC ICS 2
 35856 MC ICS 3
 35888 MC ICS 4
 35920 MC ICS 5

Tri County Metro Transportation District (Tri-Met) Talkgroups

28304 Ruby Junction Yard operations
 28208 Eastside Train Movement (Lloyd Center to Cleveland/Red Line) (Formerly MAIN 1)
 28272 CBD/Interstate Train Movement (Formerly MAIN 3)
 28336 Mall/I205 Testing (Formerly RLTA1)
 28240 Westside Train Movement (PGE Park to Hatfield) (Formerly MAIN 2)
 28176 Elmonica Yard operations
 28368 Rail Operations – Tac 2 / Administration / Manpower
 28112 Fare Inspection Tactical
 28464 Repeat-Offender Checks/Records
 27952 Customer Service
 27888 TriMet ICS 1
 28624 TriMet ICS 2
 28656 TriMet ICS 3
 27856 Road Operations Tac 2 (Formerly BUS T3)
 28496 Road Operations Tac 1 (Formerly BUS T1)
 28432 Bus Dispatch (Formerly BUSSUP)
 28400 Eastside tactical channel (Formerly RLMNT T2)
 28048 Central tactical channel (Formerly RLMNT T1)
 28080 CBD tactical channel (Formerly FARE MNT)
 28016 West tactical channel (Formerly TUNNEL)
 28144 Rail Maintenance – Eastside/Red Line (Formerly RLMNTE)
 27984 Rail Maintenance – Downtown/Interstate (Formerly RLMNTN)
 27920 Rail Maintenance – CBD (Formerly BUSPEV)
 27824 Rail Maintenance – Westside (Formerly RLMNTW)
 28688 TriMet C6

Portland Streetcar Talkgroups

38416 Portland Streetcar Main
 38448 Portland Streetcar Tac 1
 38480 Portland Streetcar Tac 2

Port of Portland / Airport Talkgroups

21712 POP-BLDG'S
 21776 POP-ELECTRICAL
 21872 POP-GEN. MAINT
 22096 POP- AIRPORT
 22592 POP-AIRPORT?
 22768 POP-OPS
 22800 POP- AV EQUIPMNT
 22864 PD RECORDS
 22992 POP-MAINT FAC.
 23216 POP-EMERG OP CTR
 23280 AIRPORT
 23312 AIRPORT
 23440 POP-INFO/TECH.
 23664 POP-CRANE 2371
 23696 POP-CRANE 2372
 24528 AIRPORT EOC
 24560 AIRPORT AV ICS
 24592 AIRPORT
 24720 Airport Fire Dispatch
 24752 Airport Fire Tac 1
 24784 PDX TAC-2
 24816 PDX TAC-3
 24848 PDX TAC-4
 24880 PDX TAC-5
 24912 PDX TAC-6
 24944 PDX TAC-7
 24976 PDX TAC-8
 25104 AIRPORT
 25136 POP-RED ZONE OPS

25264 PDX SHUTTLE
 25456 POP-EOC TAC-2
 25560 PDX FIRE OPS
 25680 POP-EOC TAC-3
 25872 PDX PARKING
 25904 PDX EMS TAC-1
 25936 PDX EMS TAC-2
 25968 PDX EMS TAC-3
 26128 PDX POLICE DISP
 26160 Airport Police Tac 1
 26192 PDX POLICE TAC-1
 26224 PDX POLICE TAC-2
 26256 PDX FIRE
 26288 Airport Police Tac 5
 26352 Airport Police Tac 7
 26384 RADIO SHOP TEST
 27152 POP-AV PHA ?
 27158 AIRPORT
 31280 PDX BUS TAC 1
 31408 POP-TELECOM
 31440 POP-END USER COMP.

Portland Parks and Recreation Talkgroups

5904 PARKS FAC-EQUIP
 5936 PARKS FAC-MAINT
 6032 PARKS FORESTRY

Portland Bureau of Transportation (Maintenance) Talkgroups

5168 Drainage/Roadside
 5232 Maintenance Dispatch
 5296 Street Cleaning
 5360 Sewer Cleaning
 5392 Sewer Repair
 5424 Sidewalks
 5456 Streets – Paving
 5488 Streets – Repair
 5520 Structures (Bridge/Viaduct Inspectors)
 5552 Traffic Electrician
 5616 Data Only (Transponder)

Bureau of Transportation Engineering Talkgroups

30800 TRN-SURVEY TEAM 1
 30928 TRN-SURVEY TEAM 5
 31088 TRN-SURVEY TEAM 10
 31120 TRN-SURVEY TEAM 11

Troutdale Public Works Talkgroups

15216 TRTDALE PW ADMIN

Bureau of General Services Talkgroups

14672 RADIO SHOP-ENG
 14864 PD MDT TEST
 29648 BGS-TECH NET
 29680 DEMO 1
 29744 DEMO 2
 29808 TELECOM
 29904 RADIO SHOP?
 30320 BGS-CATV

Gresham Public Works Talkgroups

848 DES STORM ADMIN

Milwaukie Public Works Talkgroups

3184 MILW.PW 1
 3216 MILW.PW 2

University of Portland Talkgroups

ID	Description
35504	University of Portland Security
35536	University of Portland Security Tac 1

Portland Community College Talkgroup

17456 PCC Public Safety Dispatch
 18448 Public Safety Tac 1

Trivia And Toons

by R.B. Sturtevant, AD7IL

Q. I recently came across the word “goniometer.” What is it and what is it used for?

A. A goniometer is a direction finding antenna and receiver. The antenna was designed by E. Bellini and A. Tosi, who patented the device in Paris in 1907. The Marconi Company bought their patent in 1912, and by 1915 the receivers were good enough that direction finding became a key tool in radio intelligence gathering, used for locating enemy forces by their transmitter’s signals during World War I. This is still the principle method of radio direction finding.

Q. When was the first trans-Atlantic two-way communications made by amateurs?

A. That would have been November 27, 1923. Two Americans, 1XAM and 1MO contacted 8AB in France. One point of interest is that 1XAM was John Reinatz, who in 1921 wrote *How to Build Receivers and Transmitters at Low Cost* and distributed it free. He was also a frequent contributor to *QST*, *Radio News*, and various other radio publications throughout the 1920s. All three stations involved in the historic trans-Atlantic contact were using Reinatz-designed equipment. If someone wrote that into a novel nobody would believe it.

Q. Who invented the Yagi antenna?

A. Dr. Hidetsugu Yagi, a Japanese college professor, invented this directional antenna and published his work in Japan in 1932. Soon after that the professor visited the United States, where his

findings were written up in several scientific journals. Britain and the U.S. were both trying to develop radar at the time and needed directional antenna information for that vital project. The Japanese, who were trailing in the radar field, had ignored Yagi’s work. Little did the Japanese troops who invaded Shanghai know that they were looking Yagi-designed antennas being used at the various electronic installations in that city. And if the Japanese fighter pilots trying to stop the B-29 bomber streams from getting to the Home Islands had had radar, things might have turned out very differently.

Q. How and when did the Collins Radio Company get started?

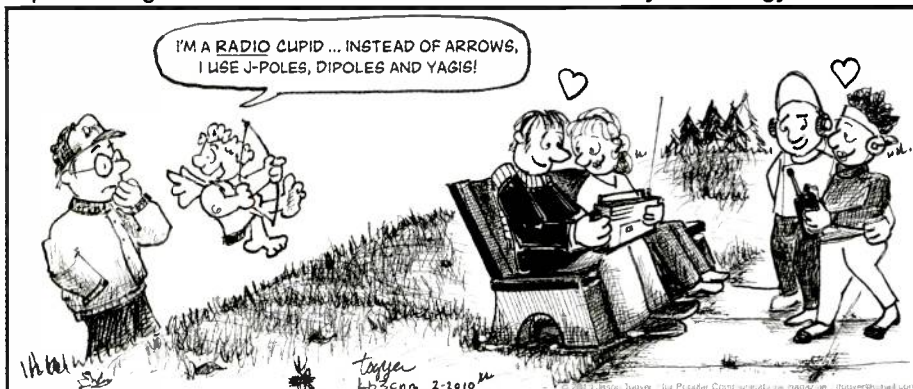
A. Arthur Collins was a high school student operating an amateur station, 9CXX, from Cedar Rapids, Iowa, in 1925. Collins maintained a daily schedule of contacts with the Navy’s Artic Expedition to the North Pole, headed by Commander Donald B. MacMillian. After that experience the amateur radio bug bit the young Collins...hard. He would go on to start the highly successful Collins Radio Company, which produced some of the best amateur and military equipment of its time. Unfortunately the Collins Company is no longer in business.

Q. I’ve heard the phrase “Bravo Zulu” used on the radio. What does it mean? None of my local ham friends seem to know.

A. If you hear Bravo Zulu, or simply BZ, you’ve got a couple of sailors. Bravo Zulu comes from 1949, when NATO was organized. We’d learned during World War II that when the navies of different nations try to work together they have to have extremely good communications. Bravo Zulu or BZ as a flag hoist or radio signal means “Well Done,” the traditional naval compliment from a commander to his crew or other ships in his task force. If you hear or see November Bravo Zulu, or NBZ, someone has a problem. November used to signify Negative or “negative well done.”

Spurious Signals

By Jason Togyer KB3CNM



Trains And Boats And Planes... Several RF Signal Sagas Set On Land, On The Sea, And In The Air

by Shannon Huniwell
melodyfm@yahoo.com

It's almost embarrassing to admit that a swift bump from a quickly closing, cold, glass shower door on a sleepy Saturday morning served as the idea starter for this column, but that's what happened. The jolt elicited a startled high-octave note or two, which in the shower inexplicably morphed into a tune I'd not thought about for years: the 1960s Burt Bacharach classic, "Trains and Boats and Planes."

We've all experienced having a song stuck in our heads. It can be annoying, but sometimes the music brings back forgotten memories or generates new ideas. As usual, I'd been fretting over a *Pop'Comm* topic, but after only about three soapy encores, inspiration hit as the lyrics got me thinking about histories of broadcast stations that were

"If, as I imagine, [WEBJ's format] consisted of playing 'I've Been Working On The Railroad' over and over in between programming that interprets the electric railway industry, you wouldn't think it would be on the right track for high ratings. You'd be wrong."

based on the transportation trio named in Bacharach's Top-40 hit, hauntingly sung by Dionne Warwick.

"I've Been Working On The Microphone, All The Live-Long Day!"

The train component of our story begins with dusty paperwork from the Radio Division of the U.S. Commerce Department's Bureau of Navigation. According to these documents from 1924, the Third Avenue Railway Company of New York City proposed building a 500-watt broadcast facility, a notably large power request for that era. In its application, Third Avenue Railway billed itself as a "utility carrying 350 miles of track" throughout the Big Apple. In simpler parlance, the organization operated a fleet of trolley cars vast enough to require some 3,000 employees to staff its line. Because of the firm's electrical focus, Third Avenue Railway technical gurus envisioned a novel way to communicate to their workers aboard the trolleys. They commissioned General Electric to rig up a one-way carrier current transmission system that sent voice through the network of overhead drive wires to each trolley car.

Originally, the content of the closed-circuit programming was limited to information germane to the folks running the trolleys. In short order, however, company bigwigs saw immense opportunities in being able pipe programs to the



Seashore Trolley Museum

Third Avenue Ry. #631

A crisp color postcard from the Seashore Trolley Museum shows the Third Avenue Railway Company's #631 trolley car. It looks to be from the early 1920s and quite possibly treated a captive audience of passengers to programming from an overhead power wire-delivered closed circuit radio station designed by GE. Later, in order to reach beyond the tracks, Third Avenue built a true broadcast outlet, WEBJ.

passengers from the trolley outfit's headquarters, via a bigger amplifier and speakers placed throughout the cars. After this 1923 closed-circuit installation was deemed successful, Third Avenue officials figured a reception footprint larger than the track boundaries would net the company an even wider range of public relations possibilities. That's where the radio station concept came into play.

In its efforts to establish a true broadcasting arm, the transport company's secretary, Garrow T. Greer, was identified as the radio venture's "executive director." A governmental OK to construct the proposed station was granted in July 1924. Almost immediately, work began on the installation of a pair of 60-foot self-supporting steel towers on the roof of Third Avenue's "car barn and executive offices located at 130th Street and Third Avenue." Between the cross-hatched lattice style pyramids was strung a T-type wire antenna. Electrical oversight was the job of W.J. Quinn, who normally served as the company's chief engineer. Along with the technical authorization for Third Avenue's radio enterprise, Government officials bestowed the callsign WEBJ, a simple sequential issue by the Radio Division that didn't stand for anything.

In August WEBJ sent out a test signal, and a grand opening of the new station was staged on September 9, 1924. That Sunday evening debut included an on-air welcome by Third Avenue Railway's president, S.W. Huff, with master of ceremonies duties handled by Harry Bruno, program director and chief announcer. *Broadcast Pro-File* recalls that station director Garrow Geer also got on the mic to say that "the establishment of WEBJ was a goodwill enterprise of the railway, which was to present entertainment programs as well as talk on the electric railway industry and the problems of the Third Avenue Railway [and] to interpret the industry and the railway to the public."

I'm trying to conjure up what exciting format such technical gobbledygook represented. If, as I imagine, it consisted of playing "I've Been Working On The Railroad" over and over in between programming that *interprets the electric railway industry*, you wouldn't think it would be on the right track for high ratings. You'd be wrong. As it turned out, Geer's boring description was probably designed to satisfy the U.S. Government's stodgiest radio application examiners and WEBJ's fare was sometimes downright "lively." As Bill Jaker, Frank Sulek, and Peter Kanze, the authors of *The Airwaves of New York*, chronicle: "Cabaret artists who were rushed by car (they didn't take the trolley) to [the WEBJ studios, were] returned in time to make their next appearance on the stage. Some entertainment apparently came from within the company, with performances by the Motormen's Quartet [and a] ukulele expert played a program especially for people who felt blue and needed cheering up."

From its original sign-on until May 1927, WEBJ could be heard on Tuesday and Friday nights with, as *Broadcast Pro-File* labels them, "popular programs" on the 273-meter or 1100-kilocycle dial position. *The Airwaves of New York* calls WEBJ's audience for these shows, "substantial." If true, it's likely that Third Avenue brass, which initially envisioned WEBJ's audience to consist primarily of its 3,000-member staff and their immediate families, decided that results would be better with less programming devoted to trolley-related factoids and more toward tickling the average New Yorker's fancy.

According *Radio Broadcast* magazine at the time, the latter strategy paid off. A 1927 issue focused on speculation about which of the 75 or so New York area stations the new Federal Radio Commission would keep operational after a planned thinning out of "also-ran" stations and a frequency re-allocation.

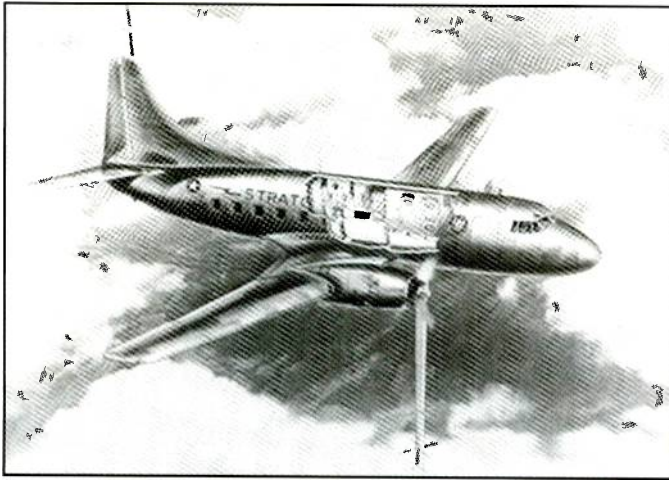


Alfred Grebe was really into radio! He not only started a factory to build receivers, but also established several licensed broadcast stations, including this "portable" facility, dubbed WGMU (Grebe's Mobile Unit), which was headquartered in his car. Check out the "T" towers on the front and rear bumpers! WGMU's transmitter and other vital gear—dedicated to sending word of on-the-spot events—was rigged to the vehicle's running boards and on a bracket between the back of the car and its spare tire. Here, Grebe (at right) is participating in a broadcast on the side of a road. Note the carbon mic supported by a revamped music stand. Sister station, WRMU (perhaps denoting Radio Marine Unit?) was also classified as a "portable" and transmitted from Grebe's yacht.

Radio Broadcast predicted WEBJ would be one of the half dozen major players that would survive. Sure enough, a June 1927 directive from the FRC showed WEBJ on the "saved" list, though its carrier frequency was shifted to 1170 kc. Because of WEBJ's part-time broadcast schedule, however, regulators bunked two other Gotham area outlets—WLTH and WBBR—on the 1170 spot.

For the station's fans, all seemed well. Just a year later, however, surprised listeners heard the WEBJ announcer say the 500-watt outlet "was to shut down for changes and overhauling." Within a week, the Third Avenue Railway Company "voluntarily relinquished the WEBJ license...to aid in clearing the air of congestion." Nothing further was ever heard from the WEBJ transmitter.

While this broadcast suicide might appear odd to those coveting a slice of metropolitan media pie, Third Avenue officials later explained that they never meant for WEBJ to be more than a way to transmit safety messages and PR to its employees and passengers. Further, the management admitted that any entertainment WEBJ offered was simply the sugar to sweeten "the more serious subjects" related to trolley protocols and particu-



With a receive antenna (to pick up terrestrial TV or FM signals) on its tail and a transmitting stick under its fuselage, this Westinghouse Stratovision-equipped plane could send RF to a wider audience than any land-based tower could. A November 1945 *Popular Science* article quotes the flying station's creator as predicting, "One kilowatt of power in a plane will impress a satisfactory signal on a receiver 200 miles away, whereas a ground station requires 50kW to deliver the same usable signal approximately 50 miles. Operation of a single [TV/FM] plane," the magazine reported, "would cost \$1,000 per hour, compared with \$13,000 hourly for sufficient ground stations to cover the same area."

lars. With a note of pride, Third Avenue executives also said they never used WEBJ as a means to "enter the advertising field."

In retrospect, that highlights the firm's shortsightedness. There'd come a time when trolleys would be a symbol of a bygone era while commercial radio broadcasting transformed into a major industry. In fact, when Third Avenue's transport came to a halt in 1957 due to the declining fortunes of the trolley business, the value of a New York City AM radio license was in the hundreds of thousands—if not millions—of dollars.

During the late 1920s federal radio regulators were putting pressure on public relations-oriented stations—especially those capable of a respectable 500-watts or more—uninterested in broadcasting as a primary business or unwilling to transmit daily, to make way for the full-service, fully commercial outlets more apt to help grow the radio industry. To its credit, Third Avenue apparently decided it was in the transportation, not the commercial broadcasting, business.

By mid-June 1928, self-derailed WEBJ was listed by the FRC as defunct and deleted. It was an unusual de-authorization that carried with it the Commission's sincere appreciation of Third Avenue's decision and the "unselfish example" of a radio licensee that helped clear the dial of peripheral signals.

WRMU: A Ripple, Not A Wave

The "Boats" portion of our radio journey more resembles a bobbing cork than an ocean vessel in marine radio-related history, but it's a fun nugget of flapper-era station statistics, nonetheless. The saga starts with a U.S. Department of Commerce go-ahead to radio manufacturer Alfred H. Grebe's 1925 request for permission to start a 100-watt broadcast station on his yacht, the *MU-1*. This outlet, dubbed WRMU, was specified as a "portable" station and shared time on 1270 kilo-

cycles with Grebe's existing portable, WGMU, located in Grebe's car. Not shy about seeking broadcast licenses, Grebe also operated stationary stations WAHG and WBOQ in the New York City neighborhood of Richmond Hill.

Construction went quickly, as the build-out largely consisted of bringing a transmitter on board and rigging a wire antenna on the boat's masts. By summer 1925, WRMU was serving the occasional purpose outlined in its application: "broadcasting marine events." Beginning in the latter part of 1927, Grebe moved his radio headquarters to the more cosmopolitan locale of 113 West 57th Street in New York City, though the transmitters for his fixed-location facilities, WAHG and WBOQ, stayed at Grebe's radio set plant in Richmond Hill. He changed the official licensee name of his broadcast operation from A.H. Grebe & Company to Atlantic Broadcasting Corporation. With this mnemonic upgrade, Grebe's main station, WAHG got recast as WABC. Then, yachting and other New York-region water-based events of any importance could not only be caught by chance by itinerate WRMU's listeners, but were relayed to WABC for its wider audience.

Another 1927 modification saw WRMU and its automotive sister WGMU reassigned (from 1270) to 1490 kilocycles. Even with that shift obeyed, as far as portable radio broadcast stations having any lasting favor with regulators, that ship had sailed by mid-1928. The relatively new Federal Radio Commission decreed that portables "were not in the public interest and a waste of valuable frequencies." It just so happened that the licenses of WRMU and WGMU expired on July 1, 1928, giving FRC officials the perfect time to deny renewal and then delete the call letters a few weeks later. Grebe's "regular" Atlantic Broadcasting Corporation stations, WBOQ and WABC, continued to operate, though the former facility (which took its name from New York's Borough of Queens) was almost only nominal, as it operated infrequently and shared time with Grebe's dominant WABC.

By the way, before 1928's end, that WABC (along with tag-on WBOQ) was sold to the upstart Columbia Broadcasting System and later became WCBS. Few listeners of the resulting 50,000-watt WCBS 880 New York ever knew that the network flagship was once related to little portable WRMU, whose memory quickly sank beneath New York radio's waves.

Six Miles High

The final leg of this month's bygone broadcasts journey involves aircraft, the benefits of FM/TV line-of-sight transmission, and a young man with high aspirations. Near the end of World War II, Charles E. Nobles, a 26-year-old Westinghouse engineer, was working on radar projects when he got to thinking about how frequency modulation and television signals might be offered nationwide to a post-war America accustomed to coast-to-coast AM radio networks.

There were incredible obstacles involved: the shortcomings in the FCC's television channel allocation plan, the complexities of establishing thousands of miles of coaxial video cabling, a reluctance of many AM broadcasters to invest in FM, and economic hurdles associated with building a television station. Nobles estimated that it would take at least a decade before most rural communities could receive decent terrestrial FM and TV service. He suggested looking to the skies for a solution to the problem of getting a VHF transmit antenna high enough to exceed the 25 to 30 miles of coverage of the typical city-based TV or FM tower facility.

By the fall of 1946, Nobles had convinced Westinghouse officials that aircraft could be fitted with TV and/or FM transmitters and antennas and flown at 20,000 to 30,000 feet to deliver clear sound and picture to receivers anywhere within the plane's line of sight. An impressive 200-to-240 mile footprint was predicted. If Westinghouse equipped 14 planes, Nobles calculated, a little over three-quarters of the homes in the continental U.S. would receive clear television and FM programming, without the need for even a single tall tower or an inch of coaxial cable.

His employer expressed keen interest in the possibilities and brought the aviation innovator, the Glenn L. Martin Company, into its project, codenamed "Stratovision," denoting television from the stratosphere. The firms' made their initial tests in mid 1948 through early 1949, first with a dual-motor PV-2 plane carrying a 250-watt FM transmitter (on 107.5 megacycles) and 5kW TV transmitter. Because Westinghouse owned a Television station (WMAR-TV) in Baltimore, it elected to fly over that Maryland city and retransmit WMAR-TV programming picked up by a receiver in the aircraft. From 25,000 feet, the experimental transmissions were easily seen and heard as far away as Boston.

Another series of tests utilized a converted Boeing B-29 bomber at 30,000 feet with 1 kW of audio and 5 kW of video power on VHF Channel 6. A trio of 15 kVa, 500 Hz alternators drew energy from the B-29's engines in order to enliven the electronics. Even with that relatively low power output and atmospheric temperatures outside the aircraft of 25 degrees, it was necessary to air-condition the transmitter/alternator compartment lest the cabin heat to over 130 degrees.

The hot political discourse of the June 23, 1948, Republican National Convention served as programming for a nighttime run of a Stratovision B-29 as it circled Pittsburgh at 25,000 feet while relaying NBC's Philadelphia-based network convention coverage, picked up from the Baltimore WMAR-TV signal some 300 miles distant from the airplane. Via that one high transmitter, the rebroadcast was seen well in nine states, including Ohio where reporters were gathered in front of a television set in Zanesville, a community thought to be on the very fringes of the Stratovision coverage.

Westinghouse conducted the Pittsburgh flight because it was in the process of seeking FCC approval for daily air-

borne TV service in the region as a complement to its pioneer radio station located there, KDKA. Such a novel request soon became moot, however, after Westinghouse began negotiating for the struggling DuMont network's Pittsburgh television operation WDTV-TV. (Westinghouse finally purchased the Channel 2 Pittsburgh outlet in 1955 and dubbed it KDKA-TV.)

Meanwhile, late in 1949 AT&T completed a video coaxial cable run that linked New York-based network flagship stations with affiliates as far west as Chicago. With the more rapid than

expected expansion of this westward affiliate cabling, and the sprouting of new commercial TV stations in secondary as well as large media markets, Westinghouse suddenly opted to end its Stratovision project in 1950.

Eight years down the road, however, after noting the struggles of those trying to bring educational television to a wide audience, Westinghouse officials convinced a Ford Foundation executive to consider jump-starting non-commercial TV via Stratovision coverage. In 1959, a conference was held at Purdue University where attendees heartily accepted Ford

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The Midwest Program on Airborne Television Instruction or MPATI conceived this Strategic Air Command-style logo to depict its planes targeting key central states. Maybe the insignia's militaristic metaphor signaled that the flying educational TV stations would be carpet bombing ignorance with classroom lessons, delivered on video by erudite professors from prestigious universities. In its key, Vane Jones' 5th edition of the *North American Radio-TV Station Guide* had to come up with a dedicated symbol for MPATI's unique UHF-TV outlets (on Channels 72 and 76). An inverted triangle of asterisks referenced the explanation, "Airborne transmitters in plane flying above location shown." They were only "shown" in one city-of-license, Montpelier, Indiana.

Foundation developmental funding for a pair of DC-6 aircraft, TV transmission gear, programming production, and staff. The founding organization coalesced under the banner The Midwest Program on Airborne Television Instruction, or MPATI.

Interested in seeking ways to breathe life into UHF-TV, the FCC quickly granted MPATI two experimental TV construction permits: one for UHF Channel 72 with the callsign KS2XGA, and the other, KS2XGD on Channel 76. An obscure line in MPATI's archives indicates that these were 3-MHz (or narrow-

cast) channels rather than those blessed with the 6-MHz width typically allotted to UHF-TV operations. As far as the FCC was concerned, these flying TV stations were considered "experimental," hence the alpha-numerical callsigns. The Commission did designate a traditional or land-based city of license for the two high U's: Montpelier, Indiana. Some 23,000 feet above that city, the planes lazily flew in a figure eight pattern while a technician ran videotaped educational instruction four out of five school days per week.

Several MPATI histories cite 1960 as its broadcast debut, but it appears instead that this was the year the Purdue University-located organization began amassing a tape library of classroom lessons for the kindergarten through grade 12 students. By 1961, though, enough of these instructional videos were available to allow airborne transmission to commence. Predictions had over 15,000 mid-western schools (with a total of about 5-million students) eagerly subscribing to MPATI's UHF University, kicking in between \$1 and \$3 per student. Such revenue would be needed to wean MPATI off sunseting Ford Foundation dollars. But that lucrative audience didn't materialize.

Robust membership drives from 1962 to 1965 (and less energetic efforts in 1966 to 67) attracted only about 1,800 schools, a bit over 10 percent of possible supporters. Many big school districts, like those of Chicago or Cleveland, were already involved in fledgling educational television stations in their own cities and were reluctant to purchase from MPATI what seemed like a duplicate service. And more than a few schools cherry-picked MPATI's programming without ever paying a subscription fee. (Unlike commercial "subscription television," such as Zenith's Phonevision over Channel 18 WHCT-TV Hartford, Connecticut, the MPATI fare from skybound KS2XGA and KS2XGD wasn't scrambled.)

As a youngster in a rural Illinois school district, present *Pop'Comm* reader Ellis DeKalb watched "a big kid from the high school wing" rolling a large big black & white TV into his 4th grade classroom and showing the rookie teacher what to do if the picture drifted and needed to be fine-tuned. Ellis can't recall too much about the broadcast other than that it was "pretty much a talking head kind of direct instruction with a professor-type guy writing on a black board in a studio set arranged to look like a science room." He says the kids

knew that the program got transmitted from an airplane, though isn't sure who revealed this detail. What Ellis does clearly remember after 45 years, however, is an Indian head test pattern that "seemed to be on the air longer than the lesson." The MPATI archives do indicate that a slide of the once stately but now politically incorrect Native American identifier was aired for approximately five minutes before and between each lesson.

Also remaining in the erstwhile grade school boy's noggin is the sight of a rambunctious classmate suddenly darting from his desk to the huge bank of classroom windows while the TV lecturer droned on. "Though our teacher yelled at him to return to his seat," Ellis laughs, "the kid exclaimed that he heard an airplane, pointed towards the wild blue yonder, and got the whole class to come see *the flying TV station buzzing the school!*"

It's unlikely that the school board in Ellis' district had official ties with MPATI, meaning they used the programming on a trial basis. Ellis says his class was subjected to the plane-delivered educational broadcasts "only on four or five occasions," and that "a couple of those times the show the teacher had planned for wasn't on." The aircraft UHF-TV coverage showered a signal on locales in the Central and Eastern time zones. When one adds daylight savings time to the mix, it's no wonder why some teachers, perhaps using outdated programming schedules or not factoring in a time difference, got snickers from their students.

MPATI explained this confusion to the FCC, hoping the Commission would happily grant the educational broadcaster a few more frequencies to better facilitate running multiple shows appropriate for particular time zones. The Commission reminded MPATI that its two existing licenses were experiments that needed more perfecting before any additional channels would be considered. Sometime in 1968, the directors of MPATI realized their efforts netted more error than trial, so reluctantly grounded its two-plane UHF-TV air force. Over the next three years, the organization simply loaned tapes of its instructional shows to schools that had faithfully subscribed. In 1971, even this vestige of MPATI closed its doors, forever bumping the novel concept of airborne educational UHF-TV into the fascinating turbulence of broadcasting's past.

And so ends another day of broadcasting history at Pop'Comm...

Change We Can Count On

by Tomas Hood,
NW7US, nw7us@arrl.net

It was year of change. During the first half of 2009, it looked doubtful that Sunspot Cycle 24 had any life, or any hope for change. However, as reported last month in this column, the sun began to show signs of waking up from the extended period of sunspot slumber. Solar observers have resisted getting too excited about any solar activity, because the sun has fooled us already during this cycle minimum; we'd see signs of life with a sunspot region emerging, only to see it fade away quickly, leaving a spotless sun for another few weeks. October's grand sunspot showing was not enough to convince the once-bitten, twice-shy heliophiles.

Then came November and increased solar activity. Only the first four days in November were spotless. Five days with a zero sunspot (October 31 through November 4) ended with the arrival of an official new active sunspot region on

"...sun has fooled us already during this cycle minimum; we'd see signs of life with a sunspot region emerging, only to see it fade away quickly, leaving a spotless sun for another few weeks."

November 5 (**Figure 1**), numbered 1030 by the National Oceanic and Atmospheric Administration (NOAA). At the same time, another region appeared to the south of 1030 and looked like it might develop into an actual group of sunspots. The official Space Environment Service Center (SESC) sunspot count on November 5 was 15. Both areas were small compared to the sunspot region that just rotated out of view at the end of October. By the next day, the count reached a maximum of 16. Two days later the sunspot count was back to zero. Heliophiles around the world thought that things were going back to "normal" for this sunspot cycle minimum: no spots for days on end.

This dismal outlook was cut short on November 9 when sunspot region 1030, thought to be dead and gone, flared up with a sunspot count of 14. This region was active until November 12, and the next day was again spotless. Heliophiles turned skeptics once more, pointing out how small this active region was compared to the region seen during the end of October.

Little by little, the period of days with zero sunspots is becoming shorter than we'd seen during most of the current solar cycle minimum. The sun delivered another sunspot region that yielded a sunspot count of 11 on November 15 and 12 on the 16th. The official count on the 17th was zero, but by the 18th the count was 29, and that started a run of daily sunspot counts (**Figure 2**). Clearly, November was more proof of what I've been forecasting: by the end of 2009, we'll witness the waking up of our nearest star, and sunspot Cycle 24 is alive and well.

During all of November, the 10.7-cm flux remained above 70. This slight and welcomed increase in daily flux activity, combined with the expected yearly improvement that comes each autumn, resulted in very good conditions on the shortwave frequencies. During the rest of

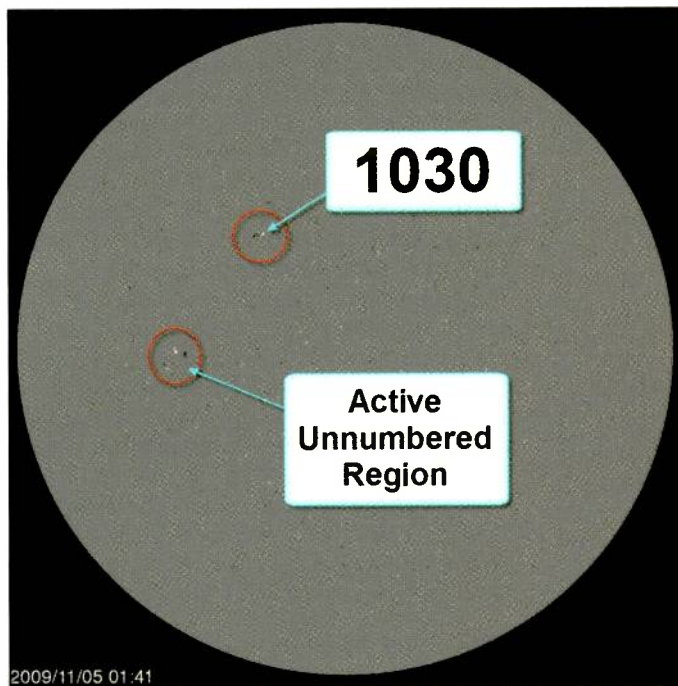


Figure 1. This magnetogram view of the sun on November 5, 2009, shows two sunspot regions. An Active Region number of 1030 was assigned to the northern region, while the southern region never produced an official sunspot. These regions appeared only a few days after the active regions of October rotated away from view. (Source: NOAA)

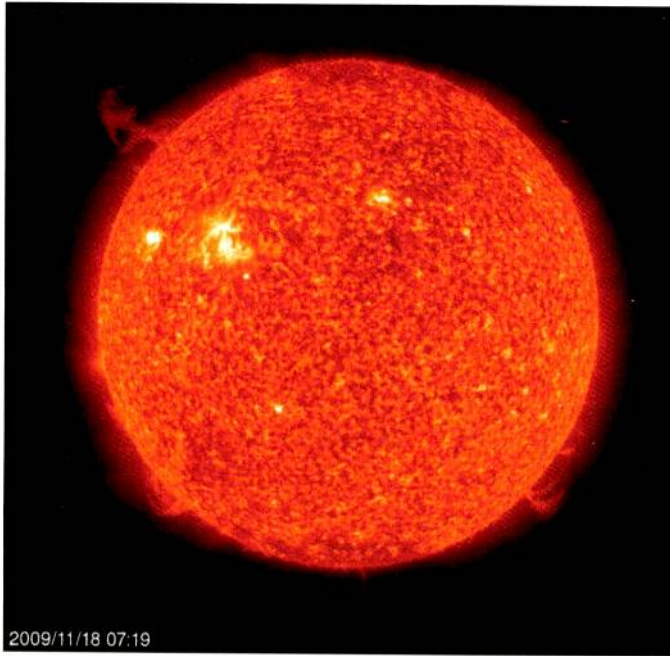


Figure 2. A stunning view of the sun, captured November 18, 2009. Notice the plasma filament jetting away from the sun in the upper left region, as well as others seen around the perimeter of this solar image. The large white area is one of two active solar regions, each producing sunspots. Clearly, November demonstrated what was suspected during October: Sunspot Cycle 24 is alive and the sun is starting to stir with sunspot activity. (Source: NOAA)

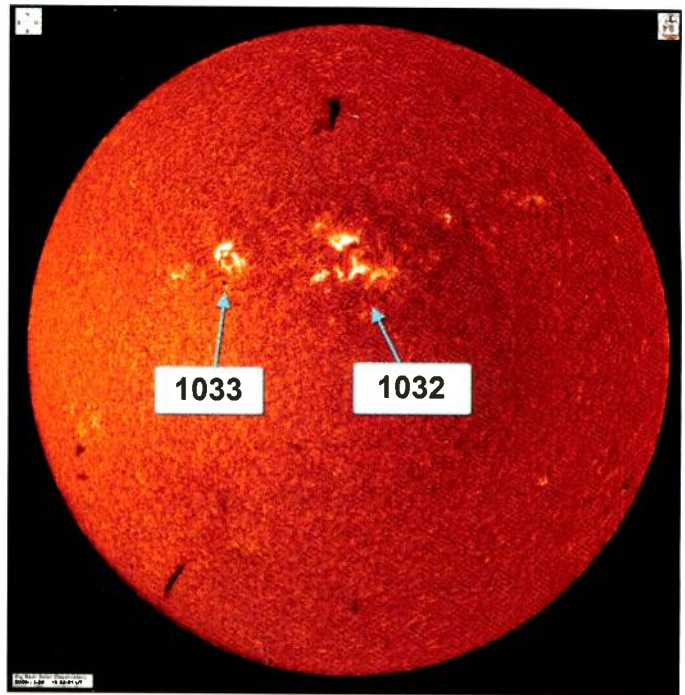


Figure 3. This view of the sun, taken November 20, 2009, reveals the complex and powerful magnetic structures of the active sunspot regions 1032 and 1033. This solar activity resulted in good conditions on most of the shortwave radio spectrum during November. (Source: NOAA)

November, the sun remained active (**Figure 3**). Will this activity die away again? Or are we now seeing the sure and steady monthly rise expected at the start of a new sunspot cycle? Is Sunspot Cycle 24 here to stay, and did 2009 indeed end as a year of true change? Keep checking this column each month for progress reports.

High-Frequency Propagation

We're starting to approach the end of the winter season. The period of darkness is growing shorter, causing the average daily maximum usable frequencies (MUFs) to rise a bit. At the same time, noise levels are still low, making for reliable DX. The solar activity is moderate and holds enough energy to keep the mid-HF spectrum alive with signals. General conditions are expected to be good to excellent for HF propagation throughout February.

Nineteen meters through 15 meters will open shortly after sunrise, and will remain open until early through late evening, on those paths where the current (low) solar activity might support ionospheric propagation. Morning and evening DX openings between some areas in the Northern Hemisphere on these bands are very short, because the band in question closes on one end of the path before it opens on the opposite end. Transequatorial propagation on these bands will be more likely toward sunset during days of high solar flux and a disturbed geomagnetic field (look for days with an A_p greater than 15, or a K_p greater than 3).

Paths on 31 through 22 meters remain in their seasonal peak, much as they were in January, but with longer openings. Look for possible openings between North America and Europe in the mornings and between North America and Asia during the late afternoon hours. Twenty-two meters will often be the best daytime DX band, with 31 and 25 running a close second.

Ninety through 41 meters will be useful almost 24 hours a day. Daytime conditions will resemble those of 25 meters, but skip and signal strength may decrease during midday on days with high solar flux values. Nighttime will be good except after days of very high MUF conditions. Generally, the usable distance is expected to be somewhat greater on the higher of these bands than on 90. DX activity tends to increase later in the evening toward midnight. Look for Africa and South Pacific (Australia, Papua New Guinea, and so on) on 90 through 60 meters throughout the night. On 41, 49, and 60 meters, long-path DX is possible along the gray line.

The 120-meter band continues to remain stable, with very low noise levels. High noise may occur during regional snowstorms throughout the winter season. The band opens just before sunset and lasts until the sun comes up on the path of interest. Except for daytime short-skip signal strengths, high solar activity has little impact. Continue to look for Europe and Africa around sunset until the middle of the night, and then Asia, Pacific, and South Pacific as morning approaches.

Signals below 120 meters will remain strong and exciting, except during times of regional storms and high geomagnetic activity. Mediumwave DX is still quite hot throughout February.

VHF And Above

There are no major meteor showers during February that could provide any VHF meteor scatter propagation, but other modes may be possible. Check for 6-meter short-skip openings during the daylight hours; some short-skip openings over distances of about 1,200 to 2,300 miles may occur. The best times for such openings are during the afternoon hours.

Auroral activity often occurs during periods of radio storminess on the HF bands. Look for days where the A_p index is climb-

Optimum Working Frequencies (MHz) - For February 2010 - Flux = 77, Created by NW7US

UTC	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
TO/FROM US WEST COAST																								
CARIBBEAN	19	18	14	11	11	10	10	10	9	9	9	9	9	9	15	18	19	20	21	21	22	21	21	20
NORTHERN SOUTH AMERICA	27	25	22	17	16	15	14	13	13	12	12	12	12	12	17	22	25	26	28	29	29	29	29	28
CENTRAL SOUTH AMERICA	27	25	21	16	15	14	13	13	13	12	12	12	12	12	19	24	25	26	27	28	28	28	28	28
SOUTHERN SOUTH AMERICA	28	27	25	21	18	17	16	15	14	13	13	13	12	12	12	21	24	26	27	28	28	28	29	29
WESTERN EUROPE	9	8	8	8	8	8	8	8	8	8	8	8	8	8	11	14	15	16	15	14	13	10	9	9
EASTERN EUROPE	8	8	8	8	8	8	8	9	8	8	8	8	8	8	10	10	10	9	9	8	8	8	8	8
EASTERN NORTH AMERICA	21	19	16	13	12	11	11	10	10	10	10	10	10	10	16	20	21	22	23	24	24	24	23	22
CENTRAL NORTH AMERICA	12	12	11	8	7	7	6	6	6	6	6	5	5	5	5	10	11	12	12	13	13	13	13	13
WESTERN NORTH AMERICA	7	6	6	5	4	3	3	3	3	3	3	3	2	2	2	3	5	6	6	7	7	7	7	7
SOUTHERN NORTH AMERICA	21	19	17	13	11	11	10	10	10	9	9	9	9	9	17	19	20	21	22	22	22	22	22	21
HAWAII	19	19	18	17	16	13	10	10	9	9	9	8	8	8	8	8	13	16	17	18	19	19	19	19
NORTHERN AFRICA	9	9	8	8	8	8	8	8	8	8	8	8	8	8	12	14	16	17	17	15	11	10	10	9
CENTRAL AFRICA	11	11	10	10	9	9	9	9	8	8	8	8	8	8	11	14	15	16	17	14	13	13	12	12
SOUTH AFRICA	19	18	14	12	11	11	10	10	10	10	10	10	9	9	16	19	20	21	22	22	22	22	22	21
MIDDLE EAST	8	8	8	8	8	9	9	9	8	8	8	8	8	8	12	14	15	10	10	10	9	9	9	9
JAPAN	18	18	17	17	16	14	10	10	9	9	9	8	8	8	8	8	8	8	8	8	8	14	16	17
CENTRAL ASIA	18	18	17	17	15	14	10	10	9	9	9	8	8	8	8	8	11	10	10	10	10	14	18	18
INDIA	14	14	14	13	11	9	9	9	8	8	8	8	8	8	8	8	8	8	8	8	8	9	12	13
THAILAND	18	17	17	16	15	13	10	9	9	9	9	8	8	8	8	8	11	12	11	11	11	10	10	10
AUSTRALIA	23	25	26	26	24	20	15	14	14	13	13	12	12	12	12	11	15	15	14	15	18	20	22	22
CHINA	16	17	17	16	15	12	10	9	9	9	9	8	8	8	8	8	8	8	8	8	8	8	8	13
SOUTH PACIFIC	27	28	28	26	24	18	17	16	15	14	14	13	13	12	12	15	15	15	18	21	23	24	26	26
TO/FROM US MIDWEST																								
CARIBBEAN	22	19	15	14	13	13	12	12	11	11	10	10	10	16	20	22	23	24	25	25	25	24	23	23
NORTHERN SOUTH AMERICA	24	22	19	17	16	15	14	13	13	12	12	11	11	14	19	21	23	25	26	27	27	27	27	26
CENTRAL SOUTH AMERICA	26	23	19	17	16	15	14	14	13	13	12	12	12	19	22	24	25	26	27	28	28	28	29	27
SOUTHERN SOUTH AMERICA	28	26	22	20	18	17	16	15	14	14	13	13	12	13	21	23	25	26	27	28	28	29	29	29
WESTERN EUROPE	9	9	8	8	8	8	8	8	8	8	8	8	8	13	15	16	17	16	16	15	14	12	10	9
EASTERN EUROPE	8	8	8	8	8	8	8	8	8	8	8	8	8	11	13	13	13	12	11	9	9	8	8	8
EASTERN NORTH AMERICA	15	13	9	9	8	8	8	8	7	7	7	7	7	11	14	15	16	17	17	17	17	17	17	16
CENTRAL NORTH AMERICA	7	6	5	4	4	4	3	3	3	3	3	3	3	3	5	6	7	7	8	8	8	8	7	7
WESTERN NORTH AMERICA	12	12	11	9	7	7	6	6	6	6	6	6	5	5	5	10	11	12	13	13	13	13	13	13
SOUTHERN NORTH AMERICA	14	13	11	8	8	7	7	7	7	7	6	6	6	6	11	13	14	15	16	16	16	15	15	15
HAWAII	22	21	20	18	13	12	11	11	10	10	9	9	9	9	9	9	16	19	21	22	22	22	22	22
NORTHERN AFRICA	11	10	10	9	9	9	9	8	8	8	8	8	8	10	15	16	17	18	18	19	19	16	13	12
CENTRAL AFRICA	12	10	10	9	9	9	9	8	8	8	8	8	8	10	14	16	17	18	18	19	17	15	14	13
SOUTH AFRICA	20	16	15	14	13	13	13	12	12	12	12	12	16	22	25	27	28	28	29	28	28	26	24	22
MIDDLE EAST	9	8	8	8	8	8	9	8	8	8	8	8	8	13	15	16	17	16	13	10	10	9	9	9
JAPAN	17	17	16	14	10	10	9	9	9	9	8	8	8	8	8	8	8	8	8	8	8	13	16	17
CENTRAL ASIA	17	16	15	14	10	10	9	9	9	8	8	8	8	8	8	10	11	10	10	10	10	10	11	18
INDIA	10	13	12	10	9	9	9	8	8	8	8	8	8	8	11	14	13	12	9	9	9	8	8	8
THAILAND	17	16	15	12	10	9	9	9	9	8	8	8	8	8	8	12	13	12	12	11	11	10	10	10
AUSTRALIA	24	25	25	23	17	15	14	14	13	13	12	12	12	12	12	13	16	15	15	14	15	18	20	22
CHINA	15	16	14	12	10	9	9	9	8	8	8	8	8	8	8	9	9	8	8	8	8	8	8	12
SOUTH PACIFIC	28	27	26	23	18	17	16	15	14	14	13	13	12	12	12	16	15	15	16	19	22	24	25	27
TO/FROM US EAST COAST																								
CARIBBEAN	17	14	13	12	11	11	10	10	9	9	9	8	10	15	17	19	20	20	21	21	20	20	19	18
NORTHERN SOUTH AMERICA	22	20	18	17	15	14	13	13	12	11	11	10	11	15	18	20	21	23	23	24	24	24	24	23
CENTRAL SOUTH AMERICA	25	22	21	19	18	16	15	15	14	13	13	12	18	21	22	24	25	26	27	28	28	28	28	27
SOUTHERN SOUTH AMERICA	27	25	23	21	19	18	16	15	15	14	13	13	15	20	22	23	25	26	27	28	28	29	29	29
WESTERN EUROPE	9	8	8	8	8	8	8	7	7	8	7	12	14	16	17	17	17	17	16	15	14	12	9	9
EASTERN EUROPE	8	8	8	8	8	8	8	8	8	8	8	10	14	16	16	16	15	15	14	13	11	9	9	9
EASTERN NORTH AMERICA	7	4	4	4	4	3	3	3	3	3	3	4	6	7	8	8	8	8	8	9	8	8	8	7
CENTRAL NORTH AMERICA	16	13	10	9	9	8	8	8	8	8	7	7	12	15	16	17	18	18	18	18	18	18	18	17
WESTERN NORTH AMERICA	21	20	16	13	12	11	11	11	10	10	10	10	10	10	17	20	22	23	24	24	24	24	23	23
SOUTHERN NORTH AMERICA	17	15	11	11	10	10	9	9	8	8	8	8	12	16	17	19	19	20	20	20	20	19	18	
HAWAII	22	20	17	13	12	12	11	11	11	10	10	10	10	10	11	10	10	18	21	23	24	24	24	23
NORTHERN AFRICA	11	11	11	10	10	10	10	10	10	10	10	17	20	22	23	24	24	23	22	20	17	13	12	12
CENTRAL AFRICA	12	12	11	11	11	10	10	10	10	10	10	17	20	22	23	24	24	23	22	19	16	15	14	13
SOUTH AFRICA	19	18	16	15	15	14	13	13	13	12	12	18	23	26	28	28	28	29	29	28	26	24	22	22
MIDDLE EAST	10	10	9	9	9	9	8	8	8	8	8	13	16	17	18	19	19	19	18	13	12	12	11	11
JAPAN	16	14	10	10	9	9	9	9	8	8	8	8	8	9	9	9	8	8	8	8	8	11	15	16
CENTRAL ASIA	15	13	10	10	9	9	8	8	8	8	8	8	8	12	12	11	11	11	10	10	10	10	10	16
INDIA	8	8	8	8	8	8	8	8	8	8	8	8	12	15	15	14	13	12	10	9	9	8	8	8
THAILAND	13	10	10	9	9	9	8	8	8	8	8	8	10	14	14	13	13	12	12	11	11	10	10	10
AUSTRALIA	24	24	20	16	15	14	14	13	13	12	12	12	12	12	19	18	16	15	15	14	16	19	21	23
CHINA	13	11	10	9	9	9	8	8	8	8	8	8	8	10	9	9	9	8	8	8	8	8	8	8
SOUTH PACIFIC	27	25	22	19	18	17	16	15	14	13	13	13	12	13	17	16	15	15	18	21	23	25	27	28

"I encourage all Popular Communications readers to support my FCC petition adding 97.111(6) permitting transmissions for disaster relief and emergency response, including training exercises, drills and tests without regard to whether the amateur operator has related employment."

paredness net, because of his employment as a public safety officer!

Recently retired FCC top rule enforcer, Riley Hollingsworth, K4ZDH, had a more practical way of looking at this rule "...it is ok so long as the station is being used for amateur purposes, and not for county or agency business. To say otherwise would result in a situation where a licensee could not use the system at the county building (for example) merely because they are on the payroll...But a ham operator is not barred from using an amateur station in an agency or county building, just because he happens to work for the agency or county..."

The words "pecuniary interest" (97.3(a)(4)) make good sense to all of us hams—we believe the emphasis of enforcement should be on the type of communications being passed, *not* whether or not the communicators are employed in the emergency field.

Government and emergency agencies now have exquisite non-ham radio systems, thanks to post 9-1-1 grants. The ham radio service is one of the *last* systems they would ever consider for furthering their pecuniary interest! Moreover, FCC Rule 97.113(5) forbids "communications, on a regular basis, which could reasonably be furnished alternatively through other radio services."

The Commission has suggested a "Business Radio Alternative Voice Overflow" (BRAVO) service, or "Terror and Emergency and Amateur Radio Service (TEARS), or Amateur and Government Radio Overflow (AGRO) service, and these could indeed be legitimate services without the worry of pecuniary interest. But there is absolutely no other FCC radio service now, planned, or even envisioned that can do what the Part 97 Amateur Radio Service does. And it's not the HF radio gear we drag into the hurricane center; nor the roller-bag of VHF/UHF radio gear we deploy at the tent shelter after the big hurricane; nor the fanny-pack with a gaggle

of handhelds and freshly charged batteries that represents our greatest contribution in emergencies. The greatest contribution the Amateur Radio Service offers our country is trained radio volunteers, working in the spirit of their served agencies, ready to help, in whatever numbers are needed, to get the job done.

Served agencies have seen ham radio operators in action, during drills, exercises, and in some cases, the real event. Without a ham on staff within that agency, few might realize that ham radio operators are willing to take training and be ready to serve. That ham staff member is invaluable in developing volunteer efforts into an agency's or non-government organization's (NGO) disaster plan for homeland security. Forbidding that staff-ham within that agency to join us on the airwaves during weekly nets, training sessions, and practice drills ties an arm behind the back of the Amateur Radio Service.

In this instance, let's base our "employed with pecuniary interest" rule interpretation on the *content* of the communications rather than on the *communicator*. This way we won't have to exclude the licensed ham operator who is an employee of an agency that may be involved with saving lives and property when called to do so. Part 97.1(a) addresses this, recognizing the fundamental purpose of the amateur service in "providing emergency communications."

I encourage all *Popular Communications* readers to support my FCC petition adding 97.111(6) permitting transmissions for disaster relief and emergency response, including training exercises, drills and tests *without regard to whether the amateur operator has related employment*. Send me a simple email at WB6NOA@ARRL.net and I'll add you thoughts during the formal FCC comment period.

It makes no sense to muzzle staff members from practicing ham radio emergency drills with their all-volunteer ham community.

ing and when the K_p index reaches 4 or higher. These are the days when VHF auroral-type openings are most likely to occur.

Current Sunspot Cycle 24 Progress

The Dominion Radio Astrophysical Observatory at Penticton, BC, Canada, reports a 10.7-cm observed monthly mean solar flux of 72.3 for October 2009, continuing a slow but steady monthly rise. The 12-month smoothed 10.7-cm flux centered on April 2009 is 69.3. The predicted smoothed 10.7-cm solar flux for February 2010 is about 77, give or take about 6 points.

The Royal Observatory of Belgium reports that the mean monthly observed sunspot number for October 2009 is 4.6, showing a sure rise since March (0.7). The lowest daily sunspot value during October 2009 was zero, occurring on October 2–10, 12–22, and 31. The highest daily sunspot count for October was 19 on October 25–28. The 12-month running smoothed sunspot number centered on April 2009 is 2.2. A smoothed sunspot count of 18 is expected for February 2010, give or take about 7 points.

The observed monthly mean A_p index for October 2009 is 3 (the lowest yet of this solar cycle minimum). The 12-month smoothed A_p index centered on April 2009 is 4.3. Expect the overall geomagnetic activity to be quiet during most days in January. At the time of writing, the forecast holds that February will be a quiet month with a chance for occasional geomagnetic disturbances. Visit http://hfradio.org/lastminute_propagation.html for an up-to-the-minute propagation condition forecast that incorporates the geomagnetic conditions expected based on the 27-day rotation of the sun.

I'd Like To Hear From You

I invite you to visit my online propagation resource at <http://propagation.hfradio.org/>, where you can get the latest space data, forecasts, and more, all in an organized manner. If you have a cell phone with Internet capabilities, try <http://wap.hfradio.org/>.

Do you have a question that you'd like me to tackle in this column? Drop me an email or send me a letter, and I'll be sure to cover it. I'd love to hear any feedback you might have on what I've written.

Until next month, 73 de NW7US, Tomas Hood, P.O. Box 9, Stevensville, Montana 59870

Special Event Stations: Fun To Work, Fun Stuff To Collect

by Kirk Kleinschmidt, NTØZ
kirk@cloudnet.com

Although I've been called a packrat (or less complimentary versions of the term), I prefer to think of myself as a collector! The thousands of electronic parts, doodads, and QSL cards in my office/shop aren't disgusting lumps of detritus piled carelessly by a packrat—they're lovingly cared for historical assemblages maintained by a sophisticated collector. Or maybe even a curator.

You're probably reaching for your hip waders right about now, so I'll ease off on my personal illusion. My point, though, is that most hams collect stuff. Most hams have some interest in the historical perspective of radio and all its wonders. And even if we don't all have the space or the financial ability to collect vintage radios or early De Forest Audion vacuum tubes, we still collect interesting ham stuff, as we're able.

As a teenage ham I would marvel at the photos in the ham magazines that showed hams with huge collections of QSL cards and operating achievement awards. Of course, these were

“Special Event stations show up year round, but the busiest months seem to be April and May, as many groups use them as a warm up for Field Day.”

proudly displayed on the walls of each shack. Some collections were so large that there was virtually no blank space on any of the shack's four walls! With a magnifying glass I could often make out call signs, DXCC certificates, etc.

This is the stuff that drove me to get in the game as a brand-new 15-year-old ham. I wanted to collect that special, memorable stuff myself. I also wanted to plaster the walls of my bedroom/shack with the same stuff, which made my mom a bit crazy. Apparently, tape marks, leftover adhesive, and hundreds of thumbtack holes in the paneling weren't things she could embrace as a “non-collector.” We compromised a bit, and I displayed

CONF. QSO with A.R.S.	DATE	TIME UTC	FREQ. MHZ	MODE	REPORT
NTØZ	4/7/88	0333	14.247	CW	5.6-9

I had to dig deep into my ham radio archives to find these 1988 QSL cards issued for working Special Event stations commemorating the bicentennial of the U.S. constitution. Amazingly, I had completely forgotten that I had these cards and that I'd worked these stations—but the QSLs don't lie! Score one for the packrat...I mean collector! Dozens of stations around the country got special call signs and operating permissions from the FCC in 1988. We might not be around in 2088 for the “tridentennial,” but if you scour the bands between now and then you'll work plenty of other “on-air” celebrations! —NTØZ

only the most interesting parts of my “collection” in a somewhat contained area just to the right of my operating position. (You’ll hopefully have more room!)

As a beginning ham you probably know about operating achievement awards, QSL cards, and contest certificates (which I discuss here periodically), but you may not know about another type of “wallpaper” that’s even easier to collect—and just might capture the imagination of your mom (spouse, whomever) and other non-hams. I’m talking about Special Event certificates. And unlike contest awards and other “achievement” awards, no great feat of skill or endurance is required. You simply have to contact the Special Event operator on your favorite band and mode (or more than one), and you qualify. A trophy for your collection will soon be forthcoming.

This is fun stuff, and it’s the topic of this month’s column: Special Event wallpaper and how to get some.

Special Operations Galore

Special Events are on-air activities designed to generate interest in specific happenings. Clubs or groups try to contact as many people as they can in a given time

period (usually the course of a weekend), and they produce special QSL cards and/or suitable-for-framing certificates to issue to the operators they work (that’d be you!).

Even for beginners, Special Event stations are almost always easy to work, and there are tons of them on the air each year! As I mentioned, If you become an avid Special Events participant you can *actually* wallpaper your shack with the interesting and beautiful certificates you’ll receive.

Special Event stations show up year round, but the busiest months seem to be April and May, as many groups use them as a warm up for Field Day. The commemorated “events” can be large or small, global or completely local. They might include a town festival, special historical events, the opening of museums, club anniversaries, or even holidays, such as operating from Christmas, Florida, in December. Clubs use these opportunities to get on the air in a big way, not only to publicize these events to the ham community, but also to demonstrate ham radio to the public. Just ask anyone who’s been bitten by the Special Event bug: Any excuse will do when it comes to getting on the air!

Regardless of their diversity, all Special Events operations have some-

thing in common: awards, special certificates, or collectible QSL cards. You might receive a commemorative color QSL card or a giant-size color certificate (or anything in between). Many are truly impressive, and they’re available just for making a single contact with the station(s) involved.

Getting Your SPEV On

So, now that you want to start collecting in earnest, how do you find Special Event stations, anyway? Thankfully, it couldn’t be easier. *CQ* and *QST* magazines devote space in each issue to publicizing the Special Event operations taking place that month, as does *WorldRadio Online* (www.worldradio-magazine.com). These generally appear as brief announcements listing the sponsoring club, the reason for the event, a frequency or two, and details on how to claim your certificate.

Perhaps the most comprehensive listing can be found on the Internet at www.arrl.org/contests/spev.html. Once you’ve secured a list of dates and frequencies, you simply get on the air and begin the hunt.

Most operations will use only one or two transmitters, and antennas can range from verticals to multi-antenna beam

InfoCentral (from page 8)

Radio Australia Service To Burma Launches

As from 26 October 2009 until 28 March 2010, 11980 kHz carries Radio Australia’s service to Burma in English and Burmese. 11980 kHz operates from 1600-1700 UT from the Cox Peninsula station using a 250 kW sender and an aerial bearing of 314 degrees.

(Source: *Radio Australia*)

Chinese SW Radios Available On NK Black Market

Radio Free Asia quotes a defector as saying that North Korea allowed ships to carry shortwave radios as a safety measure after a seismic wave struck North Korea’s east coast and killed thousands of fishermen in 2005. Radio channels were fixed to government frequencies, but North Koreans took advantage of this relative relaxation to begin smuggling in radios from China and are now selling them on the black market. Pyongyang remains deeply wary of international broadcasts, said the defector, whose identity is secret. “The North Korean government’s biggest concern is international radio broadcasts like those of Radio Free Asia. Content promoting democracy and disclosing leaders’ corruption as well as North Korea’s human rights situation—the Kim Jong Il regime considers this its biggest

threat. When people learn these things, they don’t believe in the regime anymore. In this context, I think those broadcasts are fulfilling their mission fully and serving as a pillar for the spirit of the North Korean people.”

(Source: *Radio Free Asia*)

Malawi: Convicted Boy Broadcaster To Get Own Station

To atone for the embarrassment suffered from the negative publicity received after a school dropout was convicted for running an improvised community radio station, Malawi’s Communications and Regulatory Authority (MACRA) said it would donate state-of-the-art community radio equipment and a license to Gabriel Mkondesi, a primary school dropout who operated the popular radio station illegally.

Mkondesi was forced to pay a fine after his conviction for operating the radio station in his rural Mulanje district of southern Malawi where he introduced phone-in programs to the community. Mkondesi, who is described as innovative, creative, and a genius, wired together two radios and made it possible for listeners to air their views using mobile phones. The service was highly appreciated by the local community until the police swooped on him and took him to court for the conviction. This solicited an outcry from the community and other legitimate broadcasters who solicited funds to free him from prison.

(Source: African Press Agency)

arrays. Almost everyone operates on 80, 40, and 20 meters, and many will accommodate a Morse code contact if you ask for one. Some Special Event stations run separate SSB, digital, and CW operations! If the sunspot cycle and enhanced propagation ever perk up, Special Event stations will migrate to 15 and 10 meters, but for the past few years the lower bands have seen almost all of the action.

When beginning your search, remember that interference and band crowding can force the stations to move up or down in frequency, depending on the bands. If the operation doesn't list any frequencies, careful tuning of the General class subbands should turn up what you're looking for. After all, why would an event designed to commemorate something special—and to work as many hams as possible—show up on the Extra class portion of the band?

Many Special Event operations also show up on DX spotting services, such as the one found at www.dxsummit.fi. Click on "DX Spots" on the main menu and then choose the band you're interested in. Most of the stuff that shows up here is DX-related, but on a weekend afternoon, Special Event spots do show up.

Claiming Your Prize

As mentioned, most Special Event stations are relatively easy to work. The most popular events, however, generate a lot of interest, and pileups can result, which can spice things up a bit. When you work that special station, whether it was a nightmare or a cakewalk, be sure you carefully mark down *all the QSO information* in your station log, including any procedures required to claim your certificate.

Some stations will give you a contact number to help the operators track you down when it comes time for them to confirm your QSO. Many groups work upwards of 3,000 hams in the course of a weekend—and if your information is more than a little off, they may not find your contact and you'll wind up in the dreaded position of being "not in the log."

After you've worked one, what's next? If you first discovered the event in a magazine or an online listing, the information probably detailed what the award was (a special QSL card, a certificate, or both) and how to obtain it. Usually, you send in your QSL card with all the information about the contact (the day, time, the callsign you worked, the band, and the signal report you gave) correctly and accurately filled in. If the op mentioned a contact number, make sure you display it prominently on the card.

And make sure you've included a self-addressed, stamped envelope (SASE).

If a group says it's offering certificates, it's best to send a 9 x 12-inch SASE. Most certificates are printed on 8 1/2 x 11-inch stock, and this will ensure that yours will not come back folded beyond recognition. Remember that larger envelopes often require extra postage!

Some groups specifically state that they want *no QSL cards* or log data at all! These ops will simply send your QSL card or certificate to the address listed in the FCC callsign database or the database used at www.qrz.com. In that case, it's important that the event ops copy your callsign correctly or you won't ever get your wallpaper. You also have to make sure your address is updated and current in the FCC database—something that you should keep current even if you're not a wallpaper collector!

Enjoy Your Paper Chase

Those are the basics of collecting Special Event wallpaper. It's fun, but it's not rocket science. Before long you'll get your first commemorative certificate, ready to be framed and displayed (or simply displayed). Your shack's walls may never look the same again!

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Vacuum Tube Voltmeters— Handy And Handsome

by Peter J. Bertini
radiconnection@juno.com

Even though modern digital meters are cheap and available, the venerable vacuum tube voltmeter (VTVM) continues to be a staple on many workbenches. My faithful Heath IM-13 has been doing duty since I was in junior high school in early 1960s. VTVMs are somewhat obsolete, but there are valid reasons for their long-lasting popularity.

The earliest DC voltmeters were simple devices. They resembled a large pocket watch, and were used for measuring B+ and filament voltages in early battery sets, but you'd have to use a different meter for each battery type! Later models incorporated a range switch, where a single meter scale might serve for the different voltage range selections. For example, a meter with

“The earliest DC voltmeters were simple devices. They resembled a large pocket watch, and were used for measuring B+ and filament voltages in early battery sets, but you'd have to use a different meter for each battery type!”

0 to 1 scale could be used for decade voltage steps of 1, 10, 100, and perhaps 1000 volts. A switch selected the appropriate dropping resistor for each voltage range. A voltmeter using 1-mA meter movement would have a total internal series resistance of 50,000 ohms on the 50-volt range; and that also means the meter had a 1000-ohms per volt specification.

There's no magic here: it's all based on simple Ohm's Law math calculations, and this resistance was the combined value of the switch-selected fixed resistance and the internal resistance of the meter's moveable coil winding. The meter's moving-coil resistance is relatively small (a few hundred ohms at most), so the fixed resistor for that range provides the majority of the resistance, especially in the higher voltage ranges.

Unfortunately any voltmeter (except a differential type) will load a circuit while taking a voltage reading. There isn't a problem when measuring the power supply voltages, but a 1000-ohms-per-volt meter will greatly influence the automatic gain control (AGC) bus, or screen or control grid bias measurements. As a rule, early schematics included voltage readings in an effort to assist with troubleshooting. More importantly, the ohms-per-volt rating for the voltmeter used to make those readings is also given.

The error is greatest when reading voltages on control grids or screen grids that a feed from a dropping resistor. For example, a typical screen-dropping resistor might be 75,000 ohms. Taking a screen voltage reading with a 1000-ohm-per-volt meter set to the 250-volt range would be the same as wiring in a 250,000-ohm resistor from the screen to ground. It would form a voltage divider with the 75,000-ohm dropping resistor, and the meter would display a lower-than-actual voltage reading. There are other dynamics at play, the screen current would change as the voltage

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Unique two-unit construction has been developed to allow placing the voltmeter tube within a few inches of the circuit being tested as to render their reading untrue. The frequency range of potentials this vacuum tube voltmeter will measure is unlimited. This enables it to make countless measurements in radio and audio frequency circuits necessary for advanced servicing, that are impossible with any former piece of testing equipment.

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A high-grade D'Arsonval type indicating meter is used, with knife edge pointer and long scale. Potentials under 2000 V. of 2 volts and lower may be read with ease and an accuracy of no less than 2% of full scale value.

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Figure. The 1934 introductory advertisement for Clough-Bregle's model UC VTVM. (Scan courtesy Ron Lawrence, W4RON)



Photo A. This Clough-Brengle model UC VTVM belongs to Ron Lawrence, W4RON, and is from his extensive collection of Clough-Brengle test equipment.

changes, making the end results even harder to predict. I've noted this in the past: It is important to understand the limitations of your test equipment and how their application affects measurements. AGC bus voltages are extremely sensitive to external loading.

Understanding Readings, Ratings

I've fielded many questions from beginners. One question I hear over and over is, "why are my voltage readings

often appreciably higher than those provided on the schematics by the manufacturers?" With little exception, it's because these hobbyists are using meters that have a considerably higher ohms-per-volt specification than the one the manufacturer used. The manufacturers used a meter that was typically available in the average service shop of the day. The more modern meter provides a more accurate measurement; but using a vintage meter would provide readings that are closer to those provided on the schematic and other service literature.



Photo B. The McMURDO Silver model 905 VTVM was made in Hartford, Connecticut, between 1945 and 1948. (Photo courtesy Neil Sutcliffe)

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Photo C. The Hewlett Packard model 400C, circa 1950. It's an AC-only VTVM, with a frequency response from 20 Hz to 2 MHz, and covers from 100 μ V to 300 volts in 12 ranges. (Photo courtesy Tom Kelly)



Photo E. The General Radio model GR 1806A is a real sleeper! The meter design is elegant simplicity and is surprisingly modern for a General Radio product. The meter has only three scales, making it one of the most user-friendly VTVMs out there. Unfortunately, they also seem to be very rare. (Photo courtesy Mike Harrison, KEØZU)



Photo D. Dating from the early 1960s, Mike Harrison, KEØZU's example of a HP 410C marked Hewlett Packard's transition from the all-tube HP 410A and 410B VTVM model lines to a solid-state version. However, the AC probe on the 410C continued using a tube diode detector.

A more modern volt ohm meter (VOM) likely uses a 50- μ A meter and would be rated for 20,000 ohms per volt. For an example, on its 50-volt range, the meter would only load the circuit by 1,000,000 ohms. That's quite an improvement over the 50,000-ohm load presented by a 1000-ohm-per-meter meter with a similar 50-volt scale. The VOM meters were able to measure AC and DC voltages, resistances, and current. A good example is the popular 20,000-ohm-per-volt Simpson 260 series of VOMs; these rugged meters are workhorses and are still in production.

Even a 20,000-ohm-per-volt meter will adversely load sensitive high-impedance circuits. A few decades back the gold

standard was a null-indicating voltmeter; these were pretty exotic devices and even now are obsolete. The solution for the common man was the development of the VTVM and its evolution from a laboratory instrument to something that was affordable and practical enough for the average service shop. The VTVM uses a vacuum tube bridge circuit to measure voltages; with some exceptions, the typical input impedance of most vacuum tube voltmeters is 11 megohms for DC voltages, and 10 megohms for AC voltages. I'll discuss their inner workings in more detail in my next column. I'll also show some suggestions on restoring and calibration.

A VTVM Photo History Sampler

While I'm not exactly confident of the timeline for VTVM technology, the vintage Clough Brengle model UC shown in **Photo A** is the earliest model that I uncovered while researching this column. The UC came out around 1934, and an early advertisement introducing it is shown in the **Figure**. Being an early, rare instrument it's best preserved in its *as-found* state, unmolested and displayed as a collectable rather than a working example to be used on the bench. Indeed, this meter belongs to Ron Lawrence, W4RON, and Ron is passionate about preserving his antiques in their original as-found condition as much as possible.

There's quite a bit to discuss regarding restoration, calibration, and safety issues that are unique to the AC line-powered VTVM, and I'm going to save that for my next column. For now let's simply enjoy taking a peek at a very small sampling of the hundreds of VTVM models produced over the years. Note that with few exceptions, most VTVMs were designed to provide DC and AC voltage measurements, and resistance (ohmmeter) measurements. A very few models also included the ability to make DC current measurements.

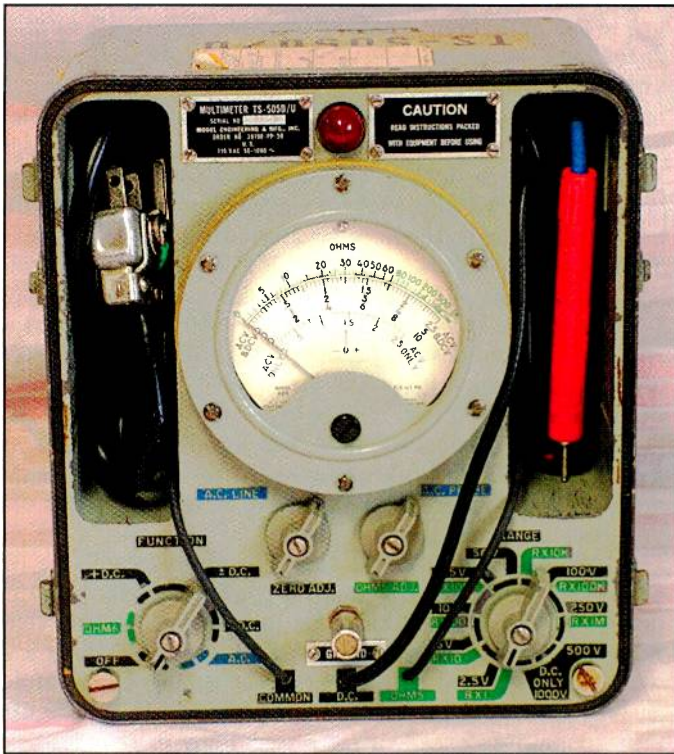


Photo F. The TS-505D/U military VTVM. This rugged meter has a protective top cover (not shown) and was designed for serious battlefield use. All of the probes safely stow inside the instrument to prevent loss or damage. (Photo courtesy Tom Kelly)

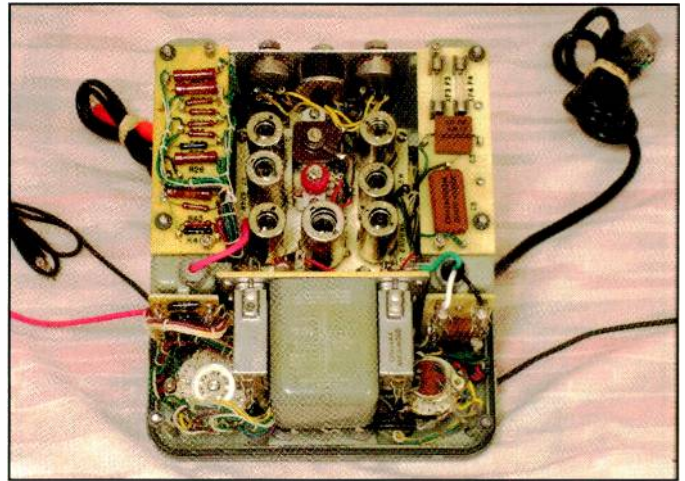


Photo G. Here's a peak under the hood of the TS-505D/U, showing the amazingly neat and compact inner workings of the VTVM. (Photo courtesy of Tom Kelly)

McMurdo Silver was best known for his earlier high-end consumer radio products. After a hiatus, in 1945, he began manufacturing a line of economical amateur radio and test equipment in Hartford, Connecticut. Production ended in 1948 when McMurdo Silver committed suicide at age 45. The McMurdo Silver model 905 VTVM is shown in **Photo B**. Most of the McMurdo Silver offerings employed the same frugal enclosure for the test and amateur equipment line alike. The 905 sported an AC probe that had a diode tube detector built into the probe body. This greatly improved the VTVM's AC frequency operating range. When not in use, the probe could be neatly stored

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Photo H. The Simpson model 303 matches the styling of the company's popular 260 series VOM line and is a good, reliable meter. They're somewhat common and available fairly reasonably. (Photo courtesy Tom Kelly)



Photo I. RCA produced both a Senior and Junior line of VoltOhmyst VTVMs. The WV-98A shown here is one of the later Senior VoltOhmyst models made by RCA. I suspect that RCA was the most prolific manufacturer of VTVMs. (Photo courtesy Tom McCarty)

in a recess in the front panel, which you can see in the photo. At the time, AC probes with the internal detector tube was cutting edge technology. I have to confess that to my eye, this is one singularly unattractive meter, but beauty is in the eye of the beholder!

Moving on, we look at few examples of early laboratory-grade VTVMs. Hewlett Packard's reputation is legendary, and many technicians and engineers preferred using HP equipment. The HP model 400C is an AC-only VTVM intended for audio and low frequency RF work (**Photo C**). The meter features the 1-3-10 voltage progression scheme explained in earlier columns, which yields comparative 10-dB voltage steps for each of the meter's range steps. The meter has 12 ranges, covering from 100 μ V to 300 volts, with a frequency response of 20 Hz to 2 MHz. The original HP 400A was introduced in 1945 with a price tag of \$200. While useful on the bench, expect to find many leaky capacitors that will need to be replaced before the instrument can be used.

Another offering from the venerable manufacturer, the HP 410A, was first introduced in 1945. The last version, the 410C (shown in **Photo D**) is solid state except for a vacuum tube detector in the AC probe. As such, it's not a true VTVM, but it is worthy of mention since it performs as one, and its AC probe enabled accurate measurements up to 700 MHz! The HP 410 series comprised excellent meters, and any one would be a good addition to any service bench. They are commonly available because so many were built, but the best examples garner a good price.

Regardless of HP's quality, my first choice for a shop VTVM would be the General Radio model 1806-A, shown in **Photo E**. This meter is extremely user friendly and handsome, and GR also was also a very highly regarded maker of lab-grade test equipment. The 1806-A's panel layout is clean and uncluttered, and the meter face has only three calibrated scales. It, too, sports an AC meter probe with an internal vacuum tube detector, which also conveniently stows into a cubbyhole in the front panel. The meter's input impedance is an astounding 100 megohms, and it can be set for "open grid" for an even higher input resistance! Unfortunately, these meters are rare and elusive quarries on the surplus market. If I found one that I could afford, I would seriously consider adding it to my bench.

A military model TS-505D/U VTVM is shown in **Photo F**, with **Photo G** giving us an inside view showing its rugged, military construction. Simpson's model 303 VTVM, shown in **Photo H**, copied the styling of the company's popular 260 VOM series. A RCA Senior VoltOhmyst model WV-98A is shown in **Photo I**. RCA's Senior and Junior VTVMs sprouted from what was perhaps the most prolific and most popular line of VTVMs ever produced. The 98A featured probes with the return (ground clip) isolated from the metal case, making it much safer to use than the majority of VTVM designs that had the probe ground returns directly tied to the metal instrument cases (a major safety issue that I'll discuss in greater detail in my next column). Like most VTVMs, the RCA probe used a switch to select between AC and DC voltage measurements (a 1-megohm resistor is switched in series with the probe tip for DC readings). Again, I'll talk more about this later.

Wow, I am rapidly running out of column space, and I haven't even begun to cover the numerous VTVMs from other companies, such as B&K, or the kit offerings from Knight, Heathkit, EICO, Lafayette, and others! Many of these are worthy of mention, but alas, it would take up this entire issue just to begin

do them justice! I'll be using a few Heathkit VTVM meters for the VTVM restoration and calibration column that follows, so be patient.

Before I close, however, I'd like to present two other classy VTVMs that were made by Hickok for the TV and radio service industry (I'm saving some of the best for last!). These are also examples of VTVMs that have caught my eye as possible candidates for bench space at "The Wireless Connection" headquarters. Take a peek at the Hickok model 209A VTVM in **Photo J**. That is a *big* meter, and it can be read from across a



Photo J. Here's another of my favorite VTVMs, an earlier example of the Hickok model 209A. The *huge* meter can be easily read across a small room! These meters are fairly common, but unfortunately many display rust and other damage from years of neglect and poor storage conditions. (Photo courtesy historian Alan Douglas)



Photo K. Wow, if the 209A shown in Photo J didn't impress, the later model 209C, shown here, surely will! Sporting the same large meter, but with a black scale and chromed grille, the 209C will be the center of attention on any bench! Note that the often-missing AC detector probe is present and accounted for here. These are gorgeously handsome meters and display well. (Photo courtesy Ron Reeland)

room. Later model 209A VTVMs featured black-faced meters and panels and chrome trimmed meter bezels.

The Hickok model 209C has a black meter face and chrome trim, and a fine example of this device is shown in **Photo K**. These are very handsome meters, and as such, also very popular. The Hickok 209 series of VTVMs also featured jacks for current readings, which makes it too easy to overload and burn out the meter. Perhaps this why so many are found with damaged meter movements. The model 209A meters also employ AC probes with tube diode detectors and are useful for RF measurements up to 700 MHz. Unfortunately, since the model 209A AC probes are detachable, they are also often missing. These models frequently require a bit of serious restoration work, but they're real attention getters and offer reasonable performance. Again, condition is everything, and a very clean specimen, with good movement, free of rust, and with all the probes included, will run between \$50 and \$150 on the open market.

Thank You, And An Invite

I wish to extend a very special *thank you* to the contributors who generously provided the photos shown in this column. Ron Lawrence asked if we could give mention of the 2010 Charlotte Antique Radio Conference, which will be held March 25-27 at the Sheraton Charlotte Airport Hotel. More info can be found at the Conference's website: <http://charlottearc2010.homestead.com/index.html>. Until next time, keep those soldering irons warm, and those old tubes glowing!

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Antennas And Electronic Warfare

by Kent Britain, WA5VJB
wa5vjb@cq-amateur-radio.com

“While it’s been some time since I attended one of our support group meetings, I’m what is known in the electronic warfare industry as an ‘Old Crow.’”

This month, and for the next few columns, I’m going to talk about (as much as I’m allowed to) some different uses for antennas in electronic warfare. It’s a fascinating subject, even if it does fall into the “don’t try this at home” category.

While it’s been some time since I attended one of our support group meetings, I’m what is known in the electronic warfare industry as an “Old Crow.” This term goes back over 60 years, and is colorfully described by the Association of Old Crows (AOC) as follows: “An Old Crow flies though the sky, not because he is the fastest, or has the sharpest claws. An Old Crow flies though the sky because he is the wiliest.” In short, if I understand how your radar-controlled missile, gun, etc. works, I can moon you as I fly over while my equipment keeps pulling off your range gate, preventing radar lock. Clear? Anyway, moving on...

In **Photo A** we have an Archimedean Spiral Antenna. These are very popular antennas in electronic warfare because of their wide frequency



Photo A. Archimedean Spiral Antenna for electronic warfare.



Photo B. Circularly polarized electronic warfare Horn Antennas.



Photo C. Electronic warfare antenna with dielectric polarizer.

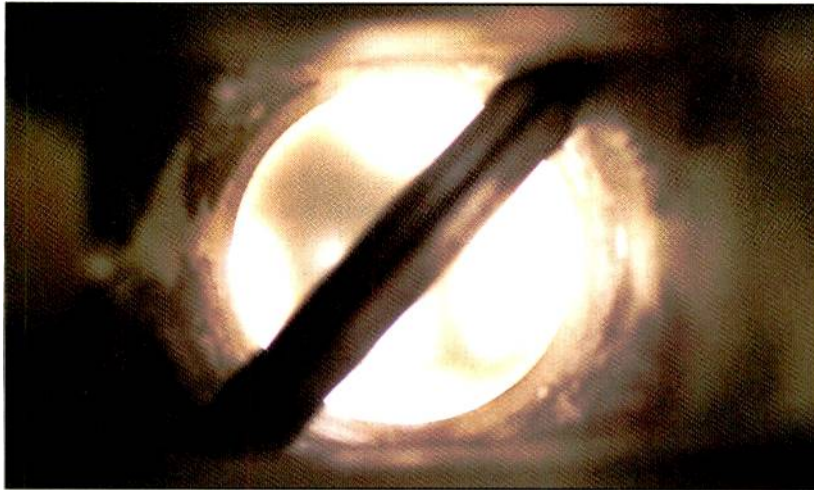


Photo D. 45-degree plastic slab polarizer.

range. The lowest frequency they will operate at is determined by the diameter of the antenna. The highest frequency is determined by how precise you can make small spirals in the middle of the antenna. A frequency range of 2 to 18 GHz is common; 1 to 40 GHz is possible.

The downside of these spirals is their low gain, usually in the -2 to -20 dBi range. To keep the housing or cavity behind the spiral from resonating, the cavity is usually filled with a radar-absorbing material. I'm currently building this particular spiral for a Radar Decoy. The spiral has an impedance in the 150 to 200-Ohm range; the hard part is coming up with a 50 to 150-Ohm impedance matching circuit that works from 2 GHz to 18 GHz. The low gain of the cavity-backed spiral gives it few civilian

uses, but its flat geometry allows the antenna to be mounted flush with the skin of an aircraft. And, when detecting radars, low antenna gain is not a problem.

To help you understand how it works, imagine that you're in a large flat area, such as a Kansas wheat field or a dry lakebed, on a dark moonless night. A flashlight is your radar transmitter, and your eyes are your radar receiver. How far can you see a person with your flashlight? One hundred feet? Maybe 200 feet? Now reverse this. How far away can you see someone holding a flashlight? One mile? Five Miles? This is how a police radar detector can pick up that speed trap on the highway long before Smokey can get your speed.

The same is true for aircraft: the electronic equipment on the airplanes can

detect and identify radars long before the radars can see the airplane. That's why an airplane can have -20 dBi antennas and still hear radars just fine. What's important is that the equipment on the plane can hear all radar bands.

In **Photo B** we have a family of horn antennas for electronic warfare. The twist in the horns is to produce circular polarization so they'll work against vertically or horizontally polarized radars. In **Photo C** we have what looks like a straight horn, but in **Photo D** you can see that there's a slab of plastic inside the horn at a 45-degree angle. This slab of plastic also makes the horn circularly polarized (and was a lot of fun to photograph inside that antenna; fortunately the front radome was translucent enough to let some light through). The horn is also designed so that its front can be mounted flush with the skin of the aircraft.

By the way, referring back to **Photo B**, notice those plastic "teeth" sticking out of the left-most horn. That's a dielectric lens and might make a very good topic for a future column. How's that for a teaser?

In The Field Of Battle, Then And Now

S-Turns Over North Vietnam

Our radar wizards came up with a mechanical way to defeat anti-aircraft radars over Vietnam after some Intel was obtained on the surface-to-air missile (SAM) site radars.

The SA-2 missile was operated like a radio-controlled airplane: there was no radar, infrared seeker, or any other smarts, just a "Command Guided" missile. This worked well enough when the target was an American bomber and the warhead was a tactical nuclear bomb in a defensive ring around Moscow. But when the nuclear warhead was replaced with a high-explosive warhead on the export models, getting close enough to your target to shoot it down was a bit trickier. After all, everything is being controlled from a radarscope by an operator many miles away. When a radar "locks" onto a target it only sweeps a tiny area, and only looks in a narrow range of distance. This "radar box" has to be pretty small with a high explosive warhead.

Our intelligence services found out a lot about this radar and its radar box. There are some incredible stories about Navy Seals stealing one out of North Vietnam and our moles obtaining them in Eastern Europe, where the Warsaw Pact used the same missile systems. But,



Photo E. MiG-29 in the zero forward velocity maneuver.

radar holds lock on both airplanes, again really looking at the geometric center of the two targets. Now the planes separate a bit more, and...surprise—no airplanes in the radar box. The SAM radar system loses lock.

After a few choice words, the radar operator starts over again, locking onto one of the planes. But if the technique is executed correctly, the radar cannot hold lock long enough to fire a missile at the airplane. Geometry and detailed knowledge of their equipment was enough to defeat the opposition's radars.

I'm showing the box as a simple square, not the complex three-dimensional shape with spherical surfaces that it really was. And there were, of course, limits to this tactic; it worked for an A4 or an F105, but not for something as big as a B52.

Zero Velocity Evasion

The Russians have demonstrated a spectacular way of breaking lock on F-15 fire control radars. The Doppler radars on the F-15 are, of course, moving with the airplane. If the airplane is moving at 600 mph, then any object with a 600-mph Doppler shift is a fixed object; that is, something on the ground. Now the radar can ignore all those reflections off power lines, mountains, parked cars, etc. If it ain't moving at the same speed as the F-15, then it's a friend or a target. And to a limited degree this also works against clouds of chaff that an airplane may throw out to confuse radars.

The F-15 long-range radar picks up, say, a Russian MiG-29 and stops sweeping to concentrate attention on the Boggy. Since the radar sweeping rate changes, the Boggy knows he's being tracked. Now the Russian pilot pulls straight up and chops power, like the plane in **Photo E**. The airplane does a spectacular straight

up climb, slows, and falls backwards tail first. After a few hundred feet the pilot flips the plane around and continues on.

When this maneuver was first performed in a Soviet demonstration flight at the Farnborough Air Show some observers thought the pilot had lost control and nearly crashed. The officials were informed that it was a practiced maneuver, and the pilot did it again just to prove it.

Ahhh, but here's the real reason behind the aircraft's tactic: As the plane hangs there for a moment its velocity goes to zero. The F-15 Doppler radar now classifies it as a fixed object and the target computer stops tracking it. In short, it falls off the F-15's radarscope. Now the F-15 has to go through the radar search and track functions to re-acquire the Boggy. Assuming, of course, he noticed this blip fall off his scope in the first place.

A Correction

Kudos to *Pop'Comm* reader Skip who noticed that in the last column I had the twin-lead feed coming down from the TV antenna touching the metal mast. Yes, most of the time letting twin lead touch metal is a no-no. With coax, the electric field is between the center conductor and the shield; with twin lead the field is between the two wires and not shielded. This is why you often see insulated stand-offs for twin lead.

But it so happens I had a section of shielded twin lead. The shielded twin lead in **Photo F** is not a common product, but it does let you run the twin lead near metal objects without losses.

Thanks, Skip, for writing in. We always welcome our readers' questions, suggested construction projects, and possible topics for future columns. Just drop me an email at wa5vjb@cq-vhf.com. I look forward to hearing from you.

no matter how it was accomplished, the important thing was that our "Old Crows" now knew the size of this radar box. The technique employed was actually fairly simple.

Here's how it worked. Let's say a fighter and his wingman just flew across North Vietnam doing slow S-turns. Looking at **Figure 2** you see the radar box locking onto one of the two airplanes at position A. Now the craft come back together in position B several hundred feet apart, just a bit closer than the size of the radar box. The radar locks onto both aircraft and looks at the geometric center of the two planes. Now as they move apart, the

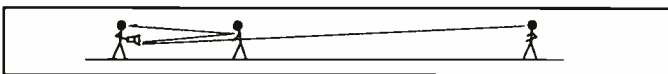


Figure 1. Range of a flashlight.

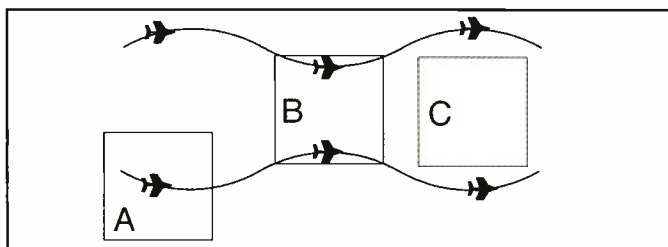


Figure 2. S-turns over North Vietnam.

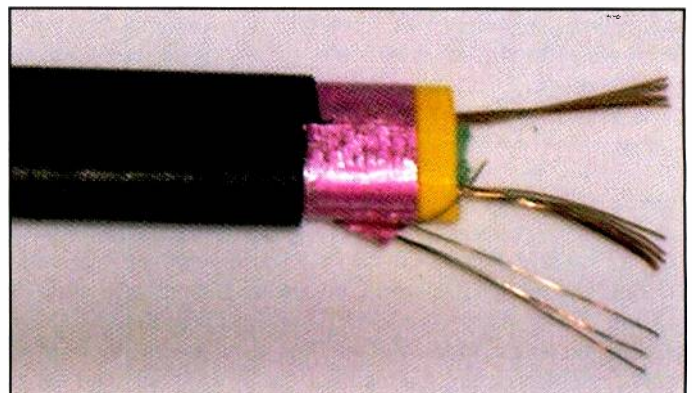


Photo F. Shielded twin lead.

Receiving Worldwide Weather Info Via HF FAX

by John Kasupski,
KC2HMZ,
kc2hmz@verizon.net

For those of us who have interfaced our radios with our computers, the door to a whole new world of utility monitoring targets has been opened. We can receive transmissions in numerous digital modes using the same equipment, and perhaps best of all, much of the software we can use for this purpose can be run on older computers running older operating systems—we don't have to have a new monster computer with the latest OS. After we buy a new machine to replace an aging family PC, the old one often makes a good "shack computer," and best of all, our family members won't be complaining about us tying up the family PC with our radios all the time!

One of the things we can do (even with a very basic computer, once we've interfaced our radio to the computer's sound card) is receive weather maps transmitted by utility stations around the world through a process known as RadioFAX. Also known as HF FAX or WEFAX, this is a means of broadcasting graphic weather maps and other graphic images via HF radio. The term WEFAX is generally reserved by some hobbyists to refer to receiving weather imagery via satellite, with HF FAX being used to refer to the reception of these products on the shortwave utility bands. I myself prefer to use the term WX-FAX, since

"As an added bonus, some of the same programs you can use for receiving weather FAX can also decode marine text forecasts from the National Weather Service broadcast by the U.S. Coast Guard using HF SITOR/NDBP..."

"WX" is an abbreviation for "weather" familiar to hobbyists.

According to the National Weather Service (one of the agencies that creates these products; see **Photo A**), the earliest broadcasts of weather maps via RadioFAX appear to have been made in 1926 by American inventor Charles Francis Jenkins (**Photo B**) in a demonstration for the U.S. Navy. If that name sounds familiar, it may be because I mentioned Jenkins previously in a column; or it may simply be that Jenkins is also credited with the invention of the motion picture; or that he later established the first U.S. television station, W3XK in Wheaton, MD. Be that as it may, the Jenkins invention we're talking about here was once used for everything from transmitting newspapers to wanted posters. The broadcasting of marine weather charts is the primary application for it today.

To receive these transmissions, one can use a dedicated FAX receiver (a rather expensive option for accomplishing only one basic objective), or an SSB receiver connected to either an external FAX recorder or a computer equipped with a radio interface and appropriate software. Since the same radio/computer/software setup can receive countless other digital modes as well as weather FX transmissions, this is the most cost-effective method for SWLs.

Where To Listen

The table accompanying this column lists every HF RadioFAX station shown in the National Oceanic and Atmospheric Administration publication, *Worldwide Marine Radiofacsimile Broadcast Schedules*, by region, in alphabetical order by country and location, along with the frequencies each station broadcasts its RadioFAX transmissions on. It is important to note that the listed frequencies are the *assigned* frequencies



Photo A. NWS Senior Marine Forecaster Scott Prorise working on the Atlantic Regional Forecast. (Courtesy of NOAA)



Photo B. William Francis Jenkins, American inventor of radiofacsimile

used by dedicated RadioFAX receivers, such as the one shown in **Photo C**. When listening on an SSB receiver, you must subtract 1.9 kHz from these assigned frequencies in order to arrive at the *carrier* frequency you want to tune your radio to. Thus, for example, to receive a transmission from station 5YE in Nairobi, Kenya, on its assigned frequency of 9044.9 kHz, you would tune an SSB receiver to 9043.0 kHz.

If all goes well, what you wind up with is a document such as the one shown in **Photo D**; in this case, a typical HF weather FAX transmission of weather info formulated by the NWS and subsequently broadcast by the USCG.

RadioFAX Decoding Software

Here's where you get to exercise your personal preferences for your chosen computer platform, operating system, and decoding software. There are many programs available that will decode these transmissions, some of which are free-ware/shareware and some of which are commercial products. I found many such programs listed on a National Weather Service webpage. Some of them are ACfax (Linux), HamComm 3.1 (DOS), MultiMode (Mac), MultiPSK, PC HF Facsimile 8.0 for Windows, PC GOES/WEFAX, PC Radiofax for Windows, SeaTTY, SkySweeper, and the WiNRADio Digital Suite.

That's far from being an exhaustive list of available software; it's only a cross-section illustrating the wide variety of programs that can be used for decoding HF weather FAX transmissions, and you can probably find others no matter what computer and OS you're using. You might even have one, or more, on your computer already. I happened to already have MultiPSK on mine, and I'm pretty sure I also have the HamComm 3.1 software for a DOS machine still hanging around here somewhere on a floppy disk.

As an added bonus, some of the same programs you can use for receiving weather FAX can also decode marine text forecasts from the National Weather Service broadcast by the U.S. Coast Guard using HF SITOR/NDBP, giving you a set of targets in yet another transmission mode to try to add to your logbook.

Reader Logs

It is now my privilege to turn things over to the readers of *Pop'Comm* who, as always, have gifted us with another fine collection of utility station loggings this month. Needless to say, you are welcome and encouraged to join their ranks by sending in your loggings for inclusion in the column. The easiest way to do so is simply to email them to me at the address that appears at the beginning of this column.

As a reminder, that address changed last month to reflect the change in my ham call sign, from the former KC2HMZ to the shiny, new W2PIO. So make be sure to make a note of it, then send me a batch of

your loggings, and I'll see to it that you're immortalized in this space, just like the following, who kindly submitted logs this month: Allan Stern, Satellite Beach, FL (ALS); Mark Cleary, Charleston, South Carolina (MC/SC); Glenn Valenta, Lakewood, CO (GV/CO); and Chris Gay, Lexington, KY.

2844.0: TADIL data transmission in LINK-11 at 1113Z. (MC/SC)

3131.9: Stations D, G, NW, and others with EE voice comms, poss mil exercise, in USB at 2200Z. (CG/KY)

3308.0: AFA5RT and others in USAF MARS North Central Area Net in USB at 1103Z. (MC/SC)

3390.0: NNN0VLK (NC), NNN0HVK (NC) in USN/USMC MARS Region 4 4F3B North Carolina Net in USB at 0006Z. (MC/SC)

4013.5: NNN0VWV (KY) in USN/USMC MARS Region 4 4K2B Kentucky Net in USB at 0010Z. (MC/SC)

4038.5: NNN0QHI, NNN0OBV, NNN0GBS in USN/USMC MARS 4G1B South Carolina Net in USB at 0000Z. (MC/SC)

4038.5: NNN0EKB (FL) net control in USN/USMC MARS Region 4 4C3B Florida Net in USB at 2304Z. (MC/SC)

4054.0: Ocean yachts *Aquarius* (YL) and *Harmony* (OM), sailing together near Mazatlan, Mexico, in southbound maritime traffic net, in USB at 0132Z. (GV/CO)

4079.6: Unid hobby temperature beacon, sending TMP72 then TMP73, weak but readable, in CW at 0636Z. (GV/CO) (*Believed to be in southwest Arizona.*—jk)

4500.0: AFA4BT (FL), AFA4BW, AFA4SW in USAF MARS Region 4 4S1 Net in USB at 0001Z. (MC/SC)



Photo C. One type of dedicated shipboard WX-FAX receiver/printer.

4517.0: USAF MARS North Central Area net in progress in USB at 0004Z. (MC/SC)

4593.5: USAF MARS North East Area NE2S1 Net in progress with AFN3WV, AFA2RD in USB at 2332Z. (MC/SC)

4623.5: NNN0SPM (VA), NNN0WNB, NNN0SYM (VA) in USN/USMC MARS Region 3 Virginia Net in USB at 2309Z. (MC/SC)

5000.0: WWVH with storm warnings for Pacific between time announcements, in AM at 0350Z. (GV/CO)

6039.0: A2J and OYQ with EAMs, sound just like HFGCS EAMs but on wrong frequency, if HFGCS, probably was supposed to be 6739; in USB at 2108Z. (CG/KY)

6604.0: New York VOLMET with good levels but heavy QRM here, in USB at 0233Z. (GV/CO)

6649.0: Dakar Radio working various A/C, voice communications and SELCAL checks, weak but readable in USB at 0346Z. (GV/CO)

6855.0: Enigma V2A numbers station, YL/SS with 5-figure groups in AM at 2130Z. (CG/KY)

7457.0: AFA4RD (FL), AFA4SW in USAF MARS Region 4 4S2 Net in USB at 1309Z. (MC/SC)

7777.8: Unid simplex QSO in Spanish, both sides heard, in USB at 0623Z. (GV/CO)

7999.0: Unid, probable hobby beacon, repeating letter "Q" in very slow CW at 1503Z. (CG/KY)

8156.0: C6WC ops report to CORAL HARBOUR BASE (Royal Bahamas Defence Forces) in USB at 2022Z. (MC/SC)

8971.0: FIGHTING TIGER 71C (P-3C, NAS Jacksonville VP-8) wkg FIDDLE (NAS Jacksonville TSC) in ANDVT and clear voice, in USB at 1638Z; CARDFILE 71B (P-3, NAS Jacksonville) wkg FIDDLE, passes ETA of 1815Z, in USB at 1655Z. (ALS)

8971.0: RED TALON 711 (P-3C, NAS Jax VP-16 "War Eagles") working FIDDLE in USB at 1940Z. (ALS)

8992.0: CONVOY 3233 (C-130T) p/p to VR-55 DUTY OPS at Point Mugu, in USB at 2240Z. (MC/SC)

9001.0: Stations "NC," "D," "S," and "G" with EE voice comms, poss mil exercise. USB at 2202Z. (CG/KY)

11104.0: Ares I-X test launch comms; BRD (Booster Recovery Director) wkg *Freedom Star* (Booster Recovery Vessel) in USB at 1514Z; *Liberty Star* (Booster Recovery Vessel) wkg *Freedom Star* in USB at 1522Z. (ALS)

11175.0: SPECTRE 61 (probable USAF AC-130 gunship), p/p via Offutt HF-GCS, made reference to an exercise and reported ETA, in USB at 2142Z. (CG/KY)

12353.0: Tug SENTINEL clg WPE, Jacksonville in USB at 1413Z. (MC/SC)

13488.0: Two FEMA stations with WGY94## callsigns testing a new facility, talk of checking other bands later in the day, in USB at 2024Z. (GV/CO)

Table. Worldwide HF Weather FAX Station Locations, Callsigns, And Frequencies

Frequencies listed are the assigned frequencies; subtract 1.9 kHz to get the carrier frequency.

Africa

5YE, Nairobi, Kenya - 9044.9, 17447.5
ZSJ, Cape Naval, South Africa - 4014.0, 7508.0, 13538.0, 18238.0

Asia

BAF, Beijing (Peking), China - 5526.9 (BAF6), 8121.9 (BAF36), 10116.9 (BAF4), 14366.9 (BAF8), 16025.9 (BAF9), 18236.9 (BAF33)
3SD, Beijing (Peking), China - 8461.9, 12831.9, 16903.9
JMH, Tokyo, Japan - 3622.5 (JMH), 7795.0 (JMH2), 13988.5 (JMH4)
BMH, Taipei, Republic of China - 4616.0, 5250.0, 8140.0, 13900.0, 18560.0
HLL2, Seoul, Republic of Korea - 5385.0, 5857.5, 7433.5, 9165.0, 13570.0
HSW, Bangkok, Thailand - 7396.8 (HSW64), 17520.0 (HSW61)
Tashkent 1, Uzbekistan - 3690.0 (RBV70), 4365.0 (RPJ78), 5890.0 (RBV78), 7570.0 (RBX72), 9340.0 (RCH72), 14982.5 (RBV76)
Tashkent 2, Uzbekistan - 3280.0 (RBX70), 5285.0 (RBX71), 8083.0 (RIJ75), 9150.0 (RCH73), 13947.0 (ROM5)
JJC, Kyodo News Agency, Japan - 4316.0, 8476.5, 12745.5, 16971.0, 17069.6, 22542.0
9VF/252, Kyodo News Agency, Singapore - 16035.0, 17430.0
GYA, Northwood, UK (Persian Gulf) - 6834.0, 12390.0, 18261.0

South America

PWZ-33, Rio De Janeiro, Brazil - 12665.0, 16978.0
CBV, Valparaiso Playa Ancha, Chile - 4228.0, 8677.0, 17146.4

North America

CFH, Halifax, Nova Scotia, Canada - 4271.0, 6496.4, 10536.0, 13510.0
VFF, Iqaluit, N.W.T., Canada - 3253.0, 7710.0
VFR, Resolute, N.W.T., Canada - 3253.0, 7710.0
VCO, Sydney, Nova Scotia, Canada - 4416.0, 6915.1
VFA, Inuvik, Canada - 8457.8
NOJ, Kodiak, Alaska, USA - 2054.0, 4298.0, 8459.0, 12412.5
NMC, Pt. Reyes, California, USA - 4346.0, 8682.0, 12786.0, 17151.2, 22527.0
NMG, New Orleans, Louisiana, USA - 4317.9, 8503.9, 12789.9, 17146.4
NMF, Boston, Massachusetts, USA - 4235.0, 6340.5, 9110.0, 12750.0

Pacific Ocean Basin

VMC, Charleville, Australia - 2628.0, 5100.0, 11030.0, 13920.0, 20469.0
VMW, Wiluna, Australia - 5755.0, 7535.0, 10555.0, 15615.0, 18060.0
ZKLF, Wellington, New Zealand - 3247.4, 5807.0, 9459.0, 13550.5, 16340.1
KVM70, Honolulu, Hawaii, USA - 9982.5, 11090.0, 16135.0

Europe

OXT, Skamlebaek, Denmark - 5850.0, 9360.0, 13855.0, 17510.0
SVJ4, Athens, Greece - 4481.0, 8105.0
Hamburg/Pinneburg, Germany - 3855.0 (DDH3), 7880.0 (DDK3), 13882.5 (DDK6)
Rome, Italy - 4777.5 (IMB51), 8146.6 (IMB55), 13597.4 (IMB56)
Moscow, Russia - 3830.0, 5008.0, 6987.0, 7695.0, 10980.0 (RCC76), 11617.0 (RDD78), 12961.0
Murmansk, Russia - 5336.0 (RBW41), 6445.5, 7908.8, 10130.0 (RBW48)
GYA, Northwood, UK - 2618.5, 4610.0, 8040.0, 11086.5

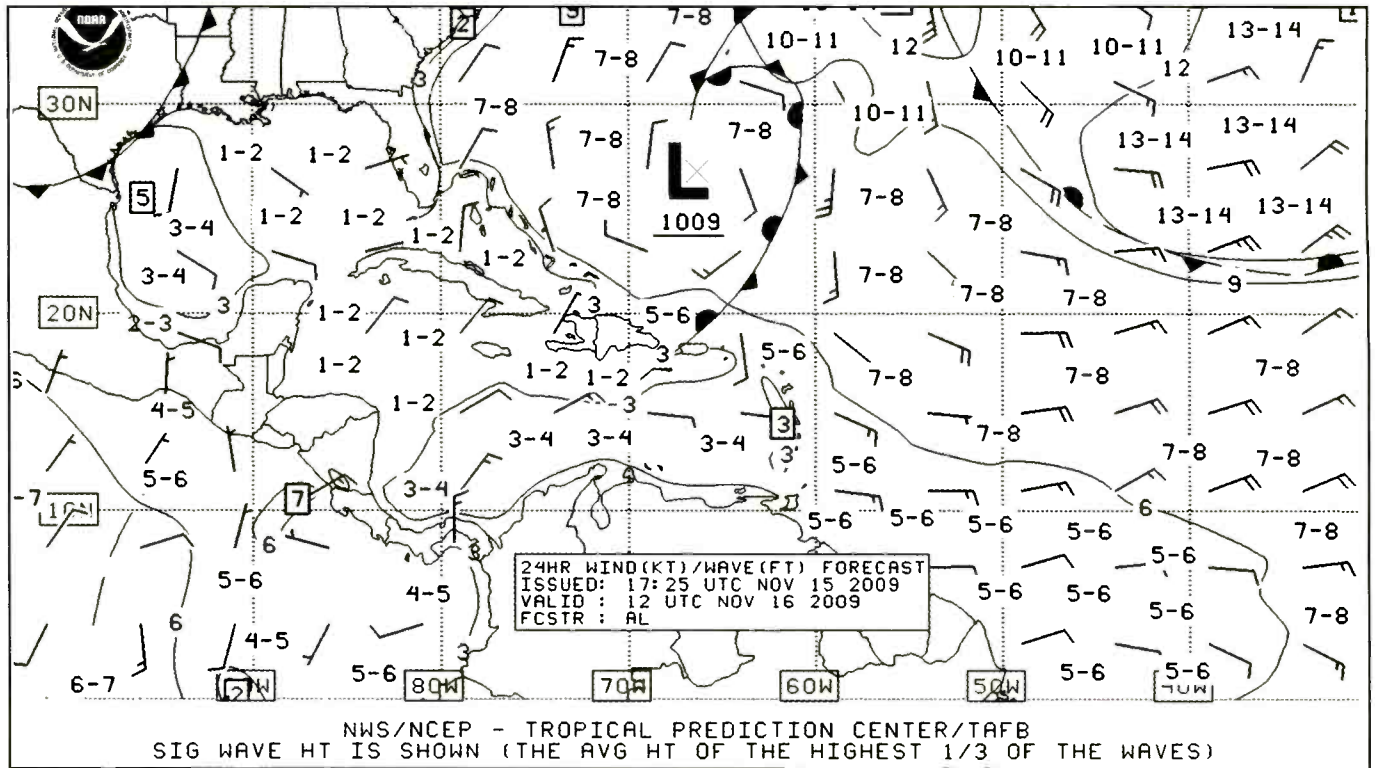


Photo D. A typical HF weather FAX. (Courtesy of NOAA)

WorldRadio
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Here's a peek at a few of the columns scheduled for the February issue of WorldRadio Online

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13927.0: PACK 33 (KC-135R) p/p via AFA9AY (CA) for status of JEDI 31 (C-17A) in USB at 2323Z. (MC/SC)

13927.0: USAF MARS Operator AFA9AY (California) working AIRCRAFT 50 for p/p to a Maryland area code, sounded like official call, in USB at 1905Z; AFA9AY wkg REACH 453 for M&W phone patches to Wisconsin and Washington state, in USB at 1813Z. (ALS)

13927.0: USAF MARS Station AFA5RF (Shelbyville, IN) wkg RICAN 72 (C-130, PR-ANG 156AW 198AS, Muniz ANGB, San Juan PR; over San Antonio, TX) for DSN phone patch to MINUTEMAN OPS (Andrews AFB ANG Readiness Center) in USB at 1824Z. (ALS)

13927.0: AFA9AY working EVAC 46703 for phone patch to a Michigan area code, requests service ambulance meet plane on arrival, in USB at 2300Z. (ALS)

13927.0: USAF MARS Operator AFA5QW (Greenwood, IN) wkg KING 57 (C-130) for DSN phone patch to Davis-Monthan AFB Metro, in USB at 1825Z; USAF MARS Operator AFA4PP wkg an aircraft over central Iraq for M&W phone patch to South Carolina area code, in USB at 1948Z. (ALS)

13927.0: USAF MARS operator AFA5RS (Shelbyville, IN) wkg aircraft over the Indian Ocean for M&W phone patch to a Virginia area code in USB at 1954Z. (ALS)

13927.0: AFN4PP wkg AIR EVAC 50040 (C-130 #85-0040, Maxwell AFB 908AW) for phone patch to Scott AFB; rqsts they call Robert Gray AAF, Ft Hood, TX, and be sure they will have ambulance waiting to meet flight on arrival, in USB at 2030Z. (ALS)

13927.0: USAF MARS Operator AFA5YD (West Point, OH) wkg REACH 1010 (over North Atlantic), mentions KPOF (Poplar Bluff MAP, Poplar Bluff, MO); rqsts M&W phone patch to an area code in the Florida panhandle, in USB at 1844Z. (ALS)

13927.0: USAF MARS Operator AFA5AD (Wisconsin) wkg JESSE 91 (C-130H, MO-ANG 139AW, Rosecrans MAP, St. Joseph, MO) for M&W phone patch to a Missouri area code, ETA Missouri 2:00 p.m. also other M&W phone patches, in USB at 1458Z. (ALS)

13927.0: AFA5QW wkg aircraft for DSN phone patch to Robins AFB PEACHTREE OPS, tells Ops to pass to PEACH 03 hello from MIKE 11, in USB at 1804Z. (ALS)

13927.0: USAF MARS Operator wkg THUNDER 64 (B-1B Bomber, Ellsworth AFB 28BW) for DSN phone patch Ellsworth AFB THUNDER OPS, asks if THUNDER 63 got off the ground, in USB at 1858Z. (ALS)

13927.0: USAF MARS Operator wkg DARK 43 (B-1B, Dyess AFB 9BS) for DSN phone patch to Dyess AFB DARK OPS in USB at 1700Z; AFA9PF wkg DRAGNET UNIFORM (E-3 AWACS, Tinker AFB) for phone patch in USB at 1901Z. (ALS)

13927.0: AFA5RS (Shelbyville IL) wkg PUMA 76 (C-130, Little Rock AFB) for phone patch; receives msg regarding crew member's child's injury; then M&W phone patch to an Arkansas area code, in USB at 2010Z. (ALS)

14300.0: W5CGC (TX) net control in weekly USCG Amateur Net in USB at 1601Z. (MC/SC)

15016.0: REARDOOR (U.S. Mil) with EAM broadcast in USB at 2200Z. (MC/SC)

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Fruits Of His Labor

by Bill Price, N3AVY
chrodoc@gmail.com

“Beezer has had to build two shelves across his windowsill, because at last count he was up to about 17 papayas (safely ensconced in bags, mind you), each at various stages of ripeness.”

I just heard from Beezer, who is doing well despite the best efforts of his former employer to close the doors and run off without paying him. Beezer worked with Norm and me way back when, and he has given me some really great tales to relate over the years. I’m still trying to work up something I call “36 Cents and High Beams” about the time he had to drive some hundred miles with just 36 cents in his pocket and only high beam headlights working on his pickup

I used to spend a fair amount of time helping wayward hams with their antenna problems, and something that often came up was the need for clandestine, secret, invisible, hidden antennas for amateur radio use. There was a particular vertical antenna that worked pretty well at ground level, and could be concealed in a 6-inch-diameter PVC pipe, which when rigged with pulleys and rope, became a wonderful, patriotic flagpole (just dare your owners’ association to deny your right to fly Old Glory!). Closer inspection made the viewer wonder what the long counterpoise rods were for, but a quick explanation (“bird perches”) seemed sufficient. Another favorite was the ground-plane 2-meter rig with plastic letters (“N, E, W, and S”) attached to the whiskers and a plastic arrow on the vertical. Sure looks like a weathervane—especially when it’s painted black.

Beezer’s situation was different. He didn’t have a townhouse and no claim to any particular piece of lawn or roof. But like most hams, he would not let a little thing like that deter him from his appointed rounds, aka skeds.

With a tuner indoors and a balun outdoors, it’s a pretty well-known secret that any long wire can be made to radiate and receive if you don’t expect super performance, and I’ve worked with long wires that have been casually thrown across tree-tops using a slingshot, a bow and arrow, or even a good throwing arm. Beezer’s arm may not be so good, but neither is his tree very tall, rising up some 25 feet, more or less.

And it’s not an apple, or maple, or oak. No, where he’s living, the *tree du jour* is a fruit tree. Papaya, to be sure. And his wire is extremely fine steel wire with just a 1 or 2-ounce fishing weight on the end, because even though it’s nearly invisible, he’s got to take it down each morning before the neighbor (on whose tree it dangles) comes out for his morning constitutional, retrieves his newspaper, and surveys the neighborhood.

The winds have been pretty brisk in Beezer’s

neighborhood lately. Normally, that’s not a big deal, but he’s noticed that the weight that holds his antenna in place swings to and fro all night while the antenna is busy sending and receiving signals around the world. In fact, he notices that every hour or so there’s an abrupt change in the SWR that requires him to adjust the tuner a bit. Not a big deal, he thought.

It seems, though, that the swaying of the weight on the end of the fine steel wire causes a sawing motion, which slices through a frond every couple of hours. It also drops a papaya every so often, even though the fruit is not yet ripe and wouldn’t normally drop for a few more weeks.

Not wanting to awaken curiosity in his neighbor about the nocturnal trimming of the papaya tree, Beezer has the good sense to remove the cut frond(s) in the morning, and dispose of them in a dumpster, but the papayas are too much to resist, so he began lining them up on his windowsill. A windowsill, I might add, chosen because it does *not* face the papaya-neighbor’s house. I probably became an unwitting accomplice when I suggested that the fruit will ripen better if placed in a brown paper bag.

As I understand it (remember, this is only hearsay) Beezer has had to build two shelves across his windowsill, because at last count he was up to about 17 papayas (safely ensconced in bags, mind you), each at various stages of ripeness.

He’s been a little concerned about the dearth of fronds on the tree as well, but he’s a master of deadpan and his poker face will probably keep him safe from suspicion. He mentioned to me that the other day, the papaya-neighbor was outside when he walked out his door. He noticed that Mr. Fruit-Tree was staring up at his papaya tree.

“Can’t figure it. It’s starting to look like a dog-goned telephone pole.”

Beezer nodded. “Whaddya think it is? Bugs?”

“I doubt it. Bugs couldn’t eat that much. Must be some kind of birds. Birds or lizards. Never saw anything like it.”

“Me neither,” Beezer said. “Me neither. Hope you figure it out soon, though.” He turned and walked back to his apartment, where he pulled the shades down and ate a papaya.

Bill tells me that Beezer wasn’t like this before they worked together. Said he was pretty normal when he first applied for that job. Norm, too. Says he can’t figure out what got into them.—Ed.

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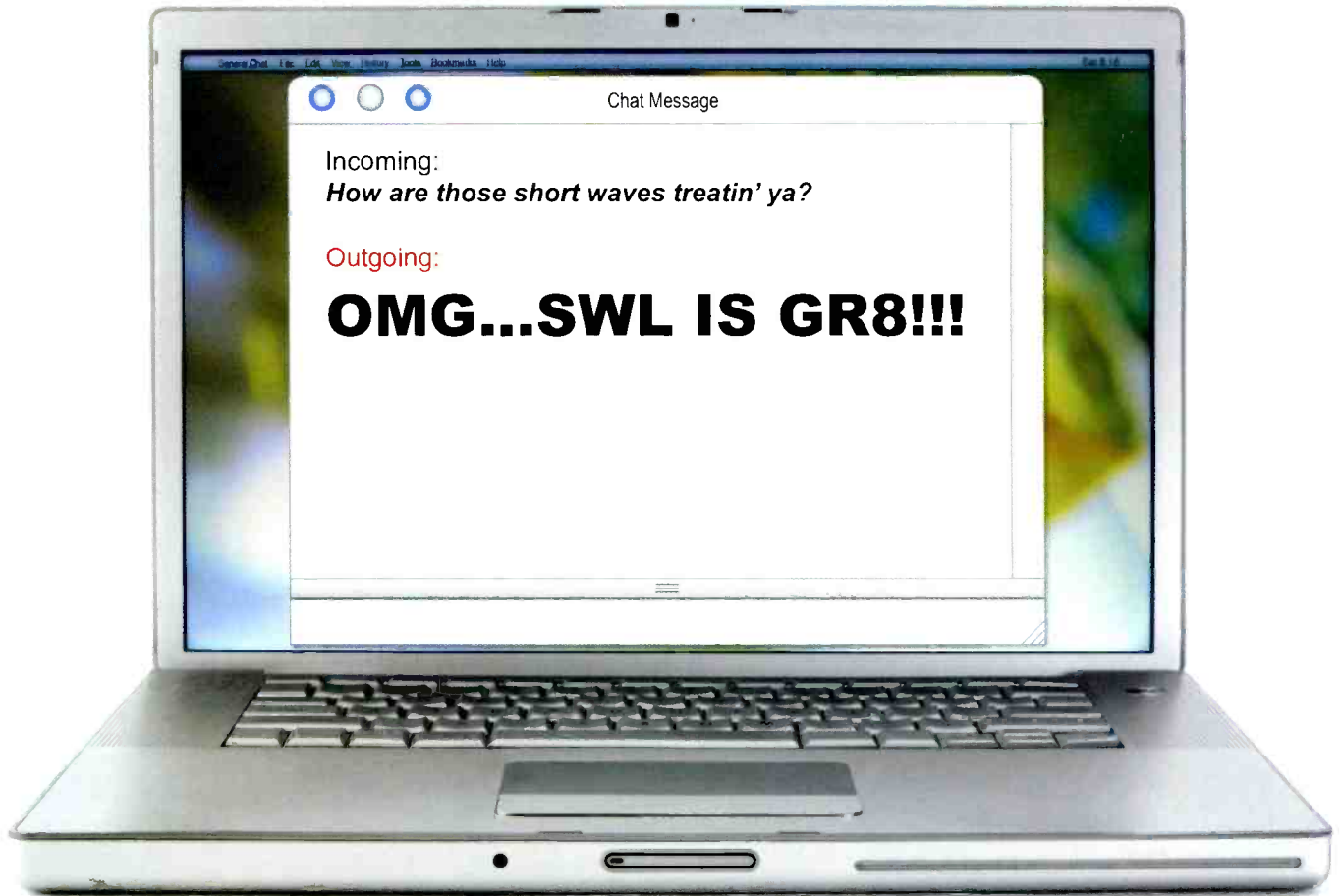
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